

SOUTH DUNEDIN FUTURE ENGAGEMENT REPORT

STAGE 3: RISK AND LONG LIST OF APPROACHES

April 2024



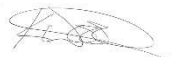
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STAGE 3: RISK AND LONG LIST OF APPROACHES

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Revision 3 of this report was circulated to the SDF Programme team at the Dunedin City Council for review and further inputs, which were incorporated into Revision 4 before finalising the report.

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EXECUTIVE SUMMARY

Community engagement to deepen councils' understanding of community views about the future of South Dunedin, and more specifically to inform the risk assessment and the long-list of approaches, occurred between February and March 2024. We wanted people to tell us where important places are in South Dunedin, how different scenarios over the next 80 years would impact people's lives and what they liked and disliked about the proposed 16 adaptation approaches for the future.

A range of communication and engagement **methods** were used. Some key methods included a flyer, online survey, Expo weekend, workshops, youth meetings, and stalls at the Dunedin Street Festival and Moana Nui Pacific community festival.

Those who responded to our **demographic** questions indicate an even split between male and females participated in the engagement, and the ethnic representation in the online survey was comparable to the 2018 census data, except for the Pacific people's representation. There was also good representation across all age groups.

This engagement has given us further insights into the **community views** that will feed into the next stages of technical work. Some of the key things we have heard from the community through this engagement included:

- A number of the most important **places** identified are those used for recreation, community gathering spaces and the natural environment of the St Clair to St Kilda coast.
- The **scenarios** showed that as the scenarios get worse people are less tolerant of living with the conditions and found the third scenario (widespread water across South Dunedin) unacceptable and people wanted action before another event.
- **Thresholds** indicated that affordable insurance cover is a key element that will indicate major change is needed before insurance was unaffordable or not available.
- All of the **approaches** received comments about what people did and didn't like. Key themes included:
 - o Concern about the **cost or investment** required, who will pay for the approach and what impact would it have on the individual property owner and the ratepayer in terms of rates increases.
 - o Approaches that provided more **natural** solutions such as wetlands, trees and greenspace were liked for their wider benefits to the community.
 - o Concern about **disruption** for implementation of approaches.
 - o Some respondents saw a **combination of approaches** working together.
 - o Want **solutions** that will work in South Dunedin.
- Most respondents wanted Forbury Park to become a wetland.
- The majority of the participants in this engagement saw the **value in the Council acting** and doing something to reduce the impact of the water challenges on people's lives, while a small number didn't believe in climate change or acting before there was a need.

All feedback will be provided as input for the risk assessment (workstream 3) and the adaptation approach development (workstream 4). **Further engagement** with some groups such as schools and Pasifika community will occur in the coming months, after which focus will shift to planning and designing engagement for subsequent phases of the South Dunedin Future programme.

1 INTRODUCTION

The purpose of this report is to provide a summary of what we did and what we heard during the 'risk and long-list of approaches' engagement for the South Dunedin Future programme. The engagement occurred during February and March 2024. This report is intended as an internal document for the Dunedin City Council (DCC) and Otago Regional Council (ORC) and the project teams working on the South Dunedin Future programme as both a record and an input into the next phase of the programme.

Note that this report does not cover any engagement and collaboration activities with Mana Whenua. The DCC and ORC are engaging directly with Mana Whenua via Aukaha as 'project partners' through Workstream 1 'Strategic Programme Management' and directly inputting into Workstream 3 – 'Risk Assessment' and Workstream 4 – 'Adaptation Planning' deliverables – currently including the Mana Whenua risk assessment and the decision-making framework which will inform the adaptation planning workstream.

The objectives of this engagement were to work with the community to:

- Understand places of importance as information for the risk assessment.
- Understand how different scenarios over time might impact people if action is not taken and to determine thresholds and triggers for the risk assessment.
- Collect feedback on the proposed long-list of 16 generic approaches.

The community feedback within this report will feed into the next stages of the project including the risk assessment and development of South Dunedin-specific relevant spatial long-list set of approaches to future adaptation options.

Further engagement will occur over the coming months to reach key groups in the community we haven't heard from, after which focus will shift to planning and designing engagement for subsequent phases of the South Dunedin Future programme.

2 WHAT WE DID

The engagement period ran from 20 February to the 28 March 2024, using a number of communications and engagement methods to inform people of the approaches and to engage with them about risks, triggers and thresholds, and the long-list of generic adaptation approaches. The development of the engagement approach was guided by the South Dunedin Future Communications and Engagement Strategy.

2.1 WHAT WE WANTED TO FIND OUT

During this engagement stage we asked the community about the following elements.

1. We asked people to locate on an online map places that are really important for them, their family, the South Dunedin community, or the wider Dunedin city.
2. We gave people two or three scenarios for the future of South Dunedin and discussed how much impact it would have on them and their daily life and how tolerable each scenario would be. The scenarios are provided below:
 - a. Scenario 1: Year 2030 - Infrequent flooding, high groundwater after rainfall
 - b. Scenario 2: Year 2060- 2070 - Groundwater is at the surface across large areas. Coastal waves overtopping Portsmouth Drive increasing in frequency and extent. Infrequent flooding.
 - c. Scenario 3: Year 2100 - Widespread groundwater on the surface, Coastal waves overtopping, Coastal erosion (threat), Frequent flooding.
3. People were asked to tell us for any of the 16 adaptation approaches for South Dunedin, what they liked and did not like about the approach.
4. We also asked people what they would like to see happen with Forbury Park, which the DCC has recently purchased to use as part of the programme
5. To understand who we were hearing from, we collected demographic data through the online survey and data about age at our in-person events.

2.2 COMMUNICATIONS AND ENGAGEMENT METHODS AND TIMELINE

The table below outlines the different communications and engagement methods used to get feedback from the community on risks and the long-list of generic approaches. The range of methods were chosen with the aim of hearing from a wider age range and particularly more youth and young families. Figures 2-1, 2-2 and 2-3 show images of some of the communications and engagement methods utilised at the South Dunedin Future Expo at the Edgar Centre (2-3 March).

Communications and Engagement Methods	Date	Number of people who interacted
Distribution of 'What can we do' flyer to all of South Dunedin	19 February	South Dunedin focus area (7000 households and businesses)
Online Survey	19 February – 28 March	85 started, 44 completed responses
Website update	19 February	1,300 users of South Dunedin Future pages QR codes attracted less than 10 hits
Email newsletter	20 February	415 subscribers
Social media posts - DCC - March 15: SDF expo photos (8 thumbs up). - Too AleNimo - February 27: SDF expo repost (3 hearts, 1 thumbs up). - CAMA - February 26: SDF expo repost (no reactions). - OAR FM Dunedin - February 26: SDF expo repost (7 thumbs up, 1 love, 1 share). - DCC - February 20: Updating cover photo in SDF expo event (1 reaction). - DCC - December 1: SDF approaches info (42 thumbs up, 5 hearts, 2 laughs, 1 love, 13 comments, 7 shares, 2 reposts). - ORC - December 1: SDF approaches info (10 thumbs up, 2 hearts, 1 comment, 2 shares).	20, 26, 26, 27 February 15 March	5 posts (including reposts)

Joint DCC / ORC media release: South Dunedin Future Expo: play, learn and shape the future	22 February	All local and national media, on council websites
Media coverage / advertising South Dunedin views sought Otago Daily Times Online News (odt.co.nz) 'New crowd' attends South D Future expo Otago Daily Times Online News (odt.co.nz) Expo ad run in both ODT and the Star newspapers. Colouring in competition A4 entry form ran in the Star newspaper	22 February 3 March 24 February, 29 February 29 February	Readership of the Star (38,500) and Otago Daily Times (95,000 readership print and 100,000 daily online)
Email to stakeholders, community, and cultural groups	23 February	10 schools, (3 high schools, 1 intermediate, 6 primary) 20 early childhood centres / kindergartens
Colouring competition	22 February – 3 March	
South Dunedin Community Network workshop (2 hours at Expo site)	1 March	6 network Roopu members attended
South Dunedin Future Expo, Edgar Centre - Public expo with 7 stations: - Map of South Dunedin for people to pin places of importance. - NIWA's Township Flood Challenge board game to allow people to understand adaptation planning. - Map of Forbury Park for people to indicate their preferences for use of the site. - Lego build and colouring in area. - Emergency Management stand. - Display boards and feedback stations for the 16 adaptation approaches. - Natural hazards computer 'look-up' station where people could look up hazard maps and information held on their properties.	2-3 March	198

• 5 risk workshops were held throughout the expo risk workshops were run to enable participants to do a deep dive into the scenarios and tolerance elements. • Colouring in competition.		
Engagement with schools Queens High Envirogroup, Bayfield High Envirogroup and Dunedin Youth Council	7, 13, 20 March	50 senior secondary students
South Dunedin Street Festival, King Edward Street • Township Flood Challenge game to allow people to understand adaptation planning. • Risk map for people to pin locations of importance. • Display boards with each approach displayed. • Map of Forbury Park for people to indicate their preferences for use of the site.	16 March	170 (approx.)
Workshop with people with disability representatives	18 March	4 representatives
Moana Nui Pacific Festival • Risk map for people to pin locations of importance • 16 approaches displayed	23 March	50



Figure 0-1: Lego build (left) and NIWA adaptation game (right)



Figure 0-2: Demographics and satisfaction feedback stand (left) and NIWA adaptation game (right)

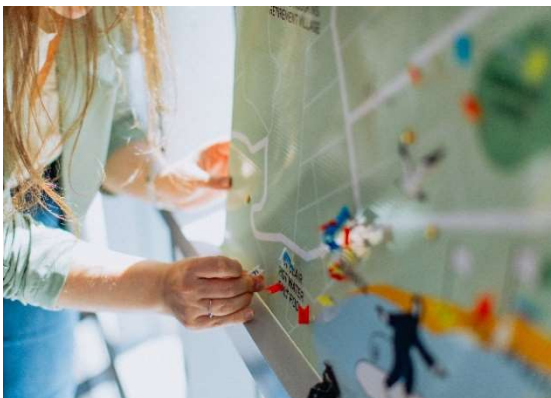


Figure 0-3: Images of the South Dunedin Future Expo and the various engagement methods used (Credit: DCC)

3 WHO WE HEARD FROM

Understanding who we have heard from is important for understanding which parts of the community the feedback collected speaks for. It also allows us to also understand who we haven't heard from and enables us to adjust engagement methods for future engagements.

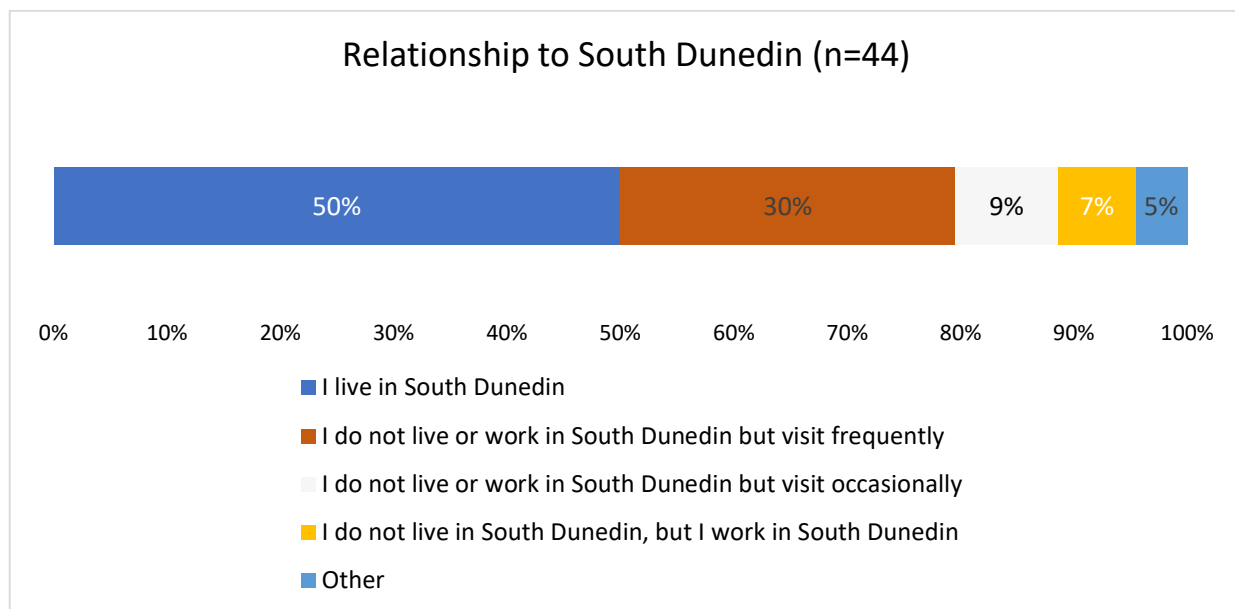
This section reports who we heard from in two sections: the online survey which collected detailed demographic information, and the expo which collected limited demographics (age),

3.1 ONLINE DEMOGRAPHICS

After cleaning the data¹, a total of 44 respondents provided answers to our online survey. Of these, half lived in South Dunedin. Approximately 40% of respondents did not live or work in South Dunedin but visited frequently or occasionally. Almost 20% of respondents were long-term residents who had lived or worked in the areas for 15 or more years, and in total 41% of respondent have been in the area for 5 or more years. There were similar numbers of males and females who took part in the survey.

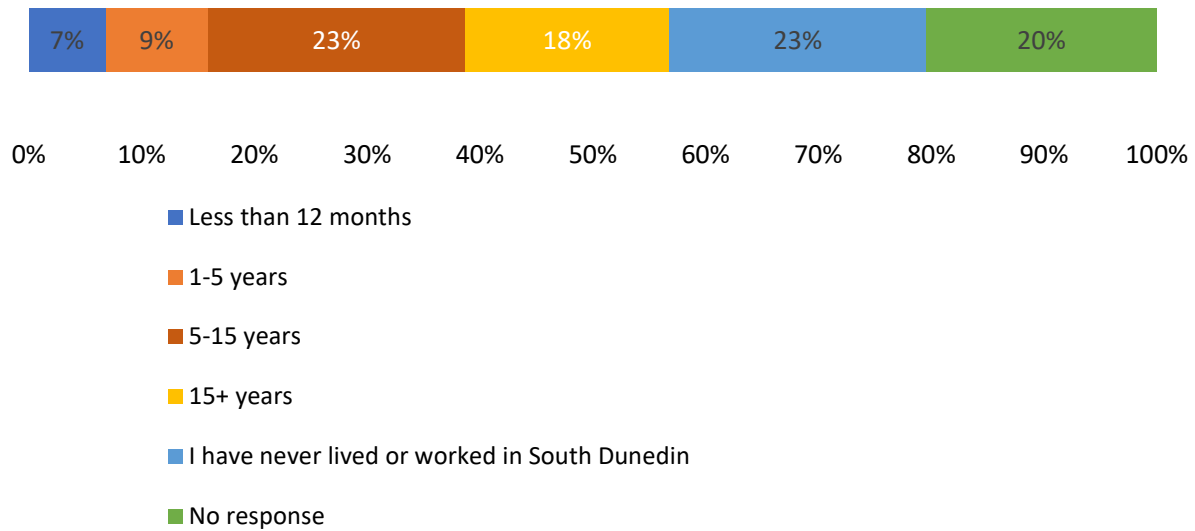
When compared with Census 2018 data for the South Dunedin focus area, and adjusted for the non-responses, our participants.

are a lower than average newer or transient residents (87% in our survey vs 78% in census), suggesting we are getting data for a higher proportion of longer term residents.

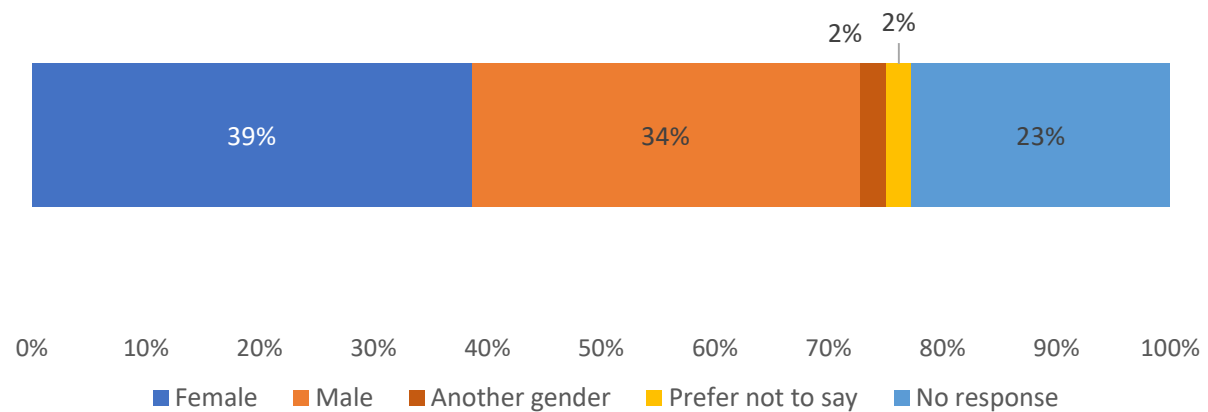


¹ 'Cleaning the data' refers to checking that people who entered the survey answered at least one of the survey questions. For this survey it was not a requirement for participants to respond to every question. If someone entered the survey but did not answer any questions they were removed from the number of participants.

