

# Pathways to carbon neutrality by restoring nature:

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# Overview of today's talk

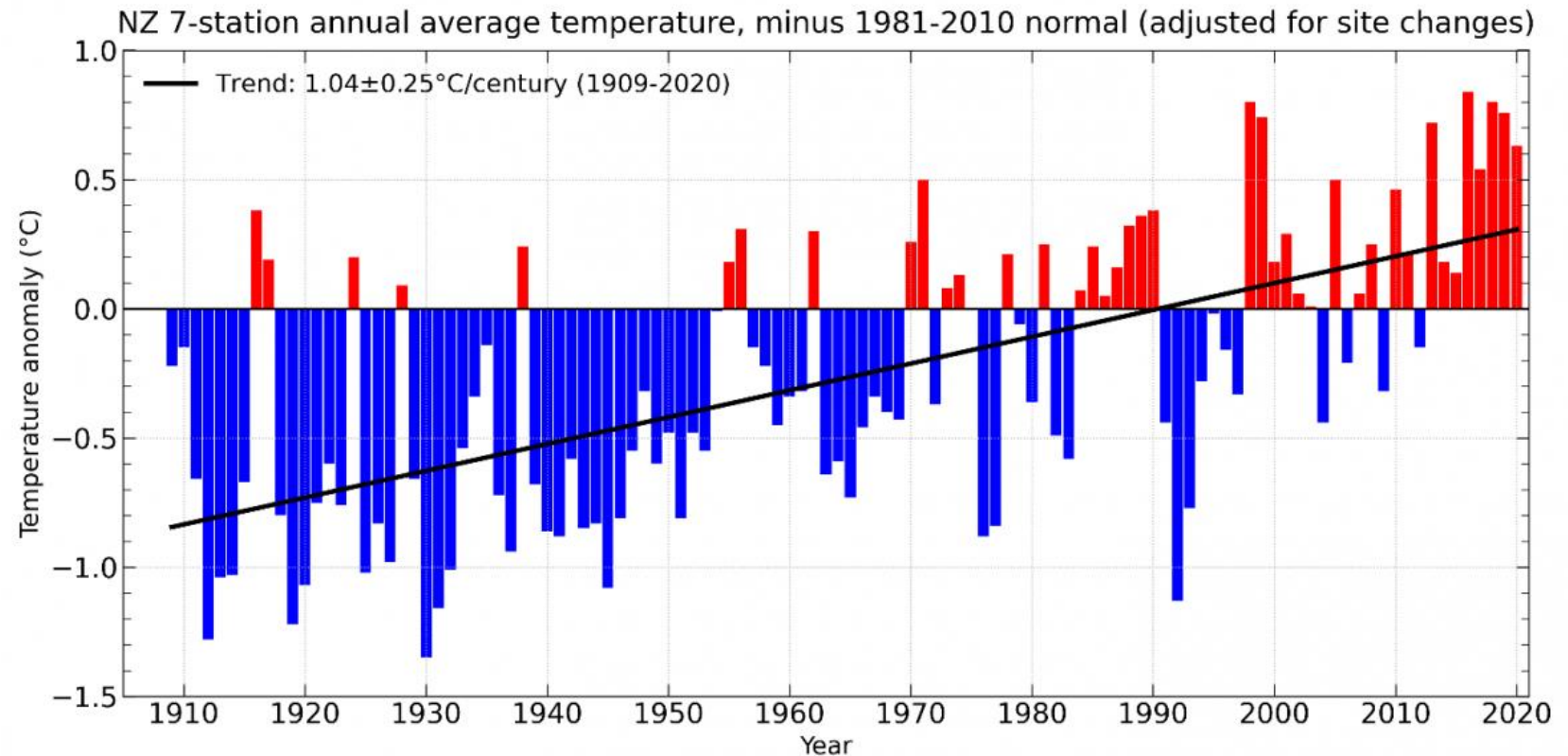
- Key concepts (the problem and solution pathways)
- Waikato Regional Council's drive for carbon neutrality
- Scope and objectives of WRC's plan
- WRC emissions needed to be offset by 2050
- Carbon sink options considered
- Nature + matrix (land options vs co-benefits)
- Indicative areas required to plant & costings
- Complications and uncertainties
- Potential role of biodiversity credits
- Questions



