IN THE HIGH COURT OF NEW ZEALAND
WELLINGTON REGISTRY

I TE KOTI MATUA O AOTEAROA
TE WHANGANUI-A-TARA

CIV-2019-485-000341

UNDER	Judicial Review Procedure Act 2016 and part 30 of the High Court Rules 2016
IN THE MATTER OF	an application for judicial review
BETWEEN	**LAWYERS FOR CLIMATE ACTION NZ INCORPORATED** Applicant
AND	**THE CLIMATE CHANGE COMMISSION** First Respondent
AND	**MINISTER FOR CLIMATE CHANGE** Second Respondent

SUBMISSIONS FOR THE CLIMATE CHANGE COMMISSION

14 February 2021

Judicial officer:

Next event date: for hearing 28 February 2022

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PART A: KEY CONTEXT

INTRODUCTION AND SUMMARY

1. None of the parties before the Court disagree on the significance of climate change as a global challenge to humanity. The Climate Change Commission only exists because of that recognition.

2. None of the parties before the Court disagree on the need for immediate action in response, nor that action in response requires fundamental change at a global and domestic level.

3. The enactment of the Climate Change Response (Zero Carbon) Amendment Act 2019 represents Parliament's response to that challenge, and followed New Zealand's entry into the Paris Agreement.[1] Parliament set a firm target of 'zero carbon' emissions by 2050 and established a framework intended to deliver "clear and stable climate change policies" to reach that goal.[2] The establishment of the Climate Change Commission, as an independent expert body charged with both advising government and holding governments to account, is a key part of this, designed to give a longer-term perspective and neutralise the previous pressures on policy responses to climate change from short term political, sectoral and special interests.

4. There is no dispute between the parties that New Zealand needs to move quickly, and make major changes without delay. The Commission's Advice is titled "Ināia tonu nei (the time is now)" and is "a call to all of us to take climate action today, not the day after tomorrow", recognising that "bold action" is needed and Aotearoa "needs to be proactive and courageous as it tackles the challenges the country will face in the years ahead."[3]

5. The point of difference between the parties is that the lawyers comprising LCANZ want the New Zealand government to move faster than the 2050 zero carbon target set by Parliament. They want deeper and steeper cuts in emissions in the next eight years, before 2030, regardless of the potentially catastrophic (and in real terms unnecessary) impact on communities – particularly rural and Māori communities which rely heavily on the sectors that will feel the impact most – and the economy.

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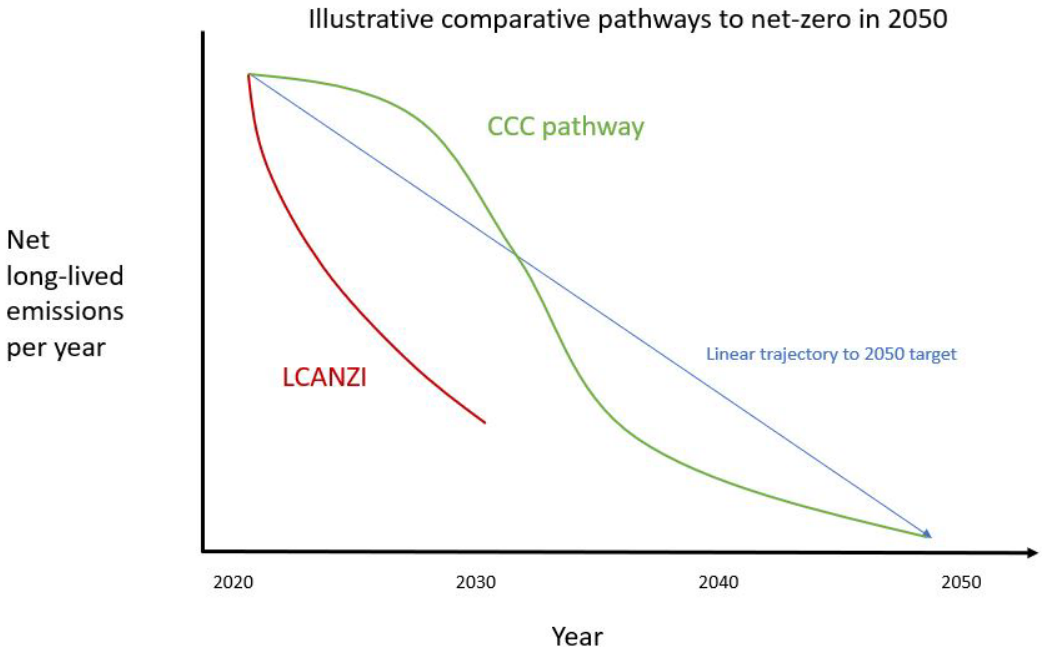
1 Paris Agreement (opened for signature 22 April 2016, entered into force 4 November 2016), Respondents' bundle of documents **[CBD]** at 48 – 74.

