Section 1 – Major Issues and Strategies

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Introduction

This section provides the economic, social, cultural and environment context for the LTP. The major content pieces include the major issues that were consulted on with the public during the LTP consultation and the results of consultation and decision-making, a summary of the Council's strategy framework and approach to sustainability and a profile of the city, the Council's financial strategy, the Council's 30 year infrastructure strategy and an update on Maori capacity to participate in decision-making. Background related to the Council's overall direction is given by the summary of the Council's strategy framework and approach to sustainability. The profile of the city provides demographic, social and economic information about life in Dunedin and identifies some of the challenges and opportunities faced by the city.

Underpinning all of this is the purpose of local government as stated in the Local Government Act 2002:

(a) to enable democratic local decision-making and action by, and on behalf of, communities; and

(b) to meet the current and future needs of communities for good-quality local infrastructure, local public services, and performance of regulatory functions in a way that is most cost-effective for households and businesses.

This purpose is taken into consideration during the development of and in decision-making on the LTP.

Major Issues

The Council consulted on a number of major issues, all of which were intrinsically linked to the financial strategy, the newly required 30 year infrastructure strategy and balancing affordability against the need to continue to take the city forward.

The issues consulted on included the Council's approach to debt management, setting limits on future rates increases, funding of infrastructure renewals expenditure, implementation and funding of decision-making regarding the continued operation of the stadium, issues arising from the development of the infrastructure strategy, funding options for major projects and gauging public opinion about possible funding of new unfunded projects. These issues were described in the consultation document along with options for managing them. A questionnaire was included in the submission form to capture community opinion. The results for the questionnaire are shown later in this section. A copy of the consultation document can be found on the Council website, www.dunedin.govt.nz.

Financial Strategy

When the Council makes a spending decision it must weigh affordability against a range of expenditure needs and obligations around maintaining, renewing and upgrading the core infrastructure it already has, as well as looking to meet community aspirations for new and improved community infrastructure.

None of these decisions can be taken in isolation and that is where the DCC's overarching Financial Strategy is needed. It outlines key financial targets for the Council to meet as it weighs spending decisions in an environment of financial constraint.

Dunedin has come through an intensive period of capital projects and improvements, such as the Forsyth Barr Stadium, Toitu Otago Settlers Museum, Dunedin Town Hall and convention facilities, and extensive water and waste water upgrades. All these projects have pushed up debt levels but the city is now moving into a phase where the focus is on debt reduction.

Two key tenets of the strategy are setting limits on future rates increase and debt levels. The foundation for managing these parameters were laid out in the Financial Strategy developed for the previous LTP.

The Council's stated aim is to keep rate increases as affordable as it can and to only exceed a self-imposed 3% per annum maximum increase in exceptional circumstances. The coming financial year is an example of this with the Council setting a 3.8% rate increase reflecting two main issues – a different way of funding the Forsyth Barr Stadium and reduced income from Dunedin City Holding Limited (DCHL).

How we plan to meet our commitment

Table 1 shows the savings required to be made in order to deliver on the proposed rates increase limit compared to the forecast rates. At present the 10 years of the plan involve a rate increase greater than 3% in seven years and we would need to take $74 million out over the 10 years.

Table 1: Proposed rates and rates increase limit/forecast rates and rates increase limit comparison

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Quantified Rates Limit $ million	130	134	138	142	146	150	155	160	165	170
Proposed Rates Increase Limit %	3.8%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Forecast Rates $ million	130	136	143	149	154	161	165	171	175	180
Forecast Rates Increase %	3.8%	4.9%	5.0%	4.0%	3.9%	4.5%	2.3%	3.9%	2.3%	2.7%
Savings Required $ million per annum	0	2	5	7	8	11	10	11	10	10

For the past three years, 2012/13 – 2014/15, we have met the limits in rates increases set out in the previous Financial Strategy, despite predicted rates rises being much higher. This means that rates are $19 million less than they would have been without the savings that the Council directed be made.

The proposed rates rises are just that – they are not set in stone. Each year the Council reviews its budgets and will continue to take a hard look at what we do and how we do it, including how we buy goods and services and whether there are better ways to provide services to the public at a lower cost. It is envisaged the savings found will mean rates rises fit within the proposed limits.

To reach the limits we will:

- generally not inflation adjust budgets where possible
- continue to seek efficiency gains
- to use Council's assets in a more efficient manner
- find ways to increase revenue
- assess the costs and benefits of all Council investments to ensure we are maximising their return
- make sales of surplus assets that are not required for any strategic purpose.

And – if we think there are 'exceptional circumstances' or we cannot make the target without reducing services – we will consult with the community. This will be done via an annual plan consultation process, with the circumstances and related issues described in the consultation document.

The level of rates increases depends on what the community wants in the way of services and facilities. Adding new projects and lifting service levels add costs which usually have to be passed on through rates rises. Trying to meet growing community expectations can lead to forecast rates increases which are higher than our self-imposed limits. When this happens, we are also committed to having a conversation with our residents about this.

The Council proposed one key change to the Financial Strategy parameters, regarding the target level for total debt by 2021. This would be lifted from $200 million to $230 million to account for the transfer of $30 million debt to the Council from Dunedin Venues Limited (DVL) – the owners of the Forsyth Barr Stadium – to leave them with a more realistic level of debt. This move has no overall effect on the Council's group debt.

The alternative option was to bring forward the $230 million target to 2019 but that would have required lifting the rate increase limit to 4% per year rather than the current 3% per year. This would have allowed 1% each year to be applied to debt repayment.

Under the Financial Strategy the capital expenditure emphasis will now be on infrastructure assets renewals, such as renewing and upgrading Dunedin's underground waste water system which is more than 100 years old in places. The Council proposed that this should be funded out of rates, rather than borrowing.

The Council has also committed to running an operating surplus of greater than zero over a moving three year period. This means ensuring operating revenues meet operating expenses. The Council also intends to fund all depreciation from its operating budget.

Investments held by the Council, through DCHL and city property investments, along with the equities and fixed interest deposits held by the Waipori Fund, are designed to provide a long term revenue stream that is higher than the cost of debt. This produces a net financial gain to the city, which in turn provides a subsidy to rates.

Infrastructure Strategy

Providing essential infrastructure such as roads, footpaths, water supply and waste water and stormwater services – collectively called 3 Waters – is a core part of Council activity. Dunedin's aging infrastructure means careful, strategic asset renewal is needed, along with well-planned maintenance.

By developing a 30 year Infrastructure Strategy as part of the LTP, Council was able to take a long term strategic view and provide greater certainty for financial planning by outlining when operational and capital spending is most likely to be needed during that time. A full copy of the Infrastructure Strategy can be found later in this section.

The forecast expenditure will keep service levels where they are, so any additional services would increase costs or require other work to be reprioritised. Any unexpected events, requiring unplanned spending on assets, would have to be managed in a similar way.

The Infrastructure Strategy highlighted a backlog of an estimated $60 million worth of renewals in the 3 Waters area, due to the number of assets that have become due for renewal in a short period of time. These include cast iron water mains built in the 1920s and 30s which are not delivering suitable water pressure, and earthenware sewer pipes dating back to the early 1900s.

The Council's preferred approach to managing this is to step up spending over the next eight years and then hold it at that level until 2033. Spending will step up from $11.7 million to $22.2 million. This change will allow the Council to catch up the renewals backlog and manage any expenditure peaks and troughs in the longer term.

Even with this extra spending there is still a gap ($88 million) between the Council's proposed funding levels ($612 million) and the theoretical cost of the renewals needed ($700 million). It is expected that, through a combination of refining cost assumptions and delivering projects for less money, the Council can close the 16% gap between theoretical and actual cost to allow the backlog of renewals to be caught up by 2039/40. The Council acknowledges the risk surrounding this and a significant forecasting assumption regarding closing the gap has been included in the LTP. The audit opinion in the consultation document noted the quantum of savings required across the 10 years of the plan as an emphasis of matter.

We are confident that the funding gap can be closed through a combination of reviewing the cost assumptions to reflect packaging of procurement, network rationalisation and programme optimisation, as well as by delivering projects at reduced cost through smarter procurement and multi-service projects (including place-based planning) which will enable smoothing of the required spend. Furthermore, the market has been primed for the delivery of increasing capital works programmes. Over the next one to two years, as further condition assessment continues to improve our knowledge and efficiencies of a new structure are bedded in, our ability to meet the 16% target and therefore catch up the backlog by 2040 will become clearer.

Stadium

A review of the operation and ownership of the stadium leading up to the drafting of the LTP highlighted a range of issues that needed to be resolved.

Stadium budgets were too optimistic and required annual ratepayer top ups. The level of rent payments, amount of debt and a lack of funding for future asset renewals had to be addressed.

The Council proposed making a suite of changes including making the stadium's owners, Dunedin Venues Limited (DVL), and the stadium operators, Dunedin Venue Management Limited (DVML), subsidiaries of Dunedin City Holdings Limited (DCHL), reviewing the rent charged to the operator, DVML, transferring $30 million of debt to the DCC and making an allowance of $10.5 million for maintenance and renewals over the next 10 years from 2015/16 to 2024/25.

In summary, the following changes were proposed and have now been confirmed by the Council.

- Dunedin Venues Limited (DVL – the stadium owner), and Dunedin Venues Management Limited (DVML – the stadium operator), become subsidiary companies of Dunedin City Holdings Limited (DCHL). In addition, their boards will be restructured and made independent. These changes will clarify responsibilities and lines of accountability and provide the commercial focus required to run the Stadium. This means that the governance arrangement for the Stadium companies will be consistent with all other Council companies.
- The current rent charged to DVML is $4 million a year. The rent will be reviewed to ensure it is set at a market level with the expectation of a rent reduction.
- The current level of debt sitting with DVL (the Stadium owner) is too high and unsustainable for a company owning this type of asset. Therefore, $30 million of debt will be transferred from DVL to the Council; reducing DVL's debt to equity ratio (an accounting ratio) to a more appropriate amount.
- An allowance is made in the budget of $10.5 million for maintenance and renewals, spread over 10 years between 2015/16 and 2024/25.

The Council's aim is to have the $30 million of stadium debt repaid by 2031. The Council has taken a staged approach to achieve this. From 2015/16 to 2021/22 the ratepayer contribution towards the Stadium will be $11,350,000. At this level, the $30 million of Stadium debt would be repaid over a 20 year term. From 2021/22 to 2030/31, the ratepayer contribution increases to $12,150,000 annually. This increase in ratepayer contribution applied to Stadium debt from 2021/22 enables debt to be repaid over a 16 year period (namely by 2031) but allows for smoothing of the rate increases over the period of the LTP budgets.

Other options were consulted on, including closing down and demolishing the stadium. This option was ruled out by the Council.

The other main option available was to stick with the status quo which would have left the stadium owners and operators continuing to need unbudgeted annual ratepayer top ups to meet unrealistic budgets.

Other Consultation Items

The Council asked for feedback from the community on potential changes to funding for several major projects and on several items that were of significance to the community, some of which were not funded in the draft LTP budget.

Funding Options for Major Projects

The Council asked for feedback from the community on potential changes to funding for several projects.

- Central City Plan
- Strategic Cycle Network
- Portobello Road Safety Improvements
- South Dunedin Community Complex
- Funding for City of Literature initiatives
- Funding for the implementation of the Gigatown Plan
- Funding for Otago Museum Projects
- Support for the Dunedin Hospital Therapeutic Pool.

Unfunded Projects

The Council asked for feedback from the community on potential funding for several unfunded projects.

- Upgrading of aquatic facilities in Mosgiel
- Installation of lighting for cricket games at the University of Otago Oval
- Transport safety and accessibility projects in the Mosgiel Town Centre and the University and Polytechnic area.

The results of the LTP consultation and decision making processes are described in the next part of this section.

Results of Consultation

Consultation on the LTP was undertaken between Saturday 28 March and Tuesday 28 April 2015.

During this time 2,178 submissions were received from the public. This is the largest number of submission the Council has received during a draft annual plan or LTP consultation. Comparisons with previous years are shown below.

Consultation	Number of Submissions Received	Number speaking at Hearings
2015/16 – 2024/25 Draft Long Term Plan	2,178	147
2014/15 Draft Annual Plan	1,119	176
2013/14 Draft Annual Plan	262	108
2012/13 – 2021/22 Draft Long Term Plan	1,024	200

Submitters made a total of 3,074 comments on 158 different topics.

The Council received large numbers of pro-forma forms on two topics – Unfunded Aquatic Facilities in Mosgiel – Four New Pool option (around 1,000 hard copy forms) and Portobello Road Safety Improvements – Acceleration of the project (430 on line pro-forma submissions).

During the consultation period nine consultation events were held (public meetings or pop up stalls at public events or shopping centres). This resulted in 849 one to one contacts between the community and elected members. Comments received at these events were provided to the Councillors to inform the deliberation process, along with 55 comments received via social media and the results of a Peoples' Panel Survey on LTP issues completed by 177 panel members.

The LTP submission form contained a questionnaire section with 16 questions relating to the options for the major issues and projects noted in the LTP consultation document and 2,093 submitters chose to complete all or part of the questionnaire.

Results of Consultation and Decision Making

A summary of responses to the submission questionnaire are shown on the next pages. The Council decision on these items is shown in the last column.

Further details regarding decision-making are shown in the Group of Activity section under the group to which the project relates.

A complete record of decision-making can be found in the Minutes of the Draft Long Term Plan Deliberations 18 -22 May 2015 which are available on the Council website.

Summary of results and decision-making on submission form questionnaire items

1	Debt		No. of responses	Council Decision
	Option 1	Proposed – Reducing debt to $230 million by 2021	287	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Reduce debt to $230 million by 2019, by making the annual rate increase 4% per year to allow additional rates to be applied to debt repayment	110	

2	Rates increases		No. of responses	Council Decision
	Option 1	Proposed – 3% unless exceptional circumstance	286	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	4% unless exceptional circumstance	124	

3	Stadium		No. of responses	Council Decision
	Option 1	Proposed – Stadium owned by DCHL; $30 million debt transferred to the Council, funding for renewals allowed in budget:$10.5m over 10 years; more achievable budgets and additional ratepayer funding	334	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Close down the Stadium, demolish and sell (land and materials)	45	
	Option 3	Status quo/do nothing – unbudgeted top ups will be required	32	

4	Infrastructure Renewals		No. of responses	Council Decision
	Option 1	Leave renewals funding at present levels (Service levels will trend down under this option)	61	
	Option 2	Proposed – Step up renewals funding over the 10 years of the LTP	205	Confirmed – The Council adopts the Infrastructure Strategy as consulted on, noting that this incorporates the proposed Infrastructure Renewals Water and Waste Option 2 to step up renewals funding
	Option 3	Add additional funding to the draft budgets to catch up backlog more quickly in the next five years	70	

5	Funding Infrastructure Renewals		No. of responses	Council Decision
	Option 1	Proposed – Fund the additional renewals expenditure by rates	294	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Fund the additional renewals expenditure by debt	24	

6	Central City Plan		No. of responses	Council Decision
	Option 1	Proposed – Paver renewals are accelerated and completed between 2018/19 – 2020/21, urban amenity funding is reprofiled and accelerated between 2018/19 – 2023/24	183	The Council approved the adoption of the Central City Plan; and confirmed the proposed option for the Central City Plan for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Paver renewals are completed between 2017/18 – 2024/25, Urban amenity funding is evenly spread between 2018/19 – 2024/25	135	

7a	Strategic Cycle Network – Project Funding		No. of responses	Council Decision
	Option 1	Proposed – Increase the Council's contribution to $650,000 per year	466	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Reducing the Council's contribution	91	
	Option 3	Maintaining the Council contribution at $340,000 per year	105	
	Option 4	Increase the Council's contribution to maintain the existing $1 million spend per year	48	

7b	Strategic Cycle Network – City to Harbour Pedestrian/Cycle Bridge	No. of responses	Council Decision
	Do you agree with the proposal to include a pedestrian/cycleway bridge from the city to the harbour		Confirmation of decision to include bridge (the resolution regarding this is on the next page)
	Yes	253	
	No	151	

A report on the City to Harbour Pedestrian /Cycle Bridge Funding advised the Councillors that the proposed City to Harbour pedestrian/cycle bridge has been shortlisted for $3 million of funding through the Urban Cycleways Programme. The Council endorsed this proposal and resolved that the Urban Cycleways Programme funding component of the strategic cycle network project be reprofiled as shown below.

Urban Cycleways Programme Funding	2015/16	2016/17	2017/18	Total
Draft 2015/16 – 2024/25 Long Term Plan	$793,000	$774,000	$756,000	$2,323,000
Final 2015/16 – 2024/25 Long Term Plan	-	$200,000	$2,800,000	$3,000,000

The funding profile for the entire strategic cycle network project, with the changes made from draft to final budgets, is shown below.

	2015/16 Budget $	2016/17 Budget $	2017/18 Budget $	2018/19 Budget $	2019/20 Budget $	2020/21 Budget $	2021/22 Budget $	2022/23 Budget $	2023/24 Budget $	2024/25 Budget $
Draft 2015/16-2024/25 Long Term Plan	2,378,000	2,354,000	2,351,000	1,567,000	1,571,000	1,579,000	1,589,000	1,602,000	1,620,000	1,672,000
Final 2015/16-2024/25 Long Term Plan	2,435,000	1,772,000	4,469,000	1,567,000	1,571,000	1,579,000	1,589,000	1,602,000	1,620,000	1,672,000

8	Portobello Road Safety Improvements		No. of responses	Council Decision
	Option 1	Proposed – Bring funding forward and complete the project earlier	818	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	The original plan – project completed over 10 years	136	

9	South Dunedin Community Complex		No. of responses	Council Decision
	Option 1	Proposed – Continue planning and consultation for a South Dunedin community complex funded from the sale of an operational or investment property	239	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Continue planning and consultation for a South Dunedin community complex funded by debt	31	
	Option 3	Status Quo/Do nothing	107	

10	City of Literature		No. of responses	Council Decision
	Option 1	Proposed – Provide additional rates funding to support the work programme for the Dunedin City of Literature Trust	198	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 2	Not to provide any additional funding to the Dunedin City of Literature Trust	162	

11	Gigatown		No. of responses	Council Decision
	Option 1	Continue the existing level of funding	185	
	Option 2	Proposed – Increase funding by $185,000 in 2015/16	220	Confirmed for inclusion in the 2015/16 -2024/25 LTP

12	Otago Museum		No. of responses	Council Decision
	Option 1	Fund 13 projects across the next 10 years	92	
	Option 2	Proposed – Fund six projects over the next three years	213	Confirmed for inclusion in the 2015/16 -2024/25 LTP
	Option 3	Not to provide any funding for these projects	82	

13	Dunedin Hospital Therapeutic Pool		No. of responses	Council Decision
	Option 1	Proposed – Underwrite the operating costs for the pool by up to $100,000 per year for three years from 2015/16 -2017/18	394	Confirmed for inclusion in the 2015/16 -2024/25 LTP Funding is subject to satisfactory progress by the Trust monitored on an annual basis in achieving its fundraising target and providing a sustainable operating budget
	Option 2	Not to provide any financial support	0	

14	Unfunded Mosgiel Aquatic Facilities	No. of responses	Council Decision
	Do you think that the Council should fund improvements to aquatic facilities in Mosgiel?		Decision taken to put placeholder budget of $6 million in 2018-19 for new Aquatic Facilities in Mosgiel. (See full account of decision-making below)
	Yes	1191	
	No	129	

If yes, which option?		No. of responses	Council Decision
Option 1	Upgrade existing pool	113	See full account of decision-making below
Option 2	Two new pools	51	
Option 3	Three new pools	57	
Option 4	Four new pools	1001	

That the Council agree to:

1 support in principle the development of a new aquatic facility complex for Dunedin in Mosgiel

2 fund up to $300,000 from the 2015 under-spend to progress geotechnical investigations and designation of a site, development of design and capital and operating budgets, liaison and communication of progress

3 approves an interest free loan of $50,000 to the Taieri Community Facilities Trust (TCFT) for operational costs to be repaid from early fundraising received once the Council confirmed a decision to proceed

4 acknowledge the substantial progress that TCFT has made in developing the proposal and thank them for their contribution completing the first stage of the proposal

5 request that staff and TCFT work on the development of a new Memorandum of Understanding to be presented to Community and Environment Committee at a later date for ratification."

And subsequently:

1 That the Council includes in the LTP a placeholder of $6 million in 2018-19 for new Aquatic Facilities in Mosgiel noting that staff would:

a) work closely with the Taieri Community Facilities Trust; and

b) report back concept design options and costs by 30 October 2015; and

c) report back developed design options and costs by 30 April 2016.

2 That the Council confirms that the capital expenditure on new aquatic facilities in Mosgiel is subject to the Taieri Community Facilities Trust achieving a fundraising target of $7.5 million, and final Council approval of the project."

The Council also noted information on the funding options for a new aquatic facility in Mosgiel.

15	Unfunded Cricket Lighting for University Oval		No. of responses	Council Decision
	Option 1	Fully fund the purchase and installation of lights	94	
	Option 2	Provide partial funding	208	Funding of up to $1 million from any underspend in the 2014/15 year for the establishment of cricket lights at the University of Otago Oval. If the underspend proved to be less than anticipated, the sum provided would be reduced accordingly. Subject to a number of conditions*
	Option 3	Do not provide any funding	163	

* The funding would be subject but not limited to the following conditions:

1. that the Otago Cricket Association need to demonstrate that they were in a position to guarantee meeting match preparation payments
2. that the light stands were specifically branded as approved by the Council
3. subject to Otago Cricket meeting the balance of fundraising required
4. subject to the works to increase ground seating capacity being completed as agreed, at Otago Crickets cost

5. that the lighting design specifically meets the Council requirements for operational efficiency and not focus on actual costs alone
6. that the Council's lighting design requirements include consideration of feedback from the Council's Dark Night Sky Advisory Group and other sports users of the grounds.

16	Unfunded Transport Projects			
16a	**University of Otago and Otago Polytechnic area**		**No. of responses**	**Council Decision**
	Option 1	Provide $1.05 million in budgets for safety and accessibility improvements	158	That the Council continues to note the unfunded Tertiary Precinct Transportation project (option a) as a line item in the 2015/16 – 2024/25 LTP; and That the Council request staff continue to work with project partners, to scope funding requirements and timing, and report back no later than XXX for development of the 2018/21 – 2027/28 LTP.
	Option 2	Do not provide any funding	180	

16b	**Mosgiel Town Centre**		**No. of responses**	**Council Decision**
	Option 1	Provide $2 million in budgets for safety and accessibility improvements	170	The Council notes and supports in principle the Mosgiel Town Centre Upgrade as a line item in the current Regional Land Transport Plan and requests a report back in time for the 2016/17 annual plan process with more detail on the proposed scope, budget and timing.
	Option 2	Do not provide any funding	177	

Other decisions made during the deliberations

City Safety

Grant funding from Ministry of Justice Crime Prevention and Community Safety Grant has ceased. The Council approved $40,000 annual funding to be included in the LTP for the continuation of City Safety Initiatives and in particular the CSO patrols.

Ara Toi Ōtepoti – Our Creative Future Dunedin Arts and Culture Strategy

In May 2015, following consideration of a report on Ara Toi Ōtepoti – our creative future: initial actions for adoption, the Council resolved to provide the following funding to the Community Development activity to implement the initial actions from the strategy:

- a further $100,000 for community arts development
- $50,000 for the establishment and operation of an Urban Dream Brokerage franchise
- $25,000 to advance Ara Toi's public art objectives.

This city wide strategy was adopted in April 2015 and also has links with the Economic Development Strategy and work streams in Enterprise Dunedin.

Cosy Home Charitable Trust Funding

The Council approved funding of $50,000 to the Cosy Home Trust from the Consumer Electricity Fund and asked that the Trust demonstrates the achievement of independent funding to enable achievement of the Trust's goals before renewal of this funding in future years.

Warm Dunedin Scheme

The Council resolved to continue the scheme in the 2015/16 year with the existing debt level being carried forward.

Dunedin Public Libraries

The Council resolved to maintain the existing levels of $913,200 for Dunedin Public Libraries collections for 2015/16 and 2016/17, and $68,200 for Heritage Collections by drawing down funds from the Reed Trust and RJ Trust. The Council also resolved to maintain the current opening hours of the McNab Room within existing budgets.

Matters referred to Community Boards from the Deliberations

Management of sycamore trees in the Port Chalmers Community Board area.

Waikouaiti waste transfer station – requirements to be discussed with the community by the Waikouaiti Coast Community Board.

Matters referred to Standing Committees from the Deliberations

A submission from Trustpower Limited concerning the commercial rating differential in the Strath Taieri district has been referred to the Finance Committee.

Reports requested from the Deliberations

Central City Plan – staff are to continue to work with project partners, to scope funding requirements and timing, and report back no later than for development of the 2018/19 – 2027/28 LTP.

Ara Toi Ōtepoti – Our Creative Future, the Dunedin arts and culture strategy – a report requested for inclusion in the 2016/17 Annual Plan discussions on future funding levels.

South Dunedin Community complex – staff are to report further on the practicality and cost of locating the South Dunedin Library complex in the South City Mall.

Unfunded transportation projects – a report requested in time for the 2016/17 annual plan process with more detail on the proposed scope, budget and timing of both the Mosgiel Town Centre Upgrade and the Tertiary Precinct Safety and Accessibility Upgrade.

Unfunded transportation projects – Tertiary Precinct Safety and Accessibility Upgrade – a request for staff continue to work with project partners, to scope funding requirements and timing, and report back no later than for development of the 2018/21 – 2027/28 LTP.

Strategic Framework

Our Vision: Dunedin is one of the world's great small cities.

We have a thriving economy, a connected and supportive community and a distinctive built environment. We are active, safe and healthy, vibrant and creative, and sustainable and resilient. We are a city of learning and we value and protect our natural environment.

To help direct the city's limited resources towards achieving this vision, the Council, along with the community and stakeholders, has been developing a strategic framework with key priorities for investment, effort and development.

Five of the key strategies are now in place:

- the 3 Waters Strategic Direction Statement 2010-2060 sets out how we will ensure the city has safe, reliable and affordable water services
- the Spatial Plan shapes how we'd like Dunedin's places and spaces to develop
- the Economic Development Strategy sets out priorities for increasing jobs, income and investment
- the Social Wellbeing Strategy outlines how we'll foster inclusive communities and quality lifestyles
- the 30 year Integrated Transport Strategy sets priorities for how the safe and efficient movement of people and goods will be supported.

The Arts and Culture Strategy – Ara Toi Ōtepoti: Our Creative Future, which will guide future support and investment in arts and culture, was adopted by the Council on 28 April 2015. Work has begun on the last two pieces of the strategic framework 'puzzle' – the Environment and Parks and Recreation Strategies. These will outline how we will enhance our spectacular natural environment and make Dunedin a fun, green and active city, respectively.

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

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

Within the current financial environment, the Council cannot fully resource each priority at once. While each priority will be resourced to some degree by the Council and the wider community, the Council has identified areas on which to focus its constrained resources over the next three years. These are:

- supporting economic development, for example implementing the Gigatown Plan to maximise the benefits of Dunedin having the fastest internet in the Southern Hemisphere
- improving the look and feel of the central city and local centres, continuing the Warehouse Precinct revitalisation, supporting the restoration and re-use of built heritage and central city amenity improvements
- improving the sustainability of the city's resource use and enhancing our biodiversity and natural environment

- improving the efficiency, convenience and safety of the transport network, including funding for the strategic cycle network and exploring transfer governance of public transport from the Otago Regional Council
- continuing to pay down Council debt while limiting rates increases to affordable levels.

While making decisions in alignment with the strategic framework, that seek to deliver the community outcomes developed through the 'Your City Our Future' engagement process, the Council is committed to maintaining the core levels of service expected by the community and meeting legislative requirements.

Community Outcomes

At the centre of the strategic framework are the set of 'community outcomes' that the Council and community agreed upon following the 'Your City Our Future' engagement process in 2010. While legislation has moved on and the strategic framework has been developed since the outcomes were first established, they remain relevant as they describe what Dunedin will look like as one of the world's great small cities and are the ultimate goals the Council is aiming to help deliver. These outcomes are:

- a thriving and diverse economy; Dunedin has an ambitious, prosperous, diverse and resilient economy that builds on its strengths
- a connected community; Dunedin's communities are connected by effective transportation and communications, linked locally, nationally and internationally
- a safe and healthy city; Dunedin is a clean, green, crime-free city where people feel safe and enjoy a healthy lifestyle
- a distinctive built environment; Dunedin is a compact city with a vibrant centre for people to work, live and play; complemented by thriving suburban and rural centres
- a valued and protected natural environment; Dunedin is recognised as a place with outstanding natural environments and significant biodiversity. Our distinctive rural and coastal landscapes are sustainably managed and protected
- a supportive community; Dunedin's citizens feel included and connected with their wider community and enjoy a good quality of life
- a vibrant and creative city; Dunedin is a city known for its diverse and engaging arts and culture
- a city of learning; Dunedin is a leading city of education, and its community engages in lifelong learning
- an active city; Dunedin's people lead active, healthy and enjoyable lifestyles
- a sustainable and resilient city; Dunedin is a resilient city with communities prepared for the impacts of climate change and extreme natural events, and reduced reliance on non-renewable resources.

The Council is only one of many organisations who work towards achieving these outcomes. A summary including the outcome priorities which describe what our city will be like and the indicators we use to measure the city's progress towards achieving this can be found on the next page. More detail on these outcomes can be found in the 2012/13 -2021/22 LTP, Section 1, pages 21-35.

Summary of Dunedin City's Community Outcomes (as agreed for the 2012/13 – 2021/22 LTP)

Outcome	Vision/definition	Priorities/Outcome Goals (What our will city be like)	How will we know we are making a difference (Community Outcome Indicators)
A THRIVING AND DIVERSE ECONOMY 	Dunedin has an ambitious, prosperous, diverse and resilient economy that builds on its strengths.	A city that grows businesses and industries through added value/productivity. A city that encourages employment opportunities for everyone. A city that actively attracts visitors, skilled staff and entrepreneurs and investors. A city that encourages creativity, research, and entrepreneurial excellence and ambition. A city where alliances between local businesses, community, education and research providers offer mutual benefit.	• Growth in full time equivalent jobs • Growth in real GDP per capita • Growth in the number of Dunedin businesses awarded Callahan Institute Research and Development Grants • Growth in total visitor nights • Growth in the value of international education
A CONNECTED COMMUNITY 	Dunedin's communities are connected by effective transportation and communications, linked locally, nationally and internationally.	Dunedin's transport network is integrated and responsive to changing needs and future challenges. Dunedin is safe and easy to get around for cyclists and pedestrians. Communications networks, roading, air, and port links are world-class, efficient and safe. Dunedin's public transport system meets the community's needs.	• Means of travel to work/school (mode of commute) • Perceptions of convenience of public transport (% agree) • Frequency of bus use (at least once per week) • Number of international flights per week • Passenger loadings (international and domestic) • Value of goods loaded at Port Otago ($ million) • Increase in length of cycle lanes (on and off road) • Road safety crash statistic measures: • Number of injury crashes (number of casualties) • Pedestrian vs vehicle casualties • Cyclist vs vehicle casualties

Outcome	Vision/definition	Priorities/Outcome Goals (What our will city be like)	How will we know we are making a difference (Community Outcome Indicators)
A SAFE AND HEALTHY CITY 	Dunedin is a clean, green, crime-free city where people feel safe and enjoy a healthy lifestyle.	Dunedin has resilient water supply, wastewater and storm water infrastructure that meets best practice environmental standards.	• Total recorded crime (reported incidents) • Feel safe in city centre during the day • Feel safe in city centre during the night • Feel safe at home during the day • Feel safe at home during the night • Experience of barriers to general practitioners (% no barrier) Some indicators previously used for water and waste services are now mandatory DIA measures and are reported at activity level.
		A clean city with high-quality solid waste and recycling infrastructure.	
		Dunedin is a place where people are safe in their homes, work and public spaces.	
		Dunedin's housing is warm and healthy.	
		People have access to affordable healthcare services, and existing hospital services and medical research capacity are retained.	
A DISTINCTIVE BUILT ENVIRONMENT 	Dunedin is a compact city with a vibrant centre for people to work, live and play; complemented by thriving suburban and rural centres.	Dunedin is enhanced through quality architectural, urban and landscape design.	• Perception of the value of the city's architecture (% positive) • Number of properties and structures protected under District Plan that are demolished
		Dunedin's built heritage is valued and heritage buildings are in active reuse.	
		Dunedin's central city area is the vibrant focal point for urban life, supported by a hierarchy of successful suburban and rural centres.	
		Development respects the unique character of Dunedin as a compact harbour city enclosed by hills.	
A VALUED AND PROTECTED NATURAL ENVIRONMENT 	Dunedin is recognised as a place with outstanding natural environments and significant biodiversity. Our distinctive rural and coastal landscapes are sustainably managed and protected.	Our rural and coastal landscapes are protected and maintained.	• Air quality–number of days PM10 Standards exceeded • Recreational water quality (number of times it is not safe to swim at popular swimming locations) • Areas of Significant Conservation Value (hectares and km) • Total area of indigenous habitat in Dunedin protected by the District Plan, DCC reserve land and land held under QEII covenants and other statute-based protective mechanisms
		Dunedin's wildlife and natural habitats (flora and fauna) are respected and enhanced.	
		Dunedin's people value the natural environment and are the custodians of a regenerative and flourishing natural environment.	
		We lead by example in environmental practices and promote awareness of impacts of human activity on our local environment.	

Outcome	Vision/definition	Priorities/Outcome Goals (What our will city be like)	How will we know we are making a difference (Community Outcome Indicators)
A SUPPORTIVE COMMUNITY 	Dunedin's citizens feel included and connected with their wider community and enjoy a good quality of life.	A city that supports strong and connected neighbourhoods and communities.	• Perceptions of quality of life (% extremely good or good) • Residents sense of community within their local community • Residents perception that Dunedin recognises and supports cultural diversity
		People have a sense of belonging and actively contribute to the wider community and volunteering is encouraged.	
		People are empowered to participate in decision-making and have open access to information.	
		Dunedin communities are inclusive of all people, and the relationship with Kai Tahu is strong.	
		People enjoy a standard of living to enable them to have a positive quality of life and exercise genuine choices.	
A VIBRANT AND CREATIVE CITY 	Dunedin is a city known for its diverse and engaging arts and culture.	Dunedin has a diverse range of arts and cultural facilities and activities, which are accessible to all.	• Number of residents employed in the arts/creative sector (FTE) • Perception that Dunedin is a creative city • Perceptions of city vibrancy – Dunedin is a fun city (% positive)
		Dunedin celebrates the unique identity, character and history of the diverse communities and cultures that makeup Dunedin.	
		Dunedin's legacy of creative and artistic activity is supported and promoted.	
		Dunedin is a city where art is truly valued and integrated in the design and development of the city.	
A CITY OF LEARNING 	Dunedin is a leading city of education, and its community engages in lifelong learning.	Dunedin maintains its reputation as a leading provider of education.	• Number of tertiary enrolments per year
		Dunedin harnesses and shares the knowledge of its tertiary, research and creative sectors.	
		Dunedin provides opportunities and environments that encourage learning and are accessible to all.	
		Dunedin encourages and offers opportunities for interaction and links between the education/learning sector and the community.	