# Key concepts: the problem!

The world is facing a climate crisis due to rising levels of greenhouse gases in the atmosphere

Average temperatures have already risen 1°C over the last century & are continuing to rise



# Key concepts – pathways to address the problem

- Know your impact - Carbon footprint (GHG inventory)
- Carbon neutrality / net zero
- Carbon sinks
- Additionality
- Resilience
- Nature based / nature + restoration



# Drivers for the work

- WRC has publicly committed to reduce and offset its GHG emissions to achieve carbon net-zero by 2050
- it needed a future focused framework and cost-effective plan, that considered, opportunities and risks related to nature
- Framework also needed to recognise WRC key roles & responsibilities



# Scope of the framework and plan

## In scope

- Corporate & related baseline emissions forecasts
- Identification of cost-effective emissions reductions opportunities
- Potential role of Nature + carbon projects to offsets remaining emissions on
  - Council owned land
  - Land purchase by council or via revolving land fund
  - On other land (Central Govt, Private & Māori) via carbon sharing partnerships with owners
- Role of carbon and biodiversity credits
- Carbon projects that support land use change, Iwi partnerships, and capitalise on council biodiversity and environmental best practice

## Out of scope

- Regulatory rules for emission reductions
- Regional emissions outside the responsibility, control or direct influence of the WRC
- Carbon offsets due to past council activity & or investment



# Objectives

## Key Objectives of the Nature+ framework & Plan:

1. first reduce then offset 100% of direct and indirect corporate WRC GHG missions by 2050,
2. then reduce and offset 100% of indirect additional emissions from Council's role in supporting public transport (buses and the Te Huia train by 2050), and
3. contribute (where practical and as the opportunity arises) towards reducing and/or offsetting other indirect sources of emissions arising from WRC land drainage infrastructure (not council land)