2 Climate Change Response Act 2002, s 3, LCANZ Bundle of Authorities **[LBA]** at 899 – 901.

3 Bundle of Climate Change Commission's Advice and Supporting Volumes **[Advice Bundle]** at 6.

6. It is important to be clear that LCANZ is not challenging the Commission's Advice on the basis that the budgets and emissions reductions plan it advised on would be ineffective to meet the 2050 target set by Parliament. It appears to be common ground that if adopted and fully implemented by government, the budgets are in line to achieve that goal. The argument is only about the short-term *rate* of change – in other words, the slope of the graph (noting this graphic is in stylised form):



7. The question of "how fast" was the key issue in the Climate Change Commission's Advice on the proposed budgets:[4]

> **Our key decision** in recommending the level of these [first three] budgets is how quickly Aotearoa should act to deliver emissions reductions. Acting too slowly pushes the burden of addressing climate change on to young people and future generations. Acting too quickly increases the transition cost, for infrastructure and asset replacement, and can have unintended consequences for people, society and the economy.
>
> … A key challenge for the Climate Change Commission in preparing this advice has been to strike a balance between pushing too hard to 'catch up' after years of delay, while also acknowledging that adjusting course after years of minimal action requires hard work.
>
> … The world, including Aotearoa, needs to reduce emissions as quickly as possible to limit warning to 1.5°C and reduce the severity of climate change impacts… However, there are constraints as to how quickly low-emissions technologies will come into the country, [and] solutions can be tailored to the Aotearoa context … it takes time to develop supply chain, markets and infrastructure. We must strike a balance that looks for equity across

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4 Quoting from Advice Bundle at 76 – 78, but this issue is discussed in detail throughout the Advice, in particular in Chapter 5: see Advice Bundle at 76 – 101.

generations so that future generations inherit a thriving, climate resilient and low-emissions Aotearoa.

8. The Commission's consideration of this key question was a highly complex multifaceted assessment involving numerous judgements and judgement calls across a vast array of technological, scientific, industrial, economic, social and cultural topic areas, with high level of uncertainty and major issues of distributional justice across regions and communities and between generations.

9. The Commission concluded that a faster pace of change at the kind of level proposed by LCANZ would have a range of unacceptable consequences, including that such a pace of change:[5]

9.1 risks Aotearoa New Zealand losing production in areas where technological solutions to reduce emissions could be applied, if more time were available;[6]

9.2 would likely lead to severe social and economic impacts on communities, people and businesses, far more than would be necessary to achieve the same amount of emissions reductions given more time;[7]

9.3 could not be met without rapidly shutting down many emitting activities, with closures of businesses such as farms and factories at a severe level;[8]

9.4 would result in large scale cuts to economic output across Aotearoa New Zealand;[9]

9.5 would have significant flow-on effects to jobs, broader society and the economy, potentially undermining public support for the transition, and reducing our resilience and ability to put in place solutions to make continual and lasting emissions reductions;[10]

9.6 would result in intergenerational inequity and would have a legacy impact on the quality of life for younger generations as families are left without employment or essential services;[11]

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5 In addition to the references below, see Chapter 7 generally: Advice Bundle at 114 – 153.
6 Advice Bundle at 91, 166 – 167 and 380.
7 Advice Bundle at 30, 76, 91, 166 – 167, 379 and 380.
8 Advice Bundle at 380.
9 Advice Bundle at 380.
10 Advice Bundle at 91.
11 Advice Bundle at 156 – 157 and 380.

9.7 would disproportionately affect iwi/Māori in terms of the Māori economy given its large agricultural base, and Māori workforce who are disproportionately represented in agriculture and manufacturing industries.[12]

10. The lawyers say that is just the price to be paid for New Zealand to do its part in the collective response: "it is widely understood and accepted that addressing climate change will carry costs and cause economic and social disruption."[13]

Summary of response to LCANZ' claim

11. The first response to LCANZ' pleaded claims is that the content of the Commission's Advice is not separately justiciable. In the present context, the Commission is an advisory body only and unless and until its Advice forms part of a decision by the Minister, it has no effect on the interests of any person.

12. In terms of the specific errors of law pleaded by LCANZ, **ground one** is a challenge to the Commission's methodology in forming its advice on the NDC, which LCANZ argues is irrational due to a 'mathematical' or 'logical' error. The Commission says that LCANZ has misunderstood: the Commission is clear that for a range of good reasons, it was not seeking to directly *apply* the IPCC pathways to New Zealand's circumstances (where algebra might be relevant) but rather used the IPCC pathways as a basis for a modelling exercise to develop a series of *indirect comparators*. Those comparators informed (but did not mathematically set) the Commission's advice.

13. The Commission says that ground one is in substance a challenge to the correctness of its approach (as is amply illustrated by the extensive evidence LCANZ has filed on this issue), which is not available in judicial review.

14. The Commission also says that even if an error in its methodology had occurred, LCANZ' alternative methodology would not be suitable and is highly unlikely that the Commission would adopt it. The claim against the Commission is also moot, given that the government has since reset the NDC based on its own assessment of the Commission's Advice, and having regard to a wide range of other matters.