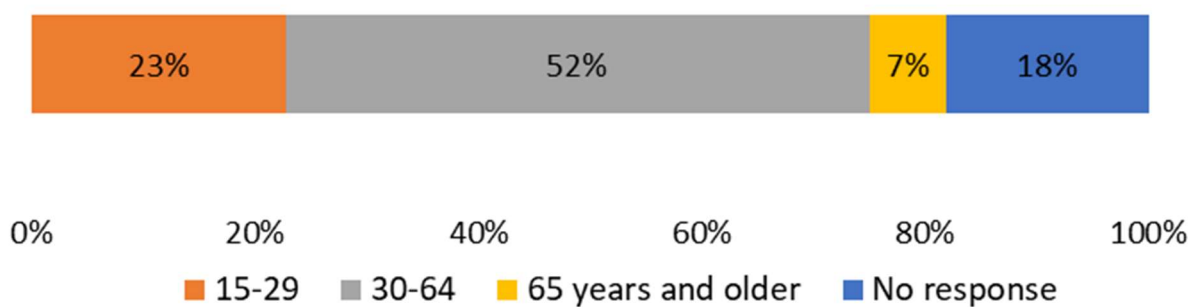
How long have you lived or worked in South Dunedin? (n=44)

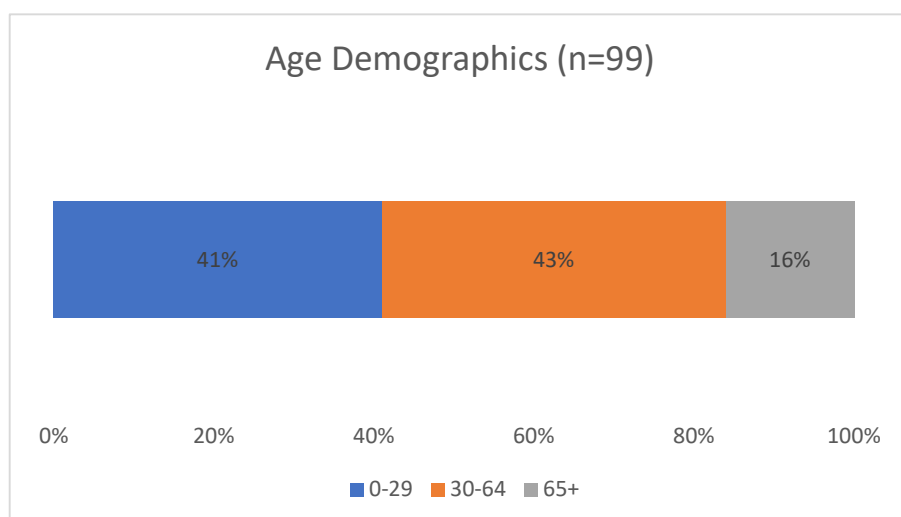


Gender (n=44)



Age group (n=44)





The ethnicity of the sample was mostly comprised of New Zealand Europeans (2 in 3) with some representation from Māori and other ethnicities. Respondents were able to select more than one ethnicity allowing for a total more than 100%.

Once non-responders are removed, the ethnicities of respondents are similar to those of the South Dunedin community. This suggests the data is generally representative of the community's views.

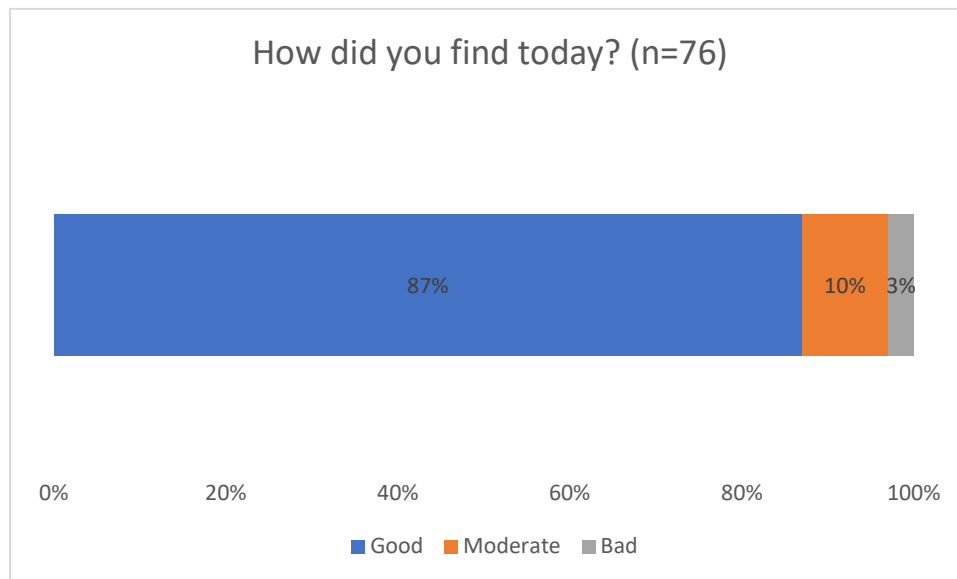
Ethnicity	Percentage	Non-responses removed	Census 2018 for South Dunedin
New Zealand European	66%	81%	84%
Māori	11%	13%	12%
Pacific peoples	0%	0%	6%
Other (eg. Dutch, Japanese).	11%	13%	11%
Chinese	2%	2%	unknown
Prefer not to say	2%	0%	-
No response	16%	0%	-
Total	108%	109%	113%

3.2 AGE ATTENDANCE AT EXPO

At the expo we had 99 of 198 (one-half) participants indicate their ages. The graph below provides a summary of the ages that attended the expo, with 41% of participants being in the 0-29 age bracket, 43% in the 30-64 age bracket and 16% in the 65+ age bracket. While only half of the attendees at the expo responded to the question, there was definitely a good mix of age groups including young people and their families. This distribution is broadly in line with the South Dunedin's community make up (from Census 2018: 36% under 30 / 43% 30-64 years / 21% 65 years plus)

3.3 HOW PEOPLE FOUND THE EXPO

As participants left the expo they were asked 'how did you find today?'. 76 of the 198 participants responded to this question. Of these 87% thought it was good, 10% thought it was moderate or ok and 3% thought it was bad. During the expo staff also received a number of positive comments regarding how people felt about the event, which included people enjoying being able to come and talk to staff and explore the topic. They also enjoyed the range of activities that there were to engage on. Families told us they enjoyed the Lego and activities for the kids.



3.4 COMPARING AGE WITH RESPONSES

Using the online survey responses, we have looked at the age of respondents and looked at if there were differences in the type of feedback they provided. A summary of the findings is provided below.

- 10 respondents were aged 15-29:
 - Found that scenarios 2 and 3 would have a moderate to significant impact to daily life and stress levels and strongly disagree to tolerance with the two scenarios. Generally tolerable with scenario 1 and high proportion noted only some impact.
 - Tend to support soft engineering over hard engineering solutions.
 - Did not tend to fill out as much of the survey as the other age groups. Provided less written feedback on likes/dislikes towards the approaches.
 - Tendency to ask more questions about the approaches (e.g. what happens if infrastructure fails; how much maintenance would be required).
 - Felt that a lot of the approaches were “necessary”.
- 23 respondents were aged 30-64:

- Acknowledged all scenarios would have moderate to significant impact to daily life and stress levels and disagreement with being able to tolerate those scenarios.
 - Have concerns about the high cost of several of the different approaches.
 - Generally supportive feedback towards the protect approaches.
 - More questionable of retreat, accommodate and avoid approaches.
 - Noted that most participants from this demographic made commentary considering both likes/dislikes towards each of the approaches, provided balanced viewpoints for both.
- 3 respondents aged 65+:
 - Consistently acknowledged that all scenarios would have a significant impact to daily life and stress levels and had a strong disagreement for tolerance toward those scenarios.
 - More dislike/negative feedback towards all the approaches comparatively to positive feedback.

4 WHAT WE HEARD

4.1 RISK

4.1.1 PLACES OF IMPORTANCE

People were asked to map and name places of importance within South Dunedin. Figure 3 below shows the responses in blue from the online survey and in green from the face-to-face events. Through the face-to-face events there were 313 places of importance noted and through the online survey 182 places, totalling 495 places of importance identified by the community. See Appendix B for the full list of places of importance and the number of people who identified each place. Figure 4 below shows clusters of places and the places that received the highest number of responses.

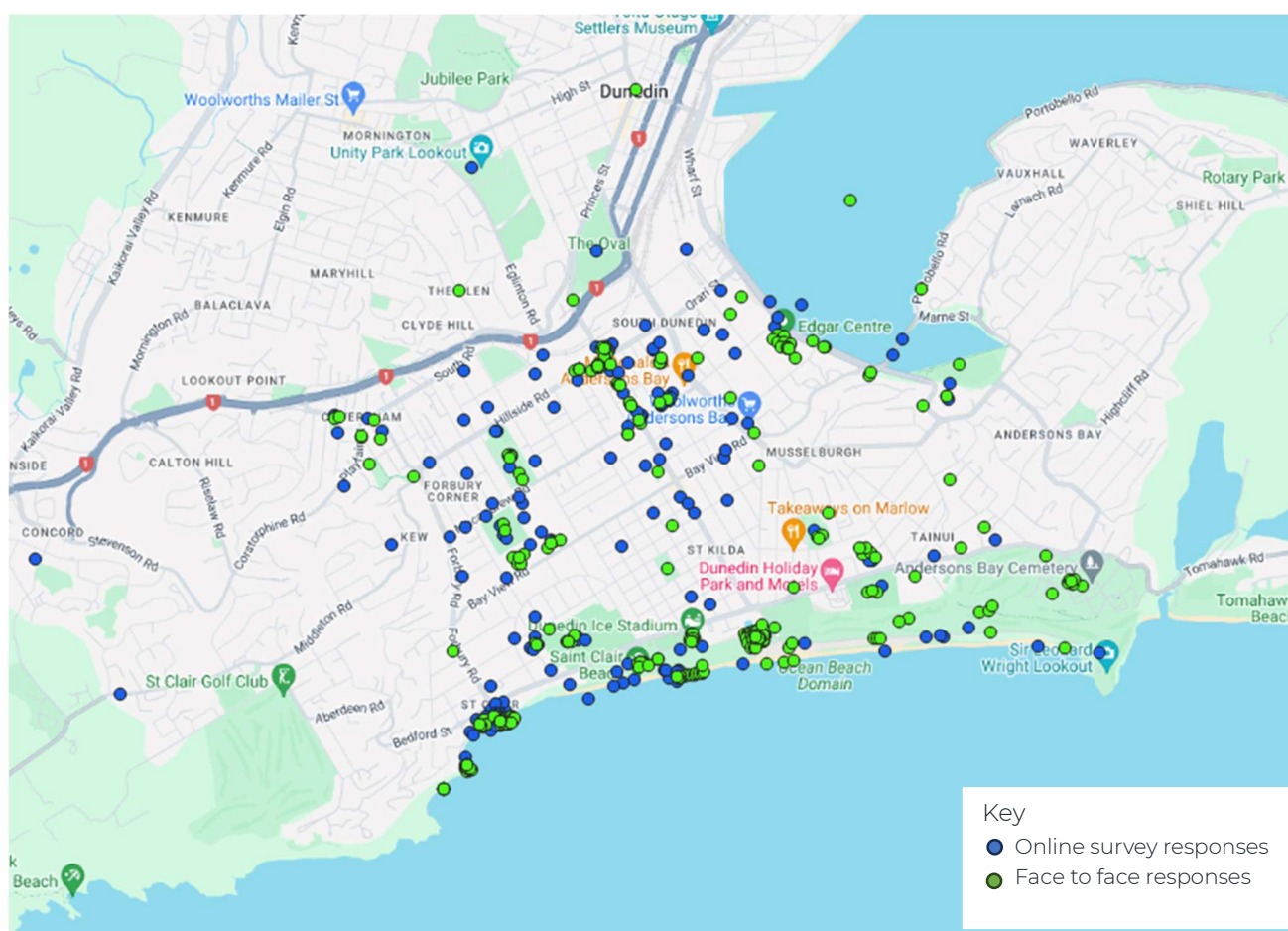


Figure 3- Places of importance gathered through face-to-face events and the online survey

The following map shows where there are 'clusters' of places that are important to people.

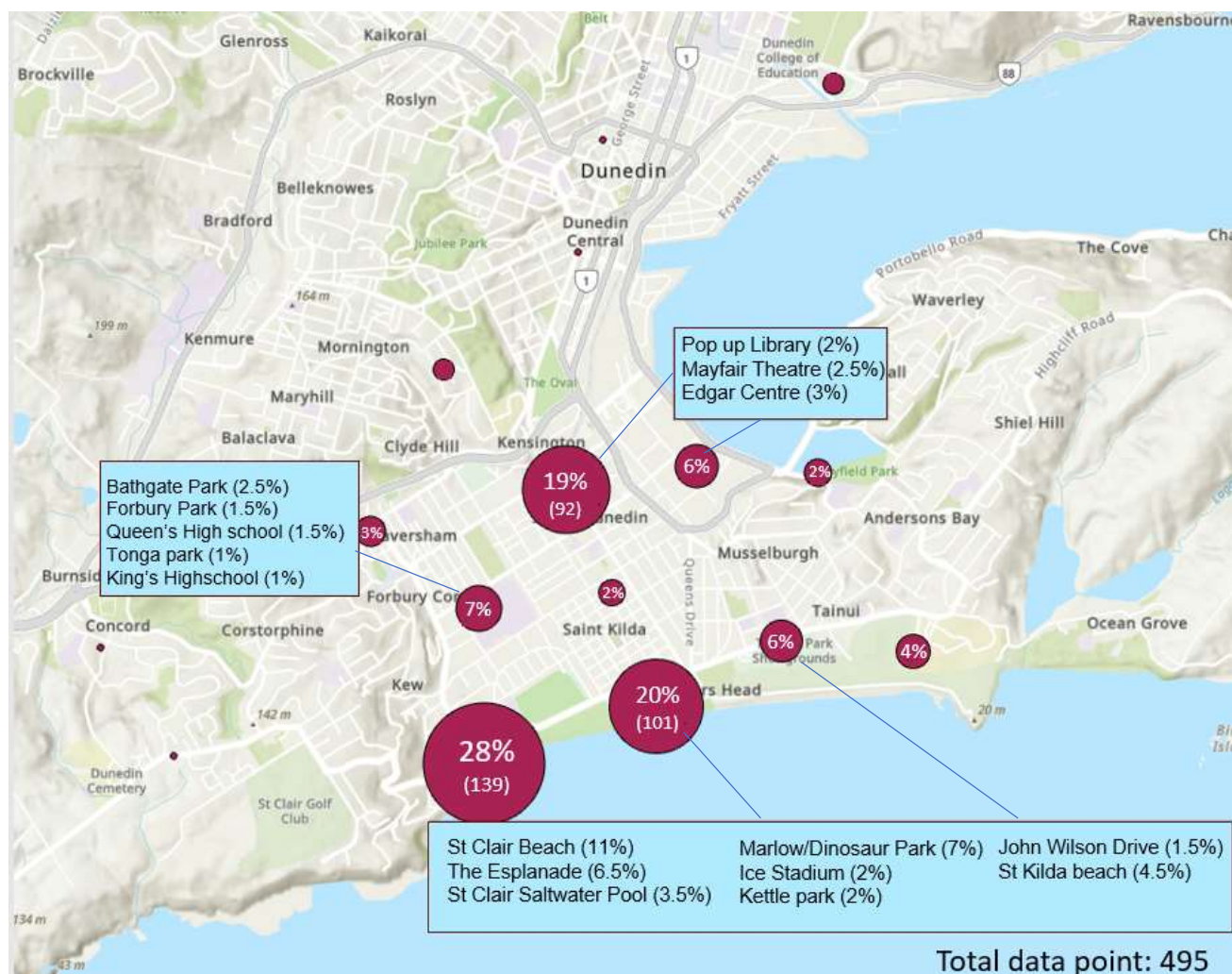


Figure 4 - Clusters of places of importance (based on information gathered through face-to-face public engagement events and via the online survey)

The data shows that the most number of pins were placed in the St Clair area with St Clair beach being the place with the most pins followed by Marlow/Dinosaur Park at the middle of the coastal edge. The places that people told us were most important to them provide recreational opportunities, access to natural environments, education, and opportunities for the community to be together.

On the online survey, people could categorise their places of importance. The table over page shows how people categorised their places of importance. Note: Respondents were able to select more than one categorisation for their place of importance.

Places that were categorised in more than one category included the Dunedin Rugby club where it was important for community service and sports and recreation. The Dinosaur Park/Marlow Park, St Kilda and the esplanade were represented under sports and recreation and entertainment. And the beach was categorised as important due for sports and recreation, entertainment and visiting friend or family.

Through the online survey other important categories were identified than in the face-to-face events such as shopping, professional services, religious centres, cultural reasons and health services.

Place of importance-online	Count	%*
Sports and recreation	69	30%
Entertainment	27	12%
School or education	21	9%
Visiting friend or family	21	9%
Shopping and/or errands	18	8%
Community or professional service	12	5%
Workplace	9	4%
Religious centre	8	4%
Cultural reason	8	4%
Health service	7	3%
Cemetery/Urupā	1	0.4%
Other, included dunes as protection from rising sea level,	25	11%
Total	226	

*Please note that the percentages don't total to 100 due to rounding.

On the online survey people were asked if their place of importance could be moved to a different area. Almost half of places of importance were deemed unable to be moved either due to the nature of the place not being able to be moved (27.4%) or the change in location would take away from the significance of the place (18.9%) by respondents. However, almost 40 percent of respondents indicated that that while it would impact the significance/importance of the place that it would be okay. Only 8.5% were reported to be relocatable with little or no impact.

