Council Workshop: ZC H/M investment packages

16 May 2025

Content

1. Development of Zero Carbon investment packages (10 mins)
2. Content of the Zero Carbon investment packages
    - Summary of high priority actions (5 mins)
    - Councillor Q&A (majority of session)
        - Communities and Economies options
        - Carbon removals investment options
        - Buildings and Energy investment options
        - Transport investment options
    - Summary of investment packages (5 mins)
3. Next steps (5 mins)

Climate change has two faces

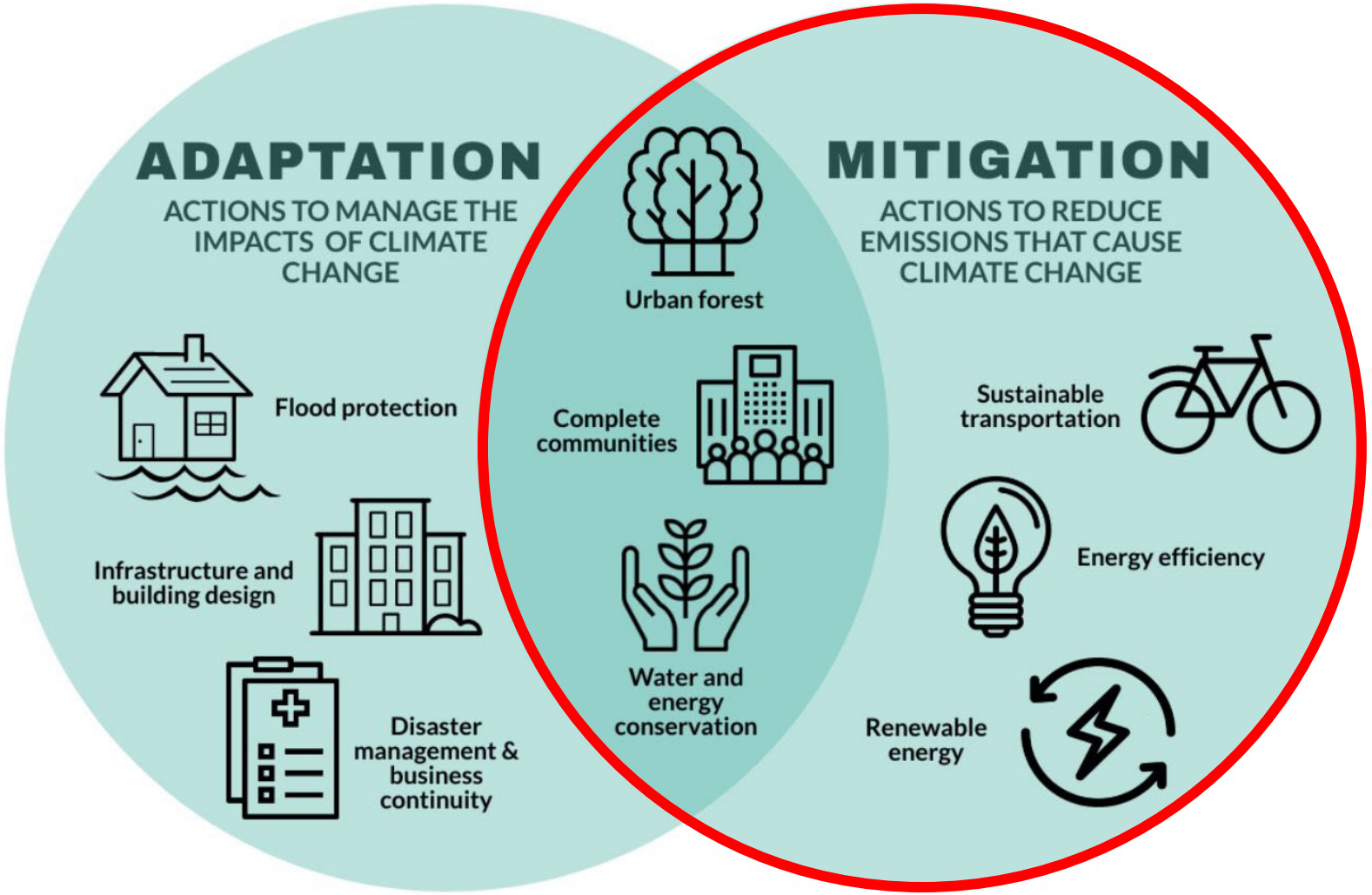


Image source: ICLEI Canada,2019

Dunedin vs DCC emissions

- The DCC's Zero Carbon Policy directs that the organisation measure and aim to reduce emissions at two scales:
    - City-wide (**Dunedin** emissions)
    - Organisational (**DCC** emissions)
- As most of the DCC's activities occur within the Dunedin boundary, there is overlap between DCC and city-wide emissions.
    - Key emissions sources and quantity of emissions differ significantly between the two scales.
- Decisions on the 9 year plan have implications for emissions at both scales, but **investment packages are primary focused on the city scale**

Part 1: Development of investment packages

Origin of investment packages

- In September 2023, Council adopted the Zero Carbon Plan
- The Plan identified that many actions required to achieve targets would reduce costs in the medium term, but there would be upfront costs (especially related to infrastructure)
- Indicative 'high'/'medium' and 'low' investment options were presented alongside the Plan
- Council requested further development of 'high' and 'medium' investment options for consideration as part of Long Term Plan development.
- Decision to develop 9 year plan delayed consideration of investment packages until 2025

Development process

1. Context update

Changes in national and local context since Zero Carbon Plan was adopted

2. Identification of investment options

Team and partner discussions to identify, scope and cost possible investment options

3. Prioritising investment options

Prioritising options **not** included in pre-draft 9 year plan budget

Changes in context

The Zero Carbon Plan set out interrelated changes and actions across five chapters:

Resource Use and Waste

Transport and Urban Form

Buildings, Energy & Industry

Forestry, Land Use & Agriculture

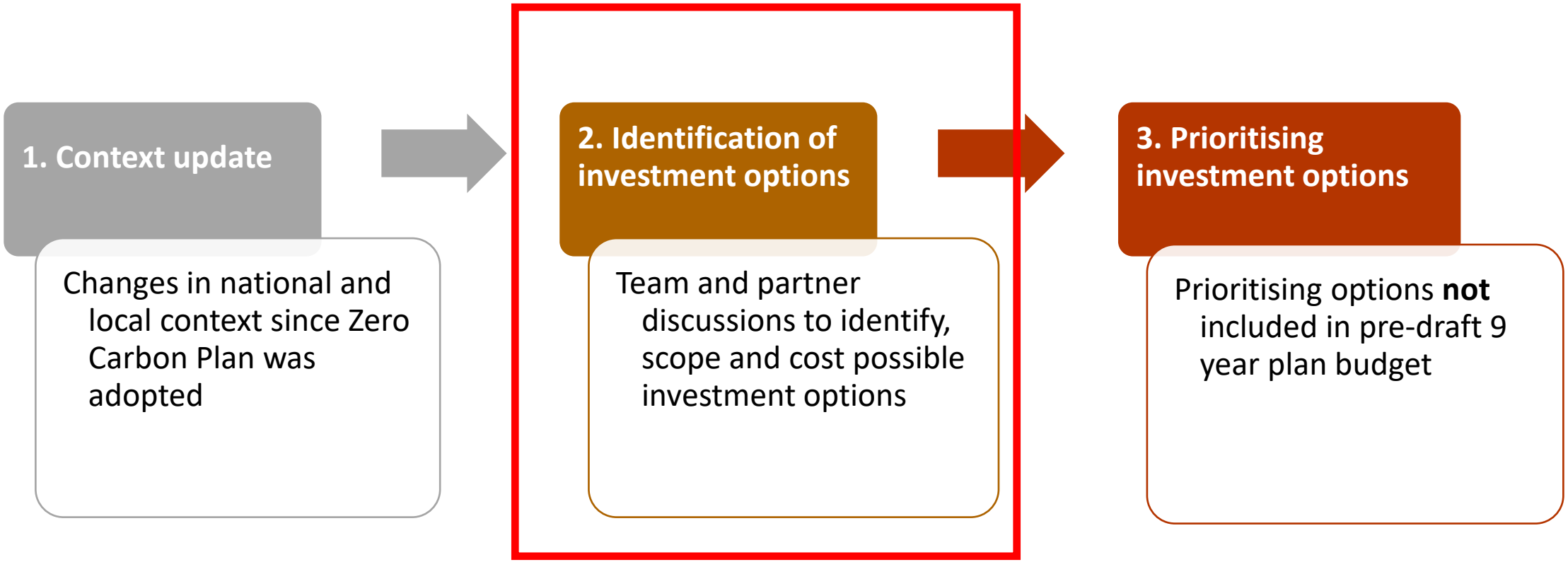
Communities and Economies

- **Since 2023 there have been changes in context across all five chapters**
  - Significant changes in central government policy
    - E.g. reduced funding/govt support for public and active transport, EVs, industry decarbonisation, waste minimisation/circular economy
    - E.g. slower track for National Grid decarbonisation, agriculture's entry into the ETS
  - Change in general economic climate
  - Momentum in local emissions reduction partnership, supporting local business transition
  - Improved understanding of some emissions sources/viability of some potential actions
- **Despite headwinds, Dunedin remains comparatively well-placed to reduce emissions.**

Priority Zero Carbon Plan action areas for DCC

Priority action areas remain the same.
These have been emphasised in the investment packages.

Development process



ZCP Advisory Panel Guidance

Zero Carbon Plan Advisory Panel's guidance to staff in November 2024:

- '**High'** = all actions at the **highest level deemed feasible and deliverable over the period to 2030**
- '**Medium'** = a **subset of high priority options**
- Assess achievability of targets under each package
- Include walking and cycling projects that would require 100% local share funding
- Include ORC-led projects that may improve public transport outcomes
- Append actions not included due to low feasibility/deliverability

Generating the short list

Key sources for short list:

- Original Zero Carbon Plan indicative action list
  - Integrated projects anticipated as part of 10 year plan 2021-31
- Pre-draft 9 year plan
  - Considered excluded projects
  - Considered faster delivery of projects in out-years
- Research, business cases and work undertaken since
- Discussions with teams and partners based on context update

- Investment options needed to be **feasibly deliverable by 2030/31** and meet the definition of "**core** or **contributing** to ZC Plan delivery"
  - At minimum, a material contribution to city emissions reduction, and/or
  - Contribute to the DCC's own decarbonisation

Development process

1. Context update

Changes in national and local context since Zero Carbon Plan was adopted

2. Identification of investment options

Team and partner discussions to identify, scope and cost possible investment options

3. Prioritising investment options

Prioritising options **not** included in pre-draft 9 year plan budget

ZCP Advisory Panel guidance

ZCP AP guidance relevant to prioritisation:

- Primary criterion = '**emissions reduction bang for buck**'
- Other contributing considerations in order of importance:
  - Building on other existing DCC investments
  - Building on other available resources or momentum
  - DCC's strategic framework
  - Set up to scale up
- Co-benefits should also be assessed for each action, as supporting information

Prioritising the short list

- All assessments considered:
  - Available emissions-related **data or projections** (if available)
  - **Evidence base from Zero Carbon Plan** (e.g. insights from other cities, literature, community engagement)
  - **Evidence base from other relevant DCC activity** (e.g. research, business cases)
  - **Projected cost**
- Comparing different 'types' of investment options is challenging:
  - Emissions avoided ($tCO2_e$) can only be accurately projected for some projects
  - Early-stage investigative projects vs physical works
  - Many transport infrastructure projects are subject to the 'network effect' (co-dependencies with other projects; non-linear reduction curves)

Co-benefits

Independently assessed by the University of Otago

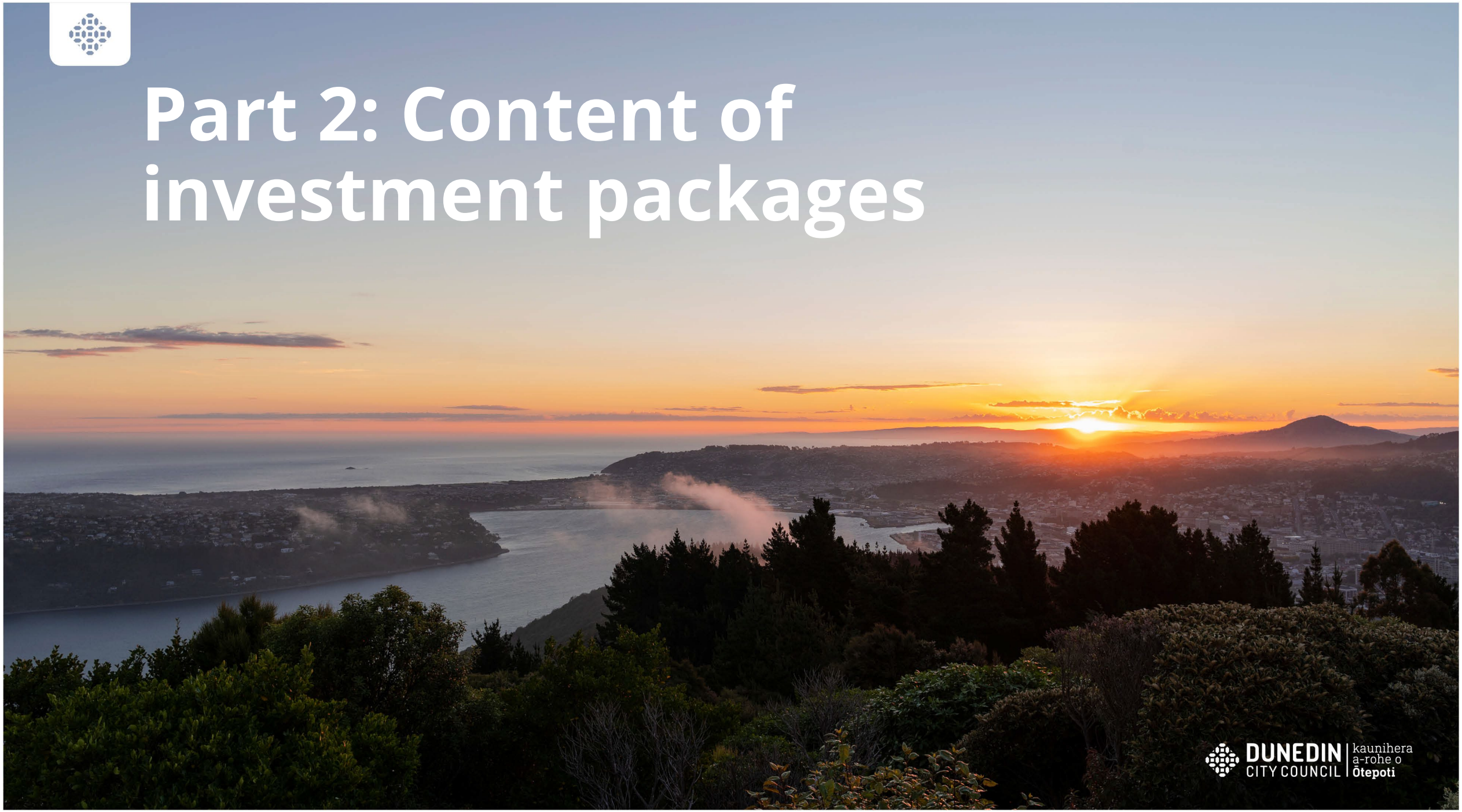
- Each investment option was assessed separately
- Based on the framework used to assess co-benefits of action areas in the Zero Carbon Plan
  - Updated to integrate Te Taki Haruru and Sustainable Development Goals

Exclusions

Several projects that were included in the original indicative action list were not included due to:

- Relatively low emissions reduction benefit for the investment required
- High uncertainty about costs, scope or phasing
- Provision in draft 9 year plan budgets (e.g. Zero Carbon business support programme, Parking Strategy)

Part 2: Content of investment packages



Packages were designed for flexibility

- Designed to enable Council to separately consider subsets of the packages
  - Each potential action was separately scoped and costed
    - Including potential investment range for scalable actions
- Packages are a snapshot of what is considered possible at a given time
- Zero Carbon has checked in with teams to ensure that investment options are still current, and there have been some minor updates:
  - NT1 Agricultural innovation costs and project description amended to reflect refined scope following completion of early work
  - NT5 Household energy efficiency amended to reflect start-up costs
  - NT4 Funding native trees scope reduced to reflect refined volunteer capacity estimate
  - T18 Tunnels Trail costs clarified, including Flower St extension and additional phasing option

Top 10 Transport investment options

T1: Ōtepoti Pathways pedestrian improvements
Improving walking infrastructure particularly at key destinations, e.g. schools/centres

T2: Ōtepoti Pathways cycling improvements
Improving cycle infrastructure, particularly filling gaps and along key routes, e.g. to schools/centres

T3: Bus priority improvements
At signalised intersections and bus stops to improve bus priority and reduce journey times

T4: Bus network & infrastructure improvements
Optimising routes and bus stop spacing and provision

T5: Car share
Enabling a provider to establish a car share service in the city (projected revenue reduction from 10 parks)

T6: Workplace travel planning expansion programme
Supporting more workplaces to promote sustainable travel to work

T7: Ōtepoti Pathways George/Bank
Improved bus stops with bus priority, cycle lanes, pedestrian crossings and intersection improvements

T8: South Dunedin Safer School Streets
Safety and access improvements to school for walking, cycling and public transport connections

T9: Cycle skills training – existing schools
Training for all (High) or about half (Med) of the schools supported by the programme in 2024/25

T10: Ōtepoti Pathways Vogel St improvements
Vogel St will become a shared, low-speed street to fill a priority gap in the network

Transport investment options 11-21

T12: Ōtepoti Pathways – Caversham to Central City Tunnels Trail link
Connecting the Dunedin Tunnels Trail end (near Sidey Park) to the central city (Vogel St)

T13: Ōtepoti Pathways – Town Belt improvements
Providing safe walking and cycling connections largely following Queens Dr.

T14: Ōtepoti Pathways – Hill Suburbs link
Providing a safe cycle route between the central city and at least one of Māori Hill, Roslyn, Wakari, Belleknowes, Mornington

T15: Central City bike parking facilities
Installing three covered bike parking facilities in the central city

T17: City to Waterfront bridge
Building a bridge connecting Steamer Basin with Queens Gardens for people walking and cycling

T18: Dunedin Tunnels Trail
Building a 15km cycle and walking path between Dunedin and Mosgiel through the Chain Hills and Caversham tunnels

T19: Shore St/Portsmouth Dr/Portobello Rd intersection
Improving the crossing point at this intersection for people walking and cycling

T20: Cycle skills training – waitlisted schools
Training for an additional 10 schools/220 students that are on the wait list

T21: Centres Upgrade programme – transport improvements
Transport improvements in priority suburban centres to complement amenity upgrades

T11 and T16: Additional Transport team OPEX to enable projects (dependent on the number of additional projects included)

Top 6 non-transport investment options

NT1: Agricultural innovation project
Seed funds a collaborative agricultural sector innovation and emissions reduction initiative

NT2: Zero Carbon community transition support project
Supporting communities to adopt low-carbon behaviours at key life transitions

NT3: Investing in priority community-led emissions reduction initiatives
Through introduction of Zero Carbon grants

NT4: Funding native trees to expand volunteer-based tree planting on DCC land
And increase sequestration (current funding oversubscribed)

NT5: Energy efficiency improvements for existing homes
Improve energy efficiency of households at risk of energy poverty

T6: Green and Blue Networks Plan with DCC sequestration opportunities
Identify priority sites and methods to optimise biodiversity and sequestration

Communities & Economies investment options

Investment options

NT1: Agricultural innovation project Seed funds a collaborative agricultural sector innovation and emissions reduction initiative

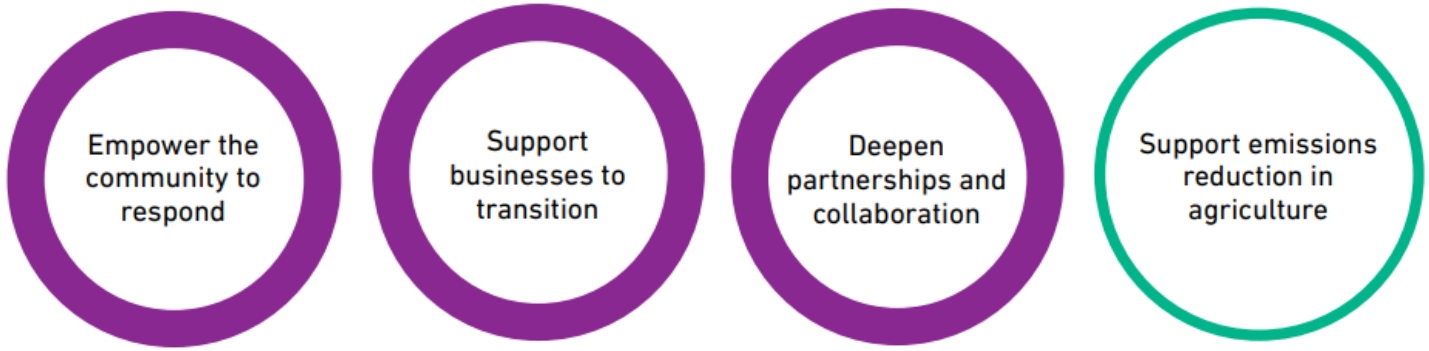
NT2: Zero Carbon community transition support project
Supporting communities to adopt low-carbon behaviours at key life transitions

NT3: Investing in priority community-led emissions reduction initiatives
Through introduction of Zero Carbon grants

Priorities because…

- NT1: Ag sector large emitter; sector-led mahi underway; strong ZCA links; systems change
- NT2: Strong evidence base from literature & from community engagement; leverages others' mahi
- NT3: Strong theme in community engagement; leverages/value add for existing mahi/investments

Primary DCC action areas



Primary outcomes sought: *"Achieving wide-scale decarbonisation across the economy requires a systems approach…this requires coordination, collaboration, and partnerships. [We must] put the needs of the people at the heart of the city's climate response."*

Carbon removals investment options

Carbon removals ("sequestration") - Soaking up and storing long-term carbon that has already been emitted, usually using trees

- Growth of **in-city carbon removals** is required to achieve the 'net zero' element of the city target
- **Best practice** is to **reduce gross emissions** as far as possible before prioritising carbon removals, because tree planting only 'buys time'
- Collaborative work with **ZCA partners** on carbon removals has just started
- **Council direction is required** on policy points as different carbon removal approaches will have different outcomes for inventories/targets, as well as other DCC strategies
    - A report will be presented to Council in June
- Carbon removals investment options presented are therefore **'no regrets' options** to plan for/grow local carbon removals while contributing to other DCC strategic outcomes
    - Scale is very minor in for both DCC and city emissions

Carbon removals investment options

Investment options	Identified because…	Primary DCC action area	Primary outcome sought
NT4: Funding native trees to expand volunteer-based planting on DCC land and increase sequestration	• Low-cost approach to increase carbon removals on DCC land • Responds to community demand and aligns with other strategic goals	Support growth of sequestration that aligns with mana whenua and community values	
NT6: Blue and Green Networks Plan with DCC sequestration opportunities identify priority sites and method to optimize biodiversity and sequestration	• Helps ensure any future scaled-up planting is “right tree, right place” • Progresses an action identified in the FDS, and will support outcomes for several other DCC strategies		