15. **Ground two** is a direct challenge to the proposed budgets, claiming that the Commission misunderstood the statutory framework and was obliged by the terms of the Act to recommend much deeper emissions cuts in the proposed budgets. The

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12 Advice Bundle at 380.

13 LCANZ submissions at [336] – [338].

claim is framed as a statutory interpretation issue but, as demonstrated by LCANZ' evidence and submissions, it is in essence an attack on the merits of the Commission's judgement on the core issue of "how fast" emissions could and should be cut in the first three budget periods. The Commission's position is that LCANZ' proposed interpretation of the statutory framework is wrong, and that it properly understood its task.

16. **Ground three** is a narrow challenge to one of the 'rules for measuring progress' that the Commission adopted in its advice: the modified activity based approach to accounting for land sector emissions and removals (LULUCF). This is pleaded as an issue of statutory interpretation: LCANZ say that Parliament directed the Commission to use the measures reflected in the national inventory reporting under the United Nations Framework Convention on Climate Change. The Commission says that Parliament directed that the Commission to use its expert judgement to decide the rules for measuring progress, and that its choice was open to it. It also says that even if LCANZ is correct, the change in accounting methodology would only change the expression of its Advice, not the substance – the level of ambition reflected in the budgets would remain the same regardless of how the figures were expressed.

17. **Ground four** is closely related to ground two and is an even more direct challenge to the correctness of the Commission's advice on the core question of "how fast" emissions could and should be cut in the first three budget periods. LCANZ alleges the Commission's approach is so unreasonable as to be unlawful, and specifies the budget it says should have been set. The Commission says that its Advice was the exercise of expert judgement on the core issue that Parliament had vested in it, and not unreasonable.

18. **LCANZ new (and extraordinary) irrationality claims**: the Commission is concerned to see a number of extraordinary and inflammatory claims in LCANZ' written submissions, such as that the Commission recommends 'no real action' on climate change, the Commission's NDC Advice would see emissions *double*, and the proposed budgets would result in a 310% *increase* in net CO_2 emissions, and 'fly in the face' of the uncontested need for action. These claims are wrong and misleading, and substantively misrepresent the Commission's Advice. While the strongly held views of the lawyers comprising LCANZ are acknowledged, unfounded and inflammatory allegations of this nature directed to the core competency of an independent expert statutory advisory body are not appropriate nor in the public interest.

19. **<u>Overall</u>:** this case is significant as the first challenge to the expert advice of the Climate Change Commission by a special interest group unhappy with the content of that advice. It will undoubtedly not be the last. It is respectfully submitted that the Court should be conscious of the precedent effect of the approach it takes to the scope of judicial review in this context, and the role of expert evidence. The Court is urged to exercise caution that judicial review does not become a de facto appeal against the merits of the Commission's expert assessments. That would not only be contrary to principle and the constitutional separation of powers, it would also not be in the public interest given the institutional limitations of the court process. The courts, and the relatively slow and necessarily backward focussed court processes, are not the forum in which to determine New Zealand's response to climate change.

20. The Commission's submissions are structured as follows:

    20.1 This Part A addresses the Zero Carbon Amendment Act, the expertise of the Commission, sets out a brief synopsis of the Commission's Advice and its recommended budgets, and sets out the Commission's core response to LCANZ allegations of irrationality, which it says are wrong and misleading.

    20.2 Part B sets out an overview and explanation of the key principles of climate change accounting that are central to LCANZ' claims.

    20.3 Part C addresses the role of the Courts in judicial review of an expert advisory body, the justiciability of its Advice, and the 'standard of review'.

    20.4 Part D discusses the role of ex-post evidence in an application for judicial review. The Commission's primary submission is that the majority of LCANZ' evidence is inadmissible.

    20.5 Parts E – H address the four grounds of review pleaded by LCANZ.

    20.6 Part I addresses relief.

21. There are three annexes to the submissions:

    21.1 Annex 1 is a quick reference sheet for some of the main technical terms, and also collates in one place the 'headline numbers' that are referred to through LCANZ submissions and the Commission's Advice.

21.2 Annex 2 is a table collating some of the more significant references in the Commission's Advice to the objective of contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5°C above pre-industrial levels, in response to LCANZ' claim that the Commission failed to properly consider this aspect of the statutory purposes in ss 3 and 5W.

21.3 Annex 3 is a summary table setting out the evidence from LCANZ' witnesses and the responses made in the evidence filed for the Commission and for the Minister, and LCANZ' witnesses' reply to those responses. This demonstrates that all the adverse commentary and opinions expressed by LCANZ' witnesses is firmly contested.