Outcome	Vision/definition	Priorities/Outcome Goals (What our will city be like)	How will we know we are making a difference (Community Outcome Indicators)
AN ACTIVE CITY	Dunedin's people lead active, healthy and enjoyable lifestyles.	A city with a range of recreational, sporting and leisure facilities and opportunities, which are accessible to all. Our city has environments that encourage physical activity and recreation We promote and encourage sporting and recreational events and opportunities.	• Frequency of physical activity (% of nearly every day) • Perception of overall health (rate health as excellent, very good or good) • Ratio of sportsfields to population (hectares per 1,000 population) • Participation at Council-owned pools (total attendances) • The Botanic Garden maintains a grading of "International" Significance from the New Zealand Gardens Trust
A SUSTAINABLE AND RESILIENT CITY	Dunedin is a resilient city with communities prepared for the impacts of climate change and extreme natural events, and reduced reliance on non-renewable resources.	Dunedin is a city where reliance on non-renewable energy sources and oil based products is reduced, and Dunedin's outlying communities and townships are self-sufficient. Dunedin is well prepared to face changing needs and challenges. Dunedin residents prefer to purchase goods and services from within the Otago region. Dunedin has a high quality and secure supply of food from local suppliers and producers.	• Decrease in the waste sourced from within Dunedin and disposed of to DCC landfills in Dunedin (kg/person/year) • Increase in the quantity of diverted material collected via the DCC's collection service for diverted material • Decrease in the number of dry weather sewerage overflows from the DCC's sewerage system, expressed per 1,000 sewerage connections (required under DIA mandatory measures). • Increase in the percent of Dunedin residents who walk, jog, cycle or take public transport to work (Census) • Increase in the percent of Dunedin residents agreeing that Dunedin is a sustainable city (Residents' Opinion Survey) • Increase in the percent of Dunedin residents who feel a sense of community with others in their local neighbourhood (Quality of Life Survey)

These three core sustainability values can be applied to all of Dunedin's community outcomes:

Dunedin is a city where:

We build strong communities, and enable community action on sustainability and resilience issues

We support our local economy, and enable local business resilience

We protect and regenerate our natural resources

Sustainability

Sustainability as a key principle

The Council has adopted sustainability as one of two key principles that cut across all the work we undertake as a key component of our strategic framework. There are three key reasons for this:

- the ambitions of our community
- the legislative requirements
- good business practice.

Taking a sustainability-focused approach is about how we need to change the way we do things to ensure that future generations are not negatively impacted by decisions we make today.

Our vision as a community for a more sustainable Dunedin is set out under the "A Sustainable and Resilient City" community outcome: "Dunedin is a resilient and city with communities prepared for the impacts of climate changes and extreme natural events and reduced reliance on non-renewable resources." The aim is to ensure that we take account of the impacts of all decisions and actions on ourselves, our children and our children's children. This outcome was developed in 2010 and sustainability has become an increasingly important theme in community submissions to the Council.

The Local Government Act 2002 sets a clear direction for local authorities to take a sustainable approach. It requires local authorities to take account of the interests of, and impacts on, future as well as current communities when making decisions. The Act also states that local authorities should ensure prudent stewardship, the efficient and effective use of resources, and take a sustainable development approach. This means taking into account the social, economic, and cultural interests of people and communities, the need to maintain and enhance the quality of the environment, and the needs of future generations.

Sustainability is now widely regarded as good business practice, offering efficiencies, better outcomes and a long-term, strategic approach.

What does the sustainability principle mean in Dunedin?

The Council's vision for a more sustainable Dunedin is driven by the legislation and underpinned by three concepts consistent with the United Nations' 1987 Bruntland Report's definition of sustainability:

- responsible resource use and resilience
- taking a long-term view and considering future generations
- taking account of social, economic, environmental and cultural effects of our decisions.

What is happening in Dunedin around sustainability?

The Council recognises the importance of understanding, and responding to, the risks and benefits for the communities of Dunedin in order to make Dunedin a sustainable and resilient city. The Council is taking steps to embed sustainability into its city decision-making, with the sustainability principle a key aspect of its strategic framework and a sustainable perspective taken in all of the Council's key strategies, policies and plans as these are updated.

There are a growing number of sustainability initiatives taking place across the many different areas of the Council's work, and the intention is for sustainability to be integral to all Council's activities. Some of these initiatives appear in other parts of the Long Term Plan, and in the Council's strategies, policies and plans.

There are some key initiatives of note. At the city level, work that tackles core sustainability challenges for Dunedin is underway, including: moving towards a low-carbon economy, progressing work to facilitate use of more active transport modes, planning for climate change adaptation, improving the quality of our housing, supporting the city to have strong and resilient communities, and managing and minimising our use of key resources like energy and waste. A Sustainability Audit Subcommittee has been established to monitor and report to the Council on how effectively we're meeting the Local Government Act requirements and respecting the sustainability principle. The Subcommittee is also tasked with a resilience planning responsibility. The Council also has an organisational commitment to reducing greenhouse gas emissions from its operations to help reduce costs and achieve sustainability goals. The Council's emissions have been measured and independently verified by Enviro -Mark Solutions Limited and the Council has been certified under the internationally-recognised Certified Emissions Measurement and Reduction Scheme (CEMARS). The measurements showed that Council's largest emission sources are landfill, electricity and LPG, and a plan has now been put in place to reduce non-landfill emissions by 20% from 2013/14 levels within five years.

City Profile

Dunedin – Past

Otago Harbour and its surrounds have long been a magnet for settlement. Successive settlement by Waitaha, Kāti Mamoe and Kāi Tahu established the area's cultural landscape ahead of European settlement by whalers in the early 1830s. Farming began soon after around Waikouaiti and in 1848, Frederick Tuckett chose the site of what is now modern day Dunedin at the head of the Otago Harbour.

Originally settled by the Free Church of Scotland, Dunedin was soon made capital of the Otago province. In 1861, the discovery of gold at Gabriel's Gully brought a growth spurt which saw Dunedin become the country's first city based on population growth. Dunedin quickly became a strong financial base and a centre for industry and engineering, as well as an export centre for agriculture and other primary industries that flourished around the province. All this new found wealth was reflected in many fine private and public buildings that sprang up in Dunedin during its Victorian and Edwardian heyday, leaving a lasting legacy that means we have a modern city that happily embraces its rich and distinct built heritage.

Dunedin – Present

Now, more than 165 years later, Dunedin continues to evolve. The amalgamation of borough and district councils in the 1980s made Dunedin one of New Zealand's largest territorial authority areas, covering 3,340 km – from north of Waikouaiti, to the Taieri River in the south, and the Rock and Pillar Range in the west.

Approximately 95% of Dunedin's total area is zoned rural with vast tracts of productive land which contributes to the economy of the city through farming, forestry and tourism. This rural environment is also important for biodiversity, recreation, water catchments and other ecosystem services. Despite the large rural footprint, approximately 96% of the population live in urban areas.

The city's built environment is dominated by urban Dunedin which remains the focus for social, economic and cultural life. The city's urban character is based on its hilly topography, waterways and connection to the coast, Otago Harbour and the rural hinterland. The central city contains a well-planned network of streets with open spaces, green spaces and distinct residential and business areas – featuring many heritage houses and commercial buildings.

Unlike other New Zealand cities, Dunedin has maintained, for the most part, a well-established hierarchy of commercial centres, each with various economic and social functions, and has stayed free of suburban shopping malls. Dunedin's vibrant central city, centred on the Octagon, provides a heart and focus. It caters for major city events and, with Moray Place, provides a hub for cafes, bars, and arts and cultural activities. The Octagon, George Street, the Exchange and the University provide clear focal points for the central city.

A hierarchy of suburban, neighbourhood and rural centres complements the role of the central city, and helps urban neighbourhoods and rural settlements to have their own identity.

Population and Demography

Dunedin's unique population characteristics include slower than average population growth, a larger student population, a less ethnically diverse population and fewer migrants when compared to the New Zealand population. As with New Zealand's population, Dunedin's population is ageing with a falling proportion of working age people, changing household composition, and declining household size.

Population Growth

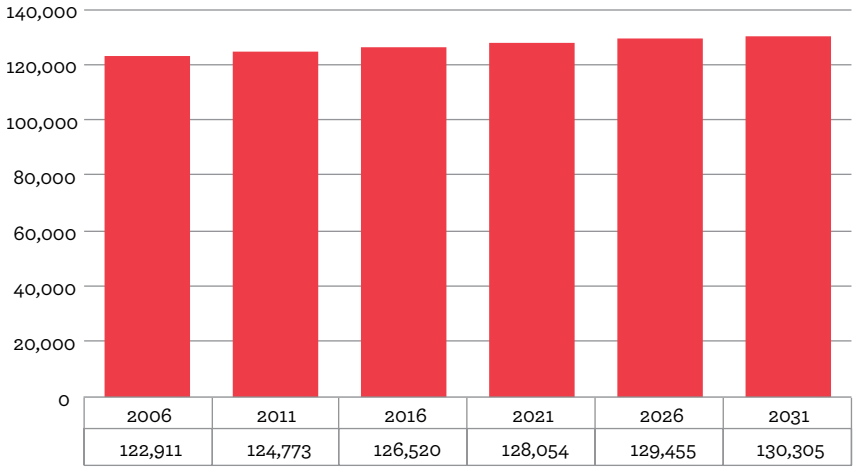
Dunedin is experiencing slower population growth.

- Dunedin's population grew 1.3% between 2006 and 2013, compared to a 5.3% increase nationally. This was a slower rate of growth than the five years from 2001 to 2006, when Dunedin's population grew 3.8%.
- Between June 2013 and June 2014, the population was estimated to have grown 0.9%, or by 1,100 people.
- In recent years, New Zealand's population growth has been influenced by international migration, however fewer new migrants move to Dunedin.

Dunedin's population is projected to increase by 4.4%, or about 5,500 people, to 130,300 in the 20-year period to 2031. Projections of the future population are used to predict demand for water, waste water and roading infrastructure, and in city planning. These projections are based on work produced in 2009, as the Council awaits the release of new projections based on the 2013 Census.

Note: The 2009 DCC projections are used in the LTP as they reflect advice from Statistics New Zealand of lower population growth for Dunedin city through until 2021.

Population Projections for Dunedin City 2006 – 2031



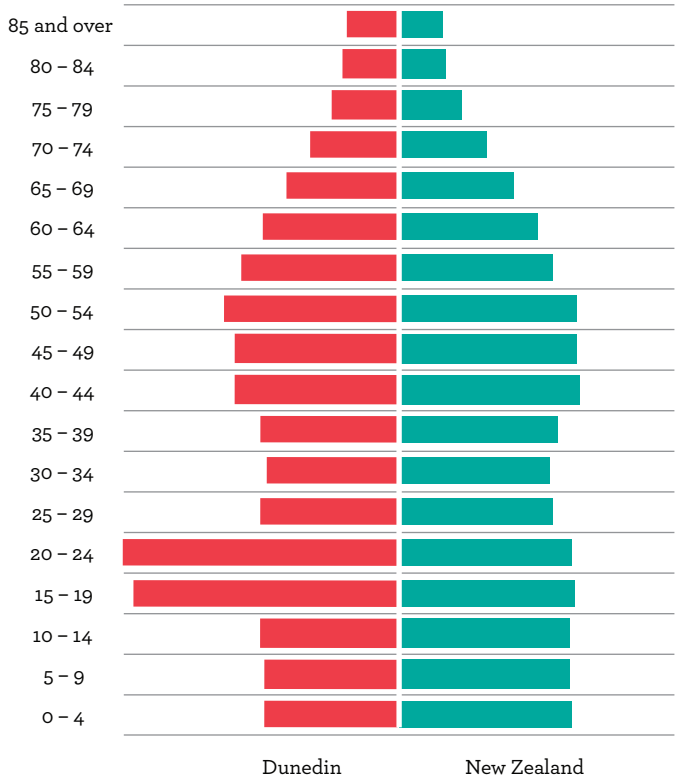
2006	2011	2016	2021	2026	2031
122,911	124,773	126,520	128,054	129,455	130,305

Source: Demand series prepared by Rationale Limited for the Dunedin City Council 2009

Age of the Population

Dunedin has a different age composition to New Zealand as whole, with a smaller proportion of children aged less than 15 years and a higher proportion of people aged 15-24 years due to the large number of students. Dunedin has slightly fewer people in the 25-64 year age group and a similar proportion of people 65 years and over.

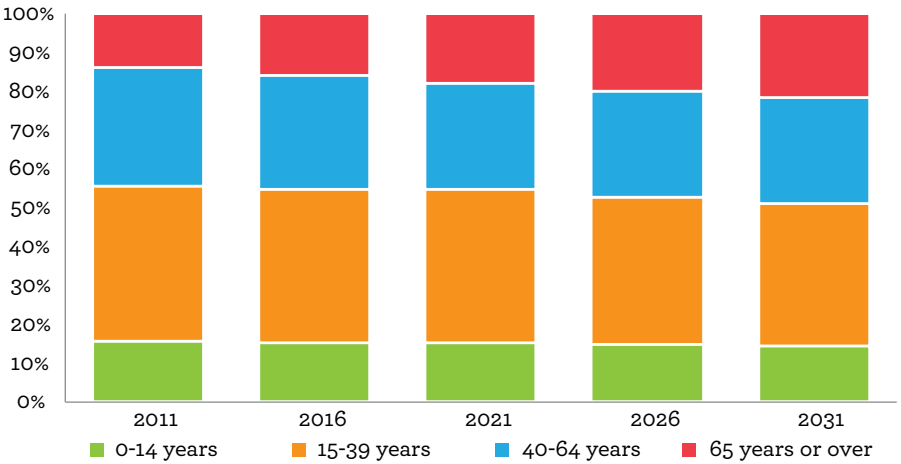
Age of people in Dunedin compared with the rest of New Zealand in 2013



Source: Statistics NZ 2013 Census Data

Reflecting national trends, Dunedin's population is ageing. In 2011, around 14% of Dunedin's population was aged 65 years or over. By 2031, 22% of Dunedin's population is expected to be aged 65 years or over (compared to 22% of New Zealand's population by 2033).

Dunedin Population by age group 2011-2031



Source: Statistics NZ medium projections series, released Dec 2009

Population projections for Dunedin show that:

- between 2011 and 2031 the 65-74 year age group is expected to increase the most
- from 2026, the population aged over 80 years will likely increase as the baby boomers age.

While Dunedin's population by age group has only been projected out to 2031, national research indicates the biggest increases in the older population will be in the 80 years plus group.

Dunedin's working-age population is projected to become smaller and more middle-aged by 2031 as the percentage of 15-24 and 45-65 year olds declines. The population aged 15 to 64 years is projected to decline from 71% in 2011 to 64% by 2031. The size of Dunedin's workforce is likely to fall and may not return to current levels until 2061.

This ageing population will alter demand for housing, social, health and transport services and is likely to:

- increase demand for smaller, more accessible housing on flat land and could increase demand for social housing
- increase demand for health services with more services to enable older people to age at home

- increase demand for public transport suitable for an ageing population.

These changes could present challenges for Dunedin, such as:

- a higher proportion of people on fixed incomes.

New Zealand research suggests older people will be more likely to be employed in the future[1]:

- the labour force participation rate of older people is projected to increase from 16% in 2010 to 26% by 2030
- the economic value of older people's paid, unpaid and voluntary work is expected to increase, as is their contribution to tax revenue.

Population and Housing Trends

Dwelling Numbers

Dwelling numbers in Dunedin grew at a faster rate than the population between 2006 and 2013 due to changes in the composition of families and households.

- Dunedin dwelling numbers increased to about 50,700 in 2013 – growing about 3.6% between 2006 and 2013 compared to 6.9% nationally.

Dunedin's population and dwelling growth, 2001 to 2013

	2001	2006	2013
Population	114,300	118,700	120,200
Dwellings	47,800	48,900	50,700

Source: Statistics New Zealand 2001, 2006, 2013 Census

1 The Business of Ageing: Realising the Economic Potential of Older People in New Zealand: 2011 – 2051, Ministry of Social Development

Dunedin Families and Households

Dunedin has more one person and other multi-person households than New Zealand overall.

- In 2013, 28% of Dunedin's households were one-person households compared to 24% nationally
- Other multi-person households (households not comprised of families) are also more common in Dunedin, making up 8% of households compared to 5% nationally. This is due largely to the number of student flats in the city.

Family households are less common in Dunedin.

- In 2013, 62% of Dunedin households were one family (with or without others) compared to 68% nationally.

There was little change in household composition from 2001 to 2013. During that time the proportion of one-person households increased slightly (from 27% to 28%), while multi-person households declined slightly (from 9% to 8%).

How Big are Dunedin's Households?

Dunedin's average household size is projected to fall from 2.5 people per household in 2011 to 2.2 people in 2061, largely due to changing demographics including an ageing population.

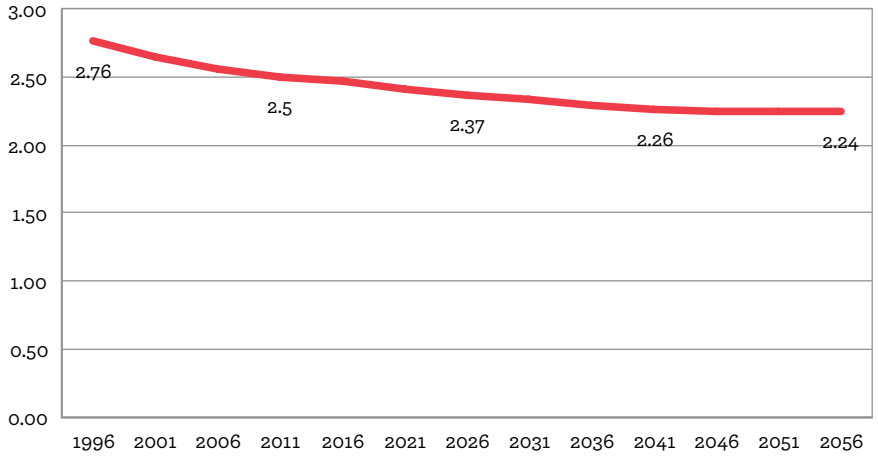
Dunedin households are smaller on average than New Zealand households.

- In 2013, Dunedin's average household size was 2.5 people, compared with the national average of 2.7 people.

Dunedin's declining average household size is explained, in part, by the city's changing population structure. It is also a reflection of changing lifestyle choices with people choosing to starting a family later in life and having fewer or no children.

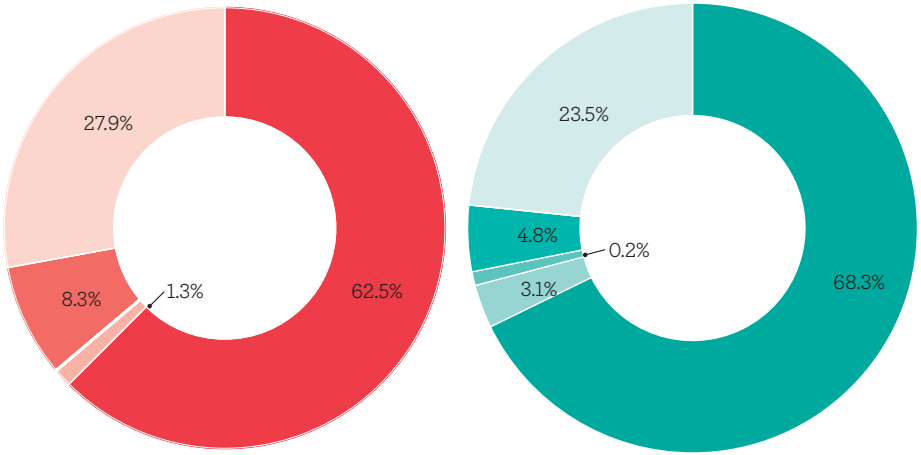
Household composition	Dunedin	NZ
One-family household	62.5%	68.3%
Two-family household	1.3%	3.1%
Three or more family household	0.0%	0.2%
Other multi-person household	8.3%	4.8%
One-person household	27.9%	23.5%
Total households stated	100.0%	100.0%

Projected household size for Dunedin city, 1996 to 2056



Source: Dunedin City Council 2009 Growth Projections

Household composition for Dunedin city and New Zealand 2013



Source: Statistics New Zealand 2013 Census

Ethnicity and Migration

Ethnic Composition

Dunedin is less ethnically diverse than New Zealand as a whole.

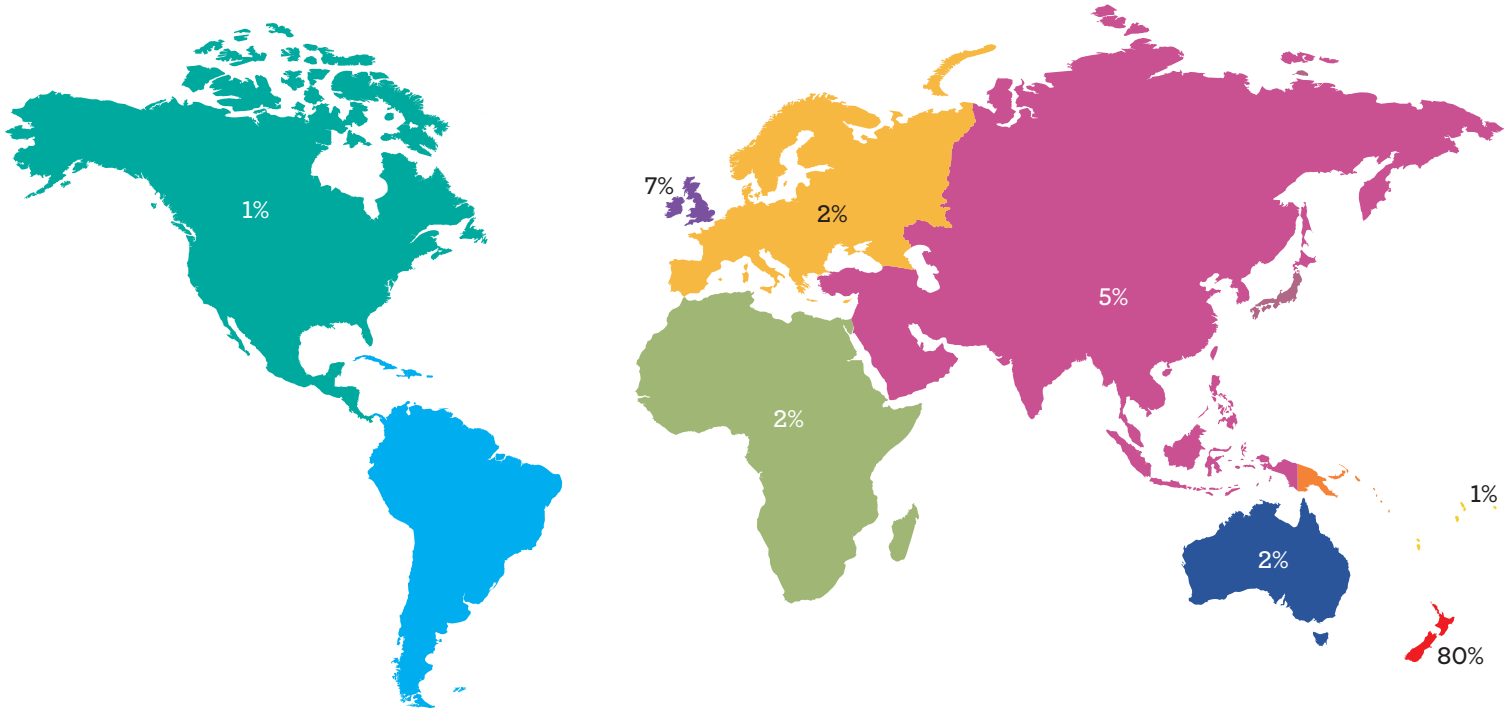
- 88% of Dunedin residents identify as European compared to 74% nationally
- 8% of Dunedin residents identify as Maori compared to 15% nationally
- 6% of Dunedin residents identify as Asian compared to 12% nationally
- 2.5% of Dunedin residents identify as Pacific compared to 7% nationally.

Migration

Migration into New Zealand is a key factor in national population growth. However, new migrants are less likely to come to Dunedin, meaning the city has a lower proportion of overseas born residents than the rest of the country.

- only 18% of Dunedin residents were born overseas compared to 25% nationally
- the United Kingdom is the most common birthplace for Dunedin residents not born in New Zealand, with 7% of Dunedin residents born in the United Kingdom and Ireland
- Asia is the next most common birthplace for Dunedin residents, with 5% of Dunedin residents born there.

Birthplace of Dunedin residents in 2013



	Dunedin	NZ
New Zealand	80%	71%
Australia	2%	2%
Pacific Island	1%	4%
United Kingdom and Ireland	7%	8%
Europe (excluding the UK and Ireland)	2%	2%
North America	1%	1%
Asia	5%	9%
Middle East and Africa	2%	3%
Other	0%	0%

Source: Statistics New Zealand 2013 Census

Life in Dunedin

Standard of Living

Overall, Dunedin residents rate their quality of life highly – 84% rate their quality of life as good or extremely good. Almost nine out of 10 Dunedin residents agreed that Dunedin is a great place to live compared to eight out of 10 respondents living in the cities participating in the Quality of Life Survey. Housing is more affordable in Dunedin than in other large cities with more households enjoying lower rents and owning their own home. While housing is more affordable, the city experiences some challenges with the age and condition of housing due to an older housing stock. Dunedin residents have lower personal and household incomes when compared to New Zealanders overall.

Quality of Life

Quality of life is one of the broadest measures of standard of living and covers social, economic, environmental and cultural aspects. Dunedin participates in the Quality of Life Survey. Every second year, residents in participating cities are surveyed on a variety of topics relating to the Quality of Life in New Zealand. The 2014 Survey shows that Dunedin residents rate their overall quality of life highly.

- 84% rate their quality of life good or extremely good – one of the higher ratings of any of the cities in the survey.

Income

Dunedin residents have a lower median income than New Zealanders overall.

- In 2013, Dunedin's median income for Dunedin was $23,300, compared to $28,500 nationally
- Dunedin's median household income of $54,400 gross per annum was lower than the $63,800 national average
- Compared with the rest of New Zealand, Dunedin households were more likely to fall into the low income category and less likely to have household incomes of $70,000 or more.

Deprivation

The New Zealand Deprivation Index combines a range of standard of living indicators. In 2013, 29% of Dunedin's population lived in the most deprived areas (deciles 8, 9 or 10), up from 26% in 2006. Dunedin's most deprived areas are concentrated in the south of city, including the densely populated areas of South Dunedin, as well as state housing areas on the west side of the city, and older areas of housing around North East Valley and West Harbour. Large parts of the City Rise area, with its older housing stock, also fall towards the most deprived end of the scale. In some areas rental housing has become more prevalent than owner occupied housing.

Housing

Home ownership

Dunedin households are more likely to own their own home.

- 68% of Dunedin households owned their home in 2013, compared to 65% nationally.

Rental costs

Dunedin's median weekly rent for households was lower than for New Zealand households.

- Rental was $250 per week, compared to $280 nationally.

Affordability

Two-thirds of Dunedin residents consider their housing is affordable, compared to 42% for the six cities surveyed in the Quality of Life Survey. While Dunedin is seen to have relatively affordable housing, affordability is still an issue for some. The proportion of net household income spent on housing costs provides a measure of housing stress. Statistics from the biennial Statistics NZ Household Economic Survey are not available at city level for the lower South Island.

- At the national level the latest Household Economic Survey showed that in 2012/13, 35.5 percent of households that did not own their dwelling spent more than 30% of their household income on their housing costs, with 23.1% spending more than 40%. In contrast, 11.9% of those who owned, or partly owned, their dwelling spent 30% or more of their household income on housing costs, and 5.6% spent 40% or more.

Housing quality

One in five Dunedin dwellings were built prior to 1920. Older houses are less likely to be insulated adequately or built to maximise sun, meaning they are more likely to be cold and damp, leading to health issues for the occupants.

Community and health

Dunedin residents report a strong sense of community, with almost two-thirds of residents agreeing or strongly agreeing they feel a sense of community with others in their neighbourhood (up from 54% in 2012). This compared positively with the participating cities surveyed where just over half agreed that they felt a sense of community with others in their neighbourhood.

Health

A similar proportion of Dunedin residents rate their health positively (81%) compared to the cities surveyed (82%) in the 2014 Quality of Life Survey.

- the proportion of Dunedin residents rating their health as excellent, very good or good dropped slightly, from 82% in 2012 to 81% in 2014
- in 2014, 57% of residents were physically active five or more day a week compared to 46% for participating cities.

Internet access

In 2013, 78% of Dunedin households had internet access, compared to 77% nationally.

Safety and crime

Dunedin residents feel safer in the city when compared residents of the cities participating in the Quality of Life Survey. In 2014, 95% of Dunedin residents feel safe in the city centre during the day and just under half (47%) feel safe in the city centre after dark.

The number of incidences of crime reported in Dunedin has fallen, with NZ Police crime statistics showing a 5% decrease in the number of reported incidents between 2012/13 and 2013/14.

Transport

Data from the 2013 Census shows Dunedin has a high level of car ownership and reliance on cars to travel to work.

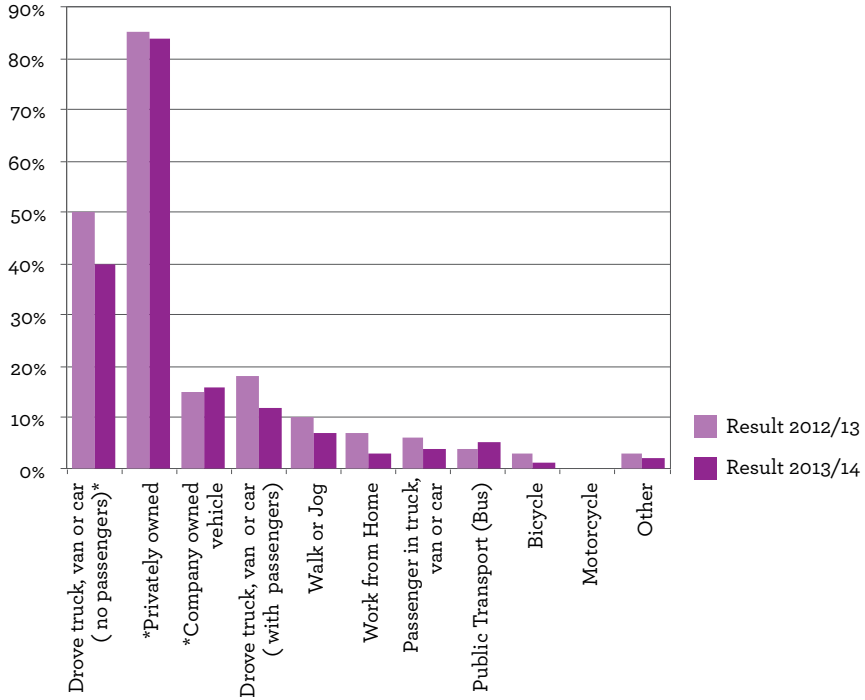
- 40.5% of Dunedin households had access to one car compared to the national average of 37.6%
- However 11% percent of Dunedin households do not have access to a car, compared to 8% of New Zealand households overall
- While the majority of Dunedin residents main means of travel to work was a private car, truck or van (62%), which is very similar to the rest of the country (63%), Dunedin residents were more likely to walk or jog to work (11%) than New Zealanders overall (7%)
- The Council's Residents' Opinion Survey also surveys means of travel to work and the results for 2012/13 and 2013/14 are shown on the next page.

According to the Quality of Life Survey 2014, slightly more residents used buses in 2014, (16% used a bus at least once per week, up 1% from 2012).

While residents consider bus transport is safe, Dunedin has the lowest perception of the centres surveyed that bus transport is affordable, easy to access, or frequent enough.

- more than three quarters of Dunedin residents agree that public transport is safe
- Dunedin residents were less likely to consider bus transport to be affordable, with just over a third of Dunedin residents rating bus transport as affordable
- just under half of Dunedin residents (46%) perceive bus transport as easy to use
- only 44% of respondents strongly agreed or agreed that public transport is frequent
- road safety remains a major challenge for Dunedin, as identified by the New Zealand Transport Agency's Communities at Risk Register
- Dunedin has the highest level of overall road safety risk of all New Zealand cities. Dunedin's road safety is improving and the level of risk has been trending down for the past five years
- Dunedin has the highest risk for intersections and the second highest risk for younger drivers
- the city has the third highest risk for pedestrians, motorcyclists and older road users, and the fifth highest for cyclists.

Means of travel to work



Source: DCC Residents' Opinion Surveys 2013 and 2014

Economy

In the last decade, Dunedin has seen substantial changes in the range of activities contributing to its economic wellbeing. Since 2000 the trend in Dunedin and nationally has been for a continued reduction in the contribution of goods-producing industries, with a corresponding increase in the contribution of services, including the growth in a knowledge-based services economy.

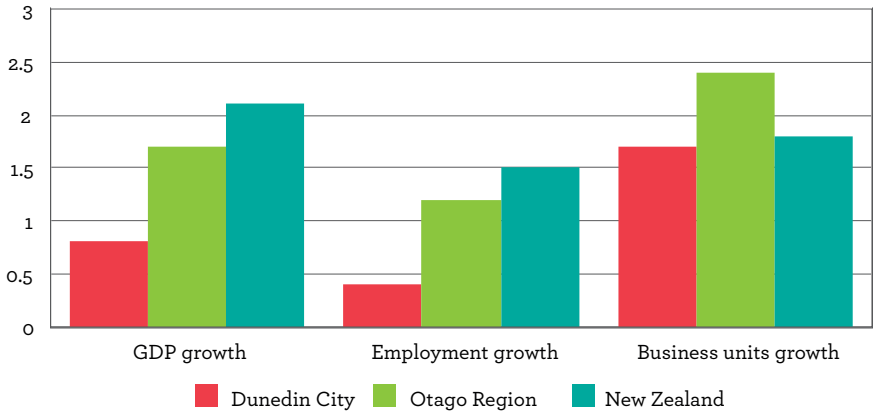
Dunedin's liveability is an important asset in attracting and retaining a skilled workforce and new businesses, with many people choosing to live here for lifestyle reasons even if they could have a 'better' job or higher salary elsewhere. Dunedin has a reputation as a great place for families, thanks to its quality schools, abundant recreational, leisure and cultural opportunities – supported by outstanding green spaces and high quality amenities such as Moana Pool and Forsyth Barr Stadium – along with relatively low crime rates and a friendly, supportive community. Housing and transport costs are also relatively inexpensive, and it boasts an attractive urban environment, enhanced by stunning landscapes.

Dunedin's geographic isolation imposes some constraints with the physical distance to markets increasing business costs. However, the isolation is reduced thanks to international transport infrastructure including the Dunedin International Airport and Port Otago, as well as the growth of the internet and digital communications.