Buildings & Energy investment options

Investment options

NT5: Energy efficiency improvements for existing homes

Improve energy efficiency of households at risk of energy poverty

NT7 to 9: Energy efficiency & LPG displacement at various DCC facilities

Identified because…

- Just transition focus in the current economic climate
- Research-backed
- Leverages existing mahi and complements partner activity
- "Getting our own house in order"

Primary outcomes sought

Improved energy efficiency

Reducing LPG use

Primary DCC action areas

Replace fossil fuels and improve energy efficiency of DCC facilities

Support energy efficiency and the transition away from fossil fuels in homes

Transport investment options

- Unlocking changes in transport is core to achieving **any** emissions reduction target
- Additional sources for investment options:
  - Ōtepoti Pathways business case (priority gaps in network)
  - Insights from ZCA work programme & conversations with ORC Transport staff
- Prioritising transport investment options:
  - Location on network/size of population served
  - Making the most of existing investment (improve existing service, plug critical gaps in existing network)
  - Planning status (designs ready vs early-stage investigations) and likely completion date
  - Other considerations from evidence base (e.g. services schools)
  - Links with other projects (9 year plan, WK NZTA)
  - Cost (all assume 100% local share)

Top 10 Transport investment options

T1: Ōtepoti Pathways pedestrian improvements
Improving walking infrastructure particularly at key destinations, e.g. schools/centres

T2: Ōtepoti Pathways cycling improvements
Improving cycle infrastructure, particularly filling gaps and along key routes, e.g. to schools/centres

T3: Bus priority improvements
At signalised intersections and bus stops to improve bus priority and reduce journey times

T4: Bus network & infrastructure improvements
Optimising routes and bus stop spacing and provision

T5: Car share
Enabling a provider to establish a car share service in the city (projected revenue reduction from 10 parks)

T6: Workplace travel planning expansion programme
Supporting more workplaces to promote sustainable travel to work

T7: Ōtepoti Pathways George/Bank
Improved bus stops with bus priority, cycle lanes, pedestrian crossings and intersection improvements

T8: South Dunedin Safer School Streets
Safety and access improvements to school for walking, cycling and public transport connections

T9: Cycle skills training – existing schools
Training for all (High) or about half (Med) of the schools supported by the programme in 2024/25

T10: Ōtepoti Pathways Vogel St improvements
Vogel St will become a shared, low-speed street to fill a priority gap in the network

‘Low cost low risk’ investment options

Investment options

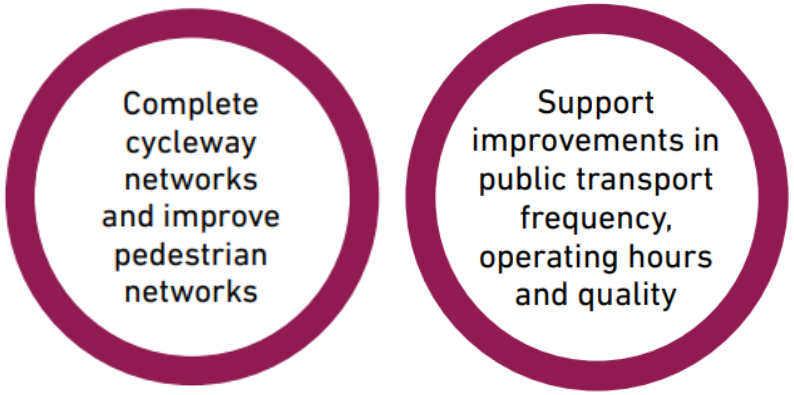
T1: ŌP pedestrian improvements
Improving walking infrastructure particularly at key destinations

T2: ŌP cycling improvements
Improving cycling infrastructure particularly filling gaps and at key destinations

T3: Bus priority improvements
At signalized intersections and bus stops to improve bus priority and reduce journey times

T4: Bus network & infrastructure improvements
Optimising routes and bus stop spacing and provision

Primary DCC action areas



Primary outcomes sought

Priorities because…

- Flexible funds enable high-priority gaps to be filled quickly and simply
- Potential to be topped up without an extensive business case process if the government policy changes
- Low-cost, deliverable approaches to help improve existing bus service (the most viable alternative to motor vehicles for most people)

Ōtepoti Pathways investment options

T1: ŌP pedestrian improvements
Improving walking infrastructure particularly at key destinations

T10: ŌP Vogel St improvements
Vogel St will become a shared, low speed street to fill a priority gap in the network

T14: ŌP Hill Suburbs link
Providing a safe cycle route between the central city & at least one of the hill suburbs

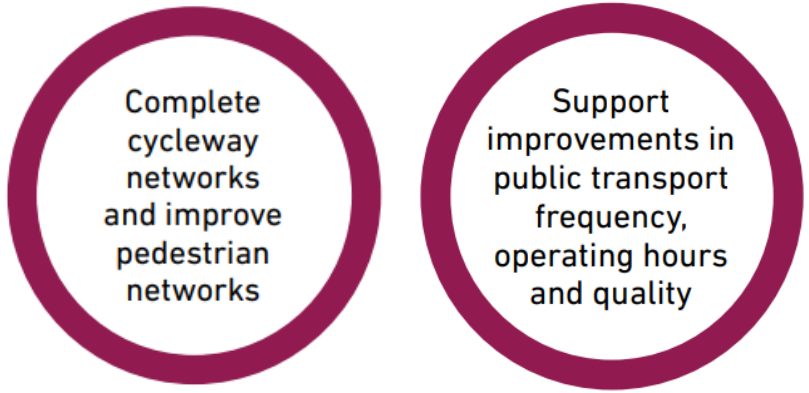
T2: ŌP cycling improvements
Improving cycling infrastructure particularly filling gaps and at key destinations

T12: ŌP Caversham to Central City Tunnels Trail link
Connection the Tunnels Trail end (near Sidey Park) to the central city (Vogel St)

T7: ŌP George/Bank improvements
Improved bus stops with bus priority, cycle lanes, pedestrian crossing and intersection improvements

T13: ŌP Town Belt improvements
Providing safe walking and cycling connections largely following Queens Dr

Primary DCC action areas



Primary outcomes sought

Priorities because...

- All are gaps in inner city cycle and/or walking networks (serve most people)
- T7 also improves the primary northern bus spine

Overview: High investment

Over 6 years

Capex: $101.17M

Opex: $8.749M

+ Ongoing interest & depreciation

All ‘core’ & ’contributing’ actions feasibly deliverable by 2030/31, including:

- Progressing a collaborative agricultural innovation project
- Supporting and investing in communities to transition and reduce their emissions
- Supporting active and public transport modes through infrastructure improvements, linking key gaps in the cycleway network, supporting workplaces to implement workplace travel interventions, and central city bike parking facilities
- Implementing car share
- Supporting schools and students with cycling infrastructure and skills, including supporting schools that are currently waitlisted
- Growing the number of native trees the DCC provides to meet current volunteer demand, and undertaking work to identify high-priority areas for increasing biodiversity and sequestration
- Decarbonising and improving the energy efficiency of additional DCC buildings

