

**BEFORE THE INDEPENDENT HEARINGS PANELS APPOINTED TO HEAR AND MAKE
RECOMMENDATIONS ON SUBMISSIONS AND FURTHER SUBMISSIONS ON PROPOSED CHANGE 1
TO THE REGIONAL POLICY STATEMENT FOR THE WELLINGTON REGION**

UNDER Schedule 1 of the Resource Management
Act 1991 (the Act)

IN THE MATTER OF Hearing Submissions and Further
Submissions on Proposed Change 1 to the
Regional Policy Statement for the
Wellington Region

**REPORTING OFFICER RIGHT OF REPLY OF GIJSBERTUS J ROOS
ON BEHALF OF WELLINGTON REGIONAL COUNCIL**

HEARING STREAM 3 – CLIMATE CHANGE

21 SEPTEMBER 2023

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RIGHT OF REPLY AUTHOR

- 1 My full name is Gijbertus Jacobus (Jake) Roos. I am Manager, Climate Change at Greater Wellington Regional Council.
- 2 I have prepared this Reply in respect of the matters raised during the hearing of matters in Hearing Stream 3: Climate Change.
- 3 I listened to submitters in Hearing Stream 3, read their evidence and tabled statements, and the written submissions and further submissions relevant to the Hearing Stream 3 topic.
- 4 My technical evidence for this topic, at paragraph 5, sets out my qualifications and experience as an expert.
- 5 I confirm that I am continuing to abide by the Code of Conduct for Expert Witnesses set out in the Environment Court’s Practice Note 2023.

SCOPE OF REPLY

- 6 This Reply follows Hearing Stream 3 held on 28 August to 31 August 2023.
- 7 Minute 12 requested from the Council a written Right of Reply as a formal response to matters raised during the hearing and to specific questions asked by the Panels.
- 8 This reply covers feedback on matters raised by submitter Paul Melville for Wairarapa Federated Farmers during the hearing. None of the specific questions asked by the Panels in paragraph 6 of Minute 12 are responded to in this statement.

RESPONSES TO POINTS RAISED DURING HEARING STREAM 3 – PAUL MELVILLE

- 9 Mr Melville made statements regarding the validity of emission reduction targets in proposed Change 1 to the Regional Policy Statement (Change 1), which I subsequently reviewed through the hearing transcript.
- 10 Mr Melville stated that:

“Much of the evidence the Council has relied on is not well-referenced and doesn’t appear to understand either the Paris Agreement or the IPCC. For example, the Technical Memo by Jake Roos states, “Net zero by 2050 aligns with the Paris agreement and the IPCC target.”

11 There is a single passing reference to 'the IPCC target' in my original technical memo to support the preparation of Change 1, dated August 2022¹. There are no references to 'the IPCC target' in my subsequent technical evidence for Hearing Stream 3 (HS3) dated 7 August 2023² or supplementary technical evidence dated 23 August 2023³. I acknowledge that this one reference is a drafting error and should instead refer to 'IPCC scenarios'.

12 Furthermore, Mr Melville stated that:

"The Paris Agreement aims to avoid two degrees of warming and pursue efforts to limit the increase to 1.5 in a manner that doesn't threaten food production. It doesn't have "nett zero" mentioned in the agreement anywhere.... Secondly, the IPCC doesn't have a target.... and 1.5 degrees doesn't require nett zero..."

13 Mr Meville denies there is any alignment between the Change 1 Objective CC.3 target and the Paris Agreement goals. I have provided significant evidence to the contrary already, in both my 2022 memo and my technical evidence for HS3 but I will summarise it here for the Panels benefit.

14 The Paris Agreement goal is to avoid global warming over 2 °C and obliges parties (signatories) to pursue efforts towards limiting warming to 1.5 °C. It identifies the method of meeting the goals as by achieving a balance of greenhouse gas (GHG) emissions from sources and removals of emissions by sinks globally in the second half of the 21st Century. 'Net zero GHG emissions' literally means that greenhouse gas emissions are balanced by removals. There is no practical difference. So, Mr Melville's issue that the words 'net zero' are not in the Paris Agreement is of no consequence. I note the phrase and concept of net zero, for both CO₂ and all greenhouse gases, is used extensively in IPCC reports.

15 Depending on what decision makers accept as a tolerable risk of catastrophic climate change for human societies, and whether they factor their region's historic contribution to total GHG emissions when deciding what level of reduction to make (taking a 'fair share' approach), deeper, faster cuts than the global aggregate median emissions pathway consistent with limiting warming to a given level are justifiable.

16 As I noted in my technical evidence for HS3:

¹ <https://www.gw.govt.nz/assets/Documents/2022/08/Evaluation-of-the-preferred-regional-greenhouse-gas-target-August-2022-with-calculations-attached.pdf>

² [HS3-Climate-Change-GWRC-Statement-of-Evidence-Technical-Evidence-Jake-Roos-070823.pdf](#)

³ [HS3-GWRC-Statement-of-Supplementary-Technical-Evidence-Climate-Change-General-Jake-Roos.pdf](#)

(52) *The Climate Change Commission's 2021 advice to Government on what NDC it should adopt said:*

[93] "... science alone cannot determine the share Aotearoa should contribute to those global reductions. Reaching a conclusion on this also depends on social and political judgements about international equity. These should be made by the Government of the day."

