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**CARBON NEUTRAL NEW ZEALAND**

**Waiheke Branch**

Submission  
to  
New Zealand Productivity Commission  
Low-emissions Economy  
Draft Report  
April 2018

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## Introduction

1. Carbon Neutral Waiheke (CNW) is a group of concerned citizens committed to addressing the issues of climate change and its ramifications for our local economy, environment, culture and way of life. CNW is an affiliated branch of Carbon Neutral New Zealand Trust.
2. CNW thanks the New Zealand Productivity Commission for its work in the area of climate change and its issues paper of August 2017 and this low- emissions economy draft report April 2018..
3. CNW also acknowledge the wide range of reports written about climate change over the last two years by various New Zealand government agencies, local government, independent research agencies, business and community organisations plus individuals. These reports all add to the depth of information available to decision-makers and the general public about climate change and build an extremely strong case to support the notion that climate change is a global crisis which requires all nations to act immediately.
4. CNW recognises that there is a pivotal role for New Zealand's central government to negotiate international climate agreements; pass appropriate legislation (proposed 2018 Zero Carbon Bill); establish appropriate supporting institutions (the planned Climate Change Commission); set the policy framework and work with local government and industry sector bodies to seek a broad consensus on the steps required to transition to a low carbon economy.
5. CNW also acknowledges that the Terms of Reference for the New Zealand Productivity Commission's Inquiry into the Opportunities and Challenges of a Transition to a Lower Net Emissions Economy for New Zealand, defines the purpose of the Inquiry to identify options that the government could take to reduce NZ's domestic emissions whilst at the same time continuing to grow incomes and well-being.
6. We note that the Inquiry was asked to address six questions - the role of the NZ EFTS; potential market-led solutions and regulatory requirements; overview of suitable science and innovation support systems; identifying domestic investment barriers; encouraging more efficient land-use decisions and maximising NZ's comparative advantages in a carbon constrained world.
7. We also note that the Inquiry was excluded from commenting on the suitability of New Zealand's current or future emissions reduction targets under the Paris Agreement – that is, to reduce its carbon emissions by 30% below 2005 levels by 2030 (first Nationally Determined Contribution) and by 50% from 1990 levels by 2050. Through the UNFCCC New Zealand has set a 2020 target of reducing emissions to 5% below 1990 levels. We note that both the 2020 and 2030 targets are international responsibility targets, which means that, as well as reducing its domestic emissions, the country can purchase credits from other countries to mitigate its emissions.
8. CNW notes that the Terms of Reference excluded the Commission from considering what forms of adaption may be required to adjust to the negative impacts of climate change on New Zealand and New Zealanders way of life and well-being. This is extremely unfortunate

given the vulnerability of many New Zealand cities and rural areas to sea-level rises, severe weather related events and ocean acidification.

9. CNW believes that without the concerted efforts of locally based businesses, communities and individuals utilising a bottom-up, grass-roots approach, no or limited meaningful change will result.. Positive and sustainable behavioural change relies not only upon coercion, regulation or economic incentives but on an educated public willing to sacrifice short-term economic gains for longer-term equitable growth in incomes and well-being, plus improved environmental, social, health, cultural and economic outcomes.
10. As a community-based organisation in each section of our submission we have given an overarching response to the issues raised and then discussed potential impacts both positive and negative on the community. We want to determine how transitioning to a low emission economy will impact on Waiheke Island and its residents.
11. In this submission references for quoted information is provided in the text. The bibliography outlines other reports used as background material.

## Overview

12. Carbon Neutral Waiheke (CNW) believes that the New Zealand Productivity Commission's Low-emissions Economy Draft Report April 2018 (referred in this submission as the Commission's Draft Report) does not give sufficient urgency to addressing the issue of climate change in a timely manner. Being an active participant in the international response to climate change does not necessarily imply "... a gradual change to the country's pattern of economic activity in order to avoid a potentially costly and disruptive economic shift in the future." (*Commission's Draft Report pg. i*)
13. CNW believes that the Productivity Commission's focus on a gradual transition denies New Zealanders the opportunity to engage productively in developing a low-emission economy that grows incomes equitably and promotes social and environmental well-being. Such an approach also deprives New Zealanders of the moral, reputational, business and practical advantages resulting from adoption of faster reduction targets.
14. The Commission's report also fails to address in-depth the following issues:
  1. whether it is possible "... for true alternatives to emerge in a context in which global capitalism has so profoundly become normalised as the sole possible way of human existence." (*Baghel,R., Knowledge, power and environment: Epistemologies of the Anthropocene, Transcience 2012, Vol. 3 issue 1.*)
  2. whether the Paris Agreements aim to "...holding the increase in the global temperature to well below two degrees C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 degrees C... " and "... to achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouses gases in the second half of this century.." are really realistic and the implications if they are incorrect on how New Zealand should address climate change. (*Net Zero in New Zealand: Scenarios to achieve domestic emissions neutrality in the second half of the century: Summary Report, Vivideconomics, March 2017*)
  3. Climate change indicators such as rising land and sea temperatures, sea level rises, and extreme weather events are occurring faster and stronger than originally predicted. The world was already poised to achieve a 1 degree C temperature rise in 2015 (*UK Met Office, 9 November 2015*) and by the time of the Paris Agreement in 2016 had achieved a temperature rise of 1.1 degrees C. In the spring of 2015 the global average concentrations of CO2 exceeded 400 parts per million for the first time. The global temperature rise has resulted in 50% of Arctic summer sea ice melting and once in 100 year weather events happening regularly.
  4. To consider that a 1.5 degree C or two degree C global temperature rise is acceptable and will allow people to continue their current lifestyle pattern is false and gives the public an overly optimistic view regarding what are safe levels of climate change and what actions need to be taken.

5. There is an almost total consensus amongst the scientific community that a two degrees C global temperature rise will result in the loss of the Arctic's summer sea ice; irreversible melting of parts of the Greenland and West Antarctic ice sheets; loss of many warm-water coral reefs and disappearance of many mountain glaciers. If such occurrences were to happen then world leaders would have failed in their duty of care and be rightly condemned for inadequate management of known risks.
15. Countries and states that have taken positive action are already achieving economic, social, and environmental benefits. For example, in the UK, since the passing of climate change legislation the country has been reducing its emissions and meeting its carbon budget targets. *(Professor. Cameron Hepburn, Oxford University, Keynote Address, E-Mission Possible: Directing Mitigation Policy and Action for Results Conference, New Zealand, 13 April 2018)*
16. Norway, likewise is a climate change leader and has committed to achieving climate neutrality by 2030.
17. In 2006, California's legislature passed a climate law to reduce greenhouse gas emissions to 1990 levels by 2020. As the State was on track to achieve such reductions in 2016 a new law was passed aiming to reduce by 2030, emissions to 40% below the 1990 baseline.
18. As a consequence, California is already reaping the economic, health and quality of life benefits. For example, in 2007, California had a personal per capita income (PCPI) of US\$43,692 and was ranked 10<sup>th</sup> in the United States. In 2017, California had a personal per capita income of US\$58,272 and was ranked 6<sup>th</sup> in the United States and its per capita income was now 116 percent of the national average. *(Bureau of Economic Analysis, US Department of Commerce, Personal Income published 22 March 2018)*
19. In terms of real Gross Domestic Product (GDP) California grew 3.0 percent in 2017 versus the national average of 2.1 percent. The 2007-17 compound annual growth rate for California's real GDP was 1.8 per cent compared to 1.2 per cent for the nation. Throughout this period California maintained its ranking as 1<sup>st</sup> in terms of GDP by state. *(Bureau of Economic Analysis, US Department of Commerce, GDP published 4 May 2018)*
20. In contrast, New Zealand's emissions are increasing. The question needs to be asked, how can other countries and states (California), even during times of real GDP growth achieve significant climate change reductions in 16 years compared to New Zealand planning to take 50 plus years to achieve similar GHG reductions.
21. Delaying committing to effective GHG reductions will be costly in economic, social, environmental and cultural terms for New Zealand. Westpac NZ estimates that early action on climate change could save NZ\$30 billion in GDP growth and a 32% lower carbon price by 2050 than adopting a slower approach. *(Westpac NZ Climate Change Impact Report pg.2)* Also a report tracking global financial risks has rated extreme weather events as the top global risk in terms of likelihood and second in terms of impact for both 2017 and 2018. *(The Global Risks Report 2018 13<sup>th</sup> Edition, Marsh & McLennan Companies & Zurich Insurance Group, World Economic Forum, Geneva, 2018)*

22. We note that such conclusions are supported by internationally recognised climate change thinkers such as Stern (*Stern, 2015*) who consider climate change has the potential to usher in a new economic age similar in impact to the industrial or information ages.
23. Evidence from other disruptive technological changes such as the internet, mobile phones, social media and artificial intelligence shows that early adopters of the technology reap most of the innovation and economic rewards. The question is why is New Zealand prepared to sacrifice such potential gains and why has the Productivity Commission not addressed this issue.
24. New Zealand's shift from a mixed model economy to a highly deregulated economy was done very quickly in the 1980s and 1990s despite the substantial economic, social, employment and business costs. The proposed shift from a fossil fuel based twenty century economy to a decarbonised twenty-first century economy will likewise be transformative and disruptive affecting land use patterns, energy usage, production methods, technology inputs, regulatory frameworks, government institutions, business and society itself. Climate change is a global issue and therefore is more profound than was economic reform alone.
25. New Zealand as a small, relatively isolated island nation has a moral duty to demonstrate to other nations that it takes climate change seriously, especially given that according to the OECD it is the fifth highest emitter per capita amongst its members. (*Commission's Draft Report pg. 27*)
26. The slow transition approach has foreign policy ramifications – instead of NZ being a leader and standing beside other small island states in the Pacific as they attempt to address climate change – the nation risks being seen as a country that puts the interest of large emitting nations and corporate interests ahead of those of its neighbours.
27. Climate change is likely to increase the risk of large-scale migration and associated civil unrest. People from several Pacific Island states are likely to be amongst the first people displaced as a result of climate change. New Zealand has the opportunity to advance the cause of a global legal framework for climate displacement.
28. In addition, by going early New Zealand will be able to demonstrate that good climate mitigation and adaption strategies can help to achieve the UN's Sustainable Development Goals that provide a pathway to prosperity for all and a global transformation to sustainability.
29. Such approaches would enhance the nation's international reputation by once again adopting an independent foreign policy position similar to its stance on nuclear free.
30. The transition to a low carbon society can be presented either, within an apocalyptic framework or as an opportunity for innovation and positive change. If New Zealand becomes an early embracer of climate change and the actions required the changes could be financially and socially positive. On the other hand, if New Zealand waits until severe climate impacts force overwhelming change, it could be catastrophic and undermine any attempt to achieve equitable income growth and a just society.

31. Without making climate change an immediate priority, industry and the public, will become apathetic and slow to adopt new approaches and plan for the behavioural and structural changes required to achieve the necessary carbon emissions targets. It is important that the Productivity Commission does not continue to give the impression that “Climate change is a problem unlike any other, both because of its scale and because it is mainly about the future.” *(Commission’s Draft Report pg. 17)*
32. If New Zealand goes late in adopting carbon reduction strategies and actions then the necessary changes will require compulsion, regulations and enforcement with a corresponding curtailment of personal liberty, and lack of choice. For example, to solve traffic issues in cities such as Paris, London and Singapore a congestion tax is levied on motorists. In New Zealand, a fuel tax is being introduced in Auckland to fund the building of transport infrastructure such as public transport, cycle-ways and roads.
33. Politicians world-wide have tended to be slow to act in the face of many pressing international issues. There was consensus amongst the majority of the world’s scientists about the potential impacts of climate change by 1988 when world leaders convened for their first global conference on climate change in Toronto. According to NASA the Earth’s average temperature at that time had only increased by 0.5 degrees C above the average of the late 19th century.
34. It took 11 more years until 1997 for the world’s leading nations to negotiate The Kyoto Agreement. In the meantime the global average temperature had increased to 0.7 degrees C above the average of the late 19th century.
35. The next major agreement - the Paris Agreement – took 18 more years to achieve and by then the world’s average temperature had increased to 1.1 degree C above the average of the late 19th century and global CO<sub>2</sub> concentrations were 403.3 parts per million well above the suggested maximum of 350 parts per million as suggested by many climate change scientists and institutes. *(Hansen, J et.al Target atmospheric CO<sub>2</sub>: Where should humanity aim?, The Open Atmospheric Journal 2 (1) 217-231, 5 November 2008)*
36. This tortuous pathway suggests that it is extremely difficult to achieve international consensus on the issue and some of the leaders of countries, including the USA, still deny that climate change is a matter of concern.
37. It is ironical that in New Zealand the very people and organisations that are promoting a slow transition to a low carbon economy are those who pushed for a fast transition to the neo-liberal economy based on individual rights, competition and the primacy of the market.
38. For those promoting a slow and gradual transition to a low carbon economy a fast change would be challenging to their way of life and they are not prepared, or used to, such challenges. Luckily, there are only a few of these super-privileged individuals, be they multi-national corporations, corporate farmers, various industry sectors leaders, businesses owners, financial institutions executives or politicians from both the centre-left and the centre-right and individuals. The rest of the New Zealand population does not have the income to defend themselves from the realities of severe weather events and/or temperature increases.

Overtime increasing inequality undermines the very basis of our society –politically, socially, culturally and economically.

39. To illustrate CNW notes the NZ minerals sector industry association, *Straterra's* opposition to the ban on offshore fossil fuel exploration in New Zealand. (*Engineering News May 2018 Pg.10*)
40. Likewise, despite the almost unanimous international scientific consensus that of the known worldwide fossil fuels reserves at least a third of global oil reserves, half of gas reserves and more than 80% of coal reserves must be left in the ground (*Fossil fuel warning: Climate scientists beg governments to leave buried natural resources in the ground, Independent, 7 January 2015*) New Zealand environmentalists are still having to take coal mining companies and district councils to court to prevent the development of such mines as the Te Kuha mine on the West Coast. (*Forest & Bird's email newsletter, 16 May 2018*)
41. An extreme case of corporate reluctance to change was ExxonMobil not disclosing that it knew of climate change and its likely impacts as early as 1981 (seven years before it became a public issue) and yet it continued to fund climate change deniers for 27 years. (*Suzanne Goldenberg, The Guardian, 8 July 2015*).
42. Such positions erode the public's confidence in multinational and local corporations, the New Zealand public service as well as the political and justice system.
43. The reasons why New Zealand has collectively failed to reduce its emissions, despite climate change policies being in place, is important. The Commission's report suggests that the reasons may be inconsistency in policy settings and uncertainty about the future. CNW considers a lack of incentives (economic, social and cultural), inappropriate pricing structures, distorting subsidies to various industry sectors, poor planning regulations, judicial decisions not in keeping with new planetary realities; short-sighted individual behaviour, lack of concern with intergeneration impacts and organisation's and people's unwillingness to change are equally important.
44. CNW considers that the approach by *Project Drawdown* in the US to look for options to "draw down' carbon, warrants careful consideration. (*Project Drawdown, Penguin Books, 2017*) A strong endorsement of business strategies and methods that either reduce carbon emissions or increase the level of carbon sequestrating is needed to demonstrate to all citizens that there are positive technological, biological and social alternatives to current practices.
45. Climate change provides an opportunity to demonstrate that environmental, social and cultural values take precedence over economic values. It permits civil society to challenge the beliefs of neo-liberalism that has resulted in many negative impacts on society since 1985 including for New Zealand slower than the OECD average GDP per capita growth and exports growth rate plus low productivity ratios. Accompanying these trends has been rising levels of housing indebtedness, unemployment, social and income inequality, homelessness and a housing shortage. (*Max Harris, the New Zealand Project, Bridget Williams Books, Wellington, 2017, pgs 56 -59*)

46. CNW believes that New Zealand must be a leader not a follower, as we owe it to the people of this country to build on the achievements of the average New Zealander of producing 8% lower emissions in 2015 than in 1990. We need to maximise the health benefits (reductions in illness and mortality from cleaner air and water); greater biodiversity; and the employment, trading and productivity opportunities associated with the green economy. Our policies, strategies and actions must ensure that the impacts and costs of climate change and the associated transition to a low emissions economy do not disproportionately fall on lower income households.