Overview: Medium investment

Over 6 years

Capex: $35.54M

Opex: $4.984M

+ Ongoing interest & depreciation

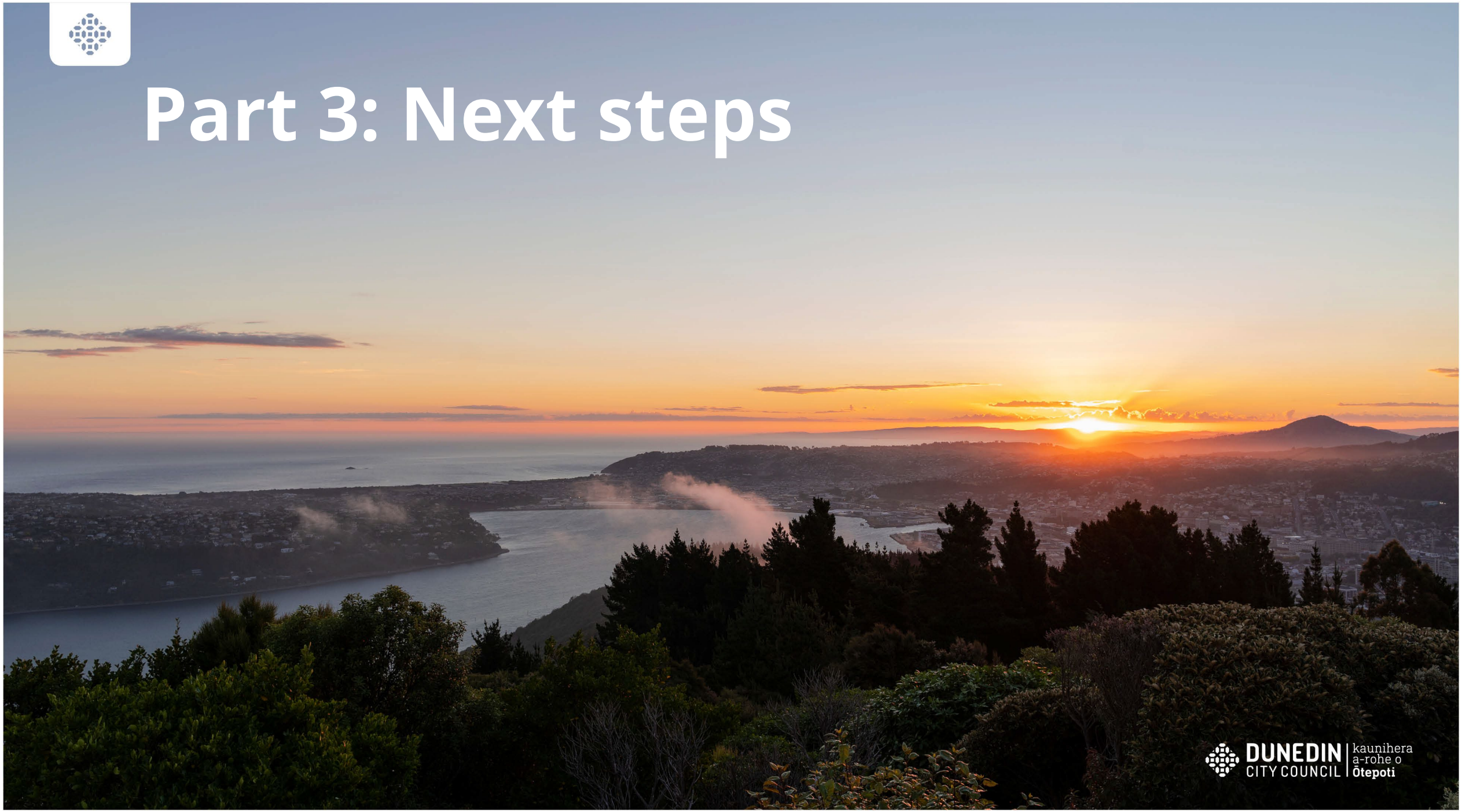
Many of the initiatives in the High package, but some to a lesser degree

- Community-led emissions reduction initiatives
- Tree planting on DCC land
- Cycle skills training for schools and safer school streets in South Dunedin
- Transport improvements for the Town Belt and between the hill suburbs and central city

It also excludes several lower-priority initiatives

- Decarbonising DCC buildings
- City to Waterfront bridge and the Dunedin Tunnels Trail
- Improvements to the Shore Street/Portsmouth Drive intersection
- Centres upgrades – transport investment

