DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

Otago Regional Council

Programme Plan

South Dunedin Future

DOCUMENT CONTROL

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TABLE OF CONTENTS

1. DOCUMENT INTRODUCTION

The Dunedin City Council (DCC) and Otago Regional Council (ORC) have for several years been collaborating in a joint effort to address climate change-related issues facing South Dunedin. This has included adopting a programmatic approach, working across both councils to better coordinate a wide range of work focussed on improving social, economic, and environmental wellbeing in South Dunedin. This joint approach is known as the South Dunedin Future programme ("the programme").

While much of the programme is captured in this document, an operating reality of adapting to climate change is navigating complexity and uncertainty. As the programme develops over time, refinements to the programme plan will be needed, including to the scope, objectives, outcomes, outputs, governance, and management, to ensure it remains fit for purpose.

This information will be developed iteratively over time and as the programme progresses through phases. At various intervals, particularly when transitioning between phases, it will be necessary to update the programme definition and this plan to reflect new information.

2. DOCUMENT PURPOSE AND SCOPE

The purpose of this programme plan is to consolidate and summarise key information to define the programme, outline how the programme will be controlled, and how progress will be tracked. The programme plan should also provide confidence to partners and stakeholders that the situation facing South Dunedin is being actively managed by both councils in a coordinated manner. Further detail will need to be developed for programme actions, activities and projects, which will be captured separately (for example, in project-level documentation).

The programme plan will:

- Outline the background and context of the programme, enabling a common understanding of its origins, and the key problems it is seeking to address.
- Record the objectives of the programme and desired outcomes in a draft strategic intent. This strategic intent will be further developed with input from mana whenua and refined as the programme progresses through subsequent phases.
- Seek to define the scope of the programme, by providing a framework for assessing activities and determining their relevance to the programme. This includes identifying exclusions, or things that are considered outside of the programme scope (but which might commonly be thought of as being inside or associated with the programme).
- Record programme constraints and assumptions, including known boundaries in which the programme must operate, and areas of uncertainty in which assumptions are made due to timing or limited available information.
- Identify the key interfaces and dependencies the programme has with other key pieces of work and note how these might affect the programme now or into the future.
- Describe key risks and issues related to the programme, and outline roles, responsibilities, and arrangements for managing and mitigating risk.
- Describe the overall approach, including the methodology that will be used to deliver the programme, and how the Dynamic Adaptative Planning Pathways (DAPP) framework will be applied. This will also outline the programme structure, phases of work and key milestones, including a high-level programme schedule.
- Provide a high-level breakdown of the work that is expected to be undertaken as part of the programme. This includes a range of questions that need to be answered, and associated programme actions or activities that are planned to provide the necessary information or outputs. Programme action descriptions for the activities/outputs provide additional detail about what will be delivered and conditions of acceptance.

- Outline the programme structure, including key roles and responsibilities, and how these roles interact in the governance, management, and delivery of the programme. This includes summarising how the programme will be controlled, and how performance will be measured.
- Provides a reference for the Programme Manager, and Programme Management Team, to use when managing the delivery of the programme.

3. PROGRAMME DEFINITION

This section sets out to define the programme. It is important to have a clear and common understanding of what constitutes the programme. A best practice definition of a programme is:

"a temporary, flexible organisation created to coordinate, direct and oversee the implementation of a set of related projects and activities in order to deliver outcomes and benefits related to the organisation's strategic objectives" – Managing Successful Programmes (MSP®), AXELOS Ltd, 2013.

The South Dunedin Future programme could be described as an *emergent* programme, which has evolved from separate initiatives that have developed in different parts of the organisations; and which is currently *transitory*, becoming a fully planned programme when its vision, context and direction have been defined and established.[1]

An ongoing focus is firming up the programme vision, objectives, outcomes, and overall approach to enable more effective coordination of the constituent projects.

3.1 Executive Summary

The South Dunedin Future programme provides a framework for developing climate change adaptation options for South Dunedin. Adaptation means adjusting to the actual or expected climate and its effects, to reduce harm and take advantage of new opportunities. This should be done in a way that enhances resilience, and improves social, cultural, economic, and environmental wellbeing.

The focus is on developing options for adapting to the locked-in impacts of climate change, and better understanding the risks presented by our changing climate, so we can better plan for the future. Successful delivery of the programme will require ongoing coordination of detailed technical work and extensive engagement with mana whenua partners, affected communities, and other stakeholders. The aim is to develop and deliver an adaptation strategy for South Dunedin that is viable, affordable, and backed by the community.

The programme is characterised by complexity and uncertainty. This includes the nature of the current physical environment in South Dunedin, the uncertain impacts of a changing climate on that environment, and the timeframes in which this will occur. It extends to the diverse social, cultural, and economic fabric of the communities in South Dunedin, and the uncertainties about how each community might be impacted by change or respond to it. The eventual adaptation options and pathways chosen for South Dunedin will need to account for these factors and respond over the short, medium, and long terms.

The programme will not provide immediate answers. Rather, it creates a framework for navigating complexity and resolving many (but not all) uncertainties. Answers will appear gradually, and issues may need to be revisited as new information appears. The programme will be implemented using a Dynamic Adaptive Pathways Planning (DAPP) approach, a best practice methodology for identifying

[1] Managing Successful Programmes (MSP®), AXELOS Ltd, 2013.

ways forward (pathways) despite uncertainty, while remaining responsive to change should this be needed (dynamic).

This programme plan seeks to outline how this DAPP approach will be applied in South Dunedin. This will include developing a more detailed understanding of the physical environment, including natural hazards, and how these might be affected by a changing climate. It involves identifying and connecting with partners and stakeholders most likely to be impacted by these changes and any adaptation to them, and developing a detailed understanding of their socioeconomic characteristics, and well as their collective views, values, and aspirations for South Dunedin.

Climate change and natural hazard risk assessments will assess levels of hazard, exposure, and vulnerability, helping to identify the people, places, and assets most at risk in South Dunedin. Potential adaptation options will be developed, based on local context, but informed by national and international experience. Layering these various assessments on top of one another will enable comparisons between hazard and climate risk, community characteristics and priorities, and options for adapting to anticipated changes in the fairest, most cost-effective and ordered manner possible.

Through extensive technical assessment and community engagement, potential adaptation options will be narrowed to preferred options that are most likely to achieve desired objectives. These preferred options and pathways will form a climate change adaptation strategy for South Dunedin. This strategy will need to be integrated into the core functions of both councils, shaping wider strategy, policy, planning, budget, and operational decisions. It will also inform wider public and private sector investment and decision-making relating to South Dunedin.

This will need to be an evolving process. Adaptation decisions are being made every day through current policy, planning, and operational processes. By adopting a staged DAPP-based approach, the programme will be able to provide high-level guidance to inform council decisions in the short-term, while developing more specific and detailed guidance over the medium- to long-term, as the programme progresses. This should help avoid maladaptation, where decisions or investments made now have unintended consequences, such as locking in unwanted cost and risk for later.

The intent is that the land use, infrastructure, and urban form of South Dunedin will change in a gradual, organised manner in response to the changing climate and natural hazard risks, and reflecting the characteristics and priorities of affected communities.

This ongoing adaptation should seek to stay ahead of the changing physical environment, and its effects, without getting ahead of support from the community. In doing so, it should balance natural hazard risk with the need to carefully manage the impact of change on affected communities. Over time, the process should (re)generate a more sustainable natural and urban form for South Dunedin. A place where climate change and natural hazards risks are managed effectively, where the community is more resilient, and enjoys improved social, cultural, economic, and environmental wellbeing.

This programme plan seeks to outline a process for realising that future for South Dunedin.

3.2 Programme Background

Background

South Dunedin is a large, diverse community of 12,000 residents. Historically, much of the area was a wetland system which mana whenua utilised for food gathering and other activities before the location transformed into an industrial manufacturing and service area for Dunedin. It remains important for light industry and has also evolved into a destination retail area. It is central, flat, conveniently located, and home to 700 businesses, schools and popular amenities such as the St

Clair and St Kilda beaches. South Dunedin, and other low-lying areas such as Harbourside, host a range of essential infrastructure and DCC assets, which support services for wider Dunedin.

Operating context

South Dunedin comprises a large area of flat land close to the city centre, key transport networks and a range of important city services and amenities. As such, it plays a key role in the functioning of the wider city and will feature prominently in considerations of future growth and development.

South Dunedin is, however, exposed to a range of natural hazards, due to being a low-lying area built on a former coastal wetland. Potential hazards include coastal inundation from storm surge or tsunami; runoff flooding exacerbated by a high groundwater table; and seismic hazards such as liquefaction. Climate change will likely increase most of these hazards over time through rising sea level, rising ground water, and increased frequency and severity of storm events. Land subsidence may also increase both the impact of these hazards and the rate of onset.

While much work has been undertaken to enhance environmental monitoring and better understand natural hazards, there remain gaps in our knowledge of the natural coastal and ground water processes. How these complex natural processes interact with the built environment in and around South Dunedin, and the impact of climate change on these and other processes, also remains uncertain.

Local identity, social and economic indicators, and levels of resilience are highly varied across South Dunedin. Residents and non-residents have deep historical, cultural, and personal connections to the area. The flat geography hosts core DCC infrastructure, and enables access to housing, community services, and economic opportunities found largely in South Dunedin. Most census statistical areas in South Dunedin register as 8-10 on the socioeconomic deprivation index (10 being the most deprived), meaning much of the community has low household income levels. However, certain areas of South Dunedin are among the wealthiest in the city.

This diversity impacts potential adaptation options as the views, needs and interests of stakeholders are wide-ranging. South Dunedin's exposure to natural hazards, legacy infrastructure that is ill-suited to servicing future needs, and the community's varied capacity to adapt, potentially make it vulnerable to the negative effects of climate change. The complexity of the issues, and many unknowns, also create unavoidable uncertainty. It is not possible, practical, or sensible to wait until all uncertainties are resolved before making decisions. Long lead-in times for many potential adaptation options require decisions to be made on evolving understandings of the potential impacts of climate change.

South Dunedin Future (SDF) Programme

To date, the focus of the programme has included three core workstreams: (i) community engagement; (ii) environmental investigations and monitoring, and identification of the risk posed by sudden onset hazards; and (iii) interventions to help mitigate short-term flood risk.

This work has involved extensive community engagement, including more than 80 meetings and hui since the beginning of 2020 to build trust, relationships, and awareness of key issues. This has been supported by a range of communications activities, including proactive media engagement and the establishment of South Dunedin Future webpages, designed to increase access to information about local climate change adaptation issues in South Dunedin. The webpages include the history of post European settlement of 'The Flat' area now known as South Dunedin.

An enhanced programme of environmental research and monitoring, led by the Otago Regional Council with support from external agencies such as GNS Science, Te Pū Ao, continues to build knowledge of rainfall, ground water, and coastal processes, including through rainfall monitoring, bore drilling, and modelling storm surge and tsunami risk. This is complemented by geological hazard work looking at fault lines, vertical land movement, liquefaction and lateral spreading.

Physical infrastructure work since 2015 has included upgrading the Portobello Road pumping station and Forbury aqueduct; improved inspection, cleaning and maintenance of 1,500 mud tanks; replacing old and leaking pipes to reduce groundwater infiltration; and fitting new backflow prevention valves to help stop wastewater getting inside homes most at risk. Investigations have been undertaken into upgrading Green Island wastewater treatment plant and redirecting wastewater from the Kaikorai Valley to an existing treatment plant in Green Island. Extensive computer modelling work is underway to evaluate the current performance of the network, identify problem areas and model potential improvements. Work continues to strengthen emergency management procedures during heavy rainfall events.

The DCC's 10-Year Plan (2021-31) allocates $36 million for flood prevention works in South Dunedin, with two projects currently underway to develop an integrated catchment model and a flood alleviation plan for the area.

The St Clair-St Kilda Coastal Plan Project, Whakahekerau – Rakiātea Rautaki Tai, approved in February 2022, seeks to inform how this coast is managed and how it will need to adapt, in time, to the effects of coastal hazards and climate change.

Other related work

In addition to climate adaptation-related activities, the DCC has committed $12 million to the design and construction of a new South Dunedin Library and Community facility, as a strategic investment and community asset for the area. A range of other relevant work is either planned or underway, which is currently not formally associated with the programme, but which will have an impact on the outcomes in South Dunedin. For example, open and green spaces will be a central factor in managing climate change impacts in the future. The DCC is currently developing an Open Spaces Plan for Dunedin and is undertaking a Sports Facility Needs Assessment. The DCC's Transport Asset Management Plan is also investigating road maintenance options that are better suited to the ground conditions in South Dunedin or that could help flood mitigation.

In 2018, ORC joined the NZ SeaRise research programme, which in April 2022 released localised sea-level rise projections for New Zealand to help better anticipate and manage impacts such as flooding, rising groundwater levels, and coastal erosion. South Dunedin is also the focus of a regional case study of a low-lying urban area impacted by sea level rise. The case study outcome will be used to develop planning and risk assessment toolkits for sea level rise adaptation.

3.3 Programme objectives and desired outcomes

The programme seeks to achieve an evolving vision, purpose, and set of strategic objectives. This strategic intent will be developed and refined as the programme progresses, noting that success will be dependent on many factors, both within the programme and outside of its influence or control. Successful adaptation will require significant collaborative efforts from central government, local government, iwi/Māori, private sector and communities.

Programme Vision

Vision: Improved community wellbeing and resilience through sustainable urban regeneration of South Dunedin

Programme Purpose

Purpose: To enable South Dunedin to prepare for and adapt to the impacts of climate change.

Programme Strategic Objectives

- Reduced risk from flooding (and other natural hazards): Successful adaptation will ultimately be defined by our ability to manage the presence of, and our relationship with, water – particularly in the form of flooding and rising groundwater. The increasing presence of water in and around South Dunedin will shape other natural hazards.
- Increased social and economic resilience: To adapt effectively to the effects of climate change, all partners and stakeholders will need the knowledge, tools, and support to cope with and navigate extensive social and economic change.
- Environmental and cultural restoration: By adapting in ways that better balance human and environmental systems, we can help restore lost natural environments and reenergise cultural connections to places of significance.
- Climate change impacts are fair ('just transition'): We need to adapt in ways that ensure the risks, costs and opportunities are shared equitably across all partners and stakeholders, and that no one is left behind.
- Community ownership of process and outcomes: Adaptation will require many difficult decisions and trade-offs, so we need to support partners and stakeholders to commit to the process and take ownership of the outcomes.
- Improved urban form in South Dunedin: Adaptation is not only a process for managing risk and threats to the status quo, but also an opportunity to imagine and create a better South Dunedin. This includes reshaping the urban form of South Dunedin both to adapt it to a changing climate, and to make South Dunedin a better place to live.

Programme Operational Objectives

Within the wider strategic intent, and supporting these strategic objectives, the programme will seek to achieve five operational objectives. These focus on delivering a specific output (an adaptation strategy) and doing it in a way that builds trust and confidence amongst partners and stakeholders.

- Lead and coordinate development of a climate change adaptation strategy ("adaptation strategy") for South Dunedin: The adaptation strategy should embed climate change adaptation into the core functions of the councils by shaping organisational strategy, policy, planning, budgeting and operational decision-making.
- Community buy-in through inclusive engagement: Ensure widespread and substantive engagement, including with mana whenua partners, affected communities, and other stakeholders, to develop an adaptation strategy that is representative and enjoys strong community support.
- Run a robust, transparent, and inclusive process: Ensure the programme is robust, transparent, and inclusive for all partners and stakeholders, so that as many as possible have ownership of the process, irrespective of the outcome.
- Alignment with council strategies and policies: Ensure alignment between the adaptation strategy, the organisational strategies of each council, the projects and activities that constitute the programme; and
- Integration with business-as-usual functions: Integrate programme activities, projects and outputs into the business-as-usual operations of both councils, both during, and at the conclusion of the programme.

The programme strategic intent is summarised in **Figure 1** below (Note Programme Actions and Cross-Council Adaptation Work are described more fully in **Section 4 – Programme Approach**).

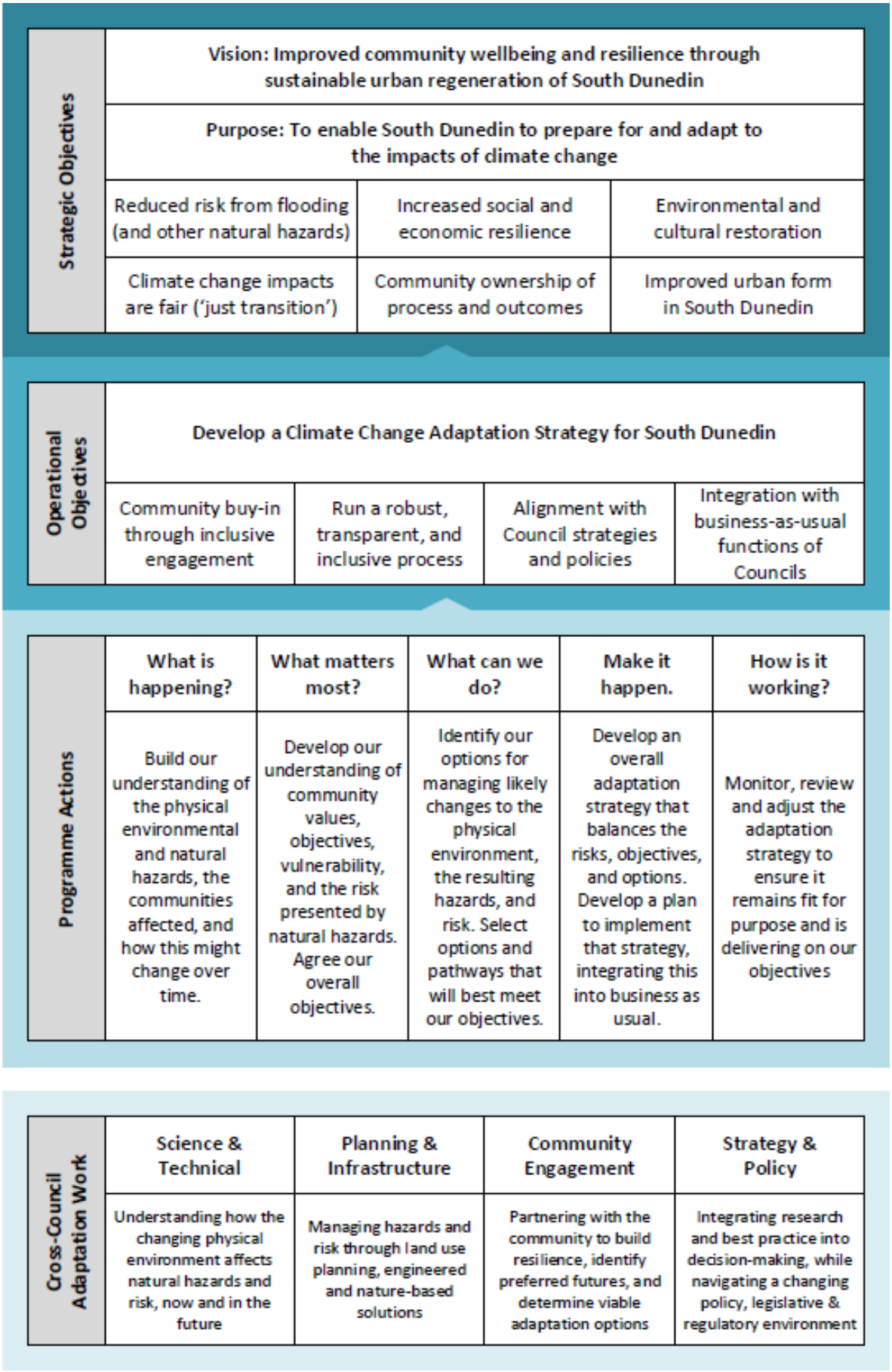

Figure 1: SDF Programme Strategic Intent

3.4 Alignment with Strategy

The programme is a horizontal initiative, working across a range of vertical strategies, groups, and budgets in both DCC and ORC. This horizontal focus is intended to drive greater strategic coherence across councils' strategies and operations regarding South Dunedin, particularly those with a direct climate change dimension. As such, the programme has links to a wide range of strategic objectives, the most important of which are shown in **Table 1** (covering both DCC and ORC). The programme similarly contributes to a wide range of DCC community outcomes, shown in **Table 2**.