### Waiheke Context

47. Waiheke Island is the most populated and the second-largest island in the Hauraki Gulf with a surface area of 92 square kilometres and a coastline of 133.5 kms. It is situated in the Hauraki Gulf Maritime Park and is 18kms (western end) from downtown Auckland. The island is serviced by two ferry companies providing passenger, car and freight services.
48. It is New Zealand's most densely populated island with nearly 100 people per square kilometre and the third most populated island in New Zealand. It has a population of 9,250 permanent residents and a further 3,400 people have second or holiday homes on the island. The demographic composition of permanent residents is 80% European, 11% Maori, 3% Pacific Islander and 3% Asian. The median age is 45.3 years and the median household income is \$51,100 compared to Auckland City as a whole \$76,500. (*Demographic Report Card, Waiheke Local Board Area 2016*)
49. As a popular holiday spot in summer its population increases two to threefold. Between 750,000 to 900,000 tourists and visitors come to the island each year. In the peak period this means between 10,000 to 14,000 visitors arrive per day.
50. The islands climate is subtropical with an annual mean temperature of 15.2c, rainfall of 1461mm and sunshine hours of 2100.
51. Waiheke was forcibly amalgamated with Auckland City Council in 1989 and became part of the Auckland super city in 2008.
52. The island is well-renowned for its unique character with most locals describing themselves as Waihekeans not Aucklanders. The Waiheke character is described as "A special connection to the land. Environmentally aware. Relaxed. Opinionated. Independent. Artistic. Unconventional. Resourceful. Sense of belonging." And "The community is passionate, vocal and makes more submissions to government per capita than any other in New Zealand." (*Essentially Waiheke: Refresh 2016*). Waiheke was the first community in New Zealand to vote for a nuclear free zone, later for a genetic engineering free zone and more recently challenged the Government by declaring TPPA-free status.

53. With its strong creative and arts sectors, its activist background and community approach Waiheke is a perfect site to test new ideas and approaches to climate change, especially those requiring behavioural change. The island population has witnessed that current environmental issues can either unite (Predator Free Waiheke) or divide (marine reserves) the community. The role and influence of external forces - be they property owners, boaties, companies, government agencies and elected officials are clearly visible.

## Climate change, emissions and the New Zealand context

54. As previously stated Carbon Neutral Waiheke (CNW) questions the reality of the Paris Agreement's ability to achieve the central aim of the Agreement, namely to limit temperature rise to well below 2 degrees C given the fact that already global temperatures are above 1.1 degrees C and the level of carbon dioxide concentrations in the atmosphere now exceeds 400 parts per million.
55. Given that carbon dioxide can stay in the atmosphere for hundreds of thousands of years; there is a finite global carbon budget (which on current projections will be used up by 2036) and only about one-third of the emission reductions needed to achieve the two degree target have been pledged. The Paris Agreement's targets are grossly and irresponsibly over optimistic.
56. New Zealand's average temperature has already increased by one degree C since early 1900s (*MfE & Stats NZ, 2017b*) and the country is experiencing negative effects such as coastal erosion, flooding and droughts.
57. New Zealand's global emissions per person are high with gross emissions per capita being the fifth highest among developed countries. Overall, our level of gross greenhouse gas emissions have not decreased but instead rose 24% from 1990 to 2015 whilst net emissions for the same period rose 64%. (*Stats NZ, 2017*). Consequently, urgent action is required to change land use patterns, industry production methods, urban and rural planning, work patterns, transport usage and lifestyle to name but a few.
58. Without such changes New Zealand, to meet its first commitment under the Paris Agreement, will have to buy international carbon credits. Such a strategy is risky given that currently no formal mechanisms are in place to trade international credits and the price per tonne is likely to rise significantly, placing a considerable financial burden on the nation.
59. Whilst the current Labour-led Government has stated its intention to enshrine in law more stringent carbon reduction targets, no effective actions has yet occurred.
60. The track record of local government addressing the issue of climate change in New Zealand is also not good. For example, Auckland Council has produced some excellent reports for example, *Low Carbon Auckland: Auckland's Energy Resilience and Low Carbon Action Plan, Auckland Council, July 2014* and *Low Carbon Auckland: Annual Update 2017, Auckland Council, March 2018*) but these reports have not been transferred into action as the Auckland 10 year Consultation Document (*The 10Year Budget and Auckland Plan 2050, Auckland Council, March 2018*) only mentions climate change in two areas.
61. Farming, industry, iwi and the communities' record in addressing climate change issues is no better.
62. To illustrate this point the amount of greenhouse gas emissions from farming activities increased by 12% between 1990 and 2016 with methane emissions increasing 4% and nitrous

oxide emissions increasing by 28.3% due to dairying intensification and the use of nitrogen-containing synthetic fertilisers. (*MfE NZ Greenhouse Gas Inventory 1990 -2016*)

63. We are concerned that the Commission's report in this chapter states "The large contribution of CH<sub>4</sub> to New Zealand's emissions is important because CH<sub>4</sub> is a short-lived gas – it lasts on average about 12 years in the atmosphere. While reducing CH<sub>4</sub> emissions slows warming and limits temperature rises, eliminating CH<sub>4</sub> emissions is not needed to stabilise global temperature." (*Commission's Draft Report pg. 32*)
64. Such a statement that does not mention that methane global warming potential is 25 times greater than carbon dioxide can lead to claims that that methane is not a problem.
65. CNW does however acknowledge that in 1990 methane made up the largest proportion of NZ's gross emissions whereas in 2016 methane and carbon dioxide contributed nearly equal proportions due to the expansion of the energy sector (predominately road transport). (*MfE NZ's Greenhouse Gas Inventory 1990-2016*)
66. CNW agrees that forestry has a crucial role in offsetting carbon and believe that the decline in planting rates under the previous National-led government shows how silo thinking (encouraging such activities as dairy intensification, large irrigation schemes and tourism) has compounded the problem of growing emissions. The public deserve to have their future safeguarded from such irresponsible political acts.
67. The fact that the transport sector carbon dioxide emissions have risen significantly (by 70% between 1990-2015) (*MfE, NZ's Greenhouse Gas Inventory 1990-2016*) is due to New Zealanders love of the car, poor urban planning, work/life issues, aggressive lobbying by the Road Transport Federation, the previous National-led government promotion of road transport and roads of national importance, the deliberate rundown of rail services (freight and long distance passenger) over many decades and a compliant media (*Jon Addison, Rail can't take strain of freight expansion, NZ Herald, 11 January 2018; Hamish Rutherford, Oil ban decision risks PM's moral high ground, The Press 6 June 2018; Patrrick Smellie, Oil and gas ban a fast, quiet manoeuvre, The Press 7 June 2018,*)
68. It is a pity that the Commission's report does not clarify what the level of GHG emissions would have been between 1990 and 2015 if New Zealand's population had grown at the rate of the average OECD country. Such an analysis would help to clarify the success or otherwise of initiatives to abate the worst effects of climate change in New Zealand to date.
69. With the international aviation and maritime sectors being excluded from the Paris Agreement the amount of New Zealand's gross and net emissions are likely to be underestimated. This effect is noticeable when a household or business completes a carbon footprint calculator air travel is frequently the largest component of the business or household's carbon emissions.
70. The most disheartening aspects of this chapter is Section 2.4 which outlines how New Zealand can reach its 2020 targets through the UNFCCC, and the 2030 target through the Paris Agreement by reducing *net* domestic and emissions and *purchasing* overseas credits for emissions reductions. Of particular concern is the statement "A gross/net accounting

approach means that New Zealand's targets are expressed as reductions in net emissions compared to historic gross emissions baseline." (*Commission's Draft Report Pg. 35*) In addition, the role of forests established pre 1990, the ability to use New Zealand's surplus credits under the Kyoto Protocol means that "New Zealand is on track to meet its upcoming 2020 target." (*Commission's Draft Report Pg. 36*)

71. Therefore, for New Zealand to meet its first international climate obligation by using accounting techniques that are best farcical and at worst cynical is a classic case of 'green-washing' and helps to explain why successive New Zealand governments have been so slow in taking real action to address climate change. They have known that there will be no international repercussions for their tardiness and have unfortunately wasted the best years to change the nation's level of emissions. This approach has also slowed the response from local government, business and individuals as they have interpreted the government's inaction as proof that action is not required immediately.
72. However, like all smoke screens they clear with time and New Zealand, as the Commission's report states, will find it much more difficult to meet its 2030 and 2050 targets without significant actions to reduce the level of carbon emissions.
73. CNW is heartened by the *Pure Advantage* survey in May 2017 that showed the vast majority of New Zealanders wanted action and leadership on climate change. (*Pure Advantage website*)
74. CNW is very concerned that the Commission's Report did not include a section on the role of the marine environment given that the world's seas comprise about two-thirds of the Earth's surface and oceans are the main heat stores – trapping more than 90% of the excess heat generated by GHGs. The role of the oceans in sequestering carbon and the opportunities that new approaches to managing marine ecosystems and the ocean's resources are worthy of consideration.
75. New Zealand's Exclusive Economic Zone is one of the largest in the world and contains a wealth of natural biodiversity values and potential economic opportunities. (*MfE, Improving Regulation of Environmental Effects in New Zealand's Exclusive Economic Zone, Wellington, August 2007*) Therefore, as the country's geography gives it a large coastline, its trade is dependent on international exports and imports, it has unique flora and fauna and as we have no immediate neighbours this means that when addressing climate change the role of the surrounding oceans must be considered.

#### Waiheke Context

76. The issue of how carbon footprints are measured is critically important. *Thinkstep Australasia* notes that a production-orientated view highlights the supply-side of the economy resulting in the energy and agricultural sectors having the greatest opportunities to reduce emissions. In contrast a consumption-oriented approach considers the demand-side and indicates that the consumption of goods and services by households, businesses, NGOs and governments can

provide the largest potential for emission reductions. They state that “New Zealand is therefore a net exporter of approximately 25% of our total gross GHG emissions.” (*The carbon footprint of New Zealand’s built environment, thinkstep Australasia 14 May 2018*).

77. As a community based organisation, CNW relates more readily to the consumption-oriented approach as this allows individuals and organisations to take responsibility for their GHG emissions and adjust their behaviour to reduce their carbon footprint.
78. Unfortunately, despite several attempts CNW has been unable to establish the emission profile of the island in 1990 nor 2017 to ascertain how it has changed overtime. Consequently, CNW has been forced to rely on anecdotal evidence in many instances. This is regrettable as civil society groups and individuals need to know what actions they can take to mitigate or reverse their emissions and the impact of such actions. On a global, national or regional level there is no direct feedback loop demonstrating the effect of individual households, businesses and community responses.
79. Waiheke Island, to preserve its biodiversity and to be an attractive tourist destination, needs to uphold New Zealand’s ‘clean and green’ image. To achieve these extraordinary levels of social mobilisation will be required involving people from diverse constituencies.

## Low-emission pathways

### Scenario Analysis

80. It is accepted that scenario analysis attempts to provide “plausible descriptions of how the future may develop based on a coherent and internally consistent set of assumptions about key relationships and driving forces” (*Millennium Ecosystem Assessment 2005*) and that scenarios are often used to explore a number of alternatives possible future outcomes; be proactive about possible upcoming changes; generate confidence and a sense of security whilst creating plans for the future.
81. However, CNW believes scenarios do not provide a critique of the present economic, social and environmental context. According to Funtowicz & Ravetz climate change is a global environmental issue with long-term impacts not able to be addressed through computer generated scenarios. (*Funtowicz, S & Ravetz, J A new problem-solving strategy for global environmental issues, National Forum, 01621831, Fall 90, Vol. 70, Issue 4*) Also scenario analysis does not address the “precautionary principle” which “...requires both an assessment of the effects of the causal activities and an assessment of response measures. It requires an element of precaution in policy choices” (*Taylor, P. Heads in the Sand as the tide Rises: Environmental Ethics and the Law on Climate Change, UCLA Journal of Environmental Law and Policy, 19 (1), 2000*) Therefore, scenarios provide options but do not address the need to apply the “precautionary principle” to issues relating to climate change.
82. Also scenarios will never be 100% correct as there are too many alternatives and variables regarding what may and may not happen tomorrow or even 5 years from now. The longer the time period the less accurate the predictions are likely to be. As a result scenarios can give a false sense of security about the future and may limit thinking and actions about other better alternatives. The Commission’s statement “... New Zealand has time to consider its options, and develop or deploy technologies that offer new, cost effective ways to mitigate GHCs” reinforces this concern. (*Commission’s Draft Report pg. 43*)
83. The scenarios used for the Commission’s report are looking out 32 years so are highly likely to be inaccurate especially as they are based on three key emission reduction drivers – electrification of the transport sector, expansion of forestry and changed land use patterns and agricultural production methods which are predicted to provide between 70-80 per cent of net-emissions reductions.
84. CNW questions whether these drivers are necessarily the correct approach and notes that the work of Young (*Towards a 2050 Pathway for New Zealand: A Discussion paper for Globe-NZ September 2017*) suggests that because of the heavy reliance on forestry sequestration New Zealand’s net emissions will begin to rise again after 2050. Other strategies aimed at permanent gross emissions reductions are required.
85. CNW contends that the public will not accept a continued expansion of intensive dairying, even if a methane vaccine is developed, given the industry’s negative impact on waterways, soils and runoff. For example, it has been reported that local Maori in North Canterbury are

opposing a resource consent application by a large irrigation scheme wanting to draw water from the Waipara River on the rounds of cultural offence. *Charlie Mitchell, Dirty rivers 'culturally offensive', The Press 5 June 2018*). Consequently, of the three scenarios outlined by the Commission if we were forced to choose then our prediction would lean towards the “Disruptive Decarbonisation Pathway” as the most likely future.

86. Scenario models tend to marginalise individual and community solutions by focusing on large scale activities. As a result the impact of such technologies as domestic solar PV panels or community owned windfarms receive passing consideration despite their potential to contribute significantly to the electricity needs of an expanded EVs fleet. (See the transport and electricity sections of this submission.)
87. CNW considers that the *Project Drawdown* approach based on potential action plans is a better and more resilient approach with potentially fewer regrets for New Zealand to adopt and should provide industry, iwi, communities and businesses with a more realistic, active and engaged approach to reducing GHG emissions whilst meeting the “Precautionary Principle” identified in international legal jurisdictions.

#### Waiheke Context

88. Civil society and communities rely on the concerted actions of engaged citizens who need to be able to take action (positive or negative) to maintain interest and involvement plus monitor, measure and report their results.
89. As a result communities are much more likely to engage with the *Project Drawdown* approach rather than scenarios. This was very evident at the *Tai Tokerau Climate Change Conference* held in Whangarei, 8 & 9 June 2018 where representatives from regional government, councils, iwi, development agencies, universities, tertiary institutions, schools, research bodies, hospital board, power companies, farmers, businesses, not-for-profit organisation, ex MPs and individuals discussed and developed pro-active sector action plans based on information, innovation, knowledge, experience and skills from across the community. A scenario approach would not have generated such passion, involvement, participation and commitment from grassroots participants.
90. CNW believes that Waiheke will be no exception.