Part 3: Next steps



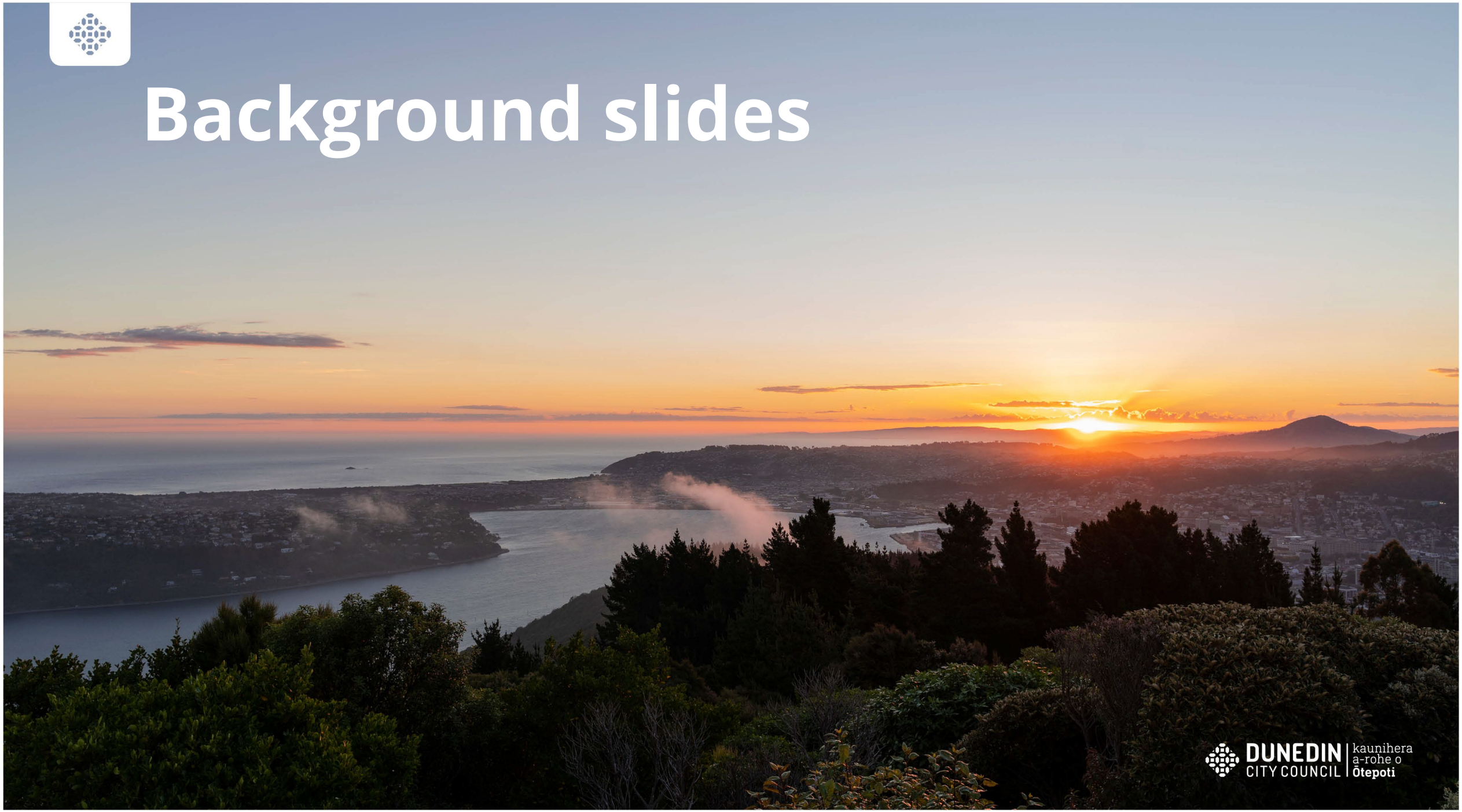
Next steps

26 May Council report will present:

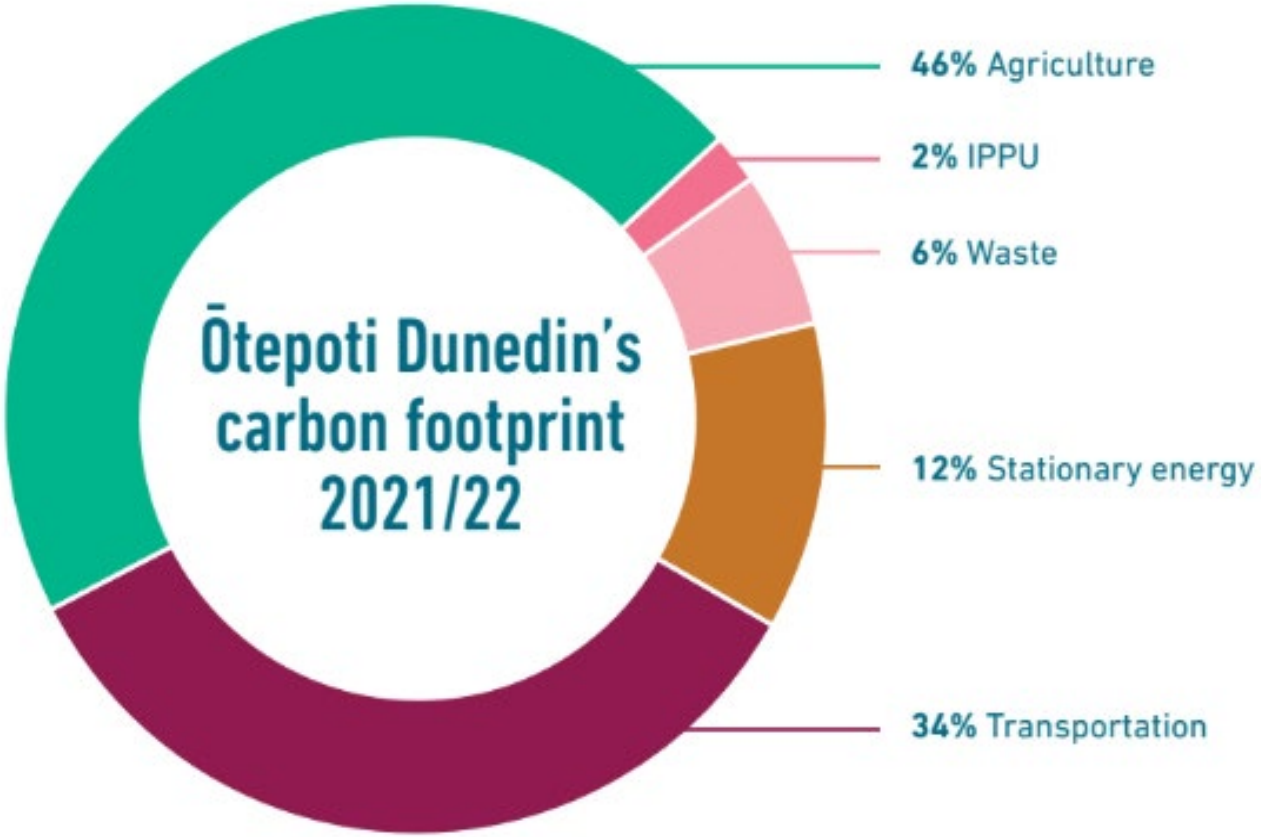
- Peer-reviewed modelling (city and DCC)
- Advice on alignment with OAG guidance
- Summary of Zero Carbon-related submissions
- Minor updates to Zero Carbon investment packages

- An updated city-wide emissions inventory up to the end of 2024/25 will be calculated in the second half of 2025
  - This will provide detailed information on how Dunedin is tracking
- Staff will make further updates to modelling and provide advice on target options following completion of the 2024/25 Dunedin emissions inventory