Trends in economic growth and employment

- Over the past decade Dunedin's economy grew more slowly than for Otago and New Zealand, growing 0.8% per annum, compared to 1.7% for Otago and 2.1% nationally
- Employment growth over the same period was 0.4% per annum for Dunedin, compared to 1.2% for Otago and 1.5% nationally
- Dunedin experienced slightly higher rates of unemployment in 2013 – 7.5% of the Dunedin labour force was unemployed compared to 7.1% nationally.

GDP, employment and business unit growth over the decade 2003-2013



Source: BERL Otago Economic Overview 2013

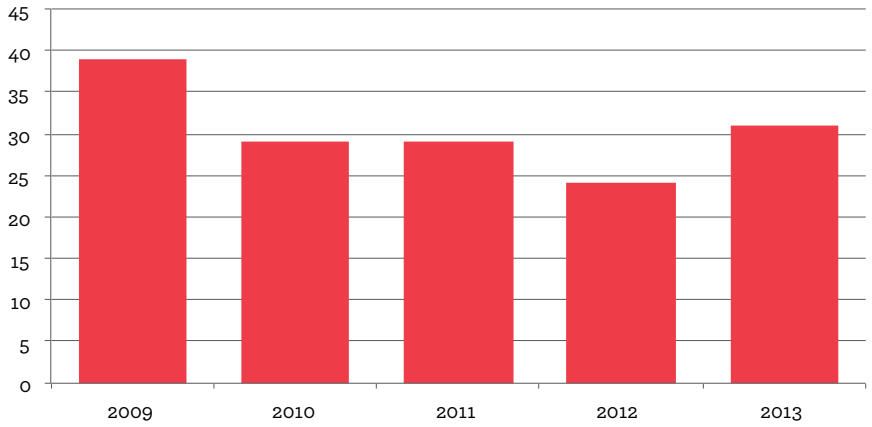
The Dunedin business environment

To compete nationally and internationally, Dunedin needs to be seen as an easy place to do business.

Businesses need talented people to manage them, and to create and generate high-value products and services. The knowledge and skills base in Dunedin is relatively high, built on the strengths of the University, health, professional and niche manufacturing sectors[2].

2 Dunedin's Economic Development Strategy, By Dunedin for Dunedin and Beyond 2013-2023

Perceptions of Dunedin as a thriving city 2009-2013



Source: Dunedin Residents' Opinion Survey 2009-2013

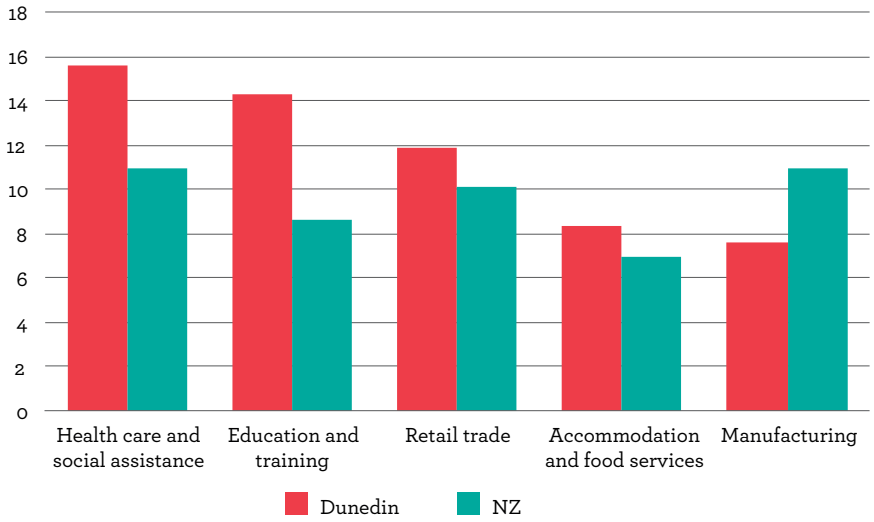
- Between 2009 and 2012, Dunedin residents perception of Dunedin as a thriving city fell from 39% to 24% before increasing to 31% in 2013.

Dunedin's innovative and internationally competitive sectors

Among Dunedin's economic strengths are its health and education sectors.

- In 2013, 16% of Dunedin workers were employed in healthcare and social assistance – Dunedin's largest employment industry. Education and training is also a major industry for the city, with 14% of Dunedin employees working in this sector.
- In total, 30% of Dunedin employees are employed in the health, social assistance and education and training sectors, compared to 20% nationally.

Top 5 industries in Dunedin and New Zealand as measured by the number of employees 2013



Source: Statistics New Zealand Business Demography

Dunedin also has a comparative advantage in sectors such as health technologies and biotechnology, niche manufacturing and engineering, primary and food processing, tourism and ICT, and creative[3].

Advanced computer-based software and creative technologies provide the best opportunity to grow new, future oriented, high value, high growth businesses which provide high-skilled, high-income employment. Research suggests proximity to universities, such as Otago, is a key factor in sparking technology businesses and innovation.

The city's long industrial tradition has contributed to an industrial workforce that possesses strong technical knowledge, particularly in the manufacturing and engineering sectors. Many industries have been specialising in niche markets, rather than compete, and this has spawned a number of successful business clusters.

3 Dunedin's Economic Development Strategy, By Dunedin for Dunedin and Beyond 2013-2023

Dunedin's export economy

Businesses with the ability to compete in international markets are critical to Dunedin's economic performance, but only a small proportion of city businesses are export oriented[4]. Fewer Dunedin businesses are exporting (4% of Dunedin businesses were exporting in 2010, compared to 16% in Auckland and 12% in Christchurch) and the contribution of exports to Dunedin's GDP was lower when compared to Auckland and Christchurch.

An educated population

Dunedin residents are more likely to be tertiary qualified than other New Zealanders. In 2013, 21% of Dunedin residents had a tertiary qualification compared to 18% nationally[5].

4 Dunedin's Economic Development Strategy, By Dunedin for Dunedin and Beyond 2013-2023
5 Statistics New Zealand, Census 2013

Tourism and international students

The large number of students and tourists studying and visiting Dunedin creates opportunities for the city. The number of international students and the revenue generated from international education both increased between 2007 and 2012.

- Tourism contributes 4.2% of Dunedin's GDP – compared to 3.6% nationally.
- Tourism makes up 6.1% of Dunedin's workforce – compared to 5.3% nationally.
- International fee-paying student numbers increased from 2,810 in 2007 to 3,256 in 2012[6].
- Revenue from international education tuition in Dunedin increased from $35 million in 2007 to $48 million in 2012[7].

6 Ministry of Education Export education levy statistics customised request
7 Ministry of Education Export education levy statistics customised request

Student City

- The University of Otago was New Zealand's first university, established in 1869.
- The University has grown rapidly in recent decades, and now has approximately 22,000 students and the equivalent of 4,000 full time staff, across all its facilities in the country.
- The Otago Polytechnic, developed from New Zealand's first school of art in the 1870s, has approximately 9,000 full and part time students and 700 staff[6].
- The tertiary student population comprises about 20% of the population of Dunedin.
- The University of Otago alone anticipates an increase of 6,500 students and 500 staff in the next 25 years, which will require additional residential accommodation.

Regional and National Infrastructure

Dunedin's key infrastructure plays an important economic and social role for the wider Otago region and provides connections to the rest of the country.

Rail provides good connections for freight from the Otago and Southland regions to Port Otago and has opportunities to increase its capacity to cater for demand for freight in exported goods from the Otago region. The port plays a key role in the freight and export of goods as part of a national and international supply chain.

Dunedin International Airport, at Momona, hosts both domestic flights and direct flights to Australia's east coast, with connections to long-haul international flights via Auckland and Christchurch.

The city also contains important electricity distribution networks which provide power to the wider region, and are part of the national communications infrastructure.

Dunedin's road transport network experiences little congestion and most parts of the city have ample on and off street parking. The quality of the transportation network for other modes of transport is not so well developed, which is an issue for the 12% of households who do not own a car.

- Pedestrian facilities are inconsistent with some areas better serviced than others
- Cycling is one of the most commonly raised issues during public consultation, with an increasing number of people advocating for improved cycling facilities
- Public transport accessibility is also commonly raised, although Dunedin has reasonably good coverage of frequent bus services (65% of dwellings are within 400 metres of a frequent bus service).

Due to urban Dunedin's relative compactness many trips can be done on foot, by bike or public transport. As fuel prices rise, accessibility should be a primary consideration for new residential development.

Much of the infrastructure used to deliver water, wastewater and stormwater services in the city has a long life, with parts of it dating back to the 19th century. But the nature of Dunedin's growth over time, with periods of rapid growth, led to large quantities of infrastructure being built at the same time. This means they will require renewal at about the same time, creating peaks in costs for renewals.

It is important to maintain the environmental efficiency of the water, wastewater and stormwater infrastructure to preserve and improve the recreational, environmental and cultural values of the city's water environment, something highly valued by residents. The management and quality of Dunedin's reticulated water supply has been improved substantially in the past 20 years. The last decade has seen a significant investment in wastewater infrastructure with 99% of reticulated wastewater getting secondary treatment and disinfection. Future challenges include responding to climate change and rising energy costs while maintaining affordable levels of service.

Dunedin's agricultural hinterland and related industries continue to be vital to its economy, but new areas of development continue to be found. Education is a good example – the University of Otago has grown from around 5,000 students in the 1970s to more than 20,000 students. Growth in modern industries such as information technology is also helping Dunedin overcome the tyranny of distance imposed by its geographical location.

From February 2015 Dunedin becomes the first city in NZ with gigaspeed ultrafast broadband. This will enhance the city's ability to attract new information technology business and provide communications technology advantages for existing businesses and educational institutions, such the university and the medical and dental schools.

Landuse and Urban Form

The overall objective for urban form and future development for Dunedin is to have a 'Compact City with Resilient Townships'.

Dunedin generally maintains the distinction between rural and urban environments and protects its natural resources. However, rural land close to urban Dunedin is often threatened by competing uses, particularly from the desire for coastal properties and lifestyle development.

Residential activity in the rural environment leads to loss of productive land and can threaten local food production capacity. It can also threaten natural values such as ecosystem services, landscape, and cultural and recreational values, so it needs to be carefully controlled.

Research has been completed to identify significant landscape features that will be used as part of the Second Generation District Plan to protect these areas from inappropriate development.

Future housing needs

Dunedin's ageing population and a decrease in the average household size, including an overall increase in one to two person households, means Dunedin needs to think about how it approaches residential development.

Demographic changes will likely lead to an increasing demand for a wider variety of housing types other than the traditional three or four bedroom detached family home. The trend for smaller households with one or two occupants (often students or the elderly) is likely to create demand for smaller dwellings, including more options for good quality apartments and townhouses. Associated with the ageing population and large number of low income households will be an increased demand for social housing. Some existing three-bedroom or larger houses could be divided into flats or to provide more single-room accommodation as social housing. Providing a wider choice in housing size will also improve affordability so people can choose housing that meets their needs.

Dunedin's Residential Characteristics

The most common type of dwelling in Dunedin is the single-storey detached house on sites with an area of 500m^2 or larger. There is a greater variety in dwelling types surrounding the central city with higher density dwellings occurring in the form of villas, terraces and townhouses or cottages on small sites. South Dunedin and North Dunedin are the most intensively developed parts of the city. The majority of residential development occurring over the past 10 years has been in the form of greenfield development in Mosgiel and on the edges of urban Dunedin.

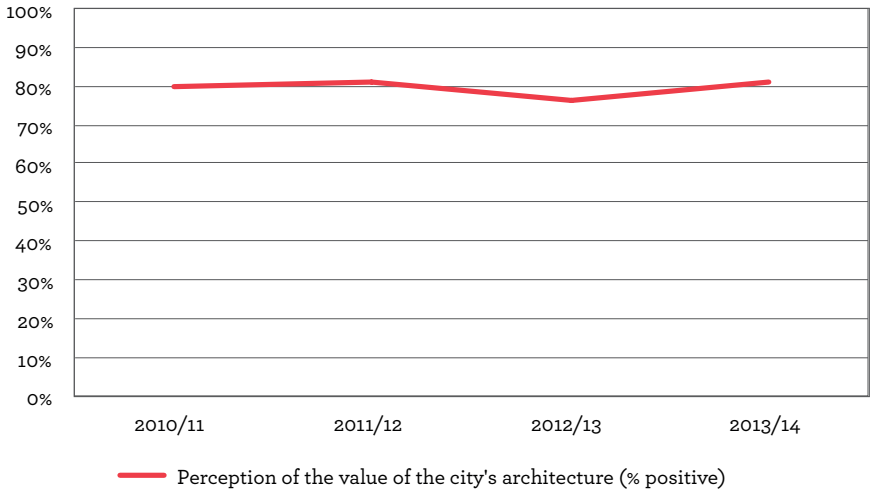
The Second Generation District Plan review process is responding to these considerations. At this stage 23 areas have been identified for medium density zoning, although five may need infrastructure upgrades if significantly more development occurs.

Housing will also need to be affordable to run, so improving the environmental performance of housing, for example by passive solar design and better insulation, will be important. Providing homes close to public transport and other services will reduce reliance on private motor vehicles and overall transportation costs.

Protecting our Heritage

One of the strengths of Dunedin's built heritage is the collection of heritage buildings that define the distinctive townscape in the central city. Mostly established following the 1860s gold rush, they reflect the wealth of the era and the Victorian and Edwardian architecture of the time. While there are on-going challenges to the continued protection of these buildings, there has been substantial investment going into many heritage buildings in the central city over the past five years. Substantial regeneration work is underway in the Warehouse Precinct, Exchange, and Princes Street, driven by the re-use and restoration of heritage buildings. The Council has been trying to work collaboratively with heritage building owners, providing a range of incentives and policies to assist owners with earthquake strengthening, upgrade, and other restoration works.

Perception of the value of the city's architecture



Source: DCC Residents' Opinion Survey

Industrial and port land

The main industrial areas are located adjacent to the harbour edge, Portsmouth Drive, Kaikorai Valley and Mosgiel. Port Otago occupies land at Dunedin Port and Port Chalmers.

Future land-use demand

As the trends in industrial activity continue to change from manufacturing to services, and from heavy (or dirty) industries to light (or clean) industries, there is likely to be sufficient serviced land in suitable locations to provide for our future needs, provided it is not utilised by other competing activities. Industrial activity requires good accessibility and proximity to transportation routes.

The majority of greenfield development opportunities lie on the Taieri Plains, at North Taieri and Dunedin International Airport. Brownfield are also available for redevelopment at Green Island and Burnside. Some green industries or high tech industries may be compatible with other activities, such as retail and commercial, and can be integrated into centres and mixed-use developments.

The issue of reverse sensitivity, where new activities (often residential) locate close to industrial land and then complain about noise or light from industrial or port related activities, can affect the ability of industry to operate and expand.

Dunedin's natural environment and biodiversity is a significant strength for the city, providing food, various ecosystem services and supporting recreation and the eco-tourism industry.

Recreation and Culture

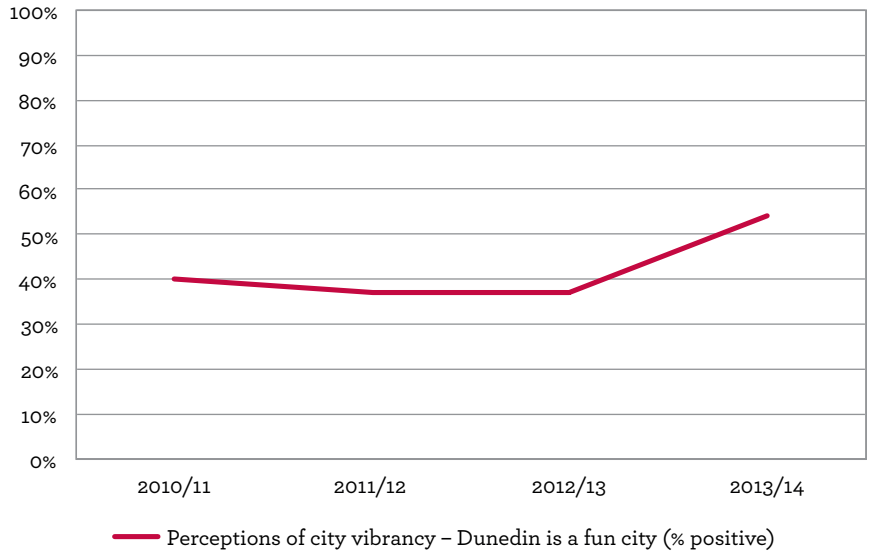
Dunedin provides a great lifestyle with many recreational and sporting opportunities, internationally regarded natural attractions, cultural institutions and events that are attractive to residents and visitors alike.

During the past decade the Council has invested in the upgrading and improvement of recreational and cultural facilities of the city. This includes substantial upgrades to the Dunedin Centre, Municipal Chambers and Town Hall complex, Toitū Otago Settlers Museum and Regent Theatre. New constructions include the Forsyth Barr Stadium and the Dunedin Chinese Garden. The Council has also invested in events that attract visitors from all over NZ and the world, such as the Rugby World Cup and iD Fashion.

Recent accolades such as the recognition of the Botanic Garden as a garden of an international significance and the city being made a Unesco City of Literature enhance the attractiveness and vibrancy of the city.

There has been a positive change in how Dunedin's vibrancy is perceived by residents in the past year.

Perceptions of city vibrancy – Dunedin is a fun city (% positive)



Source: DCC Residents' Opinion Survey

Arts and culture have been an important part of Dunedin since its founding. Creativity is now widely recognised as a key driver for a successful modern city.

Dunedin's arts and cultural sector already makes a major contribution to the city's economy and employment. In the year ending March 2013, BERL reported the creative sector contributed around $55 million (1% of GDP) and about 1,300 full time equivalent jobs (2.6% of Dunedin's full-time equivalent jobs). It is thought that the majority of these jobs are part-time and spread across a large number and range of employers and types of cultural activity.

An Arts and Culture Strategy for the city was adopted in April 2015. The strategy's purpose is to provide a framework for arts and culture in Dunedin over the coming years, with the aim of positioning Dunedin as one of the world's finest creative small cities.

Perception that Dunedin has a culturally rich and diverse arts scene

Source: Quality of Life Survey

Natural Environment and Biodiversity

Dunedin's natural heritage is one of its greatest assets. Within the city boundary there is a diversity of natural habitats that provide homes to numerous native plants and animals, some of which are found nowhere else on earth. These habitats and their constituents provide a number of important ecosystem services including the maintenance of soil health, water quality and the provision of clean air.

The Council, along with many dedicated landholders, private organisations and volunteers are protecting and enhancing the Dunedin's natural environment. Areas of Significant Conservation Value (ASCV) are one of the ways this is achieved. These are remnants of indigenous vegetation and fauna on public or private land that are listed in, and therefore protected by, the District Plan. Currently there are 101 ASCV's listed in the District Plan, which collectively account for just over 10,684 ha or around 3.2% of Dunedin's land area.

In 2007 the Dunedin City Council established the Biodiversity Fund to assist with the protection and enhancement of natural habitat, with priority funding going towards areas protected as an ASCV or by a Queen Elizabeth II (QEII) Open Space Covenant. The fund provides $60,000 per annum split over two rounds at a 50/50 cost-share with private landholders or organisations. Since its inception the Biodiversity Fund has provided financial assistance to 124 biodiversity related projects.

External Challenges

Like many other small cities, nationally and internationally, Dunedin faces challenges from external factors that may require an adaptive response in the future.

Oil Price Volatility

Over the five past years the world has experienced volatility in the pricing of oil and petroleum products and it appears that in the longer term prices may rise in the event of declining availability of oil and petroleum products.

Council activities depend on oil and oil-based products in order to deliver core services. Oil products are used as fuel and are also a key constituent of a wide ranges of products used in the city's infrastructure, including the bitumen and hot mix products used in roading and footpaths, and the plastics and other synthetic materials used in water, wastewater and stormwater services.

As the price of fuel remains volatile, residents may adapt their travel behaviour, choice of location, and/or transportation mode in response to increases and decreases in fuel pricing. For example, residents may use less fuel and look for alternate modes of transport in times of high prices, or vehicle use may increase when prices drop and fuel becomes more affordable in household budgets. Dunedin's urban form and transportation infrastructure needs to have adaptive capacity and be resilient to these changes.

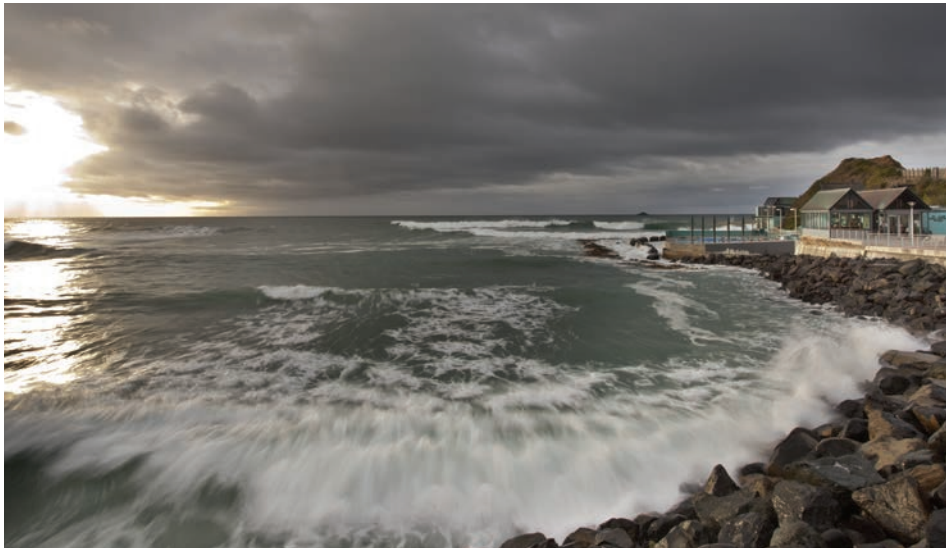
Climate Change

Climate change will have greater direct effects on some parts of the city than others, including low-lying and coastal areas. This includes some densely populated urban areas and major infrastructure including the Dunedin International Airport. The main issue will be rising water tables, inundation and increased frequency of flooding which will affect both above ground and below ground infrastructure. Engineering solutions may be available, but these may be prohibitively expensive. The DCC is currently researching how to adapt to the effects of climate change in areas most at risk.

Natural Hazards

Like most of New Zealand, Dunedin is at risk from a wide range of natural hazards, including river and lake flooding, earthquakes and seismic hazards, landslides, coastal flooding and erosion, severe wind or snow, tsunami, storm surge and soil erosion. Ongoing research and monitoring has improved awareness of the likely extent and effect of these different natural hazards.

Coastal erosion is a significant issue and a range of options is being investigated to address erosion issues.



Financial Strategy

Why a Financial Strategy?

This Financial Strategy has been developed to guide the Council as it seeks to balance the competing tensions of affordability, maintaining its assets and investing for the future.

This balancing process involves evaluating the impact on affordability of a range of expenditure needs and obligations including:

- the need to maintain, replace and renew core infrastructure
- the obligation under law to build new infrastructure of a higher standard
- a desire to respond to community aspirations for new and improved community infrastructure.

Financial Strategy at a Glance

- an operating surplus greater than zero over a moving three year period
- operating cashflow at 100% of depreciation
- to provide a working capital ratio of greater than 1. Where current assets include cash on hand and available credit facilities
- capital expenditure focus on increasing renewals required for infrastructural assets
- core Council debt (term and current portion) below $230 million by 2021
- rate increases to be limited to 3% unless there are exceptional circumstances
- Dunedin City Holdings Limited (DCHL) to provide a consistent and maintainable cashflow at no less than the projected levels over the 10 year period. This may include building up a cash reserve to allow for the commercial reality of the group
- that investments held by the Council (Investment Property and DCHL) provide a long term moving average return greater than the Council's average cost of capital
- that the Waipori Fund provides a minimum return over the medium to long-term, equivalent to the weighted average Official Cash Rate plus the consumer price index.

Introduction

Dunedin has set a goal to be one of the world's great small cities. It enjoys an outstanding natural environment and setting plus a fine network of social and cultural infrastructure – for example Moana Pool, Forsyth Barr Stadium, Toitū Otago Settlers Museum, Dunedin Town Hall and convention facilities, and the Dunedin Public Art Gallery. The Dunedin City Council has also recently completed an intensive programme of services infrastructure upgrades, for example extensive water and waste water service level improvements.

These capital projects and upgrades have pushed up debt levels but the city is also now moving into a phase where overall debt levels peak and will begin to track down, allowing the focus to shift to debt reduction. This is aided by the fact that the Council is now in a position where infrastructure renewals, for example pipe renewals, are increasing and can be funded by rates rather than additional new debt.

Dunedin faces some unique challenges and opportunities now and into the future relating to its population, demography and economy.

The city's unique population characteristics include a slower than average population growth, an ageing population with a falling proportion of working age people, less ethnic diversity and immigration, changing household composition, and declining household size.

While Dunedin provides its residents with a great lifestyle, the city is at risk of losing business and people to other centres. Creating an attractive environment – where businesses thrive and residents feel proud – will establish Dunedin as one of the world's great small cities.

The nature of the city's growth has meant that large quantities of network infrastructure were built over a short time period. Assets that were built at the same time generally require renewal at the same time, causing peaks in renewals cost.

Land use is not expected to change to the extent that big increases in debt and operating expenses will be required to service development.

A summary of the key challenges and opportunities for consideration are:

- large capital projects and upgrades have pushed up debt levels, the focus now turns to repaying debt
- Dunedin has come through a period of high rates increases, these now need to be limited
- large asset base
- levels of service should be maintained. One of the key assumptions in the Financial Strategy and Infrastructure Strategy is that there will be no change to the existing range of services and/or service levels provided by the Council
- in recent years, budgeted income from DCHL to the Council has proven to be unrealistic. This, coupled with stadium-related financial issues, has created a degree of financial uncertainty for the Council when trying to establish budgets. The strategy in place to build cash reserves in DCHL and the recently completed Stadium review provide a greater level of financial certainty for the Council
- network renewals will occur at a growing rate over the next decade.

It is the Council's view that the implementation of this financial strategy in the 10-year plan is prudent and sustainable.

With the major projects completed, the Council has shifted its focus onto operating in an environment of financial constraint. With rate increases now constrained and affordability in mind, borrowing reducing and greater certainty around both funding from and for DCHL, the DCC will continue providing the services needed to attain the city's vision and meet the growing renewals requirements.

The following sections outline the individual components of the financial strategy.

Operating Surplus and Cashflow

A local authority must ensure that each year's projected operating revenues are set at a level sufficient to meet that year's operating expenses, unless the local authority resolves that it is financially prudent to not do so.

The Council approach to this is to show an operating surplus of greater than zero over a moving three year period. Across the period of the plan, projected revenue is more than adequate to cover operating expenditure.

In terms of operating cashflow, the Council's approach is to have an operating cashflow which covers 100% of depreciation. The Council is forecasting an operating cashflow of $52 million in the 2015/16 year which then steadily increases annually to $90 million in the 2024/25 year. Depreciation is forecast to be $53 million in the 2015/16 year, increasing to $69 million in the 2024/25 year. The incremental increases in operating cashflow arise because the Council is signalling additional rates income each year to fund increasing infrastructure renewals expenditure. In addition, because the majority of Council debt is repaid on a table loan basis, this means that when interest expenditure reduces, loan repayments increase. Loan repayments are funded from operating cashflow.

The Council will ensure that there are sufficient cash resources available to meet its obligations. This means providing a working capital ratio of greater than 1, where current assets include cash on hand and available lines of credit. The Council has access to credit facilities of up to $270 million.

Capital Expenditure

Dunedin has recently completed a period of capital development during which a number of large new capital expenditure projects and upgrades were undertaken simultaneously. A small number of large new projects remain in the capital expenditure programme for transportation upgrades, library and community facilities.

Attention has now turned to a renewal programme, for example waste water (sewer) renewals and upgrading under street infrastructure that is more than 100 years old in some places. Generally speaking, this work is to be funded out of rates, rather than borrowing. The Council approach to funding renewals in this way is to avoid the significant longer term cost of borrowing annually for renewals. Further information on the Council's approach to this is discussed in the Infrastructure Strategy.

Debt

Any discussion of Council group debt needs to be balanced with an acknowledgement of its large asset base which includes the Council-owned companies, Waipori Fund and considerable property assets. This means that as the Council addresses debt levels and loans are repaid, the city's debt to asset ratio will also improve.

Forsyth Barr Stadium debt continues to be an important factor in future debt projections. The recent Stadium review has found that the debt which sits with Dunedin Venues Limited (DVL) – who are the current owners of the stadium – is too high. The Council is proposing to transfer $30 million of debt from DVL to the Council. While this has no impact on overall group debt it does affect one of the goals of the Council's previous Financial Strategy which was to reduce Council debt to $200 million by 2021. Bringing that $30 million of debt back to the Council means that target has been revised upwards to $230 million.

Gross Debt Limit: Target of $230 million by 2021

The budgets forecast the following levels of debt:

Gross Debt Forecast: $ millions

2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
255	248	248	245	243	236	228	212	194	174	153

Dunedin's financial position has been scrutinised by international ratings agency Standard & Poors, which has just reaffirmed the Council's credit rating to AA/Stable/A-1+ from AA/Negative/A-1+. Their report talked about Dunedin's debt burden being high compared to international peers but also acknowledged that debt (including the borrowing of the Council-owned companies) as a percentage of adjusted cash operating revenues is forecast to fall below 140% in 2016, down from 160% last year. Standard & Poors also acknowledged that Dunedin's debt is set to be reduced at a quicker pace.

It highlighted the predictable and supportive institutional framework available to local councils in New Zealand, it's very positive view of the Council's financial management, and the way that its budgetary performance has improved significantly.

Standard & Poors also noted that Dunedin has no foreign-denominated debt, and its hedging of interest rate risk provides some support to the Council's debt profile. Importantly, the city also has a large portfolio of assets to support this debt.

Looking ahead the city has no new major approved projects, except for upgrades to the City Library, the proposed South Dunedin Community Library, an upgrade to the central city, cycleways developments and peninsula road improvements. Borrowing around projects such as roading improvements are generally done across 20 years to spread – or smooth – the cost of debt servicing to users over the lifetime of the asset. This is a way in which debt can be used in a positive way so that the cost of new assets is not lumped on one generation during the initial construction or project period.

The Council policy is clear in terms of the use of any surplus funds which will be spent according to the following priority:

- repayment of debt
- investment
- priority projects.

Security for Borrowings

It is the Council's policy to give rates as security. It does give assets as security; however, it is not legal to give water assets, including wastewater and stormwater, as security.

Rates

In the 2014 Residents' Opinion Survey Dunedin people made it very clear they wanted the Council to keep rates in check by controlling debt and new spending. It is a message that is being taken to heart in this strategy.

Dunedin has come through a period of high rates increases to fund many of the projects, peaking at a high of 10.4% in 2008/09. Since 2011/12, when rates rose 7.7%, increases have tracked downwards falling to 3% for the 2014/15 year.

This period of high rates increases has been driven by an extensive capital programme, from new projects such as the Forsyth Barr Stadium, to significant upgrades at Toitū Otago Settlers Museum, and the Dunedin Town Hall and conference facilities, which are marketed as the Dunedin Centre.

While this work has provided the city with top class venues there have been other key infrastructure redevelopments, such as the city's water upgrade, which has delivered vastly improved drinking water standards for Dunedin.

The aim now is to limit future rates increases to 3%, unless there are exceptional circumstances. The first such exception is the 2015/16 year. The city faces two hurdles which will push rates up by 3.8% for that year. The first is the reduced income stream of $4.5 million from DCHL as they carry out needed capital works. The second relates to an additional $1.51 million funding requirement for the Stadium.

Getting into the position where future rates increases can be expected to be limited to 3% has been brought about as the result of an extensive programme of activity reviews. These reviews have identified ways to improve service delivery and reduce costs by doing things smarter and more efficiently as well as making greater use of technology.

The Council has chosen not to link rates increases to the Consumer Price Index (CPI) but rather to set rates in response to funding requirements as they arise.

While setting annual rates increases based on the CPI offers transparency and simplicity, its major disadvantage is that it constrains capital expenditure on projects that the community may support. As a general rule, new debt funded capital expenditure tends to compress the servicing of that debt into a time frame that is shorter than the life of the asset. What this tends to do is raise rates in the first year of the new debt above a typical operating cost index, such as the CPI or the Local Government cost index. The larger the item of new capital, or the more the number of projects embarked on, the larger the impact.

It is also important to note that the Council's costs for service provision don't increase at the same rate as CPI. This is because the group of costs used to measure CPI are not strictly applicable to an organisation involved in the management of infrastructure.

Allowing elected Councillors to set rates according to their consensus view on what the city needs to spend on gives full effect to the principle that, as elected members, they are there to make decisions as representatives of the community rather than in response to some mathematical index.

Renewal projects, such as pipe renewals, will be paid for out of rates rather than taking on further debt. Dunedin has an aging infrastructure that needs to be addressed. These renewal projects are expected to be a significant driver of the requirement to increase rates in the coming years due to an under investment in this activity over an extended period of time.

The Council has avoided taking an easy path in setting its limits. By imposing on itself rate increases that are lower than today's indicative calculations for years it has set itself a challenging task. The Council is accustomed to identifying more efficient ways of doing things and maximising non-rates revenue sources.

Rate increase limit: Limit future rate increases to 3% unless exceptional circumstances
The budgets forecast the following rate increases:

Forecast rate increases:

2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
3.8%	4.9%	5.0%	4.0%	3.9%	4.5%	2.3%	3.9%	2.3%	2.7%

Rates limit: the forecast rates incorporating a 3% increase from the 2016/17 year are shown in the table below along with the forecast rates.

Rates Forecast: $ millions

	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
Rates Limit	130	134	138	142	146	150	155	160	165	170
Rates Forecast	130	136	143	149	154	161	165	171	175	180
Savings Required	0	2	5	7	8	11	10	11	10	10

Financial Resilience

Financial resilience is becoming an increasingly important strategic consideration, whether that be the ability to weather a global financial crisis, local economic downturn or a civil emergency. It means being prepared for future challenges and the unexpected.

The Council has, in the past, carried a significant amount of uninsured assets and in the event of a significant earthquake would carry a larger share of the cost of rebuilding. However, as part of the renewal approach for the 2014/15 year the Council has been able to secure insurance for some infrastructure assets (mainly in the 3 Waters area).

In the event of a civil emergency, the Council would fund major infrastructure rebuild via a combination of:

- insurance cover
- access to Government funding for infrastructure assets
- reprioritisation of renewals and new capital expenditure budgets
- an existing line of credit of $5 million
- access to liquid assets available from the Waipori Fund
- loan funding in the event of any shortfall.

Investments

While the Council does hold considerable debt, this is offset by the fact that it is also asset rich, holding a range of investments, including Council-owned companies, investment property, and the Waipori Fund (a balanced portfolio of fixed interest deposits and equities).

These investments are designed to provide the Council with an ongoing non-rates revenue stream over a long period of time.