Could this place be moved to a different area?	Example of places	Count	%
It cannot be moved (eg. the beach/sand dunes)	St Clair, St Kilda, The Esplanade	29	27.4%
No - it would not mean the same at all (eg. land/placement is of significance/memorial site)	Parks and local roads (eg. Tonga Park and John Wilson Ocean Drive)	20	18.9%
No - it would mean something different, but it would be okay (eg. not being as close to home)	Parks, shopping and schools (eg. Marlow/Dinosaur park, St Clair school, Main street shopping centre)	18	17.0%
Yes - but it would be less ideal than it is now	Parks, shopping and schools (Dinosaur park, supermarket, St Clair school)	22	20.8%
Yes - it could be moved with little or no impact	No theme	9	8.5%
Unsure	No theme	8	7.5%
Total		106	

Range of opinion in the community on what can be moved and what can't be moved. A lot of places that can't be moved relate to the coast, St Clair and esplanade. There was a split between no - it wouldn't mean the same in a different location and yes - but it would be less than ideal. Connections to parks, shops and schools are important from people's homes. More work can be done to understand further about why people thought places could or couldn't be moved. Full list of Places is in Appendix B.

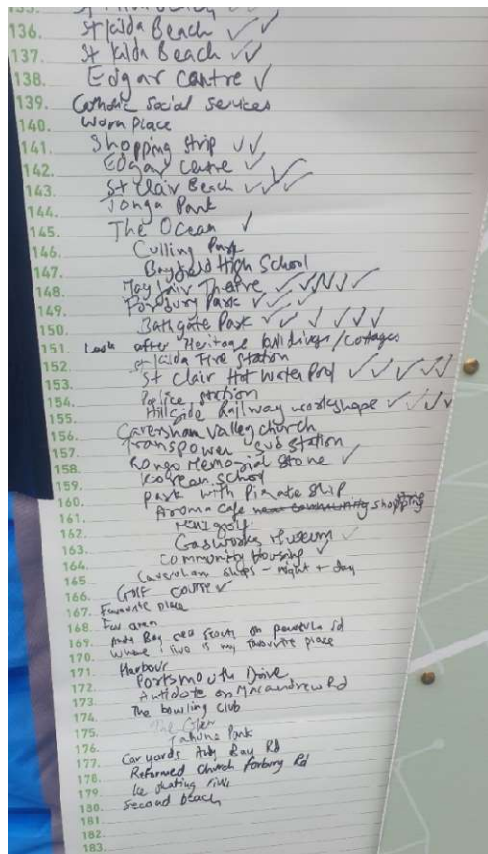


Figure 5: Images of the South Dunedin Future Expo and the various engagement methods used (Credit: DCC)

4.1.2 FEEDBACK ON SCENARIOS AND THRESHOLDS

To help the team understand community tolerance to risk, as well as helping us identify potential triggers and thresholds, we presented three scenarios for discussion and in the online survey. The three scenarios attempted to illustrate what the future might look like and asked participants to describe the impact that these scenarios would have on them, their community, and the places they told us were most important. Participants were also asked about 'thresholds' – what factors would be considered unacceptable? The feedback on this was gathered through in-person workshops and online. The three scenarios were:

Scenario 1: Year 2030

Main hazards:

- Infrequent flooding, high groundwater after rainfall.

Life in South Dunedin is much as it was in 2024; there is a severe flood one day which damages dozens of homes, and business grinds to a halt. Infrastructure repairs and clean-ups clog the streets in the days following and trigger longer-term upgrades. The groundwater table is often so high that it impacts daily life, such as when playing fields need to be temporarily closed when rains cause the turf to flood.

Main hazards:

- Groundwater is at the surface across large areas.
- Coastal waves overtopping Portsmouth Drive increasing in frequency and extent.
- Infrequent flooding.

Life in South Dunedin is noticeably damper than it was 30-40 years ago. This is because the groundwater level is closer to the surface, and in some spots, it's pretty much always soggy underfoot and there are puddles all the time even when there is no rain. Sea levels have risen, which means that when big storms come through the waves can get high. One time they got so high that parts of Portsmouth Drive were flooded with flood water approaching Andersons Bay Road. That was made worse by the heavy rainfall, which together with the already high groundwater levels meant flooding was worse than anyone remembered, and the water took a long time to drain.

Main hazards:

- Widespread groundwater on the surface.
- Coastal waves overtopping.
- Coastal erosion (threat).
- Frequent flooding.

Life in South Dunedin is wet. A lot of the flat land in South Dunedin has groundwater at the surface most of the time, making it swampy and wet - even worse than in 2060! Even after light rain, puddles form everywhere and take a long time to drain. When big storms come through, flooding is much worse than it ever was. The presence of the sea is also worrying. Every time there is a big storm the waves could erode the sand dunes or even flood across Andersons Bay Road from the harbour. If this happened, most of South Dunedin would flood.

4.1.2.1 WORKSHOP RESPONSES

During the expo two public workshops were held, these workshops aimed to focus on the scenarios and what impact participants thought they would have on their lives and their communities. Through the workshops participants were asked what was unacceptable (thresholds). Other workshops were held with particular interest groups (South Dunedin Community Network, Polytech students, youth, disability representatives and other voiced concerns, and these are reported in Section 4.4 of this report. The public workshop responses are below.

These workshops aimed to focus on the scenarios and what impact participants thought they would have on their lives and their communities. Through the workshops participants were asked what was unacceptable ('thresholds'). The workshop responses are below.

Scenario 1: 2030

Main hazards under this scenario - there is infrequent flooding, high groundwater after rainfall.

Reflections from participants of the 2015 flood:

- *"It was impossible to get into Dunedin because of issues on the motorway."*
- *"In the St Kilda area, it was possible to see what houses had flooded by their design. were the flats that were practically on ground level. They would have had concrete floors. All of these houses would have to be raised given the future."*

Surrey Street resident:

- *"We live in Surrey Street which used to flood regularly because of water from the creek up the hill from Macandrew Road. If the drains were too high or blocked, then the water used to flow down Macandrew Road and into Surrey Street. This hasn't happened for a while thank goodness as we also have the sewer running down the middle of the street."*

Impacts of the scenario:

- Access:
 - o Inability to reach schools, work, health places, businesses that we visit each week.
 - o Getting around would be difficult.
 - o Lack of access to community spaces both cultural and recreational.
 - o Complete disruption to daily life.
 - o Isolation for the old and people living with disability.
- Homes:
 - o Living at home maybe difficult.
 - o Clean up in houses consistently.
 - o The wake from cars washing water into houses.
 - o Makes gardening hard.
 - o Concern for neighbours living close to the ground.
 - o Worried about property values.
 - o Loss of income and education.
- Cost of clean-up and repair.

Solutions:

- All houses need to be raised.

- No impact, because action has already been taken which has dramatically increased our ability to deal with stormwater and pump out to sea, particularly through the Lawyers Head pipe.

Scenario 2: 2060-2070

Main hazards:

- Groundwater is at the surface across large areas.
- Coastal waves overtopping Portsmouth Drive increasing in frequency and extent.
- Infrequent flooding.

Impacts of the scenario:

- Access
 - o Transport to and from home to work would be affected.
 - o Concern around getting to services and places for those who live and work in South Dunedin. What about those less able to get about? Who would help them get to shops, work, doctors, church, community activities.
 - o Inability to travel and move through the community.
- Health
 - o Health of homes affected by constant 'wet' - mould, hard to heat, increased need for maintenance (increased costs).
 - o Water everywhere would affect mental health.
- Homes
 - o Can't garden, so would have to buy more vegetables rather than grow them - impacting on people's finances.
 - o Housing requiring repair - poor living conditions.
 - o The housing situation would become untenable.
- Complete disruption to daily life.
- Time taken is longer for activities.
- Damage to buildings.
- Similar to scenario 1 but it gets worse.
- Natural environment associated with trees, gardens etc... would deteriorate and impact on people's mental health.
- This is not an acceptable situation to be living, working, owning businesses in South Dunedin.

Solutions:

- Find out the cost to move.
- Find out the cost to raise up the properties and put into action.
- By this time, many people will have sold up.
- Hopefully, people will start doing things like: raising houses, raising gardens, public lakes and pumps.
- We will need transportable houses that can easily be shifted and perhaps bought back after the flood.
- I would hate to see houses built on ground level still operating.

Scenario 3: 2100

Main hazards:

- Widespread groundwater on the surface.

- Coastal waves overtopping.
- Coastal erosion (threat).
- Frequent flooding.

Impacts of the scenario:

- Access
 - o Ability to move around to access necessities such as food, education and hospital would be affected.
- Emergency housing
 - o Require future emergency housing/community space.
 - o Access to safe shelter would be a serious concern (expect emergency provisioning).
- Loss
 - o Rapid deterioration of important locations (needs and cultural locations).
 - o Loss of income.
 - o Lack of education.
 - o We would not be living here. The community would be 'dead'.
 - o South Dunedin is now basically abandoned.
- Experience of living there
 - o Frequent evacuations.
 - o Frequent repairs to housing and drainage infrastructure.
 - o Those who are still living here would be in poor quality houses, would not be able to get insurance.
 - o Heaps of ducks, swans and pukekos.
 - o The few remaining residents have no support from climate infrastructure.

Thresholds

In the workshop participants were asked what factors should be considered for when conditions become unacceptable for people? Responses included:

- Homes/Buildings
 - o Unhealthy and dangerous homes.
 - o Building structural issues - dampness, mould, foundation erosion
 - o Unable to provide for family.
 - o Longevity of housing in regards to deterioration.
 - o Unable to reach education, health or work places at any stage (1 day is enough).
 - o Unsafe housing, people should not live in locations which frequently put them in danger during daily life, loss of income/education.
- Everyday life
 - o Destabilisation of everyday life - will be a significant impact on mental wellbeing of family and wider community and negative effect on children's ability to take part in education and play.
- Access
 - o Unable to access to roads.
- Ability to have access to emergency housing.
- Insurance
 - o Lack of insurance - unable to get contents/house insurance.

- Flooding that is more than a 1 in 100 year event - where it is a constant continual/worry for people to think about (impact on mental health).
 - I wouldn't wait for this but not everyone has the ability to get out.
 - Draining of stormwater at a reasonable rate.
- If the situation were to get worse, there would need to be intervention.

Solutions:

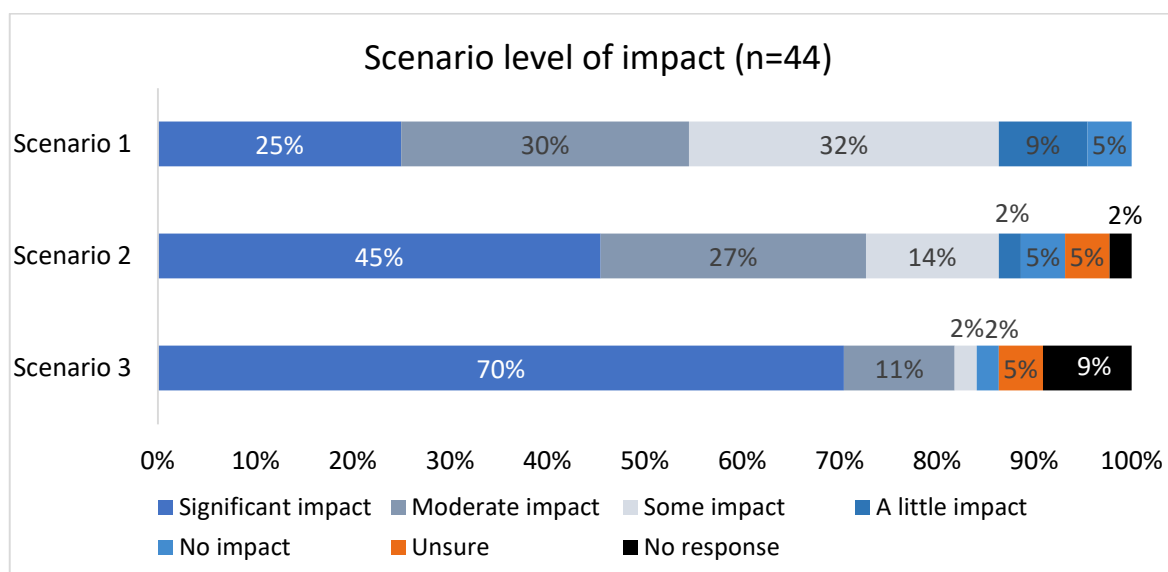
- Walls and pumping would have to be developed. We can't wait for the situation to totally deteriorate. This would most probably be too expensive for the city, so the central government would have to be involved. We should also be talking with other countries who have similar experiences the Dutch come to mind.
- Rebuild the sand dunes along St Clair and St Kilda, maintain them regularly.
- Build a sand dune and beaches along Portsmouth drive, Kitchener Street and Andersons Bay inlet.
- Regional Council owns a dredge that can be adapted to pump sand in large columns. This dredge model has been adapted overseas to this work. Serious pumping may be continuous.

4.1.2.2 ONLINE RESPONSES

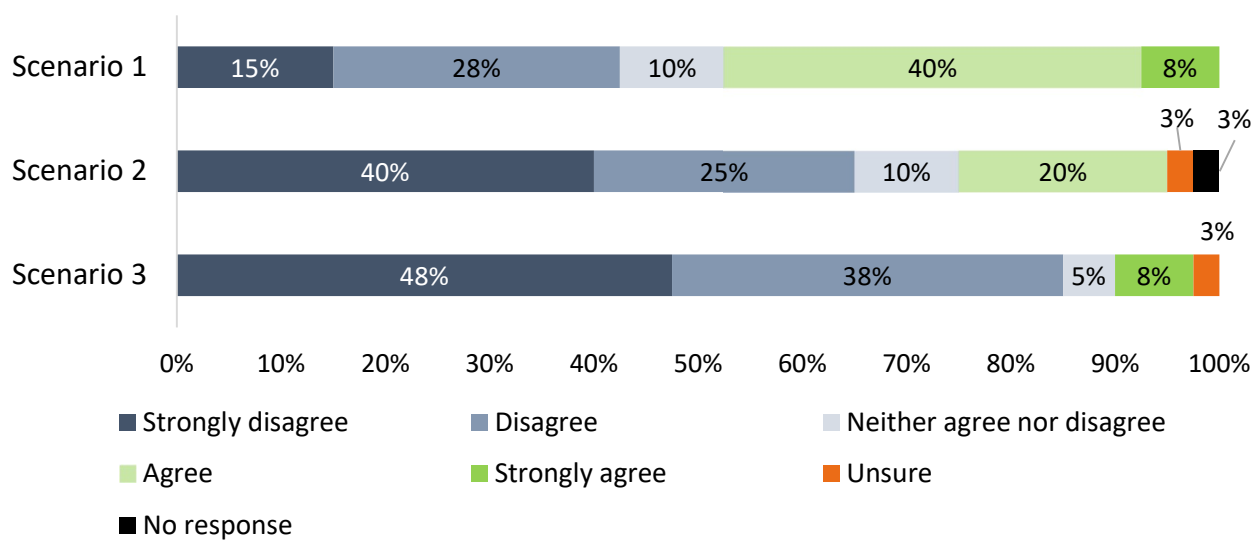
Respondents were presented with three scenarios and asked to rate the level of impact they believe this would have on their lives. The scenarios are outlined in Section 4.1.2.

The trend across scenarios shows that as the scenarios increase in severity, the responses also show people acknowledge this with have more significant impacts. This same trend it shown in relation to people's level of tolerance, with respondents reporting reduced tolerance of the scenarios as severity (including frequency) of climate impacts increase.

It is notable that 55% of respondents said the 2030 scenario, which is effectively another flood in a situation like today would have moderate to significant impact. 43% rated this scenario intolerable. The impact grows dramatically with each scenario. The 2100 scenario rated a more than 80% moderate to significant impact, and 86% intolerable.



I would be able to tolerate this scenario (n=40)



4.2 IDEAS FOR FORBURY PARK

Ideas for the future use of Forbury Park were sourced through the in-person events. 63 comments were received for Forbury Park. The following table shows the ideas received:

Ideas	% of comments*	Examples for use
Wetland	49%	
Community space	19%	- o Sports ground. - o Dog park. - o Playground. - o Skate park. - o Walkway. - o Fitness track. - o Community education. - o Community meeting space.
Natural features	11%	- o Trees. - o Nature based solutions. - o Native habitat. - o Help with drainage.
No more development	6%	- o No more hard surfaces. - o No more new builds in South Dunedin. - o There needs to be closer checks on building sites for example the height of foundations above ground. - o If there are any new builds, they need to be on poles.
Develop part of the area and make the rest floodable	6%	- o Half raised housing and half water storage. - o Sports field and stilt housing. - o Could keep the café and grandstands and develop wetlands. - o Develop sports facilities and recreational uses.
Floodable park or sports ground	5%	
Development	5%	- o A shopping centre like Riccarton Mall. - o A retirement home. - o A development such as Pisa Moorings in Cromwell.
Other comments	3%	- o Do it properly. - o Return to a racecourse.

**Note: the percentages have been rounded and therefore don't total 100.*

4.3 LONG-LIST OF APPROACHES

Across all methods of engagement, the following feedback was received on the 16 approaches. People were asked what they liked and what they didn't like about each approach. A summary of the feedback is provided below in section 4.3.1- 4.3.16.

Summary of the number of comments per approach

The table below summaries the number of comments received per approach breaking down the number of comments that outlined what they 'liked' about an approach and what they 'didn't like'.