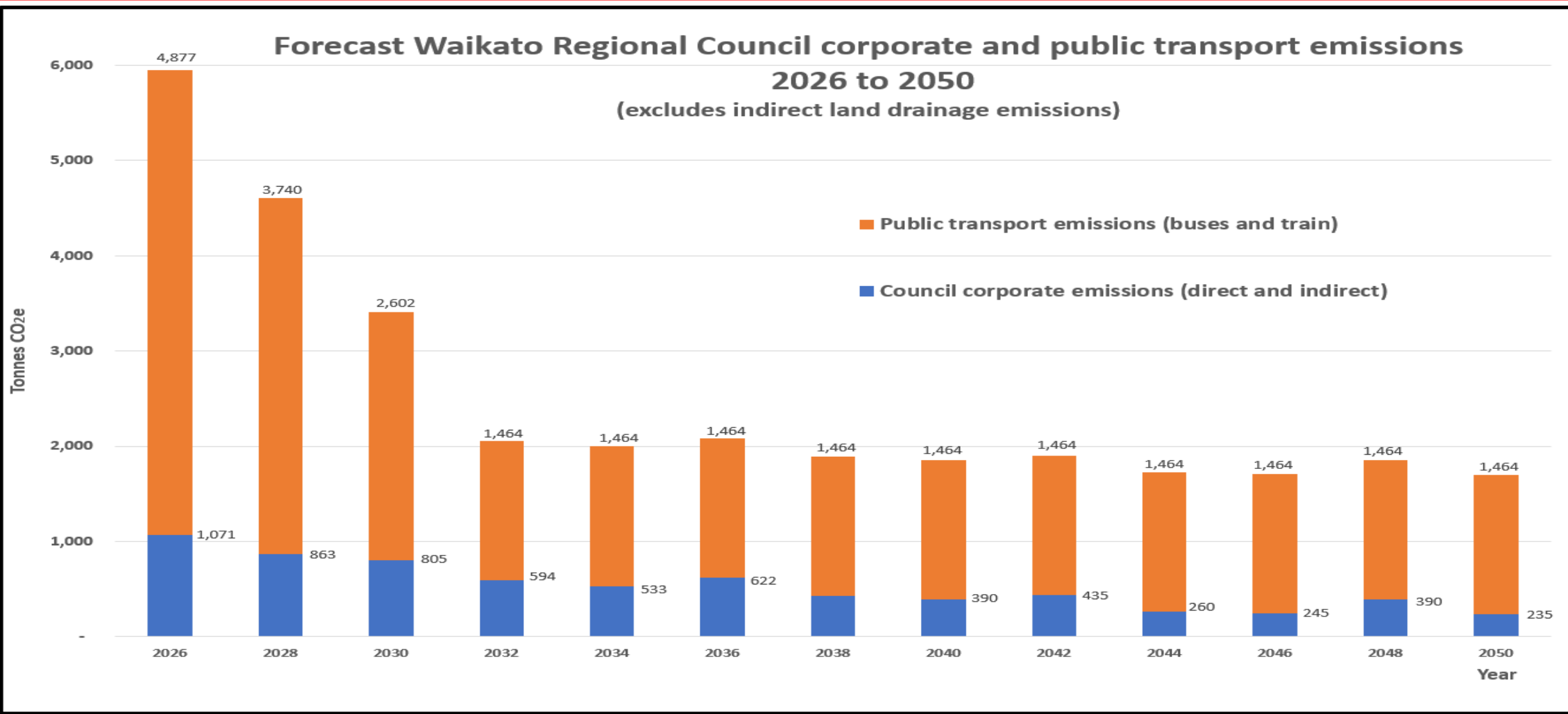
# Baseline information needed

- emissions reductions baseline & forecasts out to 2050 for:
  - Corporate emissions (direct & indirect Categories 1 to 4 in WRC emissions inventory)
  - public transport emissions
  - Indirect emissions arising from WRC operated land drainage infrastructure (Category 6)
- suitable council owned land that could theoretically be used to create nature-positive offsets < 2,500 ha of bare land