Accordingly, the Council's target return on investment is higher than the cost of debt, thereby producing a net financial gain to the city, which in turn provides a subsidy to rates. The estimated cost of debt for the 2015/16 year is 7.3%. In the case of equities, such as those held through the Waipori Fund, it also includes an allowance for inflation to protect their real value.

The Waipori investments in particular have a high degree of liquidity which means the Council would have ready access to cash should the need arise.

Council-Owned Companies

Council-owned companies are an important component in the Council's financial strategy. While they are valuable assets in terms of their capital value, the income (income includes dividends, subvention payments and interest) they generate from their operations are used to keep down the levels of funding required from the city's ratepayers.

In more recent years, the revenue expectations from the companies to the Council have been unrealistic. This, coupled with stadium-related debt pressure, has created a degree of financial uncertainty for the Council when trying to adopt budgets and set rates.

Income from the holding company, Dunedin City Holdings Limited (DCHL), to the Council will continue to be paid but it will reduce by $4.5 million from the 2015/16 financial year. This will give the companies time to invest in their own infrastructure – something which is particularly important in the case of lines company Aurora which has infrastructure that needs to be renewed.

This will also allow DCHL to begin the process of building up cash reserves. This means that when income from DCHL increases again in future years, any future volatility can be absorbed within the group. This will ensure that in the future the city is provided with a steady and predictable income stream. The Council does not expect the current level to change within the next two years but is forecasting an increase over the longer term.

Forecast revenue from DCHL: $ millions

2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
11	11	11	12	12	12	13	13	14	15

Costs associated with Forsyth Barr Stadium are also a key consideration. A review of the Stadium operation and ownership has been completed which proposes additional ratepayer funding for the next 10 years to enable the Stadium to operate on a sustainable basis.

Stadium debt is also being addressed through transfer of $30 million of stadium debt to the Council's books. Taking the responsibility for servicing this debt away from the stadium will strengthen its financial viability.

Waipori Fund

Established in 1999, using proceeds from the sale of the Waipori electricity generation assets, the Waipori Fund provides a valuable annual dividend to the Council. The fund value at 30 June 2014 was $74 million.

Objectives

The primary objective of the Waipori Fund is to generate income and increase capital value over the long term, subject to a proper consideration of investment risk.

Subject to the income distribution needs of the fund owner and the provisions for capital protection, a key tenet is to enlarge the Waipori Fund's capital base to protect that base from falls in the value of money. This adjustment to the capital base is described as "inflation adjusting the fund".

Other objectives

- provide a non-rates revenue source to the Council
- provide a source of liquidity should the need arise
- provide long-term wealth generation for ratepayers
- to hold equity investments as a hedge against inflation – and also provides an offset to other areas of the Council.

Target

The Council envisages a minimum return over the medium to long-term, net of all fees and charges attributable to the Fund, equivalent to the weighted average Official Cash Rate plus the movement in the 'all groups' consumer price index.

Investment Property Portfolio

Objectives

The primary objective of the Investment Property Portfolio is to maximise its return, subject to a proper consideration of investment risk. The portfolio value at 30 June 2014 was $95 million.

A key principle is to invest in properties that will increase in value over time.

Because a significant portion of the portfolio is endowment land, the Council is required to hold the land as an endowment for the general purposes of the City.

Other objectives

- provides a non-rates revenue source to the Council
- diversification outside of the city
- provides long-term wealth generation for ratepayers.

Target

The long term target for the Investment Property Portfolio is a return which is greater than the Council's overall cost of capital. The draft budgets provide a return of 6% in the 2015/16 year. Over the next 10 years the portfolio will transition towards the target.

This will be achieved according to the following sequence:

- identify and sell properties that aren't making an appropriate return
- identify and sell properties with a return less than the DCC's overall cost of capital
- reinvestment in properties that will provide a target rate of return on investment, along with capital growth.

Surplus Property Sales

Maximising returns and realising under-utilised and non-performing, non-strategic assets

This will be achieved according to the following sequence:

- sell properties already identified as not being required for operational or strategic purposes
- identify and sell properties that are not required for operational or strategic purposes, that are not making an appropriate return
- identify and sell properties that are not required for operational or strategic purposes with a return less than the Council's overall cost of capital
- reinvestment in properties that will provide a target rate of return on investment, along with capital growth.

Infrastructure Strategy

Executive summary

One of the Council's main functions is to provide roading, water supply and waste services to the city. The networks of roads and footpaths, pipes, treatment stations and drains that provide these services are called service infrastructure.

This Infrastructure Strategy outlines a planned approach to four key areas of service: roading and footpaths, water supply, wastewater and stormwater. The latter three, collectively referred to as 3 Waters, include an asset base with a gross replacement cost of $1.6 billion, while the roading and footpath asset base represents a further $1.3 billion. Providing these services forms a substantial part of the Council's activity and expenditure, accounting for approximately 46% of annual operating expenditure and approximately 78% of annual capital expenditure. Ensuring consistent and reliable service delivery to the community requires good asset management practices and strategic thinking.

Dunedin's aging infrastructure, and the nature of infrastructure investment over time, means the Council faces challenges over the next 30 years as it balances the need for infrastructure renewal, new capital expenditure and ongoing maintenance. This will require significant investment to maintain existing levels of service. By level of service we mean the range and quality of service that we provide for the community – the measurable outputs such as the quality of drinking water or the efficiency of travel on the roading network. There are small pockets of the city where we are not meeting service levels and this will continue in the short term as the infrastructure deteriorates. However, careful planning of infrastructure renewals delivering efficiencies, and the gradual increase in funding, will allow us to address these areas in the medium term. Key service levels, such as drinking water quality, are not affected.

There are a range of factors that need to be considered when planning for infrastructure renewal and development. However, the overriding issue is the age and condition of the infrastructure. This situation is partially due to underfunding in the past and partially due to nature of the city's development, with large quantities of network infrastructure being built over a short time. This has led to the need to renew a large number of these assets over the next 30 years.

We are maintaining the existing levels of customer service by providing appropriate renewals funding. That ensures the services continue to function at the level they are now. By developing a 30 year Infrastructure Strategy as part of the Long Term Plan (LTP), the Council is able to take a long term strategic view of asset renewal and development, managing and prioritising the capital programme to provide greater certainty for financial planning. It outlines the key issues associated with the on-going management of the infrastructure and the most likely scenarios for operational and capital expenditure requirements across the strategy's three decade time span. This provides a clearer picture of when expenditure is required and how this may impact on rates requirements during and beyond the 10 years of the LTP.

We are forecasting expenditure of $844 million and $719 million respectively on 3 Waters and roading infrastructure renewals and new capital in the 30 years between 2015/16 and 2045/46. Over the same period, around $1.9 billion is forecast to be spent on operational costs. This expenditure will allow us to continue to provide the services that are in place now. Decisions to increase service levels by adding or improving services, will mean either increased costs or that existing programmes would have to be reprioritised to include them. That could result in some previously planned work being delayed.

Renewals expenditure is forecast to be on average over the next 10 years $16-19 million per year for 3 Waters and $17 million per year for roading and footpaths. It is important to note, however, that due to under-funding of renewals in the past it will be necessary to fund them above this level in the short to medium term to address the backlog.

Stepping up the renewals programme in the first 10 years of the strategy is the preferred way to deal with the issues outlined above. This allows us to manage any expenditure peaks and troughs in the longer term and ensure our key service levels can be maintained without big increases in operating costs.

In order to reduce the impact of these peaks, the DCC has developed a prioritised programme so the assets which most need to be replaced are tackled first. At the same time we will be working to provide best value for money in the way we manage these projects. This will include departments co-ordinating work planned for areas such as the Warehouse precinct and the central city. The Council believes it is preferable to invest in catching up on renewals over the next 30 years than to leave funding at 2014/15 levels and have assets and service levels deteriorate over time.

Introduction

This strategy is a new legislative requirement under the 2014 amendments to the Local Government Act 2002. The aim of the strategy is to identify the key infrastructure issues facing the Council and the principal options for managing these issues.

The document is structured in a series of chapters, describing the strategic framework and context that the strategy operates within, and the major issues for the activities contributing to the strategy. Major issues are described in summary initially, with activity specific responses to these issues described in later chapters of the strategy. Financial information is presented at the aggregated level in the chapter: 'How much needs to be invested over the next 30 years?' Activity specific estimates of cost for operations, capital expenditure for renewals, new capital requirements across the 30 years and key asset management practices and considerations are described in the latter chapters of this document.

Financial information is provided in detail for the first 10 years of the strategy, with estimates of expenditure for the remaining 20 years which are shown in blocks of five years.

This document is supported by the Council's wider strategic framework and activity group Asset Management Plans.

What is an infrastructure strategy?

This strategy provides information about the significant infrastructure issues that the Council will face over the next 30 years. This strategy applies to the following groups of activity:

- roading and footpaths
- water supply
- sewage treatment and disposal (more commonly known as wastewater)
- stormwater.

Providing these services forms a substantial part of the Dunedin City Council's activity and expenditure:

- approximately 46% of the Council's annual operating expenditure
- approximately 78% of Council's annual capital expenditure.

The Council's 3 Waters services (water supply, wastewater and stormwater) work with the main types of water affecting people's lives – drinking water, wastewater from kitchen, bathrooms, toilets and laundries, and rainwater.

The Council ensures that people receive drinking quality water at their taps, that wastewater is removed and treated for environmentally safe discharge at sea and ensures that rainwater going into the stormwater network from roofs and streets is removed and disposed of in accordance with Regional Council resource consent requirements.

This is achieved via a vast network of largely underground pipes, pumping stations and treatment plants.

The roading and footpaths activity group manages a large network of road carriageways, footpaths, cycleways, streetlights, traffic signals, signs and road markings, retaining walls, bridges, culverts and seawalls. All of these assets contribute to the ability to move people and goods around the city using a variety of means of transport.

Roading infrastructure also connects Dunedin to the wider national and international road, rail, shipping and air transportation networks.

Managing and maintaining these assets to ensure consistent and reliable service delivery to the community requires good asset management practices and strategic thinking. A key characteristic of Dunedin is the age of the existing infrastructure. By developing a 30 year Infrastructure Strategy in this Long Term Plan (LTP), the Council is able to demonstrate that it is taking a long term strategic view and making prudent decisions regarding the funding of any further development of networks and maintenance, and renewal of the existing assets.

In the past five years, the Council has focused on strategic planning by developing an integrated strategic framework based on eight core strategies, including a Spatial Plan for the city. The city's infrastructure enables the social, economic, recreational, environmental and other outcomes discussed in these strategies. Two of these strategies relate specifically to the overall planning for the city's infrastructure and take long term strategic views – the 50 year 3 Waters Strategic Direction Statement completed in 2010, and the 30 year Dunedin City Integrated Transport Strategy completed in 2013. Development of these strategies involved extensive community consultation and they are supported by investment in technology to assist with assessing network asset condition and management of asset life cycles.

The 30 year Infrastructure Strategy compliments this work by outlining the key issues associated with the on-going management of the infrastructure and the most likely scenarios for operational and capital expenditure requirements across the 30 year time span of the strategy. By providing a longer view of requirements residents and ratepayers will get a sense of when expenditure is required and how this may impact on rates requirements beyond the 10 years of the LTP.

Infrastructure strategy at a glance

This strategy applies to the Council's roading and footpaths, water, wastewater and stormwater services.

Challenges faced by the Council:

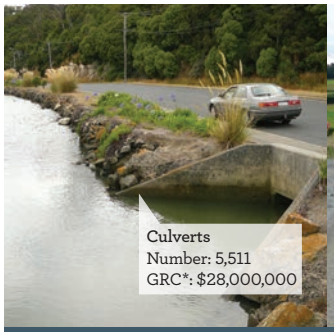
- ageing infrastructure
- relatively low levels of population growth and economic growth
- an aging population which will provide challenges and opportunities for infrastructure networks, particularly for roading and footpaths
- predicted effects of climate change.

Over the next 30 years the Council plans to:

- maintain existing levels of service while managing the above challenges
- manage infrastructure by focusing expenditure on renewal of ageing assets
- step up the level of renewals funding in the next five years and hold funding at the increased level to manage peaks in asset renewals noting that:
  - peaks occur when large numbers of assets need renewal at the around the same time
  - sustainable levels of renewals expenditure is forecast to be approximately $22 million per year for the 3 Waters and $17 million per year for roading and footpaths
  - higher levels of funding are required in the early years of the strategy to manage backlogs in renewals in the 3 Waters
- strengthen the capability and capacity of the teams developing and delivering renewals programme requirements.

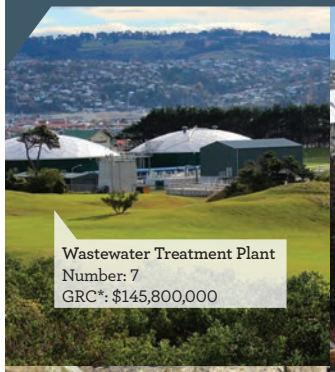
Where will we be in 30 years' time?

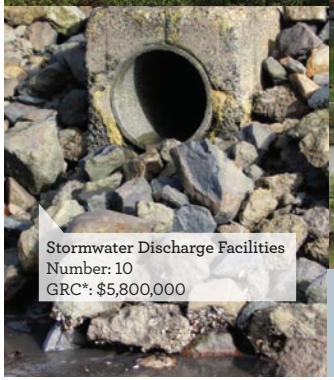
- renewals backlogs will be caught up
- Dunedin's infrastructure will be fit for purpose and will be continuing to deliver levels of service that meet today's community expectations.

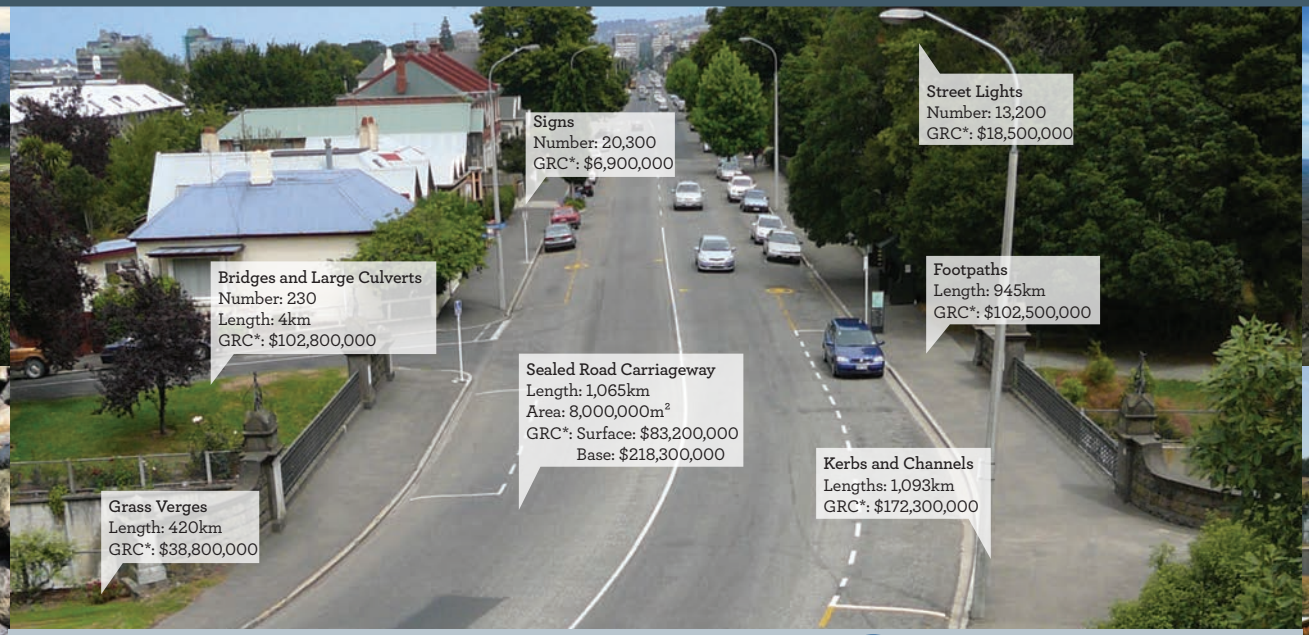


DUNEDIN'S MULTI BILLION DOLLAR INFRASTRUCTURE

The DCC assets are valued annually so that appropriate depreciation can be allowed for in budgets to replace assets at the end of their life.
*GRC – Gross Replacement Cost







Water Supply Pipe
Length: 1,380km
GRC*: $590,200,000

Sewer Pipe
Length: 906km
GRC*: $493,400,000

Stormwater Pipe
Length: 371km
GRC*: $282,600,000

Key assumptions

These are the key assumptions that under pin the Infrastructure Strategy and projected budget requirements.

Assumption		Risk	Level of Uncertainty	Impact
Levels of service	It is assumed that existing levels of service will be maintained unless otherwise stated for the duration of the 2015/16 – 2024/25 LTP.	Service levels may require adjustment in response to service issues identified by the community, changes to legislation or an external factor.	Low	Changes to the stated service levels may result in new operational and/or capital expenditure costs which may require an increase in rates requirement.
Capital Expenditure Budgets – Renewals	The level of renewals shown in the budget estimates and this Infrastructure Strategy will ensure the long term integrity of infrastructure assets within the roading and footpaths and 3 Waters networks.	That renewals programmes are deferred and asset condition deteriorates as a result.	Low – Medium	A long term deferral of renewals poses a risk of asset deterioration and compromise of network integrity which may attract additional capital expenditure costs in the future.
Capacity and Capability – 3 Waters Renewals	That the planned improvements to work and procurement practices will allow 3 Waters to deliver the renewals programme to budget. Efficiencies of 16% are required on renewals costs in order to deliver projected work programmes and budgets.	That the required efficiencies are not able to be made.	Low – Medium	Failure to find the required efficiencies will impact 3 Waters' ability to catch up on renewal work to the level proposed in this strategy. This would result in a further backlog of renewal works and may attract additional capital expenditure costs in the future.
Useful lives of significant assets	The useful lives of significant assets shown in accounting policies and activity management plans have been assessed appropriately.	Asset life and condition assessments prove to be invalid and assets require replacement earlier or later in their life cycle.	Low	Asset management planning is a priority for the Council. An unexpected failure of an asset would be managed by re-prioritisation of capital expenditure programmes. Additional borrowing costs may be incurred if renewals programmes were not able to be re-prioritised, and could require rates funding.
Population growth projections	It is assumed that the population growth projections stated in the LTP significant forecasting assumptions and utilised in roading and 3 Waters asset management systems, provide an appropriate indication of population growth for asset management and planning purposes.	That population growth occurs at a faster or slower rate than projected.	Low	Slower or faster population growth may impact on service levels, infrastructure expansion renewal programmes and costs, resulting in increased or decreased rates requirements.

Assumption		Risk	Level of Uncertainty	Impact
Industry capacity for infrastructure asset construction	It is assumed that sufficient design, engineering, and construction capacity, including availability of construction materials, will exist in the construction industry to undertake the physical works programme within projected timeframes.	That the demands of the Christchurch rebuild on the construction industry may impact the Council's ability to engage consultants and contractors for components of capital expenditure projects, particularly in roading.	Low	Issues with availability of contractors may cause delays and/or cost escalations in competitive tendering which will impact project budgets and timelines.
Oil price volatility	Oil price fluctuations may impact on operational and capital expenditure estimates with fluctuations in fuel pricing and movements in the Construction Cost Index (CCI). Impacts may be positive or negative but in the longer term are expected to be negative. No specific allowance has been made in budgets to accommodate oil price volatility. Oil price fluctuations may influence modal (method of transport) choices.	That contract pricing is significantly impacted by oil price increases or increases. That the modal choices impact on the range of service/infrastructure that the Council provides.	Medium Low	Increased CCI and fuel costs may impact the Council's ability to complete programmed work within budget. Work programmes may need to be changed to fit funding. That changes in modal preferences result in additional costs and potential rate increases.
Climate Change	It is assumed that the climate change projections commissioned by the Council and utilised in the 2011 Climate Change Policy are correct.	That the projections do not match reality.	Medium/ Unknown	Climate change adaptation and/or mitigation works are required earlier or later than programmed and require changes to capital expenditure programmes.

The complete set of significant forecasting assumptions for the Council can be found in Section 3.

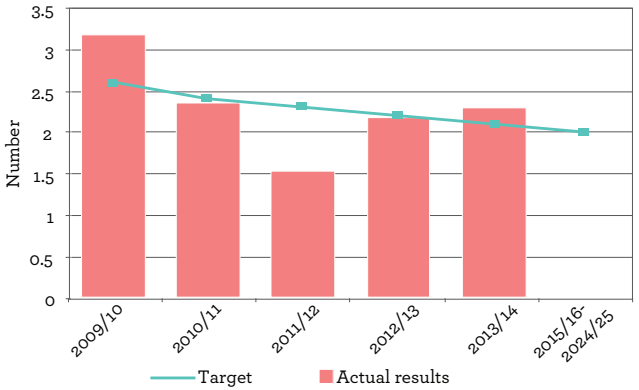
Maintaining service levels

The Infrastructure Strategy is based on the assumption that the current levels of service provided by the roading and footpaths and 3 Waters activities will be maintained across the next 30 years. Levels of service are usually defined as the outputs of a service and are supported by performance measures. For example 'Residents receive safe clean water' is a service level and can be measured by compliance with aspects of the New Zealand Health Drinking Water standards.

In order to maintain existing levels of service, infrastructure networks and assets will need to be maintained in a condition that will support these levels. This means that the Council will be focused on the renewal of assets rather than major new projects. Any new projects that may be requested by the community would result in additional costs over and above the projected funding included in this strategy and potentially result in an increase in rates. New projects would be viewed as an increase in service levels or a new service level.

There are some infrastructure issues that are affecting the level of service provided by the Council. The footpath renewal programme has been slowed while Chorus complete ultrafast broadband cabling work. In 3 Waters, ageing pipes and sewers are creating 'nuisance' level problems for residents. Deteriorating clay pipe sewers (which were largely built in the early 1900s) are now causing overflow and flooding issues. Ageing cast iron water mains (many of which were installed in the 1920s and 1930s) are causing discoloured water and affecting water flow and pressure. The levels of service that are affected by these issues are shown below. Further information about these can be found in the Activity Management Plans for the water, wastewater and transport activities and in the activity specific sections of this strategy.

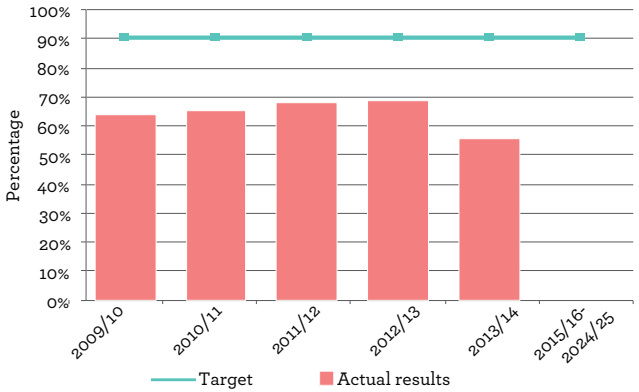
Level of service: The water tastes and looks pleasant



Performance Measure: Number of complaints regarding colour, taste and odour per 1000 connections

The stepped target is considered achievable with the planned renewals programme in place and targeted planned maintenance programmes.

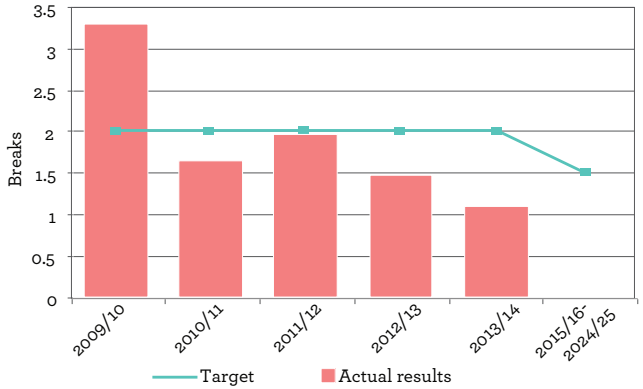
Level of service: Water is available for firefighting



Performance Measure: Percentage of Tested Hydrants that meet NZ Fire Service Code of Practice

Condition issues in older cast iron water mains causes some flow and pressure restrictions in certain areas. These areas are being targeted for renewal and compliance with NZ Fire Service Code of Practice is expected to rise over time as these projects are delivered.

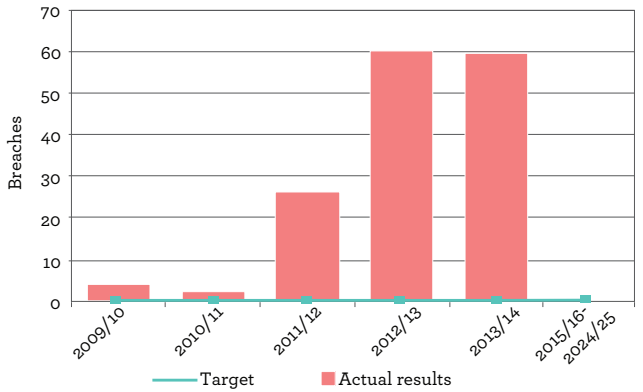
Level of service: The wastewater service is reliable



Performance Measure: Number of Breaks per 100 km Foul Sewer Main

The target has been met in recent years due to recent improvements in the approach to renewals planning. The target has been stepped accordingly from 2 breaks per 100 km to 1.5 breaks per 100 km from 2015/16.

Level of service: Sewage is managed without adversely affecting the quality of the receiving environment

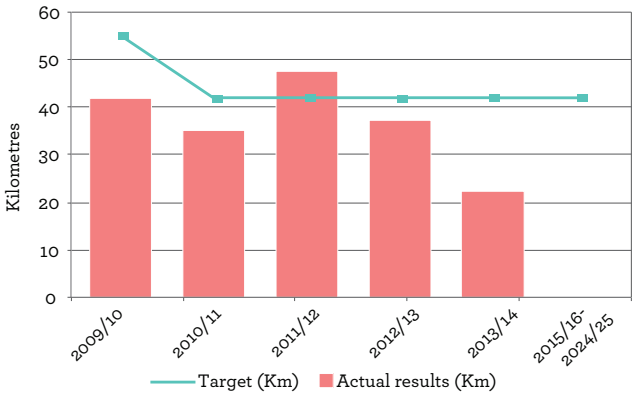


Performance Measure: Number of recorded breaches of the Resource Management conditions (Wastewater)

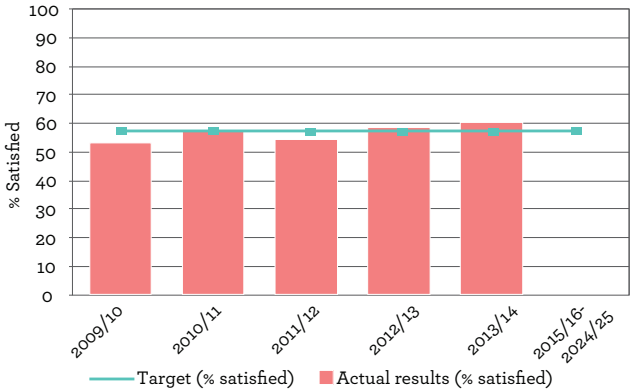
The increase in recorded breaches relates to more intensive monitoring of spill sites as well as deterioration of the pipes. The number of monitoring sites has been increased annually from 2012/13. The proposed renewals programme will improve performance on this measure over time; however it is subject to annual variation due to the number and intensity of weather events.

Level of Service: The transport network facilitates active travel

Two performance levels measures apply to this service level.



Performance Measure: The total length in kilometres of footpath resurfaced annually



Performance Measure: Resident satisfaction with the condition of footpaths throughout the city

The slowing down of footpath renewals since 2012/13 has not adversely affected satisfaction as yet. Renewals in particular streets have been rescheduled so that they are not undertaken until after the work on ultrafast broadband is carried out. Chorus is reinstating the footpath that is disturbed during their work.

Basis of budget estimates from 2025/26 – 2044/45

The latter 20 years of the strategy contains estimates of expenditure based on five year averages:

- operational expenditure – it has been assumed that expenditure will be similar to the 2024/25 year through the following 20 years
- capital expenditure for renewals – estimates are based on data generated by condition assessment programmes, performance data and remaining asset lives
- new capital expenditure is based on projects identified in strategic plans.

Budgets for the first 10 years have been inflated using information provided by BERL in October 2015. An inflator of 2.5% per annum based on an analysis of prospective information from BERL (20 years average percentages for key inflation adjustors, a consideration of CPI projections and other economic indicators) has been applied to the 2025/26 – 2044/45 years.

Unless specified, budget information is shown with inflation applied.

When individual projects are discussed within the strategy, these are shown as uninflated (in today's dollars). This allows the reader to assess the costs of the individual projects and compare these without the distorting effect of inflation, particularly in the later years of the strategy. Where individual projects are described in the activity specific sections of this document uninflated costs (in today's dollars) are used for the same reason.

Context and major issues for Dunedin's infrastructure

Dunedin faces some unique challenges and opportunities now and in the future relating to its population and demography, economy, social wellbeing and connectedness, housing, arts and culture and environment. These trends will impact on the Council's strategic priorities, its land use planning, amenities, services and ability to fund Council infrastructure. The city profile has described these in more detail. A number of these challenges are common to both the roading and footpaths and the 3 Waters groups of activity and some are unique to a particular group.

These challenges will affect how we manage our 3 Waters networks and how people and businesses will choose to travel and move goods. Some of the challenges are national or global, and many cities around the country and the rest of the world are faced with the same, or similar, challenges. Others are more specific to Dunedin due to factors including geography, socio-economic conditions and the nature of the existing networks.

The following information summarises the significant issues facing the Council's roading and footpaths and 3 Waters activities. The proposed response to each of these issues is explained in the activity specific sections of this document and includes the principal response(s) along with the implications of no response.

Ageing infrastructure

The nature of Dunedin's growth has meant that large quantities of network infrastructure were built over short time periods or 'investment bubbles'. Assets that were built at the same time generally require renewal at the same time, causing peaks in renewals cost.

Climate change

Climate change has been flagged as a critical consideration in the Council's long term planning. The Council uses guidance from the New Zealand government, based upon the best available climate science, to underpin planning. Currently we are using guidance from the Ministry for the Environment that is based on the Intergovernmental Panel on Climate Change's (IPCC) Fourth Assessment Report 2007 predictions, and our own Climate Change Projections Policy (updated in 2011 following a report commissioned by the Council from Professor Blair Fitzharris of the University of Otago).

The IPCC published a fifth Assessment Report in November 2014. This provides a clear and up to date view of the current state of scientific knowledge relevant to climate change for policymakers.

The Council is now waiting for the Government to work through updating its guidance based on this new information, and then we will be able to update our Projections Policy and current climate change assumptions if needed, and continue to plan actively for future possible events and scenarios.

The Council's current Climate Change Projections Policy sets out the following climate change projections:

Climate variable	Projected change in Dunedin	
	2040	2090
Mean temperature change	+1.1°C	+2.5°C
Sea level rise	+0.3m	+0.8 to +1.6m
Annual rainfall change [min, max]	-5 to +5%	-5 to +15%

Climate variable	Projected change in Dunedin	
Daily temperature extremes	Fewer frosts, increasing very hot days.	
Extreme rainfall	+9%	+20%
Drought	Drought incidence will be largely the same over large areas of the city, slight increase for urban area of Dunedin city and expected to increase for coastal areas north of Waitati.	
Waves and storm surge	Storm surge level likely to rise at least in line with sea level and to be greater when combined with El Niño Southern Oscillation events and increased storm intensity.	
Average wind	Increased annual mean westerly component.	
Strong wind	Increased possibility of severe winds.	
Snow	Snow level rising with decreased annual mean snowfall.	

Looking forward, Dunedin is expected to experience greater seasonality with the climate becoming drier for extended periods, with increased mean temperatures and daily temperature extremes. Increased peak demand due to drier periods and decreased average river 'low-flows' could create a drought situation. However, rainfall events are likely to become heavier but less frequent, which results in an increased annual catchment yield. Sea level is predicted to rise with increased occurrence of associated storm surges. Dunedin may be at particular risk to the effects of sea level rise as it has significant areas of low-lying land, some of which is reclaimed.

Population trends

Dunedin's population is ageing, with a high and growing proportion of people aged over 65 years, while the working age population (15 – 64 year olds) is predicted to remain static initially and then decline. The 65-plus group is projected to increase over the next 20 years, increasing from 14% to approximately 22%. Dunedin's ageing population will affect demand for modes of transport and drive changes in travel patterns as older people tend to make greater use of shared transport, public transport and mobility scooters. There will also be increased demand for healthcare services and community facilities. Better pedestrian environments that cater for those with mobility impairments, using wheelchairs and mobility scooters will be important to ensure accessibility for an ageing population. An emerging trend where fewer young people are learning to drive may also impact demand for alternate transport modes.

Population projections and census data show that Dunedin has lower growth relative to the rest of the country. Dunedin's population is projected to grow by only 4.4% over the next 20 years.

Dunedin also has a high proportion of 15 – 24 year olds (21.3% in Dunedin compared to 13.9% nationally). This is because Dunedin is home to about 28,000 tertiary students, of whom about 80% (22,400) are from outside Dunedin. This presents an on-going transport challenge in regard to providing for this group's transport needs and choices, and because young people are over-represented in Dunedin's road crash statistics.

Another trend related to ageing population is average household size which is declining. Dunedin's average household size is 2.5 people compared with 2.7 people nationally and is projected to decline to 2.2 people by 2060. This trend is influenced by lifestyle choices as well as population changes and may result in more demand for smaller housing units and urban intensification in future years. This may in turn affect infrastructure requirements.

Resilience

The Council will work with other authorities and lifeline utilities throughout the Otago region in order to implement the activities outlined in the Otago Lifelines Project Report. This report addresses the criticality of network components, known risks from environmental effects, interdependencies between lifeline utilities in responding to a major event and proposed initiatives to improve network resilience. Identified hazards include earthquake, tsunami, flooding, landslides, fire, weather events (snow, wind and rainfall) and events arising from human activity such as terrorism, a global financial crisis or a more localised economic downturn.

The Otago region is prone to seismic activity. Recent events in Christchurch have provided the infrastructure engineering community with significant learning opportunities. The Council has taken the time to incorporate industry learning into the way it manages infrastructure. Our 3 Waters networks are made up of significant portions of earthquake vulnerable materials such as earthenware pipes and typically the most vulnerable materials were installed early in the 20th century.

Economic predictions

While Dunedin provides its residents with a great lifestyle, the city is at risk of losing business and people to other centres. Economic growth in Dunedin has been slow and at times declining over the past 10 years relative to the rest of the country. Creating an attractive environment – where businesses thrive and residents feel proud – will establish Dunedin as one of the world's great small cities. Dunedin's economic development strategy aims to increase employment growth by around 2% per annum and to see an increase in GPD per capita by around 2.5% per annum over the next 10 years.