THE ZERO CARBON AMENDMENT ACT

22. The Climate Change Response (Zero Carbon) Amendment Bill was introduced in the House on 8 May 2019 and the Act came into effect on 13 November 2019. It followed New Zealand's entry into the Paris Agreement[14] and the first communication of New Zealand's first Nationally Determined Contribution under the Paris Agreement in October 2016.[15] It also followed the October 2018 publication of the IPCC's 2018 *Special Report on Global Warming of 1.5°C* with its modelled global pathways, and that report featured strongly in its development.[16]

23. The Zero Carbon Amendment Act established the Climate Change Commission and set the 2050 carbon zero target. It set up a regime for emissions reductions budgets to be set and implemented through emissions reductions plans, and for the Commission to monitor and hold governments to account for their performance against those budgets. It also has a strong focus on adaptation to climate change, with the Commission again providing advice and monitoring and reviewing the government's progress. The Amendment Act represented a fundamental shift in focus for New Zealand: rather than focussing on meeting international targets the Amendment Act aims to drive a change in domestic behaviour towards a low-emissions society, that is also able to adapt to the effects of climate change.

24. The intent of the Amendment Act was to establish an enduring structural framework that would support a response to climate change that is independent, scientifically based, sustainable and achievable, and that reflects long term goals and objectives, not short term political, sectoral or special interests. As the Hon James Shaw, Minister for Climate Change, explained in the third reading of the Zero Carbon Bill:[17]

> Some things are too big for politics, and the biggest of them all is climate change. The intent of the zero carbon bill was, is, and always should be to elevate climate change policy above petty politics and partisanship, to transcend and transform a problem so wicked and so stuck that we have made virtually no progress on it in the 30 years we have been aware of it … Climate

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14 New Zealand signed the Paris Agreement on 22 April 2016 and and ratified the Agreement on 4 October 2016.

15 New Zealand *Submission under the Paris Agreement: New Zealand's Nationally Determined Contribution* (October 2016), LBD at 8 – 10.

16 Intergovernmental Panel on Climate Change *Global warming of 1.5°C: An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* (2018), LBD at 13 – 642.

17 (7 November 2019) 742 NZPD 14892, LBA at 1311. See also the discussion at the first reading of the Bill: (21 May 2019) 738 NZPD 11026 – 11052, LBA at 1217 – 1243.

> change policy has been a political football … This unstable policy environment has prevented progress and sent contradictory signal, which has stymied decision action until this, the 11th hour and 55th minute before midnight. The zero carbon bill [was] … conceived as a way to depoliticise climate change policy so that we can actually start to make some progress.

25. The aim of the new regime is to lift New Zealand's response to climate change away from the partisan sectoral and special interest disputes that have "stymied decisive action" so that "we can actually start to make some progress."

26. That purpose is reflected in what is now in s 3(1)(aa) of the Climate Change Response Act 2002, being to:

> provide a framework by which New Zealand can develop and implement **clear and stable climate policies** that –
> (i) contribute to the global effort under the Paris Agreement to limit the global average temperature to 1.5° Celsius above pre-industrial levels; and
> (ii) allow New Zealand to prepare for, and adapt to, the effects of climate change.

27. The step change in response represented by the Amendment Act is critical. New Zealand is starting well back from where it should be, and sustained *and sustainable* response action is required. Parliament recognised that it was essential to establish a stable framework that allowed a long-term policy response that could navigate the complex judgements required, with core decisions being made by the democratically accountable government of the day but on the basis of robust advice that would be independent from political, sectoral and special interest pressure. The Court in the context of a judicial review proceeding should be cautious that it does not inadvertently undermine that important objective by giving undue weight or priority to the narrower perspectives of the groups that have the means and commitment to pursue litigation.

THE CLIMATE CHANGE COMMISSION

28. The Climate Change Commission is established under Part 1A of the CCRA. Its role as an expert independent advisory and monitoring body was recognised as essential to deliver the clear and stable policy framework that the Zero Carbon Amendment Act intended to achieve.

29. This purpose is reflected in two particularly notable features about the establishment of the Commission by Parliament: the extraordinary level of independence and the high level of expertise.

Independent

30. Parliament recognised that the credibility of the Commission's work must be underpinned by widespread trust in its independence, given its advice would reach far into every corner of New Zealand society and our economic future.[18]

31. The Act expressly provides for the Commission to operate independently in s 5O, with two exceptions where Parliament recognises that the interests of the government of the day should be taken into account:

> **5O Commission must act independently**
>
> (1) The Commission must act independently in performing its functions and duties and exercising its powers under this Act.
>
> (2) However, the Minister may direct the Commission to have regard to Government policy for the purposes of the Commission—
>
> (a) recommending unit supply settings of the New Zealand emissions trading scheme; and
>
> (b) providing advice about New Zealand's nationally determined contributions under the Paris Agreement (in a report requested under section 5K).

32. The unusual feature of the Act however is the distancing between Commission appointments and the government of the day.[19] Commission members are not directly appointed by the Minister. The Minister is instead required to establish a nominating committee comprising five people (including the Chair of the Commission, if already appointed), who then undertake the process of publicly calling for expressions of interest and consultation. The nominating committee then puts forward its nominations, and the Minister (in practical terms cabinet) then assesses those against the statutory criteria in s 5H and makes a recommendation to the Governor-General.