Background slides

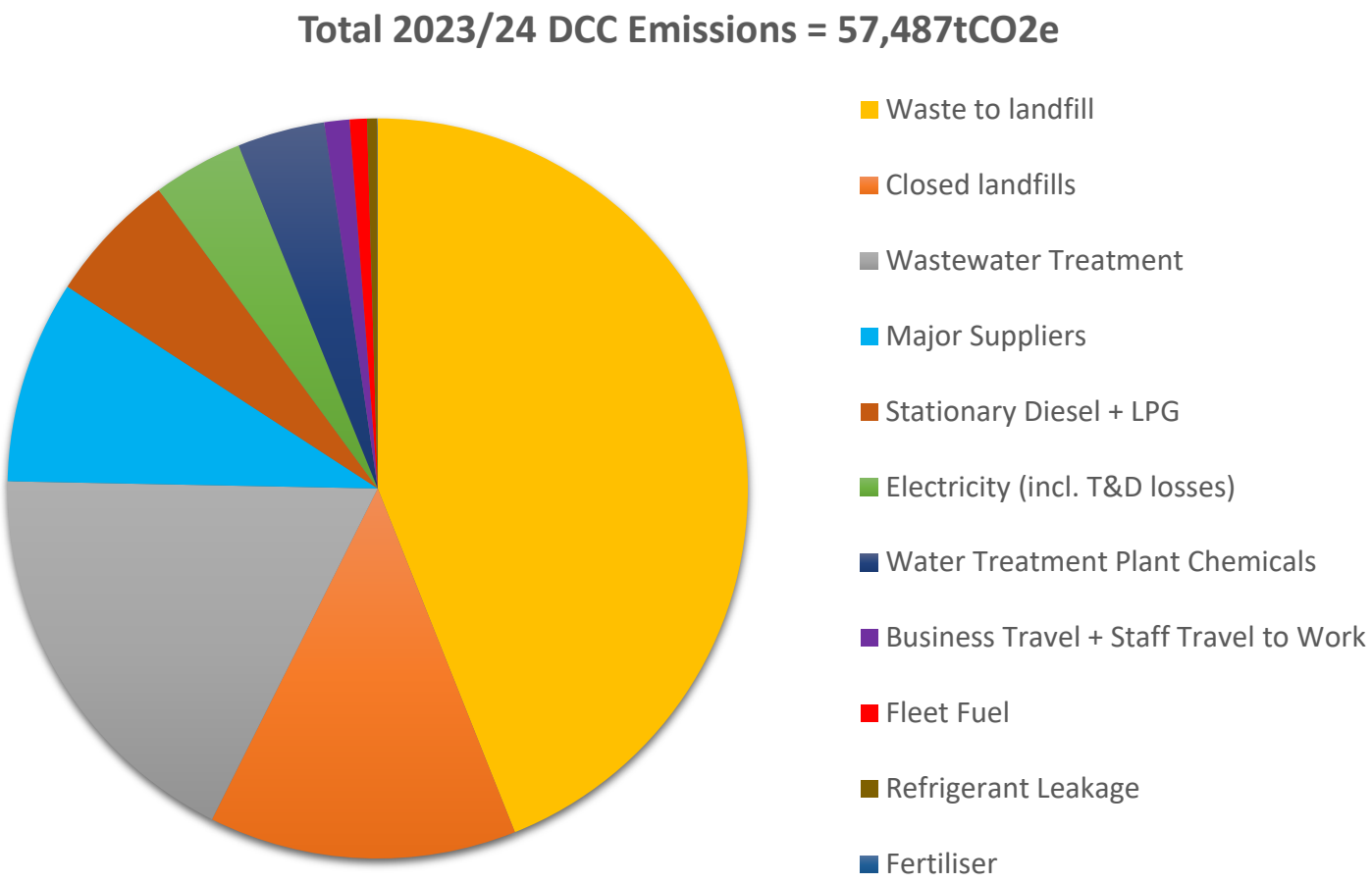


Dunedin's emissions in 2021/22

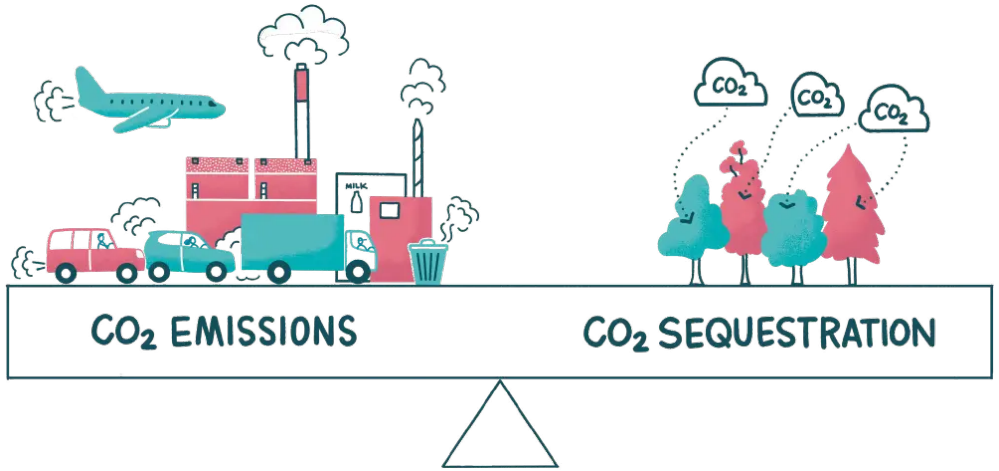


	Gross:	1,542,500 tCO2e
–	Sequestered:	(493,170 tCO2e)
	Net:	**1,049,330 tCO2e**

DCC's emissions in 2023/24



Dunedin targets



1 Net zero carbon by 2030 (excluding biogenic methane):

Net zero carbon means that any **greenhouse gases** (excluding biogenic methane) emitted into the atmosphere in Dunedin are **in balance** with the amount of carbon absorbed out of the atmosphere by trees, also known as **sequestration**.

2 Reducing biogenic methane emissions

The city's **biogenic methane** reduction targets are the same as the central government targets:

- **10% reduction** from 2017 levels by 2030.
- **24-47% reduction** from 2017 levels by 2050.

DCC target

- **Reduce** DCC emissions **by 42%** compared with baseline (2018/19)
  - Set with reference to Council's guiding principles for the work programme and best practice (GHG protocol; Science-based targets; LGFA)

Zero Carbon Plan (2023) modelling

Reductions to achieve the ‘net zero carbon’ part of the target

Agriculture N_2O

2030: ↓11%

(↓3% between 18/19 and 21/22)

IPPU

2030: ↓15%

(↓1% between 18/19 and 21/22)

Transport

2030: ↓42%

(↓16% between 18/19 and 21/22)

Stationary energy

2030: ↓61%

(↓12% between 18/19 and 21/22)

Sequestration

2030: ↑64%

(↑36% between 18/19 and 21/22)

Zero Carbon Plan (2023) modelling

Reductions to achieve the biogenic methane target

Agriculture CH_4

2030: ↓11%

(↓3% between 18/19 and 21/22)

Waste

2030: ↓37%

(↓13% between 18/19 and 21/22)

Dunedin's advantages

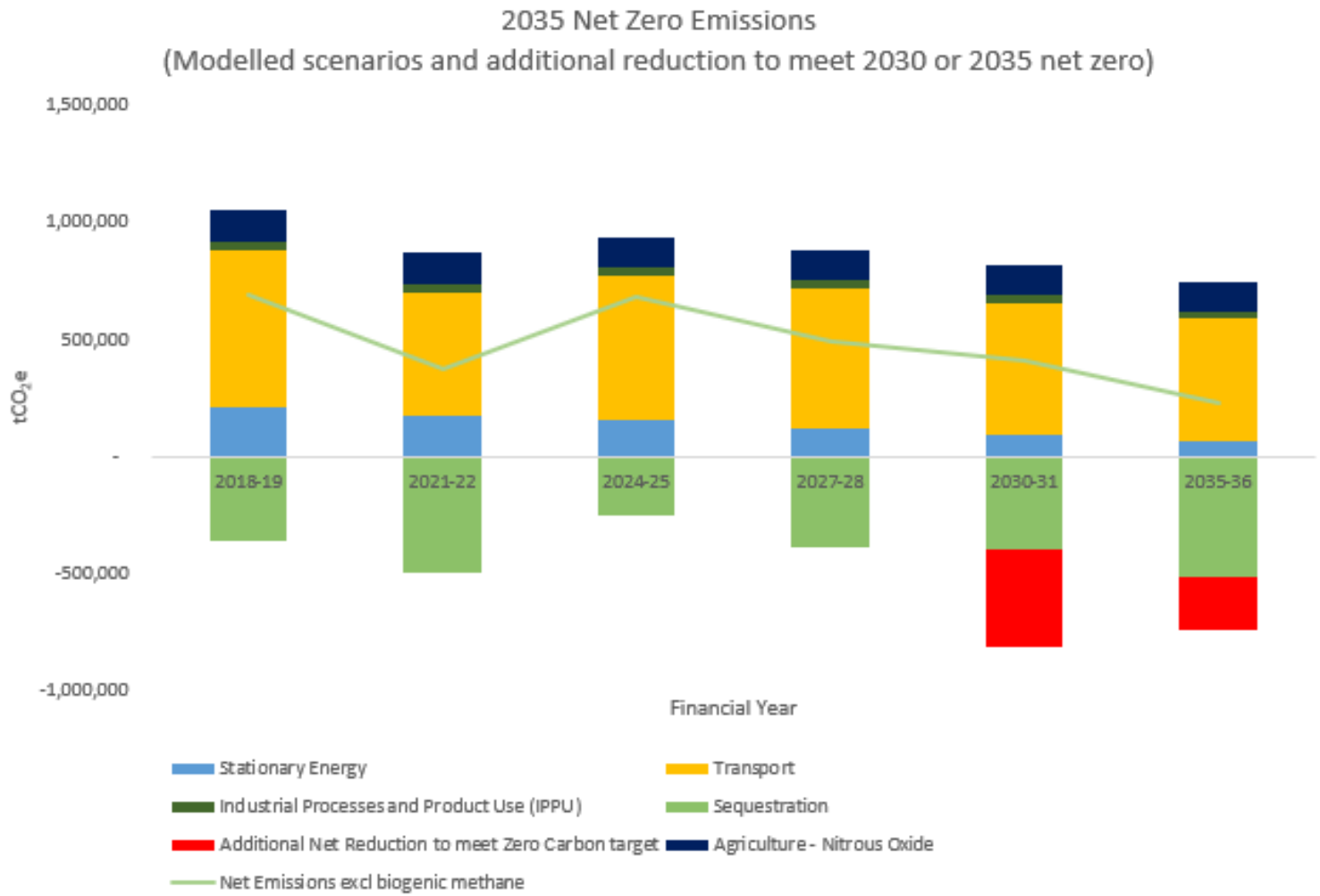
Despite headwinds, Dunedin is still comparatively well placed to tackle the challenge:

- Strong partnerships in place with major institutions/employers
- Relatively low VKT per capita
- About double national average for walking to work or education
- Urban densification in inner city underway
- Large land area/significant forest cover
- Phasing down coal and gas well underway
- Reducing waste emissions underway
- Strong uptake in rooftop solar
- The costs of EVs, solar panels, hot water heat pumps, and other technologies continues to decline

Modelling update: ‘net zero’ part of target

- Emissions have been modelled through to 2035.
- Two emissions scenarios for the ‘net zero carbon’ target have been modelled:
  - A **BAU** scenario, which broadly follows national level trajectories included in the Emissions Reduction Plan 2 (2026-2030) modelling
  - An **accelerated ambition** scenario. Achievement of this scenario would require some changes in Central Government policy setting (though not radical 180-degree shifts) and additional local investment