Dunedin has important economic foundations on which to build a prosperous city of opportunity. These include:

- the University of Otago and Otago Polytechnic, and a reputation for high quality education, innovation and research
- access to significant natural resources, such as mineral wealth in the hinterland and extensive agriculture
- developing strengths in high value niches of the economy related to health technologies and biotechnology, food processing, ICT, creativity, niche manufacturing and engineering:
  - being the gateway to the lower South Island – a major transport and export hub
  - access to New Zealand's fastest fibre optic broadband services from February 2015.

Dunedin has a comparative advantage in the education and health industry sectors, with employment in medium and high-tech manufacturing and knowledge intensive services also relatively higher than the rest of the country. Alongside this is Dunedin's strong quality of life rating, with its residents rating of their overall quality of life one of the highest in the country.

The challenge for the Council's infrastructure networks is to be able to manage expected levels of service and the long term financial and environmental sustainability of infrastructure networks in a strategic manner. This means being able to readily adapt to changes in growth supported by reliable knowledge of infrastructure network asset condition and capacity.

Capacity and capability

The Council delivers its services through a combination of in-house and external professional services and physical works contractors. The Council, as one of the main clients of civil construction services in the region, needs to ensure that there is sufficient capability and capacity within the marketplace to meet the future level of works as outlined in this strategy. This will require the Council to act as a "smart buyer" of such services, and to tender out the works in such a manner that the industry remains able to deliver the required works in a competitive manner.

Funding and affordability

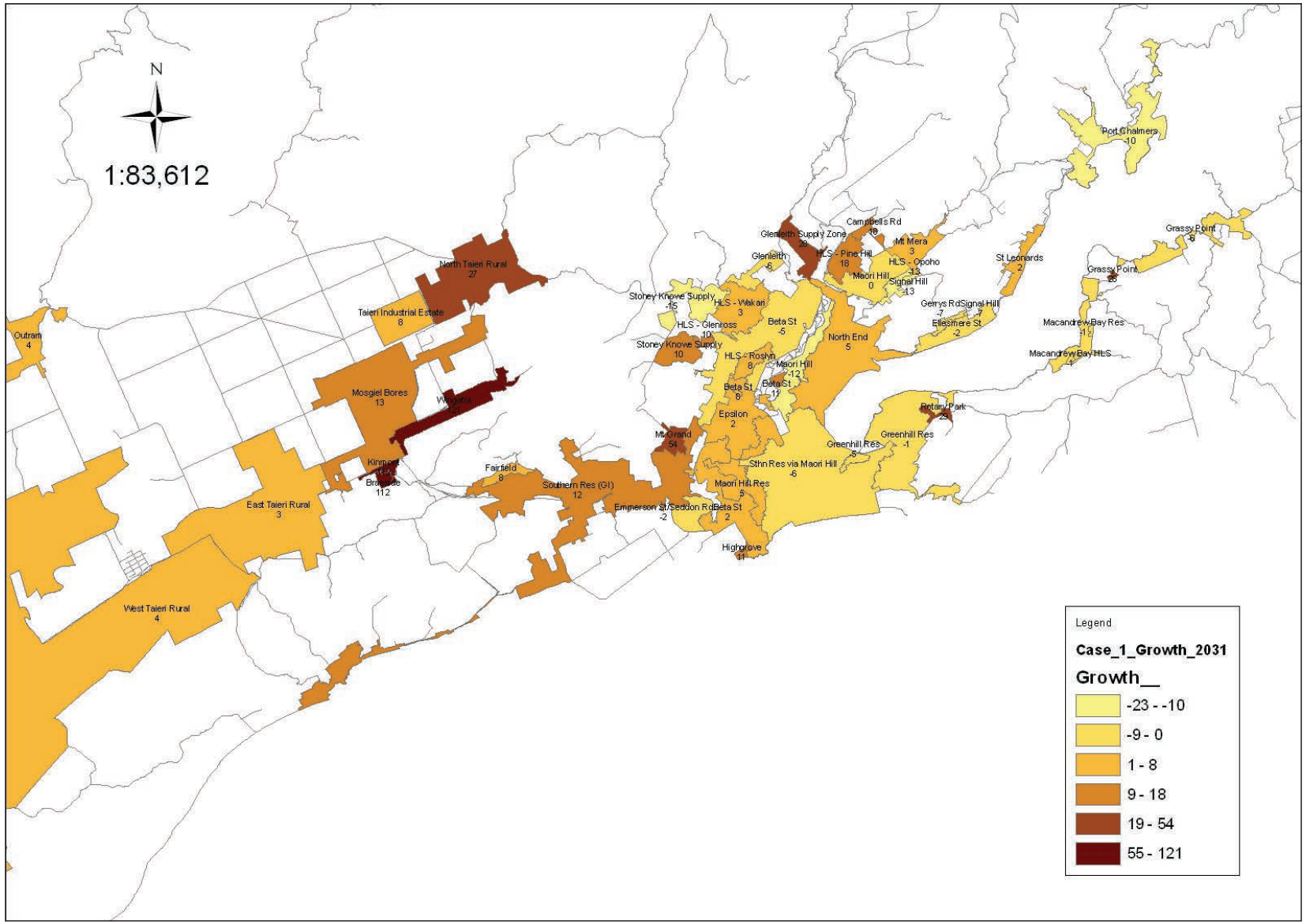
The requirements for the renewal of infrastructure assets are scheduled to increase across the next 30 years.

Over the past 20 years the Council engaged in a period of significant new capital expenditure, building new assets such as the Forsyth Barr Stadium, redeveloping the Toitū Otago Settlers Museum and Town Hall/Dunedin Centre complex, and upgrading existing infrastructure assets such as the Tahuna Wastewater Treatment Plant and outfall, and water supply and stormwater networks. This capital investment has increased levels of service and enhanced the liveability of the city. The expenditure was largely funded by borrowing and has increased the Council's debt levels and resulted in high increases in overall rates during the periods of heaviest expenditure. With these major projects completed, the Council has shifted its focus and is now operating in an environment of financial constraint in order to reduce debt and limit rates increases to the levels specified in the Financial Strategy. This approach is supported by the people of Dunedin who have indicated in successive Residents' Opinion Surveys that they want the Council to keep new spending, debt and rate increases in check.

The 2015/16 LTP provides funding for the first 10 years of the Infrastructure Strategy and the Council's revised financial strategy acknowledges the need to increase the level of funding for infrastructure renewals going forward. It should be noted that the backlog of renewals in 3 Waters ($60 million in today's dollars) in the LTP period which is not funded, represents assets at their theoretical end of life. This does not mean that $60 million of assets are at risk of failing at the same time. The identified backlog represents the best knowledge about when these assets should be renewed if there were no funding constraints and sufficient industry market capacity was available to carry out the work. The backlog combined with other scheduled renewals cannot be managed within the first five years of the LTP. There is smaller backlog of renewals for footpaths, as a result of slowing these while work on the Ultra-Fast Broadband (UFB) network is completed.

The approach to managing renewals in both 3 Waters and roading and footpaths is to steadily increase the level of renewals funding across the next six years and to hold funding at this higher level to enable smoothing of renewals across the later part of the LTP period and the following 20 years.

Figure 1: Schematic of Metropolitan Population Change to 2031



How much needs to be invested over the next 30 years?

In addressing challenges and retaining levels of service, the Council is forecast to spend $844 million and $719 million respectively on 3 Waters and roading and footpath infrastructure renewals and new capital in the 30 years between 2015/16 and 2045/46. Over the same period, around $1.9 billion is the forecast spend on operational costs, though operational efficiencies are a continual area for improvement and savings are actively being pursued in this area.

The 3 Waters asset base is estimated to be worth a gross replacement cost of $1.6 billion. The roading and footpath asset base represents a further $1.3 billion. Broadly assuming an 80 to 100 year life cycle for network assets, it is expected that sustainable renewals expenditure is, on average over the next 10 years, $16 – 19 million per year for 3 Waters and $17 million in roading and footpaths. The projected total expenditure on renewals is around $1.3 billion over the 30 year Infrastructure Strategy. It is important to note, however, that due to historic under-funding of renewals it is necessary to fund renewals above the sustainable level in the short to medium term to address the backlog. It is also true that some assets have a considerably shorter life cycle such as those with mechanical and electrical components.

The graphs on the following pages show the total projected infrastructure expenditure (Figure 2), the total capital expenditure projections (Figure 3) and the total operational expenditure (Figure 4) across the 30 year period of the strategy for 3 Waters and roading and footpaths.

Figure 2 shows total projected expenditure for the 3 Waters and roading and footpaths in a stacked area graph split into operational expenditure, capital expenditure on renewals, and capital expenditure on new projects.

The Council has set itself a significant challenge by adopting a funding strategy for 3 Waters that does not provide for all of the renewals that are required over the 30 year horizon. This will be absorbed by implementing the following management strategies.

- addressing 3 Waters' networks as one – where economically appropriate the Council will renew all 3 Waters' networks in a given locality at once as a part of the same contract. This approach will yield significant efficiencies for the Council over the next 30 years. A recent example of this approach resulted in a contract price roughly 40% of the pre-tender estimate
- use of alternative rehabilitation techniques – where it constitutes the lowest life cycle cost the Council will use alternative rehabilitation technologies such as pipe relining to address renewals requirements
- optimisation of existing networks – the Council will ensure all pipes are optimised to achieve the required levels of service by utilising its in-house hydraulic modelling capability
- optimisation of renewals timing – the Council will develop tools (both software and process) to optimise the timing of renewals to ensure the most appropriate level of funding is made available.

To achieve this target the Council will need to find collective efficiencies of approximately 16% on total renewals costs over the next 30 years, while absorbing other cost pressures such as peak oil and growth. This is an ambitious target.

Table 1: Expenditure 2015/16-2044/45 (inflated)

Infrastructure Activity	New Capital Expenditure Funded	Renewals Capital Expenditure	Operational Expenditure
Water Supply	$17.13 m	$432.19 m	$513.62 m
Wastewater	$11.89 m	$268.69 m	$567.14 m
Stormwater	$11.63 m	$102.53 m	$108.67 m
3 Waters combined activities	**$40.65 m**	**$803.42 m**	**$1.19b**
Roading and footpaths	$173.35 m	$546.29 m	$723.42 m
Sub totals	**$214.00 m**	**$1.35b**	**$1.91 b**

Figure 2: Projected Infrastructure Expenditure for Roading and Footpaths, Water, Wastewater and Stormwater 2012/13 – 2044/45 (inflated)

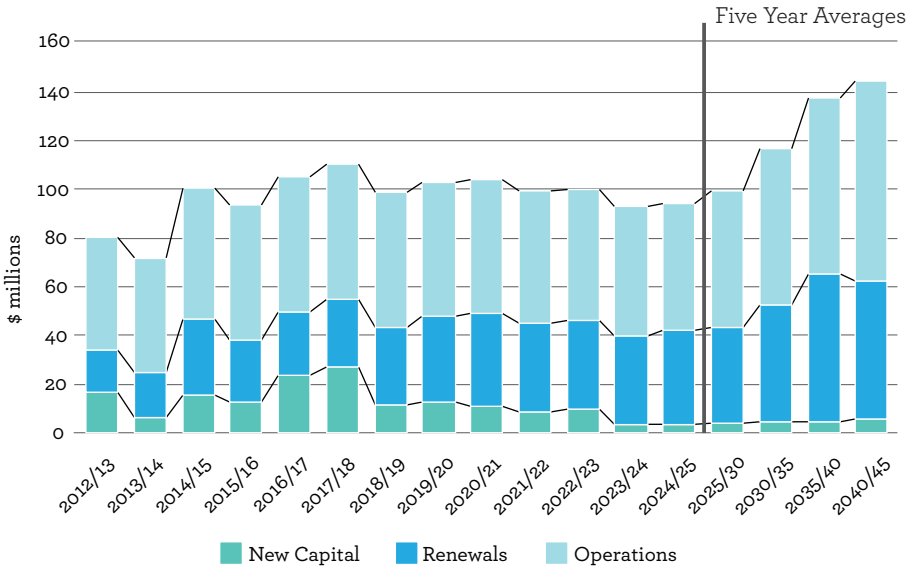
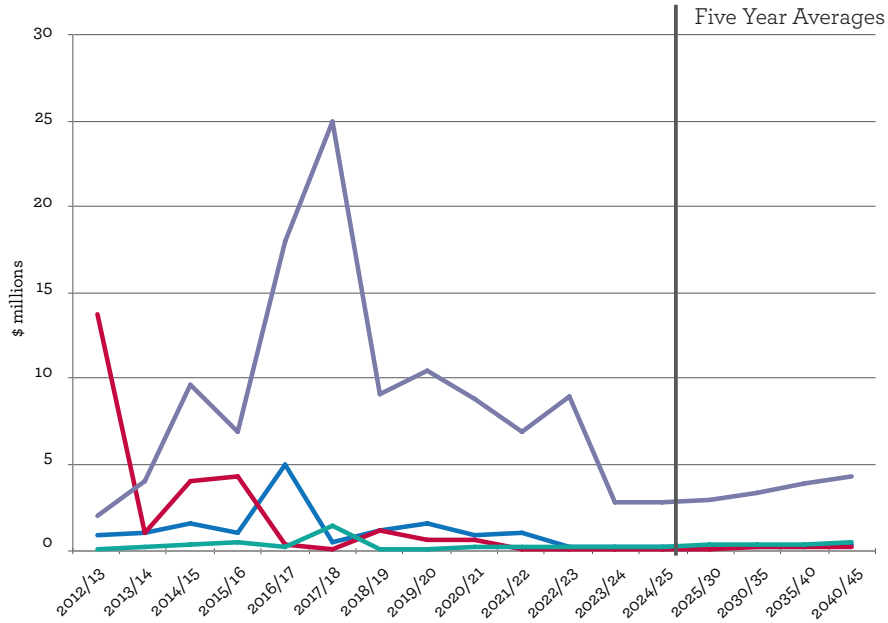


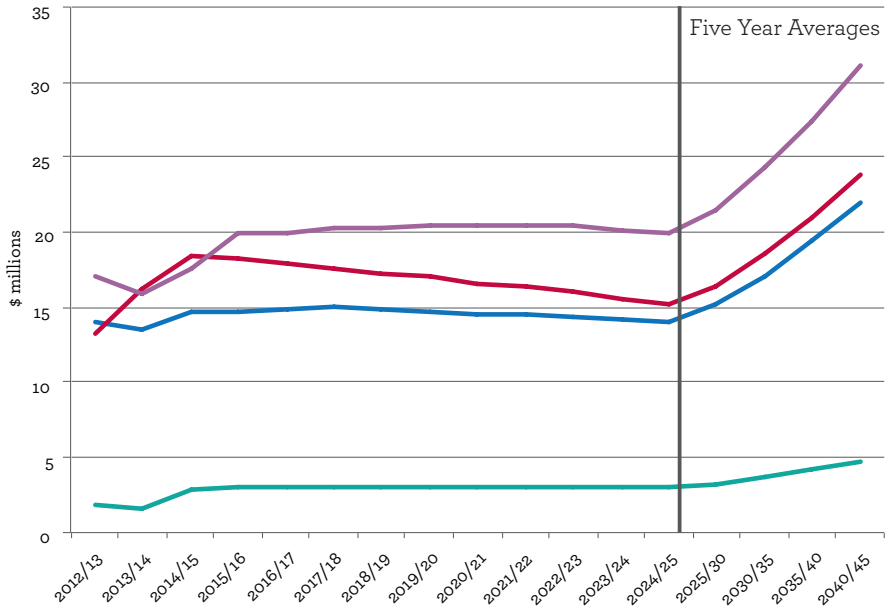
Figure 3 shows capital expenditure by each activity group across the 30 years of the strategy. It should be noted that the scale on the vertical axis of this graph differs from that of Figure 2 and shows a peak in spending on water infrastructure relating to the renewal of the Deep Creek and Deep Stream water supply pipelines. This is discussed further in the Capital Expenditure Highlights for 3 Waters. Figure 4 shows forecast for operating costs in each activity. Operating costs begin high in water supply and wastewater sectors, but slowly drop until the 2025/26 year where a constant sustainable level of costs is maintained. This is mostly due to savings in interest costs from the recent new capital expenditure and upgrade programme. Stormwater has a low operational cost and only equates for 9% of operational budget, with its spend remaining constant about $3 million per year over the 30 year infrastructure period as it is the only activity with no treatment costs.

Figure 3: Dunedin City Council Infrastructure Capital Expenditure (inflated)



Water	0.95	1.1	1.58	0.99	4.98	0.56	1.16	1.65	0.94	1	0.2	0.2	0.2	0.22	0.24	0.28	0.31
Wastewater	13.8	1	4.13	4.4	0.4	0.1	1.17	0.65	0.65	0.15	0.15	0.15	0.15	0.16	0.18	0.21	0.23
Stormwater	0.04	0.3	0.39	0.46	0.27	1.41	0.07	0.07	0.3	0.3	0.3	0.3	0.3	0.32	0.37	0.41	0.47
Roading and Footpaths	2.04	4.04	9.61	6.92	17.99	24.99	9.12	10.43	8.89	6.86	9.02	2.81	2.81	3.03	3.42	3.87	4.38

Figure 4: Operational Expenditure Projections by Activity 2015-2045 (inflated)



Water	14.1	13.5	14.68	14.76	14.83	15	14.79	14.69	14.61	14.5	14.38	14.24	14.05	15.14	17.12	19.38	21.92
Wastewater	13.25	16.15	18.44	18.2	17.93	17.53	17.27	16.99	16.64	16.41	16.08	15.63	15.25	16.43	18.59	21.03	23.79
Stormwater	1.87	1.59	2.83	2.97	2.96	2.99	3.04	3.04	3.03	3.02	3.02	3.01	3	3.23	3.66	4.14	4.68
Roading and Footpaths	17.01	15.9	17.5	19.87	19.94	20.25	20.26	20.4	20.49	20.5	20.43	20.15	19.91	21.45	24.27	27.46	31.07

Figure 5: Relative proportion of capital expenditure (new capital and renewals) for each of the activity over the 30 year period

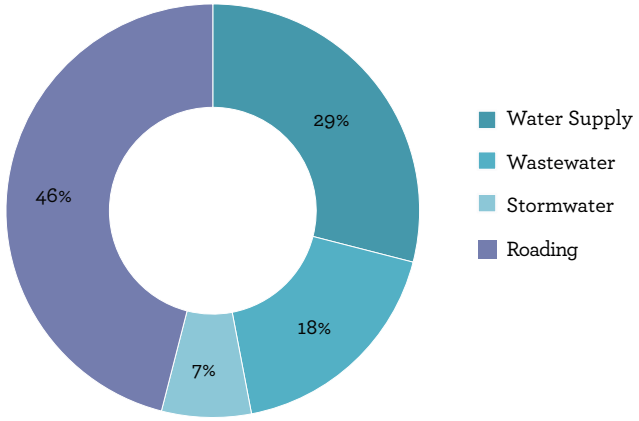
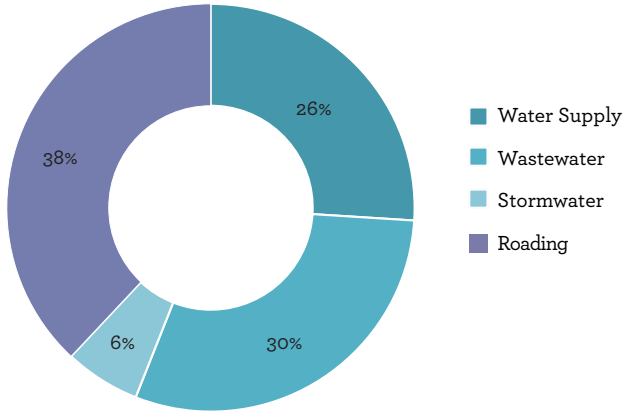


Figure 6: Relative proportion of operational expenditure for each of the activity over the 30 year period



Activity Specific Assumptions

Roading and Footpaths

The roading and footpaths activity group is responsible for roading assets and their use. To achieve this it undertakes short and longer term planning to meet the city's transportation needs, develops strategies to manage the increasing volumes of traffic, and actively promotes improved road safety. It manages the maintenance and enhancement of the city's physical transportation network, including roads, footpaths, cycleways and associated structures and amenities. It also regulates the activities of other parties, both on and next to the road corridor, which impact on the condition and availability of the network.

Dunedin's road transport network comprises state highways managed by NZTA and local roads managed by the Council.

The network experiences little congestion and most parts of the city have ample on and off street parking. Because much of Dunedin was developed prior to the era of the car, the city's main urban area is compact with a distribution of land-uses that generally supports good accessibility.

Urban Dunedin's relative compactness means that many trips can be done on foot, by bike or public transport. Dunedin's Integrated Transport Strategy notes that accommodation of alternative modes of transport should be a primary consideration for new development and urban densification.

Integrated Transport Strategy 2013

In 2013 the Council publicly consulted on and adopted a 30 year Dunedin Integrated Transport Strategy (ITS) and the transportation component of this Infrastructure Strategy aligns with and supports it. The ITS enables the Council and other agencies who invest substantial funding in Dunedin's transport system to review whether past investment priorities are still relevant and whether they are achieving the type of transport system that will best support the city, its people and the wider region. Because Dunedin's challenges and priorities will continue to evolve over the next 30 years, the Council will review the ITS every five years.

The ITS identifies some of Dunedin's key transport challenges, including road safety, fuel price volatility, high dependence on motor vehicles, the importance of improving provision for travel modes other than cars, and the future complexities of prioritising, protecting and maintaining critical infrastructure in light of a changing climate.

To address these challenges, the ITS has identified a vision and five 'Areas of Focus' that the Council will prioritise. The vision is:

'Dunedin is one of the world's great small cities, with a safe low-carbon transport system that supports a compact city with resilient centres, inclusive and healthy communities and national and international connectivity'

The identified areas of focus are:

Safety: Improving Dunedin's road safety record

Travel Choices: Providing safe, viable travel options in addition to the car

Centres: Strengthening connections to, within and between Dunedin's centres

Freight: Supporting safe and efficient freight movement

Resilience: Ensuring the on-going resilience of Dunedin's transport system and key infrastructure

The ITS is based on five key assumptions which are closely related to the significant challenges for transportation infrastructure in the city:

1. the cost of fuel will continue to be volatile
2. road safety needs to improve for all users of Dunedin's transport system
3. there is a need to provide for the transport requirements of Dunedin residents who do not have access to a car
4. the Integrated Transport Strategy should give effect to the Dunedin City Spatial Plan
5. providing active transport options will contribute to a healthy and sustainable city.

A copy of this strategy can be found at www.dunedin.govt.nz/transport

Roading and footpath's specific challenges

This section provides further comment and describes the principal responses to the challenges identified in the 'Context and Major Issues for Dunedin's infrastructure' section, as applicable to the roading and footpaths activity group.

Ageing infrastructure

Dunedin has around 1800 km of local roads plus other transport-related assets worth a total of $1.3 billion (excluding land). Many of the assets were initially developed early in the 20th century as the population transitioned to the use of motor vehicles, and ongoing expansion and improvement continued from there. From the 1930s to 1950s many of the originally gravel roads were strengthened and sealed. Then from the late 1950s through to the early 1970s significant expansion occurred with the Housing Corporation developments. While assets with shorter effective lives are being renewed at a steady rate, for those with longer lives, future renewals will have peaks that reflect the times of increased construction activity in the city. Many of the older local road pavements are not fit to carry the larger and heavier vehicles that are being introduced and are likely to require earlier rehabilitation intervention. The assets require ongoing maintenance to ensure that their value is maintained and they continue to meet the needs of the community and wider region. Effective condition-based maintenance means that assets can achieve this for the maximum life cycle.

Activities that are expected to cause significant future fluctuations from a steady renewal budget line are:

- bridges – 60% of bridges were constructed between 1950 and 1990 so renewals will be at a low level until beyond 2050
- kerbs – 55% of kerbs were constructed between 1950 and 1980 (Housing Corporation developments) so renewals are at a low level now increasing to a peak in 2030s
- pavements – with network expansion peaking in the 1960s an increase in pavement rehabilitation is expected from 2020
- seawalls – there was substantial renewal of the harbour stone seawalls in the 1930s which means most are at the end of serviceable life and renewals for the next decade will continue to be at a high level.

Principal responses

The Council will invest adequately in renewals to maintain the performance of our infrastructure.

The Council will invest carefully by understanding which assets are most critical to maintaining the delivery of service and using information to drive pro-active condition assessment of these critical assets.

The Council will plan renewals effectively to avoid sharp increases in costs and gain cost efficiency in procurement and project delivery.

The Council will take a 'one network' approach to managing the Dunedin transport system. This means that DCC will work collaboratively with the other organisations responsible for delivering the transport system to ensure seamless, logical and integrated delivery of the transport network and to ensure that the separation of control over different parts of the network does not affect the user's experience and the coherence of the network.

The Council will develop tools to communicate effectively the implications of levels of funding.

Do nothing

Failure to find the right balance between investing in renewals and deferral could either leave the Council struggling with over-investment where the community has infrastructure surplus to requirement, or under investing and delivering a level of service that does not meet public expectation which would breach our key strategic priority ('we will ensure that, as a minimum, key service levels are maintained into the future'). Both of these scenarios will result in a rising service cost.

Climate change

Rising sea and groundwater levels, and changing weather patterns as a result of climate change, are expected to have an impact on Dunedin's transportation network in the future. Low lying densely populated urban areas (especially South Dunedin), coastal areas and major transport infrastructure (including harbour roads, the railway, and Dunedin International Airport) are likely to be affected by this.

Climate change is likely to lead to higher rainfall and more frequent, more severe, storm events. This has implications for Dunedin's transport infrastructure and asset management. Such changes may lead to more frequent and larger slips, more flooding and wetter ground conditions, with increases in temporary road closures on key transport routes and increased risk of asset failures. The life expectancy of assets may also be reduced under these conditions. All of this is likely to result in rising maintenance, repair and renewal costs. The Council and partner agencies, will need to plan ahead to appropriately meet these challenges.

Principal responses

Increase the flexibility and resilience of our affected infrastructure to reduce the risk of prolonged service interruption.

Promote the integration of land use and transport planning to reduce the demand for vehicle travel.

Plan, prioritise and support local community responses, to ensure Dunedin's critical transport infrastructure is resilient in the face of future threats and constraints.

Actively planning for potential events that result from climate change scenarios, for example designs for roading works adjacent to the foreshore will include provisions for sea level rise.

Do nothing

This would place pressure on infrastructure of accessibility to the road network due to flooding and increased road deterioration, or inundation of low-lying infrastructure due to storm surge, seabed rise, or a combination of the two.

Require a possible change in location of residential population.

The harbour-side and south city area covers the most densely populated part of Dunedin, with a population of about 10,000 residents. It contains a lot of infrastructure, such as wastewater and stormwater assets and key roads. The area has an estimated asset value of $4.3 billion. This low-lying area has been assessed as being the part of Dunedin most vulnerable to sea level rise in the medium to long term. A rise as predicted (0.59 metres by mid-2090) would leave substantial areas vulnerable to coastal inundation and a number of key assets susceptible to saltwater intrusion. The main threat, at least in the medium term, is from rising groundwater in the south city area, as groundwater levels are forced up by rising sea levels. Direct inundation from the sea becomes more of an issue around the Otago Harbour in the long term. This scenario could also displace coastal residents and require them to move to other parts of the city with insufficient infrastructure to support the localised increase in population.

Population trends

Predictive modelling is carried out to estimate future traffic growth using various parameters that include land use, population census data and historic traffic counts. The table below illustrates the expected change in vehicle trips in relation to household and population changes. The chart does not reflect the effect that rising fuel prices might have, however indications from some experimental modelling are that traffic growth will reduce as fuel prices increase.

Table 2 – Projected Population Growth and Impact on Vehicle Trip Numbers

Parameter	2008	2021 (forecast)	2041 (forecast)	2008 – 21 growth (pa)	2008 – 41 growth (pa)
Households	44,789	51,035	57,155	1.1%	0.8%
Population	120,298	126,726	131,303	0.4%	0.3%
All day trips	396,527	445,274	487,452	0.9%	0.7%

Principal responses

The Council ensures collaboration with infrastructure providers occurs during processes such as the Second Generation District Plan. For example water and waste services considers the impact of each proposed density change on the 3 Waters networks using in-house hydraulic modelling capability. The district plan in turn allows for additional growth where infrastructure capacity is available.

The Council will take a sustainable development approach to delivering Dunedin's transport system. This includes taking into account the social, economic, and cultural interests of Dunedin's people and communities, maintaining and enhancing the quality of the environment, and taking into account the needs of future generations.

Where infrastructure capacity is compromised one of the following approaches is taken:

- the district plan constrains growth
- the Council makes capacity available by utilising the development contributions policy.

Do nothing

Increased congestion can put pressure on local roads, or alternately it may no longer be economical to maintain roads to the current levels of service (for example a sealed road could revert back to unsealed).

Multi modal access

Car ownership levels in New Zealand are particularly high compared to most other developed countries. Consistent with this, Dunedin has relatively low rates of public transport or active mode (walking and cycling) use. This is even more pronounced in the more rural communities.

Much of Dunedin's transport network has been developed in the context of increasing vehicle use and private travel, and in anticipation of a degree of city growth which, largely, has not occurred. This has insulated Dunedin from many of the transport problems that bigger cities face, especially in regard to urban sprawl, congestion, pollution and car parking. This has benefitted private vehicle use and helped make Dunedin very accessible by car. Well maintained roads, generally ample parking, low traffic volumes and free-flowing urban street environments with no significant congestion all contribute to Dunedin's relatively short vehicle travel times.

Research identifies that where vehicles speeds are higher, and where little provision is made for active modes, road safety is generally compromised. In keeping with this, partly due to wide, high-speed urban street environments (such as the one-way system, Andersons Bay Road, Princes Street, and Hillside Road) and poor provision for other modes (such as buses, walking and cycling), road safety has suffered in Dunedin.

Despite Dunedin's high level of car ownership, the proportion of Dunedin residents that do not have access to a car is higher than the national average and, in a city that has prioritised the demand for car travel, the travel needs of these residents have not traditionally been well provided for.

Principal responses

The Council will reprioritise investment and reallocate space on the transport network to achieve a significant improvement in the provision of active travel modes and public transport in Dunedin, and explore initiatives to support the uptake of travel choices.

Do nothing

Conflicts between pedestrians, cyclists and motor vehicles will continue.

Road safety

The New Zealand Transport Agency's Communities at Risk Register (CARR) identifies road safety as a major challenge for Dunedin.

CARR ranked Dunedin as having seventh highest risk out of New Zealand's 67 territorial and unitary authorities in 2013 – a slight improvement from the third highest ranking in 2011 but it remains the highest of all the major urban centres.

Dunedin has the highest risk for intersections and the second highest risk for younger drivers.

The city has the third highest risk for pedestrians, motorcyclists and older road users, and the fifth highest for cyclists.

Principal responses

Signalisation of intersections and improvements to phasing on existing signalised intersections on both State Highway and local roads has increased in recent years. Maintenance of traffic signals is to a high level recognising the safety benefit. Improvements will continue at high risk intersections.

Street lights provide safety and security for motorists and pedestrians. The Council intends to replace all of its conventional street lighting fittings with LED luminaires over the next four years in order to ensure the provision of safe and efficient lighting.

Do nothing

Dunedin's accident statistic trends may not improve or may become worse.

Oil price volatility

In New Zealand, the transport sector is responsible for 86% of total oil consumption, with road transport using 87% of that total. In addition to the oil-based fuel used in motor vehicles, our roads themselves are also oil-dependent. Bitumen, the binding agent used in sealed road surfaces, is an oil-based product which also increases in expense as oil prices rise. This means, in the absence of more cost-effective alternatives, the cost of maintenance and renewal of existing sealed roads will increase, as will the cost of building new roads.

Recycling of waste product from road infrastructure maintenance may also provide an opportunity for increased resilience in the future. Crushed concrete from demolition sites and asphalt millings removed during sealed road resurfacing are examples of products that may be recycled back into the transport network.

Principal responses

The Council will stay informed of developments in these areas and will encourage contractors to adopt sustainable practices over time. One method of supporting uptake in this area may be through the Council's Waste Levy Fund, whereby roading contractors seeking to invest in waste minimisation methods may be eligible to apply for grants from the fund.

Do nothing

The Council may have to absorb rising costs and may have to decrease levels of service provision for roading and footpath infrastructure.

Resilience

Principal responses

The Council will ensure infrastructure is built to a resilient standard.

The Council will address most vulnerable materials at the time of renewal except where an asset has a high level of criticality. In which case, the asset will be assessed to determine its level of resilience and where necessary renewal may be prioritised.

Do nothing

Potential loss of access to road network due to damaged infrastructure in a major event.

Economic predictions

Principal responses

Optimise the current planning to cater for the economy. Much of the planning around roading and footpaths and 3 Waters infrastructure planning aims to be nimble and responsive to change, allowing any change in the economy can be accounted for at the planning stage.

The Council will build on the existing foundations and use strengths and capabilities to ensure sustainable economic and community development.

The Council will provide diverse economic opportunities for businesses and residents, while also ensuring environmental sustainability.

Do nothing

Failure to address and prepare for the issue of economic fluctuations could result in reduced infrastructure capacity and reduced ability to cater to consumers' needs and retain levels of service.

Capacity and capability

Principal responses

The Council will provide works and services in accordance with its relevant procurement policy and strategy.

Procurement of subsidised roading works will comply with the New Zealand Transport Agency procurement procedures and policies.

Multi-service projects (including place-based planning) where tenders packages include all 3 Waters services, transportation and other infrastructure works to minimise construction overhead costs and long term disruption to the area. This includes spreading contract delivery over several financial years.

'Piggy-backing' existing infrastructure projects. Examples such as the University Campus works and the SH1 Safety Improvements package enable us to enter existing construction contracts, receiving good value construction.

Active engagement with the market. Meetings are held with each of the large local contractors, informing them of the scope and timing of upcoming capital projects to enable them to better plan and prepare their workforces. Tenders are also released to the market to a programme based on which contract resources are already committed.

Multi-year renewals package contracts are used where it's appropriate. Discussions have already begun with several of the City's larger contractors around appetite for longer term contracts and how these might be mutually beneficial.

Using a range of tender evaluation methods to give consideration of contractor's ability to deliver work to deadlines. Where a renewal can be completed with a number of different methods delivering assets of different expected lives (based on material or construction method), the new weighted evaluation process will help to optimise value, comparing price per year of service with delivery risks.

Where possible, bringing forward projects to compensate for projects that are delayed, this includes over-allocating the capital works programme for each year (but not committing beyond approved budget) in anticipation that some projects won't go to plan.

Do nothing

There is a risk that insufficient capability or capacity within the industry may lead to an inability to deliver services or the incurring of costs in excess of market prices.

Funding and affordability

Principal responses

Stepping up renewals expenditure across the 30 years of the strategy to allow infrastructure renewal needs to be managed proactively and in a timely manner. It is more cost effective to manage renewals in a prioritised programme than to defer work on renewals in order to make savings and risk a much more costly asset failure in the future.

The proposed 10 year plan provides adequate funding for renewals of infrastructure across the immediate 10 years with few new capital projects programmed.

Smoothing renewals expenditure in outward years to ensure that there is adequate funding outside of the immediate LTP period.