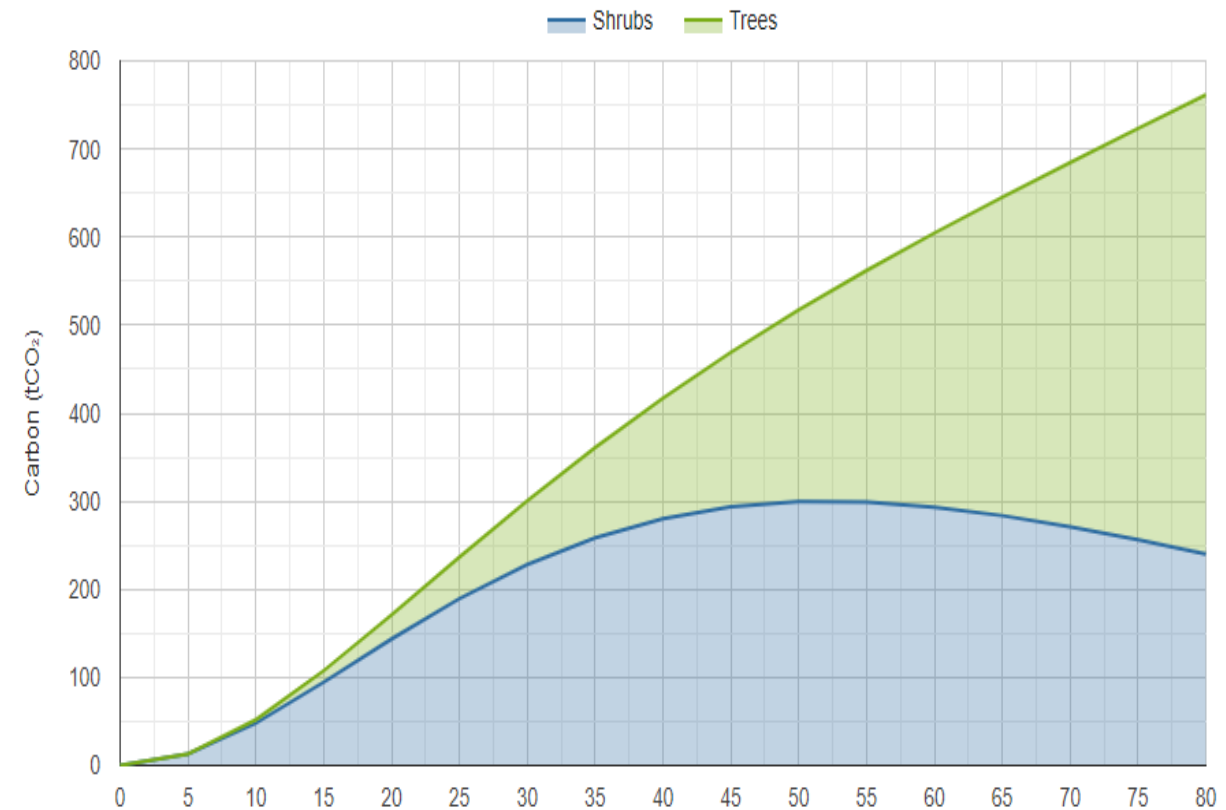
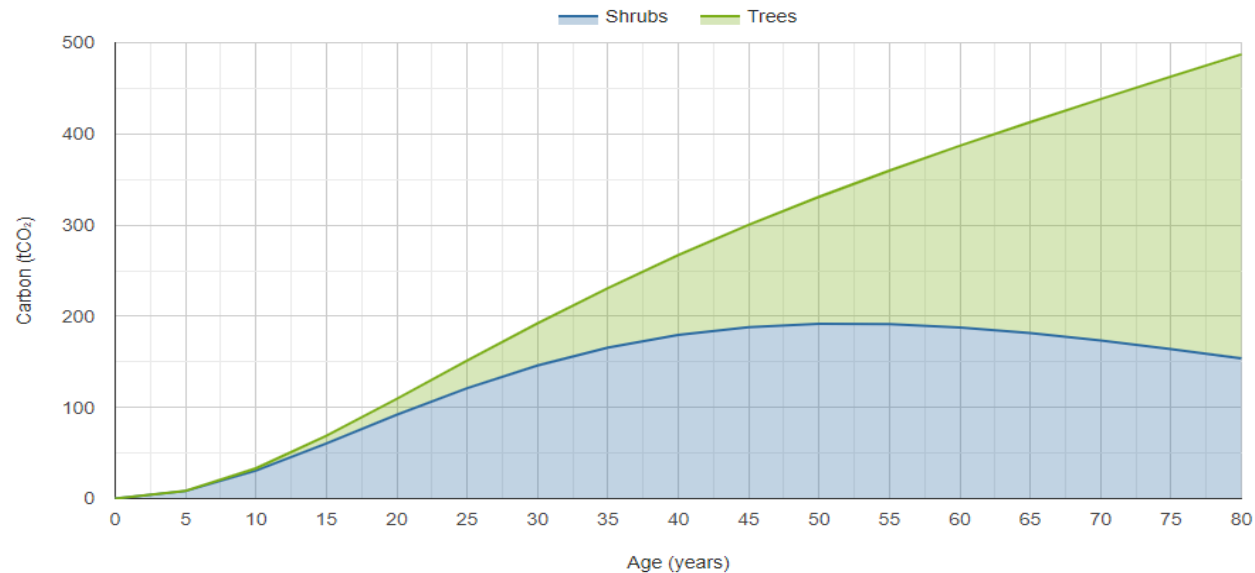
# Baseline Projections - direct & indirect Corporate & Public Transport emissions