Approach	Number of comments made about liking the approach	Number of comments made about dis-liking the approach	Difference between like and dislike comments
1. Ground Reinforcements	21	17	4
2. Groundwater Lowering	32	25	7
3. Land Grading	23	34	-11
4. Water Flow Improvements	33	17	16
5. Remove Wastewater Network Overflows and Cross Connections	34	18	16
6. Dedicated Water Storage	45	23	22
7. Floodable Infrastructure	34	16	18
8. Increase Permeability of Ground Surface	39	17	22
9. Coastal Protection	35	23	12
10. Behavioural and Societal Change	24	17	7
11. Readiness and Response	26	14	12
12. Property Level Interventions	27	27	0
13. Reactive Retreat	27	24	3
14. Managed Relocation	31	33	-2
15. More Restrictive Building Development Standards	32	22	10
16. No New Development, Redevelopment, Change of Land Use	23	18	5
TOTAL COMMENTS	486	345	

Key:

Highest like comments to dislike comments

Next highest number of like comments to dislike comments

Highest dislike comments to like comments

Next highest number of dislike comments to like comments

Difference of 'like' comments to 'dislike' comments

The summary of results show Approach 6 (Dedicated Water Storage and Approach 8 (Increase permeability of ground surface)) had the highest number of like comments, whilst Approach 3 (Land Grading) had the highest number of disliked comments followed by Approach 14 (Managed Relocation).

Overarching themes from the feedback on approaches

Throughout the feedback on approaches the following themes were consistent threads for consideration across many of the approaches:

- Consideration of **cost**, who will pay for the approach and what impact would it have on the individual property owner and the ratepayer in terms of rates increases.
- Approaches that provided more **natural** solutions such as wetlands, trees and greenspace were liked for their wider benefits to the community.
- Concern about **disruption** for implementation of approaches.
- Some respondents saw a **combination of approaches** working together.
- Want **solutions** that will work in South Dunedin.

PROTECT

4.3.1 GROUND REINFORCEMENT

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	5	4
Online survey	16	13
Total	21	17

What people liked:

- A good idea to prevent liquefaction, people mentioned that it had been used in Christchurch as a good way to prevent liquefaction. A respondent proposed that it could be a requirement for developers.
- Concern about spending money and a high cost was also raised by those that did like the approach.
- No red zones (such as Christchurch, where people had to leave their land).
- Maintains existing buildings and infrastructure and existing South Dunedin layout.
- Protects damage to buildings.
- Low cost approach.
- That should be the ultimate solution for the land and all the other options can supplement this.
- Common sense and sounds like a good option.

What people didn't like:

- Cost of this option and the concern that it might not change anything, and a question was asked about whether it was environmentally suitable.
- One respondent stated that the water should just be drained.
- Too disruptive.
- Will it help long-term:

- We got into this mess by changing the topography of the landscape and will doing more actually be a long-term fix.
- Seems pointless as won't help in longer term with predicted groundwater levels.
- How much maintenance would this require?
- It could be very invasive, costly, and slow - people may have to leave their homes while the work is happening.
- A respondent found it difficult to respond to this as they felt they didn't have enough information.



Figure 6 People sorting the approaches in workshops

4.3.2 GROUNDWATER LOWERING

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	13	12
Online survey	19	13
Total	32	25

What people liked:

- Respondents thought this approach should be part of a multi-pronged plan.
- Another respondent thought that it could work well when paired with coastal protection (approach 9) and would help ground reinforcement (approach 1).
- Those that did like this approach also commented that it was what was used by the Netherlands.
- Liked the idea as long as the pumps worked. Another commented that it needs to be continual and couldn't just switch on in heavy rain.
- Housing and infrastructure:
 - Maintains existing infrastructure and protects housing.
 - Makes sense in places of high value.
 - Helps to preserve existing buildings and infrastructure.
- Keeps South Dunedin the same.
- That should be the ultimate solution for the land and all the other options can supplement this.
- Good short-term option that could be in place in next few years in some areas.
- Could be done in Forbury Park.

What people didn't like:

- Concern if the water is pumped out then the ground will subside. One example of Bathgate Park.
- Limited and expensive.
- Concern about the pumps not working.
- Works against nature.
- Natural wetlands should be prioritised over this approach.
- Expensive and concern it may not be effective in a flood event and with sea encroaching – is this really a long-term solution?
- Possible disruption to communities while the approach is being installed.
- Unrealistic, endless pumping and dependant on the water table.
- We got into this mess by screwing with the topography of the landscape and I'm not sure that doing more will actually be a long-term fix.
- The risk of liquefaction in South Dunedin is relatively low when compared with Christchurch for example. The soils are simply too plastic to liquefy. This has been studied and report by ORC already, so I don't understand why this is even being considered.
- It's too temporary. If the sea rises a lot, it's just delaying the inevitable.
- How long would this take?

4.3.3 LAND GRADING

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	9	17
Online survey	14	17
Total	23	34

What people liked:

- Respondents thought it was a good idea and acknowledged flooding was an issue but was concerned about who would pay for it.
- Should be implemented immediately as homes are being built now at low levels.
- Agreement this would help control water table in southern Surrey Street.
- Seems sensible to do in combination with other approaches. Would always keep groundwater slightly lower than it would otherwise be, which is a good thing.
- Creates a diverse landscape.
- Get onto it now before things get bad.
- Internal drainage will be very important.
- Most buildings are already legally established.
- Reduces dampness to homes.
- Makes sense, expensive in short term but possibly only long-term option not reliant on pumps, electricity etc.

What people didn't like:

- Cost and who pays – need to get funding from the government or somewhere else.
- Would be difficult as whole blocks need to be done at the same time and some existing floor levels are at groundwater.

- Save money and do nothing.
- One respondent stated that it was not feasible.
- How would this happen in practise – how would this be done to individual properties?
- Already we have made a mistake filling South Dunedin, would more filling be the answer?
- It looks VERY INVASIVE and could end badly, again like approach one, it would be costly, tricky and slow - people will have to leave their homes while the work is happening.
- Don't make significant decisions that have catastrophic implications for those affected based on frivolous likes/dislikes.

4.3.4 WATER FLOW IMPROVEMENTS

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	17	8
Online survey	16	9
Total	33	17

What people liked:

- This is a must, not just water on the flat but a huge amount of water comes from the hill and housing intensification. Soon there will be no bare land left.
- Channels and canals could be a feature if they are done well. They could create an attractive natural environment.
- This seems like a cost effective and holistic solution.
- Used in Amsterdam and Christchurch has a lot of waterways that are attractive to.
- Could this connect to the harbour from the beach?
- While, it would be great, would need to work out how it doesn't get litter in it or litter is removed before it enters the ocean.
- Re-route the creek up hill so that it doesn't flood Surrey Street.
- This would help protect social infrastructure and homes.
- Links with other approaches:
 - o This approach is the best – then 5, then 6 and then 2.
 - o Could work with approach 2 or 3.
 - o Could do this with improving drainage of pumps and pipes.
- 6 years ago there was talk about lowering roads to allow water to flood there and not on people's properties, nothing has been done.
- The last floods were to do with the drainage so would appear this would be helpful regardless. Less changes required to existing dwellings - work around them and use public spaces to achieve the results.

What people didn't like:

- Costs.
- Natural solutions better.
- Long overdue – proper re-routing of foul sewers and culverts.
- This wouldn't be enough on it's own.
- It would be disruptive while it is being created.
- Need to improve the drains, gutters and mud tanks by keeping them clean.

- Requires a lot of work to improve current assets.
- Affected by sea level rise.
- Will it solve storm surges?

4.3.5 REMOVE WASTEWATER NETWORK OVERFLOWS & CROSS-CONNECTIONS

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	20	9
Online survey	14	9
Total	34	18

What people liked:

- This is a good idea to prevent wastewater contamination.
- Please update the old pipes to protect health.
- This is a must. There is probably a lot of stuff done on the cheap in the past or is old or is not robust enough.
- Should've already happened.
- Reducing the risk of surface flooding before it becomes horribly wrong.
- Poor infrastructure should be fixed first, before rates increases are passed onto landowners.
- Most important. Maintenance of underground water and above ground transport infrastructure is vital to keeping our water clean.
- Add capacity to stormwater system by fixing cracked pipe and manholes and removing accidental connections.
- The need to have public awareness regarding keeping storm water gutters and cesspits clean and debris-free.
- This sounds great in theory. Would be a balance between cost vs effectiveness and benefit.
- Most important of all approaches.
- Not sure if solves the bigger issues, but seems like it would certainly help.
- Cheapest option.
- If Kaikorai wastewater is still being diverted to the flat via the Caversham Tunnel, this needs to stop.
- This is exactly what DCC is legally obliged to have already done as part of its local government obligations.

What people didn't like:

- Need all tradies work to be signed off and held responsible, not residents.
- Hopefully this wouldn't increase rates substantially.
- By building more units/homes is what is actually adding to the problem.
- Will be costly but needs to be done.
- Expensive and may then be abandoned.
- This is part of normal maintenance, which shouldn't even be up for discussion. It doesn't make sense to have existing dysfunctional infrastructure. The discussion should focus on what new approaches should be taken.
- If we land grade and build canals then any pipe replacement needs to be deferred until planning completed.

- Limited impact in major change future.
- Roadworks will be frustrating.
- This is insufficient.
- not sure if solves the bigger issues, but seems like it would certainly help.
- Limited impact in major change future.

4.3.6 DEDICATED WATER STORAGE

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	25	15
Online survey	20	8
Total	45	23

What people liked:

- Respondents would love to see wetlands, basins, ponds to help with increased water storage during heavy rainfall. They stated it would have multiple benefits for community wellbeing, recreation, biodiversity, and the environment.
- This could be a natural feature, work with wildlife needs like increased sea lions, tourist attraction and improved visual features in South Dunedin. Also seems to be able to capture more water and be a more long term approach.
- Like them as beautiful ponds for wildlife, like option 4. I would be very happy for more water and greenery back in the place. Maybe eels will return.
- Would create more green spaces for community and contain 1 in 100 year events more easily.
- The water needs to go somewhere. This could lend itself to a recreational water pond suitable for sailing small boats e.g. for learner sailors and other suitable recreational users.
- Bathgate Park and Forbury Park were both suggested locations for this water storage.
- These in conjunction with canals and channels will add to the "greening" of South Dunedin and more park-like areas.
- Attracts development of green spaces and may provide future ecological areas. Seems easier to install than the more 'hard' engineering options.
- Need water storage on individual properties.
- Supports climate change through drier periods.
- Seems like it works with the phenomena instead of working against it.
- Good use of open land.
- Good approach to minimize problems for residents due to surface flooding.
- After the Auckland floods, the suburbs that had ponding area and lower level streets that became water channels seemed to be a great answer that Dunedin should follow. As a large area of South Dunedin was swamp before being filled re building wetlands as storage areas would be a long term solution to my mind.
- I love this idea. I think it could make South Dunedin more beautiful with more vegetation and wildlife. would rain water tanks on houses help to reduce capacity during rain?

What people didn't like:

- Concern that wetlands may not provide necessary attenuation.
- Groundwater:

- With groundwater already near the surface there is not much storage value and difficulty to keep any elevated storage.
- Space
 - Could lose sports ground.
 - Means extra space is required.
 - Unsure if there is enough space in South Dunedin to cater for this option as would require larger areas, other than Forbury Racecourse and a few select parks.
 - It means less housing available as properties would need to be strategically purchased to construct the storage areas.
 - Missing the reality that this is not possible given the DCC is also targeting this area for high density housing therefore there will be no land available to exercise this option - even if it was a good idea - which no one can know given the DCC has very carefully failed to identify pros/cons for ANY of the options.
- Detention
 - Ensure every household has stormwater retention/detention
 - Stormwater retention tanks on scale through the hill suburbs. We have many green spaces that could use stormwater retention tanks to lower the impact of storm events on South Dunedin.
 - Already too many plastic bins on properties (rubbish bins etc).
- Unintended consequences
 - Nature solutions may have unintended consequences and could see an increase in vermin or mosquitoes. Get community involved in control measures?
- Pumping
 - Where is the consideration of large scale pumping out the Tahuna outfall?
 - Groundwater already transfers through the clay pipes of South Dunedin's sewage network and can be pumped at greater scale during storm events.
- In an industrial property in Otaki Street, the stormwater system is overcrowded in a rainfall event, such that stormwater is trapped on the site.
- Not a good approach because the harbour is lower than the land and lower than any pond storage - use existing pipes or dig more to drain water into the harbour.
- Could be over run in severe event leading to worsening flooding and recovery.
- Only, if necessary, as global warming / sea level rise is a fraud.
- I don't like them being underground, feels weird and unstable.
- Don't make critical decisions based on emotion - although this one has an even stronger disconnect from reality and evidence-based decision-making than the previous ones.

4.3.7 FLOODABLE INFRASTRUCTURE

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	21	7
Online survey	13	9
Total	34	16

What people liked:

- Good for parks and reserves.
- Works with natural forces.
- Some parks could be designed to be floodable.
- Links well with approaches 6, 8 and 14.
- Could be built into future upgrades.
- Good idea to develop flood zones for overflow.
- Floodable infrastructure at Bathgate and Tonga park are places where water can go.
- Like the idea of allowing specific areas for flood water to go to, although prefer approach 6 slightly more.
- In a new area, maybe canals.
- This seems logical. It is good to use the spaces we already have and would require little disturbance to people who live in the area, i.e. they would not have to make changes to their house.
- Seems like it might be a good idea to support protecting homes/businesses.
- It means intentionally designing places like parks - North Shore (Auckland) has done some of this effectively post flooding.
- There could be some communication with local gardens / beekeepers in regard to using berms to grow vegetables, pollinators etc... Root systems would need to be considered re: water retention etc.
- It's a nature based solution, enabling liveability for a little longer while taking a science based approach to the climate crisis.
- In general, agree, but not the roads. Could affect property and emergency access.
- Yes, most parks need bunds around them to have water pumped into them in flood events.
- It's a great safety net and backstop in times of emergency.
- Should be considering run off areas when doing any of the approaches, ensuring these aren't directed at property. Seems this should be part of the town planning in any area.

What people didn't like:

- Expensive if done as a primary option.
- Displaces people from their homes, expensive and unproven success.
- Not good when it soaks sports grounds making them unusable.
- But only if necessary - which is unlikely as anthropogenic global warming is a fraud.
- The downside is that it will come up against climate decisions and government inertia.
- If parks mean green spaces, then they are all reserves so the option starts by being based on mindlessness. It then proceeds to ignore the number of green spaces and car parks that exist in the area to determine whether that would provide capacity before plainly having zero knowledge of the roading given anyone with a memory knows exactly what happened in 2015 when the DCC tried to use the roads in exactly this way.

- Seems like creating large spaces for standing water would only bring about more problems like algae, insects, etc.
- Depends on how bad the flooding is - how much can they take?
- It still disrupts while the areas are flooded.
- Don't make decisions based on your little emotions in the moment. But this one illustrates the typical transition from options based on zero evidence to ones contrary to the evidence that exists.

4.3.8 INCREASE PERMEABILITY OF GROUND SURFACE

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	22	7
Online survey	17	10
Total	39	17

What people liked:

- Great idea:
 - o Working with nature.
 - o Not only is natural green space good for regulating local climate.
 - o Slowing down run-off.
 - o Good for mental health lowers crime rate.
 - o Catalyst for community cohesion.
 - o It's a "whole of community" approach where landowners can contribute and be empowered in the process. It must not just be public buildings / spaces.
 - o For residents to share skills, workshops, help and advice as council can't do it all. Individual residents have a part to play.
 - o Increase house values.
 - o Increasing wildlife and greenery.
 - o Native planting would be ideal.
 - o Make South Dunedin more vibrant and less of a 'grey' built environment and more of a 'green' location.
 - o This could only help to improve morale with beautification, and it's an opportunity to grow more food within the city and live in a better balance with nature.
 - o Good in the short term.
- Would this be for council / public assets or incentivised to the rest of the community?
- There could be subsidies for people doing such work on their land.
- Has it been proven to work?
- Lots of great ideas for people to share and develop skills. Get support from Mitre 10, Placemakers etc.
- All new builds to include adequate drainage - should be built into building regulations.
- Because permeable ground is reducing on a weekly basis, building ways to mitigate this is crucial even at short - medium term.
- Yes, love the idea of rain gardens which allows space for excess water to go.
- Very keen to see more use made of the grass berms - gardens, vegetables, community building, plus suitable planting to address this issue.

- This seems like a great idea, especially if it can be done both on a city wide scale and in an individual scale. If options are affordable, home owners could implement some of these methods in their own properties privately.
- Great idea - individuals can choose to do this but local authorities need to set an example - at places like Forbury Park.
- Good, owners need subsidy to develop.
- I love this idea for the same reason I love ideas number 6. It is important to think more about sustainability, not just protection. This idea increases beauty, wildlife and helps reduce flooding.
- We have a house and child in Albert Street St Clair, the early childhood centre is important, the road is very wide, there would be room in this street to put a green verge like in upper Albert Street across the South West side of Forbury road. Could you please consider this for the Street, it would improve stormwater draining and act as sponge.
- This was always a characteristic of NZ cities, but the DCC very deliberately attacked that by allowing new-builds to completely cover over the surrounds of houses. It is pursuing that inherently self-destructive option with even greater fanaticism in the high-density housing: The few remaining metres left around the houses are completely covered with impermeable surfaces. And that follows the DCC spending rate-payers money to attack green-spaces by pouring concrete or laying down synthetic surfaces over every bit of grass it could possibly justify: The anti-nature addiction to fossil fuels means it even replaced real grass with synthetic grass then took photos and paraded itself around social media claiming this was an improvement. This option is cheap, easy, and implementing it also improves quality of life: The DCC has already made its position on this option loud and clear.

What people didn't like:

- Uses space dedicated to housing.
- Long term costs of managing green spaces effectively.
- If it's community incentivised and requires capital it may be a burden to administer.
- The diagrams show this only happening in public areas, which is not the best way in my opinion.
- Need to control greedy developers who want to exploit the land and cover every inch with concrete.
- Understand this is difficult to control as property owners can lay concrete and asphalt without anyone having to provide an 'okay' to do so. People still need their freedom on their property to a point.
- It's important that both central and local government take responsibility and don't just pass the expense of these solutions on to the individual.
- Supposedly the ground is saturated already.
- Not sure this would absorb as much water as we need absorbed, though it would be awesome if this could work!
- Will eventually be redundant as water level rises.
- don't see it as being terribly efficient.
- It's not enough.
- It depends on how bad the flooding is and how much they can take.
- May cause some accessibility issues on footpaths.
- Wasting time proposing options the DCC has already made very clear it is completely against.