Objective	Contribution	Programme focus
DCC Social Wellbeing Strategy		
Connected people: making people feel connected and involved in community and city affairs	Yes	Community engagement
Vibrant and cohesive communities: building better communities both at a local/geographic level and communities of interest	Yes	Place making
Healthy and safe people: promoting good health and ensuring people feel safe, and are safe	Yes	Hazard risk mitigation
DCC Three Waters Strategy		
Meet water needs: utilising existing water sources for the safe and quality water needs of the city for the next 50 years	Yes	Long term focus
Adaptable supply: adaptable water supply to a variety of future climate change and population scenarios	Yes	Adapting to changing climate
Maintain service levels: maintaining, and where practicable, improving key service levels into the future	Yes	Flood risk mitigation
Kaitiakitaka: an integrated approach to management of the three waters which embraces the concept of kaitiakitaka (guardianship)	Yes	Systems focus
DCC Spatial Plan		
Liveable city: a healthy and safe environment; quality air and water; a connected community; recreation, leisure and learning opportunities; heath care, and warm housing	Yes	Community wellbeing
Environmentally sustainable and resilient city: resilient ecosystems and communities; actively responding to climate change; reducing dependence on non-renewable resources; seismic-strengthened heritage buildings	Yes	Social and environmental resilience
DCC Integrated Transport Strategy		
Resilient network: integrating land use and transport to reduce demand for vehicle travel and increasing the resilience of the transport network	Yes	Adapting transport network to a changing climate
DCC Te Ao Tūroa Environmental Strategy		
Resilient and carbon zero: planning for and adapting to climate change and impacting positively on global environment and managing resources sustainably	Yes	Environmental sustainability and resilience
Healthy environment: sustaining ecosystem services, increasing indigenous biodiversity and restoring areas of ecological value	Yes	Ecosystem protection
Caring for the natural world/Tiakitaka: enjoying, connecting to, and celebrating the natural environment	Yes	Sustainable behaviours
DCC Parks & Recreation Strategy		
Open spaces and facilities: our parks and facilities are meeting the changing needs of our communities and are increasingly used	Yes	Utilising green and natural spaces to manage risk

Objective	Contribution	Programme focus
Treasured parks, natural landscapes, flora and fauna: understanding, protecting and restoring our ecosystems and biodiversity, and our parks and landscapes bringing people together to celebrate our cultures and heritage	Yes	Sustainable behaviours
ORC Strategic Directions & Community Outcomes		
Communities that connect with, and care for, Otago's environment	Yes	Education and awareness
Communities that are resilient in the face of natural hazards, climate change and other risks	Yes	Environmental sustainability and resilience
An environment that supports healthy people and ecosystems	Yes	Social and environmental resilience
Te Ao Māori and Mātauranga Kāi Tahu are embedded in Otago communities	Yes	Whakamana 'E tipu, e rea', honour the Treaty
A sustainable way of life for everyone in Otago	Yes	Sustainable behaviours

Table 1: Alignment with wider strategic objectives

DCC Community Outcomes	Contribution	Comment
A sustainable and resilient city	Yes	Primary
A supportive community	Yes	Primary
A valued and protected natural environment	Yes	Primary
A safe and healthy city	Yes	Primary
A distinctive built environment	Yes	Primary
A thriving and diverse economy	Yes	Secondary
A connected community	Yes	Secondary
A vibrant and creative city	Yes	Secondary
A city of learning	Yes	Secondary
An active city	Yes	Secondary

Table 2: Community outcomes

Links to Future Development Strategy

The DCC and ORC are jointly developing a Future Development Strategy (FDS) for Dunedin. The purpose is to promote long-term strategic planning by setting out how councils intend to achieve a well-functioning urban environment in Dunedin's existing and future urban area, and to provide sufficient residential and commercial development capacity over the next 30 years to meet expected demand. A 'well-functioning urban environment' (as defined in the National Policy Statement on Urban Development) is characterised by a range of features, including cities being 'resilient to the likely current and future effects of climate change'. Development capacity to meet future needs must be plan enabled, infrastructure ready, and feasible (could reasonably expect to be realised).

Most urban areas of Dunedin are not likely to suffer significant adverse effects of environmental change or natural hazards that would threaten their long-term development capacity. Infrastructure investments that enable development capacity in such areas presume the development will effectively be permanent. However, parts of South Dunedin are likely to be vulnerable to future environmental change and natural hazards that could shorten the lifespan of new development or supporting infrastructure. The District Plan currently includes rules that require new homes to be 'relocatable'. Minimum floor levels on new homes are managed through the building consent

process. These rules are an initial step towards reducing the risk that climate change poses to building assets.

The FDS is a district-wide strategy and should, therefore, encompasses South Dunedin. The FDS will need to respond to the current understanding of the likely future effects of climate change in South Dunedin over timescales relevant to the FDS. This would inform the calculation of how much development capacity can be relied upon in South Dunedin to contribute to meeting wider Dunedin's long-term housing and commercial growth needs. Depending on the current state of knowledge and adaptive planning, it will eventually need to consider where additional development capacity may be required elsewhere in the district to offset any losses due to areas potentially identified for development 'holds' (no further development) and/or managed retreat.

There is a clear strategic and operational overlap between the objectives of the FDS and the SDF programme, creating opportunities for collaboration (and need to avoid duplication). Ideally, the processes would be combined, however this is not considered practicable, as the extensive technical analysis and community engagement envisaged under the SDF programme will require 4-5 years (to mid-2026), whereas the FDS has a statutory requirement to be completed before mid-2024. It is worth noting that the FDS is anticipated to be a rolling process, reviewed every three years. There is also an expectation regional and local councils will be required by Government to develop 30-year regional spatial strategies (which would replace the FDS). South Dunedin-related work that cannot be incorporated into the current or updated versions of the FDS, could inform development of a regional spatial strategy at a later date.

FDS and SDF programme teams are actively and regularly communicating, undertaking collaborative planning work, coordinating work schedules wherever practicable, and tailoring outputs from the SDF programme to inform the FDS. The close relationship between these two initiatives is reflected in the inclusion of the FDS in the programme flow chart (**Figure 5**, below) and efforts to align schedules are described in **Section 4.4**, and illustrated in **Figure 6**, below.

3.5 Programme Benefits and Disbenefits

Delivering the outcomes of the programme should provide a range of benefits for the councils, partners and stakeholders. A programme benefit can be defined as a measured improvement that results from a programme outcome. It should be perceived as an advantage by one or more stakeholders and contribute towards an organisational objective(s).

For example, a programme output may be improved knowledge of natural hazards affecting South Dunedin, which may lead to increased capability of councils to plan for and adapt to these hazards, thereby leading to an outcome of reduced exposure to and risk from natural hazards. This outcome could have many benefits, such as reduced impact on residents from flood hazards (stakeholder), enabling the design of infrastructure to better avoid or mitigate known hazards (value), or cost savings from adjusting expenditure decisions to account for natural hazard risk (financial).

Conversely, a programme disbenefit can be defined as a measured decline resulting from a programme outcome. It is normally perceived as negative by one or more stakeholders, which detracts from an organisational objective(s). A disbenefit could also be a side effect or unintended consequence of programme outputs or outcomes.

For example, improved knowledge of natural hazards, increased capability to make planning, infrastructure and investment decisions based on that knowledge, could lead to reduced investment in hazard-prone areas. Although the long-term community benefits are positive in terms of reduced exposure to hazards, this could generate disbenefits for particular communities in those areas.

Understanding the relationship between programme outputs, outcomes and benefits is critical to programme success – specifically, in maximising benefits and minimising disbenefits over different timeframes.

At this stage of the programme, the benefits it is expected to deliver include:

- Confidence – The primary output of the programme is an adaptation strategy for South Dunedin. Production of this strategy should have the broader benefits of reducing uncertainty and enabling more informed, coherent, and high-quality decision-making. This should increase confidence across all stakeholders that decisions made are both in their best interests and the right decisions in the circumstances, based on available information.
- Stakeholder – Engagement, with mana whenua partners, affected communities, and other stakeholders will be central to the programme. This engagement should help ensure that, on balance, programme outputs and outcomes reflect what partners and stakeholders want and value. Adopting an open, transparent, and inclusive approach to engagement should help ensure the widest possible selection of views and interests are considered.
- Reduced risk – Identifying natural hazard risks, acting to both mitigate current risk and manage or avoid future risk, should have the benefit of significantly reducing the overall risk profile for South Dunedin (including against the backdrop of increasing natural hazard risk due to climate change). Reducing risk should produce a range of social, cultural, economic and environmental benefits.
- Effectiveness – Improved knowledge of natural hazards, coupled with development of a collective vision for the future of South Dunedin, will enable more informed planning and more targeted investment. This new knowledge and capability should enable councils, partners, and stakeholders to make better quality investment decisions, with higher likelihood of success.
- Efficiency – A primary focus of the programme is coordination across a range of vertical work streams between and within DCC and ORC councils. This enhanced coordination, across strategy, policy, planning and operational functions should reduce duplication of effort, help resolve previously intractable issues, and enable a range of efficiencies in terms of staff time, operating, and capital expenditure. In short, it should enable councils to do more, with less.

As the programme progresses, more work will need to be undertaken to identify the range of benefits expected from each of the programme actions, projects or activities. A benefits management plan will be developed to support tracking and managing of programme benefits.

3.6 Programme scope and exclusions

Developing an adaptation strategy that will deliver *"improved community wellbeing and resilience through sustainable urban regeneration of South Dunedin",* is a significant undertaking. Achieving this goal would likely require extensive social, economic, and environmental change over an extended period (e.g., decades). The focus of the programme therefore needs to be strategic, societal, and long term. The programme will also need to adopt a systems focus.

The many interrelated, and long-term processes involved are not necessarily controllable or predictable. As such, the programme will likely be characterised by a high level of complexity, uncertainty, and risk (to property, people, and relationships).

This means there will be a wide range of activities that have varying degrees of direct and indirect connection to, have impact on, or be impacted by the programme. To account for this, a flexible and nuanced scope will need to be adopted for the programme.

It may not be possible (nor necessarily advisable) to delineate a clear scope for the programme based on factors such as absolute geographic boundaries, specific teams, functions, or projects.

For example, natural hazards, land use planning, and three waters infrastructure in South Dunedin are interdependent parts of a complex system, are influenced by multiple internal and external factors, independently and collectively influence risk and vulnerability, and are managed by different parts of different organisations. Such complexity needs to be taken into consideration.

Nonetheless, there is value in seeking to define a scope for the programme, to the extent this is possible and practicable. This scope will need to be monitored regularly, and adjusted as ambiguities are clarified, or as the results of various programme actions or activities (and external factors) become known over time. The scope will therefore need to be flexible to remain fit for purpose.

A focus on climate change adaption (but mitigation is still relevant)

The programme has a focus on climate change adaptation, defined as adjusting to the actual or expected climate and its effects, to reduce harm and take advantage of new opportunities. However, the other critical element of climate change is mitigation, which is a human intervention to reduce emissions or enhance the sinks of greenhouse gases[2].

Effective climate policy aimed at reducing the risks of climate change to natural and human systems involves a portfolio of diverse adaptation *and* mitigation actions[3]. Adaptation and mitigation actions can have multiple consequences (intended or unintended), and this can involve both trade-offs and synergies. For example, nature-based adaptation actions such as creation of wetlands to reduce flood risk, could have co-benefits of creating a carbon sink. Conversely, adaptation actions that have high embed carbon or carbon intensive operations, such as infrastructure that is concrete-based or runs on fossil-fuel energy sources, could create additional otherwise avoidable emissions.

While the programme will focus on adaptation, this work will occur within the wider systemic context of climate change. It will therefore need to consider climate mitigation at appropriate points, to ensure coherence across councils' climate change policy, practice, and communications.

3.7 Programme Scope

At this stage of the work, where much of the programme is still being fully defined, the proposed approach is to adopt a *graduated scope*, where relevant programme components are assigned to one of four layers:

- core programme,
- inside the programme,
- outside but programme-related, or
- outside the programme;

and grouped in the following three segments:

- sector/team
- organisation/stakeholder
- geography

This graduated scope can also be used as a framework for grouping, organising, and coordinating actions or activities that have (or are perceived to have) some form of association with the programme, whether direct or indirect. The proposed graduated scope of the programme, using this framework, is outlined in the **Figure 2** below.

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[2] IPCC, 2018: Annex I: Glossary [Matthews, J.B.R. (ed.)]. In: *Global Warming of 1.5°C.*

[3] Klein, R.J.T., S. Huq, F. Denton, T.E. Downing, R.G. Richels, J.B. Robinson, F.L. Toth, 2007: Inter-relationships between adaptation and mitigation. *Climate Change 2007: Impacts, Adaptation and Vulnerability*

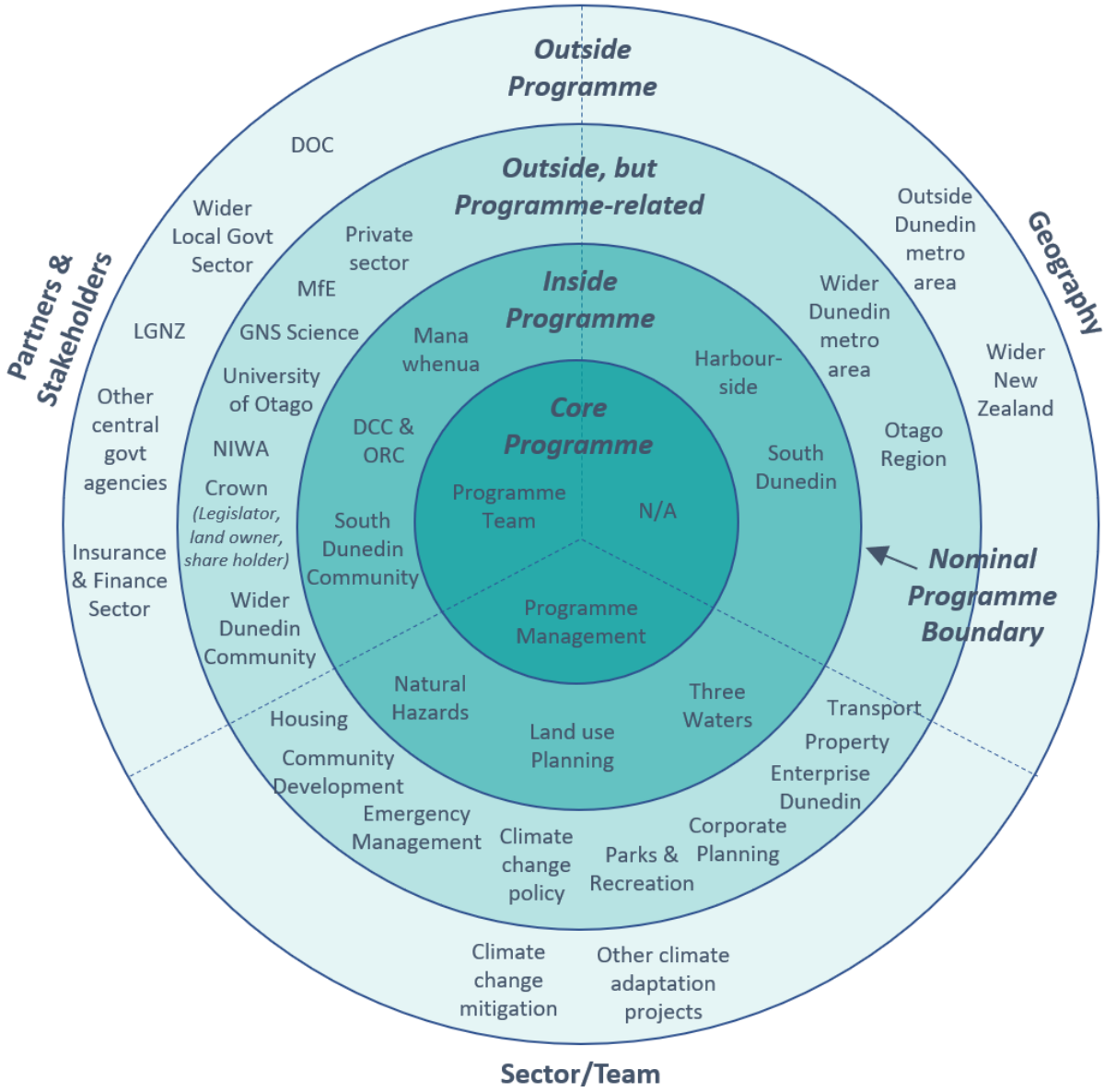


Figure 2: South Dunedin Future Programme – Graduated Scope

Geographic focus area

The current geographic focus of the programme is on the flat area commonly known as 'South Dunedin and Harbourside', which incorporates the suburbs of St Clair, St Kilda, Tainui, South Dunedin, Kensington, Caversham and Forbury. This area is similar (flat, low-lying, hazard exposed), but distinct (zoning and land use, socio-economic profile, flood history) from the Harbourside area encompassing the central business district, waterfront and Logan Park areas.

