

This section presents the Central City Framework in more detail and explains the analysis behind it



strategic directions

SECTION 5

Strategic Direction:

2

An Environmentally Sustainable and Resilient City

Strategies aimed at making the central city more environmentally friendly

Making the city more environmentally sustainable and resilient to change is not only based on the objective of good guardianship, but also has economic, social and cultural benefits. Some examples include:

- Future-proofing significant financial investments;
- Making the city and its natural surroundings more attractive to tourists;
- Promoting the health of Dunedin's population; and
- Celebrating the area's rich past, present and future natural habitats.

This Central City Framework is based on sustainable urban design principles, so the objective for a central city that is more environmentally friendly is not isolated to only this Strategic Direction, but interwoven with the other five directions as well.

Specific initiatives under this Strategic Direction include:

- A package of high level proposals aimed at improving the sustainability performance and resilience of the central city
- Improving regional biodiversity through central city initiatives



5.2.1 High level sustainability and resilience initiatives

Several existing and proposed initiatives currently being considered by the Council are aimed at improving the environmental sustainability of the city and its users.

CLIMATE CHANGE ADAPTATION

- A large issue is the storm water drainage in the city. Currently the area is vulnerable to flooding from a 1 in 2 year event. Climate change is going to make events like a 1 in 10 year and 1 in 100 year more frequent which would have a worse flooding effect than a 1 in 2 year event. This therefore seems to be an urgent issue to address. Analysis during the Inquiry-by-Design workshop showed how little green space and by extension how little permeable surfaces there presently are in the city to help with drainage. This Central City Framework includes the recommendation to increase the amount of permeable surfaces in the city through a number of initiatives. These initiatives could include encouraging green roofs, rain gardens and more planting.
- Section 5.2.2. (overleaf) introduces biodiversity considerations pertaining to terrestrial ecosystems. Since ecosystems are inter-connected, it is essential that aquatic systems are taken into account as well. This includes both freshwater (e.g. streams, creeks, lakes, reservoirs) and also marine biodiversity protection and enhancement as well as looking at developing wildlife corridors connecting the marine, freshwater and terrestrial areas.
- With the discussion of encouraging more 'Tech' Businesses in the Warehouse District and forming a Creative Quarter, the idea could be raised to specifically encourage Clean Tech and Low Carbon Tech businesses to come to Dunedin. Additionally, what about encouraging more businesses that are local and supply to the local community? In addition to a focus on the global economy, from a Peak Oil and climate change resilience point of view it would seem that the focus should be on strengthening the local and regional economies and networks. For example, rural businesses could build micro distilleries for processing waste biomass material into bio fuels. For bio fuels to work, it needs to come from a local and regional approach with lots of players rather than global approach. This suggestion extends beyond the scope of the central city but it is an example that is focussed on the future with the understanding that the economy will not function in the same way due to the resource constraints and limitations that will increase dramatically.

Scenario-Planning

It should be considered that scenario planning should be undertaken beyond the Central City Plan's planning horizon of 40 years. There are a lot of predicted changes for the 100 year timeframe and by working only to 40 years, there is a danger that certain planning outcomes could lock future generations in.

An example of this are the predicted climate change and sea level rise projections that were in the 2010 Climate Change report (commissioned by DCC).

Decade about	2040	2090
Temperature (°C)	+ 0.7 to 1.1	+0.8 to +2.5
Rainfall (%)	-5 to +5	-5 to +15
Sea Level (m)	+ 0.1 to + 0.3	+0.2 to +1.6*

Some climate experts are recommending local councils investigate the scenario of a 2m sea level rise by 2090 in their plans. This needs to be considered as part of the Central City Plan or a possible next generation of this plan, due to the fact that some of the areas both in and around the CCP area (e.g. the Dunedin harbourside area, Portsmouth Drive, Electricity Substation) are low lying. This could have consequences for the central city.

Temperature rise will have some effects on the central city. Considering there is so much concrete there is likely to be a heat island effect in the summer months. Increasing green spaces in the city could help alleviate that issue. Heavy rainfall events have been investigated and addressed in the Three Waters Strategy.

DCC is currently in the first stages of a work programme to investigate the effects and the response options of Climate Change on Dunedin, starting with a pilot project focussing on South Dunedin. The information gained from this work will help develop a framework and methodology to investigate other areas of Dunedin, including the central city.

Refer to **Appendix 4** for an overview of detailed ideas pertaining to Climate Change Mitigation and Peak Oil currently being developed and considered as well as their progress status.

SUSTAINABILITY INITIATIVES FOR THE IMMEDIATE TERM

With this Central City Framework being based on sustainable urban design principles, a wide range of initiatives with sustainability objectives proposed for the shorter term are included in this report.

Examples include, but are not limited to:

- Encouraging inner city living (Section 5.1)
- Stimulating local economy in central city mixed-use environments (Section 5.3)
- Encouraging walking, cycling and bus use (Section 5.4)
- Strengthening the central city's retail position (5.5)
- Protection and enhancement of heritage buildings (Section 5.6)

5.2.2 Biodiversity

Dunedin's regional biodiversity is mapped in Figure 5-12. The city is positioned between a large area of indigenous vegetation to the north and smaller patches to the southwest and east (Otago Peninsula). Ecological and biodiversity connections in this wider ecological network could be established and improved. The city prevents ideal ecological connections between the areas of significant biodiversity value on these three sides of the city from occurring. For an urban area to have good ecological and biodiversity connections these areas of green space need to be of a reasonable size (about 2ha), be located within 1km (two circles with a 500m radius) of each other and be planted with many types of vegetation. These features will help create quality habitats between which birds and other species can travel.