## Emission Pricing

91. Carbon Neutral Waiheke (CNW) believes that the emphasis on establishing a viable emission pricing scheme as the central policy lever to incentivise businesses and individuals to lower their GHG emissions may be a distraction.
92. Government agencies (central and local), iwi authorities, sector organisations, businesses, communities and individuals need to reduce their GHG emissions from a moral, ethical or value perspective first and foremost; secondly, for social, environmental or economic reasons and thirdly, from a cost perspective.
93. Emission pricing schemes, such as the New Zealand Emissions Trading Scheme (NZ ETS), do not themselves result in any carbon reduction, provide a “get out of jail” option and undermine efforts to reduce actual emissions.
94. Unfortunately, the focus of an ETS scheme is the creation of a secondary marketplace for the trading of carbon credits (a type of share market) which can easily be manipulated by nation states, trading blocs, multinational and national corporations plus individual investors interested primarily in generating profit rather than reducing emissions.
95. It seems incredible that given the failure of the international EFTs scheme, that NZ is proposing to retain and expand its own EFTs system which retains a number of the features (lack of access to a sound and trustworthy system of trading; undisciplined market access; lack of certainty and credibility about future unit supply; over and under-pricing resulting in a market glut or scarcity) that destroyed the international EFT scheme.
96. In addition, the failed ETS system was based on a ready supply of questionable quality units at a cheap price which will “...enable New Zealand to meet its first targets for the Kyoto Protocol period with no significant reduction in domestic emissions.” (*Commission’s Draft Report pg. 96*)
97. The rationale that as New Zealanders hold a large number of ‘banked’ New Zealand Units and NZ Assigned Amount Units, an EFT scheme is preferable to a carbon tax as it will prevent possible legal challenges, sends the wrong message to emitters namely, that administrative and legal concerns are more important than reducing emissions.
98. By establishing transferrable property rights (EFTs) the Commission argues that holders of EFTs can manage risk, maintain liquidity and help innovation. In addition, futures, derivatives and forward markets may become established. Such markets are driven by greed, profit maximisation, are highly speculative and were a major factor in the global financial crisis of 2008.
99. The barriers to improving the NZ ETS are considerable ranging from supply, demand, price and policy stability and cross-party agreement. “New Zealand’s emission prices under its past and current versions of the ETS have been too low to incentivise meaningful reductions in emissions.” (*Commission’s Draft Report pg. 108*) To have an effective system it is suggested that the price of NZUs would need to rise from their current \$21 per tonne to at least \$75 per

tonne. Whether this is feasible within an acceptable time period is questionable. The omission of agriculture in the initial international and the existing NZ ETS schemes was and is wrong.

100. The Commission admits that both the international and the NZ ETS scheme have also been largely ineffective in incentivising new forestry planting.
101. CNW therefore, does not support the Commission's Recommendation 4.1. Instead we favour a carbon tax plus a sequestration subsidy as they are not subject to the whims of the marketplace and should be easier to operate given that nominated polluters pay a specified levy for each tonne of emissions and forestry planters and other sequesters receive a specified amount for each tonne of carbon sequestered. It is much easier to establish a correct pricing mechanism which can be set immediately and adjusted as required. Such a system is also more transparent and less open to abuse.
102. We note the success of carbon taxes in reducing emissions in Finland and Japan but particularly in British Columbia which introduced such a tax in 2008. Between 2008 and 2013 British Columbia fuel use dropped faster than other Canadian provinces with overall emissions dropping by between 5 and 15 per cent. GDP growth in the period was higher than other Canadian provinces. (*Max Harris, The New Zealand Project, Chapter 9, Bridget Williams Books, Wellington, 2017*)
103. However, CNW accepts that a mixture of the two systems may be the best long-term option. We suggest that initially a carbon tax regime is used to transition to an ETS scheme or is used if the ETS carbon price is too low or to cover areas not included in the NZ ETS system.

#### Waiheke Context

104. It is difficult to envisage how the NZ ETS scheme would operate on the island given that there are no large scale emitters. Some large landowners could possibly claim carbon credits for forestry planting (predominantly native) as could environmental organisations such as Forest & Bird which owns several reserves on the island and has an active planting programme of native tree species. The island's wineries may also be able to claim credits.
105. In addition, unless the four criticisms of the current NZ ETS outlined by Max Harris, namely- it is highly opaque and difficult to understand; the fraudulent nature of many of the overseas credits used in the scheme; the ability to manipulate prices by large electricity and fuel companies; and the lack of impact on reducing emissions - are overcome it is difficult to see the scheme gaining traction. (*Max Harris, The New Zealand Project, Chapter 9, Bridget Williams Books, Wellington, 2017*)
106. On the other hand, a carbon tax could be easily imposed on the island's building and construction industry, plus the transport and waste sectors.

107. CNW believes that a carbon tax should be levied on all day visitors to the island. The proceeds from this fund could be used to establish a Waiheke Green Innovation Fund with some of the proceeds going to help low income families living permanently on the island transition to a low-emissions economy or a carbon neutral community.
108. However, if the NZ ETS scheme was expanded to include coastal wetlands, marine permaculture and ocean farming as outlined in *Project Drawdown* then given Waiheke Island's extensive coastline such a system could possibly help to drive innovation.

## Innovation

109. Carbon Neutral Waiheke (CNW) supports the Commission's key points, recommendations and conclusions in the chapter on innovation. We strongly agree that innovation needs to be an integral part of the transition from polluting to clean technologies and that delays in making the necessary transition will reduce the associated environmental, economic, social and health benefits plus potential productivity gains.
110. We agree that "Fossil fuel subsidies act in direct opposition to New Zealand's transition to a low emissions economy" and "The Government should phase out all subsidies that support the ongoing production and use of fossil fuels." (Commission's Recommendation 5.1) The savings of approximately \$78-88 million per year should be invested in a new green clean energy innovation fund. (*OECD-IEA fossil fuel support and other analysis: New Zealand, OECD 2018 and Loomis, T., Ending government oil & gas subsidies, Fossil Fuels Aotearoa Research Network, Wellington 2017*)
111. CNW agrees with the proposition that given the countries size and unique emission profile the New Zealand government's innovation strategy should focus on a few niche areas of high importance to reduce its GHG emissions and be a smart follower in other areas and therefore support the Commission's Recommendations 5.2, 5.3 and 5.4.
112. We believe that funding (Commission's Recommendation 5.5) should be shifted to prioritising low-emissions innovations and that both central and local government have a responsibility to use public procurement as an instrument to achieve the required innovations.
113. However, the question "Is it possible to generate creative solutions to environmental problems with an economic, social and political system that has done much to exacerbate these problems in the first place?" needs to be addressed. Baghel, believes ".. that creative and critical solutions can only emerge from approaches that move beyond established boundaries." (*Knowledge, power and environment: Epistemologies of the Anthropocene, Baghel, R, Transcience 2012, Vol. 3 Issue 1.*) In New Zealand this would require support for individual's and/or community's green innovations such as community hot composting or community windfarms.
114. As a community based organisation located on an island CNW lacks the capacity to undertake large-scale technological innovation but can be used to test or pilot new ideas, methods and systems.

### Waiheke Context

115. As New Zealand is often a technology taker (using overseas innovations) a geographically distinct community close to New Zealand's largest city that is dependent on imported energy, food, building and construction materials and relies on ferries as the transport mode to access the island Waiheke can provide an ideal testing site for such climate mitigation ideas as micro-wind systems, micro-grids, smart grids, smart thermostats, building insulation and retrofitting,

electric bikes and vehicles, home water saving, septic tank systems, industrial recycling and community owned solar and wind-farms.

116. In the future it could provide a venue to test the regenerative effects of marine permaculture and ocean farming in restoring a damaged and dying marine environment.
117. Waiheke is already experiencing some climate adaption issues such as coastal erosion and as a consequence local body, private sector, communities and individual adaption initiatives can be tested.
118. CNW believes that civil society organisations on the island can also be leaders or supporters of behavioural innovations as Waiheke has a long tradition of being a leader in community driven change. Recent examples include, the island being the test site for *Countdown's* plastic shopping bag free initiative; the island successfully trialling, with financial support from Auckland Council's Waste Minimisation Fund, community based hot composting of household and commercial organic waste and the Kai Consciousness programme that converts rescued or surplus food into meals for the disadvantaged and reduces waste to landfill. The Waiheke Resources Trust is trialling the production of an Engineered Composite Board made from waste plastic.
119. Waiheke could even be the first NZ centre to have its entire light vehicle fleet run by EVs.

## Investment

120. Carbon Neutral Waiheke (CNW) supports the general thrust of the Commission's recommendations on investment strategies, barriers and opportunities to move public and private investment from traditional high carbon emission intensive industries to low carbon emission industries.
121. We note that several organisations have recently produced reports on the impact of climate change on the world or local financial markets. For example, Marsh and McLennan with the Zurich Insurance Group produced for the 2018 World Economic Forum The Global Risks Report 2017 13 Edition which clearly shows that "extreme weather events" or "failure of climate-change mitigation and adaptation" or "climate change" have since 2011 been ranked in the Top 5 Global Risks both in terms of likelihood and Impact. In New Zealand, David Hall and Sam Lindsay state that "The transition by financial markets to a low-emissions global economy has already begun. Global capital is increasingly being channelled in directions that prioritise and enable climate-aligned projects to deliver mitigation and adaptation benefits." (Hall, D & Lindsay, S, *Climate Finance Landscape for Aotearoa New Zealand: A Preliminary Survey*, Mohio, 2017) Likewise, Westpac NZ has undertaken modelling to assess the climate change implications facing the New Zealand economy through to the middle of the century. The report suggests taking early action on climate change results in savings of NZ\$30 billion in GDP growth by 2050 compared with delaying action. (*Westpac NZ Climate Change Impact report April 2018*)
122. CNW notes that the OECD is reported as saying that with the existence of a global financing gap a 'decisive transition' by G20 nations could add 2.8% to long-run economic output. If avoided costs are added then the net effect on combined GDP could be 4.7% higher in 2050. (Hall, D & Lindsay, S *We must spend more green to get more green. Stuff, 17 April 2018*)
123. CNW supports the establishment of the Green Investment Fund (Commission's Recommendation 6.1) whose initial capital could come from cancelling the existing subsidies to the fossil fuel industry and large irrigation schemes.
124. CNW acknowledges that the Government may need to regulate the investment marketplace through mandatory climate related financial disclosures as recommended by the Task Force on Climate-related Financial Disclosures (Commission's Recommendation 6.2) to ensure that commercial decision-making based on maximising profit does not take precedent over the public interest of avoiding climate change and that 'greenwashing' is not occurring through the actions of established financial institutions.
125. CNW considers the Government should set targets and report annually on how the investment market in New Zealand is moving from fossil-fuel intensive investment to climate-aligned investments. (Commission's Recommendation 6.3) The New Zealand Stock Exchange should require listed firms to disclose their climate-related risks. In addition, mainstream banks, financial institutions plus the Reserve Bank and financial regulators should be required to assess and report on the exposure of the domestic banking and financial system to climate risk.

126. Such an approach would be a major educational tool especially if the notion of climate-related risk being a real financial risk was promoted given that climate change will cause physical risks associated with coastal erosion, extreme weather events and sea-level rise plus transitional risks of ‘stranded assets’ (coal mines, oil deposits and associated production equipment) which become of less value or obsolete as the economy transitions.
127. We believe that central and local government, companies, farmers and directors will be increasingly subjected to liability suits as people affected by climate change sue those organisations perceived to have caused the problem or who failed to protect the public or enable rational decision-making by withholding or not disclosing information.
128. CNW supports the establishment of a New Zealand low-emission investment strategy by the government and other stakeholders covering direct government investments, large public institutional investors and the financial sector. (Commission’s Recommendation 6.4)
129. CNW is pleased by the actions of KiwiSaver provider *Simplicity* decision to disinvest in all companies profiting from fossil fuel. (*The Press*, 5 June 2018). We contend that government agencies such as ACC, the KiwiSaver Fund and NZ Super Fund should be required to disinvest in fossil fuel industries and provide leadership by investing in companies providing low emissions products and services or infrastructure for climate mitigating interventions.
130. CNW notes the rapid development of the Green Bond market overseas since their introduction in 2007 to fund projects with climate or environmental benefits. The market is expected to double in 2017 from its 2016 US \$93.4 billion base. (*Mirchandani, B, The Next Green revolution: An Overview of the rapidly Evolving Green Bond Market, Nonprofit Quarterly, fall 2017*)
131. We support such investment instruments as social responsible investment, corporate-issued and public-issued green bonds provided the return is in line with commercial rates. We note the comparative lack of interest in the Earthquake bonds issued by the Government after the Christchurch earthquake which only offered a rate of return of about half the current term deposit rate.
132. We are heartened by the success of overseas social or green investment banks such as the Triodos Bank which raises and lends funds from the public for specific bankable green projects such as community owned wind-farms and solar-farms or infrastructure projects. Such banks give the socially conscience investor more options as they supply information, reduce risk and financing costs thereby increasing investor confidence. We lament that such financial instruments are not available in New Zealand due to inappropriate legislation and regulation.
133. CNW believes that the Commission should have considered how small to medium scale investments in green technologies could be supported. We suggest that Government financial guarantees, community shares and impact investing could help the creation of a distributed energy grid based on individual and community owned solar, wind and heating systems.
134. We encourage the Commission to recommend that the Government introduces a domestic PVC solar loan scheme modelled on either the current Healthy Home insulation scheme or preferably its predecessor in the 1970s which provided home owners with a zero interest loan

scheme with monthly repayments made through their monthly power bill. Such a scheme could provide the additional electricity capacity to charge the extra Electric Vehicles (EVs) needed to achieve the transition to a low emission economy at almost no cost to the government. (See the electricity section of this submission.)