4.3.9 COASTAL PROTECTION

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	21	13
Online survey	14	10
Total	35	23

What people liked:

- It provides an opportunity to make spaces that the community enjoy, as well as protecting from coastal erosion, it would mean we don't need to completely retreat everywhere and still get to keep at least some of the spaces that people know and enjoy now.
- Give it a go. If a plan can be done economically or successfully engineered for the Dunedin environment.
- Yes, I like this idea of protecting living areas from coastal events.
- Number one priority. We lose the coast we lose South Dunedin.
- Replace St Clair groynes.
- Sea wall causing problems. Need more rock and sand to make gradual slope.
- Absolutely There are some wonderful ideas suggested last year. Hope they stay part of this bigger plan.
- Really important to have the best qualified coastal engineers and experts working in this space. Can't be politically motivated. Looks like good options, just need to ensure they are accessible.
- Soft engineering options preferable. May not work long term. May increase amenity e.g. lovely walkways planted to increase biodiversity.
- Soft engineering would be good. If it focused on saltmarsh / coastal wetlands it could integrate with approaches 6 and 8 for a whole system approach and honour the whakapapa of the locality.
- This would be good if in its creation it remains environmentally friendly otherwise it is almost counter intuitive.
- We are watching the beach St. Clair, Middles, St. Kilda from our house and it seems that the extension of the esplanade carries the problem along the dunes. I don't think further walls or groynes are the solution.
- Nothing. We have the means to pump sand from both the harbour to city - Portsmouth Drive and from the sea to St. Clair and St. Kilda using the Regional Councils dredge which operates to remove sand from the shipping channel. The dredge model is used elsewhere internationally with a pump out function installed. It is a major priority to extend the sand saudades to protect existing infrastructure before the level of damage makes the task look impossible. The dredge can rebuild the former double dune system and do regular maintenance on it. The port company no longer does work in Lyttleton and further north so has capacity to diversify the work it does.
- Yes, if it becomes necessary. Rate payers / tax payer cannot finance all this much longer.
- I think this is a sensible approach, bearing in mind we need to work with nature as much as we can.
- Should seriously be looked at especially top of the harbour.
- Coastal protection along St. Clair / St. Kilda beach could allow for development along John Wilson drive creating space for beach front shops and real estate, increasing revenue and a

source of extra income / funding to the project. Rates collected on new properties would be put forward to maintenance.

- Any solution that involves environmentally friendly options is good. Reinvigorate the natural environment while helping the urban environment.
- Good for peace of mind.
- Working with the natural environment and increases biodiversity and is adaptable to need.
- Maintains the future of the community.
- Prefer the option of soft engineering vs hard engineering. Soft engineering provides better treatment of the coastal environment and may also promote / enable opportunities for better community education on restoring the coastal environment.
- Like mixed solution approach with the water still being an accessible feature even if it is only for viewing at some parts.
- Coastline must be protected.
- We will require this on Portsmouth drive.
- Don't do this.
- Provides protection from sea surge/sea level rise. I think this should be a critical component the plan in conjunction with strategies to improve ground water issues.
- These approaches are used overseas with good effect and should be instituted here anyway.
- Is needed to protect existing dwellings.
- Where does the DCC think the coast line is" Given I have just discovered the DCC considers Caversham is in South Dunedin, and areas that have never flooded have done so regularly, who knows where the DCC might have invented the coast line to be. And where it is makes a significant difference. You see based on the DCC current confusion it may actually be intending to put these features on the top of Maori Hill.

What people didn't like:

- As long as access to beaches or coastal areas isn't compromised.
- Needs immediate engineered solutions to later be developed with soft options which will be expensive.
- Raise level of sea bed with more rock, reduce energy hitting sea wall. Angle of rock and sediment important for reducing energy, ponding of surf and erosion.
- Expensive.
- Don't like the idea of hard engineering options.
- Nervousness about people's properties losing value or having to force people to move.
- Whilst individuals may think this a good idea you cannot "battle" sea level rise! You may put preventative measures in place, but it only takes one small breach and water will find entry and move to the lower lying areas.
- Central government need to get involved.
- What approaches does a hard engineering tactic exclude from future adaptation.
- Sadly, views would be gone. But safety first.
- Monstrously expensive and pointless: we can't afford any of these approaches, we don't maintain our infrastructure, and the sea will always win.
- Hard engineering is costly. Sea Walls / Groyne etc... are likely to damage these naturalized coastal spaces and may create other erosion issues elsewhere so it may not fix the problem in the long term. This approach is also quite controversial and has already caused a lot of discourse within the public, especially with the St Clair Sea Wall.

- would this help with the water table?
- Short term relief only.
- Cost and if it fails in a storm then South Dunedin floods.
- Past efforts have not been terribly successful over time. Bit like a finger in the dyke scenario.
- I don't like the 'hard engineering' so much. The sea is extremely powerful and a force to be reckoned with! We cannot win against the sea, we have to work with it, be friends with it!
- Hard engineering works but seems to push the issue to the end of it. ie Esplanade wall pushed erosion to the sand dunes. if you are going to do it, do it the length of the beach. Sausages in St Clair are working, until you get to where they stop and the erosion there gets worse. Why stop them where there are houses? keep them going.
- Too easy for the DCC to put these in exactly the wrong places.

ACCOMMODATE

4.3.10 BEHAVIOURAL & SOCIETAL CHANGE

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	10	4
Online survey	14	13
Total	24	17

What people liked:

- Must include residents. People can help in our own way (e.g. plantings, rills, swales, trees etc) but it would be great to have some support on how to do things properly. Some workshops on developing eco-friendly properties with advice on how to go about things. Also, a help line to continue the support and contact with skilled and knowledgeable people. Build community skills.
- Building a stronger, closer community to look out for each other is good.
- I think this approach is essential to go along with every other option. I like this idea and it can empower the community (e.g. by local individual support to increase permeability). Can work well with numbers and you support people to modify their landscape (e.g. by planting rain gardens).
- A necessary approach - good information based on good science is a great resource for communication. Having community action plan for streets would be good in a big event.
- This is a long game however people are wanting a sense of community more than ever and well thought engagement in different ways could interest many residents in our neighbourhood (as in South Dunedin).
- Love the idea of being rewarded for doing something good that will also benefit you as an individual and the wider community.
- Hard to change behaviour as people are selfish.
- Education is important - availability of information to better understand the area we live in may create a foundation for change to happen.
- Always keep the people informed on an inclusive basis. Communication reduces stress.
- education is key, consents process can also help manage this. I don't think penalizing individuals is going to support where the major problems are, businesses need to lead this along with local and central government.
- Zoning changed and incentives needed to encourage appropriate development.

- I like the potential of behavioural changes. This is something that we should be doing Dunedin anyway- not just South Dunedin.

What people didn't like:

- Doesn't actually solve anything.
- Very dodgy! Changes in behaviour are up to the individual. Indoctrination should be a crime.
- There are people who do not want to be educated.
- Too vague.
- It's just being reactive to symptoms and not even looking at causes.
- Risk of wasting a lot of cash on not real outcomes if focuses on the intangible.
- Takes a long time to make behavioural / societal change - especially with South Dunedin being such a diverse community of people.
- Sanctions for individuals.
- A nice to have but focus funds on actual activities that will help reduce the risk of rising water levels. Well, we are already doing this. We need some physical changes too.
- Behavioural change might be hard to achieve with those who are change resistant.
- Not sure what you mean by this. Are we talking building resilience, so we get used to having our homes flooded?
- Need more clarity around financial reward/sanctions.
- Unsure if Council will be able to resolve the issues.

4.3.11 *READINESS & RESPONSE*

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	12	2
Online survey	14	12
Total	26	14

What people liked:

- This should already be in place. We need to work harder on this one.
- We need more community involvement (networking in response to disasters) especially given the aging population in South Dunedin, many of whom do not have access to technology.
- Educating the public and early warning is good.
- Since the "big" flood a few years ago, we have been pleased with the proactive response of the council when there has been concerns.
- Definitely. People need to have a plan when the water level rises. Place set up/helpers on hand to accommodate "refugees".
- Good idea, easy to implement. Not expensive.
- Yes, good to be proactive but make sandbags available when there is a warning - not when it is already bucketing down and getting dark. I would like to get the sandbags ready early - to be prepared for the water. Easier for older people on their own to get a few at a time. Wouldn't mind paying a little for more durable sandbags that I could keep for a couple of years - others disintegrate easily.
- Good idea! But nothing is in place yet. The landowners are always told - why don't you sell up and move.
- Agree, but not everybody has a texting cell phone. Fire and police sirens can be ignored (too frequent) but "air raid" grab the attention.
- Community need to be aware of the part they play and how to enact / react to events.

- Good to do regardless.
- Great, last flood no one was ready and teaching at school and having to close early and try to get frightened children home not good, so if they might of had readiness like firewise (fire safety programmes and keeping ourselves safe, police programmes) taught may have been great way to be prepared.
- This seems like a great response in the interim to finding a more permanent solution.
- This is very realistic and achievable. I like this a lot.

What people didn't like:

- It is only mitigating damage rather than preventing it.
- It's not really a solution - it's just responding to the inevitable. Seems to me like a combination of this and No. 10 are unavoidable?
- Insufficient.
- Given 8 years since 2015 flood this should already be in place.
- This requires people to be ready. This also means that the extent of the damage is reliant on predicting severe weather events and having time to prepare for them.
- Human lethargy would be a problem.
- It doesn't stop problems. It's reactive.
- Not everyone will follow instructions.
- It's a bit like the ambulance at the bottom of the cliff.
- Concern Council won't be able to deliver on this Programme.

4.3.12 PROPERTY LEVEL INTERVENTIONS

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	14	12
Online survey	13	15
Total	27	27

What people liked:

- Good proactive idea.
- Known to work.
- *"We are a Surrey Street person, we are upset with all this. Dining out with this 2015 flood. All the town houses going in, where is all the shit go? Down our street"*.
- This would require assistance and professional advice to each household. It's a brilliant idea, but can the DCC afford to do it properly?
- Rather have water contained.
- It works in other flood prone areas like in the Manawatu, the houses on stilts stay high and dry while others flood.
- You raise homes like on Great Barrier Island.
- There are some good ideas and solutions to the issues. There is a potential for a move aesthetically pleasing area in South Dunedin from redevelopment. This would be a positive thing.
- These ideas are quite good in theory. Would need funding from government as most residents wouldn't have friends available for its type of work.
- What about storage tanks on properties? DCC talked about this 4-5 years ago. But these new developments in Mornington and hills don't seem to be required to store stormwater.
- Focus on how income/low value houses that are also damp/flood prone. This is a "just transition", do not worry about the wealthy houses. Do a 'trial' and demolish a JT house and rebuild 2 eco flood damp proof houses on site (i.e. carpark and laundry on ground floor - all living and sleeping is upstairs). Relocate the owner into one unit and the other unit goes to

a social property developer (i.e. DCC set up a social property developer unit under the property unit or holding company).

- Provides security for people looking to live in an area susceptible to flooding and security for their assets / homes.
- Allows homes and community to remain. Feels like a reasonable fix for this and maybe the next generation.
- Need incentives/ appropriate support (within strict limits).
- If it was gradually introduced, i.e. new properties developed are required to be built to spec then I like it.
- It's a very practical solution.

What people didn't like:

- Cost
 - o Expensive for individuals. Possibility of effort being past to the DCC to change zoning rules.
- Hillside has no grass we have lost green ways.
- Doesn't fix anything. Protects people's homes, but in a large flood people are stranded for days with no escape. Still needing rescue with nowhere to go until flood waters subside and clean up begins.
- Who is liable if it doesn't work?
- How would this be funded? Concern about the costs on individuals for this approach.
- There is growing concern regarding DCC rate and Regional Council rate increase to come in the next 5 years especially. I have concerns that this is going to cost the rate payers and make South Dunedin too expensive for the lower income people to live in South Dunedin or to be relocated somewhere?
- Can displace lower socio-economic groups during upgrades.
- Not really the best approach and dependent on other suggestions.
- Risk of underplaying the real changes, and homeowners fooling themselves I to thinking they'll be ok, then expecting support and help because they've done it.
- May change the look of South Dunedin as it's predominantly single story homes.
- Seems like this will only work for 100 years or so. It works in many parts of the US, but I guess it's a question of how long-term we are wanting these solutions to go.
- Can be moral hazard of supporting reckless development.
- Harder to implement with commercial and industrial real estate.
- Planning will need to change to allow this. I hope this isn't the default option.
- No - there needs to be a proper wider plan for where the water will go for the whole area, not fighting it property by property.
- Very invasive of people's home and very costly. We as the public, don't expect to pay for this all on our own, we would need financial help for this.
- Expensive? My house is 100years old. It would need extensive modifying.
- How do you know which house will be affected by an uncertain natural event & what does it do to the value of the home once identified / who pays to fix etc, especially if not agreeing it is a risk.
- Massive hike in insurance premiums, massive reduction in property values, massive flight from the area by those able - which leaves only the vulnerable behind. While the DCC does nothing because it has shifted responsibility to the individual property owner.

RETREAT

4.3.13 REACTIVE RETREAT

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	15	15
Online survey	12	9
Total	27	24

Summary points

There was a divide between those that want to wait till there is a disaster and then not rebuild, others think that is too late and action should be taken to avoid this situation, particularly for the vulnerable people living in these areas that could be hit hard by a disaster.

What people liked:

- A needed response
 - o This seems a good response to a tragedy. People would likely be highly motivated.
 - o Once damage has occurred, I agree we should abandon instead of rebuilding.
 - o Makes sense but only for abandoned and badly damaged places.
 - o This appears an obvious forgone conclusion.
 - o If there has been a significant event then this makes sense, we have the opportunity now to learn from both Christchurch and recent cyclone events how to manage this properly.
 - o Sensible not to have people in flood prone areas, also space may be needed to protect the greater area.
 - o It's probably the lowest-cost solution in the end.
 - o Necessary and useful (CHCH red zone).
 - o Should be looking at this now.
 - o If its unliveable and unrepairable, it takes the decision making out of the picture.
 - o No other option once it has happened, but gives people the option to assess their own risk profiles & live where they want in the meantime.
 - o If you are insured and that's what is decided then go with it.
- Work with other approaches
 - o Must work with the other things that have been suggested. There is not a one size fits all approach.
 - o Okay to demolish old, mouldy, past their used by date. Replace with whatever makes good sense with appropriate floor levels.
- Don't do until it is required
 - o This has always been the situation for centuries. Don't cross a bridge before you get to it.
 - o Sad - but no point in retreat if nothing will happen?
 - o Ok if properties become uninsurable.
- Other considerations
 - o If decision is made to withdraw then we have to step putting new build in the area just more people to leave.
 - o Yes- short term steps for relocation good. Having people blame you afterwards for insufficient intervention or claims of insufficient mitigation is good to have in mind while composing a plan for extreme events. Good work.
 - o A major consideration given the aging population in South Dunedin, many of whom have mobility issues and don't have technology access.
 - o Maybe rebuilding in the sense to a better standard?
 - o Decommission Victoria Road, purchase the houses south of Victoria Road, turn the coastal strip into rec grounds, green space.

- Depends on the occasion may be necessary. People need to know that property owners would not be unduly financially penalised.
- Help us to transition and I wouldn't mind this either.
- This would mean that people only abandon houses which have been impacted by weather events- they have not withdrawn from houses where it sits within a zone where people think might flood.
- Don't like approach
 - I don't like anything about this approach but it might be unavoidable.

What people didn't like:

- An approach only if necessary
 - Should be last resort
 - This approach is too late and should be a last resort.
- Think about the vulnerable
 - Consider mothers, pregnant women and young children as vulnerable segment (Gisborne floods - deaths).
- Approach is too late
 - Seems like a waste of resources and putting people/property at unnecessary risk to wait till after damage has occurred to take action.
 - Let's put things in place now so this isn't the outcome.
 - it's too late to protect people & belongings once it has happened. Insurance is slow & recovery long.
- Against people leaving their homes/ the area
 - I do not want to see people coerced or pressured to leave their homes.
 - South Dunedin too valuable for everyone to leave.
 - Disagree with retreat. Working out how to manage water and work as a community to adjust is a preferred idea. This is our home, and we love the community. Even if only 10%, where would you locate those evacuated? Most other flat areas in Dunedin will be facing a similar problem.
- Examples from other places
 - Good to look at other communities for their good ideas too (e.g. Seattle).
- Individual decision
 - This would be an individual decision rather than continued rate payers responsibility.
- Implications
 - More discussion on implications for property and contents insurance. Also impact on property values surrounding condemned property. Potential for gaps in recovery.
 - Costly - reactive approach.
 - Wouldn't that create a terrible red zone and loss of property value?
 - Needs to be done proactively.
 - Shutting the gate after the horse is bolted is sure to be more expensive and stressful.
 - It's not planned - "it will be fine" mentality may not work or be appropriate for this area.
 - May be difficult to relocate amount of people.
 - Hard to apply and finance.
 - People's reluctance to move / accept inevitable.
 - So traumatic and stressful for the people involved. Not the best idea.
 - Unsure if insurance would cover all eventualities.
 - Obviously, it's a last resort and can have no good outcome for home owners. It will lower the value of all homes in the area.
- Proactive measures
 - Prohibit people from improving property in high risk areas.
 - Why are DCC still consenting homes and town houses in South Dunedin?