Therefore, the proposed geographic focus area for the programme is recommneded as comprising the flat area of the South Dunedin rainfall catchment, proposed as:

- North: South Road / Strathallan Street / Portsmouth Drive
- South: St Clair Beach/ Middle Beach / St Kilda Beach
- East: Lawyers Head / Tainui Road / Bayfield
- West: David Street / Forbury Road / Norfolk Street

The proposed geographic focus area is shown in **Figure 3** below. It is important to note that the geographic boundaries are indicative, not absolute. What happens within this area, whether that be rainfall, flooding, transport, 3W infrastructure, community resilience, etc., is influenced by what happens elsewhere in and around Dunedin. The 'South Dunedin and Harbourside' area is part of a wider system, has many dependencies across the city, and should always be thought of as such.

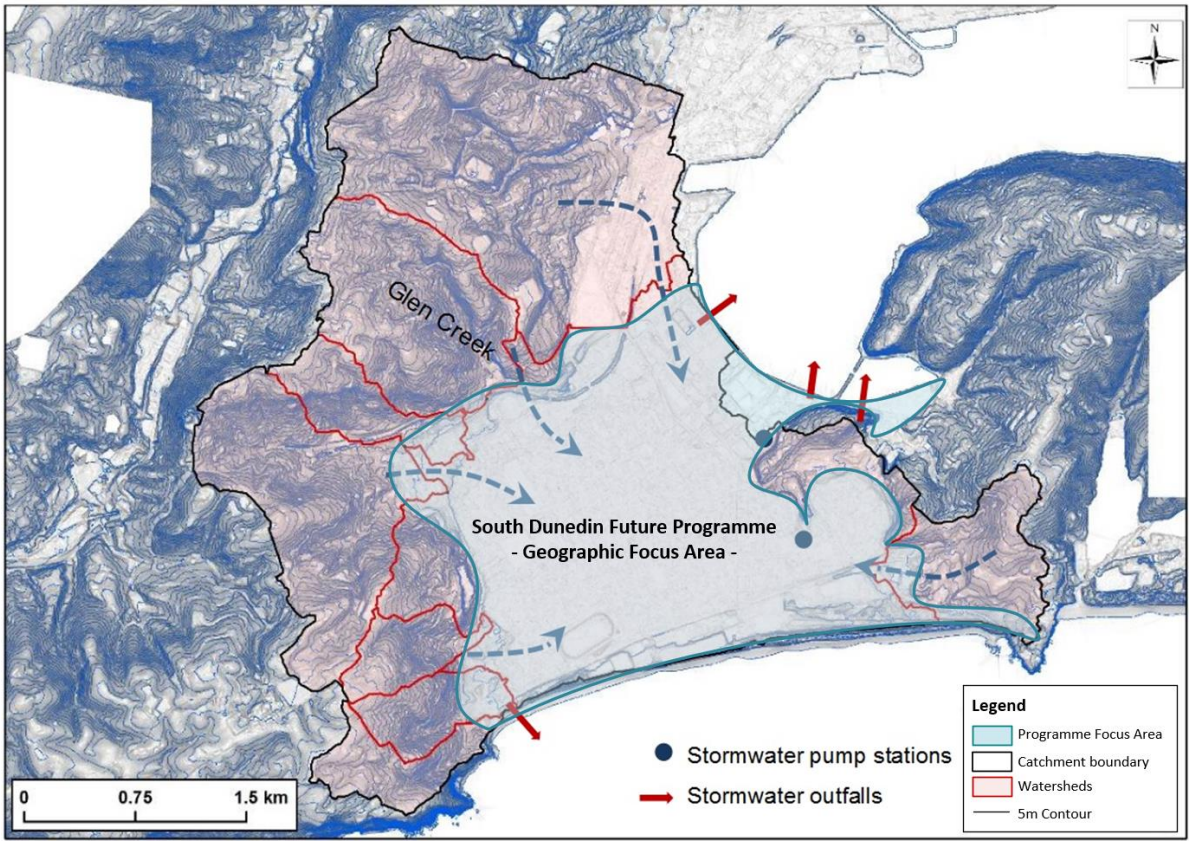


Figure 3: Geographic focus area of South Dunedin Future programme

Sectors and teams

There are three primary sectors involved in directly managing the natural hazard risk posed by climate change, including natural hazards, land use planning and 3 waters. However, there are many other secondary sectors that will also have interest in, and influence over, the development of a climate change adaptation strategy for South Dunedin. These include, but are not limited to, parks and recreation, transport, property, housing, community development, economic development, and emergency management.

Partners and stakeholders

A wide range of partners and stakeholders will have an interest in, or influence over, climate adaptation options for South Dunedin. The primary partners are DCC, ORC and mana whenua. The primary stakeholders are the South Dunedin community, councils and mana whenua. A range of secondary stakeholders include, but are not limited to, wider Dunedin community, Crown (as a legislator, landowner, and shareholder), Crown Research Institutes (NIWA, GNS Science), Ministry for the Environment, Local Government New Zealand (LGNZ), the wider local government, and other relevant agencies (Earthquake Commission, Climate Change Commission).

Each of these partners and stakeholders has a unique set of views, values and interests in the programme. Detailed stakeholder profiles will be developed are part of programme management

activities (see **Table 5**, below) to help ensure engagement with partners and stakeholders is tailored accordingly.

Mana whenua engagement

The central component of the programme is engagement with partners and stakeholders. Critical to this will be ensuring that the Treaty of Waitangi, and Crown's partnership with Māori, is accurately represented and integrated into the programme. This is currently envisaged to include four lenses:

- establishing and operating Treaty-based governance arrangements, through which mana whenua can formally and actively participate in governance of the programme;
- seeking to align the strategic intent of the programme with Te Ao Māori and mana whenua aspirations;
- providing meaningful opportunities for all Māori to input their views and values into ongoing programme activity, including through targeted engagement; and
- identifying and agreeing Māori-specific programme outputs (e.g., cultural narratives, adaptation options for Māori land in Ōtepoti, adaption for cultural taonga, mana whenua design inputs, etc).

Initial conversations have been had with mana whenua representatives on Council Committees, as well as with Aukaha Ltd, with further work planned (see **Table 8** and **ANNEX 3**).

Programme activity scope, accountabilities, and exclusions

The framework for determining the graduated scope can also be used to organise programme actions, activities and projects into categories that correspond to the four layers of the programme. This is outlined in the **Table 3** below:

Scope layer	Aligns to:	Programme activity category
Core programme	↔	Programme management activities and programme actions
Inside programme	↔	Programme activities & projects
Outside, but related to the programme	↔	Programme-related activities
Outside the programme	↔	Unrelated activities or exclusions

Table 3: Scope layers and Programme activity categories

Moreover, the framework can be used to assess the relationship an action, activity or project might have with the programme, and therefore which programme activity category it should be assigned to. This assessment can be made using the following set of criteria:

- Delivery - who is responsible for delivery of the activity?
- Reporting - who is responsible for reporting on the activity?
- Accountability - who is accountable for activity performance?
- Outcomes/outputs - how are the activity's outcomes or outputs determined?
- Control/influence - who has control or influence?
- Governance - how is the activity governed?

Table 4 below illustrates how each set of criteria is applied to each of the four programme layers and four programme activity categories.

	Core Programme / Programme management actions	Inside Programme / Programme activities or projects	Outside, but Programme-related / Programme-related activities	Outside Programme / Unrelated activities or exclusions
Delivery *Who is responsible for delivery of the service or output*	Action is delivered by the programme team	Activity is delivered by DCC/ORC teams; or third party		
Reporting *Who is responsible for reporting on the service or output*	Programme team reports on the action or activity	Programme team reports on the activity (in coordination with delivery entity)	Delivery entity or third-party reports on the activity	Delivery entity or third-party reports on the activity
Accountability *Who is accountable for performance?*	Programme team is accountable for these actions and activity	DCC/ORC Manager is accountable for these activities; or third party		Delivery entity or third party is accountable for these activities
Outcomes/outputs *How are the outcomes and outputs determined?*	Outcomes and outputs (actions) are derived from Programme Plan	Outcomes and outputs are either derived from, or consistent with, the Programme Plan	Outcomes and outputs are broadly consistent with or complementary to the Programme Pan	Outcomes our outputs may have some relation to the Programme Plan (actual or perceived)
Control/influence *Who has control or influence?*	Programme team has control over programme management activities and programme actions	Delivery entity has control over activities; Programme team has high influence	Delivery entity has control over activities; Programme has moderate influence	Delivery entity has control over activities; Programme has limited/negligible influence
Governance *How is the service or output governed?*	Programme management activities or programme actions are governed through Programme mechanisms		Activities are governed through mechanisms separate from the Programme	

Table 4: Programme activity category criteria

Table 5 below provides a fuller narrative about each programme activity category and provides examples of activities or projects that match the corresponding criteria. This is intended to illustrate where activities sit in relation to the programme, by whom they will be managed, and how.

	Programme Activity Category	Examples
Core / central	**Programme management actions** *These actions are delivered by the programme team for the purpose of coordinating the organisation, direction and implementation of a dossier of projects (i.e., the programme). The programme team reports on and is accountable for these actions. Activity outcomes and outputs are derived from Programme Plan. Programme team has control over the actions, which are governed through Programme governance mechanisms.*	• Programme Strategy • Programme Definition • Stakeholder profiles • Programme Activity Matrix • Programme Risk Register • Programme Comms & Reporting • Monitoring & Evaluation • Community Engagement

	Programme Activity Category	Examples
Within programme	**Programme actions/activities/projects** *These activities or projects are delivered by DCC/ORC teams or by a third party outside of Councils. The programme team reports on the activities (in coordination with delivery entity), although accountability for their delivery sits with the relevant DCC/ORC Manager or third party. Activity outcomes and outputs are either derived from, or consistent with, the Programme Plan. The delivery entity has control over activities; however, the programme team has a high level of influence. These activities are governed through Programme governance mechanisms.*	• Consolidated natural hazard scape information • Components of the Future Development Strategy (FDS) • Climate change and hazards risk assessment • Long list, short-list and preferred adaptation options • South Dunedin Adaptation Strategy • South Dunedin Implementation Plan
Outside, but related	**Programme-related activities** *These activities are delivered by DCC/ORC teams; or by a third party. The delivery entity reports on the activity and accountability for delivery sits with the responsible DCC/ORC Manager or third party. Activity outcomes and outputs are broadly consistent with or complementary to the Programme Plan. The delivery entity has control over activities; however, the programme has a moderate level of influence. Activities are governed through mechanisms separate from the Programme.*	Parks and Recreation • Open Spaces Plan • St Clair-St Kilda Coastal Plan • Coastal Hazard Risk Assessment • Sports Facilities Plan Housing • Housing Action Plan Transport • Network repairs and maintenance Property • South Dunedin Library Project • Tar Well Rehabilitation Project Community Development • Community Resilience Plan Land use planning • Future Development Strategy 3 Waters • Integrated Catchment Model • South Dunedin Flood Alleviation Projects
Outside	**Exclusions** *These activities are typically delivered by DCC/ORC teams; or by third parties. The delivery entity reports on the activity and is accountable for performance. Activity outcomes or outputs may have some relation to the Programme Plan (actual or perceived). The delivery entity has control over the activities, and the programme team has limited/negligible influence. Activities are governed through mechanisms separate from the Programme.*	• Climate change mitigation strategy and policy • Wider Dunedin City climate change adaptation strategy and policy • Climate change adaptation projects outside of Dunedin city metropolitan area

Table 5: Programme activity category narrative and examples

3.8 Programme constraints and assumptions

A programme may include immoveable deadlines or external factors that act as constraints, where activities or outputs might need to be adjusted to account for these boundaries or excluded from the programme altogether. Similarly, the programme will always be working with imperfect information, and assumptions will need to be made where facts are not yet known. Certain assumptions will need to be taken as being true for the purposes of planning, but these could change later. There is a risk these assumptions will be incorrect. **Table 6** below summarises some key constraints and assumptions relevant for the programme at this time.

Item	Constraint	Assumption
Time	Corporate Planning timeframes for DCC and ORC require triennial planning and budget setting processes for the development and resourcing of rolling Long Term Plans. This is complemented by annual planning processes (on an exceptions basis). The current Long Term Plan cycle ends in June 2024.	Programme, and programme-related, activities will need to be planned, resourced, and delivered in accordance with corporate planning timeframes and cycles (which may not align with optimal programme time frames). The quality, cost, or scope of programme activities may need to be adjusted to fit the timeframes.
Cost	The core SDF programme budget is $550,000 per annum. All programme management activities, and selected programme actions/activities/projects, are funded from this budget. Selected programme-related activities will require separate, dedicated funding (from business as usual or project funding) and are therefore subject to competing priorities and interests across the breadth of DCC/ORC corporate planning and budgeting processes.	The programme will retain dedicated resourcing at a level required to undertake the programme management functions. DCC/ORC teams with responsibility for delivering programme activities or projects will incorporate programme-relevant outcomes and outputs into their annual planning and budgeting processes and provide resources (personnel and consumables) required for delivery.
Scope	The current legislative and policy framework, including provisions in the Local Government Act, does not provide local government with the tools or mandate to effectively respond to the full breadth of climate change adaptation challenges (particularly managed retreat).	The Resource Management Act reform process will significantly alter the legislative framework, specifically passing of a Climate Change Adaptation Act (CCA) in 2023. The CAA, together with the National Climate Change Risk Assessment and National Adaptation Plan (to be finalised in August 2022) is assumed to provide the necessary legislative and policy framework to enable local government to effectively respond to climate change adaptation challenges (including managed retreat).
	Local government reform, including three waters reform, will create uncertainty about the scope of DCC/ORC's mandate and constrain their ability to plan for the medium and long term. The outcome of the reform processes is unknown.	It is assumed that local government mandate and processes will continue as status quo until 1 July 2024. After 1 July 2024, it is assumed that responsibility for governance and management of 3W infrastructure assets, and funding and delivery of 3W infrastructure investments, will transfer to a third party.
Risk / uncertainty	There is a large degree of uncertainty about future emissions pathways and associated climate impacts. Decision-makers face unavoidable uncertainty about ongoing sea level rise. The effects of climate change, including sea-level rise, are localised and highly variable.	The programme will seek to balance these uncertainties with the need to make decisions. This will be done using a best practice climate change adaptation approach called *dynamic adaptive pathways planning* (DAPP). The DAPP approach will be used to identify ways

Item	Constraint	Assumption
	However, it is usually not possible, practical, or sensible for them to wait until uncertainties are reduced before making decisions.	forward (pathways) despite uncertainty, while remaining responsive to change should this be needed (dynamic).

Table 6: Programme constraints and assumptions

3.9 Programme interfaces and dependencies

Delivering the outcomes and realising the benefits of the programme will likely require extensive social, economic, and environmental change over an extended period (e.g., decades). The programme will seek to account for this by adopting a systems focus, however these outcomes will be affected by a range of interrelated and long-term processes that are not necessarily controllable or predictable.

This generates a myriad of dependencies, meaning many programme activities, outputs or decisions will be pre- or co-requisites for delivering other aspects of the programme. Some primary examples are described in the **Table 7** below, with a wider web of linkages and dependencies also mapped **ANNEX 1** in the document 'SDF Programme Matrix'.

Item	Dependency	Description
Internal Dependencies *Managed within programme boundary (e.g., how programme activities depend on each other).*	Programme coordination	A key component of a successful programme will be effective coordination (strategic, operational, day-to-day) of the portfolio of programme activities/projects and a myriad of other related issues and initiatives. This will need to occur across and within councils and seek to integrate with external agencies and initiatives. Central to this will be leadership, ensuring that consistent direction and messaging cascades from Councils through to staff, and that this are reflected in programme activities.
	Natural hazards	Understanding climate change impacts, particularly natural hazards, is essential for developing adaptation options. Ongoing work by ORC and other technical agencies to investigate and model geological, hydrological, and coastal hazards, as well as monitor hazards such as sea-level rise, tides, ground water, erosion, subsidence, and rainfall, are critical inputs into the programme. Natural hazard and risk information will inform land use planning decisions and infrastructure investment, along with a range of other programme activities and engagement processes.
	Land use planning	Climate change adaptation in South Dunedin will very likely require extensive land use change over time. These changes are yet to be determined and will be informed by a range of programme-related issues, including natural hazards and infrastructure investment. Planning rules and tools will play a central role in preparing for, and adaptation to, a changing climate, as such, these will be critical for delivering many programme outcomes, such as reduced flood

Item	Dependency	Description
		risk, and realising broader objectives and benefits, such as enhancing community resilience and wellbeing.
	Three waters	Infrastructure investment, particularly in regard to 3 Waters, will be central to adapting the physical and built environment in South Dunedin to a changing climate. Appropriate and value-for-money 3W/infrastructure investment decisions will need to be informed by *inter alia* natural hazard and climate information, and land use planning strategies and rules.
Intra-dependencies *External to the programme, but within DCC/ORC span of control (e.g. other related-programmes of work)*	Land use planning	Effective adaptation responses will likely require councils to develop a consistent and coherent approach to managing natural hazard risk, including in regard to existing uses and developments, and proposed ones. This is particularly relevant in development of a Future Development Strategy (FDS) for Dunedin, which will focus on ensuring there is enough housing and business land capacity available, that the necessary infrastructure to support growth is planned, funded, and integrated with growth; and that growth delivers a 'well-functioning urban environment'. The joint-DCC/ORC process to develop the FDS will need to consider land use tools as a medium for managing climate change impacts, natural hazard risk, and developing associated adaptation options.
	Infrastructure	Infrastructure will play a critical role in developing effective adaptation options for South Dunedin. However, even new or innovative infrastructure decisions for South Dunedin will occur within the context of the wider system of city infrastructure management. The DCC has an infrastructure strategy for managing drinking water, wastewater and stormwater (3 waters) and transport infrastructure for the next 50 years. This strategy is being reviewed and will be updated by the end of 2023, and infrastructure options for South Dunedin will be in part dependent on the outcome of this process.
	Corporate Planning	Delivering outcomes and realising the benefits of the programme will require appropriate planning, resourcing and delivery across councils. This will depend on the effective integration of programme outcomes and outputs into the corporate planning processes of the council groups/teams/individuals responsible for their delivery. The programme budget will support and assist with coordination of this process, but is insufficient to deliver programme outcomes alone.
	Programme / programme-related activities	Delivering outcomes and realising the benefits of the programme will require outputs from a wide range of programme activities and projects, as well as outputs

Item	Dependency	Description
		from activity from outside the programme (i.e., the enabling environment). The programme team will seek to identify and manage associated dependencies, however, many of these are likely to be unknown, uncertain or uncontrollable, and will therefore need to be managed as risks.
External dependencies *Outside programme boundaries (e.g., other organisations or dynamics such as legislation)*	Community perspectives / engagement	Identifying a preferred adaptation option(s) for South Dunedin will require extensive community engagement, particularly regarding long term options and managed retreat (see Climate Change Adaptation Act dependency below). Development of options, identification of pathways and triggers will be dependent on community perspectives and their willingness/ability to engage in this process. Timeframes will likely also be subject to community comfort with the speed and direction of the process.
	Mana whenua	Incorporating the views, interests and aspirations of mana whenua, and other interested Māori, will be a central element of developing an effective climate change adaptation strategy for South Dunedin. Programme objectives, processes, and timeframes will need to be developed/adapted to enable co-development of this work in partnership with mana whenua.
	Legislative change, including the Climate Change Adaptation Act	Identifying a preferred long term adaptation option(s) for South Dunedin will likely require extensive community engagement on the issue of managed retreat (in areas and over timeframes yet to be determined). This will be dependent on changes to the statutory framework around climate change adaptation. The Resource Management Act (RMA) reform process, specifically development of a Climate Change Adaptation Act (CCA) is expected to provide a national framework for managed retreat.