### Waiheke Context

135. Waiheke has access to several mainstream banks which have branches on the island. It also has its own credit card (Waiheke Credit Card) which can be used only on the island but at all major retailers (including the supermarkets), timber merchants, professional services, restaurants, tourism operators and wineries.
136. The island does experience difficulties in raising finance for a number of new initiatives including for social and community housing, private housing repairs and renovations. Whether the on-island finance company is prepared to lend for EVs and/or rooftop solar is yet to be determined.
137. The island community has demonstrated on numerous occasions the ability to raise funds for local natural environment protection such as the campaigns to save Matiatia and Kennedy Point from so-called development – the building of marinas.
138. Waiheke would be an ideal testing ground for new financing tools such as crowdfunding, impact investment, blended capital and cryptocurrencies to finance such projects as micro-grids, smart-grids, community owned solar or wind farms and even marine permaculture and ocean farming.
139. CNW welcomes the proposal to develop a green bond to be used to fund the planting of permanent native forests in the Hauraki Gulf and elsewhere in the country. Such a bond would greatly help to retain and improve biodiversity on the islands of the Gulf. (*Project explores bond to fund new permanent native forests, NZ Herald, 22 October 2018*)

## Laws and Institutions

140. Carbon Neutral Waiheke (CNW) agrees with the Commission's major key points, recommendations and conclusions in this chapter.
141. We agree with the contention that "There are strong political incentives to avoid making long-term decisions that will have short-term costs and impacts, but benefits that manifests well into the future." (*Commission's Draft Report Pg. 159*) Successive New Zealand Governments have focused "... on economic prosperity over long-term environmental sustainability which has resulted in GHG emission reduction actions that: - do not go far enough or fast enough; lock us into the status quo whereby we repeated the patterns of human activities which caused the threat of climate change; avoid or delay fundamental social and economic restructuring necessary to address the causes of climate change; enable some nations to become economic opportunists; fail to address important equity issues." (*Taylor, P. Heads in the Sand as the tide Rises: Environmental Ethics and the Law on Climate Change, UCLA Journal of Environmental Law and Policy, 19 (1), 2000*) As a result New Zealand's politicians have frequently lacked the foresight and courage to think long-term but in certain circumstances they have demonstrated their willingness to create such frameworks that promote and maintain our present economic system for example in relationship to fiscal and monetary policy.
142. CNW is encouraged by the current government's willingness to take a long-term approach to the Mycoplasma bovis virus even when the chances of success are questionable.
143. We accept that a policy and legal regulatory framework does not ensure that a credible plan with targets to reduce carbon emissions will result unless it is linked to a transparent, accountable and mandatory process agreed by all major political parties. Without such a process future generations will bear the cost of this generations' inaction.
144. CNW supports the recommendation to establish a new Climate Change Act, modelled on the United Kingdom's Climate Change Act, which enshrines legalised long-term emission reduction targets, reporting obligations and timelines. (Commission's Recommendations 7.1 and 7.3)
145. CNW supports the intention of gaining cross party support for Climate Change legislation (Commission's Recommendations 7.2) but is concerned that such an approach may delay the passing of such legalisation as political parties play games to gain short-term political advantages.
146. Likewise CNW supports the recommendations to establish an independent Climate Commission as has happened in the UK, Denmark, Sweden and Finland with the duty to recommend emission budgets and monitor progress towards achieving the budgets. (Commission's Recommendations 7.7, 7.8, 7.9 and 7.10)
147. CNW agrees with the recommendations that all government agencies and new legislation (acts and regulations) should be required to have a climate impact disclosure statement. (Commission's Recommendations 7.4, 7.5, 7.6, 7.11 and 7.12)

148. CNW believes that in the future politicians, government departments, local government and business sectors will be subjected to an increasing number of liability suits such as *Thomson v The Minister for Climate Change Issues, 2017* and *New York v BP plc et.al. 2018* as citizens seek compensation for losses incurred because of the failure to act despite scientific consensus.
149. Such liability suits in the future will probably include dairy farm conversions in environmentally sensitive areas such as the Mackenzie country as the public may view such acts as “eco-vandalism” resulting in the proponents and government agencies that approved such projects being subject to legal action. An equivalent act to the Criminal Proceeds (Recover) Act 2009 or an extension to that may be required to prevent mindless destruction in the pursuit of private profit as citizens attempt to address the attack on the ‘commons’ and try to mitigate against the ‘tragedy of the commons’. Also to ensure the impartiality of the New Zealand judiciary all judges should be required to register their pecuniary interests – such an idea was raised in the defeated private members bill introduced to Parliament by Dr. Kennedy Graham.
150. CNW recommends that the current Resource Management Act needs urgent modification to not only strengthen its environmental provisions but incorporate specific climate change criteria which recognises the impact of carbon emissions and places importance on carbon sequestration. Marine areas such as wetlands, estuaries and bays that either sequester carbon or could potentially sequester carbon should have greater importance than privately owned economic activities such as marina developments or reclamations.
151. CNW considers the Commission has not paid sufficient attention to the role of local government given that they are responsible for regulating land-use, managing land transport, setting building standards, managing the natural environment and waste management. These are all areas which have a major effect on the lives and well-being of the nation’s citizens and should be governed by elected members not “Government appointees” or “arms-length” council controlled organisations. This may require a change in the Local Government Act.
152. To illustrate this point, CNW notes that Auckland Council has signed the Paris Pledge for Action in support of the Paris Agreement; is a member of the C40 Cities Climate Leadership Group and the Compact of Mayors on Climate Change (global coalition) and has signed the NZ Local Government Leaders Climate Declaration. It has been proactive in writing a series of reports on Low Carbon Auckland since July 2014 and has issued updates in 2016 and 2017. Some local boards have also written reports on becoming a low carbon community. (*Becoming a Low Carbon Community: An Action Plan, Waitemata Local Board August 2015*) Yet most of the recommendations of these reports have not flowed into “*The 10 year Budget and Auckland Plan 2050*” or “*Te Mahere a Tamaki Makaurau 2050 Auckland Plan 2050*” which are the action plans guiding future development of the city. The six major objectives and the accompanying 40 plus focus areas for the next 30 years as outlined in the *Te Mahere a Tamaki Makaurau 2050 Auckland Plan 2050* plan do not mention climate change once despite reports from the Ministry for the Environment (*Preparing for coastal change: a summary of coastal hazards and Climate change guidance for local government, December 2019*) and the New Zealand Climate Change Research Institute, Victoria University (*Vulnerability and adaption to*

*sea level rise in Auckland, New Zealand October 2011*) outlining Auckland's vulnerability to sea level rises, coastal erosion and extreme weather events. Such a situation reinforces the concept that policy objectives are not emission reduction tools, that strong leadership is required and that carbon reduction targets need to be stated, monitored, reviewed and reported regularly to the public.

153. CNW is pleased that the latest Auckland Council's 10 year budget has a line item called climate change to which \$40 million for a climate change response fund has been committed. (*Jackson Thomas, "Auckland Council approve Goff's \$26 billion budget; 31 May 2018. Stuff.co.nz*) The relationship of this funding to the objectives outlined in the 10 or 50 year plans is unclear.
154. CNW suggests that the Local Government Act needs to be amended to once again require Councils to consider the well-being of their citizens along with roads, rates and rubbish. Such a shift in local government's priorities will help to facilitate and support actions by local businesses, communities and individuals to address climate change.
155. In addition, CNW urges the Commission to recommend that all local authorities in New Zealand should be required to outline the impact of possible sea level rises and extreme weather events into their five year plans and to report on mitigation and coastal withdrawal strategies.

#### Waiheke Context

156. CNW as a community based organisation mainly deals with local government. As has previously been mentioned, a significant sector of the Waiheke community opposed the compulsory amalgamation of the island with Auckland City Council in 1989 and later the Auckland super city. The island has continually agitated for de-amalgamation and, on three occasions, has formally applied for such a result, only to be turned down by either a democratic referendum, a Royal Commission or the Local Government Commission. As a result the relationship between the islanders, the local board, Auckland Council and its agencies such as Auckland Transport Board are frequently strained.
157. Many people consider that Auckland Council does not listen to the views of the island's residents be it on waste management, transport, roading, stormwater, housing permits or protection of the local marine and land environment (especially given that the island is part of the Hauraki Gulf Maritime Park).
158. To illustrate the difficulties faced, the local community predominantly opposed the Kennedy Point marina project on grounds of environmental damage and also that the benefits of the marina would accrue to the users of the marina and not to the local people whilst the costs (such as waste management) would be borne not by the users of the marina by the local community. However, Auckland Council supported the development as they appear to be more influenced by people living off the island than by those living on the island and as a consequence the community's case was lost in the Environment Court in May 2018.

159. On numerous occasions Auckland Council has failed to uphold its own zoning requirements, stormwater discharge restrictions, allowed development and activity harmful to the health of the Hauraki Gulf and has imposed waste management systems unsuitable for the island.
160. Such decisions undermine confidence and will unless addressed create difficulties in implementing a number of climate change strategies and options.
161. The track record of Auckland Council's controlled organisations such as Auckland Transport is little better. "In recent years, there has been significant controversy with many of Waiheke's resident population who rely on the ferries "like buses" - and especially those who commute daily to work – complaining of poor parking arrangements at Matiatia, unfair price increases and generally poor ferry services." (*Waiheke Island Wikipedia accessed 4 June 2018*).
162. The issues still remain with poor bus timetabling and congestion from tourism operators adding to the woes. "However, progress has been stymied for more than a decade by multiple ownership by council agencies operating in silos." (*Geoff Cumming, Fix for Matiatia on fast track, Gulf News, 14 June 2018*)
163. Given that the roads on the island are mainly narrow, sometimes unsealed, mostly unlit, subject to slips and flooding and in many cases without footpaths other transport issues remain controversial. For example, Auckland Transport approval of Fullers, the main ferry operator, to run double decker tourist buses on the island outraged the local community and because of the safety risks has prevented more active transport options (walking and cycling); encouraged parents to drive their children to school; increased car ownership rates and decreased car and ride sharing.
164. In addition, the local Waiheke board lacks a climate change plan even though issues of coastal erosion, property damage and flooding are becoming commonplace resulting in some residents taking remedial actions themselves to protect their properties. (*Neighbours want wall to stop erosion, Waiheke Marketplace, 8 November 2017 &Turning the Tide, Gulf News, 31 May 2018*)

## Short-lived and long-lived gasses

165. Carbon Neutral Waiheke (CNW) agrees with the Commission that carbon dioxide as a long-lived gas is the key long-term driver of climate change. However, we are concerned that the summary key points and conclusion section of this chapter whilst outlining that GHGs have different atmospheric lifetimes is not specific in naming the short-lived GHG - methane - nor the longer-term GHG - nitrous oxide - despite their significant role in New Zealand's greenhouse gas profile.
166. In the detailed sections of this chapter these short-comings are addressed but such an omission allows New Zealand's agricultural sector and some industry sectors to spread the myth that methane and nitrous oxide production are not important given their relevant short atmospheric lifetime in comparison to carbon dioxide.
167. Yet methane over a five year period traps up to 100 times more heat than carbon dioxide; 72 times more heat over a 20 year period (*IPCC 2007*) and therefore whilst accounting for only 14% of emissions worldwide it is still 19 times greater a problem for climate change than carbon dioxide over a 5 year period and 4 times greater over a 100 year period. As a consequence methane warms the planet rapidly but dissipates quickly.
168. According to a French study (*Laboratoire des Sciences du Climat et de l'Environnement (LSCE)*), released by the Global Carbon Project, methane concentrations in the atmosphere began to surge around 2007 and grew by 10 or more parts per billion in 2014 and 2015 compared with an average annual increase of only 0.5 parts per billion during the early 2000s. The researchers warned that such increases in methane could threaten efforts to limit global warming.
169. The impact of nitrous oxide is many times worse given that it is a comparatively long-lived gas. Like carbon dioxide, it must be reduced to net zero to stabilise the climate.
170. As methane and nitrous oxide are significant components of New Zealand's GHG emissions - 42.7% and 10.5% respectively (*New Zealand greenhouse gas inventory 1990-2015, MfE, 2017*) it behoves New Zealand to take serious steps to prevent the emission levels of these two gases from increasing even though the steps required will have significant impact on New Zealand's agricultural sector.
171. CNW supports the establishment of separate domestic targets for long-term and short-term domestic GHGs to be monitored and reported regularly. (Commission's Recommendations 8.1) Such separate targets will have an important educational role as they will help to make transparent the difference between net-zero long-lived gas targets and stabilising targets for short-lived gases.

### Waiheke Context

172. CNW, as previously mentioned has faced considerable difficulty in obtaining data for Waiheke's 1990 or current carbon footprint. The 1990 date almost coincides with Waiheke getting a regular commuter ferry (1987) which dramatically changed the composition of the island's population, their employment options and socio-economic characteristics. The island commenced a process of gentrification. The date (1990) also closely coincides with the island losing its own council (1989) and becoming part of Auckland City Council. After amalgamation of Auckland's four city councils into one council (2009) Waiheke became part of the new super city (Auckland Council) which has tended to consider the island to be a dormitory suburb of Auckland and an important tourist destination.
173. Without concrete evidence CNW assumes that given that there are no dairy farms on the island and the extent of sheep and beef farming is limited, that the majority of Waiheke's GHG emissions will be carbon dioxide due to emissions from transport – ferries, cars, light and heavy vehicles – with some methane emissions predominantly from farming, waste disposal and sediment runoff plus some nitrous oxide emissions from fertiliser applications.

## **Policies for an Inclusive Transition**

174. Carbon Neutral Waiheke (CNW) accepts that the transition to a low carbon emissions economy will result in changes to the existing fabric of society due to jobs being created or lost, industries declining or growing, changes in the pricing of some essential household goods and services such as food, transport and energy which may negatively impact on lower-income households.
175. We agree that issues of social justice and fairness need to be addressed during the transition process and support the Commission's analysis that the Government has the means to address such concerns and can introduce measures such as welfare benefits, personal tax credits and minimum wage increases to lower or offset any negatives effects.
176. Government, by passing legislation to make solar panels compulsory in all new homes, as has happened in California, could stimulate the marketplace and drive prices down which would make solar panels more affordable to both home owners and landlords.
177. Other measures such as home insulation, double glazing, heat pumps, domestic solar energy systems and regulations to improve the quality of housing would have secondary health and well-being benefits and could be targeted at home owners and renters with limited income.
178. If effort is put into making New Zealand's current housing stock warmer, drier and healthy coupled with domestic hot water and rooftop solar panels we believe sufficient new jobs will be created to compensate for many of the expected job losses in the fossil fuel sector,
179. For communities experiencing major economic and social changes as a result of low-emissions reduction policies CNW supports the intervention of specialists teams that can help residents to find other employment, retrain or provide assistance to those forced to shift to another location.

### *Waiheke Context*

180. The island population is older and less multicultural than Auckland as a whole. It has a large proportion of people born overseas (28%) with the majority coming from the UK.
181. Waiheke has a higher proportion of lower-income groups and a lower proportion of higher-income groups compared to Auckland due to the higher number of pensioners and single-parent families living on the island.
182. The island is faced with a housing shortage due to the high number of holiday homes (38% of houses were unoccupied at the time of the 2013 census) and these homes are not normally rented on a long-term basis. In addition, many of the occupied homes are only rented on a short-term basis (March to November) as the owners can get considerably more rent over the summer peak tourism season.

183. Many of the rental properties on the island are of low quality with poor insulation and rely on wood fired heating in the winter. A coalition of agencies including Waiheke Budgeting Services and the Waiheke Health Trust has been formed to address this issue.
184. Rents on the island are increasingly becoming unaffordable and when combined with the higher cost of living, due to shipping freight costs of most foodstuffs, fuel and amenities, many low income families have been forced to leave the island.
185. As a result many island families will require assistance to transition to a low emission economy. This could be funded by the introduction of a tourist carbon tax for people visiting the island for a day. Such a tax at \$1 per person could raise between \$500,000 to \$750,000 per annum.