- By then it's too late: this needs to be an active management process in advance of adverse events - the geotechnical and survey information will give you a risk profile for who moves first.
- Everything. Reactive approach is a terrible idea, but fairly common practice for most councils in NZ.

4.3.14 *MANAGED RELOCATION*

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	16	21
Online survey	15	12
Total	31	33

What people liked:

- Voluntary
 - Voluntary buy-outs a good solution - very last resort though.
 - Good as long as it is voluntary. Reasonable solution.
 - Voluntary and carefully done - for a purpose not to intensify housing as many developers are doing. If at present any spare land suddenly has intensive housing. Tricky
- Link with other approaches
 - Could tie in well with option 6 at a lower scale.
 - This could work well as a long term approach that combines with approach numbers 10, 8, 7, and 6.
- High density
 - Good idea if alternate high density housing provided. Create green space and community spaces. Allow for flooding, unused walkways.
- Support proactive relocation
 - Proactive retreat is much better than red zoning after a flood.
 - A good solution for the most at risk homes and infrastructure if done with sufficient support for those being bought out.
 -
 - To act in advance of change is the only logical thing to do and given the poor state of so much of our existing infrastructure it would give us the opportunity to build new and better wherever things go to. This is going to be a very long process, so best we start with the highest risk places now.
 - Obvious choice, can be planned and managed over time.
 - Supports people to move and resettle, is a sensible approach to protect the majority.
 - Seems like the most human and lowest-impact solution, though it would of course mean dismantling these communities and creating our own refugees here in Dunedin.
 - Bought out rather than forced out by an incident, asset value protected for the owners who can then buy elsewhere.
- Support
 - Really in favour of this as well but myself and others have low incomes we would need support to manage this and it needs to be happening now BEFORE the shit hits the fan
 - Need to start sooner than later.
 - Yes! This should happen. Less dithering and zone land now so that new things aren't going in places that will be decommissioned.
- Market value and cost
 - I wouldn't mind being bought out so long as it was market value. So long as people could afford to relocate and there were places to relocate to.
 - If there was the money to buy the properties this is okay (e.g. council reimburse).

- Could be necessary.
- Look into MFE inquiry into managed retreated August 2023.
- If there was proof of this actually happening?

What people didn't like:

- No just leave as is. This is a nightmare for everybody concerned.
- Price/cost
 - o Home buy out needs to be at a fair price. Most South Dunedin housing would not provide enough to purchase new build. Many aged could not get mortgages to cover difference.
 - o Unaffordable, unrealistic. Where could we even go? We don't have space. Housing costs would skyrocket.
 - o Not do what they did for the Canterbury earthquakes, people were not adequately compensated and very heavy handed.
 - o Expensive and needing to have strict caps on levels of support (refer govt working group report on issue).
 - o The true value of homes will not be honoured. We all know that GV does not reflect value, which will make finding a replacement fraught. To move into the city or on a hill would impact financially, as well as create accessibility issues for many disabled and elderly population.
- Timeframes
 - o Too slow. 10 years of talking about planning already.
- Impact on vulnerable
 - o Least favourite option. Not keen to displace people especially elderly/disabled people with little means of buying again. People become very vulnerable. Lose sense of belonging/community.
 - o No money, who would volunteer to lose equivalent to life savings?
 - o Not an option for the elderly.
 - o Could really damage the community and risk of properties being moved or poor pushed out.
- Stress
 - o Will cause a lot of stress for people.
 - o A traumatic prospect for those who have lived in South Dunedin for generations. Many have mobility issues, hence their preference to live on the flat.
- Lack of space
 - o The DCC knows full well there is no place to move the houses to given it has not opened up any more building space, and it does not have the money to do buy-outs: This option is the DCC trying to make it acceptable to remove infrastructure from Sth Dunedin - and get the residents to agree to it doing so.
- Future community
 - o Destroys communities and the uncertainty around this approach put everyone's house values at risk.
 - o If not voluntary the area could become a slum as people not prepared to put in the time and effort to help make other solutions work.
 - o Displaces people and businesses. Creates drastic changes to areas.
- Rehoming people/ planning
 - o What provision will be made to rehome and reestablish moved homes/people/infrastructure etc? Will it disappear or will new buildings and infrastructure somewhere suitable be put in place? Where?
 - o Majority of people would not like this option (re value of their property and leaving neighbours friends).
 - o It will require long term planning, at which we have demonstrated poor performance as it all gets so politicized and doctrine driven at the expense of being evidence driven.
- Infrastructure

- Tahuna wastewater plant, Musselburgh pumping station, Portsmouth drive power station are in high risk locations, businesses, schools, homes etc, how do they relocate and who pays.
- It uproots peoples' lives!
- who decides where is/isn't risky? Dunedin has as many landslides as floods at this stage, so could be forced to move from a South Dunedin that never floods at a cost to the county and be rehomed into a landslide zone, or other flooding zone like Mosgiel. Large cost to the City.
- DCC never openly stated this captures Caversham so it plans to walk out that suburb as well, even though it is not affected by flooding. This is just a plan for the DCC to stop performing its local government functions.

AVOID

4.3.15 MORE RESTRICTIVE BUILDING DEVELOPMENT STANDARDS

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	14	10
Online survey	18	12
Total	32	22

What people liked:

- Positive comments
 - Great idea. Houses on stilts would be a great start.
 - This has to happen regardless of what other measures are taken
 - It seems like a sensible idea, and would hopefully result in less expenses in terms of maintenance and repairs in the future.
 - Functional and can be implemented over time.
 - Can be actioned quickly.
- Good for new developments:
 - Stop people developing in risky areas!
 - Yes - good for new developments especially in areas that have been used for intensification
 - People should not be allowed to build in flood zones.
 - Absolutely. It is crazy to see new builds in the flood prone areas. And large commercial buildings being built adding weight to the area.
 - Yes, but don't seem to be many restrictions at present with lots of 2 storied and multiple dwellings going up on land - no room for spongey areas and lots of plantings.
 - Yes definitely. Start with new builds, but don't stop there.
 - Ensures homes are built that can withstand climate changes, safety and security for home owners and renters.
 - Would of course help for future.
- Permeable surfaces
 - Restricting % of any section that can be built on - many of these townhouse developments have very little outside permeable space - a situation then compounds the problem.
- Is it required?
 - Nothing wrong with planning for the future - but not upon the basis of a fraud - namely manmade global warming.
- Other approaches

- o Fits with approach number 10 and 8 - to empower individuals who don't want/aren't able to move out of the area. Together they can make a positive difference to the landscape without working against it.
- Suggestion: raise a quantity of land 1m. Allow tiny and small portable houses to lease the land long term. This allows a cheap housing solution very low energy requirement. Have rainwater tanks and solar panels.
- Prohibiting any improvements in future flood prone, damp prone existing dwellings. Place a warning on title that the dwelling will lose its residential status in 15 years at this stage - no rates charged. Option of regaining long term residential status if house is demolished and a new as 2 new dwellings built to be damp proof (i.e. ground floor garage only upstairs, all living and sleeping plus as an incentive give the owner of the new development rates relief for 20 years. Do a trial to show how this will work.
- Good, needs min floor height and site coverage.
- Makes sense and why would you not do that, better than getting your house flooded.
- A very logical way to approach this situation.
- It's an added tool.
- I followed this approach when building my home. I had my house built higher off the ground, foundations engineered, and opted for permeable ground cover.
- This seems sensible for replacing existing structures.
- The DCC already has the tools to do these things - and it has already shown it looks to every way it can possibly not do them: Confirmed by its enthusiastic pursuit of high density housing.

What people didn't like:

- Don't want to see existing buildings being taken away.
- It may cause panic selling and many people would lose value on their homes.
- Piles lack of sun for surrounding residents to grow stuff/evaporation of amount of intensification that is being permitted.
- Serious rethink on building multi units on section that contained. House had lot storm/wastewater pipes to several all going into old storm/waste pipes loss of natural drainage due to increase of concrete covering land. Feel that these units are not high enough above ground level.
- So many restrictions to add to already many rules.
- Can't make it so restrictive that progress stagnates.
- Stop so much control of adults.
- I am against this approach - the standards as they are applied in New Zealand are compliance driven, not performance driven. Standards should be encouraging innovation and allow multiple ways of achieving outcomes when current ones are picking up one only.
- Making the restrictions in a way that don't inhibit innovation: maybe some people want to live in a houseboat in the South D lagoon...
- Seems like the damage is already done, and while this is useful it doesn't really help what's already here.
- Conservative attitudes supporting maverick local/national reactive political voices.
- How do you work out the areas and then what happens to property value in restricted areas, i.e. Christchurch red zone and the various green zones.
- Could be seen as bureaucratic over-reach.
- Someone will have to draw a line somewhere, and there will always be the question of "why does my neighbour not have restrictive provisions and I do".
- Retrograde thinkers might push for this to apply to land that really shouldn't be retained as residential at all.
- Some people will not be on board. I'm onboard, but there will be complaints from others.
- Could be used retrospectively on existing homes as a reason to encourage retreat.
- consent rules are prohibitive as they are, needs to be workable.
- It requires the DCC reverse its position then actually do what it is supposed to do.

4.3.16 NO NEW DEVELOPMENT, REDEVELOPMENT, CHANGE OF LAND USE

Source of comments	Number of comments for what people liked	Number of comments for what people didn't like
Face to face events total	12	9
Online survey	11	9
Total	23	18

What people liked:

- Seems sensible to reduce risks.
- I think this might be quite a controversial approach, but I think it does make sense long term. Even if we try to build/develop in this area to cope with erosion etc in the next four years, eventually we will need to retreat anyway, and we might as well focus funding and research that works in the longest term.
- Yes. New development is short sighted when so much change is afoot.
- No more infill development that increases the problem. Houses on hill causing issues.
- Yes definitely. Doesn't make sense to develop sites like Forbury Park when different approaches can be employed to increase the resilience of the entire area. We need to think collectively, not for advantage of individuals.
- It's unsustainable to allow building in places we know as at high risk. Better outcome for all to utilise this space in an alternative way, rather than developments.
- Yes restrictions should be put in place now so that if homes do need to relocate eventually it's not such a mammoth task.
- We like this approach. The groundwater is a problem already. Having grown up near Bathgate School it was high then 1950-1970. Act now stop more building.
- Yes - should already be happening.
- The only logical approach.
- Sets a limit / draws a line in the sand and stops more development from happening in an area that is at risk.
- Excellent need strong, ongoing local community involvement.
- Probably necessary long term.
- Will need govt buy outs at market value.
- Well if it's a high risk area or vulnerable there just should be any buy in - no one to be allow to buy. Safety risk full stop.
- This is also a very practical way to start solving the issue.
- I think this would be a good way to manage retreat...which I think needs to happen.
- It avoids the risky areas.
- Perhaps these areas can then be used for some of the other flood prevention ideas.
- Already a local government requirement. Already something the DCC can be shown to have ignored.

What people didn't like:

- Is it necessary is measures are being put in place to protect existing buildings and facilities?
- Not a good idea. If things can be done to preserve the area for use by future generations, it should be. This is a vibrant community and very historical. The facilities and the land are what make it attractive to many age groups and abilities, not just elderly and those with disabilities.
- Beter outcome for ratepayers.
- Hard for people who live in the areas. This is where buy outs would be indicated.
- New developments already happening. More concrete more pipes into aging system. Loss of trees and bushes that were on section.
- This does not solve the problem. The new development can provide innovative ways of dealing with climate change.

- No provisions have been made for compensating landowners.
- may take many years to phase in and clear no build areas.
- Not a long-term solution overall.
- Council or govt in control and their decisions deciding financial outcomes for property owners.
- It drives people away from this awesome place. People are already so put off South Dunedin. This only encourages that stigma.
- It could create areas of isolation and wastelands of abandoned buildings. I feel this would greatly devalue land/ property prices.
- To stop redevelopment of existing could mean renovations not comply with healthy homes or losing community buildings like library and cafes and social areas
- what happens to homes values already in these areas.
- Requires the DCC to comply with the law, adopt a position and apply it consistently. The DCC has zero history of doing either, so this is another time-wasting option.

4.3.17 *OTHER/GENERAL COMMENTS:*

- Are these approaches going to be needed as this may or may not happen.
- Maintain and repair existing pipes mud tanks, might realistically might be the only option.
- Save money and do nothing.
- Concern about where the money is coming from to implement the proposed approaches.
- Māori understand this best. What would their solution be?
- Bringing people along for the ride is essential with everything. Events like these are great! Ongoing engagement is good (referring to the expo event).
- The council is doing a good job at educating and bringing people along on the journey. Thank you.
- Will information gathered from the public here be used for decision making especially any negative feedback? Will comments be made publicly available as this project progresses?
- Generally missing the point that the long term issue is ground water level rise. These are all dealing with temporary flooding.
- All good ideas. Sort out worst property that is low value and limit improvements but assist in a total replacement using eco SIPs parcels and work schemes garage at bottom level and lounge upstairs. It is a natural choice for poorest houses with DCC holding company or joint venture assistance.
- More information about screen clearing.
- Need to fix pipes where they need upgrades or replacing; maintenance ok but needs to be cost effective. Coastal protection at Kettle Park to stop landfill eroding onto the beach. Some parts of South Dunedin could do with a tidy up. All looks too expensive and is unaffordable for a city that already has high levels of debt. Need to see costings early. Too much change will destroy fabric of South Dunedin, ruin access, stop people going out, confining them to their homes.
- Concern people don't have enough information about the approaches to respond.
- Recent resurfacing of roads doesn't take into account this climate work.
- Streets cleaned yesterday for first time, but brush tar and chip into gutters - now blocked.
- Decisions that affect large assets like houses and the quality of life are not based on like/dislike.
- Congratulations you are doing a great job to prepare. Make sure all stakeholders are fully involved (citizens/experts/politicians). Have you thought of using Citizens Assemblies as part of ongoing decision- making processes?

- Living adjacent to Forbury Park for the last 40 odd years and having noticed the effects of heavy rain / tides etc. I am strongly of a view that the majority of the area should be used for stormwater retention and [re]turned into a wetland. Also living in the area am familiar with the effect of heavy rains and high tides on the groundwater and the inability of sections to drain quickly.
- I think that most of these are great options. Based on the limited amount of knowledge I have; I think that most of these options will need to be used as a 'puzzle' rather than choosing one option and applying it like a blanket over south Dunedin. I.e. some areas might be ok to have the grounds stabilized while other areas might need to retreat completely.
- I LOVE South Dunedin. I want to see this place thrive. I am so keen for returning to our marshy roots, encouraging wildlife and nature to live in synergy with the humans and infrastructure. The idea of ponds, canals, more greenery, permeable places, working with the sea rather than fighting it, is my favourite approach. Let's make South Dunedin an eco-friendly Venice!
- I think the approach needs to be a combination of sea wall and wetland/pond/canal style redevelopment. Whatever we choose must be environmentally forward thinking. At the moment South D has very little vegetation or areas of natural beauty within the residential or business areas. Permeable paving might be another consideration to help reduce run off and store surface water.

4.4 COMMUNITIES OF INTEREST

There are a number of communities of interest that exist within South Dunedin. Their views are important to distinguish from the broader community as they have distinct interests to be considered.

4.4.1 SOUTH DUNEDIN COMMUNITY NETWORK

A workshop was held with the South Dunedin Community Network on 1 March 2024. Their feedback is outlined below.

Places of importance to community

Schools – school communities – locations.

Supermarket.

Shops main street - Main street is constantly evolving

Heritage:

- Facades on main street (these could be shifted).
- Gasworks + dinosaur park.
- Mayfair theatre.

Churches:

- These change too...
- Richardson St, St James Anglican.
 - o Deconstructed.
 - o Converted to apartments.
- Churches are architectural features of a community / built to last / retains architecture.

Dunes are an important recreational space, proximity to coast.

Homes:

- Villas – important architectural features but must be healthy (and many currently are not).
- St Clair saltwater pools – recreation.

Homes:

- Opportunity to get healthy housing stock.
- So many are run down. High rental and inherently chargeable.
- Need good infrastructure access to shops etc.

Non-spatial elements that are important:

- Community / whanau / family.
- Mobility.

Most things within the community could be shifted.

Previously lost facilities -

- Caledonian.
- Carisbrook.
- Forbury Park.

Scenarios

Impacts:

- 2015 some residents had to be relocated from their homes for 9-12 months.
- Future: access major problem.
- Growing isolation due to inability to move around using e.g. mobility.
- Cannot access doctor, supermarket.
- Access to schools can be disrupted. Even now low attendance at school.
- Property level limiting access the washing line resulting in health impacts.
- Dampness in houses.
- Sewage in floodwater.
- The above physical impacts may result in wider mental health issues:
- Public health issues that come with waterlogged properties, backyards.
- Resulting in feelings of abandonment, anger, highlighted vulnerability. Resentment at lack of action (seen as a simple fix, why hasn't it happened WWTP).
- Fear of event, anxiety.
- Poor community means cost of repair (e.g. insurance premium).
- Shifting costs.
- Fear of change resulting in sleepless nights.
- Growing own food may be disrupted.
- Elderly / less abled.
 - o The fear itself / not just the event but living with constant fear about what will happen when it rains next.
 - o High-cost / emotional cost.
 - o Low social economic community / pay the excess "there is a lot of going without for a long time".
 - o Fear of whether or not I would be able to move.
- If in 2030, our long-term infrastructure upgrades haven't happened and we have a big flood again, there will be rioting / a lot of anger.
- "Ticking time bomb".