Table 7: Interfaces and dependencies

3.10 Programme Risks

The programme is characterised by a large degree of uncertainty, including in terms of natural hazards and their impacts, how these will be affected by climate change, the options available for adapting, how partners and stakeholders will respond to these options, and the capability and capacity of councils (and others) to deliver equitable outcomes. These factors rest against the backdrop of extensive Government reform, including Resource Management Act, 3 Waters, and Local Government reform, the outcomes and impacts of which remain uncertain at this time.

All of this, in various ways, presents risk for the programme. A risk being an uncertain event(s) which, should it occur, will have an impact (usually negative) on achievement of programme objectives. A risk, when it occurs, becomes an issue to be managed.

It will not be possible to control all risks and issues affecting the programme – indeed many, such as global emissions and sea level rise, are outside of our control. In many instances, it will only be possible to monitor and plan for the impact of these risks.

Programme risk work is in development to support improved awareness and understanding of risks, issues and their potential impact on the programme and its objectives.

Initial risk work has identified several risks and issues affecting the programme, which will need to be monitored and managed as the programme progresses. These risks and issues can generally be organised into five categories:

- external influences (e.g., government reforms, changing legislation, etc.)
- navigating governance (e.g., evolving roles and responsibilities of local government in climate change adaptation)
- managing relationships (e.g., balancing interests across internal and external partners and stakeholders)
- managing complexity (e.g., coordination, collaboration, dependencies, trade-offs, etc.)
- managing resources (e.g., juggling resources requirements across many different areas and timeframes).

Further work will be undertaken on risk management as part of the next phase of the programme, as more information becomes available and as new risks or issues present. This work will be further developed in the programme risk register, which is supplementary to this programme plan, and will detail roles, responsibilities, and arrangements for managing and mitigating risk.

4. PROGRAMME APPROACH

4.1 Dynamic Adaptive Pathways Planning (DAPP)

The programme will be implemented using a *Dynamic Adaptive Pathways Planning (DAPP)* approach, a best practice methodology for making decisions to respond to the deep uncertainty of climate change impacts and responding to the challenges and opportunities in South Dunedin. It is anticipated that this process will involve five interdependent phases, which will seek to:

- What is happening? Build our understanding of the physical environmental and natural hazards, the communities affected, and how this might change over time.
- What matters most? Develop our understanding of community values, objectives, vulnerability, and the risk presented by natural hazards. Agree our overall objectives.
- What can we do? Identify what our options are for managing likely changes to the physical environment, the resulting hazards, and risk. Then select preferred options and pathways that will best meet our objectives.
- Make it happen. Develop an overall adaptation strategy that balances the risks, objectives, and options. Develop a plan to implement that strategy.
- How is it working? Monitor, review and adjust the adaptation strategy to ensure it remains fit for purpose and is delivering on our objectives.

These five phases / questions and 10 steps of the DAPP process are represented in **Figure 4** below:

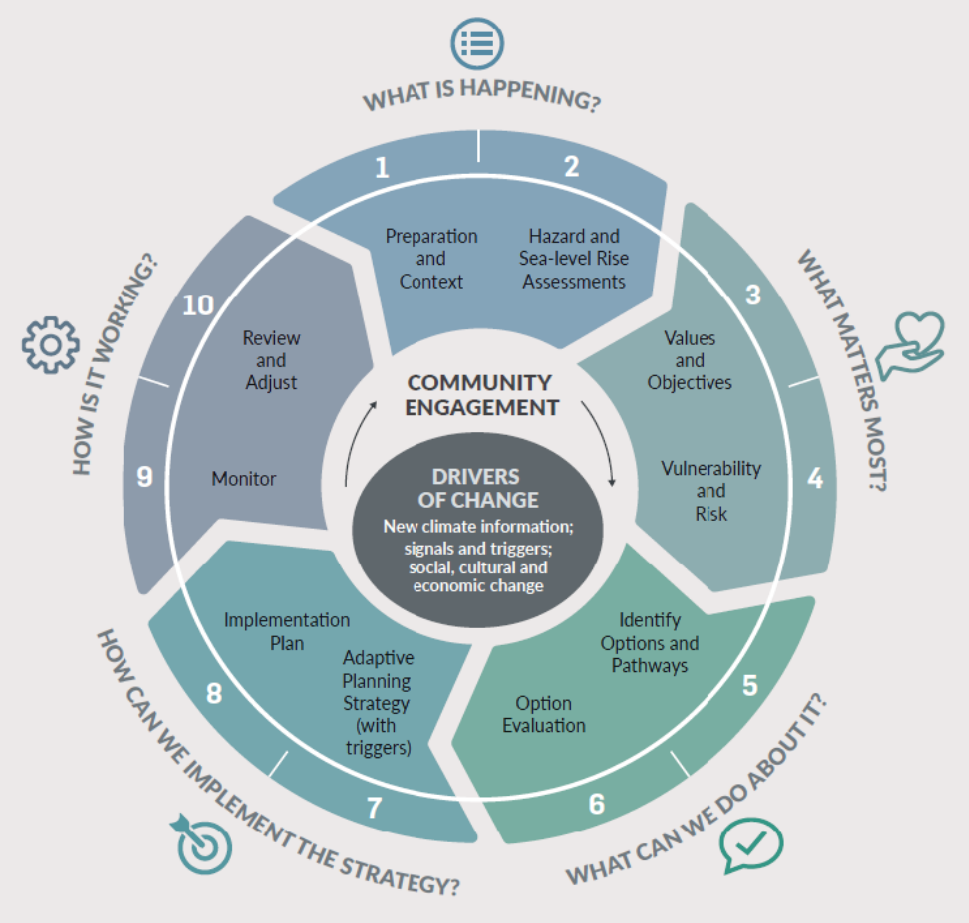


Figure 4: Dynamic Adaptive Pathways Planning (DAPP) [4]

[4] *Preparing for coastal change: A summary of coastal hazards and climate change guidance for local government*, Ministry for the Environment, 2017.

It is important to note that DAAP is a circular process, in which each phase feeds back into previous phases, phases and steps can be progressed in parallel, and where the whole process repeats in a circular motion (as represented the 'DAAP Wheel' in **Figure 4**).

In the interests of simplicity and clarity, the DAAP Wheel has been 'unrolled' from this point of the document forward, with the process being represented in a more linear fashion (left to right, in tabular form). This is intended to illustrate what the programme will do and in what sequence. It does however overlook some of the nuance and interlinkages between different programme actions and activities, so this should be considered.

4.2 Programme phasing and key milestones

The five phases of the programme described in **Section 4.1**, above can be further broken down into several key milestones. These milestones are essentially 'decision gates', at which point it is assessed that Council endorsement would be necessary to proceed. These decision gates typically relate to a major programme or policy decision (e.g., strategic intent of the programme) or precede community engagement on substantive new material or issues (e.g., at different stages of options development). The decision gates are included in **Table 8,** below. It is anticipated that periodic programme update reports would also be provided to Councillors, to cover any intervening periods between for decision gates in the programme.

4.3 Programme work breakdown structure

Programme work breakdown structure

The following **Table 8** illustrates the planned high-level Work Breakdown Structure (WBS) for the programme. The table structures the work against the five phases of the DAPP approach and notes summary descriptions of what is involved. This is further broken down into programme actions, and the table includes a summary explanation of each action, what it is seeking to achieve, what this would involve, who would lead or undertake the work, and who would be involved.

This high level WBS will be refined and developed to include additional programme actions and activities as required as the programme progresses. More detail is provided for the initial stages, reflecting the greater certainty about the actions and resources required for delivery. Additional detail will be added in subsequent phases, as objectives, parameters and approaches are developed or better understood (i.e., we do not have all the answers now but will need to work through a process to get them).

Programme flow chart

The programme actions noted in **Table 8** are also displayed visually in the flow chart in **Figure 5**, below. This flow chart is intended to illustrate the general sequencing of programme actions, the linkages between actions, and how these could be expected to inform, or be informed by, other relevant activities occurring outside of the programme. Again, this is a simplified, linear representation of the programme so does not capture the complexity and nuance but is nonetheless a general representation how the programme is expected to roll out over time.

The flow chart also seeks to emphasis the porous nature of the programme, in the sense that it will continually be informed by business-as-usual activities across and outside of the councils. The programme will also regularly inform council processes, meaning each stage of the programme will produce valuable information, which other parts of DCC and ORC could use to inform strategy, policy, planning, budgeting and decision-making processes (i.e., there is no requirement to wait until the final programme output, the adaptation strategy and implementation plans).

Programme Phase	Programme Action	Purpose	Who would lead/do this work?	Who would be involved?
What is happening? *Build our understanding of the physical environmental and natural hazards, the communities affected, and how this might change over time.*	Identify and connect with partners and stakeholders	Identify and connect with affected communities	SDF Programme Team	Partners and stakeholders
	Initial engagement on community views, values and objectives	Build initial understanding of community interests	SDF Programme Team	Selected partners and stakeholders
	Monitor physical environment and natural hazards	Build general understanding of natural environment	ORC Natural Hazards Team	GNS, NIWA, other technical agencies
	Investigate natural hazards affecting South Dunedin	Developing detailed understanding of specific issues	ORC Natural Hazards Team	GNS, NIWA, other technical agencies
	Identify likely future changes to physical environment	Predict future changes to inform planning / decisions	ORC Natural Hazards Team	GNS, NIWA, other technical agencies
	Consolidated natural hazards information management	Streamline management of / access to hazards info.	SDF Programme Team	ORC Natural Hazards, Project Delivery Teams
	- **Decision Gate –** Natural hazards information management	Formally agree how to manage natural hazards information	SDF Programme Team	Council Executive Teams, Councillors
	Communicate climate change and hazard info to community	Build community understanding of changing hazards	SDF Programme Team	DCC/ORC Communications Teams
	New or additional investigation & monitoring of natural hazards	Respond to new/changing hazard info as required	ORC Natural Hazards Team	GNS, NIWA, other technical agencies
What matters most? *Develop our understanding of community values, objectives, vulnerability, and the risk presented by natural hazards. Agree our overall objectives.*	Engagement with mana whenua	Integrate Te Ao Māori & Treaty principles into programme	SDF Programme Team, Aukaha Ltd,	Ōtākou Rūnaka, other iwi/Māori (as appropriate)
	Confirm strategic and operational intent of SDF programme	Establish clear goal posts for the programme	SDF Programme Team	Council staff, Councilors
	- **Decision Gate –** Programme strategic and operational intent	Formally approve programme strategic and operational objectives	SDF Programme Team	Council Executive Teams, Councillors
	Develop initial signals, triggers and thresholds for changing from status quo	Understand when status quo no longer acceptable	SDF Programme Team	Partners and stakeholders
	Detailed engagement on community views, values and objectives	Build detailed understanding of community interests	SDF Programme Team	Partners and stakeholders
	Develop spatial view of community characteristics and priorities	Develop detailed spatial understanding of community	Contractor(s), SDF Programme Team	Partners and stakeholders
	Initial climate change and natural hazards risk assessment for Dunedin	Formally assess climate change/hazard risk in Dunedin	Contractor(s), SDF Programme Team	ORC Natural Hazards Team, other (tbc)
	Climate change and natural hazard vulnerability assessment for South Dunedin	Formally assess vulnerability in South Dunedin	Contractor(s), SDF Programme Team	ORC Natural Hazards Team, other (tbc)
	Detailed climate change and natural hazard risk assessment for South Dunedin	Formally assess climate/hazard risk in South Dunedin	Contractor(s), SDF Programme Team	ORC Natural Hazards Team, other (tbc)
What can we do? *Identify our options for managing likely changes to the physical environment, the resulting hazards, and risk. Select options and pathways that will best meet our objectives.*	Detailed review of national and international adaptation options	Identify best practice adaptation relevant to South Dunedin	Contractor(s)	SDF Programme Team
	Develop long list of generic adaptation options	Understand what adaptation options are on the table	Contractor(s)	SDF Programme Team, Project Delivery Teams
	- **Decision Gate –** Long list of generic adaptation options	Formally endorse options before engaging community	SDF Programme Team	Council Executive Teams, Councillors
	Engage community on long list of generic adaptation options	Engage community in assessment of long list options	SDF Programme Team	Partners and stakeholders
	Develop spatial longlist of adaptation options	Identify where particular options might be deployed	Contractor(s), SDF Programme Team	ORC Natural Hazards, Project Delivery Teams
	- **Decision Gate –** Spatial long list of adaptation options	Formally endorse options before engaging community	SDF Programme Team	Council Executive Teams, Councillors
	Engage community on spatial longlist of adaptation options	Engage community in assessment of spatial long list	SDF Programme Team	Partners and stakeholders
	Develop spatial shortlist of adaptation options	Narrow down the options to a shortlist	Contractor(s), SDF Programme Team	Project Delivery Teams
	- **Decision Gate –** Spatial short list of adaptation options	Formally endorse options before engaging community	SDF Programme Team	Council Executive Teams, Councillors
	Engage community on spatial short list of adaptation options	Engage community in assessment of short list	SDF Programme Team	Partners and stakeholders
	Develop preferred adaptation options, triggers and pathways	Finalise combinations of options for each area	Contractor(s), SDF Programme Team	Project Delivery Teams
	- **Decision Gate –** Preferred adaptation options, triggers and pathways	Formally endorse options before engaging community	SDF Programme Team	Council Executive Teams, Councillors
	Engage community on preferred options, triggers and pathways	Engage community in finalising preferred options	SDF Programme Team	Partners and stakeholders
	- **Decision Gate –** Agree preferred of adaptation options, triggers and pathways	Formally approve preferred options and pathways	SDF Programme Team	Council Executive Teams, Councillors
Make it happen. *Develop an overall adaptation strategy that balances the risks, objectives, and options. Develop a plan to implement that strategy, integrating this into business as usual.*	Develop draft climate change adaptation strategy	Capture everything in a single document	SDF Programme Team	Project Delivery Teams
	Consult draft adaptation strategy across Councils & Govt	Align strategy with Council and Government work	SDF Programme Team	Councils, selected central Government agencies
	Finalise climate change adaptation strategy	Formalise climate change adaptation strategy	SDF Programme Team	Project Delivery Teams
	- **Decision Gate –** Climate change adaptation strategy	Formally approve adaptation strategy	SDF Programme Team	Council Executive Teams, Councillors
	Co-develop implementation plan with partners & stakeholders	Determine how the strategy will be delivered	SDF Programme Team	Partners and stakeholders
	Finalise implementation plan with Councils	Seek formal approval of the implementation plan	SDF Programme Team	Project Delivery Teams
	- **Decision Gate –** Implementation plan	Formally approve implementation plan	SDF Programme Team	Council Executive Teams, Councillors
	Integrate strategy & plan into Council corporate planning processes	Embed the strategy and implementation plan in BAU	SDF Programme Team	All DCC and ORC
How is it working? *Monitor, review and adjust the adaptation strategy to ensure it remains fit for purpose and is delivering on our objectives.*	Develop systems to monitor and review adaptation strategy & plan	Agree how to track progress and measure success	Contractor(s), SDF Programme Team	Project Delivery Teams, partners & stakeholders
	Monitor signals and triggers; review and evaluate progress	Monitor developments so we know when to change	SDF Programme Team	To be confirmed
	- **Decision Gate –** Adjust strategy or implementation plan	Formally approve adjustment or revision	SDF Programme Team	Council Executive Teams, Councillors
	Adjust strategy & plan to account for monitoring & review findings	Make sure the strategy and plan remain fit for purpose	SDF Programme Team, Contractor(s)	To be confirmed
	Recommend shifting between adaptation options and pathways	Time changes to minimise risk, maximise opportunity	SDF Programme Team	Project Delivery Teams
	- **Decision Gate –** Shift between options and pathways	Formally approve shift	SDF Programme Team	Council Executive Teams, Councillors
	Implement shift between options and pathways	Adapt before risks become intolerable or costs unaffordable	SDF Programme Team	To be confirmed