## Land Use

187. Carbon Neutral Waiheke (CNW) strongly agrees that as biological emissions from land use make up almost fifty per cent of New Zealand's gross emissions and growing forests offset about 30% of total gross emissions then any realistic transition to a low-emission economy requires a substantial shift in how land is used.
188. We are concerned that the level of agricultural emissions from both methane (produced predominantly by ruminant animals) and nitrous oxide from soils has continued to rise by 16% between 1990 and 2015. Emissions from dairying rose 130% in the same period.
189. However, we strongly disagree with the Commission's assertion that the major shift should be from sheep and beef farming to forestry. As the Commission's report shows (Figure 10.1) yearly biological emissions per hectare from dairying is about four times greater than from sheep and beef farming and at least 11 times greater than from cropping. Surely, then the focus should be on shifting land use from irrigation intensive dairying to lower emissions land uses.
190. Irrigation intensive dairying is a subsidised land use - through irrigation subsidies; ability to access water for free and to externalise the costs associated with pollution from sediment, chemical and pesticide runoffs - that has made many of New Zealand's rivers unfit for swimming and helped to destroy New Zealand's clean, green image.
191. Irrigated intensive dairying is similar to a charity's second-hand shop as it gets its basic raw material (water) for free even though water has a real economic value. To illustrate, urban residents are forced to pay water rates; a considerable number of water bottling plants operate in New Zealand supplying domestic and international markets; and domestic and imported water is sold from commercial and at retail outlets. The estimated amount of bottled water sold in New Zealand at supermarkets and petrol stations in 2013 was \$60.4 million in 2013 with two companies Coca-Cola Amatil and Frucor. (*Is bottled water a case of money down the drain?, NZ Herald, 10 June 2013*)
192. Estimates quoted by Flemmer & Flemmer are that lactating cows consume 70 litres of water per day whilst dry cows consume 45 litres per day. In addition, the farm dairy shed uses 50 litres per day for washing the cows and rinsing the milking equipment. (*Flemmer, C & Flemmer, R Water use by New Zealand dairy farms 1997-2000, New Zealand Journal of Agricultural Research, 50-4, 479-489*). An article in Stuff quotes agricultural economist Peter Fraser and farm consultant Dr Alison Dewes who claim that using Dairy NZ figures the 12,000 NZ dairy herds consume 4.8 billion cubic metres of water per annum or the equivalent of 58.2 million New Zealanders each consuming the average 80 cubic meters of water per annum. They state that almost all of the water is used by 2000 farms mainly in Canterbury and Otago. (*Dairy farms use equivalent water of 60 million people, experts say, Stuff NZ, 18 September 2017*)
193. At just one cent per litre this subsidy is worth \$4.8 billion. Water, a resource owned by the people of New Zealand is being privatised for private gain. Consequently, CNW encourages the

charging of a water rate – in addition to the current water right levy imposed by regional councils. The funds received from this levy could be used to trial better farm management systems and innovations aimed at reducing methane and nitrous oxide emissions.

194. CNW endorses the views expressed by Steven Carden, CEO of *Pamu (Landcorp)* in relationship to restricting some on farm activities in some regions in an effort to help clean-up waterways when he commented that “We’d be dreaming if we believed that, as farmers, we might be exempt from practices everyone else has to adopt.” *Pamu* has halted dairy conversions, adopted lower farm stocking rates and stopped using imported palm kernels as a feed-stock with the result of improved milk quality, fewer periods of feed deficits, less farm injuries and fewer animal health issues whilst maintaining or improving farm profitability. (*NZ Herald 22 May 2018*)
195. A shift as simple as switching from twice daily to once per day milking is estimated to reduce emissions by 10%. (*Reisinger, Clark, H, Journeaux, Clark, D & Lambert On-farm options to reduce agricultural GHG emission sin New Zealand, NZ Agricultural Greenhouse Gas Research Center, Palmerston North, 2017*)
196. Therefore, CNW believes there should be a moratorium on all land-use conversion to irrigated intensive dairying farming and other further livestock intensive schemes. Such a moratorium would save iconic landscapes such as the Mackenzie country from further dairying conversions that require irrigation, chemical fertilisers and lack the correct infrastructure to prevent runoff from polluting the surrounding rivers and lakes. (*Greenpeace Newsletter 24 May 2018*). We welcome the Labour-led government’s announcement that it will wind down Crown Irrigation Investments Ltd (a \$450 million fund). (*Greenpeace press release, April 2018*)
197. Another area of concern is that the cost of damage to the waterways is not borne by the polluters but by other ratepayers and through the general tax system. This is clearly an example of the ‘tragedy of the commons’ where one party receives the economic benefit (the farmer) whilst the other party bears the loss (the general public) who did not cause the initial problem. We support the nutrient caps system used by Environment Canterbury but insist that it be properly monitored and where necessary enforced.
198. CNW rejects the view expressed by the President of Southland Federated farmers stating that farmers had made great strides in addressing issues related to clean rivers as 2/3rds of Southland rivers are now swimmable. (*Rural News Radio NZ Saturday 19 May 2018*) We wonder when did New Zealanders agree that having 1/3rd of its rivers non-swimmable was OK? Would society accept that 1/3<sup>rd</sup> of its public and commercial buildings were below minimum earthquake standards or 1/3<sup>rd</sup> of its hospitals did not operate within agreed medical standards? Such statements reveal how deep seated is the resistance to change.
199. CNW is also concerned that the Commission’s report was light on considering such alternative farming practices as multistrata agroforestry, silvopasture, regenerative agriculture, tree intercropping and conservation agriculture which Project Drawdown considers are all proven techniques to reduce agricultural emissions. (*Project Drawdown pgs 46-47, 50-51, 54-55, 58-59, 60-61*). Therefore, the Commission’s (Recommendation 10.8) needs to be broadened to include alternative land use practices.

200. CNW believes that the assertions in Box 10.3 by Locke, Wise Response Society and St. Pierre in the Commission's draft report are of the utmost importance, namely that "A small percentage increase in the amount of carbon stored in the world's soils (as little as 0.4% a year) could entirely offset fossil fuel emissions." Other submitters considered there is the potential to increase soil carbon levels between 10 to 40 per cent.
201. Such observations could support the further growth of organic farming in New Zealand. Statistics NZ reported domestic sales of \$217 million and exports of \$280 million in 2015 and the trend is for the market to increase. We note that Carden, in the NZ Herald 22 May 2018, stated that "We have not used nitrogen on these farms since converting them to organics 18 months ago, yet the pastures are as healthy as ever." Organisations such as Nourish Scotland report that on average soil carbon on organic farms is 285 higher than non-organic farms in Northern Europe and 20% for all countries studied in Europe, North America and Australasia. (<http://www.nourishscotland.org/wp-content/uploads/2012/09/sa.pdf> Others such as Reisinger (*Commission's Report* pg. 248) state that New Zealand animals consume more nitrogen than they need which increases the levels in their urine and dung.
202. CNW notes that the rate of change to achieve the desired land use shift is no greater than that experienced by the sector over past decades.
203. We support the research efforts into potential new methane inhibitors and/or vaccines for reducing methane emissions from animals but believe the potential impact from such approaches are unproven and should not be part of the land-use shift model until verified.
204. CNW agrees that agriculture should not be excluded from the NZ ETS. (Commission's Recommendation 10.3). We believe that the Commission's (Recommendations 10.4) should be broadened to include also the potential effects of a carbon tax. We do not accept the argument that global food security issues are a valid reason to exclude agriculture from the NZ ETS given how little agricultural production is traded internationally. We consider the point of obligation for the NZ ETS should be a mix of processor and farm levels. The use of a common tool such as OVERSEER to monitor emissions at a farm level is a sound approach (Commission's Recommendation 10.5)
205. We support efforts to increase the acreage of horticulture and cropping farms as these tend to provide higher levels of profits and are less environmentally damaging especially when they are using organic and/or regenerative farming practices. Crops such as Green Kiwifruit may need to shift from their current major growing areas because of climate change according to a study in the *New Zealand Journal of Crop and Horticultural Science* by Dr. Andrew Tait of NIWA, and reported by Andrew McRae, Rural reporter, Radio NZ 15 September 2017)
206. CNW believes that there should be a moratorium on converting plantation forestry to irrigation intensive dairying, such as Balmoral Forest in North Canterbury. The reasons outlined in the Commission's report (pg. 242) for deforestation before 2008 are sobering and show how economic rationalism prevails over environmental considerations unless there are appropriate regulations and incentives.

207. CNW considers that with the support of initiatives such as the new Government's proposal to plant a billion trees in the next 10 years, the rate of forestry planting can be achieved. However, the relative merits of carbon farming versus production forestry will need careful consideration with sufficient areas devoted to native plants as forest carbon sinks. In addition, it is accepted that some form of incentive may be necessary to achieve the desired level of planting which needs to be monitored and reported regularly (Commission's Recommendations 10.1, 10.2, 10.6 and 10.7).
208. CNW welcomes *Pamu (Landcorp)*'s report that it is accelerating its forestry planting over the next few years (up to four million trees) across its hill-country farms which it believes will result in less runoff and erosion whilst improving profitability. (*Carden, NZ Herald 22 May 2018*)
209. CNW believes a number of community based organisations would actively participate in the *DairyNZ (Commission's Draft Report pg. 267)* proposed community based afforestation blocks where farmers collectively purchase land for carbon sequestration purposes and people buy carbon offsets.
210. CNW encourages the New Zealand land-based sector to use its comparative advantage and excellent international reputation to be a leader in advancing new practices and maybe technologies to reduce agricultural emissions internationally.
211. CNW is very concerned that the Commission's Report did not include a section on the role of the marine environment. Because we wish to discuss the potential carbon sequestering opportunities of the marine ecosystems we have included comments in this section of our submission.
212. The world's seas comprise about two-thirds of the Earth's surface and oceans are the main heat stores – trapping more than 90% of the excess heat generated by GHGs. Given that water has a greater capacity to soak up thermal heat than land they have acted as a buffer from rising carbon dioxide concentrations and warming temperatures. The rising temperatures of the Earth's oceans adds to rising sea levels as warmer waters expands. In addition, the oceans have absorbed about one-third of the carbon dioxide released over the past two centuries resulting in ocean acidification which in the future will effect marine life including coral reefs (*Veronika Meduna, Towards a Warmer World: What Climate Change will mean for New Zealand's Future, BWB Texts, 2015*)
213. The world's oceans have also been subjected to overfishing, fertiliser, chemical and sediment runoff, plastic dumping and fossil fuel spills.
214. The world's coastal wetlands can store five times as much carbon over the long term than tropical rainforests and "According to the journal *Nature* the soil of mangrove forests alone may hold the equivalent of more than two years of global emissions – 22 billion tonnes of carbon. Much of which would escape if these ecosystems were lost." (*Project Drawdown, Pg 112*)

215. Consequently, given the length of New Zealand's coastlines and the size of our Economic Exclusive Zone the role of the marine ecosystems should be an essential component of the Commission's report.
216. CNW urges the Commission to consider the role of coastal wetlands in New Zealand as a potential carbon sequester and their role in protecting coastal communities from coastal erosion and severe weather events. We believe that there should be a government ban on all wetland reclamation and that the Government should have a programme actively encouraging mangrove restoration similar to the announced forestry planting programme. We note that Senegal has such a programme and is receiving carbon credits to offset its emissions.
217. We also urge the Commission to consider the potential roles of marine permaculture which cultivate kelp forests that not only store carbon but can provide food, feed, fertiliser, fibre and biofuels. (*Project Drawdown pg. 178-180*) Also the potential of ocean farming cultivating seaweed and shellfish to clean up polluted waterways and the oceans. (*Project Drawdown pg. 206-208*)

#### Waiheke Context

218. Rural land use on the island has undergone a number of changes since 1990. The most drastic being the conversion of pastoral land to winegrowing resulting in the island becoming known as New Zealand's "island of wine" with over twenty-six vineyards and wineries. This trend appears likely to continue. Encouraging the use organic winegrowing methods would increase the levels of carbon sequestered by the island's soil.
219. Stronger laws need to be enacted to ensure existing parks and reserves on the island will not in the future be subject to property development thus maintaining their existing role of carbon sinks.
220. Due to the needs of household sewage management the island has relatively larger sections than Auckland households. This has increased the level of home gardening and composting and enables many residents to eat seasonally grown local food thereby reducing food-mileage and carbon emissions.
221. It is vital that a sensible policy framework be used when land development is suggested as unlike Auckland, the island does not have a reticulated water or sewage system. To illustrate the problem, in 2016 the Auckland Council, under pressure from the Government to free up more land for housing, attempted under their Unitary Plan to promote and use a one size fits all approach for all land in the Auckland District, even though Waiheke island's district plan was not covered by the unitary plan. As a consequence, Waiheke lost its 'rural-urban boundary' a planning tool which had helped to limit suburban sprawl outside the main villages and avoid large-scale housing subdivision on the island's eastern half. Council's decision was appealed to the High Court resulting in an out of court settlement with the Unitary Plan Hearings Panel to reinstate the 'rural-urban boundary'. To achieve this favourable outcome the community contributed \$35,000 through fundraising to fight the case. (*Gulf News 22 June 2017*) It is a sad situation when the local community has to endlessly fundraise to prevent

inappropriate, often illegal, and irrational economic and carbon emitting developments from occurring. This situation has occurred because our established laws require the “.. advocates for the environment to have the burden of proving environmental harm.” These laws should be amended and require “.. the burden of proof to be moved to the initiator of change, as an essential element of implementing the ‘precautionary principle.’” (*Taylor, P. Heads in the Sand as the tide Rises: Environmental Ethics and the Law on Climate Change, UCLA Journal of Environmental Law and Policy, 19 (1), 2000*)

222. A number of the sections on the island are zoned bush residential and strict bylaws exist to maintain the existing trees and bushes on the property. Unfortunately, many newcomers to the island plus property developers want to change this zoning requirement to obtain a sea view which increases the capital value of the property. However, from a carbon emission perspective such properties are essential carbon sequesters and we urge the retention of the bush residential zoning.
223. A further example of short-sighted and climate change contradictory behaviour by Auckland Council is their recent decision to axe the rates remission policy for natural heritage despite opposition from the QE11 Trust, Forest & Bird, the Council’s Rural Advisory Panel and the Waiheke Local Board. The decision means that residents who have restored native bush and placed the land into QE11 Trust covenants will no longer be exempt from paying rates on protected property. (*Rates blow for private bush restoration, Gulf News 14 June 2018*) The Council’s anti-carbon sequestering approach is obvious.
224. The marine environment surrounding Waiheke is under considerable pressure from population growth; marina developments, stormwater and sewerage discharge; sediment runoff; discharges of heavy metals, micro-biological pathogens, nutrients, fertilisers and micro-plastics plus rubbish dumping. As a result the health of the Hauraki Gulf has declined significantly with a thick layer of mud now through large parts of the Gulf especially around the Firth of Thames. In Auckland, half of all monitored beaches exceeded contamination levels at least once in 2017, with several beaches being “no swimming” zones. Over 882,000 metric tonnes of rubbish was removed from the coast between 2014 and 2016 by the Watercare Harbour Clean-Up Trust. Fish stocks have declined with snapper numbers down by 83% on historic levels and other biodiversity indicators have also decreased significantly. (*State of the Hauraki Gulf 2017, Hauraki Gulf Forum*)
225. For residents and visitors to the island such reports of a dying Hauraki Gulf are alarming. If the Gulf was seen as not just a marine paradise for beach-goers, boaties, recreational and commercial fishers but as a critical part of the action to address climate change then positive steps may happen to increase the number of marine reserves; control fishing, runoff and dumping of rubbish plus protecting estuaries, harbours, coastal wetlands and mangroves from further development.
226. CNW considers that Waiheke island has considerable potential to act as a carbon sequester and increase the levels of biodiversity whilst helping to protect its coastal communities from erosion and severe weather events. We would like to see Waiheke being used to trial marine permaculture and ocean farming techniques. (*Project Drawdown pgs. 178-180 & pgs. 206-208*)