Thresholds

- Unaffordable insurance is already happening (rises). Doubt on whether insurance will pull out.
- One more flood would be unacceptable.
- Surrey street - Anger resentment at previous 'warnings', Mental + physical health impacts
- Lim information changes and liquefaction on the LIM is a major issue.
- Liquefaction information. Increased difficulty in selling.
- Sporting parks becoming unusable week after week (impact is Dunedin wide), need to have facilities close to people.
- Surrey Street.
- Physical barriers are the more concerning factors.
- Queen and Kings High Schools / Bayfield High School.

- Schools already affected / less kids go to school when it rains. When it gets worse, schools will shut down.

Approaches – the future

General comments

- Slow change means community could be adaptable.
- St Clair / the Esplanade / Saltwater Pools: really have to protect.
- Opportunity for positive change.
- People moved together at the same time.
- If change is slow, anything is possible in terms of the community adapting to change e.g. main street shifting to Hillside Road. What's the speed of change? "We're in control of how we adjust to change as opposed to change being done to us".
- Living right in the middle of South Dunedin: hopeful that this project will help create better housing for people, beautify the spaces, still densely populated.
- Maybe want to save villas in St Clair, but in South Dunedin they're mostly run-down, many have been lost.

Approaches that the network least liked:

- Retreat / reactive retreat as it would be disastrous. Stressful for too many people. Change is done to us rather than us having control about how we adapt to change.
- Managed relocation in contrast, [some] might like - "if you have a choice".
- Ground reinforcement / Coastal Protection will work for some time but nature has its ways and will overcome it.
- Water will keep rising - "I'm afraid of this water here" [pointing at the harbour].

Approaches that the network most liked:

- 'Managed Relocation': being proactive about relocation / council buying my house might diffuse the anger experienced in 2015. What if we have a process of 'managed relocation' set up and there is a big change of council or government?
- 'Dedicated water storage':
 - o There are open spaces which could be suitable for an engineering perspective, but may not be in an optimal location for placemaking.
 - o What if there are better spaces but there are houses there. Would a trade-off be acceptable?
 - o If you're going to move people out of one street and into a new area - e.g. Forbury Park - it could free up other spaces.
 - o As long as the communities who had to be moved (relocated) so that these spaces are opened up for floodable infrastructure / water storage, then that's ok.
 - o Moving people forcibly is not ok.
 - o Moving people who are comfortable moving elsewhere, that's ok.

4.4.2 DISABILITY REPRESENTATIVES

A workshop was held with disability representatives, this was the first in a number of workshops we will need to hold with this community. The information that was provided through this workshop is outlined below.

“Please don’t leave us behind” – quote from the workshop

Places of importance

When discussing places of importance there was discussion of the supermarket, Community Care Trust and supporting services, but the key features that are important to those living with disability included:

- Access
 - o South Dunedin is flat which makes it easy to get around.
 - o Proximity to support services, they are easy to get to.
 - o Buses allow good connection to the rest of Dunedin.
 - Cheap housing but is not good quality and is sometimes hard to convert to be accessible.
 - A number of respite care and residential homes are in South Dunedin.
 - While all of these elements are important, they can move but need to move as a ‘hub’.
- However, change for people facing disabilities can be more disruptive and stressful.

Scenario 1: 2030

Life in South Dunedin is much as it was in 2024; there is a severe flood one day which damages dozens of homes, and business grinds to a halt. Infrastructure repairs and clean-ups clog the streets in the days following and trigger longer-term upgrades.

The groundwater table is often so high that it impacts daily life, such as when playing fields need to be temporarily closed when rains cause the turf to flood.

Participants were asked how this would impact them. Their responses are summarised below:

- When there is no power can’t use electric wheelchairs.
- Have to stay home even more than they do now.
- Stress and anxiety when it rains.
- Not everyone with a disability has family or friends to go to and have to wait for providers to contact them, which is a major issue during disaster events such as flooding.
- Emergency evacuation points aren’t set up for people with disabilities, sleeping on the ground is not an option for many and could end up putting people in ICU.
- Using shared toilets is not always appropriate as often bowel issues arise for people alongside their disability.
- *“Need to move the vulnerable people out of South Dunedin ASAP.”*

Note: Due to time during the workshop we went covered Scenario 1 and 2.

Scenario 2: 2060- 2070

Life in South Dunedin is noticeably damper than it was 30-40 years ago. This is because the groundwater level is closer to the surface, and in some spots, it’s pretty much always soggy underfoot and there are puddles all the time even when there is no rain.

Sea levels have risen, which means that when big storms come through the waves can get high. One time they got so high that parts of Portsmouth Drive were flooded with flood water

approaching Andersons Bay Road. That was made worse by the heavy rainfall, which together with the already high groundwater levels meant flooding was worse than anyone remembered, and the water took a long time to drain.

Participants were asked how this would impact them. Their responses are summarised below:

- People dying on a regular basis from Cholera.
- The scenario is totally unacceptable.
- Many would be in emergency housing more of the time.
- Any further flood event is unacceptable.
- *"The change is real people – this is going to happen and we will be under water 100 years time".*
- *"Last time there was a flood it was very wet and people were told to get sandbags from somewhere – how would I do that? No car and can't see and some can't walk."*
- Need to get disabled people out first and then the rest of the people as the disabled people can't move themselves.
- Ideas were shared to do emergency management better, including having a list of contacts for people with disabilities and knowing how to get in touch with them.

4.4.3 YOUTH

Four targeted events were held and were focused on engaging young people on this phase of the programme.

Rangatahi Hui, 26 January

The Rangatahi hui was held by the South Dunedin Community Network, run by a student intern and supported by the programme team. The hui was focussed on gathering youth views on the long-list of approaches. Participants were asked to rank the approaches 'best' to 'worst' in small groups. A summary of the findings are below:

Points of difference between groups selections:

- Managed Relocation: South Dunedin based participants especially (2 total at Hui) had a strong voice for pursuing other options to conserve people's idea of place. Forcibly moving should and would be a 'last resort' for a lot of people in South Dunedin.
- Contrasted against more general young people's perspective that suggested the cost of retaining sense of place for few individuals is a luxury that could not be conserved under future climate induced restraints and challenges.

Agreed non-acceptable across all participants:

- Passing on disproportionate or avoided costs to future generations.

Agreed approaches across participants:

- Greater investment for long term approaches a supposed to short is worth the greater cost, with the belief that future costs (ad overall costs) will be reduced for future generations if long term approaches are prioritised now.
- Increased permeability and water storage options both ranked highly (Top 4) for both groups. This was predictable, as these approaches were in alignment with the shared perspective across groups and individuals which were highlighted in discussions. Those were:

1. When given the choice, we should work with the sea and nature.
2. Naturalise/Beautify our urban places.
3. Benefit future generations (these approaches were perceived to do so by participants due to reduced maintenance cost in future and them being a perceived permanent solution).

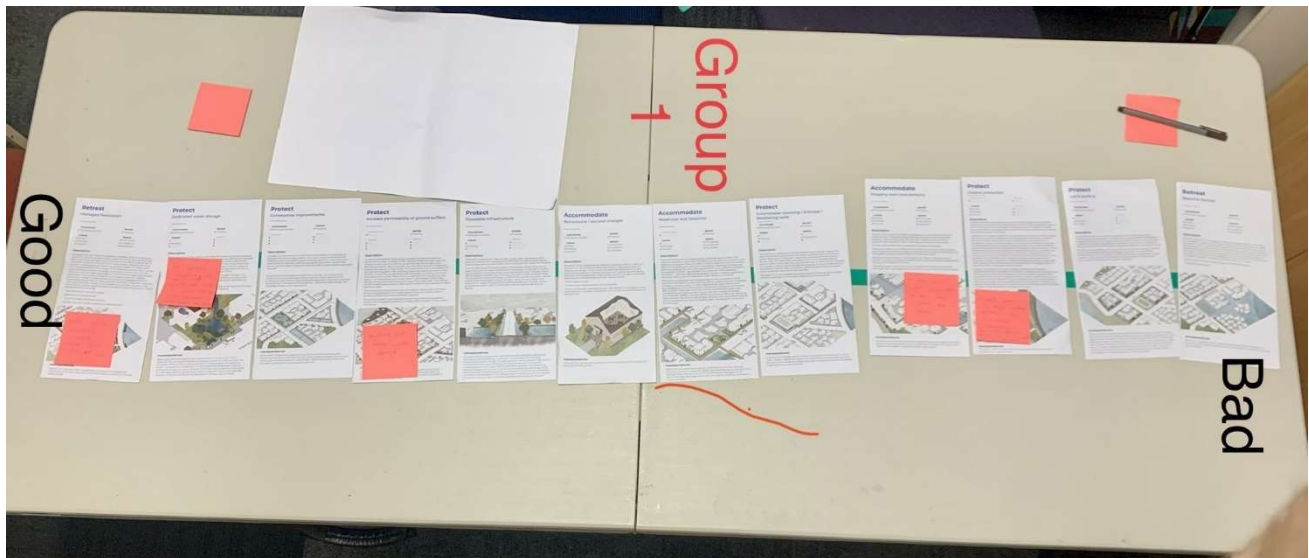
Key takeaway:

- All participants seemed to value soft engineering approaches. Perhaps because such approaches often aligned with the above-mentioned unanimous values and perspectives.



Queens High School, South Dunedin envirogroup, Thurs 7 March

Ian Telfer (SDF) and Jennie Upton (Enviroschools facilitator) visited the lunchtime meeting of the envirogroup. 15 pupils and supervising geography teacher. Participants were given 16 adaptation cards, had students study them and explain briefly their approach to the group. Then split the students into two groups to discuss the pros and cons, and lay out the cards in order of most favoured to least favoured option.



Bayfield High School, South Dunedin envirogroup, Weds 13 March

Ian Telfer (SDF) and Jamie MacKenzie (ORC) visited the class meeting of the envirogroup, about 15 pupils and supervising teacher. We played the Township Flood Challenge board game, followed by a cards exercise (35 shuffle) to line up from most favoured to least.

Dunedin Youth Council, Weds 20 March Ian Telfer attended a meeting of the Dunedin Youth Council on Weds 20 March. The council is a collective of one student leader from each Dunedin High School. About 15 student leaders present. We played the Township Flood Challenge board game. We handed out the 16 adaptation cards, had students study them. Then split the students into two groups to discuss the pros and cons and lay out the cards in order of most favoured to least favoured option.

For the enviro schools and youth council discussions had similar feedback to the rangatahi event and included favouring nature based solutions, rejecting reactive retreat but split views of the use of managed relocation given the disruption that would cause.

4.4.4 PASIFIKA

The Pasifika voice is one that we heard mostly at Moana Nui and this identified some additional places of importance that included cemeteries and places for community gatherings such as churches. One of the key next steps will be a pacific people's leaders fono, being arranged during May.

4.4.5 OTHER VOICED CONCERNS

A separate workshop during the expo was had with a group of 6 people who provided clear insights as they didn't believe in climate change and/or that the council should be doing this work. This group was disruptive at previous Council events and disrupted a public workshop the previous day.

The group was challenged the costs and reasons for the programme, while there was agreement that there is a problem now, they were clear that any approaches to any future concerns should be done in the future.

Concerns raised:

- "Dunedin is being destroyed." Don't want to change Dunedin.
- Oppose cycleways and pedestrianisation of areas.
- Impacts of construction post-covid in George Street, these works should've been delayed to reduce impacts on businesses.
- NetZero is an illegal representation and an agenda of Council.
- Covid and climate change is a scam and people should be able to make their own decisions.
- They felt that we were "Crossing a bridge before we come to it" as there is no sea level rise.
- The role of the council should be to fix pipes, stick to infrastructure.
- Concern about the cost and increase on rates when people can't afford it.
- Concern Council will get it wrong again as the sea wall is built too far out. Take the wall back.

Cause of floods:

- Pipe maintenance caused the floods.
- Want to know if these pumps and pipes are being maintained now.

The future:

- Upgrade pumps and pipes to flush water out to sea. The group were happy if there was pollution 6-8 times a year on the beach, it would be a worthwhile trade-off to keep homes dry and it may only happen once a year.
- Nature based solutions could be cost-effective.
- Making decisions when the problem arises.
- Water tanks on each property to capture the water would be a good solution.

5 WHAT WE LEARNT

This engagement has given us further insights into the community views that will feed into the next stages of technical work. Some of the key things we have learnt from the community through this engagement included:

Risk

- There are a number of **places** that are really important to people of South Dunedin the places identified the most number of times were those that were for recreation, allowed for community gathering spaces to the natural environment of the St Clair to St Kilda coast.
- Other than the coast, the key places of importance the community felt that some of the places such as the beach or sand dunes couldn't be **relocated**. A lot of places that can't be moved relate to the coast, St Clair and esplanade. There was a split between no - it wouldn't mean the same in a different location and yes - but it would be less than ideal. Connections to parks, shops and schools are important from people's homes.
- The **scenarios** showed that as the scenarios get worse people are less tolerant of living with the conditions and found the 3rd scenario unacceptable and people wanted action before another event. The 2030 scenario was rated by more than 43% as intolerable. Key themes that were drawn from people's comments were the importance of access and accessibility and the risk to their homes and recovery process that includes cost and impacts on health and stress.
- **Thresholds** indicated that insurance seemed to be a key element that indicated that major change was needed before insurance was unaffordable or not available.

Adaptation approaches

- All of the **approaches** received comments about what people did and didn't like. Key themes included:
 - o Concern about the **cost** or **investment** required, who will pay for the approach and what impact would it have on the individual property owner and the ratepayer in terms of rates increases.
 - o Approaches that provided more **natural** solutions such as wetlands, trees and greenspace were liked for their wider benefits to the community.
 - o Concern about **disruption** for implementation of approaches.
 - o Some respondents saw a **combination of approaches** working together.
 - o Want **solutions** that will work in South Dunedin.
- Nearly half of respondents said that **Forbury Park** should become a wetland, while 19% want to see it used for a community space and 11% wanting to see natural features there including trees and measures that help with drainage.

- Majority of the participants in this engagement saw the value in the Council **acting and doing something** to reduce the impact of the water challenges on people's lives, many saw the wider benefits of more nature being incorporated through trees, planting and wetlands. A small number of respondents **don't believe in climate change** and would like the councils to 'not cross the bridge until we get to it' and to leave decisions down to individuals so as not to waste public money.
- **Youth** feedback showed they preferred nature-based solutions, rejecting reactive retreat but split views of the use of managed relocation given the disruption that would cause. The youth were also more tolerant of scenario 1 than the older age bracket.
- The **disability representatives** focussed on risks now and how they will worsen. As one of the most vulnerable groups there is an expectation that they be a high priority for emergency management and adaptation. Relocation if it had to happen needs to be done with all the services that support their lives – access and accessibility is a key factor in thinking about all approaches. There was also a lower tolerance level for flooding as it has a higher impact on their daily lives.
- In terms of the **engagement activities**, we did get a wider range of ages using the methods such as the expo. Follow up with the Pasifika communities will occur in the coming months as South Dunedin is a cultural home for these communities including churches, and organisations such as Pacific Trust Otago.

6 NEXT STEPS

This feedback will be provided to the workstream leads for the thresholds and triggers (workstream 1), risk assessment (workstream 3) and adaptation approach development (workstream 4). The feedback provided within this report, alongside the raw data, will be used to guide the next stage of the project which is developing the risk assessment and a spatial long-list.

Further engagement with groups such as Surrey Street residents, cultural groups such as pasifika, schools and businesses would be beneficial to fully understand more of their views.

Further engagement will occur as the programme develops and further community engagement will help share what we have heard, the decision-making framework, and outcomes of the risk assessment. Following this, there are further stages of engagement so that every step along the way the community has the opportunity to get involved in the Programme.

Appendix A- Flyer

South Dunedin Future



What can we do?



DUNEDIN | kaunihera
CITY COUNCIL | a-rohe o
Otepoti



**Otago
Regional
Council**

Big ideas for a better future!

We are pleased to present 16 ideas that could help South Dunedin adapt to flooding and future climate change.

Over the past four years, we have talked with thousands of locals, as well as mana whenua and community leaders, scientists, engineers and other experts. Overwhelmingly people want to help create a safer and better future for South Dunedin.

All your ideas and everything we have learned so far have been combined into these 16 possible adaptation approaches that could be used in the area in coming decades.

There are a wide range of ideas, including upgraded drainage and innovative floodable parks that double as water storage, clever ways to side-step trouble with new planning rules to manage where and how things are built and ways to create space for new protections, housing and public spaces.

In this flyer, we will introduce you to the 16 approaches, and the framework we used to help come up with them, and explain what happens next.



“Always plan ahead. It wasn’t raining when Noah built the ark.”

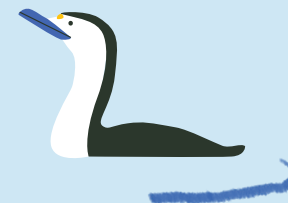
The plans we make today will benefit our children and grandchildren.

The plan we are working on is not just about fixing today’s problems; we’re planting seeds for a future that will stand strong for the next 100 years. That means preparing for more intense storms, rising seas and groundwater, and making sure our community can weather these challenges for years to come.

This is just our initial long list. Over the next two years we need to narrow down and together figure out which approaches will work best in which parts of South Dunedin. We will need a lot of community involvement to get this right.

There will be many ways for you to get involved. We will be holding weekend expos, running workshops and stalls at festivals, and putting out surveys to get your thoughts.

Read on to get informed and get involved!