Table 8: High-Level Work Breakdown Structure

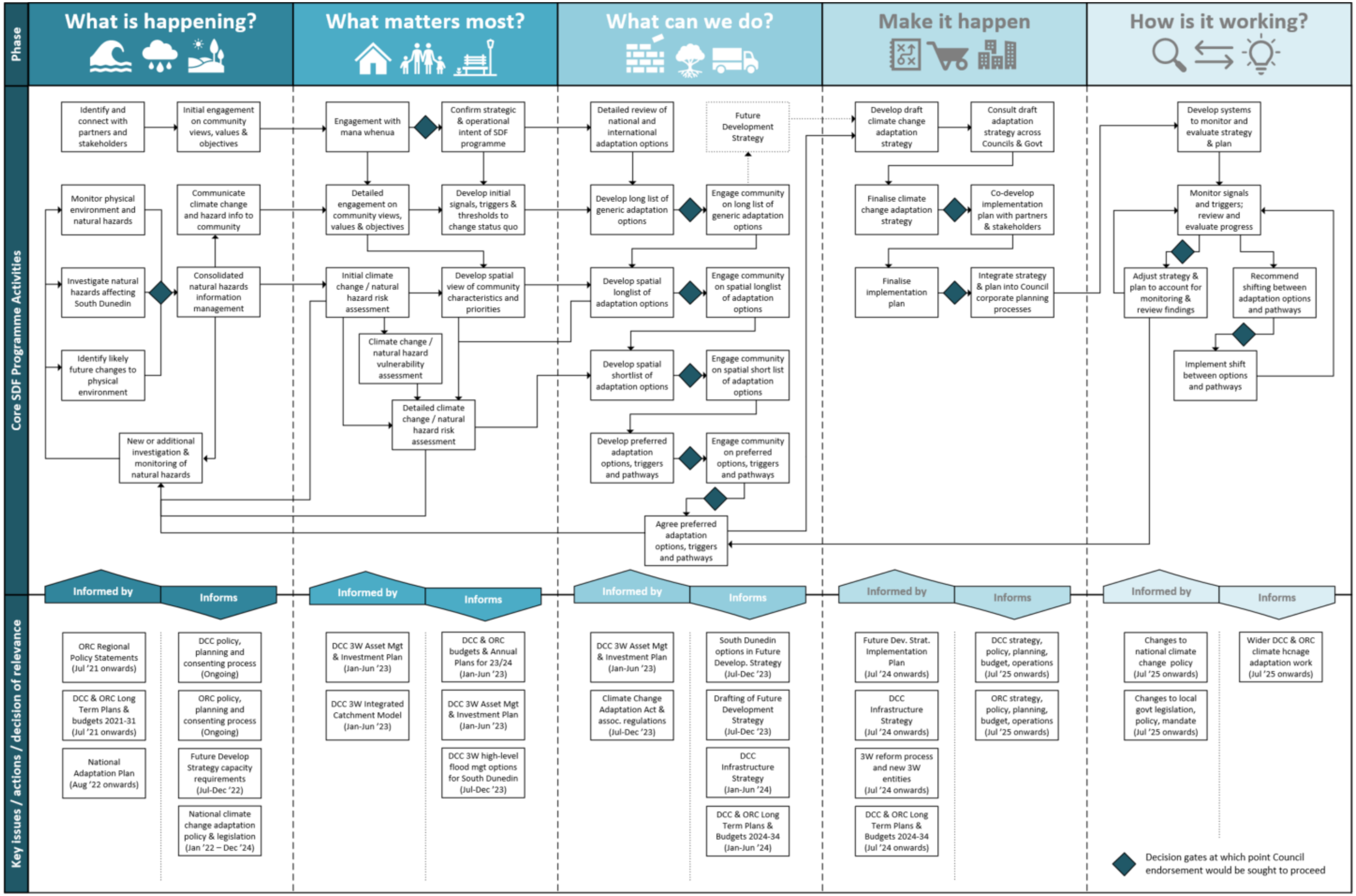


Figure 5: SDF Programme Flow Chart

Programme Communications & Engagement

Successful delivery of the programme and achievement of its objectives will depend on being able to effectively communicate a series of complex social, environmental, and economic information to a wide and diverse audience. It will also require the programme to effectively engage with all partners and stakeholders to ensure, to the greatest extent possible, they understand the issues, are able to make informed decisions, and have an opportunity to input their views into the process.

This will involve developing a communications and engagement strategy for the programme. This will build off existing relationships with stakeholders, draw on stakeholder analysis and profile information, and seek to align with programme objectives. This intention is to develop a set of communications approaches tailored to effectively communicating programme-related issues (such as strategic intent, natural hazard information, impacts of climate change, adaptation options, etc.) to partners and stakeholders. This will likely involve a utilising range of communications methods and channels (e.g., website, social media, print media, face-to-face, etc) to communicate a wide variety of information (scientific, technical, and engagement) to a many different partners and stakeholders (local government, central government, mana whenua, local communities, Dunedin residents and ratepayers, and other stakeholders).

A range of engagement tools and approaches will also need to be deployed to canvas the views of partners and stakeholders, who are likely to have very different interests, expectations, values and world views. Navigating any lack of consensus will be important for the programme, and effective engagement will play a key role by ensuring the process is robust, transparent, and inclusive.

Developing Adaptation Options

As the programme works through the 37 steps and five phases shown in **Table 8** and **Figure 5** above, all partners and stakeholders will play a role in narrowing in on preferred adaptation options and pathways. This is expected to follow a cycle of technical work – community engagement – Council decision, which repeats several times until preferred options and pathways are identified and these are captured in a climate change adaptation strategy and implementation plan for South Dunedin. The planned steps in this process could be adjusted, merged or split depending on the requirements of the programme. These possibilities will be explored as the programme progresses.

Programme Performance & Reporting

Following further development and Council approval of the strategic intent, a performance reporting framework will be developed to periodically update Councillors, partners and stakeholders on the progress made towards achieving programme objectives.

It is envisaged that this will be undertaken in two parts, initially focussing on the operational objectives of the programme, and at a later stage evolving to capture the programme's contributions to achieving specified strategic objectives (which will be also be affected by a range of factors outside of the programme).

This will initially include identifying a change logic detailing how programme actions, activities and projects will deliver specified outputs, how these outputs will lead to desired outcomes, and realisation of these outcomes will contribute to achieving the programme's operational and strategic objectives. This will require identifying baselines, agreeing targets and indicators, and establishing a process of monitoring and reporting on findings.

The reporting schedule is still to be determined but is expected to be regular (e.g., monthly to Steering Group, six-monthly to Council Committees or Councils), and to punctuate the intervening periods between when Councils will be asked to make formal decisions (e.g., adaptation options assessment process).

Cross-Council Adaptation Work

There is a wide range of climate change adaptation-related work occurring across DCC and ORC, with varying degrees of association with South Dunedin or the programme. Adaptation decisions are being made by the councils all the time – investing in infrastructure, approving a plan, or issuing a consent for example, are all adaptation decisions because they lock in a particular approach for a period of time. An objective of the programme is to embed best practice adaption into day-to-day decision-making within DCC and ORC, particularly where this relates to South Dunedin.

More specifically, there is a large amount of adaptation-focussed work occurring across both councils, that sits outside the programme – for example, coastal hazard assessments, minimum floor level policy, design of the new South Dunedin library and community facility, etc. This work can be classified into the four categories noted below and the programme will seek to increasingly coordinate, shape, and support this work in an effort to drive greater overall coherence in adaptation work, particularly as it relates to South Dunedin.

- Science & Technical – Understand how the changing physical environment affects natural hazards and risk, now and in the future.
- Planning & Infrastructure - Manage hazards and risk through land use planning, engineered and nature-based solutions.
- Community Engagement – Partner with the community to build resilience, identify preferred futures, and determine viable adaptation options.
- Strategy & Policy – Integrate research and best practice into decision-making, while navigating a changing policy, legislative and regulatory environment.

This work is included in the programme strategic intent (**Figure 1**, above). A more comprehensive (but not necessarily exhaustive) list of cross council adaptation work is included in **ANNEX 2**.

4.4 Programme Schedule

Developing a schedule

The uncertainty and complexity associated with the programme, along with the circular nature of the DAPP process, creates challenges for accurately determining the time it will take to progress each of the programme actions identified above and to move through the five phases and 37 actions. The various constraints, assumptions and dependencies noted in **Sections 3.8 and 3.9** above also have a bearing on the programme schedule.

The programme schedule has been developed in a way that seeks to balance a range of factors, while presenting an ambitious yet realistic forecast of the time it is likely to take to deliver the programme as described in this programme plan. The primary factors considered in developing the high-level programme schedule include:

- informed estimates of the likely time required (e.g., based on previous or similar practice)
- the time available due to programme constraints (e.g., corporate planning cycles)
- internal programme dependencies (e.g., timing of pre-requisites, programme sequencing)
- to align with wider council work (e.g., inform Future Development Strategy)
- assumptions about external factors (e.g., anticipated timing of key legislation)
- assessments of stakeholder expectations (e.g., balancing cost, scope, quality and speed)
- anticipated programme resourcing (e.g., having sufficient staff and budget to do the work)

The time allocated to completing programme actions can also be broken down into preparation, direct programme activity, and ongoing activity. The focus of the programme will be on preparation

and direct programme activity, whereas ongoing work is likely to be undertaken by other teams across DCC and ORC. The current high-level programme schedule is included below in **Figure 6**.

Aligning the schedule with the Future Development Strategy

The FDS must inform development of the next DCC and ORC 10-Year Plans (2024-34) and must therefore be completed no later than June 2024.

The FDS is a 30-year strategy, but the lifespan for new development and infrastructure spans significantly beyond 30 years. For example, a developer would expect a new home to last at least 50 years. Therefore, any residential development provided during the 30-year period of the FDS (2024-54) ought to have a viable 50-year lifespan (i.e., through to 2074-2104). Similarly, the cost of new and upgraded development infrastructure should be recouped from the beneficiaries of the infrastructure (either from development contributions where the beneficiary is new development or through rates where the beneficiary is existing users). It would be more challenging to justify development infrastructure investments where the lifespan of the investment is truncated by the effects of environmental change (due to the high cost-to-benefit ratio).

Some types of infrastructure investments, such as improvements to drainage schemes, are likely to directly affect the longevity of the continued use of land in a business-as-usual sense. Therefore, decisions about extraordinary infrastructure investments that mitigate the effects of environmental change directly affect decisions about investment in standard development infrastructure and the provision of new development. The FDS for South Dunedin should, therefore, reflect the likely decisions about the delivery of key strategic extraordinary infrastructure that would prolong the lifespan of (parts of) South Dunedin. These decisions should be informed by the SDF programme.

As noted in **Section 3.4** above, the FDS is anticipated to be a three-year rolling process. Any South Dunedin-related work that cannot be incorporated into the current FDS, could inform future iterations of the FDS or any regional spatial strategy.

At this stage the following SDF programme actions are expected to directly inform the FDS:

- Consolidated natural hazards information management
- Engagement with mana whenua
- Develop initial signals, triggers and thresholds for changing from status quo
- Initial climate change and natural hazards risk assessment for Dunedin
- Climate change and natural hazard vulnerability assessment for South Dunedin
- Detailed review of national and international adaptation options
- Develop long list of generic adaptation options
- Engage community on long list of generic adaptation options
- Inform South Dunedin Options for Future Development Strategy
- Inform Draft Future Development Strategy
- Develop spatial longlist of adaptation options

These actions are included in the 'informs/informed by' section of the SDF Programme Flow Chart, **Figure 5**, above; and are noted on the high-level programme schedule, **Figure 6**, below.

	South Dunedin Future Programme - High-level Schedule	2021				2022				2023				2024				2025				2026			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
3	**What is Happening?**																								
4	Identify and connect with partners and stakeholders																								
5	Initial engagement on community views, values and objectives																								
6	Monitor physical environment and natural hazards																								
7	Investigate natural hazards affecting South Dunedin																								
8	Identify likely future changes to physical environment																								
9	Consolidated natural hazards information management																								
10	Communicate climate change and hazard info to community																								
11	*Inform development capacity requires in Future Development Strategy*																								
12	New or additional investigation & monitoring of natural hazards																								
13	**What matters most?**																								
14	Engagement with mana whenua																								
15	Confirm strategic and operational intent of SDF programme																								
16	Develop initial signals, triggers and thresholds for changing from status quo																								
17	Detailed engagement on community views, values and objectives																								
18	Develop spatial view of community characteristics and priorities																								
19	Initial climate change and natural hazards risk assessment for Dunedin																								
20	Climate change and natural hazard vulnerability assessment for South Dunedin																								
21	*Inform South Dunedin Options for Future Development Strategy*																								
22	Detailed climate change and natural hazard risk assessment for South Dunedin																								
23	**What can we do?**																								
24	Detailed review of national and international adaptation options																								
25	Develop long list of generic adaptation options																								
26	Engage community on long list of generic adaptation options																								
27	*Inform South Dunedin Options for Future Development Strategy*																								
28	*Inform Draft Future Development Strategy*																								
29	Develop spatial longlist of adaptation options																								
30	Engage community on spatial longlist of adaptation options																								
31	Develop spatial shortlist of adaptation options																								
32	Engage community on spatial short list of adaptation options																								
33	Develop preferred adaptation options, triggers and pathways																								
34	Engage community on preferred options, triggers and pathways																								
35	Agree preferred of adaptation options, triggers and pathways																								
36	**Make it happen.**																								
37	Develop draft climate change adaptation strategy																								
38	Consult draft adaptation strategy across Councils & Govt																								
39	Finalise climate change adaptation strategy																								
40	Co-develop implementation plan with partners & stakeholders																								
41	Finalise implementation plan (Council, govt & private sectors)																								
42	Integrate strategy & plan into Council corporate planning processes																								
43	**How is it working?**																								
44	Develop systems to monitor and review adaptation strategy & plan																								
45	Monitor signals and triggers; review and evaluate progress																								
46	Adjust strategy & plan to account for monitoring & review findings																								
47	Recommend shifting between adaptation options and pathways																								
48	Implement shift between options and pathways																								

Key:
- Preparation / ongoing work
- Programme activity
- Council decision
- Preparation for FDS inputs
- FDS inputs

Figure 6: High -level Programme Schedule

5. PROGRAMME ACTIVITY DESCRIPTION

Delivery of the programme will involve the following 37 programme actions (also in **Table 8**, above):

Phase: What is happening?

1. Identify and connect with partners and stakeholders
2. Initial engagement on community views, values and objectives
3. Monitor physical environment and natural hazards
4. Investigate natural hazards affecting South Dunedin
5. Identify likely future changes to physical environment
6. Consolidated natural hazards information management
7. Communicate climate change and hazard info to community
8. New or additional investigation and monitoring of natural hazards

Phase: What matters most?

9. Engagement with mana whenua
10. Confirm strategic and operational intent of SDF programme
11. Develop initial signals, triggers and thresholds for changing from status quo
12. Detailed engagement on community views, values and objectives
13. Develop spatial view of community characteristics and priorities
14. Initial climate change and natural hazards risk assessment for Dunedin
15. Climate change and natural hazard vulnerability assessment for South Dunedin
16. Detailed climate change and natural hazard risk assessment for South Dunedin

Phase: What can we do?

17. Detailed review of national and international adaptation options
18. Develop long list of generic adaptation options
19. Engage community on long list of generic adaptation options
20. Develop spatial longlist of adaptation options
21. Engage community on spatial longlist of adaptation options
22. Develop spatial shortlist of adaptation options
23. Engage community on spatial short list of adaptation options
24. Develop preferred adaptation options, triggers and pathways
25. Engage community on preferred options, triggers and pathways
26. Agree preferred adaption options, triggers and pathways

Phase: Make it happen.

27. Develop draft climate change adaptation strategy
28. Consult draft adaptation strategy across councils & Govt
29. Finalise climate change adaptation strategy
30. Co-develop implementation plan with partners & stakeholders
31. Finalise implementation plan with Councils
32. Integrate strategy and plan into councils corporate planning processes

Phase: How is it working?

33. Develop systems to monitor and review adaptation strategy & plan
34. Monitor signals and triggers; review and evaluate progress
35. Adjust strategy and plan to account for monitoring & review findings
36. Recommend shifting between adaptation options and pathways
37. Implement shift between options and pathways

A fuller description of each programme action, including anticipated timing, linkages to other actions, who would lead, and support this work is detailed in **ANNEX 3**.

5.1 Programme budget

The core programme budget, meaning dedicated funding that supports programme management overheads and is the primary source of funding for the 37 programme actions (summarised in **Table 8,** above and detailed in **ANNEX 3**, below) can be quantified, and is shown in **Table 9**, below.

Source	Category	21/22 FY	22/23 FY	Outyears
DCC Funding	Personnel	200,000	200,000	200,000
	Consumables	300,000	300,000	300,000
ORC Funding	Personnel	50,000	50,000	50,000
	Supplies & Services	370,000	370,000	370,000
Subtotal	Personnel	250,000	250,000	250,000
	Consumables, supplies & services	670,000	670,000	670,000
Total		**920,000**	**920,000**	**920,000**

Table 9: Programme budget (core programme management overheads and programme actions)

ORC funding for natural hazards work

The three programme actions relating to monitoring, investigating and identifying future natural hazard impacts are funded from existing ORC budgets, with an estimated annual cost of 370,000 per annum (excluding personnel costs). This work is specific to the South Dunedin area and is a direct contribution to the core programme budget. Funding for new or additional natural hazards investigation and monitoring work required to achieve programme objectives would require new or additional sources of funding.

Comments on programme budget

The characteristics of the programme, including the wide scope and systemic nature of the issues involved, coupled with the horizontal interaction with a range of vertical functions (and budgets) across councils, create challenges for determining an accurate or meaningful 'overall' budget (i.e., one that incorporates both programme management actions *and* programme activities and projects). Tracking an overall programme budget is not recommended at this time, given the resource required, and challenges quantifying meaningful figures.

A recommended focus is on the core programme management budget only (see **Table 9**, above), and to treat programme activities or projects separately – as these will typically be managed and delivered using business-as-usual resourcing. Rather than building up a separate programme budget, which could support programme activities and projects by supplementing business-as-usual funding, it is likely more efficient and effective to focus on ensuring there are sufficient programme management resources to deliver the 37 programme actions, and using these to shape and influence planning and budgeting across DCC and ORC (with the intention of ensuring sufficient resourcing of programme activities and projects is built into business-as-usual budgets).

If additional resources are required by DCC and ORC teams to deliver programme-related activities or projects, then these resources should be sourced through normal council budgeting processes (i.e., re-prioritisation within existing resources, or bids for new resources via annual plan or long-term plan processes). This would have the benefits of avoiding the need to create an unnecessarily large programme budget running in parallel (and potentially competing with) with normal budget processes and would also help embed the associated adaptation activities and projects into business-as-usual processes, making the procedure more sustainable in the long term.

6. PROGRAMME ORGANISATION

The programme will be delivered as a temporary, flexible organisation of work with bespoke governance and management arrangements (though these will seek to utilise existing structures where possible or appropriate). The programme structure, governance, and management arrangements are summarised below.

6.1 Programme Structure

This section describes the current programme structure, where the governance and management of the programme will move from interim arrangements during the programme definition pahse, to more formal and enduring arrangements as the programme is delivered over coming years. These arrangements could be summarised in **Table 10**, and are outlined in more detail in **Annex 3**.