33. The Act requires the Minister to both review the expertise of the nominated candidate, and also consult representatives of all political parties in Parliament before recommending an appointment.[20] This final requirement is rare, and features in the appointment process of only a handful of positions where public confidence in independence and the need for a long-term viewpoint are also seen as critical: the

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18 Ministry for the Environment "Climate Change Response (Zero Carbon) Amendment Bill: initial briefing to the Environment Committee" (25 July 2019) [**Initial Briefing to select committee]** at [38].

19 See Climate Change Response Act, ss 5E – 5H, LBA at 931 – 932.

20 Climate Change Response Act, s 5E, LBA at 931.

Board of the Guardian of New Zealand Superannuation, the Board of the Reserve Bank, and the Public Service Commissioner and Deputy Commissioners.[21]

Individually and collectively expert, and staffed by experts

34. The Act recognises that the unique complexity of the challenges the Commission is required to advise on demands Commissioners with collective experience across a wide field, including the scientific and technical aspects of climate change mitigation and adaptation, local and central government management and policymaking, the wider economic and social effects of climate change, a the Treaty/te Tiriti and te ao Māori.[22]

35. The appointed Commissioners satisfy these requirements and possess a high level of expertise in several fields. Dr Roderick Carr (Chairperson), is known for his extensive expertise in public sector governance roles, notably as Vice-Chancellor of the University of Canterbury and as Chair of the Board of the Reserve Bank,[23] and his private sector experience is similarly broad, with over 10 years spent as a director of the Lyttleton Port Company. Lisa Tumahai (Deputy Chairperson) (Ngai Tahu, Tainui) brings particular expertise and knowledge in the Treaty/te Tiriti and te ao Māori as the current Kaiwhakahaere (Chair) of Te Runanga o Ngāi Tahu.[24]

36. Dr Harry Clark, Dr Judy Lawrence and Professor James Renwick are highly qualified experts on climate science and mitigation and adaptation, and have each been internationally recognised with appointments as authors of reports prepared by the Intergovernmental Panel on Climate Change.[25] Catherine Leining is one of New Zealand's foremost experts on climate mitigation policy, having co-led Motu Economic and Public Policy Research's programme on "Shaping New Zealand's Low-Emission Future".[26] Professor Nicola Shadbolt holds a number of professional

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21 New Zealand Superannuation and Retirement Income Act 2001, s 56; Reserve Bank of New Zealand Act 2021, s 30; and Public Service Act 2020, ss 42 and 47.

22 Climate Change Response Act, s 5H, LBA at 932.

23 Hendy at [36]; and Carr at [8].

24 Hendy at [41].

25 Dr Harry Clark was appointed the lead author for Global Assessment Reports 5 and 6, Dr Judy Lawrence was recently appointed as a Coordinating Lead Author with the IPCC Sixth Assessment Review, and Professor Renwick was appointed as a Lead Author and Coordinating Lead Author on three Assessment Reports: Hendy at [45], [48] and [54].

26 Hendy at [51].

positions relating to the agriculture industry, is the current Chairperson of Plant and Food Research and was formerly a director of Fonterra.[27]

37. The Commission's work is supported by an interdisciplinary team of experts with wide-ranging expertise in the science of climate change, emissions reporting and accounting, and wider issues of climate policy. Joanna Hendy reviews the qualifications and experience of the Commission's staff in her affidavit.[28]

THE COMMISSION'S ADVICE

Ināia tonu nei – the time is now: a low emissions future for Aotearoa

38. The Commission's Advice at issue in this proceeding runs to 418 pages, and is supplemented by further volumes of supporting evidence taking the total published advice to over 1,000 pages. These volumes are themselves only a summary of the vast array of matters that underpin the Advice's recommendations.

39. A very brief synopsis is set out below.

Synopsis of the Advice

40. **Chapters 1–3** introduce the Advice**.** Chapter 1 is an executive summary and Chapter 2 summarises the Commission's extensive consultation programme, which received over 15,000 submissions and involved around 700 hui across the country.[29] Chapter 3 summarises the Commission's position within broader climate policymaking and provides a roadmap for the wider report.[30]

41. **Chapter 4** summarises the Commission's method in developing its proposed emission budgets. This process, discussed further below, is broken into three stages: aggregating evidence of opportunities for abatement; modelling and reviewing test budgets to ensure they are both ambitious and achievable; and testing the rigorousness and ambition of the draft budgets.[31]

42. **Chapter 5** gives an overview of the Commission's proposed emissions budgets. This section of the Advice reviews the key outcomes needed from emissions budgets (including those listed as s 5ZZC of the Act) and groups them together into three broad

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27 Hendy at [58].
28 Hendy at [62].
29 Advice Bundle at 17 and 35.
30 At 51.
31 At 67.

categories: budgets are to be ambitious, achievable, and fair, inclusive and equitable. The Commission addresses the key question of "how fast", acknowledging that balancing these objectives is not a simple task.[32] The Commission considered the risks and consequences of acting too fast, and the risks and consequences of acting too slow.