## Transport

227. Carbon Neutral Waiheke (CNW) strongly agrees that it is essential to come to terms with transport emissions given that they are the second largest source of greenhouse gas emissions making up almost twenty per cent of New Zealand's gross emissions and grew by almost 70% between 1990 and 2015 (*New Zealand greenhouse gas inventory 1990-2015, MfE, 2017*)
228. We are concerned that the majority of these emissions are from private road transport due to New Zealand's high vehicle ownership, comparatively low levels of public transport use, an aged and inefficient vehicle fleet plus poor consumer choices such as the trend to purchase larger and heavier vehicles.
229. We accept the necessity for the light vehicle fleet to be electrified as soon as possible by New Zealanders shifting to electric vehicles (EVs) and agree that by 2030 nearly all vehicles entering the fleet need to be EVs. To support the movement to EVs CNW supports the introduction of CO2 emissions standards for light vehicles entering the New Zealand vehicle fleet (Commission's Recommendation 11.1).
230. We support the use of the proposed price feebate scheme (Commission's Recommendation 11.2) and central and local government using the power of public procurement to create a market whilst demonstrating the acceptability of EVs (Commission's Recommendation 11.4)
231. We consider it is essential for government to assist in the development of the EV charging network (Commission's Recommendation 11.3) as this is a perceived problem by some consumers who report having to queue in city centres. (*EV owners sick of queuing for charge points, NZ Herald, 20 May 2018*)
232. Given the actual or perceived consumer barriers to adopting EVs namely, price, concerns over vehicle range and lack of understanding of the costs of running and maintaining an EV then an interim strategy until 2025 that encourages a parallel shift to hybrid cars given their lower price, greater availability, higher market acceptability and proven track record is worth considering.
233. We support the setting of a target date to signal when New Zealand will phase out the importing of fossil fuel cars and suggest the date should be 2035. This is important given the media suggesting that petrol car import prices could rise. (*Shift to greener economy could see petrol car import cost rise, NZ Herald, 27 April 2018*)
234. CNW acknowledges that it is more difficult to electrify the heavy vehicle sector but believes that government policy needs to encourage wherever possible a mode shift to the less GHG emitting option especially as heavy vehicles account for 25% of transport emissions but only 6% of the total vehicle kilometres driven. (*Annual fleet statistics 2016, MoT, 2016*) However, we have been informed that it is relatively easy to electrify road building equipment such as graders and heavy rollers and urge the Commission to investigate. (*Personal Correspondence*)

235. The exclusion of international aviation and marine transport from the Paris Agreement is a barrier to reducing emissions, especially given New Zealand's dependency on global trade (exports and imports) and international tourists.
236. The UK Committee on Climate Change states that if the world is to keep within the Paris Climate Accord of less than 2 degrees C of warming then the average carbon emissions per person needs to reduce to two tonnes per annum by 2050. A trip to Sydney adds 816 kgs of climate-warming emissions, a return trip to Bali 2.5 tonnes and a return trip to London 7 tonnes. (*Rebecca Macfie, The real cost of air travel to the environment, The Listener, 26 November 2017*)
237. Also the public needs to be aware of the emission costs of international travel by both air and sea. George Marshall, Climate Outreach Information Network has calculated that for a trip from Southampton to New York on the Queen Elizabeth 11 "Every passenger is responsible for 9.1 tonnes of emissions. Travelling to New York and back on the QE11, in other words, uses almost 7.6 times as much carbon as making the same journey by plane." This calculation excluded environmental costs of water treatment and disposal, waste, sewerage and oil-contaminated water. (*The Guardian 20 December 2016*)
238. We consider that the average tourist has no idea of the carbon footprint of their recreational travel and therefore suggest that the existing voluntary carbon offset available by airlines be extended to include cruise ships and within five years be replaced by a compulsory levy on all international recreational and business travel.
239. CNW supports the introduction of vehicle emissions standards and considers the lack of standards are a demonstration of a lack of leadership from central government. Such standards will prevent New Zealand becoming a dumping ground for high emitting vehicles from overseas. It is essential that motor vehicle importers are required to report on their choices of vehicles for the New Zealand market on an emissions basis.
240. In addition, the health benefits of adopting such standards are well-known and according to the authors of the Commission on Pollution and Health, published in *The Lancet October 2017* outdoor air pollution from vehicles and industry cause 4.5 million deaths every year.
241. We acknowledge that the lack of cost effective electricity pricing may be affecting the uptake of electric vehicles. We agree that off peak charging and smart metering are essential but do not agree that this necessarily will put significant pressure on the existing electricity network nor require large investment to provide additional centralised capacity as is suggested in the Commission's Report. The Commission's view is being reinforced by articles in the print media with one under the banner "Electric vehicles may put New Zealand power network into overdrive" reporting that lines company *Vector* and *Concept Consultancy* suggest that the electricity network may struggle to keep up with the adoption of EVs. (*Susan Edwards, NZ Herald, 13 March 2018*) Whilst such reports are essential to ensure that the nation has the ability to transit its vehicle fleet to EVs we are concerned by the sensational reporting of the issues in the media which may delay the uptake of EVs.

242. We were heartened to read that Russell Watson, Network Engineering Manager, Northpower has a different perspective and states that "To power one million EV you would need around 2,600 GWh per annum which equates to 6% of New Zealand's present electricity generation"(Based on a 40 km daily commute or around 15,000 kms of driving per year and efficiency of 6km/kWh) and "If all the consented wind generation was constructed it could potentially charge 3.5 million EVs." He went onto say " If we are smart then there is the ability to charge significant numbers of EVs without major upgrades in grid and distribution networks." (*Russell Watson, Whangarei EV & AV Symposium – Grid Impact of EVs, 28 May 2018*).
243. CNW is disappointed that the Commission appears to view the national electricity grid as the sole supplier of energy for EVs. Carbon Neutral Waiheke considers that a significant amount, if not all, of the required energy can be obtained from domestic rooftop solar systems (see the Energy Section of this submission) and encourages the Commission to adopt a broader approach to this issue.
244. We support the Commission's conclusion that the Government needs to continue or add to current measures to support EVs uptake such as road user exemptions; bylaws to allow EVs to travel in special vehicle lanes; publicly available charging stations and charging stations at workplaces and car parking buildings (these must be built at a rate to ensure there is no lag between the supply and demand); a charge on fossil fuel motor vehicle emissions; and the introduction of a price feebate scheme for vehicles entering the fleet and an annual charge.
245. As previously noted CNW is worried by articles such as Jamie Morton's, Science Reporter, NZ Herald head-lined "EV owners sick of queuing for charge points" which quoted responses from the latest survey by the EV-focused citizen science project Flip the Fleet which quizzed more than 100 EV owners who stated charging availability in city centres was their major problem. Respondents reported having to wait on 14% of occasions for an average of nine to twelve minutes. (*NZ Herald, 20 May 2018*)
246. We support the promotion of people shifting their transport mode from private car to public transport, walking and/or cycling as this helps to shift mindsets. The introduction of electric trains in Auckland increased patronage and cities with electric buses report similar results. (*NZ Herald, 4 May 2018*) Julie Anne Genter, Associate Minister of Transport states that in places where they have balanced transport systems about one third of trips are walking and cycling, one-third by public transport and one-third by car. Walking, cycling and public transport make towns and cities more attractive places to live. (*AA Directions , Autumn 2018*)
247. We are heartened by the new \$28 billion Auckland Transport Alignment Project which may help to reverse the impact of the trend over several decades of a slower growth rate of investment in public transport systems than roading projects which has resulted in Auckland being rated by the navigation company *Tom Tom* as the 40th worst city for traffic congestion with each car wasting an average of 45 minutes per day (five minutes more than for London)
248. We urge the adoption of good street designs that properly cater for walking, cycling, public transport and road users. Painting cycleways on existing streets is simply not good enough nor is the tendency to provide on street car parking parallel (to the cycleway) which means

that passengers open their car door into the cycle lane. Examples of good cycling network design can be found in countries such as Denmark, the Netherlands, Germany and Bolivia.

249. CNW believes that wherever possible freight should be shifted from road to rail and coastal shipping. We acknowledge that such shifts are difficult but lament the failure of successive governments to maintain a viable freight and passenger train network in New Zealand. The fact that the main trunk line between Auckland and Wellington is still not fully electrified is a national disgrace given that this project was a “Think Big” project first mooted in the 1980s. Other countries have retained or expanded their railway network. Today, apart from city rail networks long distance passenger trains are designed around tourists.
250. The failure to consider the potential role of passenger trains was evident in Christchurch following the 2010/2011 earthquakes which resulted in a large number of residents relocating from the city to the surrounding districts of Waimakariri and Selwyn. Both of the major satellite towns (Rangiora and Rolleston) had rail connections and stations which could have been used for commuter transport but instead the road network became congested, transport time doubled and pressure was exerted to provide new motorways.
251. CNW notes that the role of ferries as a public transport mode is not mentioned in the Commission’s report which we believe is an oversight given the potential to move people in Auckland from Pine Harbour and Waiheke in the east, Hobsonville and West Harbour in the West and Gulf Harbour in the north.
252. CNW strongly supports changes to how transport infrastructure is funded in New Zealand which has been skewed to the advantage of road transport for over seven decades and has resulted in poor transport efficiencies, over investment in roads, under investment in public transport, poor city planning, congestion, over use of the motor vehicles, greater health costs and environmental degradation. We believe a holistic approach to costing transport services is required which includes pricing transport externalities such as congestion and air pollution. We also support the movement by the new Government away from the previous Government’s politically motivated Roads of National Significance programme which focused on large motorways projects despite low benefit-cost ratios which over emphasised travel time savings as a means of encouraging regional development. Future transport funding must factor in the costs of carbon and other emissions, plus social, economic and environmental costs to create a level playing field for transport investment. We support the Commission’s (Recommendation 11.6) that the Government broadens the Government Policy Statement on Land Transport to cover the whole transport system and makes the transition to a low-emissions economy a strategic priority.
253. CNW believes that price incentives (Commission’s Recommendation 11.5) and regulations as well as a major education programme will be required to halt the growth in the motor vehicle fleet and move New Zealanders from their obsession with car ownership and private mobility. We note that car usage does not respond easily to petrol price increase and so suggest that a long-term public education campaign similar to those used to promote public health issue such as anti-smoking, drink driving and road safety will be needed to shift public attitudes. The starting points could be:

- to ban all new advertising of fossil fuel vehicles from 2020. Such a ban should be progressively broadened to include second-hand vehicles. The campaign advertisements should emphasize the age of New Zealand motor vehicles, their poor fuel use, high carbon emissions, lack of fuel economy standards, air pollution, noise pollution, road fatalities and injuries and health and well-being effects.
  - signal a phase out date for diesel and fuel motor vehicle imports.
  - increase the cost for registering energy inefficient vehicles with larger cc vehicles paying significantly more.
  - change consumer financing legislation that allows buyers to purchase second-hand cars with a deposit of NZ\$1 and a payment term of five years. Note the purchaser does not need to have a driver's licence.
  - introduce a congestion tax in Auckland and Wellington to encourage individuals to shift their transport mode.
  - provide details of the national network of recharging stations for EVs
  - advocate for shared vehicle services
254. Given the low level of understanding about EVs such a public education campaign will also have to provide advice to the public about EVs to increase public awareness and overcome the inadequate understanding of the capital costs, running and maintenance costs of EVs in comparison to fossil-fuel vehicles.

#### Waiheke Context

255. Transport to and from Waiheke is by scheduled ferry services. Fullers operate passenger services from Downtown Auckland to Waiheke's Matiatia wharf whilst Sealink provides passenger, car and freight services between Half Moon Bay in east Auckland and Waiheke's Kennedy Point and between Auckland's Wynard Quarter and Kennedy Point.
256. These ferry services are probably the major source of carbon emissions for Waiheke residents - especially the daily commuting section of the population. Unfortunately, CNW has been unable to obtain accurate information about the carbon emissions of the ferries from either operator.
257. All residents, businesses, government agencies, visitors and tourists are dependent upon these services not only for personal travel but for all goods and services.
258. The provision of these ferry services, especially those operated by Fullers which is used by the 1,000 plus daily commuters, is often the subject of controversy with headings such as "Late Ferries 'risking island's reputation" (*Gulf News*, 22 December 2016) or "Transport monopoly doing damage to visitor industry" (*Gulf News*, 22 December 2016) occurring frequently. Many islanders argue that Auckland Transport gives an unfair advantage to the two established ferry operators.
259. On occasions last summer some residents were unable to get to work or home due to overcrowding on the ferries. Also the large number of tourists visiting the island place a

considerable burden on the local infrastructure (water and sewage in particular). To address such issues a Sustainable Tourism investigation is being funded by the local Waiheke board. CNW believes that the scope of this project should be widened to include carbon emission reduction impacts and possible mitigation strategies.

260. Unfortunately, when Fullers upgraded their fleet of ferries recently no discussion was forthcoming about introducing electric powered ferries such as is happening in overseas countries such as Denmark.
261. Related transport issues are car and scooter parking, bike storage and the ability to pick-up and drop-off passengers at both terminals. This perennial problem is magnified by Auckland Transport timetabling of bus services to and from the Maitiatia ferry with some bus services getting passengers to the terminal 20-30 minutes before the departure time and leaving 10 to 15 minutes after the ferry's arrival. As a result of such scheduling problems there has been a notable increase in the number of islanders opting to take their own private car to the ferry terminal which is making parking worse and increasing carbon emissions.
262. Private cars are the most common form of transport on the island but there is an island bus service which links the major communities/villages and is supported by taxi and shuttle services. The island's roads are narrow, winding and generally unlit with in most places a speed limit of 50kms per hour.
263. Visitors to the island use either the public transport service or specialised bus, taxi and shuttle services operated by tourist operators. Some modes of tourist transport (such as the Double Decker buses) appear to have precedence over local road users. Rental cars (including EVs), bikes (including Ebikes) and scooters (including Escooters) are available. However, there are no public EVs charging facilities on the island.
264. Active transport such as walking is a popular form of transport but is limited as there are few footpaths outside the villages.
265. CNW believes that given the short duration of all journeys on the island (only 19.3 kms long and between 0.64 to 9.65kms wide) Waiheke could be a leader in transitioning from fossil fuel private and light vehicles to an EVs fleet. The island could follow the lead of the Swiss ski resort of Zermatt and only allow electric vehicles to be used on the island. We suggest by 2030 that only EVs or hybrids should be permitted on the island and by 2040 only EVs.
266. If the island fails to change its vehicle fleet voluntarily then there may be an argument for limiting the number of cars on the island.

## Electricity

267. Carbon Neutral Waiheke (CNW) accepts that New Zealand has a low emission electricity generating system due to the predominance of renewable energy sources such as hydro and geothermal and that demand will greatly increase as other sectors of the economy replace fossil fuels with electricity.
268. However, as a community based citizen action group we are disappointed with the weighting given to Distributed Energy Resources (DER) such as photovoltaic (PV) solar power as such systems are an essential component of an individual, home-based or small business or a collective community's response to reducing personal or business carbon footprints.
269. Whilst we support the ongoing work of the Electricity Authority to address issues related to integrating flexible demand responses and distributed energy resources into a future electricity system we are not convinced that linking DER systems into the national grid system is necessarily the best answer. Consequently, we request the Commission to seek a full cost and benefit analysis of off-grid DER systems which includes social, environmental and behavioural components as well as economic and technical considerations. Comparisons between the efficiency and return on investment of solar hot water systems and rooftop solar systems with battery (or thermal storage) or no battery (or thermal storage) options would be useful information for consumers.
270. We are also deeply concerned by reports that the new Minister of Energy, Megan Woods has apparently accepted the arguments used by *Concept Consulting* in their report written for the Electricity Networks Association in November 2017 which claims that because wealthier people can afford to install solar panels that this will result in low-income consumers paying more for electricity. Geoff Bertam, Senior Associate at the Institute for Governance and Policy Studies, Victoria University states that "Here in a nutshell is the industry's strategy for blocking the entry of rooftop solar and preventing customers from breaking free of the incumbent electricity cartel's price-gorging." (*Dominion Post, March 2018*)
271. CNW considers that whilst the current electricity grid system has served New Zealand well it must change to meet the new multidirectional local and national operating requirements and trading relationships. The telecommunications sector has been forced to make such an adaption in the last two decades.
272. CNW rejects the Commission's (Recommendation 12.1) that the New Zealand Government should not use subsidies or regulation to favour particular low emissions technologies and therefore believes that the Commission's (Recommendation 12.2) is too cautious and may delay the development and introduction of new lower emission generating options. We believe that the Government should support the creation of a highly efficient and effective domestic and commercial solar hot water and rooftop PV solar industry.
273. We recognise that whilst the comparative price is relatively high for both solar systems that some forms of incentive will be required to appeal to early adopters seeking to enter the marketplace. Incentives could include an interest free loan scheme, favourable electricity sell

back rates, or discounted electricity buy rates. We recognise that such solar hot water or rooftop PV solar support scheme should have only a limited life as when the early majority or late majority enter into the market buying prices will have reduced substantially.