About the approaches



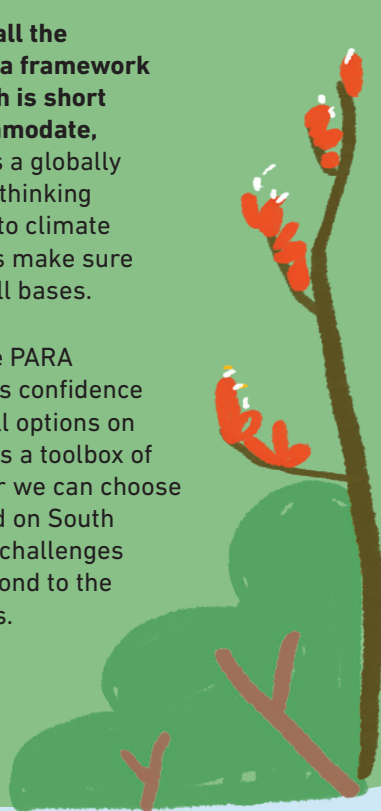
Fight or flight? It's not that black and white.

There has been a lot of talk about staying in South Dunedin or having to leave. Flooding and climate change is not a problem with a black and white solution, and our plan for South Dunedin must include a range of options.

Sure, there are fight and flight options – fight is building seawalls or bigger pipes and pumps and at the flight end, managed retreat and home buyouts might be something we discuss for the decades to come. But those are not our only options. There is a range of ways to adapt to all the water coming our way.

We have grouped all the approaches using a framework called **PARA**, which is short for **Protect, Accommodate, Retreat, Avoid**. It is a globally recognised way of thinking about approaches to climate adaption that helps make sure we have covered all bases.

Thinking within the PARA framework gives us confidence that we have put all options on the table. It gives us a toolbox of options so together we can choose the right mix based on South Dunedin's specific challenges and risks and respond to the community's needs.



P is for Protect

Think seawalls, dykes, berms, drainage upgrades, water storage, floodable infrastructure or wetlands. It is about changing the way water flows to protect your community.



A is for Accommodate

When the water comes, you can't just ignore it. This option is about adapting to the inevitable. Think raising homes, waterproofing first floors, rain tanks and flood-proof buildings. It's about learning to live with the water, not protecting against it.



R is for Retreat

Sometimes, withdrawal is the smartest move. This might be reactive retreat after an emergency event, or planned relocation through voluntary buyouts or moving critical infrastructure from vulnerable sites. To get people and property out of harm's way.

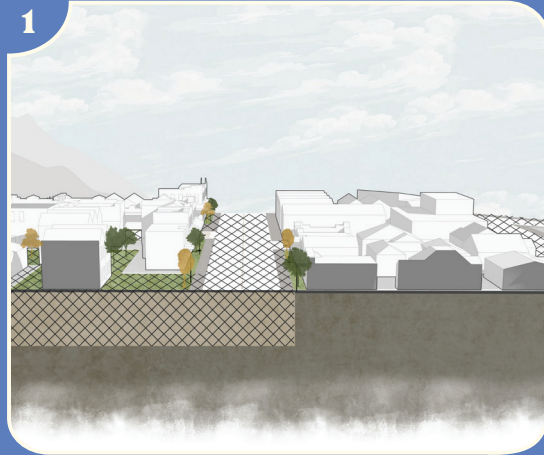


A is for Avoid

Not every battle is worth fighting head-on. This option means avoiding trouble zones. It could involve smart planning rules that restrict building in high-risk areas or allow it in other areas if they are safe. It might involve establishing buffer zones, or zoning high hazard land for purposes like parks, conservation or flood management areas.

PROTECT

1

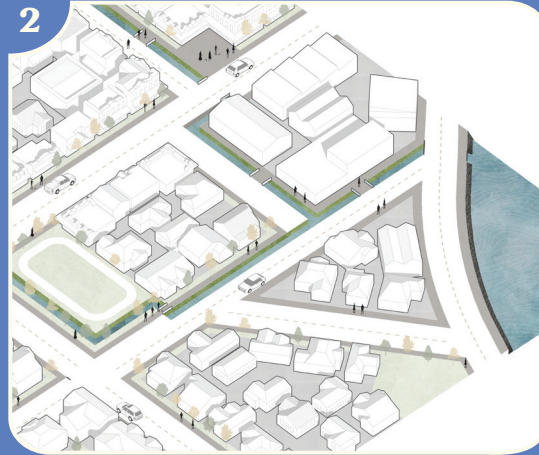


Ground reinforcements

Many different methods can be used to reinforce the ground, which can help to make soil more stable and reduce the chance of liquefaction.

PROTECT

2



Groundwater / Lowering

When the sea level rises, groundwater also rises and the risk of flooding increases. Additional drainage and dewatering wells are ways to lower groundwater, protecting underground and low-lying infrastructure.

PROTECT

3



Land Grading

The method of 'land grading' or 'land elevation' involves physically raising the ground level above the flood plain, to reduce the risk of buildings and infrastructure being flooded.

ACCOMMODATE

10



Behavioural / Societal Changes

We can't build our way out of everything. Small changes in behaviour can build community resilience, lessen the impacts of climate events and help speed up recovery. Financial rewards or sanctions, education and awareness initiatives and mental health assistance can help create collective change over time.

The 16 Approaches



The list was made by merging around 280 ideas crowdsourced from the community and stakeholders with the best approaches from around the world. Our experts looked for examples from other places with similarities to South Dunedin.

At this early stage, none of the methods have been priced because the costs will vary depending on the extent, size and timeframes for which they are used. That more detailed thinking will come in future stages of this project as we go from a long list to a short list.

For more information about all the options look on our website at dunedin.govt.nz/southdunedinapproaches or scan this QR code above on your phone.

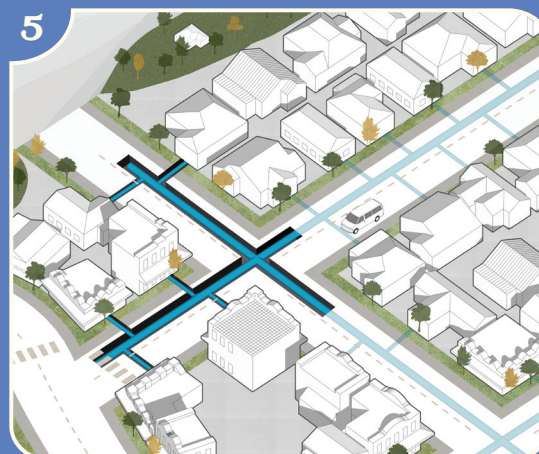
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Water Flow Improvements

Water can be dispersed more effectively by changing or improving drainage systems, such as through putting in larger pumps or pipes, diverting flows, or building engineering channels or canals.

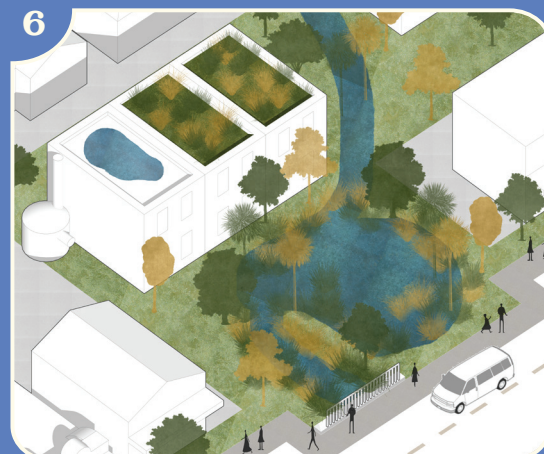
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Remove Wastewater Network Overflows

Wastewater spilling out of the water network when it's at full capacity creates health risks. We can remove wastewater network overflows by fixing cracked pipes and manholes, removing accidental connections to the stormwater system and adding capacity.

6



Dedicated Water Storage

Dedicated water storage areas include basins, ponds, and wetlands on the ground surface or underground, that fill during storms and are slowly released.

11



Readiness and Response

Community readiness (pre-event) and response (post-event) activities can involve early warning systems, public education campaigns, emergency response plans and providing support services before, during and after a flood event to reduce impacts on communities.

RETREAT

13



Reactive Retreat

A decision could be made to withdraw from or abandon homes or infrastructure after damage has already occurred, due to a major event such as a storm, flooding, tsunamis, earthquake or rapid erosion.

AVOID

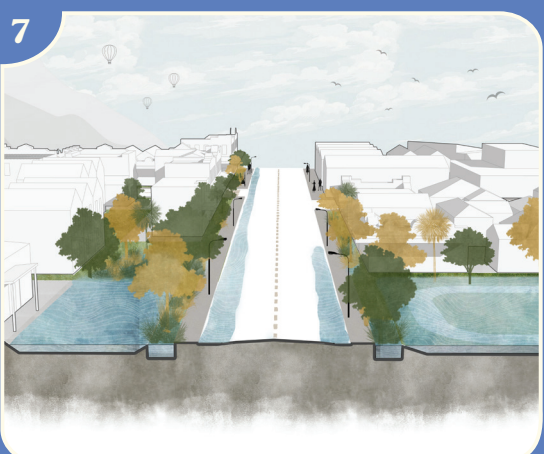
15



More Restrictive Standards

Vulnerability to hazards can be reduced by tightening development controls. This could be done through more regional and district plan rules or building standards, such specifying minimum floor heights, requiring buildings to be setback from the coast or waterways, or restricting how much land a building can cover.

7



Floodable Infrastructure

Spaces like parks, reserves, carparks or roads can be transformed into intentional temporary flood storage zones or overland flow paths, holding water during weather events and protecting other areas from flooding.

8



Increase Permeability

Making the ground more absorbent and 'sponge-like' through methods such as green roofs, reducing paved or concreted areas, introducing rain gardens, bioswales or planting more trees can help manage excess rainwater.

9



Coastal Protection

Coastlines can be protected from erosion and/or flooding through 'hard engineering' options such as sea walls, dykes, groynes and breakwaters and 'soft engineering' options such as salt marsh, coastal wetlands, sand placement and dune restoration.

12



Property Level Interventions

Individual properties can be modified to make them more resilient against flooding. Measures can include raising homes, waterproofing first floors, or flood barriers.

14



Managed Relocation

A decision could be made to proactively move homes or infrastructure before significant damage occurs from natural or climate hazards, through means such as voluntary buyouts or removing critical infrastructure from a vulnerable location.

16



No New Development

Changes to planning rules can prevent additional development of land in high-risk areas, reducing property exposure to hazards over time, and driving retreat in the longer term through preventing rebuilding or building in areas prone to flooding or coastal inundation.

PROTECT

PROTECT

PROTECT

ACCOMMODATE

RETREAT

AVOID

What happens next?

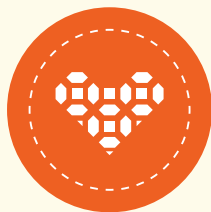
The South Dunedin Future programme has multiple stages. We are up to “What can we do?” and have a long-list of 16 approaches to talk to mana whenua, the community, and stakeholders about.

We will be gathering feedback and then our technical teams will do more work on costs, feasibility, implications and trade-offs.

The next step is to decide on the specific areas or neighbourhoods for adaptation within South Dunedin. In late 2024, we will come back to involve you in long-lists for these areas that will show how a number of approaches can be used over time.

Our aim is to have a final plan in place in 2026.





Get in touch

Head to our website to learn more.
Sign up for regular updates or drop us a line.
dunedin.govt.nz/southdunedin
southdunedinfuture@dcc.govt.nz
03 477 4000

South Dunedin Future is a joint programme between Dunedin City Council and Otago Regional Council to help the South Dunedin community adapt and prepare for a changing climate, and future flooding problems.

There will be a wide range of opportunities to get involved over the next two years. We encourage you to get involved, hear what others think and play an active role.



**SOUTH
DUNEDIN
FUTURE**

Appendix B – Full list of places of importance

Place of Importance	Expo	Street Festival	Moana Nui	In Person Total	Online Survey	Total
Anderson's Bay Cemetery	2	1	3	6		6
Anderson's Bay Shops					1	1
Andersons Bay Sea Scouts		1		1		1
Aroma Café		1		1		1
Bathgate Park	1	6	1	8	3	11
Bathgate Park School					3	3
Bayfield High School/Park	1	1		2	2	4
Bayfield Inlet	1			1		1
Catholic Social Services		1		1	2	3
Causeway/Portobello Road Access					2	2
Caversham Flats					1	1
Caversham Shops		1		1	1	2
Caversham Valley Church		1	1	2		2
Chisholm Links Golf Course	2	1	1	4	1	5
College Street Playground					1	1
Commercial/business area between King Edward Street and Portsmouth Drive	1			1		1
Culling Park	2	1		3	1	4
De Carle Park	1			1		1
Dinosaur Park	12	3		15	2	17
Dunedin Gasworks Museum	1	1		2	1	3
Dunedin Harbour		1		1	1	2
Dunedin Rugby Club	2			2	1	3
Dunedin School of Dance	1			1	1	2
Edgar Centre	3	7	3	13	4	17
Forbury Park	2	3		5	3	8
Forbury Park Hotel and Restaurant	1			1		1
Forbury Road					1	1
Forsyth Barr Stadium					2	2
Gasworks Growers and Craft Market					1	1
Green Island School					1	1
High Street Shopping					1	1

Hillside Railway Workshops		4		4	1	5
Hillside Road Shops					1	1
Ice Stadium	8	2	2	12		12
Industrial Supplies Area (Turakina Road and Otaki Street)					1	1
John Wilson Drive	2	3	1	6	4	10
Kettle Park	1	2		3	4	7
Kew Park	1			1		1
King Edward Street	2			2	3	5
King's High School	3		1	4	2	6
Korean School		1		1		1
Lawyers Head	1			1	3	4
Little Citizens Early Learning Centre					1	1
Macandrew Road Shops					1	1
Marlow Park	5	17	4	26	2	28
Marlow Park Mini Golf		1	1	2		2
Mayfair Theatre	6	6		12	1	13
Mercy Parish	1			1	4	5
Middles Beach	4			4	3	7
Midland Street (Anderson's Bay)					1	1
Mitre 10 Mega		1		1		1
Musselburgh Pumping Station	1			1		1
Navy Park			1	1		1
Neville Street					1	1
Ocean View					1	1
On Form Pilates					1	1
Otago Badminton	1			1		1
Pirates Squash Club	1			1		1
Place of Work					6	6
Police Station		1		1	1	2
Portsmouth Drive/Cycleway	2	1	1	4	2	6
Prince Albert Road					1	1
Queens High School	1	2	1	4	3	7
Reformed Church on Forbury Road		1		1		1
Residential Property	2			2	25	27
Richard Hudson Kindergarten	1			1		1
Rongo Memorial Stone	1	1		2		2
Sand Dunes		1		1	2	3
Sea Lion Habitat	1			1		1
Seconds Beach	2	1	1	4	1	5
Smaills Beach					1	1

South Coast Board Riders Club					1	1
South Dunedin Community Network					1	1
South Dunedin Countdown	1			1	5	6
South Dunedin Library/Community Centre	1	7		8	2	10
South Dunedin Pak N Save					4	4
South Dunedin Rest Homes	1			1		1
South Dunedin Shopping Strip	2	2		4	3	7
Southern Surry Street					1	1
St Clair Beach	19	35	3	57	16	73
St Clair Infants and Toddlers Centre					1	1
St Clair Kindergarten					1	1
St Clair Playground					3	3
St Clair Saltwater Pools	7	8		15	3	18
St Clair School	3			3	4	7
St Kilda Beach	3	10	6	19	11	30
St Kilda Fire Station		1		1		1
St Kilda Surf Life Saving Club	1			1		1
St Patrick's Basilica					1	1
Tahuna Normal Intermediate School	3			3	3	6
Tahuna Park	1	1		2	1	3
Tahuna Wastewater Pumping Station	1			1		1
Tainui	1			1		1
Tainui School	2			2		2
The Bowling Club	2	1		3	1	4
The Esplanade	13	13	1	27	13	40
The Glen		1		1		1
The Kensington	1			1		1
The Oval					1	1
The Warehouse South Dunedin					1	1
Tonga Park		1	1	2	3	5
Transpower Substation	1	1		2		2
Unity Park					1	1

Appendix C – Places that could be moved or not

It cannot be moved (eg. the beach/sand dunes)

Beach
Esplanade
Forbury Park
Forsyth Barr Stadium
Golf course
J.W. Drive
John Wilson Drive
Ocean View
Sand dunes
Seconds beach track/Saint Clair cafe's
St Clair
St Clair Beach
St Clair beach
St Clair Beach
St Clair beach area
St Clair, St Kilda, full length of beach and sand dunes
St Clair/st kilda beach (all the way down to lawyers head)
St Kilda Beach
St kilda Beach
St Kilda beach
St Kilda Beach
The beach
The Esplanade
The Esplanade/St Clair beach
Walking path along John Wilson Drive overlooking the beach

No - it would not mean the same at all (eg. land/placement is of significance/memorial site)

access to Portobello Road via causeway
Bathgate Park
Causeway /portobello road access
East Kettle Park
Forbury Road
Home
John Wilson Drive - St Kilda - Lawyers
Head walk
Kettle Park

Southern Surry Street
St Clair / esplanade area
St Clair Esplanade / playground / foot path areas.
St Clair hot salt water pool
Tonga Park
West Kettle Park

No - it would mean something different but it would be okay (eg. not being as close to home)

Bayfield School & park
Caversham flat area
Cycle Path
Edgar Centre
High street shopping.
Industrial supplies
Kings High School, Queens High School & grounds
Local supermarket
St Clair School
Tahuna School

Yes - but it would be less ideal than it is now

Auntie rosa's house
Bayfield high school
Dinosaur Park
Dinosaur park
Dunedin Rugby Club
Edgar centre
Gasworks Growers & Craft Market
Little Citizens
Marlow Park
On form pilates
Restaurant
St Clair pool
St Clair School
Supermarkets
Surfing Board Riders Club
Tahuna park
The Oval

Yes - it could be moved with little or no impact

Countdown south dunedin
Marlow Park
Portsmouth Drive
SDCN rooms
The park

Unsure

Esplanade
Forsyth Barr stadium
King Edward st
St Patrick's Basilica