OPPORTUNITIES

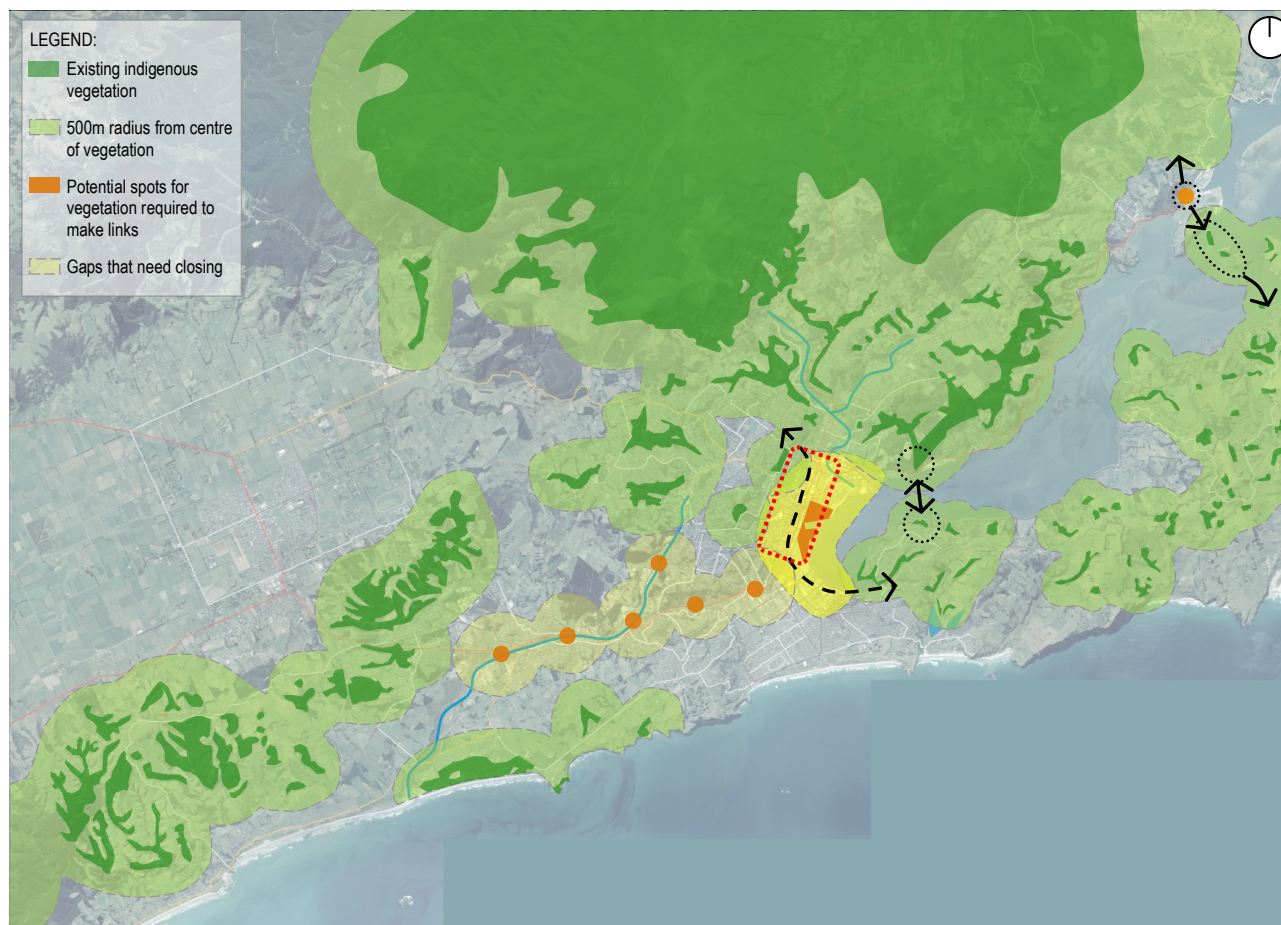
The lack of biodiversity connections can be countered by concentrating planting within school grounds, in parks and reserves, riparian planting along streams, rivers and along transport corridors (e.g. the Taieri River and Southern Motorway as shown). The harbourside area is ideally located to establish connections and it should be investigated whether scope exists to include larger areas of planting within possible future redevelopment.

An opportunity exists to enhance the connectivity across the harbour (between the hills north of the central city and The Cove) in the location shown. A connection will benefit the biodiversity on the peninsula, also enriching its potential as a visitor attraction.

LOCAL AMENITY

Within the scope of this project, two types of improvements could be pursued to contribute to increased biodiversity and to give the central city a greener appearance:

1. Add more public open spaces with a green and soft character as places of amenity in strategic locations.
2. Establish more green connections between existing green public open spaces within the central city, in combination with additional street trees, including native species.



ABOVE FIG. 5-12: Biodiversity in and around Dunedin, existing and proposed. The central city area is indicated with a red box.