43. The Commission's budget figures are listed at pages 91 – 98, and are discussed further below.

44. **Chapter 6** presents four long-term scenarios to 2050 modelled by the Commission: "headwinds", which adopts conservative assumptions as to future technology and behaviour changes; "further technology changes", which adopts more optimistic assumptions as to future technology change only; "further behaviour change", which adopts more optimistic assumption as to future behaviour change only; and "tailwinds", which adopts optimistic assumptions as to both.[33] Each scenario is underpinned by the observation that current policies will not get New Zealand to its target. Under current settings by 2050, net long-lived greenhouse gas emissions are projected to fall to 9.8 $MtCO_2e$ (missing the target of net zero) and biogenic methane is projected to fall 11 percent below 2017 levels (missing the target range of 24 to 47 percent).[34] The "tailwinds" scenario models the country reaching net zero emissions by 2040; the "headwinds" scenario indicates that would take until 2048.[35]

45. **Chapter 7** establishes that the Commission's recommended emissions budgets are achievable by presenting a "demonstration path", a set of measures and actions within each sector that would deliver the recommended budgets to 2035.[36] In transport, for instance, the path requires significant reduction in vehicle travel, for example though increases in remote working and greater reliance on public transport. Rapid increase in the electric vehicle share of light vehicles is required, such that by the late 2030s EVs accounts for virtually all new vehicles entering the fleet. A slower uptake of EVs in medium and heavy transport is suggested, reflecting greater barriers to

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32 At 78.
33 At 108.
34 At 89 – 90.
35 At 109.
36 At 114.

decarbonisation.[37] Likewise, the projection is made that that five percent of aviation fuel is displaced (likely by batteries, hydrogen, or biofuels) by 2030.[38]

46. **Chapter 8** acknowledges that certain industries, regions and communities will face greater adverse impacts from the transition than others. At the same time, future generations will be disproportionately affected by climate change.[39] Nonetheless, the Commission's analysis indicates that many mitigation strategies will yield net savings in the long run: taking transportation as an example once again, electrification will require initial capital expenditure, but these will be more than offset by savings in fuel and maintenance costs.[40] The overall economic impact of implementing the Commission's emissions budgets (in terms of lost GDP growth) is projected to be 0.5 percent and perhaps around 1.2 percent by 2050 — figures that represent a significant cost for the economy, but one that is not ruinous.[41] Nonetheless, net job losses affecting some communities and regions (such as Taranaki and the West Coast) will require localised transition planning and greater central government support.[42]

47. **Chapter 9** considers how the Commissions' emissions budgets are compatible with the global effort to limit warming to 1.5°C. The Advice concludes that the emissions reductions projections for different greenhouse gases are compatible with the global goal, and put New Zealand on track to reach net zero CO_2 by 2038, ahead of the range of the IPCC pathways of 2045 – 2055. They also put us on track to reach net zero for all long-lived gases before 2050.[43]

48. **Chapter 10** outlines the Commission's recommended approach to greenhouse gas accounting and measuring progress towards budgets and 2050 targets. The Advice reviews the relative merits of a number of different accounting methods, such as consumption-based models that would see New Zealand responsible for the emissions of goods it imports but not those it exports.[44] The Commission ultimately recommends a modified activity based approach to greenhouse gas accounting due, primarily, to the outsize role that forestry plays in New Zealand's net carbon emissions and the resulting need to smooth out cyclical peaks and troughs caused by the

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37 At 122 – 123.
38 At 126.
39 At 156 – 157.
40 At 159.
41 At 163.
42 At 177 – 178.
43 At 28, 200 and 208 – 209. See also more detailed discussion below at [76], [413], [416] and [698].
44 At 214.

harvesting of exotic plantation forests.[45] This issue is analysed in greater detail in Chapter 3 of the Commission's Supporting Volumes.[46]

49. **Chapter 11** advises on the shift required in policymaking to ensure that the government sends consistent and effective signals that align with the Commission's emissions budgets, with te Tiriti/the Treaty as their foundation. While no single policy may overcome all barriers to reducing emissions, the Advice identifies three "pillars" of interventions: emissions pricing (for example, through the Emissions Trading Scheme), attempts to eradicate market failures or inefficiencies (for example, increasing certainty in the carbon price), and positive investments in innovation (for example, where positive externalities mean the usual incentive to innovate is lower than it should be).[47]

50. **Chapter 12** considers how the government can create an environment where a culture of long-lasting change is possible and communities are able easily to make choice that support a transition to net zero. For Māori, this requires the development of an outcomes framework and action plan to ensure the principle of te Tiriti/the Treaty are observed in subsequent emissions reduction plans.[48] For the wider economy, this demands clear and credible signals of the government's direction — and, critically, a consistent direction of travel between governments — so that individual businesses, households, communities and regions can make decisions on the large investments required.[49] Specific governance reforms (for example, the creation of a specific multi-agency budget appropriation) are also suggested.[50]

51. **Chapter 13** presents advice on systems-level policy changes that cut across several different sectors. For instance, the Advice recommends changes to the emissions trading scheme to manage the incentive to plant fast-growing exotic tree species (such as pine), as well as adjustments to price control settings to increase the reserve price and the trigger price for reserve release in the scheme.[51] Similar recommendations are given to mobilise public and private finance, and to alter urban planning strategies and other far-reaching policy areas such as electricity production in the context of a long term plan for energy production and use.