[99] "In general, applying equity approaches implied that New Zealand should make "significantly deeper reductions than the global average". Emissions trajectories based on New Zealand's relative wealth would lead to deeper reductions by 2030 than the IPCC 1.5°C pathway range."

(53) *And in Chapter 5 of its advice to Government on emissions budgets, the Climate Change Commission also said:*

[174] "There is no one prescriptive path of emissions reductions for Aotearoa or any other nation that will guarantee the world limits warming to within 1.5°C. This also means there is no single prescribed way to determine whether our recommended emissions budgets are compatible with contributing to the global 1.5°C effort."

17 Mr Melville's position that there is no alignment between the Change 1 Objective CC.3 and the Paris Agreement Goal is incorrect because the specific criteria he implies (i.e. what individual countries or other entities such as regions, sectors or businesses should contribute to the global effort) do not exist in the Paris Agreement. The entire framework of the Paris Agreement is that each signatory should determine their own contribution. Countries' pledges to cut emissions are called 'nationally determined contributions' for this exact reason. But there is clear alignment between a target that seeks to cut emissions deeply and the Paris Agreement goal of avoiding dangerous levels of climate warming.

18 Mr Melville quotes the IPCC's 2018 special report regarding levels of emissions reduction for 1.5°C, but neglects to mention the authors are talking about median values. As I covered in my technical evidence for HS3, the median of all emissions scenarios in the IPCC's ensemble is not the safest or best emissions pathway: it only has a 50% chance of being the 'right' path, and each scenario individually only has a 50% chance of meeting the goal because of the uncertainty inherent to each model. Also, in the quote the report

authors are talking about global aggregate emissions, not what individual sub-global entities such as countries or regions could or should do, as I have covered above.

- 19 Regarding the Paris Agreement clause that states that efforts to reduce emissions should be undertaken in a way that does not threaten food production, I note that Change 1 Objective CC.3 does not specify a reduction level for the agricultural sector and it does not require net-zero emissions from this sector, whereas nationally there is already a clear directive for the sector to reduce under the biogenic methane targets for 2030 and 2050. The proposed amendments to Objective CC.3 from My Wyeth in his reports for HS3 dated 31 July also make it clear the intent of the objective is to contribute to a reduction in net greenhouse gas emissions to support both the Paris Agreement and New Zealand's emission reduction targets.
- 20 In his oral statement example beginning "*Having a target of nett zero for methane...*", Mr Melville confused the issue of methane emissions being brought to zero, which is not practically possible, and the warming effect of residual methane emissions being compensated for with removals of CO₂, which is possible. He has conflated attaining a state of being net zero for all gases for the region as measured using GWP₁₀₀, which is what the Change 1 Objective CC.3 2050 net-zero emissions target is, with methane emissions alone becoming net zero, which it is not. So, Mr Melville's example is simply incorrect.
- 21 To recap the points made in my technical evidence, many IPCC scenarios for meeting the Paris Agreement goals require global CO₂ emissions to become net negative in the latter part of the century, as shown in the graphic from the IPCC Sixth Assessment Report WGIII report Summary for Policymakers (Figure SPM.5) appended to the end of this document⁴ (figure b, top right). At this stage in these scenarios, the warming effect of remaining non-CO₂ emissions (figures c and d) is compensated for to some degree by removals of CO₂ (as shown in figure a). Alternatively, the removals can be thought of as reversing past CO₂ emissions. There is no practical difference – the purpose of the removals is to cool the climate from an undesirably high temperature caused by past and continuing emissions of all kinds (including both CO₂ and methane emissions).

⁴ [Working Group III contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, Summary for Policy Makers, 2022.](#)

- 22 The state of being net zero for all gases occurs when total emissions is exactly equal to removals, as measured using GWP₁₀₀. The graphic below provides date ranges for the net zero all gases state being reached globally for both 1.5 °C and 2 °C-consistent scenarios in figure a. The year of global net-zero emissions of all gases is given below the main chart. For 1.5 °C-consistent emissions scenarios (C1), the median year is shortly before 2100, and the earliest year across all scenarios they used is around 2055 (as shown by the left-hand end of the blue box and whisker plot). Note the graphic concerns global emissions.
- 23 Measured at a local, rather than global level, a state of being net zero for all GHGs could be reached either sooner or later, depending on the boundaries used and the activities influencing emissions within that boundary. Obviously, some areas can emit proportionately more and others less while still adding to the same global total.
- 24 In practice, a net zero, exactly balanced state would be passed through fleetingly, possibly repeatedly due to fluctuations, because a sustained net negative emissions state is needed, and there will always be some changes in emissions from year to year given the diversity of emissions sources and the factors that influence them. But, in my opinion, there is no fundamental issue with using it as a target for 2050 that affected parties are required to contribute to and for the Region to work towards.
- 25 Collectively, the nations of the world are completely off track from meeting the Paris Agreement goals and it appears very likely that the climate will become increasingly unstable, with dire consequences for human well-being and the natural world. We are already seeing these kinds of consequences start to play out in the form of more devastating waves of flooding, wild-fires and heatwaves around the world, and sadly, this is only the beginning. New Zealand is far from immune from both the direct and indirect effects. Given this, the implication from Mr Melville's comments that by implementing Objective CC.3, farmers in the Wellington Region might be compelled to do more than what is reasonable to help avoid dangerous climate change is, in my opinion, absurd.