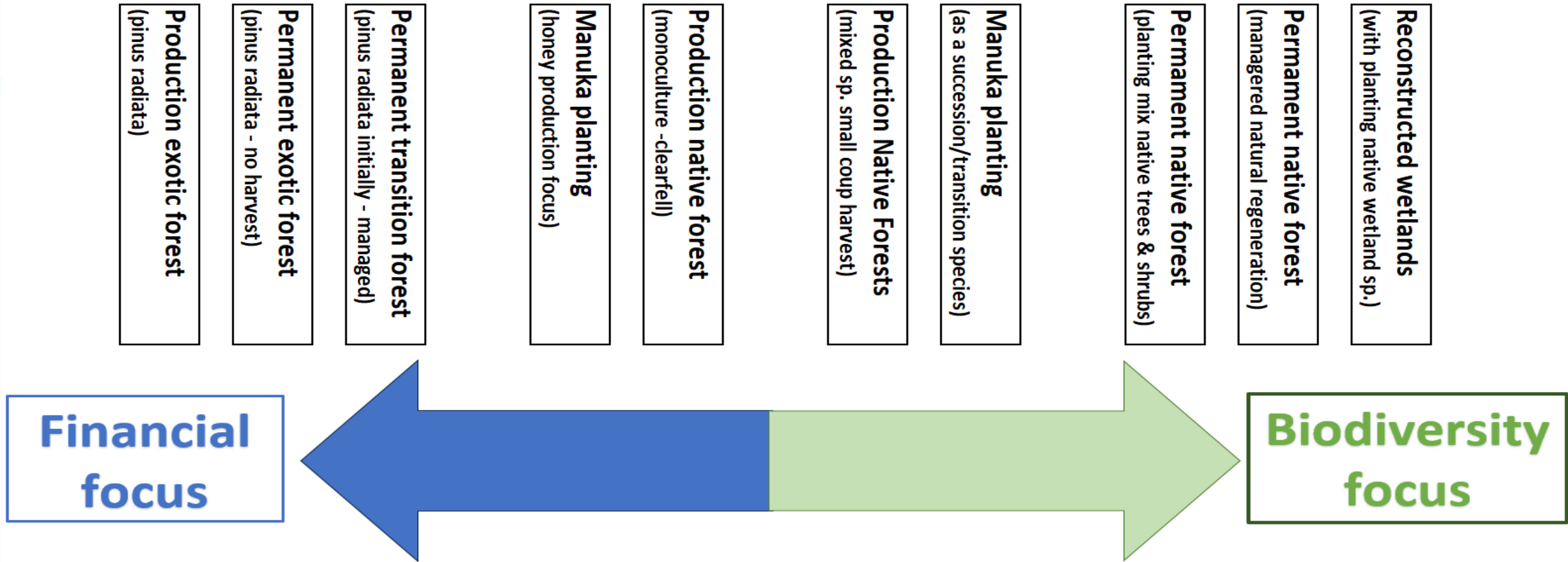
# Nature + Carbon sink removals: restoration planting

Enhanced restoration regime – 2,500 stems per ha  
(25% native tree species / 75% shrubs)

Basic restoration regime – 1,600 stems per ha  
(25% native tree species / 75% shrubs)



# Spectrum of nature-based carbon sink options





# What are Biodiversity credits?

- A biodiversity credit represent a unit of action or outcome to: protect, restore, or expand indigenous biodiversity by: restoring and reestablishing native forests, seagrasses, mangroves, wetlands etc.
- By purchasing credits, people and organisations can help fund environmental projects/activities and then claim credit for their contribution to ‘nature-positive’ activities and outcomes.



**Te āwhina i te taiao me ngā  
tāngata kia puāwai**

**Helping nature and people thrive**

Exploring a biodiversity credit system for Aotearoa New Zealand  
Discussion document

# Who might be the buyers of credits?

Growing business awareness here and overseas of the dual biodiversity and climate challenges.

Potential demand from philanthropic, community and government sectors for quality biodiversity project opportunities

Future corporate and business sector demand is likely to be driven by:

- market positioning, nature-based financial reporting, industry mandates, green investments, stakeholder and employee interest.