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45 At 215 – 220.
46 At 470.
47 At 229 – 235.
48 At 244.
49 At 246 – 246.
50 At 248 – 250.
51 At 255 – 257.

52. **Chapter 14** is dedicated to transport policy, a sector currently responsible for 33 percent of New Zealand's total long-lived greenhouse gases. The Advice on this topic straddles three broad goals, with specific policy initiatives discussed for each: reducing reliance on light vehicles in favour of low-carbon alternatives, such as cycling; the rapid adoption of EVs; and decarbonising heavy transport and freight.[52] Taking light vehicles as an example, the Advice presents a range of relatively straightforward solutions available almost immediately (for example, optimising existing systems by reallocating road space to low-carbon transport modes) alongside more aggressive changes that will be required in the short and medium term.[53] Examples in the latter category include a large reweighting of land transport appropriations in favour of public transport, walking and cycling and alterations to funding — such as incentivising use by allowing less public transport cost recovery through the farebox.[54]

53. **Chapter 15** focuses on energy, industry and buildings, a sector responsible for 44 percent of New Zealand's total long-lived greenhouse gases. Although New Zealand benefits from numerous hydroelectricity and other renewable power schemes, considerable energy (electrical and otherwise) is generated from fossil fuel production, at power stations, in households and in industry. In some cases, obvious decisions must be taken, such as eliminating the use of coal in electricity generation or process heat through boilers.[55] Other hard-to-abate areas, such as cement production or embodied carbon in buildings, require alterations to regulatory frameworks and research incentives as part of a long-term strategy to manage what will be a more difficult transition.[56]

54. **Chapter 16** concerns waste, responsible for nine percent of biogenic methane emissions. The Advice is critical of existing regulatory ambition in this area, noting that Aotearoa currently generates one of the largest amounts of waste per capita in the OECD.[57] At the disposal stage, very large capital investment in waste management infrastructure (in the low billions of dollars) is also required.[58] Action prior to the disposal stage is also required to ensure that less waste is created — the Advice suggests an expansion of the product stewardship scheme, which currently makes

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52 At 276.
53 At 278.
54 At 278 – 279.
55 At 298 and 305.
56 At 306 and 309.
57 At 314.
58 At 315.

manufacturers of products such as tyres and refrigerants responsible for their products' environmental footprint.[59]

55. **Chapter 17** sets out a policy direction for agriculture, responsible for 91 percent of biogenic methane emissions and 19 percent of long-lived greenhouse gases. The Advice identifies improvements in farm management and herd productivity as an area in which early emission abatements can be achieved.[60] Pricing emissions will, however, be an essential tool in order to reward farmers who do more and reduce emissions at a lower cost than others.[61] In the longer term, land use changes to horticulture and arable land will be needed.[62]

56. **Chapter 18** discusses the strategic management of forestry to provide a long-term carbon sink. Native forests are key to this pathway, as they will sequester carbon for hundreds of years, though they attract some risk given that how climate change will affect future tree growth or wildfires is not certain.[63] Production forests, on the other hand, can be used as an effective carbon sink only in the short term.[64]

57. **Chapter 19** concentrates on equity for Māori and the impacts of a transition on tangata whenua from a te ao Māori perspective. Tailored approaches will be needed to avoid disproportionate disruption for Māori, for example in the realm of whenua Māori which typically has a large ownership base and complex decision-making processes that may hinder land use changes or other interventions suggested elsewhere in the Advice.[65] Historic injustices that have created systemic inequalities will need to be recognised to ensure they are not entrenched by the impacts abatement will have on the economy and labour force.[66]

58. **Chapter 20** assesses how the transition to net zero can be fair, inclusive and equitable. It supplements Chapter 8 by providing a policy direction to ensure ongoing equity in the communities most affected by decarbonisation. Recent experience with strategic planning in Taranaki and Southland will need to be replicated elsewhere, and

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59 At 316.
60 At 322.
61 At 324 – 325.
62 At 327.
63 At 332 and 334 – 335.
64 At 335.
65 At 345.
66 At 348 – 349.

augmented by schemes that permit workers to transition out of high-carbon industries to jobs that require new skills and education.[67]