Peer reviewed results – BAU scenario



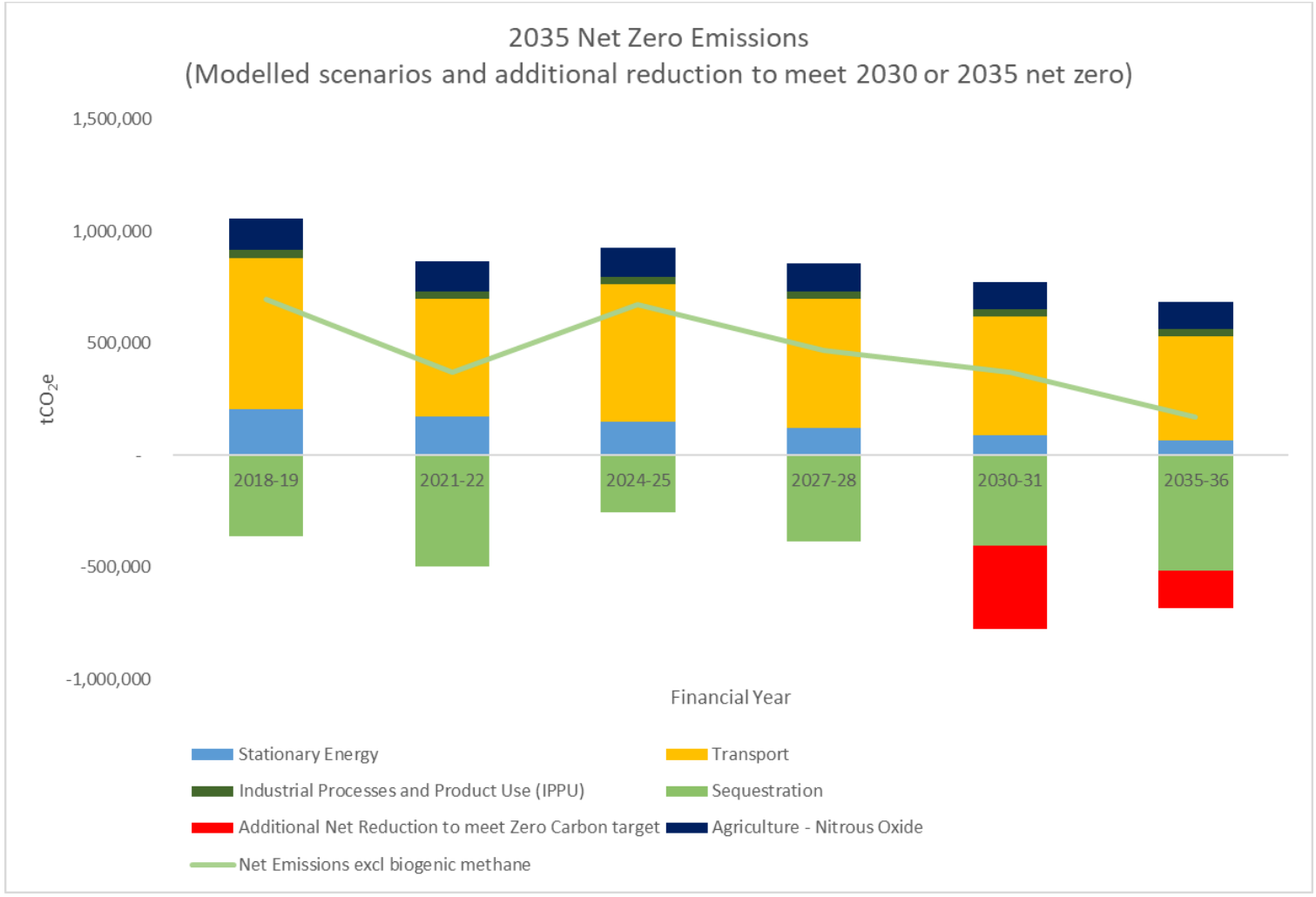
Net emissions

2030/31: **410,000tCO2e**

2035/36: **229,000tCO2e**

Additional reduction required to meet net zero is shown in red.

Peer reviewed results – accelerated ambition scenario



Net emissions

2030/31: **372,000tCO2e**

2035/36: **170,000tCO2e**

Additional reduction required to meet net zero is shown in red.

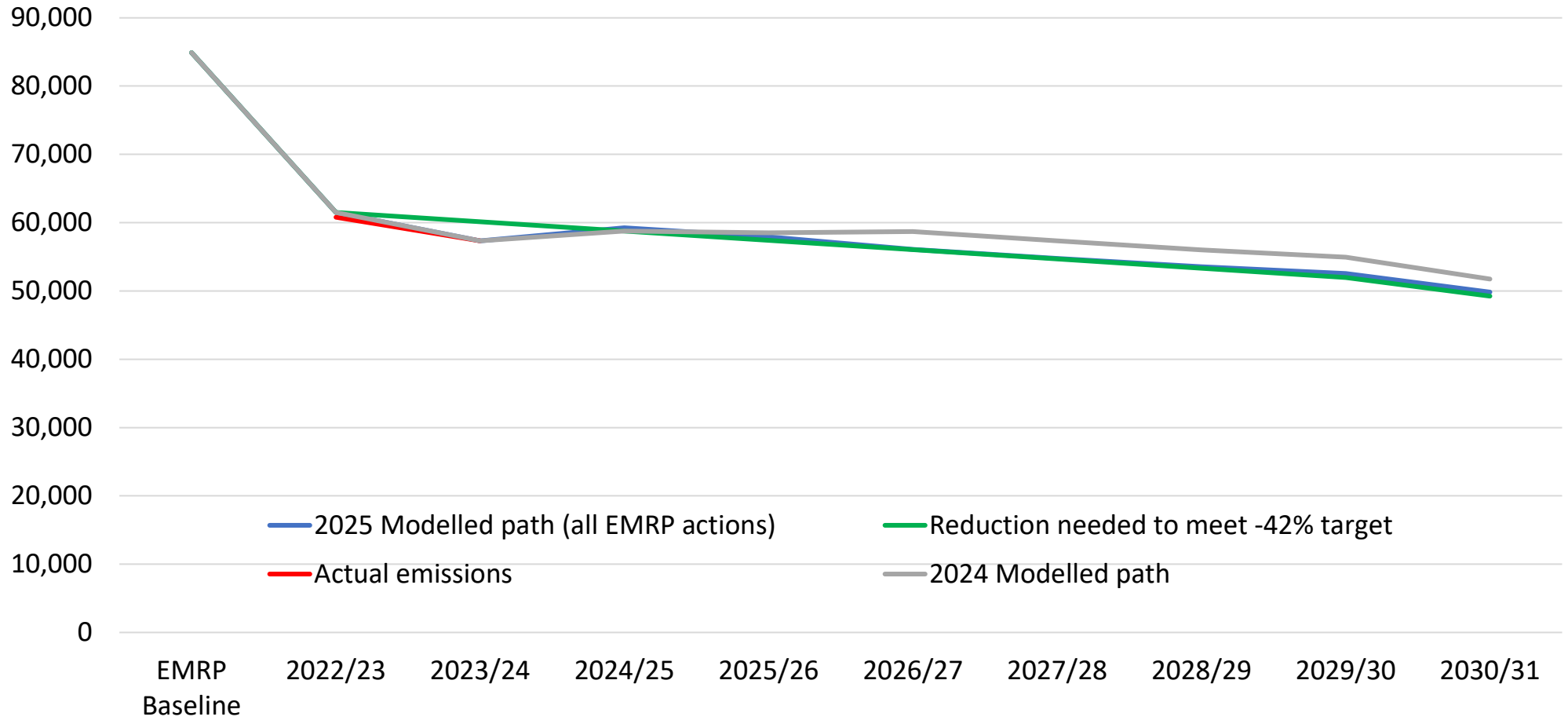
Modelling update: biogenic methane

There has been little to no change in the emissions modelled for agriculture and waste

- Dunedin city is **still anticipated to meet the 2030 10% reduction in biogenic methane target**

Modelling update: DCC emissions

Preliminary modelling suggests DCC is **on track to meet its 2030/31 organisational emissions target**.



Final modelling summary

- Estimated emissions by 2030 have changed since both the Zero Carbon Plan & EMRP were adopted, due to changes in context and improved understanding:
  - **Dunedin target: 'Net zero' element of target very unlikely to be achieved by 2030/31**; **biogenic methane element of target likely to be achieved by 2030/31**
  - **DCC target: Likely to be achieved by 2030/31**