Group/Role	Summary Role Function/Responsibility
DCC & ORC Councils	Define the strategic direction of councils Approve strategic objectives of the programme Endorse operational objectives of the programme Approve programme budgets Consider/approve specific programme milestones
DCC & ORC Committees (incl. mana whenua representatives)	Consider/approve periodic programme updates (for noting) Provide strategic guidance to the programme
DCC & ORC Chief Executives	Review/endorse programme-related Council papers Approve programme resourcing
Programme Steering Group (PSG)	Determining acceptable programme risk and performance Ensuring programme delivers within agreed boundaries Ensuring effectiveness and performance of the programme Securing investment necessary to establish / run programme Resolving strategic and directional issues Providing assurance an operational stability Review programme documentation
Senior Responsible Owner (SRO)	Championing the agreed programme vision Providing programme leadership and direction
Programme Manager	Day-to-day programme management Planning and designing the programme Managing programme risks and issues Managing the programme budget Managing communication and engagement with stakeholders Reporting programme progress to SRO and PSG
Programme Coordination Group (PCG)	Coordination and communication with areas of responsibility Advising on and supporting resolution of operational issues
Business Change Managers	Contributing to design programme activities and projects Managing programme activities and projects Preparing work areas for change resulting from the programme Leading implementation of change resulting from programme
Programme Management Team (PMT)	Supporting Programme Manager Design and delivery of programme management activities
Project Managers	Management of delivery of programme activities and projects
Programme Advisory Group (PAG)	Advising on stakeholder interests relevant to the programme Sounding board for Programme Manager/Management Team Not a substitute for partner or stakeholder engagement

Table 10: Programme Roles, Functions and Responsibilities

The individuals currently occupying those roles and their respective organisatrions, are noted below:

Role	Name	Organisation
Chief Executive	Sandy Graham Pim Borren (Interim)	DCC ORC
Senior Responsible Owner	Jeanette Wikaira, Māori, Policy & Partnerships	DCC
General Managers	Anita Dawe, Policy & Science Gavin Palmer, Operations Simon Drew, Infrastructure & Development	ORC ORC DCC
Programme Manager	Jonathan Rowe	DCC
Business Change Managers ***(for three primary sectors)***	Jean-Luc Payan (Manager, Natural Hazards) David Ward (Group Manager, 3 Waters) Anna Johnson (Manager, City Development) Others to be confirmed	ORC DCC DCC TBC
Programme Management Team	Ian Telfer (Senior Comms & Engagement) Other roles to be confirmed	DCC TBC
Project Manager(s)	Various. Recorded in project-level documentation	TBC

Table 11: Key roles and individuals

The proposed programme governance and management structure is represented in **Figure 7**, below.

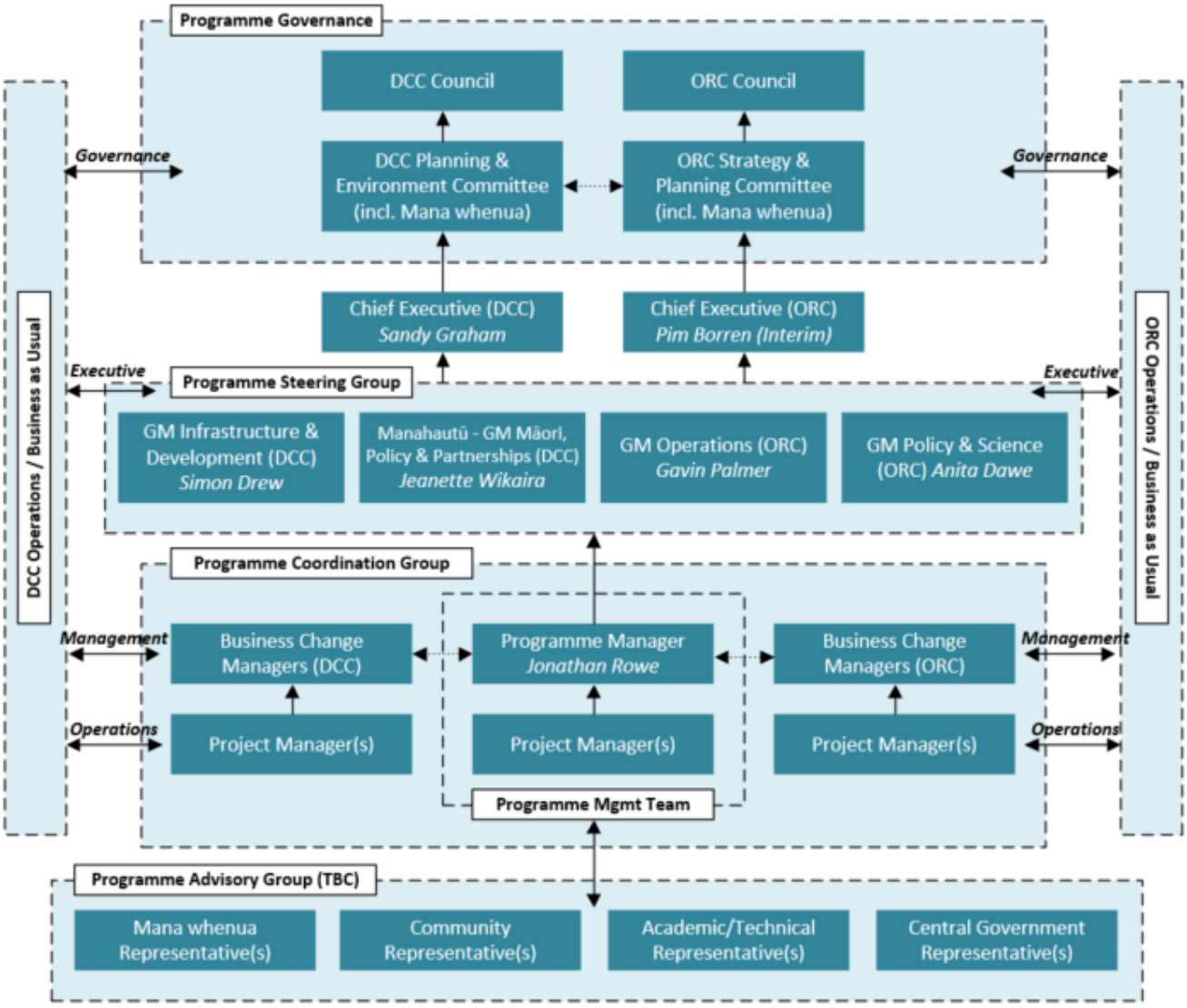


Figure 7: Proposed Programme Governance & Management Structure

Programme Governance

The programme governance function is performed by DCC and ORC Councils. This includes through meetings of the Councils or respective Committees (as outlined in **Figure 7**, above). This primarily involves defining the overall strategic direction for respective councils, approving the strategic objectives of the programme (*what* the programme is seeking to achieve), endorsing the operational objectives (*how* this should be done), approving programme budgets, and considering a range of programme reporting (for noting or decision).

Programme Steering Group

The Programme Steering Group (PSG) provides executive-level strategic and operational guidance to the programme, determining risk and performance parameters, and ensuring the programme stays within the agreed boundaries. In practice, the PSG makes a range of strategic and operational decisions, which provide assurance on *how* the programme is seeking to deliver the strategic objectives set by the Councils. The joint nature of the PSG promotes coordination and collaboration across DCC and ORC, supporting more effective and efficient delivery of the programme.

Programme Coordination Group

The Programme Coordination Group (PCG) is a temporary collection of council staff focussed on supporting programme coordination and communication with their areas of responsibility and advising on and supporting resolution of operational-level programme issues. The PSG is essentially where those promoting change (Programme Management Team) work with those designing, preparing for, and implementing that change (Business Change Managers and their teams).

Programme Management Team

The Programme Management Team (PMT) drives the programme at a day-to-day level, with a focus on design, delivery, coordination, communications and engagement. The PMT currently consists of a mix of dedicated staff (1.8 FTE), a number of DCC and ORC staff providing periodic input, and an external contractor (NIWA). To date there has been no other outsourcing to external contractors. This approach draws more heavily on internal resources, and is dependent on capacity and capability available internally. As the programme progresses, the scope, volume and technical complexity of the programme management activities and actions will grow. The capacity and capability of the PMT will likely need to change in response, through in-house resource and by supplementing with external contractors (as certain technical or specialist expertise will not be available internally).

Programme Advisory Group

A Programme Advisory Group (PAG) currently operates on an informal, ad hoc basis where a range of representatives (mana whenua, community, academic, technical and central government) provide periodic but regular advice to the programme on many issues of relevance to the programme. It is proposed that this valuable sounding board and source of informed advice for the programme be formalised, to support more effective and efficient implementation.

Formal establishment of a PAG would be subject to stakeholder feedback. It is important to note a PAG would *not* be a substitute or proxy for partner or stakeholder engagement, rather it would be a forum for sense-checking issues before wider community engagement and an opportunity for programme partners and stakeholders to hear directly from one another.

Business as usual operations

The programme is intended to continually inform, and be informed by, the day-to-day operations and business as usual activities of both councils. In this regard, it is anticipated that each layer of the programme structure will act as an intermediary between the programme and other work of councils. This can occur at all levels, governance, executive, management and operational (as illustrated in **Figure 7**), which should help integrate the programme into business as usual – which is one of the operational objectives.

ANNEX 1: SDF PROGRAMME MATRIX

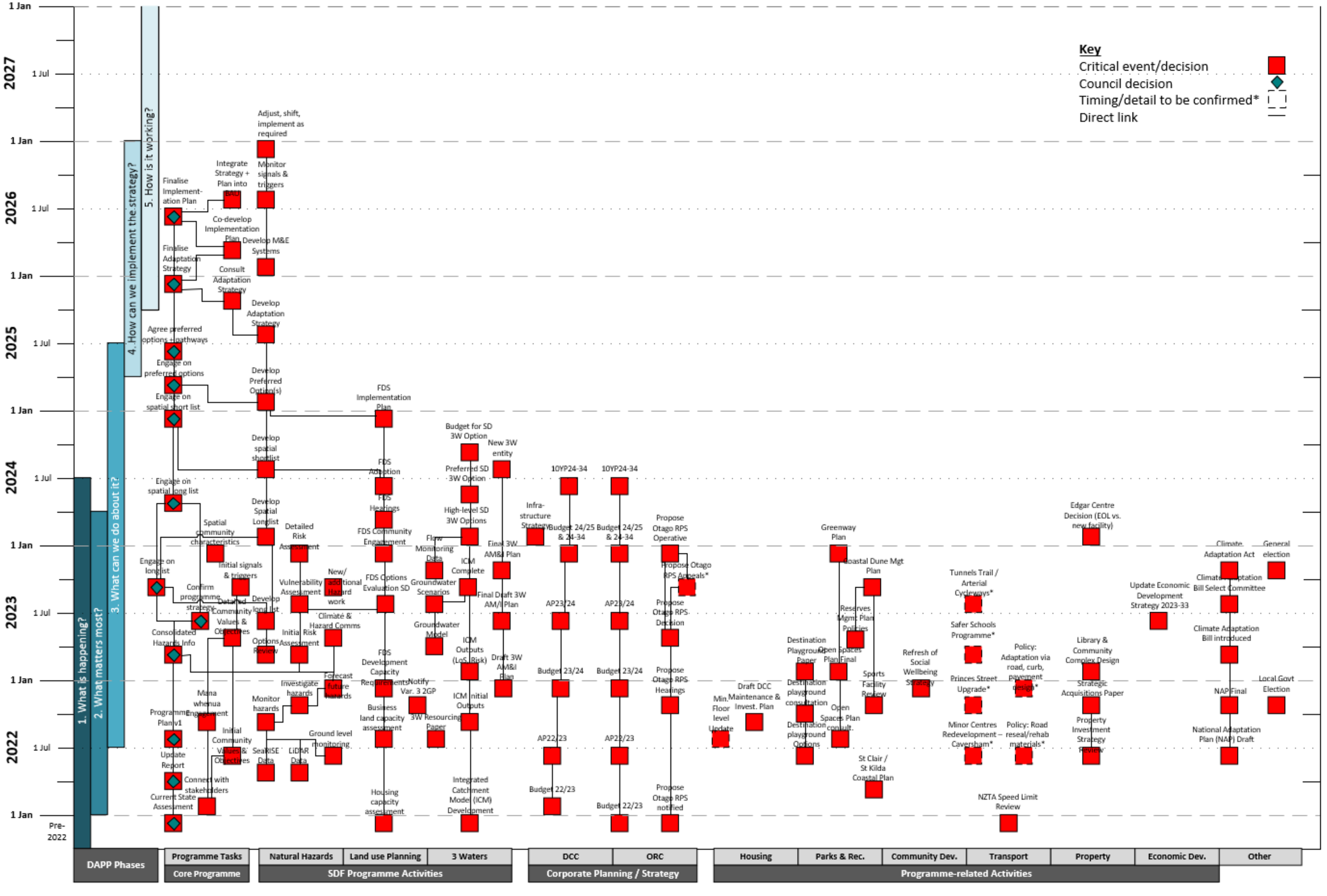
ANNEX 2: CROSS-COUNCIL ADAPATION WORK

ANNEX 3: PROGRAMME ACTION DESCRIPTIONS

ANNEX 4: DETAILED ROLE DESCRIPTIONS

ANNEX 5: GLOSSARY

ANNEX 1 – SDF PROGRAMME MATRIX



ANNEX 2 – CROSS-COUNCIL ADAPTATION WORK

The table below seeks to illustrate examples of climate change adaptation-related work occurring across DCC and ORC, which has direct or indirect links to the South Dunedin Future programme (planned activities in *italics*)

Science & Technical *Understanding how the changing physical environment affects natural hazards and risk, now and in the future*	**Planning & Infrastructure** *Managing hazards and risk through land use planning, engineered and nature-based solutions*
• Enhanced groundwater monitoring programme • Local sea level monitoring and projections (with NZ SeaRise) • Storm surge and tsunami assessment and mapping • Ground conditions assessment (liquefaction and lateral spreading) • Hydrogeological drilling programme; update of geological 3D model • Active fault identification study • Vertical land movement study • *Sports Facility Needs Assessment* • Detailed topographical data capture (LiDAR) • Ongoing geotechnical assessments and transfer of information to NZ Geotechnical database • Infrastructure monitoring programme • Communication, education and engagement activities across multiple hazards	• St Clair – St Kilda Coastal Plan • Coastal process studies, contamination assessment (Kettle Park), remediation works (St Clair Seawall) • Improved rainfall catchment monitoring • *Coastal dynamics modelling and options assessment* • *Ocean Beach Reserve Management Plan* • *St Kilda Dune Management Plan* • *Kettle Park landfill remediation* • *Dunedin Open Spaces Plan* • Upgraded screens at Portobello stormwater pumping station • Improved stormwater network maintenance (e.g. mud tanks) • Updating hydraulic models • Integrated Catchment Model & South Dunedin Flood Alleviation Plan • Transport Asset Management Plan • DCC Infrastructure Strategy • DCC 3 Waters Strategic Direction Statement (2010-60) • Shaping Future Dunedin Transport Programme • Minor centres redevelopment - Caversham • 3 Waters System Planning Project • Updating hydraulic models • Minimum floor levels • Future Development Strategy • *District Plan changes* • *St Clair sea wall risk assessment* • *Climate adaptation through sustainable asset management*
Community & Engagement *Partnering with the community to build resilience, identify preferred futures, and determine viable adaptation options*	**Strategy & Policy** *Integrating research and best practice into decision-making, while navigating a changing policy, legislative and regulatory environment*
• ORC Natural Hazards portal • ORC WaterInfo, dedicated webpage on ORC website and NZ Geotechnical database • Communication, education and engagement sessions, groundwater display with Otago Museum, information videos, natural hazards reports and brochures • Presentations to community hui and groups (>80 over meetings since 2020) • *New programme website with integrated GIS web portal* • Community engagement activities to increase public awareness of flood risk; flood hazard maps • Community engagement on the St Clair- St Kilda Coastal Plan • SDF web page on DCC website • Coastal Plan webpage • Community grants schemes (events, support, environment) • Community development and resilience projects • Community preparedness and emergency response • Community and stakeholder involvement in SDF programme governance • *Community consultation and stakeholder engagement on network maintenance and flood alleviation plan DCC* • *Social Wellbeing Strategy Refresh*	• ORC Proposed Otago Regional Policy Statement 2021 • ORC Otago Regional Climate Change Risk Assessment • Housing Action Plan • Early-stage analysis to inform strategic approaches to community resilience • RMA reform process (Natural & Built Environments Act, Strategic Planning Act, Climate Change Adaptation Act) • Future of Local Government Process • 3 Waters reform (service delivery and regulatory) • Global Covenant of Mayors for Climate & Energy (GCoM) adaptation compliance activities • Academic Reference Forums • DCC Strategic Framework Refresh Project • DCC Māori Strategic Framework Initiative • National Adaptation Plan (NAP) consultations • National-to-local climate change risk assessments

ANNEX 3: DETAILED ROLE DESCRIPTIONS

Manahautū - General Manager (the "Senior Responsible Owner")

The Manahautū - General Manager (M-GM) is **accountable** for the Programme, ensuring that it meets its objectives and realises the expected benefits.

The M-GM's key responsibilities include:

- Creating and communicating the vision for the Programme
- Providing clear leadership and direction throughout the Programme's lifecycle
- Ensuring that the Programme delivers its strategic outcomes and realises its benefits
- Establishing the programme governance arrangements and ensuring appropriate assurance is in place
- Maintaining the interface with key senior stakeholders; keeping them engaged and informed
- Monitoring the key strategic risks facing the Programme
- Maintaining alignment of the Programme with key strategic objectives from the 10YP and strategic direction
- Commissioning assurance and audit reviews
- Ensuring the effectiveness and performance of the Programme organisation
- Delivering on the priorities set by the Council.

South Dunedin Future Programme Manager (the "Programme Manager")

The South Dunedin Future Programme Manager is **responsible** for leading and managing the Programme from identification through to closure.