QEII Covenantor Michael Kelly Kelly's black creek bush

Courtesy QEII National trust

# Nature Positive Matrix

NATURE POSITIVE PRIORITY MATRIX		Location of nature positive activity				
		WRC owned or aquired land			Other Land in partnership with landowner (not WRC)	
		Current WRC land (where practical and cost effective)	Strategically purchased land (prioritised) retained	Strategically purchased land that is onsold after planting using a revolving fund (carbon biodiversity credit sharing agreement)	Public land (conservation land, unallocated Crown land, foreshore/seabed, river/lake bed) (carbon biodiversity credit sharing agreement)	Private Freehold land (carbon biodiversity credit sharing agreement) Maori land (te Ture Whenua land Act), settlement land and customary land (carbon biodiversity credit sharing agreement)
Driver for WRC investment in nature positive: planting and/or restoration and/or improved management	WRC carbon neutrality benefit (emissions offsets or reductions)					
	Regional sustainable low emissions economy benefit (emission offsets or reductions)	Note – based on regional priorities	Note – based on WRC priorities	Note – based on WRC priorities	Note – based on regional priorities	Note – based on regional priorities
	Regional biodiversity benefit - (land, freshwater, coastal, marine)	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities
	WRC / iwi Te Tiriti partnership benefit including WT claim settlement Act priorities	Note – based on iwi priorities – Waikato Settlement	Note – based on iwi priorities – Waikato Settlement		Note – based on iwi priorities	Note – based on iwi priorities
	Regional community resilience benefits	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities	Note – based on regional priorities
	WRC sustainable infrastructure benefit	Note – based on infrastructure priorities	Note – based on infrastructure priorities	Note – based on infrastructure priorities		
	Freshwater quality improvement benefits	Note – based on regional priorities			Note – based on regional priorities	Note – based on regional priorities
	Financial co-benefits either through grant funding / coinvestment /additional income					

Key	Impact
Very High	
High	
Medium	
Low	



# Indicative native planting areas required by WRC to achieve net zero by 2050

- For council corporate emissions neutrality (direct & indirect) = less than. 2 ha per year planted for 20 years from 2025  
(22 – 34 ha in total)
- For council corporate & public transport emissions neutrality 7.7 to 12 ha per year planted for 20 years from 2025  
(140 to 240 ha in total)



# Carbon neutral model – corporate & public transport

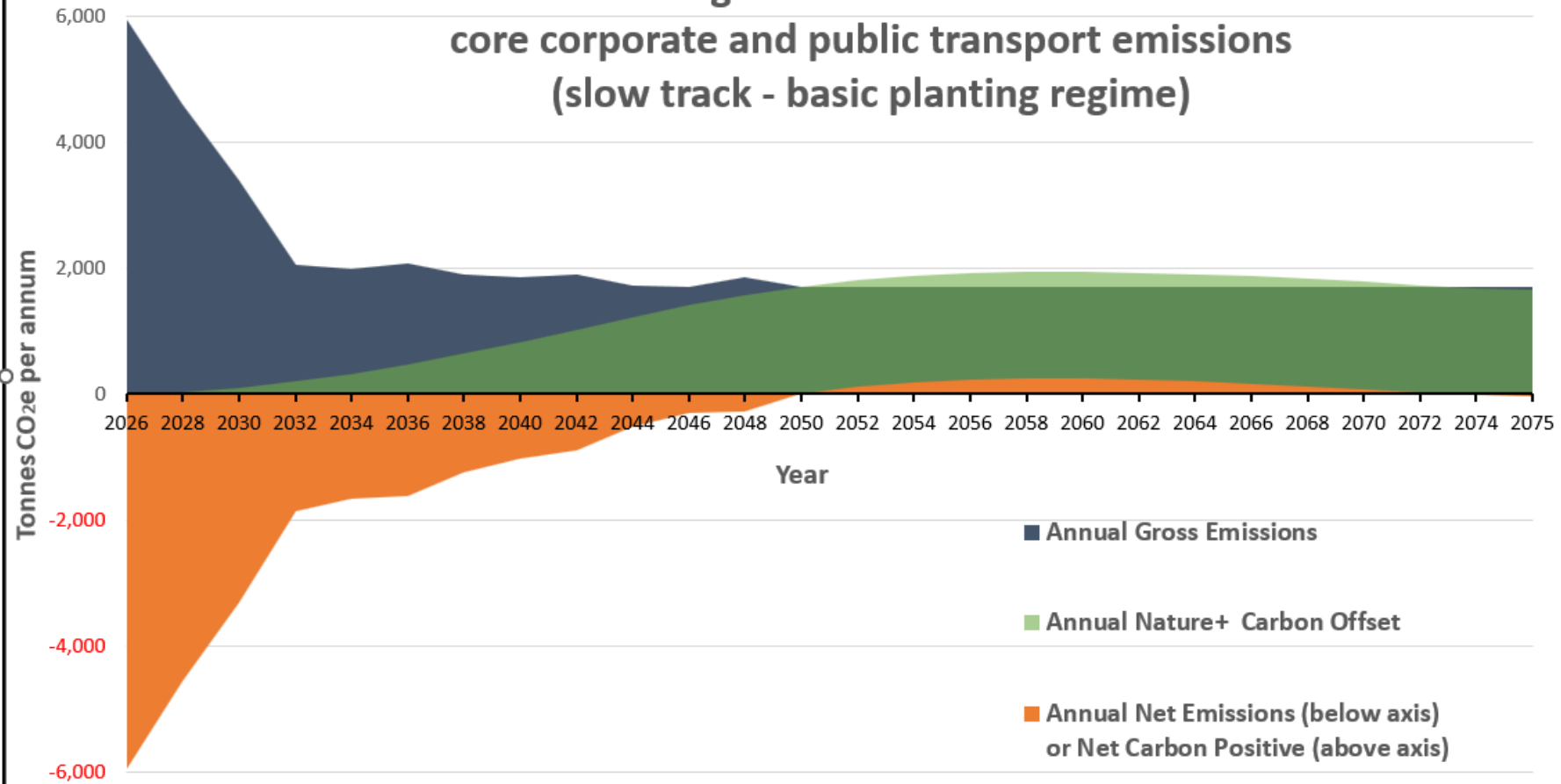
## WRC Carbon neutrality model (gross WRC direct and indirect emissions including Public Transport but excluding Land Drainage)