Renewals expenditure is funded from operating cashflow (rates) not debt.

Ensuring that the Council's financial strategy recognises the need to increase renewals funding and is able to manage this within the overall strategy limits.

Ensuring the Council's activity groups work together on planning of renewals work to provide delivery of programmed work in the most efficient and cost effective manner. For example city development, 3 Waters and roading and footpaths working together to deliver sequenced work on roading and footpath renewals, 3 Waters network pipe replacements and city amenity work to avoid unnecessary remedial work on newly replaced infrastructure.

Do nothing

There is a risk that funding of renewals will be underfunded or deferred due to other priorities and assets will deteriorate to failure impacting service levels and requiring significant unscheduled expenditure.

Multi-agency responsibilities for transport

Several organisations are responsible for both the provision and funding of different components of Dunedin's transport network.

The City Council is responsible for most of the Dunedin transport system, including local roads and the infrastructure associated with them (such as footpaths, cycleways, bridges, etc), provision of parking and bus stops, road safety planning and engineering, traffic signals, and land use planning.

The Otago Regional Council is responsible for the provision of public transport services, the Regional Land Transport Programme, major drainage controls and Port Otago.

The Agency manages the state highway network and associated infrastructure such as state highway intersections and cycleways.

The Transport Agency co-funds the local roads and public transport.

The City Council manages footpaths, parking, lighting and traffic signals on state highways on behalf of the Transport Agency.

A range of community organisations, volunteer interest groups, institutions and private landowners also influence Dunedin's transport network.

These multiple partners add complexity to transportation infrastructure decision-making and funding processes.

Principal responses

The Council will take a partnership approach to delivering Dunedin's transport system.

Collaborate and liaise with key transport delivering organisations such as the Transport Agency, Regional Council, New Zealand Police and KiwiRail.

Work with the Road Safety Partners and other stakeholders as required.

Partner and collaborate with tertiary institutions, emergency services, the health sector, business organisations and transport-focussed advocacy and stakeholder groups where possible.

Engage and assist neighbourhood and community groups where possible.

Do nothing

The transport network may no longer meet the needs of those who rely upon it.

Co-investment funding may be compromised.

One Network Road Classification (ONRC) system

The ONRC is a joint initiative of Local Government New Zealand and the Transport Agency's Roading Efficiency Group to provide a nationally consistent framework that helps with asset management planning, investment choices, maintenance and operational decisions. The initiative aims to standardise the road user experience nationally, to support consistent asset management across the country, and facilitate collaboration and prioritisation between organisations responsible for planning and service delivery for the national road network.

The classification will promote a customer focus and investment decisions will be based on whether the roads are fit for purpose and meeting the needs of the users. That will require the Council to start taking greater risks on the timing of maintenance and renewals, i.e. by not carrying out works even if the asset is not in an ideal condition but is still useable. However, the Council will not allow that risk to extend to the failure of the road, resulting in excessive or unnecessary rehabilitation costs. The Council supports the implementation of the ONRC system and will start to use the ONRC technical and customer levels of service to guide the development of its maintenance and renewals plans.

Principal responses

The Council will take a 'one network' approach to managing the Dunedin transport system.

Do nothing

Road users may be exposed to inconsistent levels of service.

Co-investment may be compromised.

Central government investment priorities and co-investment funding model

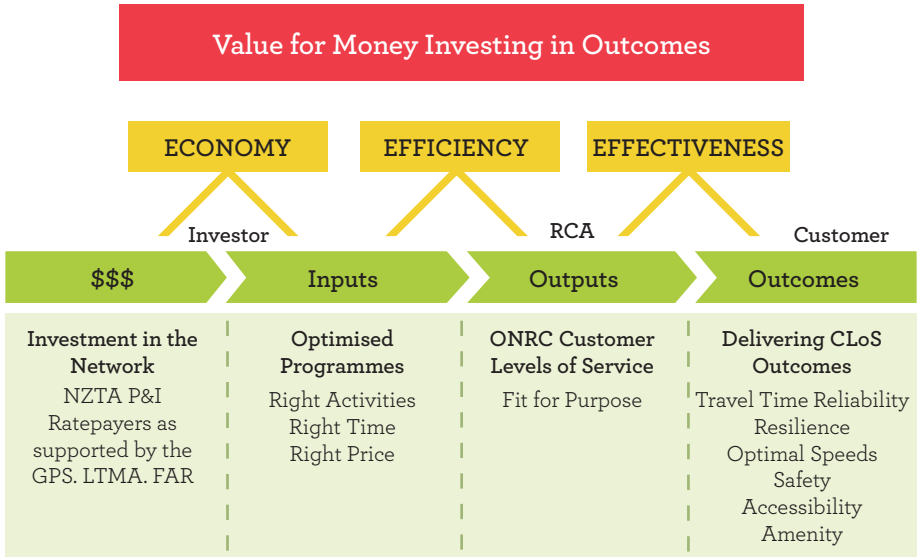
The bulk of government transport investment is targeted toward highways, including the Roads of National Significance. This expenditure is primarily focused on the higher population areas in the North Island. The current Government Policy Statement funding allocation for local road maintenance has not increased in line with inflation. This means that, in real terms, local authorities like Dunedin have diminishing funding for maintaining local roads, requiring increased prioritisation of network maintenance, a rise in rates or a reduction in service levels.

The Council has started implementing the new Transport Agency business case approach for investment initiatives. For example, the Council has worked with the Agency on developing the State Highway Cycleway improvement project through the centre of Dunedin and is currently working through the business case stages for the Council Central Activity Area Safety and Accessibility Upgrade project. From 2015/16 all new investment proposals will undergo this business case approach to ensure that the projects are consistent with the Agency's expectations under the National Land Transport Programme and represent value for money.

The New Zealand Transport Agency Funding Assistance Rate (FAR) is expected to decrease from 59% in 2015 to 51% in 2022.

Principal responses

The Council will use the Transport Agency business case intervention hierarchy to prevent congestion, safety problems or accessibility problems from occurring in the first place, and thereby minimising the need for costly infrastructure investment later.



If a major change or significant investment is being considered the Council will use temporary trials where practicable and appropriate, to ensure the effects of the proposal are properly understood.

Where new transport infrastructure is being designed, or existing infrastructure re-designed, the needs of all road users and modes will be considered.

The changes to the Transport Agency FAR may necessitate the managed downgrading of some lower priority infrastructure to allow for more critical upkeep of high priority infrastructure.

Do nothing

The Council may not be able to implement the required roading works to achieve target levels of service or to cater for growth.

Risk that investment is not focussed towards the highest needs.

Network Layout

The topography of the city contributes to urban severance. The location of Port Chalmers, the harbour and the hills surrounding the city have historically dictated where key transport corridors, such as the state highways and the railway, have been located.

Severance refers to parts of the city being cut off from other parts by infrastructure that creates a barrier to access. This can affect all transport modes but is most pronounced where it creates barriers for pedestrians and cyclists.

The railway, heavy traffic bypass and the one-way system all combine to create severance throughout central Dunedin. This is most pronounced where the one-way system runs through the University campus, reducing connectivity between the tertiary area and the central city, as well as between the central city and the harbour, and the Warehouse Precinct south of Queens Gardens.

However, these roads and the railway are essential for the movement of goods through Dunedin and a key challenge is maintaining an efficient network while improving connectivity and safety, particularly for vulnerable modes. This means some freight traffic (including trains) have always needed, and will always need, to pass through the central city. This situation could only be avoided at great expense through the use of tunnels or bypasses. Such large-scale infrastructure is unlikely to ever be financially viable and may not even be technically feasible.

Due to the narrow width of many Dunedin roads, it is not always possible to fully and safely accommodate all modes. This is a particular concern where there is insufficient space to safely provide for more vulnerable road users, such as pedestrians and cyclists.

Principal responses

Improve the connections within and between Dunedin's central city and centres so that they become highly accessible by active travel modes and public transport, and improve the road environment within centres to create safe, pleasant, people-friendly places.

Do nothing

Continued conflicts will occur between different transport modes.

Roading and footpaths capital expenditure highlights

The studies undertaken to date confirm that in general Dunedin's transportation network has sufficient capacity to cater for road user needs over the next 30 years. However, there are some specific areas where infrastructure changes are necessary to cater for growth.

The Council has identified projects to address the long-term needs in the Mosgiel-Taieri area, for upgrading key routes on the Otago Peninsula and for delivering the Strategic Cycle Network. Options for changes to address strategic corridor deficiencies in the central city were consulted on as part of the process of developing the 2013 Integrated Transportation Strategy (ITS) and projects for the future were defined in the 2006 Transport Strategy and reviewed in the 2013 strategy. Ongoing discussions are held with both the NZ Transport Agency and the University of Otago, regarding the operation of the one-way pair through the city. The Harbour Arterial identified in the Transportation Strategy is promoted to freight operators as a bypass from SH1 Andersons Bay to Port Otago.

The other area of need relates to work to address deficiencies in the network, particularly those relating to safety, and to cater for changing needs, including modal change. This work includes:

- the provision of additional footpaths
- facilities for those with mobility or sight impairment
- works to improve safety.

Minor works are identified and delivered through the minor improvement budget. In addition, a strategic cycling network route map has been developed, consulted on, and adopted by the Council. This will guide cycling investment for the next 20 years. A Centres Programme has been developed to enable targeted walking and cycling improvements in local neighbourhoods along with local area traffic management. The Council uses a place-based approach to deliver transportation improvements at the same time as amenity improvements are made.

These projects have been identified in the 10 year transportation programme to allow the Council to allocate additional funding. This is necessary as the minor improvements budget is limited in what can be delivered, particularly where there are significant safety issues such as in the central city.

New capital projects

In terms of major projects the ITS currently identifies projects to improve key routes on the Otago Peninsula, address arterial route needs in the Mosgiel-Taieri area, upgrade streetlights to LED and construct the Strategic Cycle Network. Work has been undertaken to define a 10 year transportation programme of new capital investment which will be considered by the Council as part of the LTP process. Ultimately the Council, in consultation with staff, will determine the programme to be funded through the LTP.

Most likely scenario for major improvement capital works

The major improvement capital projects are depicted in the diagram below, in the likely order of implementation with an indicative cost. All the projects shown are yet to be confirmed through the LTP process and are subject to business case assessment to fulfil the co-investor expectations prior to implementation.

Roading and Footpaths Improvement Capital Expenditure Projects Likely Scenario

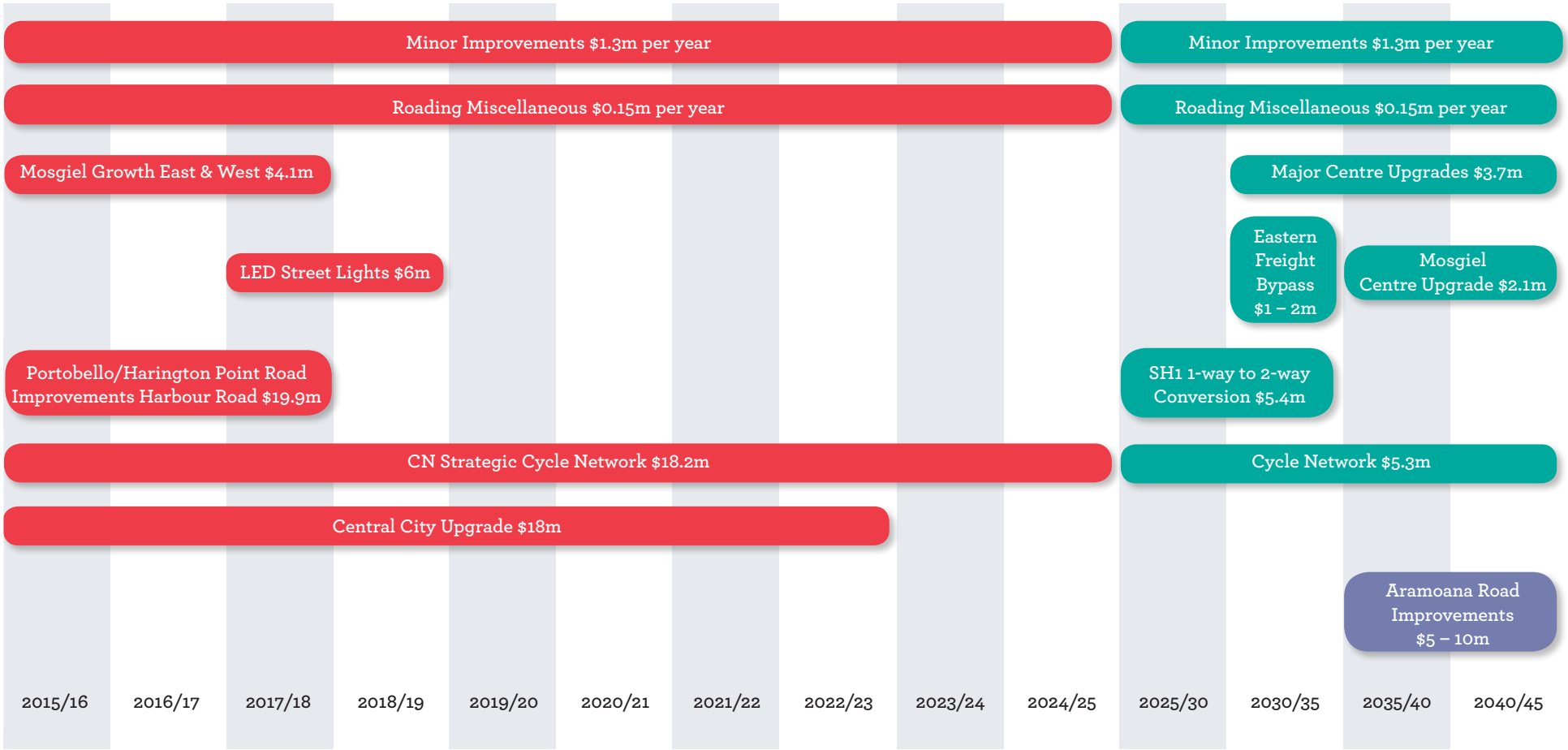
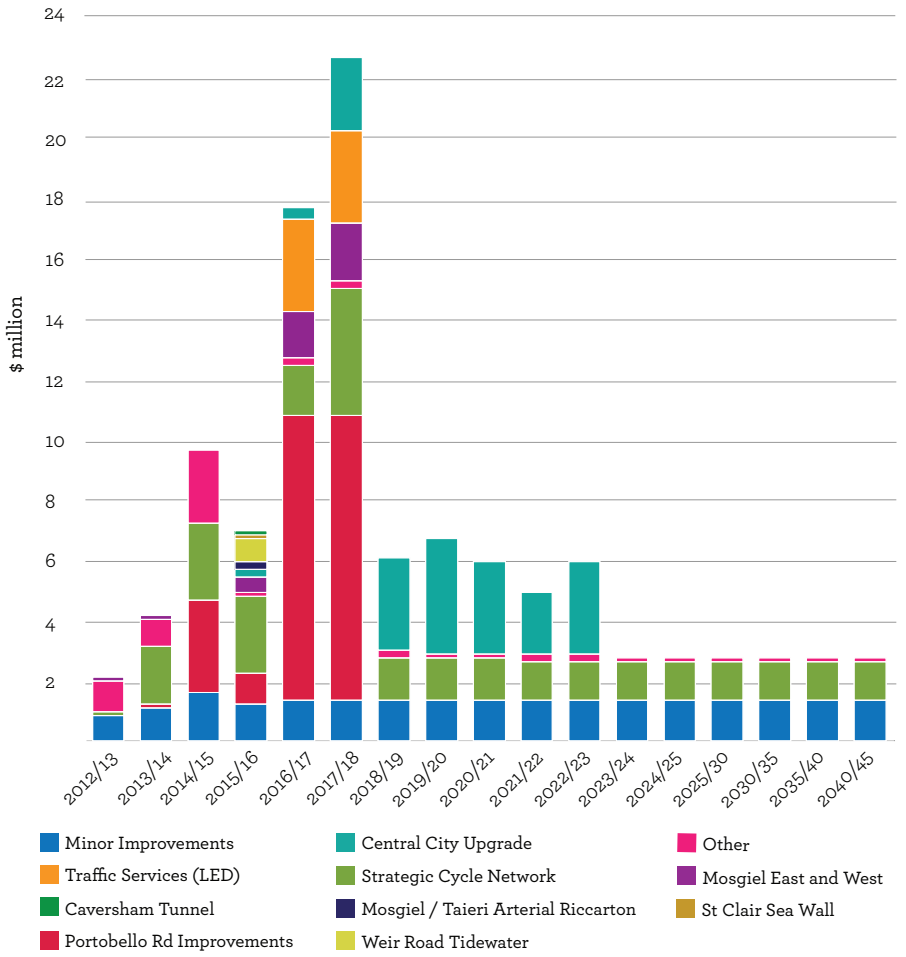


Figure 7: Footpaths and footpaths renewals capital expenditure profile 2012/13 – 2044/45

(Please note: the source data for this graph has not had inflation applied, project costs are in today's dollars)

Figure 8: Roading and footpaths new capital expenditure profile 2012/13 – 2044/45



(Please note: the source data for this graph has not had inflation applied, project costs are in today's dollars).

Asset management approach

The maintenance and operating regimes for roading and footpath assets have a technical and a social aspect. Asset condition and activity on the network affects all residents and users on an ongoing basis. The current level of service provided meets the service level targets set in the Asset Management Plan and the programmes implemented will provide fit for purpose infrastructure that retains or improves these service levels.

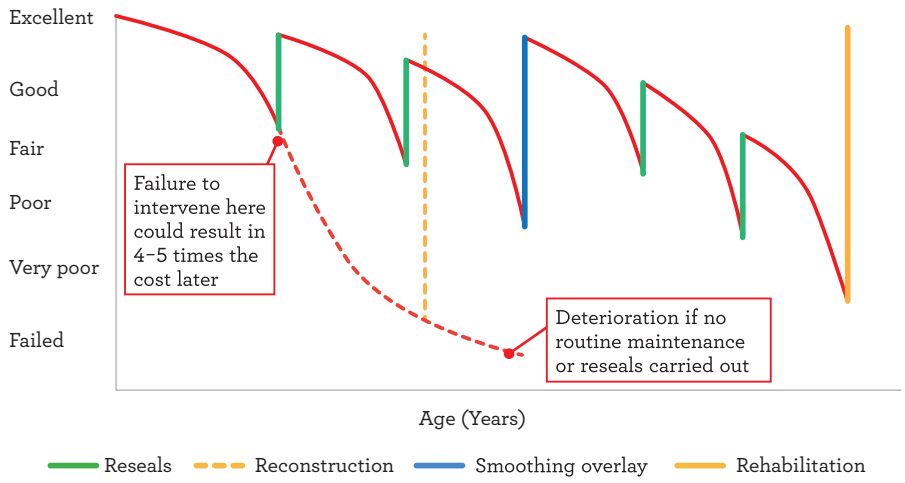
There are four main types of intervention on roading assets to provide appropriate levels of service:

- maintenance to fix defects and preserve useful life
- maintenance to mitigate safety issues
- maintenance to provide appropriate aesthetic standards
- asset rehabilitation and renewal.

Generally the mid to long-term budgets are set with the aim of maintaining assets at the current condition level in perpetuity.

When an asset reaches about 75% of its service life, deterioration will accelerate. If a road pavement, for example, is left beyond this point without maintenance the cost to restore serviceability could be 4-5 times higher (see Figure 9).

Figure 9 –A typical whole of life cycle profile



Maintenance and renewal interventions are interlinked.

Just as timely routine repairs can extend the time until a reseal is required on a road, resealing at the right time will extend the life of the pavement structure beneath.

Interventions are scheduled to be applied before the only remedy is an expensive reconstruction. Routine maintenance deals with defects such as cracks before more serious defects develop.

A road surface is resealed at regular intervals (the average reseal cycle is 14years). Eventually the material making up the road pavement layers deteriorates to the point where it can no longer support the loads imparted by traffic. Pavement rehabilitation or replacement is carried out to return the road to an acceptable condition. Figure 9 above demonstrates this cyclic process.

Asset management has been supported by the Road Asset and Maintenance Management (RAMM) system for many years. RAMM manages asset inventory and condition data, reporting, asset valuation and maintenance contract administration tools. TRACKS is utilised for transportation strategic planning.

The Council is developing improved asset management planning systems and technology and is looking at procurement opportunities to enhance its asset management capability.

Routine maintenance

Routine maintenance includes pavement and corridor maintenance and is the day to day work that keeps the network sound, serviceable and clean. This work includes:

- pavement patching, repairs and crack sealing
- routine maintenance and repair of surface water channels
- renewal and installation of culverts
- grading and gravel replacement on unsealed roads
- shoulder maintenance on sealed roads
- street cleaning including central activity area cleaning
- traffic facility maintenance and renewal
- bridge and minor structure maintenance.

The physical works on the transportation assets are all delivered by contractors under a range of formal contracts.

Renewals

Renewal work is defined as "work that is required to refurbish or replace existing facilities with facilities of equivalent capacity or performance capability".

Renewals of infrastructure can be triggered by accident history, observed failures, increased maintenance costs, complaints from road users, high road user operating costs, high levels of defects picked up during condition surveys or when the asset has reached the end of its useful life. Typical average life expectancies for various asset types in Dunedin are shown in Table 3.

There will be peaks in renewal costs where a large number of new assets were constructed over a short time period or where a major asset reaches the end of its serviceable life.

Renewals priorities

Renewals are considered to be of higher priority than new capital and have been ranked taking into consideration such things as:

- operating cost implications
- safety implications
- cost of a more expensive renewal
- backlogs.

Table 3 on page 71 shows the main assets and relative importance the Council has placed on their renewals.

Infrastructure renewals programming and budget

The asset components that have the most significant impact on budgets now and into the future have forward works programmes that have been developed from life cycle, condition surveys, predictive modelling, historic cost trends and informed reporting from maintenance contractor assessments. These are:

- carriageway resurfacing
- carriageway rehabilitation
- bridge renewal
- kerb renewal
- footpath resurfacing.

For the other components, some renewals are based on condition and others reflect historic levels.

Sustainability of renewals

Equating the value of renewals to the annual depreciation value is a measure of sustainable renewals called the "sustainability ratio". The Council uses the same unit costs for asset valuation as for budget estimation. These are based on real cost trends and this is necessary for the ratio to be valid. The ratio for Dunedin shows that renewal lags depreciation by about 15%, reflecting continual historic growth in the asset base. If work achieved in any year is less than the AMP target the ratio will be lower, and if a single major renewal occurs the ratio could exceed 100%.

The Council has a ratio that averages around 80% but varies depending on what is achieved or budgeted. Figure 10 shows the annual depreciation, sustainability ratio and level of renewals funding for roading and footpaths across the period of this strategy.

Figure 10: Annual Depreciation, Renewals and Sustainability Ratio (Inflated)

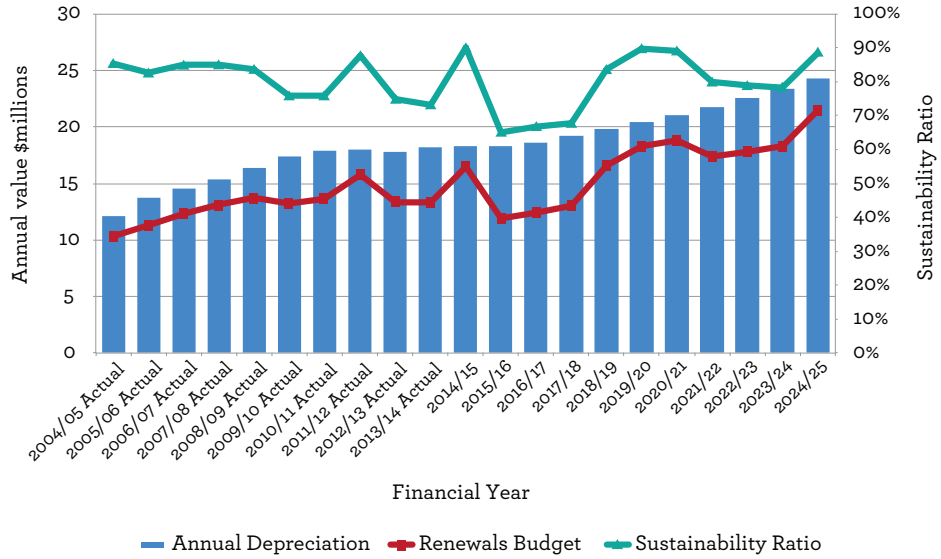


Table 3: Asset renewals strategy

Priority	Renewal Category	% Annual Depreciation	Priority Reason	Condition	Typical asset life	Forward Works Programme (FWP)
1	Carriageway Resurfacing	27.0%	Pavements are the highest value asset and failure to resurface in time can result in safety issues and eventually in premature rehabilitation costing 4-6 times the surfacing cost.	ROS and Surface condition index results indicate satisfactory condition is maintained.	7 to 60 years (14 years average)	FWP is developed with reference to current condition (RAMM treatment selection), predicted future treatments (dTIMS), maintenance costs and theoretical treatment lives. Fine tuning from annual validations indicates that the current 60 km/year resurfaced or 5.7% of network is minimum sustainable annual level.
2	Seawalls	3.0%	Inner harbour stone seawalls are at end of life and the risk from failure is the loss of the road and accessibility and also private land beyond the road could be at risk.	Condition surveys indicate high portion of stone seawalls in poor condition.	70 years	A substantial part of the stone seawall asset is near the end of its serviceable life. Renewal rate reflects this and work will be coordinated with inner harbour road improvements.
3	Bridges and large culverts	5.7%	The unexpected loss of a bridge could mean accident or the loss of access to a community or commercial area. Loss during an event could compromise lifelines.	Bridge inspections indicate bridges generally in good condition.	70 to 150 years	Full Replacement: In the short term no expected replacements in next five years. The age of bridge stock indicates future expense risk and nominal sums are budgeted from 2019/20 with a peak expected beyond 2050. Structural components: The life of the bridge can be extended by timely replacement of defective components (e.g. replacing the deck). Knowledge of condition provides confidence in future budgeting.
4	Unsealed road re-gravelling	4.2%	The loss of the road material could result in unacceptable ride quality and possible loss of access to residents or farms.	Contract Audits indicate roads maintained to satisfactory level.	8 years for surface course	The base layer provides strength to support loading. Renewal is typically reactive and prompted by requirements of heavy loading (logging, dairy). The surface course is replaced on a cyclic basis determined from condition, traffic loading and long term knowledge of materials performance. Current renewal is at a sustainable level.

Priority	Renewal Category	% Annual Depreciation	Priority Reason	Condition	Typical asset life	Forward Works Programme (FWP)
5	Footpath Resurfacing	15.8%	The risk of not resurfacing is more expensive treatment required later and safety issues with uneven surfaces.	Resident opinion and condition surveys indicate footpaths generally in good condition.	10 to 60 years (19 years average)	The FWP developed considering construction date, condition (RAMM) and reported issues. Factors include extensive cracking and defects that create trip hazards. The FWP has been modified to allow coordination with UFB rollout work currently in progress and with future central city upgrade. In general footpaths will be renewed in asphalt with exceptions in central and local activity areas.
6	Pavement rehabilitation	15.8%	The risk is more expensive maintenance costs initially and eventually a road that is unsafe and un-trafficable compromises accessibility.	Smooth travel exposure is being maintained at 80%. Local roads are rougher while pavements are mostly sound.	40 to 140 years (79 years average)	The FWP is developed with reference to current condition, prediction tool outputs for the long term view, recorded maintenance costs, contractor reports and validation inspections. Rehabilitation is justified as the best cost life cycle option. On the basis of construction date profile and predictive modelling tool the quantity is expected to increase over the strategy period and budgets allow for this. Currently 7 km or 0.7% of the network is adequate and this will increase to 10 km in the 2020s.
7	Signs, Road Marking and Signals		The risk is lack of clear direction or confusion that could lead to car crashes, congestion or lost journeys.	Generally in good condition.	Markings 1 to 4 years Signs and signals 12 to 23 years	Renewal is condition-based with a high portion replacement because of third party damage in signs and signals. These assets typically have a shorter life and there is a steady renewals level.
8	Street lighting	3.6%	The risk is that deficiencies in visibility may result in accidents or loss of security	Resident satisfaction and condition surveys indicate lights are in good condition.	18 to 40 years	Street lights are condition assessed at each maintenance visit. Renewals are identified from condition rating. The level of service will be lifted with budgeted conversion to LED lights from 2016.
9	Culverts and mud-tanks	4.3%	The risk is flooding causing damage to road or property and temporary loss of accessibility.	Generally in satisfactory condition.	80 years	Culverts are assessed on three yearly basis and mud-tanks on a regular cycle when cleaned. Renewals are programmed based on condition assessments. Increasing the capacity of culverts when renewed is considered to cope with global warming effects.

Priority	Renewal Category	% Annual Depreciation	Priority Reason	Condition	Typical asset life	Forward Works Programme (FWP)
10	Surface Water Channels (Kerb)	13.0%	The risk is potential damage to pavement from water ingress or possible seepage damaging property.	Condition rating shows condition is maintained at a satisfactory level.	12 to 100 years Concrete kerb 80 years	The FWP shows renewal increasing from 4 km/year at present to 16 km/year from 2030. Long range average renewal is 12 km/year. This increase is following the construction date profile. The budget allows for this increase in the future.
11	Retaining Walls	1.2%	The risk is loss of support for roadway and compromised accessibility.	Generally in good condition.	80 years	Retaining wall renewal is currently reactive. Current inventory and condition data collection will allow for a condition-based FWP. The budget allowance is nominal reflecting the reactive nature of the renewals.

It is important to note that a high standard of professional services applied to the design and supervision of renewals projects is required to ensure the best long term outcome and value for money.

Activity Specific Assumptions 3 Waters

Overview of the 3 Waters activity

Water supply

The Council manages the collection, supply, treatment and distribution of water to domestic and commercial residents in Dunedin.

The main aspects of the supply system are:

- raw water (not treated) – surface water and ground water that is collected from the catchments
- supply – the main supply pipelines that convey raw water from the catchments to the raw water reservoirs or directly to the treatment plants
- treatment – raw water is treated at one of Dunedin's 12 water treatment plants
- distribution – the main pipelines between the treatment plants and the treated water service reservoirs (some mains provide both primary distribution and reticulation functions)
- reticulation – the pipelines that distribute water from the service reservoirs to the customers' boundary
- Our assets include 21,000 hectares of water catchment, 12 treatment stations, 35 pumping stations and 57 reservoirs (raw and treated water). The total water pipe network has a length of 1,450 km that conveys water from the source to your boundary
- Dunedin's water comes from surface water and ground water sources
- Deep Stream, Deep Creek, and the Silver Stream are the main surface water sources to Dunedin City
- the Taieri Bores are used to supplement the above sources
- Mosgiel's water comes from an aquifer beneath the suburb via bores
- Waikouaiti and West Taieri source water from the Waikouaiti River and Waipori River respectively
- Waitati and Warrington are normally supplied with water sourced from Deep Stream and Deep Creek but can also be supplied from water sourced from the Waikouaiti River if required.

Wastewater

The Council manages the collection, treatment and disposal of trade and domestic wastewater from residents and commercial customers across the city. The service aims to ensure the health of the community by providing cost effective reticulated wastewater services throughout the urban area, and treating wastewater to a high standard before disposal to either land or sea.

The main aspects of the wastewater system are:

- reticulation – the reticulated network collects wastewater from domestic and commercial private lateral connections to the system with the majority of the 1200 km of publicly-owned wastewater reticulation system operating via gravity with pipe size varying from 100 mm to 1650 mm in diameter
- pump stations –there are 78 wastewater pump stations throughout the reticulated network which lift wastewater from low points back into the gravity network
- treatment – the Council owns and manages seven separate wastewater treatment systems. The population served by each plant varies from 100 for the smallest plant to 83,000 for the largest plant.

It has been estimated that $26 million may be required over the next 10 years for trunk mains and reticulation renewals.

Stormwater

Stormwater is rainfall or snow runoff that does not soak into the ground naturally, but instead is collected and channelled by roads, pipes or other public or private infrastructure. The Council provides reticulated stormwater services to the metropolitan area and most other areas that also receive reticulated wastewater. In total the Council owns and operates approximately 360 km of stormwater pipes and 10 pump stations.

When an area is developed, stormwater generally increases due to runoff from impermeable surfaces (e.g. roofs, roads, car parks, or compacted soil). It flows naturally from higher to lower ground, and ultimately discharges into natural watercourses such as wetlands, creeks, rivers or the sea. Land development necessitates the creation of both private and public stormwater systems; these networks work cooperatively to collect and transfer stormwater to waterways, and in some cases the marine environment, efficiently minimising damage to downstream assets.

Stormwater and wastewater use two separate systems. Stormwater is generally discharged untreated into the harbour, the sea, or the nearest watercourse. It is important not to let pollutants like litter, animal excrement or contaminants left behind on roads enter roadside drains as these can then contaminate the stormwater discharge. Washing cars on the footpath or road or excessively watering lawns can also flush pollutants into the stormwater system. The stormwater system can flood when the volume of runoff is high during intense rainfall events that are above the system's design capacity.

The 3 Waters Strategy Project included works for targeting manhole overflows, reducing flood risk, removal of wastewater/stormwater cross connections and mitigating the tidal influences on the capacity of the stormwater system. Flood hazard maps have been developed, which indicate areas that potentially require localised flood protection, upgrades or renewals now and in the future.

3 Waters Strategic Direction Statement 2010 – 2060

The Council's 3 Waters Strategic Direction Statement was developed in 2010 to provide a picture of current water supply, wastewater and stormwater (3 Waters) services and determine service delivery priorities for the next 50 years. The document explores the current activities, strategic issues, community priorities and external challenges of Dunedin's 3 Waters business. Identified within the document are seven key strategic priorities that underpin the way the Council will deliver the 3 Waters activities to the community.

1. We will meet the water needs of the City for the next 50 years from existing water sources.
2. We will be able to adapt to a variety of future scenarios for climate change and fluctuations in population.
3. We will reduce our reliance on non-renewable energy sources and oil-based products.
4. We will improve the quality of our discharges to minimise the impact on the environment.
5. We will ensure that, as a minimum, key service levels are maintained into the future.
6. We will limit cost increases to current affordability where practical.
7. We will adopt an integrated approach to management of the 3 Waters and embrace the concept of kaitiakitaka (guardianship in Kai Tahu dialect).

These priorities were the result of analysis of the activity's issues, challenges and community voice. The community priorities were gathered using a telephone survey which took a representative sample of 600 Dunedin household participants. The top priority was identified as 'providing safe and pleasant drinking water at an acceptable cost'. There was a strong desire from the community to improve the quality of stormwater and wastewater discharges, and where possible, cease discharges to the rivers and the sea[1].

Our community expect us to maintain our current levels of service, while managing future challenges such as climate change and economic fluctuations.