274. Our suggested approach is supported by the UK government's use of feed-in tariffs which resulted in a large increase in PV solar systems (in a country with much less sunshine hours and colder average temperatures than New Zealand). We also note that the UK Climate Change Committee considers that early subsidies for renewables stimulates technological advances and results in cost reductions. In light of the UK experience we question the assertions made by *Concept Consulting* that solar power, even with batteries, does not offer any particular benefits in reducing overall emissions and the *NZ Wind Energy Association's* assertion that increased solar power generation slows the growth in more efficient grid-scale wind generation. (*Commission's Draft Report pg. 340 Box 12.7*) One questions whether economic drivers and a potential loss of corporate profits may be colouring their advice.
275. CNW notes that in Australia rooftop solar systems were added at the rate of 18,000 per month on household and businesses in March 2018 with 55,000 installations and 351MW of capacity installed in the first three months of 2018. Battery storage was incorporated in one in eight new solar systems in 2017 and is expected to be one in six in 2018. Solar systems are now on 1.85 million homes and businesses in Australia with 6.8GW of installed capacity. Australia is expected to lead the world in households and businesses installing their own electricity supply. (*Giles Parkinson, 6 April 2018*)
276. CNW has undertaken work to determine whether rooftop PV solar energy systems could provide sufficient electricity to meet the expected extra demand created by the conversion of the light transport fleet from fossil fuels to electricity.
277. To power the National Vehicle Fleet of 3,133,786 petrol driven passenger cars/vans and motor caravans and the 1,025,020 registered diesel driven passenger cars/vans; goods vans/trucks/utes, buses, tractors and agricultural machines (*Stats NZ April 2018*) our calculations show that this can be done by rooftop solar systems alone as due to the greater fuel efficiency of an EV versus a petrol/diesel vehicle only a proportion of the current total fuel imports needs to be replaced.
278. To supply this amount of energy our analysis shows that if 80% of private dwellings in New Zealand (1,479,200 houses) installed on their roofs 3.34 kWp of solar panels this would generate electricity sufficient to charge a similar number of EVs. If in addition, 563,000 businesses installed 13.2 kWp this would generate sufficient energy to charge approximately 2 million EVs based on such vehicles travelling double the distance of a private vehicle.
279. In terms of cost the total annual bill for petrol and diesel imports is \$7.6 Billion dollars. The cost for installing the required eleven solar panels per household (to produce the required 3.34 kWp) at today's market prices is \$7,524 per household. This gives a payback period of 2.58 years to replace the cost of the petrol consumed by the average household or 5.32 years to replace the cost of the diesel consumed by the average household.
280. Our calculations are attached as an Appendix 1.

281. CNW believes that the most efficient use of rooftop solar includes having battery or thermal storage to provide power when the sun is not shining. However, due to the current cost of batteries we recognise that such systems are not yet cost effective for most consumers.
282. We acknowledge that it is important for a low-emission electricity system to have sufficient capacity and energy adequacy to ensure that power blackouts only occur due to adverse weather events but consider that with the use of smart thermostats, microgrid systems and behind-the-meter batteries (including EVs) many of these problems can be overcome.
283. CNW supports the Commission's Recommendations 12.3 and 12.4 that the Electricity Authority should continue to update pricing and regulation to facilitate the integration of DER and DR into the electricity system plus reviewing and developing measures to raise the capabilities of electricity distribution businesses.
284. CNW was surprised that no breakdown was provided of the amount of electricity used by different land use operations as we consider that such an analysis may be useful to determine future land use.
285. Likewise, we question why the potential for offshore windfarms was not discussed given that in countries such as Denmark 26% of wind energy is now supplied from offshore windfarms. *(A world leader in wind energy <https://denmarkdk/en/green-living/wind-energy>)*

#### Waiheke Context

286. Waiheke Island's climate is described as subtropical with annual sunshine hours of 2100 hours and a mean temperature of 15.2 degrees C. Waiheke being an island, experiences wind throughout the year with the wind speed on the majority of days being sufficient to run micro-windmills.
287. Solar and wind can also provide off grid solutions especially when linked to battery or thermal storage and a number of remote residents use such systems to operate normal household appliances and power an EV.
288. Waiheke with its high proportion of unoccupied houses, which are used primarily in the summer, coupled with high summer visitor numbers results in its peak demand for power occurring in summer when sunshine hours are at their highest.
289. Given that the island has no one large scale industrial producer or commercial operator (apart from *Countdown Supermarket and Placemakers*) it is dominated by small to medium businesses with the largest number being in the rental, hiring and real estate services sectors (19%), followed by construction (15%) and professional, scientific and technical services (15%). Such businesses operate mainly in daylight hours which favours energy supplied by solar power.

290. Considerable potential exists for the expansion of domestic and commercial solar hot water and rooftop solar systems and CNW would like to see such systems become mandatory on all rental houses, social houses and retirement village units as they will help to reduce the occupier's monthly power bill.
291. CNW considers that the local board should require all new houses and commercial buildings to have solar water heating and rooftop solar panels installed.
292. Waiheke is an active community which given the right support – governance and financial - would be willing to trial different approaches to democratising the electricity network including community owned solar systems and windfarms. We note that on the Danish island of Samsø many of the wind turbines are owned by residents providing dividends for local residents. (*Patrick Kingsley, The Guardian, 5 November 2012*) The profits from such ventures could also be used on Waiheke to support other community projects such as housing to overcome the chronic housing shortages or for wetland restoration or planting trees in community reserves.
293. Given the village layout of the island CNW believes that the island is ideally suited to trialling microgrids which could be owned by local residents. We note that Siemens Chicago is undertaking the trialling of microgrids as an integrated unit within the main electricity grid (*Kylie Field, Clean Technica, 5 April 2018*) and would welcome a similar trial on Waiheke.

## Heat and Industrial Processes

294. Carbon Neutral Waiheke (CNW) agrees with the key points and conclusions outlined in this chapter of the Report.
295. We believe that as emissions from industrial sources comprise almost 15% of New Zealand's total emissions and have grown by 47.3% between 1990 and 2015 that all possible steps should be taken to reduce emissions resulting from the burning of fossil fuels to generate process heat and that industrial processes should be encouraged, and if necessary, incentivised to adopt new technologies that reduce emissions from industrial processes.
296. CNW urges that the Government prohibits the development of any new industrial plants that rely primarily on the use of coal and/or gas to provide the low to medium heat sources for industrial processes such as drying milk and heating glasshouses.
297. We support New Zealand following the lead of Denmark in introducing regulations regarding the types of boilers that can be installed.
298. We believe that carbon capture and storage may provide a possible means of reducing emissions and support changes to the legislative framework to regulate these activities.
299. CNW considers that Fonterra should be able to refuse milk supply from farmers where the collection would lead to inefficient land use and/or significant increases in the company's GHG emissions.
300. We strongly support greater recycling efforts to lift the New Zealand collection rates for aluminium, iron and steel to similar levels achieved overseas.
301. Provided building standards are not compromised we support the revision of current New Zealand cement standards to permit greater use of lower carbon components.
302. As a community based organisation not directly involved in any industrial production process we cannot comment in detail about the majority of the issues raised in this chapter of the Commission's report but support the general tenor of the Commission's recommendations made in this chapter namely:
1. The Statutory functions of the EECA be changed to make lowering GHG emissions its primary focus (Commission's Recommendations 13.1),
  2. EECA should refocus its support for businesses adopting emission-reducing techniques to smaller firms and that its work with larger firms be on a cost recovery basis (Commission's Recommendation 13.2),
  3. New legislation should be enacted to address carbon capture and storage activities (Commission's Recommendation 13.3),
  4. Carbon capture and storage activities should be part of the NZ ETS. (Commission's Recommendation 13.4).

Waiheke Context

303. Waiheke's 1,450 businesses are small to medium in size with the main employment sectors being hospitality (23%), retail (15%), education, agriculture/horticulture and healthcare (10% each). (*Auckland Council, Demographics report card, Waiheke Local Board area 2016*)
304. As a tourism destination many of the business activities including the local wineries are locally owned and small scale. The island does not have any large scale industrial producer.
305. However, CNW supports the trialling of concentrated solar power on the island, especially the system being used in South Australia using seawater to fuel the Sundrop horticultural farm. Such a system may help the development of further horticultural activities on the island.

## Waste

306. Carbon Neutral Waiheke (CNW) is appalled that New Zealand has the highest waste emissions per person and is the most waste-emissions-intensive-economy of all members of the OECD. The fact that other countries such as the UK, Germany and Australia have been able to decrease their waste emissions between 1990 and 2016 from between 48% to 72% demonstrates how far New Zealand has fallen behind best practice. (*Commission's draft report pg. 368 and 372*)
307. To make matters worse our deregulated economy has left us with a paucity of data on New Zealand's waste and waste emissions with nearly two-thirds of our waste emissions from unmanaged waste disposal. Therefore, CNW supports the Commission's Recommendation 14.1.
308. New Zealand needs to ban private landfills – farm dumps which account for 42% of emissions and unmanaged sites which account for 28% of emissions – in-line with what is happening overseas in Denmark, Finland, Luxembourg, Netherlands, Norway and Poland. (*Commission's draft report pg. 373*) It is only by making waste visible and the producers responsible that behaviour will change.
309. CNW notes that organic waste – food, wood and garden waste - comprise 40% of all waste to landfills and that it drives the production of methane which is the predominant GHG emission (91%) from solid waste disposal to landfill. Yet organic waste is very easy to manage. However, our centralised urban waste collection system places land-fill operators at an economic advantage over firms running anaerobic digestion systems and therefore precludes proper management of organic waste. It is interesting to compare the New Zealand approach to organic waste to overseas examples including San Francisco where it is mandatory to compost all food waste. Seattle applies fines to those who violate its composting requirements. Copenhagen, Denmark has not sent organic waste to landfill in the last twenty-five years reaping the cost savings of lower fertiliser usage and increased carbon mitigation.
310. Organic household and commercial waste should be collected separately, at source and managed in a way that enables the decomposing heat and the compost to be used as a carbon sequester. This certainly is not difficult to do at a local level. (See the case study below and Appendix 2.)
311. CNW is concerned that New Zealand's market approach to waste management is so disastrous and that the two means of achieving waste reductions – the NZ ETS and the waste levy - have not worked. The current New Zealand Waste Strategy 2010 appears to be functioning no better than its 2002 predecessor which had hoped to achieve zero waste by 2010. The current version sets no targets for specific waste streams nor does it make organic waste diversion a priority and instead focuses on waste collection not processing. As a result it lacks credibility and new better instruments, including higher gate fees at landfills and regulation are required. We support a differentiated waste disposal levy for organic waste.

312. Our unregulated economy has also allowed public subsidy of corporate packaging waste and CNW believes product stewardship should be mandatory. Industry has been very slow to develop voluntary product stewardship approaches despite the efforts of several business groups. We are pleased that both *Countdown* and *New World* supermarkets have in mid-2018 announced that they intend to switch from single-use plastic carry bags to either woven fabric multiple use or biodegradable bags.
313. It is disconcerting that the New Zealand recycling industry and councils were slow to react to the announcement by China in 2009 that it would stop accepting plastic from other countries for recycling in January 2018. By not responding appropriately during the intervening years to the announcement through either establishing new markets or developing recycling methods to process the waste locally many in the industry have been caught with having to stockpile tonnes of plastic waste around the country with no alternative market. According to Statistics New Zealand 41 million kilograms of plastic waste was sent overseas in 2017 with 7 million kilograms going to China. (*The Press, 6 June 2018 Pg. 23*)
314. As New Zealand is unable to manage its recycling waste at present we need to ban the use of plastic bottles, containers and bags until industry cleans up its act and takes responsibility for the amount of waste consumers are forced to buy as part of their normal shopping. To illustrate this point, a Margate (southern England) resident, Daniel Webb decided to keep all the plastic he used in the course of a year. The result was 4,490 items of which 60% was food packaging –largely salad and vegetable wrappers and bread bags. 93% was single-use plastic. (*Laura Barton, The Guardian Weekly, 27 April 2018, pg 31*) CNW contends that the New Zealand experience would be similar but on most occasions only the disposal of the items will be included in New Zealand’s emissions figures as the production of the items is done overseas.
315. We also support the introduction of a bottle deposit scheme based on either the South Australian or German models.
316. CNW is surprised and very concerned that given our economic reliance on pastoral farming, dairying and horticulture we have not taken advantage of the organic waste produced in New Zealand by turning it into compost and using it to increase the productivity of our pastoral endeavours.
317. To deter individuals and companies from continuing to put waste into landfills New Zealand needs to increase its waste levy to a far more realistic amount of between \$140 to \$150 per tonne. This should be introduced over a period of one year to three years to be effective. At the same time New Zealand needs to require the separation of waste into separate streams and process them separately with land-fill as the least acceptable option. Councils need to be empowered to either ban or better control all waste disposal sites in their district. Consequently, CNW supports the Commission’s Recommendations 14.2, 14.3 and 14.4. We do not accept that Council managed landfills should be excluded from the waste levy and therefore do not support the Commission’s Recommendation 14.5
318. CNW supports the concept that New Zealand should move from a linear to a circular economy involving designing out waste and pollution, keeping products and materials in use and

regenerating natural systems. We consider such an approach could be transformational and encourage the removal of barriers to its implementation.

### Waiheke Context

319. Waiheke has a tradition of managing its own waste on the island with the community establishing its own charitable trust in 1992 to manage waste, run a recycling centre and provide waste education. The Trust was also the successful tenderer for the solid waste contract from Auckland Council which it ran for eight years from 2002 to 2008. However, the community owned approach to waste management was subsequently undermined by Auckland Council's decision in 2009 to grant the \$22 million waste management contract to Transpacific Industries Group Ltd despite vigorous protest from the local population. The current approach involves shipping the waste off the island at a cost of \$470 per rateable property per annum to landfill on the Auckland mainland. (*Refuse cost 'set to double', Gulf News, 15 March 2018*)
320. CNW notes that about 80% of the waste sent to the Waiheke refuse transfer station is generated commercially, including demolition material, with the cost of dumping being considerably less than the cost of shipping the waste off the island.
321. Unfortunately, the situation regarding the collection of food waste for the island is unlikely to change soon as Bernard Orsman reports that "The full introduction of kerb-side food waste collections in Auckland is up to three years away" due to councillors being split and the commercial industry and Auckland Chamber of Commerce opposing the initiative despite the 90,000 tonnes of food waste being sent to landfill each year. (*Move to food waste bins causing stink, NZ Herald, 28 May 2018*)
322. As island people, Waihekeans are deeply aware of rubbish and waste on the island and so over recent years have been instrumental in trialling a number of waste initiatives. For example:
  1. Plastic bag free campaigns which cumulated in *Countdown Waiheke* being the first supermarket in New Zealand to ban single use plastic bags.
  2. A Plastic free month is being promoted in July 2018.
  3. ZeroWaste events are the norm for the majority of festivals and public events held on the island.
  4. Food rescue and the Kai Conscious Café provide food and cooking lessons for over one hundred people each week.
  5. The Compost Collective provides support to home composting and community garden endeavours.
  6. A Hot Compost project – in 2017 the Home Grown Waiheke Trust ran, with funding support from the Auckland Council's Waste Minimisation Fund, a pilot Food 2 Soil weekly household kerbside collection of all food waste in Surfdale. The food waste was turned into compost through a hot compost system (achieving temperatures over 70 degrees C) which also involved the composting of compostable cups from local coffee outlets.