The Programme Manager's key responsibilities include:

- Day-to-day management of the Programme
- Being the day-to-day agent on behalf of the Chief Executive; ensuring successful delivery of outcomes and realisation of benefits
- Planning and designing the Programme and proactively managing its overall progress, resolving issues and initiating corrective action where appropriate
- Developing and implementing the programme governance framework
- Effective co-ordination of the projects and their interdependencies
- Managing and resolving any risks and other issues that may arise
- Maintaining overall integrity and coherence of the Programme, and developing and maintaining the programme environment to support each individual within it
- Managing the budget, expenditure and costs against benefits as the Programme progresses
- Facilitating the appointment of individuals to the project delivery teams
- Ensuring that the delivery of outputs from the projects meet programme requirements in line with the programme business case and is delivered to the appropriate quality, time and budget
- Managing the performance of the Programme team
- Maximising the efficient allocation of resources and skills within the Programme
- Managing internal and external suppliers to the Programme
- Managing communications with stakeholders
- Initiating extra activities and other management interventions wherever gaps in the Programme are identified or issues arise
- Identify Business Change Managers in affected areas of the organisation; work with them to facilitate efficient asset handover
- Reporting progress of the Programme at regular intervals to the Chief Executive.

Business Change Manager(s) (the "BCM")

Whilst the Programme Manager is responsible for delivering the outputs and outcomes in satisfaction of the desired benefits and objectives, the Business Change Manager(s), as ultimate asset owner, is **responsible** for managing the operational assets and realising the resultant benefits.

As the Programme is delivering projects that will generate operational assets across different parts of the organisation, there will be one BCM for each area (e.g. natural hazards, land use planning and three waters).

The BCM's key responsibilities include:

- Supporting the PMT to define the benefits
- Maintaining the focus on realising beneficial change
- Contributing to the development of the Benefits Management Strategy
- Identifying organisational change that is happening outside of the boundary of the Programme which may affect benefit realisation
- Preparing their respective business area for change
- Identifying opportunities and realising benefits that arise during the Programme (not originally profiled)
- Ensuring effective communication with all areas of the business they represent
- Implementing the mechanisms by which benefits can be realised and measured
- Reporting to the responsible General Manager on the operational readiness of new assets delivered by the Programme; achievement of outcomes and realisation of benefits (once the assets are in service)
- Advising the Programme Manager whether the work of the Programme and each project covers the necessary aspects required to deliver the outputs and outcomes necessary to deliver the desired benefits
- Ensuring that there is no double-counting of benefits for which they are responsible.

Programme Management Team (the "PMT")

The Programme Management Team (PMT) provides support and guidance to the projects, activities, and internal assurance of the programme.

The PMT's key responsibilities include:

- **Delivery:** Programme-related coordination, communications and engagement activities, both internal and external
- **Reporting:** Tracking measures, reporting progress against baseline plans
- **Information Management**: Manage, secure and assure data and information assets.
- **Budget and Cost Management**: Assisting the Programme Manager with budget control for the Programme, maintaining status reports on all projects in the Programme
- **Risk and Issues:** including analysing interfaces and critical dependencies between projects and recommending appropriate actions to the Programme Manager
- **Quality and Assurance:** Establishing consistent practices and standards, adhering to the Programme governance arrangements. Carrying out health checks and advising on solutions during the lifetime of the Programme and individual projects. For example facilitating workshops involving project teams, stakeholders and members of the Programme team.
- **Baseline and Change Control:** Registering changes for subsequent investigation and resolution, monitoring items identified as requiring action, prompting timely actions and reporting on whether required actions have been completed
- **Capability Building:** Providing consultancy-style services to project delivery teams at initiation and throughout the lifecycle of the Programme, ensuring that a common approach is adopted and good practice is shared

- **Procurement:** Providing support to the project teams including advice on procurement strategies and forms of contract
- **Document Management:** Holding master copies of all programme and project documentation, generating all necessary programme governance and assurance management documentation, maintaining, controlling and updating programme documentation.

Project Manager(s)

The Project Manager(s) is responsible for each project's success and is the key decision maker on delivering the outputs associated with any particular project in accordance with specified requirements.

The Project Manager's prime responsibility is to ensure that the project produces the required outputs within the specified tolerances of time, cost, quality, scope, risk and benefits. The Project Manager is also responsible for the project producing a result capable of achieving the benefits identified in the Business Case.

The Project Manager's key responsibilities include:

Directing

- Oversee the development of the Project Brief and the Strategic Assessment, ensuring that the project is aligned with corporate strategies (and presenting the Strategic Assessment to the Programme for approval where required)
- Oversee development of the Indicative, Detailed and Implementation Business Cases
- Hold the Senior Supplier to account for the quality and integrity of the specialist approach and specialist outputs created for the project
- Hold the Senior User to account for realising the benefits defined in the Business Case, ensuring that benefits reviews take place to monitor the extent to which the Business Case benefits are on track to be delivered
- Transfer responsibility for post-project benefits reviews to the Programme.
- Monitor and control the progress of the project at a strategic level, in particular reviewing the Business case regularly
- Escalate issues and risks to the Programme if tolerances are exceeded
- Ensure that risks associated with the business case are identified, analysed and controlled
- Organise and Chair PCG reviews

Managing

- Prepare the following baseline artefacts, and agree them with the Programme
  - Project Work Breakdown Structure
  - Master Project Schedule
  - Risk Register
  - Budget Profile
- Maintain the following registers
  - Risk & Issues register
  - Conflict register
  - Quality register
  - Decisions register
  - Lessons learned register
  - Communications register
- Liaise with the Programme to ensure that work is neither overlooked nor duplicated by interfacing projects

- Lead and motivate the project management team
- Ensure that behavioural expectations of project team members are established
- Manage the production of the required outputs, taking responsibility for overall progress and use of resources and initiating corrective action where necessary
- Manage the project's procedures (as defined by the Programme) – risk and issues, budget and cost, schedule, baseline, communications
- Authorise Work Packages
- Advise the Programme of any deviations from plan and seek approval for an update to the baseline plan if thresholds are breached
- Ensure that DCC/ORC Health and Safety requirements are appropriately and adequately represented in any procurement activity
- Undertake regular reviews of the audits undertaken by the Contract Manager, including participation in such audits
- Ensure all audit results are provided to the DCC/ORC Health and Safety Team

ANNEX 4 – PROGRAMME ACTION DESCRIPTIONS

PHASE: WHAT IS HAPPENING?

Identify and connect with partners and stakeholders

Purpose: Identify and connect with affected communities — Lead: SDF Programme Team
Timeframe: 2020 onwards — Status: Ongoing — Support: Various

Understanding and effectively engaging with all stakeholders will be a central component of programme success. Over 70 community meetings have been undertaken in 2020-22, to build trust, relationships and awareness of key issues relating to the programme. Initial work has involved identifying and establishing connections with mana whenua partners, affected communities, and other stakeholders. This work is focussed on fostering positive working relationships.

Future work will focus on undertaking more in-depth stakeholder analysis, including developing and maintaining detailed stakeholder profiles. These profiles will seek to outline the interests, attitudes and influence of different stakeholders, and their respective importance and authority relative to the programme. This information will inform development of a stakeholder engagement strategy, supporting a range of partner and stakeholder engagements over the duration of the programme.

Initial engagement on community views, values and objectives

Purpose: Build initial understanding of community interests — Lead: SDF Programme Team
Timeframe: 2021-22 — Status: Complete — Support: N/A

A critical element of community engagement will be understanding the views of affected communities, developing a sense of what they value most, and what they hope to achieve from a climate change adaptation process in South Dunedin. Initial engagement work was undertaken with selected community stakeholder umbrella groups between March-May 2022, which has provided valueable insights, which have and will be used to refine the strategic intent of the programme, inform design of for engagement work, and shape overall programme design. More in-depth engagement is planned with a wider group of stakeholders in subsequent stages of the programme (see below). It is anticipated that the programme will include seeking regular input from, and provide regular feedback to, stakeholders and affected communities.

Monitor physical environment and natural hazards

Purpose: Build general understanding of natural environment — Lead: ORC Natural Hazards
Timeframe: Ongoing — Status: Underway — Support: GNS Science

A wide range of work is underway to better understand how the current physical environment generates hazards and risk for South Dunedin, and how changes to this environment (due to climate change and other factors), may affect hazards and risk in the future. This includes projects to monitor sea-level, tidal movements, ground water levels, coastal erosion, land subsidence and rainfall – all of which are contributing factors to flood risk for South Dunedin. This work remains on-going and continues to build a clearer picture of the current and future physical environment, which informs planning and decision-making elsewhere in the programme.

Investigate natural hazards affecting South Dunedin

Purpose: Developing detailed understanding of specific issues — Lead: ORC Natural Hazards
Timeframe: Ongoing — Status: Underway — Support: GNS Science

Complementing the ongoing monitoring regime, specific and targeted investigations are being undertaken into specific natural hazards affecting South Dunedin. These include geological hazards (earthquake, subsidence, liquefaction, landslide), hydrological hazards (rainfall, flooding, ground water), and coastal hazards (sea level rise, storm surge, tsunami, erosion). The complexity and interconnectedness of these natural hazards, and the interaction with the built environment in South Dunedin (3 waters network, impermeable surfaces, land reclamation), means that ongoing work is required to build a better understanding of how these systems operate. This knowledge will be a critical input into understanding how potential adaptation options might affect this system over long-time horizons.

Identify likely future changes to physical environment

Purpose: Predict future changes to inform planning / decisions — Lead: ORC Natural Hazards
Timeframe: Ongoing — Status: Underway — Support: GNS Science

Building on the monitoring and investigation of natural hazards, a third workstream seeks to model how future predicted changes to the natural environment could impact on natural hazards and the associated risk they present for South Dunedin. This information, for example predicted sea-level rise, will be integral to developing potential adaptation options and pathways, and for assessing these against anticipated physical environment, hazards, and risk over various time frames. The intention is to ensure that selection of adaptation options, and broader decision making, is informed by a better understanding of natural hazards and risk.

Consolidated natural hazards information management

Purpose: Streamline management of / access to hazards info. — Lead: ORC Natural Hazards
Timeframe: 2022/23 onwards — Status: Proposed — Support: SDF Programme Team

There is an extensive and growing collection of research, data, and information on the physical environment and natural hazards affecting South Dunedin. However, this information is collected by multiple agencies, stored in a range of locations, has varying levels of accessibility and utility, and does not appear to be utilised in a consistent or standardised manner by councils. There is merit in reviewing whether a more consistent and consolidated approach to management of natural hazard information would provide value to the programme (and councils, ratepayers, and other stakeholders). This would include reviewing the collection, storage, organisation, status, accessibility, and presentation of the natural hazard information. There would be benefit in improving access and useability, clarifying the status, and effectively communicating relevant hazard information to affected communities (see below).

Communicate climate change and hazard information to the community

Purpose: Build community understanding of changing hazards — Lead: SDF Programme Team
Timeframe: 2022-24 — Status: Planned — Support: DCC/ORC Comms

This work will involve developing a communications strategy and plan for the wider programme. This will build off existing relationships with stakeholders, draw on stakeholder analysis and profile information, and seek to

align with programme objectives. This intention is to develop a set of communications approaches tailored to effectively communicating programme-related issues (such as programme overview and objectives, natural hazard information, impacts of climate change, adaptation options, etc.) to partners and stakeholders. This will likely involve a utilising range of communications methods and channels (e.g. website, social media, print media, face-to-face, etc) to communicate a wide variety of information (scientific, technical, and engagement) to a many different partners and stakeholders (local government, central government, mana whenua, local communities, Dunedin residents and ratepayers, and other stakeholders).

New or additional investigation & monitoring of natural hazards

Purpose: Respond to new/changing hazard info as required — Lead: ORC Natural Hazards
Timeframe: As required — Status: Planned — Support: TBC (as required)

While a comprehensive cache of natural hazards information exists for South Dunedin, there remain gaps in our understanding of the natural environment, the systems that contribute to natural hazards, and the changes to these systems over time ('known unknowns'). Similarly, as monitoring, investigation and modelling work progresses, new areas of interest are identified for further study, or issues appear that were not previously considered ('unknown unknowns'). In such instances, new or additional investigation and monitoring of natural hazards might be required. This work could also be generated by other elements of the programme, such as the risk and vulnerability assessment, developing of adaptation options, or as a result of monitoring and review processes. This reflects the various feedback loops in the Dynamic Adaptive Planning Pathways (DAPP) process.

PHASE: WHAT MATTERS MOST?

Engagement with mana whenua

Purpose: Integrate Te Ao Māori & Treaty principles into programme — Lead: SDF Programme Team
Timeframe: 2021/22 onwards — Status: Planned — Support: Aukaha Ltd (TBC)

The central component of the SDF programme is engagement with partners and stakeholders. Critical to this will be ensuring that the Treaty of Waitangi, and the Crown's partnership with Māori, is accurately represented and integrated into the programme. This is currently envisaged to include agreeing appropriate Treaty-based governance arrangements, seeking to align programme strategic objectives with Te Ao Māori and mana whenua aspirations; providing meaningful opportunities for all Māori to input their views and values; and identifying and agreeing Māori-specific programme outputs (e.g. cultural narratives, adaptation options for Māori land in Ōtepoti, adaptation for cultural taonga, mana whenua design inputs, etc.). It is anticipated that this work will substantively impact the strategic intent and overall programme approach, in addition to shaping design of engagement, communications, risk assessment and options development. There may also be opportunities to utilise similar approaches towards engagement with Mata waka communities.

Confirm strategic and operational intent of SDF programme

Purpose: Establish clear goal posts for the SDF programme — Lead: SDF Programme Team
Timeframe: 2022/23 — Status: Planned — Support: N/A

A critical success factor of any programme is alignment with the corporate or organisational strategy. A draft strategic framework has been developed for the programme based on review of existing DCC and ORC strategic material, interactions with DCC and ORC staff on the purpose and intent of their work, and initial engagement with mana whenua partners, affected communities, and other stakeholders on their views, values and objectives. Finalising this draft strategic framework, following some more focussed engagement with mana whenua and alignment with broader strategy work being undertaken by both councils, will put the programme on a firmer strategic footing (noting the strategy will likely need to be adapted, as new information becomes available). This will be important for informing programme design, including key programme activities, engagement, communications and measuring success (through regular monitoring and evaluation) and for establishing a periodic reporting regime to Councils so they can monitor progress. It will also support greater alignment with corporate planning processes of both councils, enabling more effective integration of programme work into business-as-usual functions, increasing the likelihood of success.

Develop initial signals, triggers and thresholds for changing from status quo

Purpose: Understand when status quo no longer acceptable — Lead: SDF Programme Team
Timeframe: 2023 — Status: Planned — Support: TBC

One of the first decisions that partners and stakeholders will need to make is at which point would the risk presented by natural hazards become intolerable. This is likely to vary across partners and stakeholders, as views, circumstances, tolerances to different types of risk, and objectives will also vary. The objective would be to develop a sense of the red lines – what would partners and stakeholders not accept – and then to identify what signals my be used to determine when these lines might be getting close, what preparations would need to be undertaken when on the threshold, and what would trigger a specific action (e.g. a change to a new adaptation option or pathway). This information would help inform development of adaptation options.

Detailed engagement on community views, values and objectives

Purpose: Build detailed understanding of community interests — Lead: SDF Programme Team
Timeframe: 2023 — Status: Planned — Support: TBC

Building on initial engagement work undertaken in 2020-22, and utilising the stakeholder analysis, consolidated natura hazard information, and communications strategy (see above), the programme would seek to expand to directly engage with a wider set of stakeholders. The intention is to develop more larger, more robust data set, and more comprehensive picture of the views, values and aspirations of affected communities, and wider stakeholders. This may involve different methods of engagement, designed to reach larger numbers of stakeholders (e.g. surveys, letter drops, visual media). The specifics of the approach will be developed as part of the broader engagement strategy for the programme, working on the principle of reaching as many stakeholders as possible, including those that are hard to reach or may not have been engaged to date.

Develop spatial view of community characteristics and priorities

Purpose: Develop detailed spatial understanding of community — Lead: SDF Programme Team
Timeframe: 2023/24 — Status: Planned — Support: TBC

Engagement work is expected to generate a large amount of data from the community. The intention is to not only develop a clear sense of community views, values and aspirations, but to also pair this with social-economic data, and to represent it spatially across the study area. Layering community data, with natural hazards information, risk assessments, and other relevant information would create a dynamic picture of the study area. It would also potentially enable differentiation across different parts of South Dunedin, allowing a more tailored approach, perhaps by identifying logical cells (or not, depending on what the data shows).

The programme has engaged the Centre for Sustainability at the University of Otago to undertake targeted research into climate change adaptation topics of relevance to the programme and to produce policy-ready research products aligned to programme phases. It is anticipated that this will include research into best practice for utilising spatial mapping of community socio-economic data for adaptation purposes.

Initial climate change and natural hazards risk assessment for Dunedin

Purpose: Formally assess climate change/hazard risk in Dunedin Lead: Contractor (TBC)
Timeframe: 2022/23 Status: Planned Support: SDF Programme Team

Risk is typically assessed as a combination of the likelihood of an impact occurring, and the consequences of that impact. In this case we are assessing the exposure and vulnerability of people and assets to a range of natural hazards affecting South Dunedin. Initially, and cascading from the National Climate Change Risk Assessment (NCCRA) and Otago Climate Change Risk Assessment (OCCRA), the intention is to undertake an initial risk screening ('first pass') on the wider Dunedin city area, likely as a desktop exercise. This will be followed by a 'second pass' standard risk assessment, focussing specifically on how climate change might compound existing risks of present new ones. These initial risk assessments will primarily be informed by consolidated natural hazards information and existing data on community characteristics, and views, values and aspirations.

Climate change and natural hazard vulnerability assessment for South Dunedin

Purpose: Formally assess vulnerability in South Dunedin Lead: Contractor (TBC)
Timeframe: 2023 Status: Planned Support: SDF Programme Team

Vulnerability assessments are used to assess the broader impacts and implications of changes to the physical environment and communities resulting from climate change. They assess the potential harm and loss to a community or environment caused by a range of natural hazards, considering the ability of the community or environment to cope and adapt to change. This helps to identify and prioritise exposed areas. This work would focus specifically on South Dunedin, and include sensitivity analysis (the degree to which varying changes to the physical environment have corresponding impacts on communities), and assessments of adaptive capacity (the ability of natural and human systems to accommodate change). This work will be informed by the consolidated natural hazards information, initial risk assessment, data on existing data on community characteristics, and views, values and aspirations, and risk workshops.

Detailed climate change and natural hazard risk assessment for South Dunedin

Purpose: Formally assess climate/hazard risk in South Dunedin Lead: Contractor (TBC)
Timeframe: 2023/24 Status: Planned Support: Programme Team

A 'third pass' or detailed risk assessment would focus specifically on South Dunedin, enabling further investigation of particular areas of risks, and prioritisation and testing of potential strategies and actions in conjunction with the vulnerability assessments. This detailed assessment would be informed by consolidated hazards information, spatial information on community characteristics and priorities, and the spatial long list of potential adaptation options.