1 Dunedin City Council (2010) the 3 Waters Strategic Direction Statement http://www.dunedin.govt.nz/your-council/council-documents/policies/3-waters-strategic-direction-statement

A copy of this strategy can be found at www.dunedin.govt.nz/3watersstrategy

3 Waters specific challenges

This section provides further comment and describes the principal responses to the challenges identified in the 'Context and Major Issues for Dunedin's infrastructure' section, as applicable to the 3 Waters activity group.

Ageing infrastructure

Over 50% of Dunedin's 3 Waters network infrastructure is expected to reach the end of its useful life (of 80-100 years) and require renewal by 2060, at a cost in the region of $820 million.

Principal responses

The Council will invest adequately in renewals to maintain the performance of our infrastructure.

The Council will invest carefully by understanding which assets are most critical to maintaining the delivery of service and using information to drive pro-active condition assessment of these critical assets.

The Council will plan renewals effectively to avoid sharp increases in costs and gain cost efficiency in procurement and project delivery.

The Council will continue with its planned programme of water upgrades and once completed, maintain our drinking water quality at those levels.

[9]The Council will develop tools to communicate effectively the implications of levels of funding.

A decision support tool (dTIMS) is being trialled in 3 Waters as a means of developing long-term strategies for the operation, maintenance and renewal of the 3 Waters pipeline assets. This tool is currently used for pavement deterioration predictive modelling in the roading and footpaths activity. It identifies intervention strategies and determines timing, frequency and treatment type to be implemented. It also optimises intervention strategies and produces expenditure forecasts, work programmes and predictions of future condition. The tool is currently in the development and trial stage[2].

2 McFarlane, Henning & Dyer (2014) Implementation of an optimized decision support tool for advanced asset management of the 3 Waters reticulation network. In Water Asset Management International, 1(10).

Do nothing

Failure to find the right balance between investing in renewals and deferral could either leave the Council struggling with over-investment where the community has infrastructure surplus to requirement, or under investing and delivering a level of service that does not meet public expectation. This would breach our key strategic priority – 'we will ensure that, as a minimum, key service levels are maintained into the future'. Both of these scenarios will result in a rising service cost.

Climate change

Future drought poses a risk to water supply. Low or no rainfall over a prolonged period would decrease the quantity of water available from the Deep Stream and Deep Creek intakes which supplies 60% of Dunedin's water. In addition there is typically higher demand for water in drier periods. The Council has adopted the 'Security of Supply for Metropolitan Dunedin Strategy'. This strategy has been specifically designed to develop options ensuring that raw water supply to the city's treatment plants is maintained following a disaster event or drought. The response from this strategy is outlined on page 87 (Security of Supply Project).

Increasing heavy rainfall events create increased pressure on wastewater systems, predominantly through inflow from private stormwater connections and groundwater infiltration from cracked and damaged pipes. Where capacity to transfer wastewater within a network is reduced as a result of inflow and infiltration, overflows and property flooding can occur.

The Council currently has 13 foul sewer overflows that are known to discharge to the environment during rainfall events. The volume and frequency of overflow is variable with extent of the rainfall event, but in the 12 months prior to August 2014 there were a total of 58 events recorded, with volume of discharge ranging from 0.2m^3 to 4,500m^3. For reference, an Olympic-sized swimming pool holds approximately 2,500m^3. Overflows during such events are diluted by the infiltration of groundwater and inflow of stormwater. However, the overflow is still contaminated with sewage[3].

Kaikorai and North-east Valley are two areas particularly susceptible to surcharge and overflow of the foul sewer network, and have been identified as the most sensitive to climate change and future growth. To limit the short term effects, 26 non-return valves have been installed to affected properties which would otherwise experience habitable floor flooding. A significant and ongoing modelling project is analysing a range of options for a more permanent solution for these areas.

3 DCC (2014) 3 Waters Capex Programme Business Case 2015/16-2024/25

While there are a number of short term projects that can be delivered to alleviate these issues slightly, the long term solution is a sustained period of investment in renewals throughout the upstream network to reduce infiltration, and the downstream network to upsize where capacity is still insufficient even with infiltration removed. This is detailed further in the following section titled Mitigating Sewer Overflows.

Climate change threatens to increase both the intensity and frequency of rainfall events. The Council's stormwater system is designed to accommodate 1 in 10 year rainfall intensity events. As climate change takes effect it is clear that an event considered to be a 1 in 10 year rainfall event today will increase in frequency in the future. The Council will review rainfall return periods on a five yearly basis to ensure design capacities are kept up to date with any evident climate change trends and take into account predicted climate change trends associated with an asset's anticipated useful life.

Principal responses

To increase the flexibility and resilience of our affected infrastructure to reduce the risk of prolonged service interruption.

Actively planning for potential events due to climate change scenarios.

The Security of Supply Strategy for Metropolitan Dunedin (2012) presents a preferred strategy for the security of metropolitan Dunedin's water supply. The strategy aims to ensure that raw water supply to the city's treatment plants is maintained following a disaster event or drought.

Climate Change Vulnerability Assessments (2011 & 2014) have been developed by the Council for areas with 3 Waters infrastructure particularly vulnerable to climate change effects; such as Warrington, Waikouaiti and Seacliff. These reports highlight the issues unique to the area such as sea-level rise (coastal inundation), storm surges, mean temperature rise, flooding and so on. These assessments highlight which risks need to be managed passively, and which need to be actively managed, and provide a range of options to do so. Further assessments are planned.

Do nothing

This would place pressure on infrastructure and potentially create:

- shortage of water due to drought
- inundation of low lying infrastructure due to storm surge, seabed rise, or a combination of the two
- a heavier reliance on pumping (because of flooding)

- increased fire risk in catchment areas – inability to utilise from a particular water source
- increased competition for water, changed resource consents and degraded wetlands
- result in poor water quality due to increased stormwater runoff, and therefore higher treatment costs
- require a possible change in location of residential population.

The harbour-side and south city area covers the most densely populated part of Dunedin, with a population of about 10,000 residents. It contains a lot of infrastructure, such as wastewater and stormwater assets and key roads. The area has an estimated asset value of $4.3 billion. This low-lying area has been assessed as being the part of Dunedin most vulnerable to sea level rise in the medium to long term. A rise as predicted (0.59m by mid-2090) would leave substantial areas vulnerable to coastal inundation and a number of key assets susceptible to saltwater intrusion. The main threat, at least in the medium term, is from rising groundwater in the south city area, as groundwater levels are forced up by rising sea levels. Direct inundation from the sea becomes more of an issue around the Otago Harbour in the long term. This scenario could also displace coastal residents and require them to move to other parts of the city with insufficient infrastructure to support the localised increase in population

Population trends

Predictive modelling accounts for growth by taking the same base information used to generate the City Profile, then projecting spatial growth trends in line with the District Plan and applying it to calibrated hydraulic models. This allows detailed analysis of spatial effects on all 3 Waters assets from minor reticulation assets through to major treatment and or supply activities. The same tool allows development of hypothetical options and 'what if?' analysis if required.

Hydraulic models allow 3 Waters to effectively manage all potential growth implications with relative agility, either through early warning of required spend; or through effective use of existing capacity. Although areas such as the Taieri Plains are currently experiencing moderate growth, population for much of central Dunedin is forecast to remain relatively static and some areas expect a population decline. This creates some specific challenges for Dunedin, both with potential for stranded infrastructure and limitations on affordability of service improvements and maintenance of the existing infrastructure.

In general terms, the relatively minor forecast changes in demographics and population for Dunedin are not expected to have a significant adverse effect on the ability to maintain the 3 Waters network current levels of service, providing these changes are in line with the District Plan. However, deviations from the District Plan will likely require significant capital investment to address any capacity shortfall. Dunedin is well placed in terms of water availability and treatment capacity. It would require a significant and un-forecasted change in demographics or population to have an adverse effect on the ability to supply water to consumers.

There are several isolated areas of the 3 Waters network, such as Mosgiel, where development even within the District Plan is causing stress on network capacity. These capacity issues will need to be managed through proactive or early renewals and upgrades.

Landowners are responsible for managing stormwater that falls naturally on their property, and must manage any runoff to avoid causing negative downstream effects. A watercourse is generally defined as an open channel through which water flows or collects (be it natural, modified or artificial), either continually or intermittently, or has the potential to do so. It includes river beds, stream beds, gullies, natural depressions, ditches, and drainage channels. A watercourse also includes any culvert or pipe that replaces a natural open channel. The property owner is responsible for a watercourse from where it enters their property to where it exits and must keep it and any associated grates clear so the water can flow unimpeded.

The District Plan requires all properties to connect to the public stormwater system, where available, while un-serviced areas must have onsite stormwater disposal. The Dunedin Code of Subdivision and Development 2010 outlines specific requirements, guidelines and minimum engineering standards for new stormwater systems.

A continuing decline in 'wet' industry and a stable population, coupled with the systematic separation of the stormwater network from the foul sewer, has led to a situation where normal flows can be insufficient to cleanse the pipes, allowing sediment to build up and causing sewer blockages. Significant changes in the volume and nature of wastewater, particularly through industry closure can lead to operational inefficiencies in wastewater treatment plants, which are designed for particular volumes and contaminant levels.

Principal responses

The Council ensures collaboration with infrastructure providers occurs during processes such as the Second Generation District Plan. For example water and waste services considers the impact of each proposed density change on the 3 Waters networks using in-house hydraulic modelling capability. The District Plan in turn allows for additional growth where infrastructure capacity is available.

The Water and Waste Services (3 Waters) business unit will work collaboratively with City Planning to ensure the Second Generation District Plan encourages growth where infrastructure capacity exists. The District Plan is the main document that sets the framework for managing land use and development within Dunedin and is scheduled for release in mid-2015. When proposals are put in place for growth in vacant land where no infrastructure currently exists (green field), developers are largely responsible to provide and install the required infrastructure.

The Council will pursue renewals not only as a necessity to maintain service, but as an opportunity to optimise current capacity by appropriately sizing pipes and eliminating infiltration of groundwater to the network and cross connections.

The Council will ensure that our infrastructure planning is flexible enough to adapt to different scenarios, whilst being affordable to current and future communities.

Where infrastructure capacity is compromised one of the following approaches is taken: either the district plan constrains growth or the Council makes capacity available by utilising the development contributions policy.

Do nothing

Significant changes in the volume and nature of wastewater, particularly through industry closure, can lead to operational inefficiencies in wastewater treatment plants, which are designed for particular volumes and contaminant levels.

Decrease in population – normal flows could be insufficient to cleanse the pipes, allowing sediment to build up and causing sewer blockages.

Increase in population – increased use of pumping would be required to avoid flooding on flat areas due to residential/urban intensification and a reduction of natural water channels for stormwater to drain.

Localised rapid growth which outstrips the capacity of the existing reticulation and distribution infrastructure can leave residents with insufficient infrastructure to maintain levels of service.

Peak oil

There is growing concern that global oil prices will rise dramatically once 'easy to reach' deposits have been used up and demand for oil outstrips supply.

The 3 Waters activities depend on oil and oil-based products in order to deliver core services. Oil is not only used to produce the fuels we consume such as petroleum; it is also a key constituent of a wide range of plastics and other synthetic materials used by the 3 Waters activities. Unless alternatives are found, the increasing cost of oil will have consequential impacts for the cost of services.

Fortunately New Zealand is well placed to take advantage of renewable energy sources such as solar, hydro, geothermal and tidal power, which may be used as alternatives to fossil fuels in energy production.

Principal responses

The Council will reduce reliance on oil-based products.

The Council will prioritise the use of energy efficient technology.

Where cost effective to do so, the Council will generate renewable energy from our network, catchments and other resources.

Do nothing

Oil forms a part of nearly every supply chain in some form, therefore the potential for dramatic fluctuations in oil prices, and the subsequent effects on the price of goods and services should not be underestimated.

Resilience

Principal responses

The Council will ensure infrastructure is built to a resilient standard.

The Council will address most vulnerable materials at the time of renewal except where an asset has a high level of criticality. It will be assessed to determine its level of seismic resilience and where necessary renewal may be prioritised.

The Council will avoid re-zoning land for urban development reliant on reticulated infrastructure in areas that are at risk from liquefaction, lateral spread or other seismic effects that may put people, property or infrastructure at risk.

The Council will reduce single point dependencies for highly critical infrastructure.

Do nothing

The 3 Waters network level of seismic vulnerability will remain a significant risk.

Economic predictions

Principal responses

Optimise the current planning to cater for the economy. Much of the planning around 3 Waters infrastructure aims to be nimble and responsive to change, allowing any change in the economy to be accounted for at the planning stage.

The Council will build on the existing foundations and utilise strengths and capabilities to ensure sustainable economic and community development.

The Council will provide diverse economic opportunities for businesses and residents, while also ensuring environmental sustainability.

Do nothing

Failure to address and prepare for the issue of economic fluctuations could result in reduced infrastructure capacity and reduced ability to cater to consumers' needs and retain levels of service.

Capacity and capability

Renewals expenditure across the 3 Waters is currently scheduled to increase steadily over the next eight years. Deferral of these renewals will impact noticeably on the 3 Waters business unit's ability to effectively deliver services to the community and further increase the backlog of technically 'failed' assets. Additionally, deferring the planned increase in renewals funding will mean that larger step increases in funding will be required in the future if we wish to maintain current levels of service and maintain an acceptable level of risk that is affordable over the long term. This 'backlog' represents approximately $60 million ($ today) at this stage. We are stepping up the funding of renewals from $11.7 million to $21.2 million over the next eight years and then plan to hold the funding at around $21.2 million until 2032. At this time there may be a need for a short term increase in funding to fund a peak of renewals anticipated at that point before funding is dropped to between $16 million and $18 million per annum for the years beyond.

Principal response

The Council will provide works and services in accordance with its relevant procurement policy and strategy.

Multi-service projects (including place-based planning) where tenders packages include all 3 Waters services, transportation and other infrastructure works to minimise construction overhead costs and long term disruption to the area. This includes spreading contract deliver over several years.

'Piggy-backing' existing infrastructure projects. Examples such as the University Campus works and the SH1 Safety Improvements package enable us to enter existing construction contracts, receiving good value construction.

Active engagement with the market. Meetings are held with each of the large local contractors, informing them of the scope and timing of upcoming capital projects to enable them to better plan and prepare their workforces. Tenders are also released to the market to a programme based on which contract resources are already committed.

Multi-year renewals package contracts are used where it is appropriate. Discussions have already begun with several of the city's larger contractors around appetite for longer term contracts and how these might be mutually beneficial.

Using a range of tender evaluation methods to give consideration of contractor's ability to deliver work to deadlines. Where a renewal can be completed with a number of different methods delivering assets of different expected lives (based on material or construction method), the new weighted evaluation process will help to optimise value, comparing price per year of service with delivery risks.

Where possible, bringing forward projects to compensate for projects that are delayed. This includes over-allocating the capital works programme for each year (but not committing beyond approved budget) in anticipation that some projects won't go to plan.

Do nothing

There is a risk that insufficient capability or capacity within the industry may lead to an inability to deliver services or the incurring of costs in excess of market prices.

Funding and affordability

Principal responses

Stepping up renewals expenditure to allow infrastructure renewal needs to be managed sustainably over the long term. It is more cost effective to manage renewals in a prioritised programme than to defer work on renewals in order to make savings and risk a much more costly asset failure in the future.

The proposed 10 year plan provides adequate funding for renewals to prevent any significant deterioration of infrastructure across the immediate 10 years whilst making progress on the renewals backlog with few new capital projects programmed.

Smoothing renewals expenditure in outward years to ensure that there is adequate funding outside of the immediate LTP Period.

Renewals expenditure is funded from operating cashflow (rates) not debt.

Ensuring that the Council's financial strategy recognises the need to increase renewals funding and is able to manage this within the overall strategy limits.

Ensuring the Council's activity groups work together on planning of renewals work to provide delivery of programmed work in the most efficient and cost effective manner. For example, city development, 3 Waters and roading and footpaths working together to deliver sequenced work on roading and footpath renewals, 3 Waters network pipe replacements and city amenity work to avoid unnecessary remedial work on newly replaced infrastructure.

Do nothing

There is a risk that funding of renewals will be underfunded or deferred due to other priorities and assets will deteriorate to failure impacting service levels and requiring significant unscheduled expenditure.

Property ownership issues – wastewater lateral connections

Faulty wastewater lateral connections have been identified as a significant contributor of the inflow and infiltration of groundwater and stormwater into Dunedin's wastewater network. Infiltration occurs when groundwater enters the wastewater system through defective pipe joints and breaks/cracks in pipes.

Inflow occurs when water enters the wastewater system from inappropriate connections. Up to 50% of inflow and infiltration volume enters the system through faulty wastewater laterals and causes problems with the reticulation network as it is not equipped to handle extreme influxes of water. This can cause an overflow into creeks and streams, some directly and some via roads and manholes. There is occasional flooding and it can present a potential health risk.

Historically, where defective wastewater laterals have been identified as a source of inflow and infiltration, the issue of who pays has been managed on a case-by-case basis. The Council has either required the property owner to replace the wastewater lateral at the property owner's cost (generally with the Council managing the renewal and recovering cost from the property owner)[4]; or Council has paid for the wastewater lateral to be replaced at no cost to the property owner.

In the past, this process has been managed in conjunction with the renewal of the public wastewater pipe the lateral connects to, and ownership of the wastewater lateral remains with the property owner post-renewal. However, this case-by-case decision-making makes it difficult for 3 Waters to accurately plan for future renewals of public wastewater pipes.

New housing affordability is affected by the cost of providing infrastructure services. In the recent past the Council has undertaken district plan changes to accommodate green field growth. Unfortunately in some instances the true cost of servicing some rezoned land has proven more expensive than initial indication and has resulted in economic development constraints.

Principal responses

A work-stream is currently underway to assess the best fit model for ownership of Dunedin's wastewater laterals, and presents options for where individual ownership stops, and Council ownership starts.

The Council's planners and engineers will work closely to ensure the true cost of servicing is taken into account early in any District Plan change or development process. This will be done by utilising in-house hydraulic modelling capability to identify locations where surplus infrastructure capacity is available.

Do nothing

The current process of case-by-case decision-making makes it difficult for 3 Waters to accurately plan for future renewals of public wastewater pipes. At present, the cost of replacing defective wastewater laterals is not included in high level budgeting but in some cases is absorbed at the capital project level. This distorts the true cost of the wastewater pipe renewal. There is also no clear process for the systematic renewal of defective wastewater laterals and the liaison with affected property owners.

4 The Rating Powers Act (RPA) 1988 contained some general provisions which allowed Councils to recover costs from property owners. These general provisions were removed when the RPA was repealed by the enactment of the LGA 2002.

If growth cannot be economically accommodated the high cost of residential and industrial development will potentially result in low growth rates, high housing market inflation and lost employment opportunities for the city.

Legislative considerations

The 3 Waters are affected by various pieces of legislation; primarily the Local Government Act 1974 and 2002 (LGA), the Health (Drinking Water) Amendment Act 2007 (HDWAA) and the Resource Management Act 1991 (RMA). The LGA requires the Council to maintain 3 Waters services, and to assess the provision of those services from time to time. The HDWAA sets requirements for drinking water suppliers to protect the health and safety of communities. The RMA promotes sustainable management of natural resources, and matters addressed include management of fresh water and the beds of rivers and lakes, and discharges into the environment.

Water takes

The Regional Council is responsible for water allocation planning, which includes setting allocation limits and minimum flows. The allocation limit is the maximum amount of water that can be taken, while a minimum flow is considered to be the lowest flow at which ecological, cultural and community values are protected. Community water takes existing as at 1998 are listed in the Water Plan and are not subject to minimum flows, but all new or additional water takes will be. Any take may be subject to a residual flow; essentially a minimum flow at the point of take. Allowance may be made for growth at time of consent renewal, if there is an anticipated excess of water needed above what is already taken, however proof will be needed of what has been taken under current consent and why the additional water is needed. Recent Regional Council plan changes have placed great emphasis on limiting water use to within its local catchment and increasing the efficiency of water use. The City Council is starting to see an increased focus on water conservation being incorporated into our water take and use consents.

As demand for water grows from the primary production sector, the Council anticipates water-take consent volumes to be challenged, especially as the effects of climate change are taken into consideration. The extent of this challenge may require further catchment prospecting, to ensure security of water supply into the future. Some areas of New Zealand impose domestic water metering. This measures the amount of water your household uses and provides an accurate charge for the water you use. It is assumed that the Council will not universally meter its customers unless a central government legislative directive is put in place. Metering customers is not politically palatable and the cost of implementation currently out-weighs the benefits when Dunedin city's current water loss drivers are taken into account.

Drinking water standards

The provision of safe drinking water at an acceptable cost was the single highest priority identified in the 3 Waters Strategic Direction Statement customer surveys[5]. The Council aligns its priorities and strategies with the desired outcomes of the community and Dunedin's water is typically very high quality. The Council follows the legislative requirements as outlined in the Health (Drinking Water) Amendment Act 2007:

> '[to] protect the health and safety of people and communities by promoting adequate supplies of safe and wholesome drinking water from all drinking-water supplies'[6]

Currently all operational plants are meeting the minimum standards outlined in the Act with the exception of the Outram Water Treatment Plant, serving a small community of approximately 750 people. To resolve this issue, an upgrade is scheduled to commence in the 2015/16 financial year at a capital cost of $520,000.

Safe discharges to the environment

The Regional Council is also becoming increasingly stringent regarding contaminant discharges to the environment, and this is likely to affect any future applications to discharge contaminants.

The City Council has committed to improving the quality of discharges to minimise the impact on the environment as a strategic priority. Monitoring wastewater and stormwater outfalls for water quality is a vital part of delivering on this priority and is also a resource consent requirement. As discharge consents are renewed in the future we are expecting more stringent quality requirements to be imposed as conditions. To meet additional requirements some of the rural plants will require upgrade to achieve greater quality, and/or improvements in discharge methodology. Approximately $97 million has been spent on treatment and disposal upgrades associated with the Tahuna Wastewater Treatment Plant upgrade.

Global research increasingly agrees that stormwater runoff may be having a detrimental effect on receiving environments and untreated stormwater can have a significant effect on ecology. Stormwater collects chemical and microbial contaminants as it runs over roads, rooftops, and impermeable surfaces.

5 Dunedin City Council (2010) the 3 Waters Strategic Direction Statement http://www.dunedin.govt.nz/your-council/council-documents/policies/3-waters-strategic-direction-statement

6 The Crown (2007) Health (Drinking Water) Amendment Act 2007 69A http://www.legislation.co.nz/act/public/2007/0092/latest/DLM969845.html

Management of these effects is extremely important for New Zealand's clean, green image and New Zealand's waterways contribute billions to the nation's GDP[7]. The 3 Waters Strategic Direction Statement identifies 'we will improve the quality of our discharges to minimise the impact on the environment' as a key strategic priority.

The Council discharges stormwater to fresh water generally as a permitted activity under the Otago Regional Plan: Water. The Regional Council has indicated they will review stormwater discharge rules in the near future although no timeframes have been confirmed. If the activity status of these discharges were to change, the City Council would need to work through a consent application process, avoiding, remedying and mitigating any adverse effects of the discharge.

Stormwater discharged to the coastal environment is a controlled activity requiring resource consent. Consents to discharge to the Otago Harbour and St Clair Beach were granted in 2013 based on the Integrated Catchment Management Plans developed for each of the 10 contributing catchments. These consents have 35 year term with a five year review period. Generally the consents operate on an adaptive management principle. The Council is required to monitor and where contamination is identified, investigate further and address the source of any contamination.

As part of the suite of environmental monitoring that forms conditions of consents to discharge to the marine environment, the Council conducts analysis of shellfish at stormwater outfalls to assess the accumulation of contaminants in the food chain. Additionally, eight separate sites around the Dunedin coastline are monitored specifically for bathing water quality. The consent principle and monitoring results to date indicate that the risk of significant infrastructure solutions being required in the future is low.

The Council is looking to conduct research to ascertain if contaminant levels in the Otago Harbour outfalls are a consequence from historic discharge practices, or whether it is a recent accumulation. The Council will also investigate whether certain concentrated areas are contributing more to the stormwater contaminant issue, or whether it is wide-spread throughout the city. Upon completion of the research, a range of options and considerations will be constructed to allow adequate planning going forward (such as stormwater treatment), but there are no tangible investment plans at present.

The Council is anticipating that increasingly stringent conditions will be applied when we apply for consents to discharge to the environment.

7 Hannah, Michael (2004) Discussion document into a national programme for evaluation and testing of stormwater products and practises.

Principal responses

The Council is committed to improving the quality of our discharges to minimise the impact on the environment.

The Council will comply with all statutory and regulatory requirements.

Environmental legislation will continue to become more stringent as new technology enables better environmental practises.

Do nothing

Potential changes in the RMA may affect all water utility providers and are likely to drive further legislative reform locally through the Otago Regional Council plans. Even without legislative reform the Regional Council has indicated their intent to undertake various plan changes that are likely to affect 3 Waters activities, including ongoing setting of allocation limits and minimum flows, and addressing stormwater discharges.

Programme delivery

Over the next 5 to 10 years the renewals programme will steadily grow from $11.7 million to $21.2 million ($ today) per annum to enable to us to address the hump of historically under-funded renewals. The total programme, including new capital, ranges from $13.9 million to $21.2million ($ today) over the same time frame.

Historically, 3 Waters has struggled to deliver the capital programme due both to a lack of appropriate resources within the Council to get the programme appraised and managed, and the lack of resource in the market place to get the physical works delivered. A range of new approaches to procurement and delivery have been developed and implemented which gives us confidence that this increasing programme can be delivered and this budget can be spent going forward.

The strategy to deliver this growing programme includes the following.

- Minor network capital works and some drain-in common works are included in the new network maintenance contact (value of approximately $1 million/year). This creates room in our in-house project manager resource and utilises a new construction resource in the market.
- Meetings are held with each of the large contractors in town, informing them of the scope and timing of upcoming capital projects to enable them to better plan and prepare their workforces. Evidence of this market response is already manifested itself.

- Minor, small value treatment facilities capital works are delivered by the respective 3 Waters teams using multiple quotes or invited pricing procurement. Again, this creates room in our in-house project management resource and utilises resource from smaller contractors, perfectly capable of delivering the projects.
- Multi-year renewals package contracts are used where it is appropriate.
- Renewals method-weighting for tender evaluation. Where a renewal can be completed with a number of different methods delivering assets of different expected lives (based on material or construction method), the new weighted evaluation process will help to optimise value, comparing price per year of service with delivery risks.
- Multi-asset renewals. Wherever possible we are now packaging up 3 Waters renewals by area, so that a single tender covers water, wastewater and stormwater renewals. This is more efficient use of contractors, reduces establishment costs and minimises the long term disruption to areas of the city.

With the growing renewals programme the capability and capacity of the teams developing and delivering the programme is also being strengthened accordingly.

Renewals backlog

Renewals expenditure across 3 Waters is currently scheduled to increase steadily over the next 5 to 10 years. Deferral of these renewals will impact noticeably on the ability to effectively deliver services to the community and further increase the backlog of technically 'failed' assets (Figure 11). Additionally, deferring the planned increase in renewals funding will mean that larger step increases in funding will be required in the future if we wish to maintain current levels of service and maintain an acceptable level of risk that is affordable over the long term.

Figure 11 shows the combined replacement cost over a 50 year period (in today's dollars) of all 3 Waters' assets based on condition assessed or modified remaining life rather than purely theoretical useful life. In this graph smoothing is based on informed assumptions and real data, the result of extensive condition assessment. Where assets have already exceeded their useful life and therefore failed (e.g. are not capable of delivering designed service levels such as fire flows in the water network or contained surcharging in the sewer network) these are shown in year one in addition to this year's 'genuine' renewals programme. This 'backlog' represents approximately $60 million at this stage. Whilst the expected lives of the assets are considered to be robust, the theoretical cost of the renewals does not take into account cost efficiencies that can be gained from effective packaging of work and rationalisation of under-utilised assets.

Clearly the backlog of failed assets and the loading of (particularly wastewater) renewals in years one to five is unable to be addressed within the stated timeframe, but represents our best knowledge to date of when assets should be replaced if there were no constraints around funding or the ability for the market to deliver the work. The renewals peak in 2015 shows the backlog of technically failed assets, i.e. assets that are no longer meeting the required level of service and have exceeded their useful lives. Each year, assets from the backlog are programmed and prioritised into the renewals programme thereby reducing the backlog.

We are proposing to continue our programme of stepping up renewals funding from the current level of $11.7 million to $21.2 million by 2021. We then propose to keep funding at the elevated level of $21.2 million until 2033 when we will adopt the 10 year rolling average funding level.

Whilst the data that underpins when assets need to be renewed is relatively robust, the detail on the cost of renewal does not currently take into account any efficiencies that can be made by packaging works efficiently or rationalising the assets that we no longer need. Therefore, whilst the theoretical cost to renew the assets over the next 30 years is $700 million (in current dollars) we are only proposing to provide funding of $612 million over the same period. As we review our underlying assumptions on renewal costs over the next LTP period we will have greater clarity of how long it will take to clear the backlog of work. We believe that it is realistic that we can close this gap between theoretical and actual cost by 16% which would allow us to catch up the backlog of renewals by 2039/40. However, if we can only close a gap of 13%, it will take the fully 30 year period of the infrastructure strategy to clear the backlog. We will continue to refine these assumptions over the next LTP period and adjust our long term funding plan accordingly.

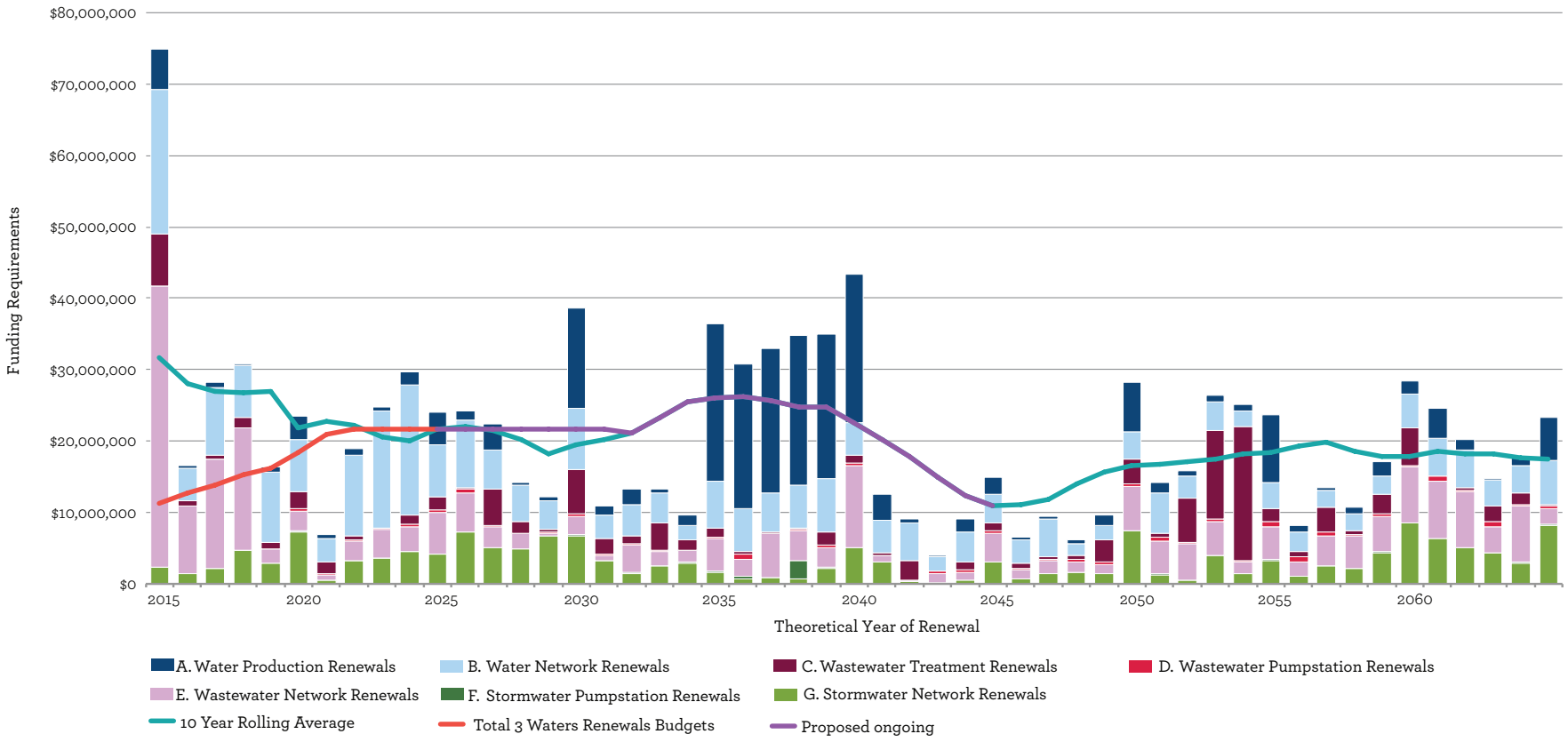
We are confident that the funding gap can be closed through a combination of reviewing the cost assumptions to reflect packaging of procurement, network rationalisation and programme optimisation, as well as by delivering projects at reduced cost through smarter procurement and multi-service projects (including place-based planning) which will enable smoothing of the required spend. Furthermore, the market has been primed for the delivery of increasing capital works programmes. Over the next one to two years, as further condition assessment continues to improve our knowledge and efficiencies of a new structure are bedded in, our ability to meet the 16% target and therefore catch up the backlog by 2040 will become clearer.

Additionally, 3 Waters have entered into a development partnership with IDS Ltd (Infrastructure Decision Systems) with the objective of developing a 3 Waters application for the dTIMS software. dTIMS is widely used by transportation authorities around the world to provide a network wide view of the future renewals and maintenance needs of a given asset base. A preliminary water network model has been developed in by Opus International Consultant, Deighton Enterprises, IDS and 3 Waters Staff. Preliminary results of the new tool are encouraging and suggest a proactive strategy of early renewal of the water network provides the lowest lifecycle cost.

As further testing is completed and confidence in the tool grows 3 Waters will look to demonstrate lifecycle management strategies and their consequence both in dollar and level of service terms. After 2033 it is proposed that the Council aim to fund at the level of the 10 year rolling average funding requirement. Currently this is elevated from 2034 to 2040, predominantly to fund the renewal of the Deep Creek and Deep Stream pipelines as a single pipeline, but it is anticipated that further smoothing will be possible in future years.

Figure 11: Renewals Programme Proposal (50 years)

(Please note: the source data for this graph has not had inflation applied, project costs are in today's dollars).



3 Waters capital expenditure highlights

As shown in Figure 3 on page 19 the forecast budget for the 3 Waters activities remains relatively constant throughout the 30 year infrastructure period.

Operational expenses remain the largest investment of just over $1 billion dollars for the duration of the 30 year strategy, and this covers operating costs, labour, materials and maintenance.

The renewals component makes up the vast majority of capital expenditure and will increase from $12 million per year to a peak of around $25 million in 2035 ($ today).