Projected annual <b>gross emissions</b> at 2050 (tCO <sub>2</sub> e)	<b>1,699</b>
Projected annual <b>net emissions</b> or net surplus at year 2050 (tCO <sub>2</sub> e)	16
Ha needed to be planted annually starting 2025	<b>12.0</b>
Years of planting required	20
Total Ha planted	240
Annual emissions neutrality achieved from year	2050

### Assumptions:

Average planting regime assumed	20% native trees 80% native shrubs Average site
Stems per Ha	1,600
% of available carbon offset used annually <u>prior</u> to 2050	100%
% carbon offsets used annually <u>from</u> 2050	100%

## Modelled Carbon Neutrality Waikato Regional Council - 2025 to 2075 core corporate and public transport emissions (slow track - basic planting regime)



# Indicative costs – to offset corporate emissions only with Nature+ planting

- Area needed to plant (between 22ha & 34ha)
- Establishment costs (between \$386k & \$588k)
- Pest Control over 25 yrs. (between \$155k & \$215k)
- Cost carbon verification -25yrs (between \$33k & \$49k)

Total costs over 25 yrs. (between \$650k & \$777k)

Compable with buying equivalent carbon credits as offsets (NZUs) instead  
(depending on price assumptions?)

(between \$578k & \$2,834k)



# Areas of complexity / uncertainty

- Data and model limitations
- Likely barriers/risks to some land use change
- Finding funding partners & land partners for carbon sharing agreements
- Immaturity of the biodiversity credits market
- Risks of other Government policy/legislation changes
- Issues with NZ indigenous forest sink credits not being recognised by some carbon zero certifiers for technical reasons