In the twelve month period:

- 17 tonnes of household food waste was composted at the Surfdale site.
- Two tonnes of left over skins and pulp collected from the fresh juice stall at the Saturday market was composted
- 11 large sacks of compostable cups and packaging were collected weekly from various commercial outlets and composted
- Food waste from seven ZeroWaste events was composted.

The resulting compost was sold to local households or given to community gardens, the local food forest or used as mulch for fruit trees planted in public places.

323. The project proved that Waiheke could manage its entire food waste through a series of community hot compost bins. Yet, despite the project's success, and backing from the local Waiheke Community Board, Auckland Council did not continue the kerbside collection in 2018 but are instead trialling the hot compost system with the raw material being sourced from commercial firms.
324. For further details on this community hot compost project see Appendix 2
325. CNW supports the introduction of a water quality tax by Auckland Council to improve and upgrade the city's sewage and wastewater network including septic tanks which on Waiheke are a major component of water contamination and a source of methane emissions. (*Water pollution tax to target leaky septics, Gulf News, 12 April 2018*)

## The Built Environment

326. Carbon Neutral Waiheke believes the built environment, including domestic dwellings, commercial buildings, farm houses and sheds, baches plus infrastructural assets (such as sewerage, water reticulation and roads) plays an important role in the lives of New Zealanders and affects their physical and mental well-being. Therefore, given that commercial and residential buildings account for more than 50% of New Zealand's electricity consumption and that the average life of a building is between 25 to 80 years it is prudent to consider ways of reducing the emissions generated throughout the lifecycle of buildings and infrastructure including the materials used, construction processes, operational and maintenance requirements plus final decommissioning and disposal.
327. We are concerned about the apparent discrepancy between the New Zealand's carbon footprint figures for buildings of about 5% (*New Zealand Greenhouse Gas Inventory 1990 - 2016 and the Commission's draft report pg. 389*) using an operational energy perspective and those reported by organisations such as *Thinkstep Australasia Ltd* which suggests that the carbon footprint maybe about 13% if a full life-cycle approach (excluding international trade) is adopted. (*The carbon footprint of New Zealand's built environment, thinkstep Australasia 14 May 2018*). We note that this discrepancy is not addressed in the Commission's draft report despite the section discussing emissions throughout the lifecycle of a building.
328. CNW supports the use of timber framing and cladding for buildings as they have the lowest embedded energy and can also sequester and store carbon. Where possible timber construction methods and products such as prestressed laminated timber building systems that can replace traditional higher emissions material such as concrete and steel should be the default construction option. We lament that New Zealand did not seize upon the opportunity to test several of these new products designed by the University of Canterbury during the rebuild of Christchurch following the 2010 and 2011 earthquakes as promoted by Jim Anderton MP and Mayoral candidate for Christchurch. (*Press release – Jim Anderton, 20 September 2010 accessed via [www.verifiedtimber.co.nz/display/Newsitem](http://www.verifiedtimber.co.nz/display/Newsitem)*) Such failures have delayed by decades the widespread adoption of this type of construction techniques which may be extremely suitable for a country prone to earthquakes.
329. CNW was surprised that the Commission's report did not consider options surrounding the retrofitting of existing buildings and the potential use of carbon tax credits as happens in Scotland.
330. We note that *Foodstuffs* is reported as saying "The company says it has slashed its greenhouse gas emissions by up to 45 per cent in its new and refurbished stores – and energy use by an average of two per cent across the entire business – since forming an alliance with the Energy Efficiency and Conservation Authority (ECCA)." (*Silver bullet for climate change, NZ Herald, 27 April 2018*). Measures used included CO2 refrigeration, LED bulbs, movement sensor technology and real time electricity monitoring. In their award winning New World store in Lincoln bike parking, wind turbines, non-PVC flooring systems and soft plastic and battery bins have been added.

331. CNW believes that the New Zealand Building Code needs to be reviewed and altered to improve the energy efficiency of buildings and infrastructural assets and include assessment criteria for the emission components of the various materials used in construction, repairs, maintenance and retrofitting.
332. We note that Andrew Eagle, Chief Executive of the New Zealand Green Building Council stated “our building code still doesn’t even provide for minimum standards relating to efficient heating, lighting, house orientation (for passive heat gain), ventilation that can significantly reduce moisture build-up, and thermal bridging, which address those areas around doors and windows.” (*Colleen Hawkes, NZ lagging as US salutes the sun, The Press, 6 June 2018*)
333. We recommend that when applying for a building permit – both residential and commercial - that the proponent should be required to show the carbon footprint including the amount of waste that will be generated. A waste levy should be imposed with the developer receiving a partial rebate if they achieve the defined standards.
334. CNW supports the Commission’s Recommendations 15.1 and 15.2.
335. To allow passive solar, green roofs and rooftop PV solar panels to operate efficiently it is imperative that New Zealand passes regulations ensuring existing property owners the right to sunlight. Without such legislation the full potential of these technologies will not result and therefore hinder New Zealand’s transition to a low-emission economy. This issue was addressed by California passing the California Solar Rights Act in 1978.
336. We suggest that car parking requirements for both domestic homes and commercial buildings should be reviewed with the aim to reduce the number of car parking spaces and thus help to decrease the level of car ownership in New Zealand.
337. CNW was surprised that the Commission’s draft report did not place greater emphasis on the potential of several available technical approaches outlined in reports such as *Project Drawdown pgs 84 -106* including not only insulation, heat pumps, LED lighting but green roofs, net zero buildings, smart glass, smart thermostats, district heating, water distribution and building automation. We consider there is considerable potential for installing rooftop solar on commercial buildings, factories and community facilities such as halls, schools and sports venues. Windmills may also be possible on certain sites. We therefore support the Commission’s Recommendations 15.3
338. CNW supports the adoption of urban planning processes which increase the density of urban areas whilst making such areas more liveable by planting more trees, increasing EVs and public transport usage - especially given that they not only have lower emissions but also decrease the need for such infrastructure as motorways, parking buildings and residential and urban car parks.
339. We are concerned that New Zealand’s new build homes have the third largest floor area in the world with the average house size increasing from 110sq.m in 1974 to 187sq.m in 2013 despite a drop in the number of occupants per house. Emphasis needs to be placed on achieving better passive solar designs, using ground source heating, increased insulation and minimum energy performance standards for building products sold in New Zealand and if

necessary placing restrictions on the sale of low efficiency and carbon emitting products such as incandescent lightbulbs.

340. CNW notes that the passing of the Resource Management (Simplifying and Streamlining) Amendment Act 2009 removed blanket tree protection and limited the ability of councils to protect trees in their city or region. The result being, (according to The Tree Council - an advocacy group for Auckland trees) and based on anecdotal evidence gathered from arborists, resource consent applications and members of the public that an estimated 30% of Auckland's trees have been lost since the Act came into force in 2012. (*Margo White, Why trees are vital to New Zealand cities, North & South, February 2018*). The failure of the National-led government to consider climate change implications and the liveability of the nation's cities was short-sighted and placed individual rights over community rights. We recommend that tree protection laws be reintroduced.
341. We also recommend that the reserve contribution for all new housing developments should be increased substantially to include areas of urban forest or bush reserves to sequester carbon with the aim of attempting to make all new subdivisions carbon neutral.
342. To ensure low income households are not disadvantaged we support the use of programmes such as Warm-Up New Zealand that provide grants for insulation to both owner occupiers and landlords who meet certain criteria. We support the requirement that since July 2016 all residential landlords have been required to disclose the extent of insulation in their property and welcome the requirement that from 2019 rental properties must be insulated up to the standard of the current building code.
343. CNW considers infrastructural issues including construction and maintenance need to determine how to maximise the efficient use of existing assets such as stormwater systems and undertake lifecycle assessment of all infrastructural assets. Examples may include roading design to reduce friction. (*Project Drawdown's Smart Highways pgs 196-197*) New Zealand should adopt Norway's lifecycle energy use and GHG emissions assessments as a required part of any transport project. Sustainable procurement such as that used by the Netherlands which judges contractors and tenderers on the environmental costs including material and energy should be made mandatory in New Zealand (*Commission's draft report Box 15-3, Pg 399*).
344. We note that in the US, the American Planning Association and the National Recreation and Parks Association have issued a guideline outlining green stormwater infrastructure. We recommend that this approach be considered in New Zealand. (*Dubb, S . Urban parks help cities adapt to climate change, Nonprofit Quarterly 12 December 2017*)
345. CNW is concerned that this chapter of the Commission's draft report does not consider in-depth the potential impact of coastal erosion, flooding and severe weather events which have the potential to change where people live, the types of buildings constructed as well as infrastructural requirements. The continuing reclamation of coastal wetlands needs to be halted immediately as does the continual sprawl of New Zealand cities over high value agricultural or horticultural soils.

346. We note that some commentators such as Brian Fallow are cautioning that due to rises in sea level, major weather events, forest fires or the change in the geographic range of pests and disease that “Over the coming years, thousands of New Zealand families are going to get some seriously bad news about climate change’s impact on the value of their properties.” This could result in the building not being able to be insured resulting in banks cancelling mortgages. *(Brian Fallow: Property values at risk as climate changes; NZ Herald, 1 June 2018)*

### Waiheke Context

347. According to the 2013 Census, there were 3,756 occupied dwellings (68.3%) and 1,743 (31.7%) unoccupied dwellings on Waiheke.
348. Most of the unoccupied dwellings were second homes or holiday homes which are used for short-term stays mostly over summer. There is a tendency for these homes to be large and sometimes in “gated communities”. The impact on housing availability and homelessness on the island is similar to that reported on *Radio NZ Morning Report 13 June 2018* where in Whangarei, due to cash-rich Aucklanders shifting or buying holiday homes in the city, is locking local residents out of the market.
349. Holiday homes on the island tend to be larger and more expensive than those of permanent residents and as a result the building and construction industry is orientated to cater for this market segment often at the expense of the local market.
350. CNW would welcome research being conducted into the effect on community housing needs when there is a significant proportion of unoccupied dwellings and the resulting gross and net carbon emission implications using a whole of life approach.
351. The rental housing stock on the island is frequently of poor quality due to the lack of insulation, the age of the building, poor workmanship and a lack of building and septic tank maintenance. Several community groups are currently undertaking a project to lift the quality of the rental housing stock.
352. Due to Waiheke not having reticulated water and sewerage the average section is larger than other parts of Auckland. The footprint of the house cannot exceed 15% of the total section size. Therefore, sections have more trees and shrubs with the potential to sequester carbon.
353. With good sunshine hours, large sections (minimising shading effects) there is considerable potential to install both solar water heating and rooftop PV solar panels on both domestic and commercial buildings.
354. Individual windmills on some commercial sections may also be possible.
355. Poor urban planning has resulted in some building permits being given for properties at risk of coastal erosion. In January 2018, the local Waiheke board granted to residents in Picnic Bay “...\$65,000 towards the cost of a 205-metre long rock sea wall to halt tidal erosion beneath

their homes.” The article notes that the residents “...will be paying for the majority of the project themselves with the Board’s share covering a council reserve.” (*Gulf News 1 February 2018*) Such stories are likely to become commonplace in the future and the ability to insure many properties will be questionable.

## **Appendix One – PV Solar versus Fossil Fuels**

Please refer to the spreadsheets attached.

## Appendix Two – Community Hot Composting

In 2017, Home Grown Waiheke Trust, ran with funding support from the Auckland Council's Waste Minimisation Fund, a pilot Food 2 Soil weekly household food waste kerbside collection project in Surfdale.

To participate in the trial all of the approximately 500 households in Surfdale were approached through a leaflet drop which offered householders the opportunity to enrol in the project.

34% or 172 Surfdale households enrolled in the Community Compost service and received either a 10 or 20 litre bucket labelled with instructions. 33 households or 6.6% of Surfdale households advised that they were managing their food waste using chickens, Bokashi, or home compost systems. Another 160 households (32%) were unoccupied (based on Census data) and therefore ineligible for the trial. Also, Surfdale, like other communities on Waiheke has a transient population with many rental houses and between 15-20% of the houses being traded each year.

The food waste collected was turned into compost through a hot compost system (achieving temperatures over 70 degrees C) and included the collection and composting of compostable cups from local coffee outlets. The hot composting system had the capacity to process at least 3 cubic metres of organic waste per week.

Four paid workers and one contractor comprised the staff team with each individual covering between 2 - 5 paid hours per person per week. At least 5 consistent volunteers collectively provide on average 25 hours work per week.

In the twelve month period:

- 17 tonnes of household food waste was composted at the Surfdale site.
- Two tonnes of left over skins and pulp collected from the fresh juice stall at the Saturday market was composted
- 11 large sacks of compostable cups and packaging were collected weekly from various commercial outlets and composted
- Food waste from seven ZeroWaste events was composted.

The resulting compost was sold to local households or given to community gardens, the local food forest or used as mulch for fruit trees planted in public places.

Throughout the project the compost team engaged with the local community through Facebook, the library, local events, the local print media and the cinema all of whom attract a large number of people who are not necessarily long-term Waiheke residents.

Positive feedback was received from the participating households. Examples of comments made include: "To my mind Food 2 Soil is a positive step to reducing waste to landfill and sustainability in general." And, "I only have to put out my rubbish bin every 3 weeks since I have had the food waste collected." Plus "Really appreciate what you guys are doing, it will be terrific for the community."

In addition, several other Waiheke communities asked for support to set up similar hot community composts in their own areas.

Home Grown Waiheke Trust considered that the trial was successful as it demonstrated that a system for collecting and processing food waste locally could be developed and operated within a prescribed budget and was:

- economically sustainable
- clean and efficient
- able to meet relevant legal requirements
- a producer of high quality compost to support local food production (randomised samples of the compost leaving the site was tested and was consistently free of weed seeds, pathogens, and pupa.) Local people and communities commented on the efficacious property of the compost and their comments suggested it was a superior medium for growing healthy, flavoursome food.
- supported by the local community
- able to be expanded and replicated throughout Waiheke.
- aligned with the Waiheke Waste Plan which suggests that all of Waiheke green and food waste should be composted, using on island solutions and maximising local economic development opportunities.

The biggest obstacles to the community compost system being viable island wide, is Auckland Council's practice of using rates to subsidise waste going to land fill. For example, Home Grown Waiheke Trust was asked to quote on the disposal of 40 sacks of compostable material and 3 bins of food from a large Zero Waste event on the island. The Trust's quote was \$800, a competitor's composting quote was \$750 but sending the organic matter to landfill was going to cost the event organisers only \$55. Such disparities give contradictory messages about Auckland Council's commitment to waste minimisation. Home Grown Waiheke Trust suggests that Council should consider a substantial increase in dump fees or impose a specific island waste levy or surcharge on general and/or organic waste sent off Island to landfill.

From its experience, Home Grown Waiheke Trust believes that all food and compostable waste from this island, could be composted, utilising a centralised system.

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