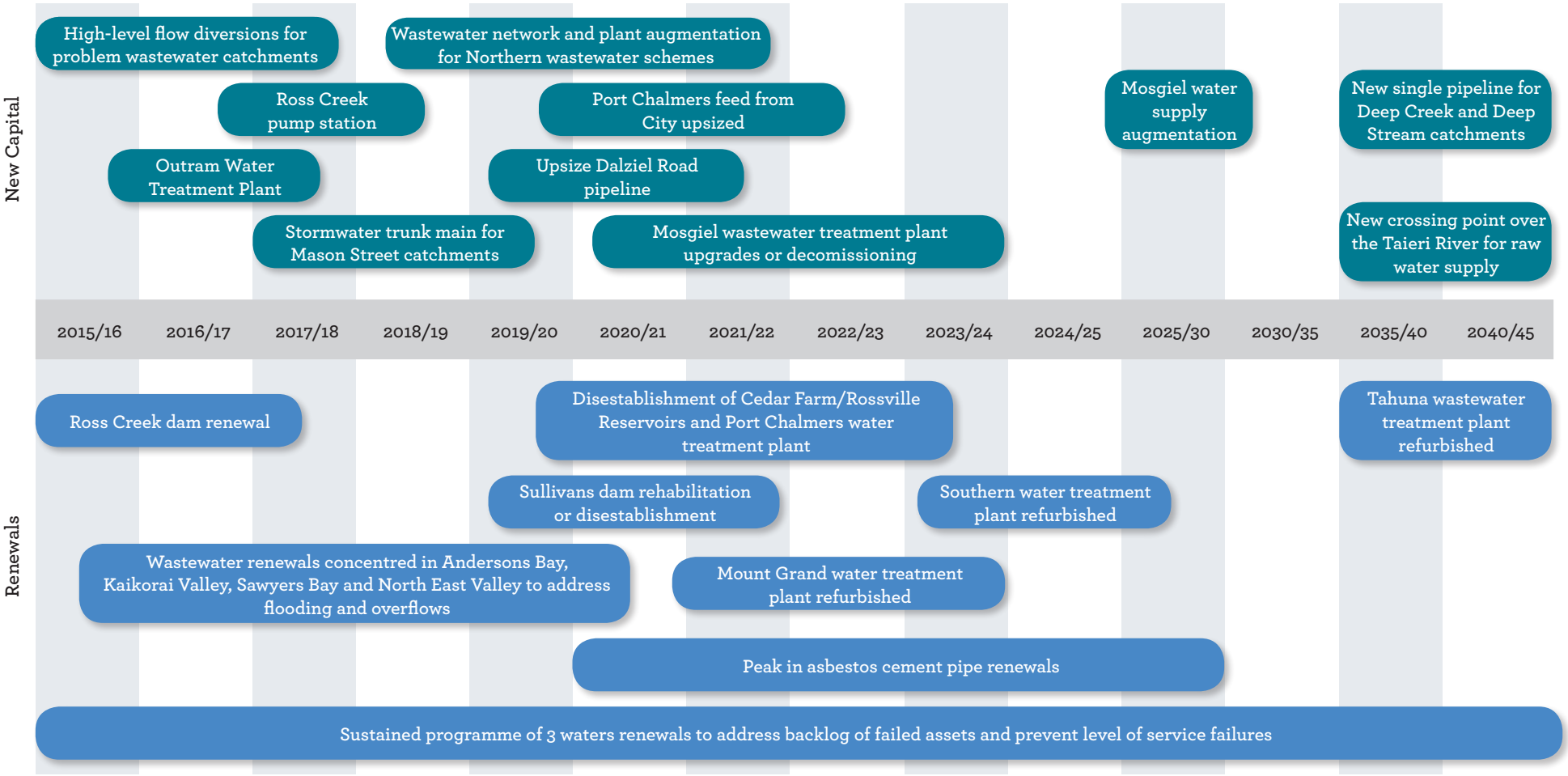
From 2040 on the renewals budget decreases as more of the city's infrastructure assets are replaced. The peak of renewals spending in 2035 is due to the anticipated renewal of the Deep Creek and Deep Stream pipeline as a single line. The Deep Creek and Deep Stream system, constructed in the 1930s and 1970s respectively, allows water to reach Mt Grand Water Treatment plant along 62 km of pipeline. The pipeline crosses the Taieri River on a steel arch bridge constructed in the 1930s and passes over Abbotts Hill to reach Mt Grand. System capacity is currently 8,000m^3/day from DC and 38,000m^3/day from Deep Stream, which provides the majority of Dunedin's water along with an intake at Silverstream. An option is currently being explored on whether it is best to retain the Taieri River crossing bridge, or to divert the anticipated new combined pipe over land which would lower the risk of supply failure.

Aside from the Deep Creek and Deep Stream pipeline, the renewals focus is on replacing the large amount of infrastructure in Dunedin that is reaching the end of its useful life. This results in a budget which slowly climbs as more and more infrastructure reaches the end of its lifecycle and needs replaced, then decreases once the optimum levels of service is reached and the majority of main pipelines are renewed to a more constant level of expenditure (see the renewals section for more detail).

New capital is low priority over the next 30 years, with the budget peaking at $4.9 million ($ today) in 2016/17, then dropping to around $200,000 ($ today) and remaining a constant projection thereafter. The projections coincide with slow growth patterns within Dunedin, and accounts for historical over spending on new capital such as new water and wastewater treatment plants. In the past, the focus has been on creating new capital assets, with under-investment in renewals, however attitudes towards this have changed, with renewals becoming the top priority as assets reach the end of their lifecycle.

Significant projects over the next 30 years

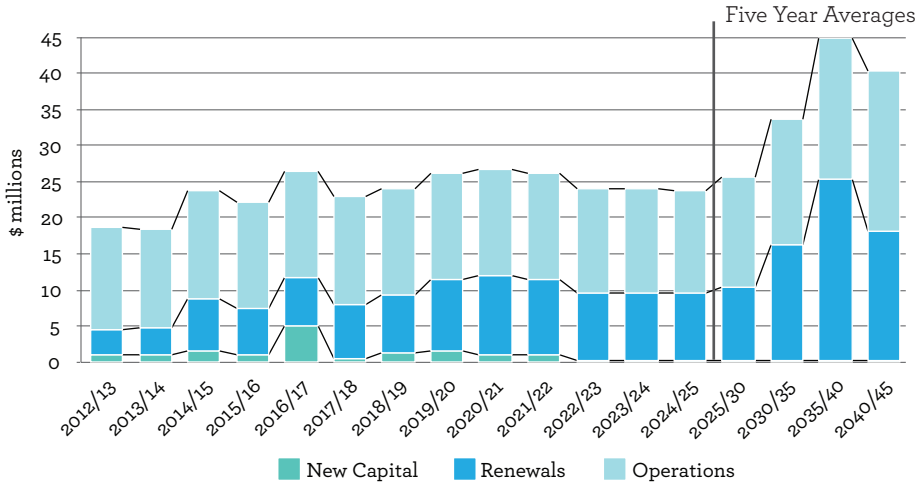
3 Waters estimated timeline of significant Capital Projects



Water supply projects

The information below outlines major projects that incorporate the projected capital expenditure associated with the management of Dunedin water supply infrastructure assets out to 2044/45. The estimated total cost of these works is approximately $219 million ($ today). The projects also highlight their level of uncertainty, and an explanation if uncertainty is high. Cost estimates vary with levels of project certainty.

Figure 12: Water supply expenditure profile 2012/13-2044/45 (Inflation applied)



Renewal of water network assets

Dunedin's water network will require significant investment over the next 50 years. The city has begun a programme to renew and, where appropriate, resize critical distribution infrastructure. In conjunction, assets contributing to reticulation network levels of service failures and poor leakage performance are addressed. These renewals are planned over the long term (50 years) based on a combination of remaining asset life, cohort condition observations, pressure, and programming considerations. Over the medium term (10 years), these hypothetical plans are optimised using actual break and other level of service information to prioritise areas where intervention will best impact overall network performance.

To ensure a robust investment programme, each project is subject to detailed engineering appraisal in the short term (three years). At this stage detailed programming is also carried out to ensure the Council's procurement efficiency is maximised by aligning with parallel infrastructure investment programmes such as road resurfacing or drainage network renewals.

The broad nature of this ongoing programme means the level of certainty varies with time. The short term level of uncertainty is low, although this increases over the medium and long term.

Renewal of water treatment plant assets

The Council has invested heavily over the past 10 years in upgrading water treatment plants to improve drinking water quality and meet changing drinking water standards. This means the Council's renewal requirement at these relatively new facilities is modest over the short term, although these will increase around 2025. Investment in water treatment plant membranes will be required in the short to medium term to maintain compliance with drinking water standards.

Outram Water Treatment Plant

The Outram Water Treatment Plant is the last of the Council's water treatment plants requiring upgrade to meet minimum urban drinking water supply standards, set out in the Ministry of Health Drinking Water Standards for New Zealand 2008. Much of the design work has been completed for this project, with property boundary adjustments underway before construction begins in 2015/2016. The estimated cost of this project is $520,000 ($ today). There is very little uncertainty associated with this project.

Security of Supply Strategy for Metropolitan Dunedin

A "lifelines" study conducted in the late 1990s identified significant risks associated with key infrastructure servicing Dunedin. Further work in the 2000s identified several options to mitigate these risks with a significant associated expenditure profile. The development of the Security of Supply Strategy for Metropolitan Dunedin in 2010 involved analysis of the same risks in the wider context of Dunedin's water supply network. The outcome was an investment strategy focusing on reuse and refurbishment of existing infrastructure, with a comparatively modest expenditure requirement and significant overall risk mitigation.

The projects that make up this plan are:

Project	Cost ($ today)	Year of works	Budget	Uncertainty
Southern to Mount Grand Treated Water Pump Station	$0.97 m	2013/14	New Capital	Low Constructed – commissioning late 2014
Ross Creek Reservoir Refurbishment	$3.5 m	2014/15 – 2015/16	Renewal	Low Tendering late 2014
Ross Creek to Mount Grand Pump Station and Pipeline	$4.6 m	2016/17	New Capital and Renewal	Low Funding allocated
Either Re-establishment or Decommissioning of Sullivan's Dam Reservoir	$2.1 m	2018/19 – 2019/20	New Capital and Renewal	High Funding allocated although some specifics are yet to be determined
Renewal of Deep Creek and Deep Stream Pipelines as a single pipe	$67.8 m	Nominally 2036	Renewal	Moderate

Dam safety works

Dunedin City Council holds a significant portfolio of medium sized water impoundment structures, or reservoirs. Civil works at reservoirs across the city will be undertaken over the next 30 years. The Council, as a dam owner, is responsible for ensuring these structures are safe. Currently this is achieved by procuring independent expert opinions to carry out a comprehensive Dam Safety Assurance Programme in accordance with the 2008 Building Regulations specific to dam safety.

As a result, the Council regularly receives an updated defects list, with resolution timeframes specified in accordance with the defect's public safety risk. In general these defects are rectified by utilising renewals budgets and relate to ancillary structures, such bypass channels. However, it is likely that within a 30 year time horizon a defect requiring new capital investment may arise at any one of the Council's seven raw water reservoirs. As these arise funding proposals will be put forward to the Council for approval. There is a high level of uncertainty associated with this area of expenditure in the long term.

Delivery of pressure reducing valves

Dunedin's steep topography presents significant technical challenges in delivering water supply to customers at uniform pressure. Much of the city's low pressure areas have been addressed by past work programmes, however areas with very high pressure (above 1250kpa) still feature in the network. Plans to install five pressure reducing valves in Andersons Bay (three), Green Island (one) and North Road (one) will reduce high water pressure levels to more than 2000 properties, reducing private and public infrastructure deterioration and leakage. This programme began in 2014/15, with three recently commissioned in Andersons Bay, and the remaining installations planned for 2016/17 and 2017/18. The level of uncertainty associated with this project is low.

For more detailed information about water pressure in Dunedin including a current water pressure map, see www.dunedin.govt.nz/services/water-supply/water-pressure.

Power outage resilience

A report will be taken to the Council's Infrastructure Services Committee during the 2015/16 year, which will outline the current level of 3 Waters infrastructure resilience to power supply outage. The mode and time to failure following a power outage of each energy reliant site has been considered, defining the current level of service. It is anticipated that the Council will adopt a minimum level of service. The project does not require additional funding. This project has a high level of uncertainty as it is yet to be considered by elected members.

Aligning with DIA mandatory measures

The Council is committed to reducing leakage to economic levels over the next decade. Delivery of the zone metering programme for improved water accounting is required to better understand the water networks leakage profile.

Following five years of installing two to three meters per year at key strategic points around the city, the remaining 10-12 meters required are to be installed between 2017/18 and 2020/21. This will complete dissection of the city into 'leakage zones', which are used to more effectively account for water losses and target more focussed leak detection programmes. In some cases installation is required under existing resource consent conditions.

This greater level of monitoring will enable the development of a System Leakage Management Plan which will detail areas for investment if required. This project has a low level of uncertainty.

Port Chalmers Water Supply project

Currently Port Chalmers Water Supply is intermittently sourced from Dunedin city. However, during cruise ship season peak demand exceeds supply availability from the city, requiring the operation of a small water treatment plant, fed by two earth dam reservoirs. This is an expensive local water supply arrangement. Work to address this began in 2014/15 and compares the life cycle costs of infrastructure alternatives to meet Port Chalmers peak water supply needs. The options range from maintaining the status quo with no additional investment, to the upsizing of the distribution pipework from the city. Capital cost ranges from zero to $2.58 million ($ today). It is anticipated that a report will go to the Council in the 2014/15 year recommending a management strategy. This project has a moderate level of uncertainty.

Mosgiel Water Supply Project

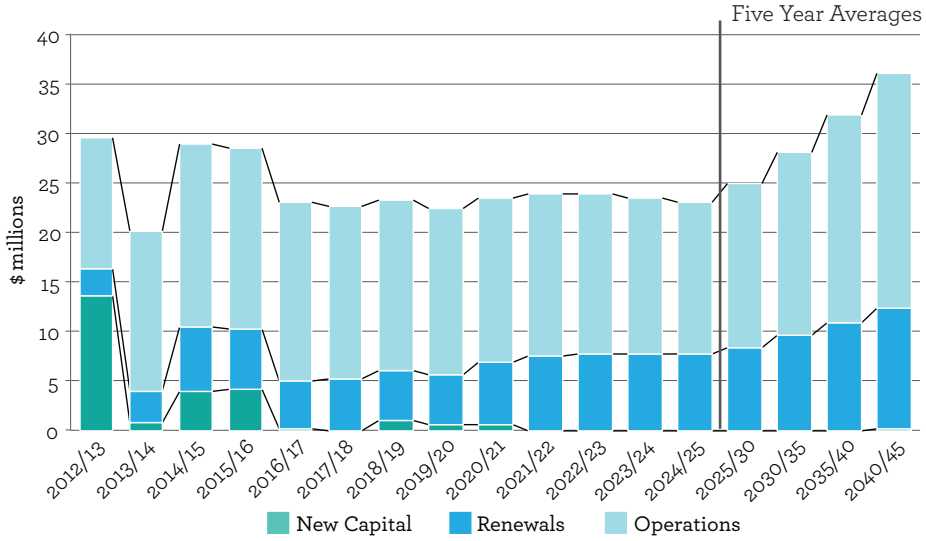
The wider Mosgiel area is serviced by seven groundwater bores, drawing from the North Taieri aquifer which is classed as 'confined'. Once extracted, the water is transmitted to one of five treatment plants, although the only treatment required to meet drinking water standards is to adjust pH levels to avoid problems with public and private pipe corrosion.

Historically, this has been an inexpensive and effective way to supply the Mosgiel community with water. More recently, investigations have indicated that the aquifers confined status may be called into question in the near future, and that evidence of a contamination plume flowing toward the current bore sites is growing. At this stage, further understanding of the movement of the plume will be gained by testing over time. This will give an indication of the timeframes over which the current arrangement can continue. Furthermore, it is unlikely that any intervention which provides an additional level of water treatment will be cost effective. Rather, it is more likely that the supply of fluoridated and chlorinated water from the Mt Grand Water Treatment Plant would be the most economical approach to supplying Mosgiel. In the past this option has received a negative community response, citing a reluctance to consume chlorinated or fluoridated water. Council will continue to assess the aquifers suitability as a drinking water supply by monitoring the quality of the aquifer upstream of the bore sites. A full options report will be compiled for the Council's consideration when further information is compiled. It is important to note that evidence to date suggests the time until action is required is outside of the 10 year long term plan horizon.

Wastewater projects

The information in this section outlines major projects that incur capital expenditure associated with the management of Dunedin's wastewater infrastructure assets out to 2044/45. The total forecast capital expenditure is $178 million over this period. The level of uncertainty of the projects is highlighted, and an explanation given if uncertainty is high.

Figure 13: Wastewater expenditure profile 2012/13-2044/45(Inflation applied)



Renewal of wastewater reticulation infrastructure

Dunedin's wastewater network will require significant investment over the next 50 years. The city has begun a programme to renew wastewater infrastructure where it is proven to be significantly subject to groundwater infiltration. This infiltration can be fresh or saline water and is addressed further under the heading Mitigating sewer overflows. In conjunction, assets contributing to reticulation network level of service failures and poor environmental performance are addressed. These renewals are planned over the long term (50 years) based on a combination of remaining asset life, cohort condition observations, pressure, and programming considerations. Over the medium term (10 years) these hypothetical plans are optimised using actual break and other level of service information to prioritise areas where intervention will best impact overall network performance.

To ensure a robust investment programme each project is subject to detailed engineering appraisal in the short term (three years). At this stage detailed programming is also carried out to ensure the Council's financial leverage is maximised by aligning with parallel infrastructure investment programmes such as road resurfacing or treated water network renewals.

The broad nature of this ongoing investment programme means the level of certainty varies with time. The short term level of uncertainty is low, although this increases over the medium and long term.

Mitigating sewer overflows

The Council's wastewater network has several areas where insufficient capacity and high levels of inflow and infiltration periodically culminate in network overflow during heavy rainfall events. Typically the areas with high inflow and infiltration levels also coincide with some of the Council's older and most significantly deteriorated pipework. The four main areas identified by hydraulic modelling are:

- the Andersons Bay catchment
- the Kaikorai Valley catchment
- the North East Valley catchment
- the Sawyers Bay catchment.

The Council has started work in Andersons Bay, renewing $6 million worth of piped infrastructure between 2013 and 2015. Further work will be completed over the next 10 years. The Council has taken a combined services renewal approach, at the same time addressing firefighting incapacity. High pressure areas in the treated water network were addressed by installing pressure reducing valves along with renewing aged and tuberculated cast iron water mains. This approach yielded significant renewals spend efficiency: up to 40% (or $1.5 million saved) in one tender.

A significant portion of renewals funding will be directed to addressing overflows caused by infiltration and inflow as a priority over the next 10 years and potentially beyond. The following tables outline projected spends in the priority areas.

Project	Cost ($ today)	Period of works	Budget	Uncertainty
Andersons Bay Wastewater Renewals	$12 m	2013 – 2023	Renewals	Low. $6 million invested to date, a further $6 million is planned for between 2020 and 2023.
Kaikorai Valley Wastewater Renewals	$25 m	2015 – 2030	Renewals	Low. Investment required based on modelling outputs and CCTV received to date. Several packages are already programmes and further filming to be received in 2015 will confirm the next priorities and overall need.
The Surrey Street Diversion	$4 m	2015 – 2017	Renewals and New Capital	Low. Large diameter pipe requires renewal and in Hillside Road, there is an opportunity to renew and upsize this pipe at a marginally greater cost to redirect flow from the Surrey Street Bottleneck.
North-east Valley Wastewater Renewals	$10 m	2019 – 2025	Renewals	Low. Investment required based on modelling outputs and CCTV received to date, further filming to be received in 2015 will confirm priority and overall need.
Sawyers Bay Wastewater Renewals	$5 m	2017 – 2022	Renewals	Moderate. Investment required based on modelling outputs and CCTV received to date, further filming to be received in 2016 will confirm priority and overall need.

Wastewater treatment plant renewals

The Tahuna wastewater Treatment Plant services approximately 78% of Dunedin's wastewater serviced population. The plant was extensively upgraded from 2009 through to 2015 to provide high quality wastewater treatment to the city, including UV disinfection and to comply with new discharge consent conditions. Subsequently, this major facility will require only relatively minor renewals investment over the short to medium term. However, this will likely increase around 2030.

The other large plants, Mosgiel and Green Island Wastewater Treatment plants, work in unison to serve approximately 21% of serviced customers. Green Island was upgraded in 2000, and provides ultraviolet disinfection to the pre-treated flow from Mosgiel. Mosgiel Wastewater Treatment Plant has not been extensively upgraded since the mid 1980s and will require significant investment within the next 10 years. Green Island no longer treats the industrial flows it was designed to as several key industrial customers ceased their high volume, high concentration discharge activities. The Council is currently working to determine an optimised strategy for the operation of the two plants for the future.

Northern wastewater strategy

Either significant network augmentation or additional treatment infrastructure is expected to be required in the northern townships of Waikouaiti, Karitane, Seacliff and Warrington when their respective wastewater discharge consent renewal applications are submitted. This is assumed to require $650,000 annually over three years and timing is projected for 2018/19 to 2020/21. The level of uncertainty is moderate as the exact nature of the consent conditions is as yet unknown, however the consent renewal timeframes are strict. The Council is working to firm this up by the end June 2015 by conducting additional environmental monitoring and wastewater network modelling.

Growth projects for the wastewater system

Pump station upgrades are required to accommodate the development at Variation 15 (Burns Street) programmed for 2018/19. The timing of this development is uncertain but for other aspects of delivery the level of uncertainty is low.

A further pump station is required to accommodate developments at Mosgiel East C (Gladstone Rd North) programmed for delivery 2015/16. The level of uncertainty is low.

Reticulated network expansion projects

The Council is required to carry out water and sanitary services assessments in accordance with the requirements of section 125 of the Local Government Act 2002. A full assessment was completed in July 2007 and annual review is completed through the Water and Waste Service Asset Management Plans.

Issues raised in the assessment were prioritised based on environmental impact and since 2007 Council has addressed a number of the highest priority issues including providing a low pressure sewer system for Allanton; reticulating areas of Blanket Bay and Curles Point; and inspecting septic tanks and requiring owners implement remedial measures.

A further recommendation from the assessment was to investigate wastewater disposal systems in Outram, to determine the most sustainably and appropriate long term arrangement. This investigation has not yet commenced as to date the focus has been on addressing the highest priority issues. However, the Council does recognise the need to investigate the wastewater disposal situation in Outram and this will be programmed in due course.

There is potential for a future project to service Outram with reticulated wastewater, replacing an old stock of septic tanks. This project would cost in the order of $7-$10 million ($ today) of new capital and the timing is subject to the establishment of further drivers and significant Council decision making as this work is not budgeted. This project has a high level of uncertainty.

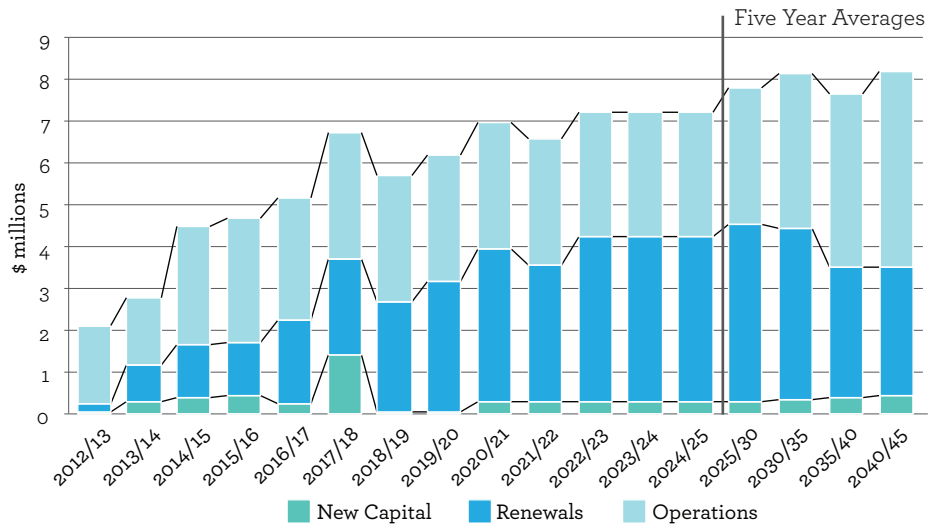
Power outage resilience

A report will be taken to the Council's Infrastructure Services Committee during the 2015/16 year, which will outline the current level of 3 Waters infrastructure resilience to power supply outage. The mode and time to failure following a power outage of each energy reliant site has been considered, defining the current level of service. It is anticipated that the Council will adopt a minimum level of service. The project does not require additional funding. This project has a high level of uncertainty as it is yet to be considered by elected members.

Stormwater projects

The information in this section outlines major projects that incorporate the projected capital expenditure associated with the management of Dunedin's stormwater infrastructure assets out to 2044/45. A total capital expenditure of $95 million is anticipated over this timeframe. The level of uncertainty of the projects is highlighted, and an explanation given if uncertainty is high.

Figure 14: Stormwater expenditure profile 2012/13-2044/45 (Inflation applied)



Stormwater renewals

Dunedin's stormwater network will require significant investment over the next 50 years. The city has begun a programme to determine the condition of critical stormwater infrastructure. In conjunction, assets contributing to stormwater network levels of service failures are addressed as and when required. These renewals are planned over the long term (50 years) based on a combination of remaining asset life, cohort condition observations, and programming considerations. Over the medium term (10 years), these hypothetical plans are optimised using actual break and other level of service information to prioritise areas where intervention will best impact overall network performance. To ensure a robust investment programme, each project is subject to detailed engineering appraisal in the short term (three years). At this stage detailed programming is also carried out to ensure the Council's procurement efficiency is maximised by aligning with parallel infrastructure investment programmes such as road resurfacing, treated water or wastewater network renewals.

The broad nature of this ongoing programme means the level of certainty varies with time. The short term level of uncertainty is low, although this increases over the medium and long term.

Mitigating flooding

$1.4 million has been allocated in the capital budget to enable works and design for the creation of a second stormwater trunk main for the Mason St catchment from Queens Gardens to a new proposed outfall at Cross Wharf. The assumed timing for these projects is 2017/18 and carries a moderate level of uncertainty as further modelling and risk analysis will be applied to ensure best value is achieved. For more information refer to the Mason Street Integrated Catchment Management Plan http://www.dunedin.govt.nz/_data/assets/pdf_file/0008/227843/Mason-St-ICMPv1.pdf

The development of several stormwater detention areas to help alleviate bottlenecks and localised flooding issues is required. These types of projects are pursued as opportunities arise, making the level of uncertainty moderate.

Watercourse ownership

A further renewals consideration in the area of stormwater is the management of urban piped watercourses. The City has approximately 305 km of watercourse; 98 km are under DCC ownership (predominantly Parks and Reserves though six different departments of the Council own watercourses) and 207 km are under private ownership. There is very little information held on watercourses, particularly those which are privately owned but the gross replacement cost of all these assets (both Council-owned and privately owned) is estimated at $220 million. Prudent asset management would see approximately $2.2 million ($ today) per annum spent on renewing these assets; $740,000 by Council and $1.5 million by private asset owners. There is a high level of certainty that this is not occurring at present and over time this situation means increasing risk to the management of the Dunedin's stormwater. The impacts of climate change will exacerbate this issue as rainfall intensities increase, and subsequently the risk of these watercourses failing increases. The level of uncertainty of this project is high, as presently the subject is for consideration only.

Power outage resilience

A report will be taken to the Council's Infrastructure Services Committee during the 2015/16 year, which will outline the current level of 3 Waters infrastructure resilience to power supply outage. The mode and time to failure following a power outage of each energy reliant site has been considered, defining the current level of service. It is anticipated that the Council will adopt a minimum level of service. The project does not require additional funding. This project has a high level of uncertainty as it is yet to be considered by elected members.

Conclusion

The Infrastructure Strategy demonstrates that the Dunedin City Council has well developed asset planning and management practices which are supported by a financial strategy that provides for the funding of forecast expenditure.

The 3 Waters and roading and footpaths groups of activity are well engaged with long term asset planning, with the Council adopting a 50 year 3 Waters Strategic Direction Statement and a 30 year Integrated Transport Strategy in recent years. These strategies are underpinned by asset management teams with a commitment to continuously improving asset condition knowledge and management of asset life cycles. This is particularly critical in Dunedin where one of the major infrastructure issues is the age of the assets themselves.

The major issues identified in this strategy are the age of infrastructure and the requirement to renew large numbers of these assets over the next 30 years. A number of activity specific issues are considered in this document as well as a high level summary of asset management practice, capability and capacity to deliver programmed work and issues relating deferrals of renewals.

Consideration of issues shows that there is a need to steadily increase the rate of asset renewal over the next 30 years. While this raises issues of affordability, the financial strategy acknowledges this as a necessity to maintain existing service levels. There is a need to spend more heavily in some activities to catch up on a backlog of renewals. However, it is more prudent to programme this expenditure in the medium term than to risk a longer term more expensive asset failure. The main options for managing infrastructure are summarised on the next page.

Options for managing infrastructure

These are the main options available to the Council for managing infrastructure and were consulted on during the LTP consultation. The third option which involves funding infrastructure spending to the highest level required is not able to be pursued due to the cost of doing so, the lack of capacity in the sector to deal with the volume of work required and the adverse effects on residents from programming large amounts of work to be carried out at the same time. The two options that are considered in the strategy are options one and two. The second option is the Council's preferred option.

Option	Description	Impact on Service Levels	Impact on Rates	Other Impacts
Option 1	Leave renewals funding at present levels. (No changes to the way we manage renewals).	Service levels will trend down over the next 10 years with more breaks in mains, overflows to streams and poorer response times due to the volume of emergency repair work that will be required. This will also drive up operational costs.	A decrease in the overall rates requirement.	Residents satisfaction with the service provided by the Council will be affected.
Option 2 (The Council's proposed option)	Step up renewals funding as proposed in the LTP and 30 year infrastructure strategy.	Service levels will be able to be maintained, without current issues getting significantly worse before they are fixed.	This work is being funded within the proposed rates increases in the LTP.	Future renewals requirements are spread across a 10 – 30 year timespan. This will mean that the next round of renewals will not all fall due over a short period of time.
Option 3	Add additional funding to the draft budgets to catch up backlog more quickly across the first five years of the LTP.	The intention of this option is that service levels will be maintained and that the current issues will be fixed faster. Note: The Council may not be able to deliver the work faster due to limited availability of contractors to deliver the work.	Increased rates	Overall rates increase well above 3% in the 10 years of the LTP. Funding that has been rated for is potentially not spent. Traffic disruptions due to large number of streets 'dug up' at the same time. Service disruptions to large numbers of customers while work is being carried at the same time in different areas of the city.

During deliberations and decision making on the results of consultation in May 2015, the Council formally adopted the Infrastructure Strategy and confirmed that Option 2 would be included in LTP budgets.

Māori Capacity to Contribute to Decision Making

The Local Government Act 2002 requires the Council to consult with Māori and to provide opportunities for Māori to contribute to its decision-making processes. The Council is working with all Māori in Dunedin to facilitate active and meaningful participation at both the organisational and operational levels.

Organisational Level

The Council held a formal meeting with Māori at Ōtākou Marae in February 2003 aimed at consolidating and further developing existing relationships between the Council and Kāi Tahu. As a result of that meeting, a Māori Participation Working Party was established to consider ways in which to further develop Māori capacity to contribute towards Council decision-making.

In 2005, following the election of the new Council, the Māori Participation Working Party was reconvened as an informal Advisory Group on Māori Participation. The advisory group comprises Councillors and representatives from the two local Rūnanga in the Dunedin city area, Te Rūnanga o Ōtākou, and Kati Huirapa Rūnaka ki Puketeraki. The Araiteuru Marae Council are also recognised as representing Taurahere (non-Kāi Tahu Māori) in the city.

The aims of the Advisory Group are:

- to provide a direct line of communication between the Council with Kāi Tahu Rūnanga and Taurahere in the Dunedin area
- to facilitate communication and understanding at the executive/governance level of all parties
- to provide a forum for discussion of strategic level issues
- to provide advice to the Council on issues relating to Māori
- to identify, set out and evaluate options for the participation of Māori in areas arising from the Local Government Act 2002.

The work of the group was formalised in a Memorandum of Understanding between the Council and Te Rūnanga o Kāi Tahu as Manawhenua. The purpose of the memorandum is to define mechanisms to promote and facilitate effective consultation and liaison between the Council and Te Rūnanga o Kāi Tahu. The memorandum was ratified and formally signed with both Rūnanga in 2006. A review of the memorandum and the Māori Participation Working Party was undertaken in December 2009, and another review will be undertaken in 2015.

In addition, Otago local authorities and Manawhenua have developed an enhanced Otago consultation model called Te Roopu. This includes representatives from councils in the Otago region, and all Papatipu Runanga. The local authorities, including Dunedin City Council, provide a subscription to Kāi Tahu ki Otago which is the consultancy arm of Te Roopu and which assists the Paptipu Runanga to resource their contributions to Te Roopu. The objectives of Te Roopu are to:

- create an Otago Takiwa-wide collective forum between Kai Tahu ki Otago and the local authorities of Otago to facilitate better mutual understanding; improve the efficiency of Iwi engagement and resourcing for council-oriented business; and foster and grow Iwi capacity in local government activities, processes and governance
- develop a combined work programme that will help establish stable resourcing levels and avoid duplication of effort for Iwi participation with local authorities; establish priorities of work demand; and move work demands into a medium term perspective in which future needs can be planned
- assist fulfilling local authority obligations to Iwi under all relevant statutes.

The Governance Charter for the Otago-wide consultation model, Te Roopu, was formalised early in 2014 after a year of operation. This had initially been signed as a starting document in November 2012 by the Paptipu Runanga of the Kai Tahu ki Otago Takiwa and local authorities of the Otago region.

Activity Level

In addition to the arrangements for progressing corporate issues and liaison described above, various Council departments have mechanisms in place for consulting with Kāi Tahu on operational matters. For example, the Council's Water and Waste department worked closely with Māori in the development of the Council's Three Waters Strategic Direction Statement, an integrated approach to the sustainable management of water, wastewater and storm water in Dunedin.

A number of projects have been initiated by the Māori Participation Working Party following hui with the wider Māori community. Some of these are:

- the creation of a database of Māori Land in the Dunedin area
- a feasibility study of Māori Tourism initiatives and entrepreneurship with the University of Otago, led by Te Kupeka Umaka Māori ki Araiteuru (KUMA) the Māori Business network
- the development of the 'Tiki Tour', a Māori guide to the lower South Island

- greater coordination and integration of Matariki/Puaka celebrations through funding and the employment of a co-ordinator to develop Matariki/Puaka as an indigenous celebration unique to Dunedin
- tree planting initiatives to encourage native birds in the Dunedin area.

In July 2014, a revised resource consent protocol to facilitate effective consultation and liaison between the Council and the Rūnanga on resource consent matters was signed. The resource consent protocol defines the process for facilitating Kāi Tahu involvement and consultation in the resource consent process used by the Council under the Resource Management Act.