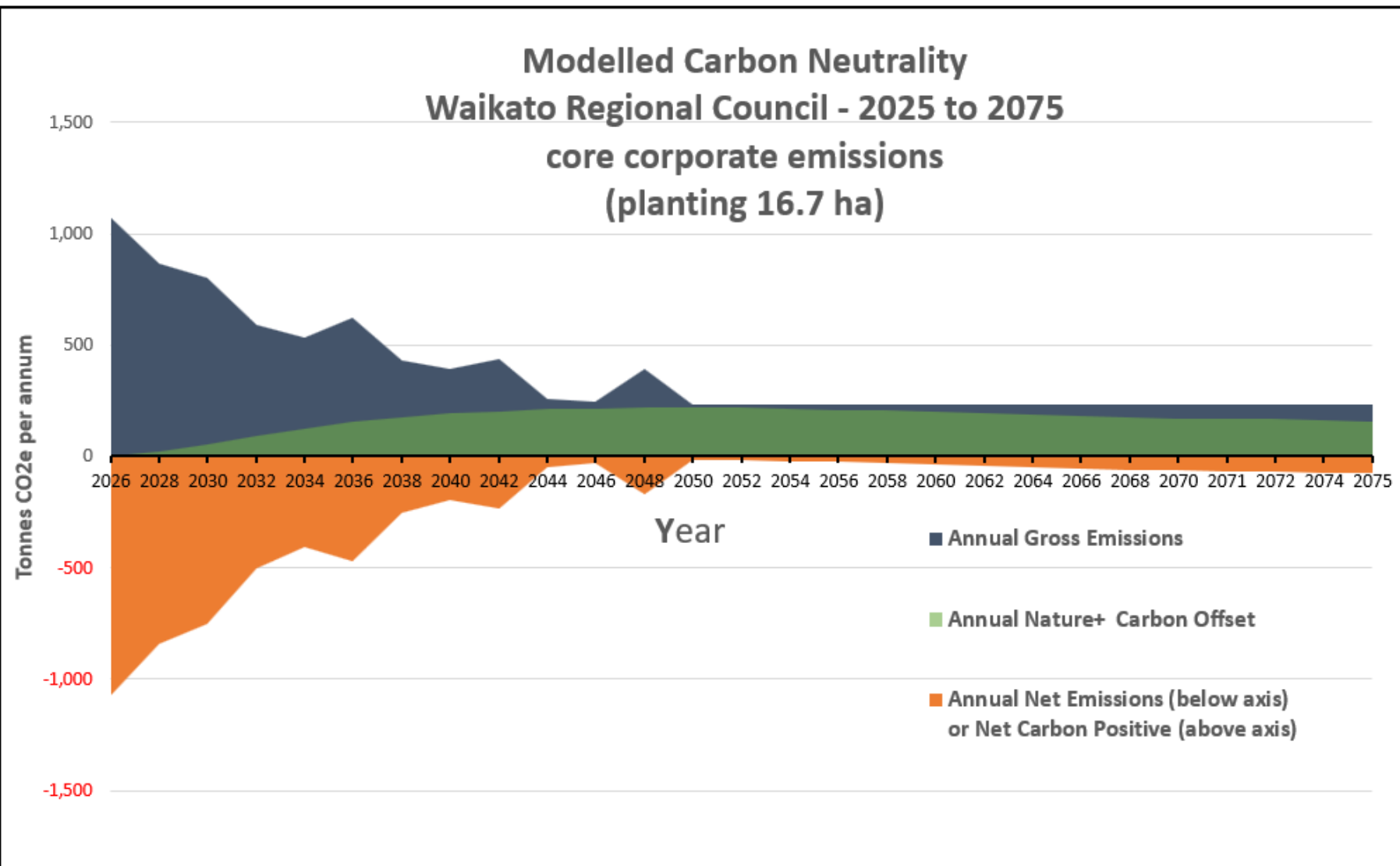
# Case Study: Kauaeranga Flood Plain



# Case Study: Kauaeranga Flood Plain

## Carbon neutrality model

Projected annual <b>gross emissions</b> at 2050 (tCO <sub>2</sub> e)	<b>235</b>
Projected annual <b>net emissions</b> or net surplus at year 2050 (tCO <sub>2</sub> e)	<b>-16</b>
Planting started	<b>2026</b>
Years of planting required	<b>2</b>
Total Ha planted	<b>16.70</b>
Annual emissions neutrality achieved from year	<b>2050</b>
<b>Assumptions:</b>	
% of available carbon offset used annually <u>prior</u> to 2050	<b>100%</b>
% carbon offsets used annually <u>from</u> 2050	<b>100%</b>
Stems per Ha	<b>2,500</b>
Average planting regime assumed	20% native trees 80% native shrubs Average site





- To read the full WRC carbon neutrality Framework and Plan  
Google: TeAkiTuroaNatureFrameworkPlan.pdf
- To learn more about biodiversity credits  
Google: Exploring a Biodiversity credit system for Aotearoa  
New Zealand

Any questions email  
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