PHASE: WHAT CAN WE DO?

Detailed review of national and international adaptation options

Purpose: Identify best practice adaptation relevant to South Dunedin Lead: Contractor (TBC)
Timeframe: 2022/23 Status: Planned Support: Programme Team

Climate change adaptation is an emerging, and rapidly evolving discipline. There is a wide range of research, analysis, and best practice being undertaken nationally and internationally. There are also mistakes being mad and lessons to learn. Adaption is highly localised, in that solutions applied in one place may not necessarily transfer to others. While there is value in reviewing what is happening elsewhere, it will not necessarily provide a blueprint for South Dunedin. It will be important to incorporate as much of this knowledge and learning into the programme so that it can inform development of the best possible climate change adaptation options for South Dunedin. Building the research undertaken in 2014 (Assessment of Options for Protecting Harbourside and South City from Direct Impacts of Sea Level Rise, Beca), and 2017 (Protection Options for Managing Rising Groundwater in South Dunedin, Golder) and informed by knowledge gained and programme structures established since, this work would seek to undertake a more detailed review of national and international adaptation practices of relevance to South Dunedin. The specific purpose of the review would be to inform development of the long list of adaption options.

Develop long list of generic adaptation options

Purpose: Understand what adaptation options are on the table Lead: SDF Programme Team
Timeframe: 2022/23 Status: Planned Support: Various

This first stage of work to develop a long list of generic adaptation options would be informed by the consolidated natural hazards information, and detailed review of national and international adaptation options. It is anticipated that the list of options would straddle the spectrum of 'fight to flight', grouped into four categories: (i) accommodate: adjust existing assets by using measures that anticipate hazard risk; (ii) protect: hold the line using natural buffers, like dunes, or hard structures, like seawalls; (iii) retreat: move existing people and assets away from the risk areas in a managed way over time; (iv) avoid: stop putting people and assets in harm's way, primarily using land-use planning measures. Council approval would be sought before engaging the community on the long list of adaptation options.

Engage community on long list of generic adaptation options

Purpose: Engage community in assessment of long list options Lead: SDF Programme Team
Timeframe: 2023 Status: Planned Support: TBC

One of the findings from community engagement to date is a community desire to shift the conversation from what is happening to what we could do about it. Responding to that signal, this work seeks to introduce the community to a wide range of potential adaptation options which could potentially be deployed in response to the natural hazards affecting South Dunedin now and in the future. The intention would be to engage the community on the hazards, and potential adaptation options, without getting into specific details around locations, timeframes, or combinations of options – which would come at a later stage. It is anticipated that this process would need to incorporate best practice science communication approaches, seeking to reach to widest possible cross section of the community, through a range of methods (e.g. visuals, video, infographics, etc). The intention is to build understanding of hazards and options, creating a foundation for future discussions about narrowing the range of options, and identifying preferred approaches.

Develop spatial longlist of adaptation options

Purpose: Identify where particular options might be deployed
Timeframe: 2023/24
Status: Planned
Lead: SDF Programme Team
Support: TBC

The second stage of the adaptation options work would seek to incorporate findings from community engagement on the long list, as well as the spatial analysis of community characteristics and priorities, to identify where particular options might be deployed in South Dunedin. By adding these spatial layers, it would be possible to illustrate where and how adaptation options might meet a range of programme objectives (e.g. reducing hazard risk, ensuring equitable outcomes, improving urban form, etc) if deployed in particular parts of South Dunedin. It is anticipated that this would illustrate how risks, objectives, and potential adaptation options may vary across South Dunedin (i.e. single option or one-size-fits-all solution may not meet programme objectives). Council approval would be sought before engaging the community on the spatial long list.

Engage community on spatial longlist of adaptation options

Purpose: Engage community in assessment of spatial long list
Timeframe: 2023/24
Status: Planned
Lead: SDF Programme Team
Support: TBC

The introduction of a spatial component, specifically identifying where particular hazards are present and where corresponding adaptation options could potentially be deployed, would provide partners and stakeholders with a more complex picture of the adaptation challenge in South Dunedin. By introducing other spatial information, such as community views and values, socio-economic information, and findings of the initial climate change risk assessment, the community would be in a position to consider the respective merits, and range of potential trade-offs, associated with each adaptation option. The engagement is intended to identify community reactions to the spatial long list and to use this to inform development of the short list.

Develop spatial short list of adaptation options

Purpose: Narrow down the options to a shortlist
Timeframe: 2024
Status: Planned
Lead: SDF Programme Team
Support: TBC

The third stage of the adaptation options process would seek to narrow the long list of options to a spatial short list, incorporating the findings of the detailed climate change and natural hazards risk assessment, vulnerability assessment, and community engagement on the spatial long list. This process would involve additional technical work to more fully investigate options as well as some form of business casing process to interrogate the relative merits of each option against a set of agreed criteria (e.g. impact, efficiency, effectiveness, value for money, sustainability, etc). This process would also need to identify how different options, in different cells within South Dunedin, could combine over varying timeframes to present a coherent and viable adaptation response (or set of responses). Council approval would be sought before engaging the community on the spatial short list.

Engage community on spatial short list of adaptation options

Purpose: Engage community in assessment of short list
Timeframe: 2024/25
Status: Planned
Lead: SDF Programme Team
Support: TBC

Engaging the community on a spatial short list of adaption options would likely seek to focus discussion on one or two options, or combinations of options, per cell. It would also seek to take the community through the complexities of stitching each cell together, to form a coherent adaptation response for wider South Dunedin (i.e. particular options may be required, or avoided, in particular cells to make the larger picture work). The intention would be to enable the community to substantively input into the assessment of remaining options, for each cell and for the wider South Dunedin, creating a hierarchy according to agree criteria or objectives.

Develop preferred adaption options, triggers and pathways

Purpose: Finalise combinations of options for each area
Timeframe: 2024/25
Status: Planned
Lead: SDF Programme Team
Support: TBC

This work would seek to develop a final set of adaptation options, across different time periods, for each cell and the entire programme area of South Dunedin. Informed by technical information and findings from community engagement, it would also seek to determine at what point a switch between particular options would be triggered (e.g. sea-level rise or ground water reaches *X,* a particular piece of infrastructure reaches end of life, *X* number of new houses have been developed, etc.). The options and triggers would be combined into pathways, and aggregated across cells, to form a suite of options and pathways for South Dunedin. This would provide an outline for how South Dunedin might change over time in adapting to climate change. Council approval would be sought before engaging the community on preferred options, triggers and pathways.

Engage community on preferred options, triggers and pathways

Purpose: Engage community in finalising preferred options
Timeframe: 2024/25
Status: Planned
Lead: SDF Programme Team
Support: TBC

This engagement would likely focus on working with the community to fine-tune how different options, triggers and pathways would fit together to form a coherent whole, and to meet programme objectives. This engagement would not seek to relitigate options, unless new information has become available (e.g. new hazard information not previously considered, new options not previously available, etc) that would have a material impact on preferred options.

Agree preferred options, triggers and pathways

Purpose: Formally adopt preferred options and pathways
Timeframe: 2025
Status: Planned
Lead: SDF Programme Team
Support: TBC

This stage would seek to incorporate findings of the community engagement on options, triggers and pathways, make final adjustments, and seek Council approval.

PHASE: MAKE IT HAPPEN.

Develop draft climate change adaptation strategy

Purpose: Capture everything in a single document
Timeframe: 2025
Status: Planned
Lead: SDF Programme Team
Support: TBC

This action would involve consolidating the entire work programme into a strategy, which may need to take the form of several documents, in order for it to be accessible and digestible for a wide range of stakeholders, while also capturing the complexity (process undertaken, options considered, decisions made, supporting technical information and rationale) that was involved.

Consult draft adaptation strategy across Councils and Government

Purpose: Align strategy with Council and Government work
Timeframe: 2025
Status: Planned
Lead: SDF Programme Team
Support: TBC

The adaptation strategy would need to guide strategy, policy, planning, budgeting and decision making across DCC and ORC, so would require consultation to ensure it was fit for purpose and appropriately aligned to corporate processes. The expectation is that the programme would have engaged extensively with internal stakeholders throughout the process, nonetheless a dedicated consultation process would likely have merit. Similarly, the strategy should also guide central government activity in South Dunedin, so relevant agencies would also be consulted at this stage.

Finalise Climate Change Adaptation Strategy

Purpose: Formalise climate change adaptation strategy
Timeframe: 2025
Status: Planned
Lead: SDF Programme Team
Support: TBC

Following consultation of the draft strategy with Councils and central government stakeholders, a final adaptation strategy would be presented to Councils for approval. This would include an indication of next steps, including developing an implementation plan.

Co-develop implementation plan with partners and stakeholders

Purpose: Determine how the strategy will be delivered
Timeframe: 2025/26
Status: Planned
Lead: SDF Programme Team
Support: TBC

Following approval of the adaption strategy, a further series of engagements with partners and stakeholders would be required to develop an implementation plan. This would essentially focus on how best to integrate the key elements of the strategy into the business-as-usual functions of central government, councils, mana whenua, private sector and other stakeholders.

Finalise implementation plan with Councils

Purpose: Seek formal approval of the implementation plan
Timeframe: 2026
Status: Planned
Lead: SDF Programme Team
Support: TBC

This would involve seeking Council approval for the final implementation plan. At this stage it is not envisaged that the implementation plan would require substantive additional resourcing, rather the plan would focus on how the adaptation strategy would be operationalised through existing structures and mechanisms (i.e. through council corporate planning processes, such as long term plans, annual plans, strategic and operational planning and budgeting). This should limit the transaction cost for implementing entities.

Integrate strategy and implementation plan into Council corporate planning processes

Purpose: Embed the strategy and implementation plan in BAU
Timeframe: 2026
Status: Planned
Lead: SDF Programme Team
Support: TBC

This process would essentially involve different teams and departments within DCC and ORC incorporating the adaptation strategy into their respective corporate planning processes, so that it becomes fully integrated into business-as-usual operations (without necessarily requiring new systems, projects or budgets). For example, this process might involve the property team using the adaptation strategy as a guide for making strategic land purchases, transport teams might use it to inform transport network design, and three waters renewal and replacement programmes might be adapted to reflect changing pressures to the network. Over time, such practice should embed adaptation into all decision making across council.

PHASE: HOW IS IT WORKING?

Develop systems to monitor and evaluate adaptation strategy and implementation plan

Purpose: Agree how to track progress and measure success
Timeframe: 2025/26
Status: Planned
Lead: SDF Programme Team
Support: TBC

Monitoring and evaluation (M&E) is a combination of data collection and analysis (monitoring) and assessing to what extent a program or intervention has, or has not, met its objectives (evaluation). This contributes to an understanding of changing risks over time, and helps with timely responses to anticipated future levels of risk. This stage will involve determining processes for monitoring specific signals (e.g. increasing frequency of flood events, rising insurance premiums, etc.) and triggers (e.g. flood event reaching *X* height, insurance withdrawal, etc.); and for monitoring, evaluating and reporting on the success of the adaptation strategy (e.g. are the options and pathways enabling us to stay ahead of the risks, while also avoiding making changes prematurely, or causing unnecessary disruption?).

Monitor signals and triggers; review and evaluate progress

Purpose: Monitor developments so we know when to change
Timeframe: 2026
Status: Planned
Lead: Programme Team
Support: TBC

Regular monitoring would be undertaken to build an understanding of the changing risks over time, to determine if and where signals and triggers are presenting, and to assess the extent to which the adaptation strategy and plan are effectively responding.

Adjust strategy and implementation plan to account for monitoring and review findings

Purpose: Make sure the strategy and plan remain fit for purpose Lead: Programme Team
Timeframe: 2026 onwards Status: Planned Support: TBC

Regular monitoring of the effectiveness of the current adaptation options and pathways against agreed objectives and new information (e.g., on hazards, global emissions, rates of sea-level rises, etc) or in response to social, cultural and economic changes, may lead to adjustments to the adaptation strategy or implementation plan to ensure it remains fit for purpose. Changes to the implementation strategy or plan would require approval of Council.

Recommend shifting between adaptation options and pathways

Purpose: Time changes to minimise risk, maximise opportunity Lead: Programme Team
Timeframe: 2026 onwards Status: Planned Support: TBC

Where monitoring systems determine that a change is required, for example from one adaptation option or pathway to another in response to an agreed signal or trigger, a recommendation would be made to Councils to formally endorse this change.

Implement shift between options and pathways

Purpose: Adapt before risks become intolerable or costs unaffordable Lead: Programme Team
Timeframe: 2026 onwards Status: Planned Support: TBC

Implementation of shifts between adaptation options or pathways would most likely require changes to be actioned via council corporate planning processes (for example, shifts in budgets from one department to another, reflecting a change in emphasis or approach). At this stage it is envisaged this would be processed through existing corporate planning mechanisms (e.g. annual planning and budgeting processes and long term strategy planning, noting options, pathways and triggers should have been signalled in advance so will have been a factor in longer term planning).

ANNEX 5 – GLOSSARY

Activity means a specific initiative (project, piece of work, etc.) that is over and above business as usual and which is intended to produce an output or product relevant for the programme.

Adaptation (to climate change) in *human systems*, is the process of adjustment to the actual or expected climate and its effects, to reduce harm and take advantage of new opportunities. In *natural systems*, adaptation is the process of adjustment to actual climate and its effects.

Adaptation options are the array of strategies, approaches and measures that are available and appropriate for addressing adaptation.

Adaptation pathways are a series of adaptation choices involving trade-offs between short-term and long-term goals and values. These are processes to identify solutions that are meaningful to people in the context of their daily lives and to avoid potential maladaptation.

Assumption is a statement that is taken to be true for the purposes of planning, but which could change or turn out to be untrue at a later stage.

A programme **benefit** is a measured improvement that results from a programme outcome. It should be perceived as an advantage by one or more stakeholders and contribute towards an organisational objective(s).

Business-as-usual describes when something is working or continuing in the normal or usual way. For councils, it means day-to-day work that is planned and budgeted for in normal corporate planning processes and delivered with existing resources.

Communications is the imparting or exchanging of information by speaking, writing, or using some other medium. It is predominantly a one-way process.

Community refers to a group of people living in the same place or having a particular characteristic in common. In the context of the programme, it means those living in South Dunedin or those who have a direct interest in South Dunedin. ***Affected communities*** refers to communities that are or will be directly affected by the natural hazards and changing physical environment impacting South Dunedin, and those who are or will be directly affected by any adaptation undertaken in response.

Core functions refers to the roles and functions of councils as required under the Local Government Act 2002, including but not limited to, strategy, policy, planning and operational functions (link).

Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing such as variations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.

Climate change mitigation is a human intervention to reduce greenhouse gas emissions or enhance the absorption of greenhouse gases in sinks.

A programme **dis-benefit** is a measured decline resulting from a programme outcome. It is normally perceived as negative by one or more stakeholders, which detracts from an organisational objective(s). A disbenefit could also be a side effect or unintended consequence of programme outputs or outcomes.

Dynamic adaptive planning pathways (DAPP) is an approach that identifies ways forward (pathways) despite uncertainty, while remaining responsive to change should this be needed (dynamic).

Engagement (also 'community engagement') is a process for making decisions that incorporates the interests and concerns of all affected stakeholders and meet the needs of the decision-making body. Engagement is a two-way process, where community inputs shape decision-making.

Equity is the principle of fairness in burden sharing and is a basis for understanding how the impacts and responses to climate change, including costs and benefits, are distributed in and by society. This includes who participates and controls the processes of decision-making.

Issue is a relevant event that has occurred, or is occurring, that was unwanted or unplanned and requires management.

Just transition is an approach to adapting to the effects of climate change in a way that is fair, locally led, and where the impacts and opportunities that may arise from the transition are more evenly distributed. Transitions have traditionally disadvantaged some groups more than others. In a *Just Transition*, this is acknowledged and incorporated into planning to make the transition more fair, equitable and inclusive.

Maladaptation involves actions that may lead to increased risk of adverse climate-related outcomes, including via increased greenhouse gas emissions, increased vulnerability to climate change, or diminished welfare, now or in the future. Maladaptation is usually an unintended consequence.

Objective is a thing aimed at or sought, such as a goal. In the context of the programme, there are both strategic objectives and operational objectives.

Operational objectives are attainable, action-oriented, shorter term statements or goals of the programme. They address both what will be delivered and *how*, describing the desired way in which the programme will move from a current to future state.

Outcome is the result of change, such as an effect on status quo behaviours or circumstances. An outcome can be the result of one or more outputs.

Output is a tangible or intangible product resulting from a planned activity.

Programme is a temporary, flexible organisation created to coordinate, direct and oversee the implementation of a set of related projects and activities in order to deliver outcomes and benefits related to the organisation's strategic objectives.

Programme Action refers to the specific activities to be undertaken by the programme to deliver the outputs and outcomes necessary to achieve the programme's strategic intent. These are generally over and above what would commonly be considered business-as-usual activity of Councils.

Programme Plan is a document that consolidates and summarises the wide range of information that has been used to define, and will be used to control and track progress of the programme

Project is a temporary initiative created to deliver an output or set of outputs in order to achieve a specific objective.

Partner in the context of the programme refers to the Dunedin City Council (DCC), Otago Regional Council (ORC), or mana whenua (collectively "the partners").

Partnership refers to the relationship between the Dunedin City Council (DCC), Otago Regional Council (ORC) and mana whenua.

Risk is an uncertain event or set of events that, should it occur, will have an effect (usually negative) on the achievement of objectives. A risk, should it occur, becomes an issue.

South Dunedin, in the context of the programme, refers to an area of predominantly flat land within the rainfall catchment that drains into southern Dunedin city area. It is acknowledged that there will be many different definitions and interpretations of what constitutes 'South Dunedin', in both a geographical and social sense.

South Dunedin Future Programme is the collection of work intended to support development, and facilitated delivery of, climate change adaptation options for South Dunedin.

Stakeholder is any individual, group or organisation that can affect, be affected, or perceives itself to be affected by the South Dunedin Future programme.

Strategic intent refers to the collection of strategic and operational objectives of the programme, as well as the key work streams within or related to the programme that are expected to contribute.

Strategic objectives are broad statements that describe the high-level and big-picture goals of the programme. They primarily address *what* will be achieved and are intended to provide a bridge from a current state to a desired future state.

Sustainability means adopting practices or approaches that have the quality of being able to continue over an extended period of time (generally, without negative effects). Sustainable development is defined as meeting the needs of the present, without compromising the ability of future generations to meet their own needs (e.g. intergenerational equity).