DATE:

21 SEPTEMBER 2023

GIJSBERTUS JACOBUS (JAKE) ROOS

MANAGER, CLIMATE CHANGE

Modelled mitigation pathways that limit warming to 1.5°C, and 2°C, involve deep, rapid and sustained emissions reductions.

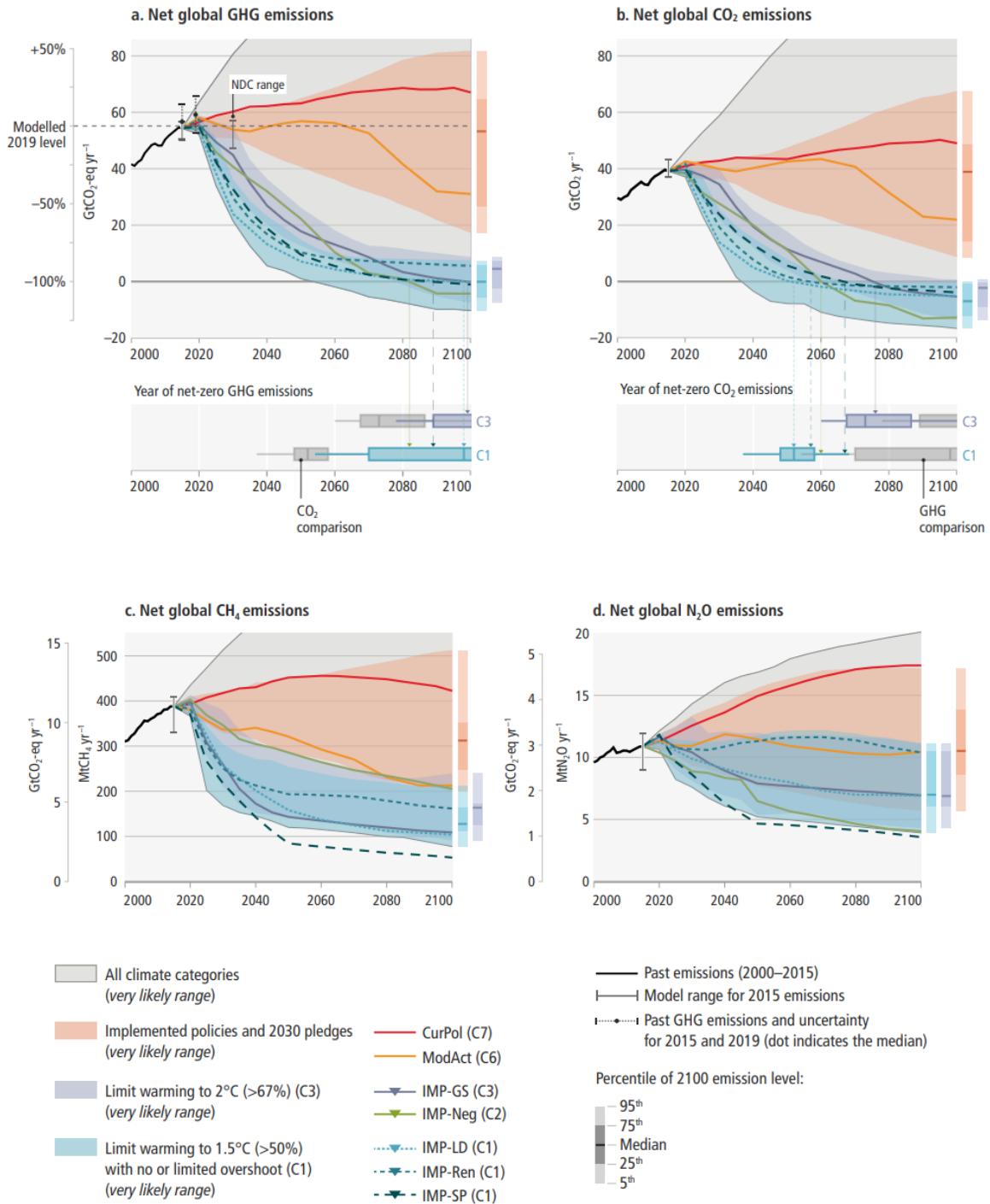


Figure SPM.5 | Illustrative Mitigation Pathways (IMPs) and net zero CO₂ and GHG emissions strategies.