59. **Chapters 21 and 22** address two questions posed by the Minister. The first question, whether the (then current) NDC was compatible with contributing with the global effort to limit global average temperature increase to 1.5°C — the first specific request for a report by the Minister of Climate Change — is answered in the negative.[68] The second question seeks recommendations on any changes to the NDC to resolve this problem. While the Commission records that the exact level of the NDC must be determined by elected decision-makers, the Advice sets out in some detail relevant factors that will need to feed in to that assessment.[69]

60. **Chapter 23** responds to a third question from the Minister, which asks what eventual reductions in biogenic methane might be needed for New Zealand to contribute to limiting the global average temperature to 1.5°C. International literature indicates a global 37 percent reduction in agricultural methane is required to have a 50 – 66 percent chance of limiting temperature rise to 1.5°C.[70] New Zealand could possibly reduce biogenic methane by 10 – 24 percent below 2017 levels by 2030 and 24 – 57 percent by 2050. The lower end of this range can likely be achieved with current practices; the higher range would require methane inhibition technologies or large-scale land use changes.[71]

61. **Supporting evidence volumes**: as noted, the Commission's Advice was accompanied by a further 19 chapters of supporting evidence.

THE PROPOSED EMISSIONS BUDGETS

62. In determining the recommended emissions budgets, the Commission undertook an iterative process involving three main parts:[72]

    62.1 compiling evidence on emissions reduction;

    62.2 modelling long-term scenarios to 2050 and beyond (including multiple paths to 2035); and

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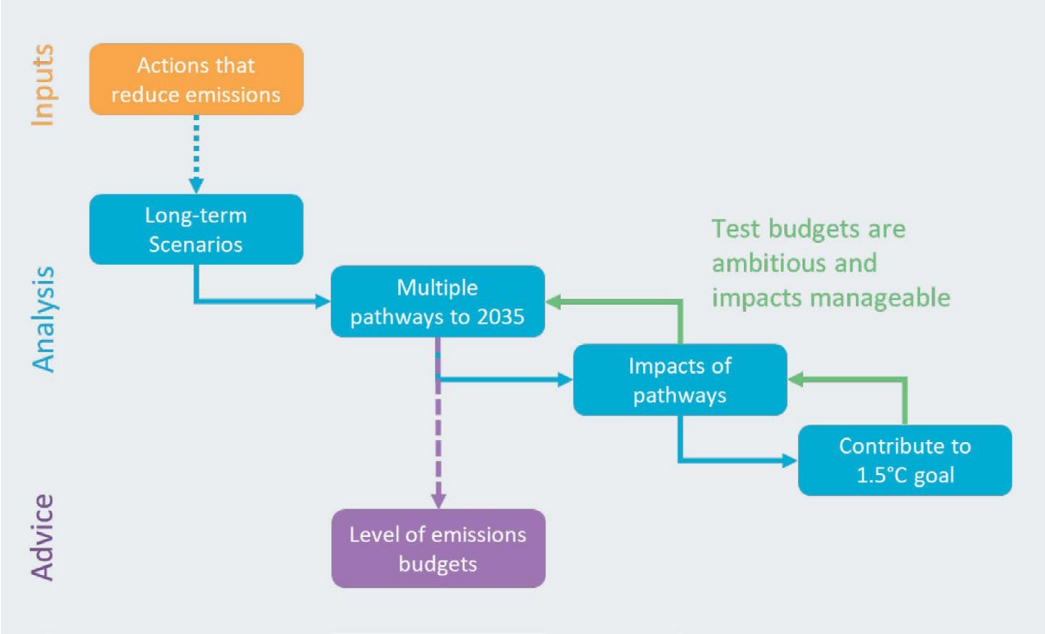
67 At 359.
68 At 365.
69 At 380.
70 At 397.
71 At 401.
72 At 63.

62.3 assessing the impacts of the pathways and the draft emissions budgets against the goal of limiting warming to 1.5°C and the other relevant criteria to test that budgets are ambitious and the impacts manageable.

63. This process is illustrated in Figure 4.2 in the Advice.[73]



64. Sections 5M and 5ZC require the Commission to take a number of matters into account when advising the Minister on emissions budgets. The Advice groups these factors into three overarching criteria: that budgets be fair, equitable, inclusive; ambitious; and achievable.[74]

64.1 **Fair, equitable, and inclusive** budgets send clear signals about the transition, allowing individuals, businesses, and government time to plan.[75] This in turn promotes sustainable and equitable outcomes that will ensure that future generations have the resilience and ability to make continual and lasting emissions reductions.

64.2 **Ambitious** budgets decarbonise where possible (requiring near-complete decarbonisation wherever technically and economically possible),[76] build a

73 At 67.
74 At 79.
75 At 80.
76 At 81.

long-term carbon sink,[77] contribute to the global 1.5°C effort,[78] and move as fast as real-world constraints allow.[79]

64.3 Recognising real-world constraints is also part of making budgets **achievable**. In addition, achievable budgets must be able to be delivered in light of uncertainty. It is for that reason that the Advice builds off multiple projections for Aotearoa's decarbonisation pathway.[80]

65. As explained by Dr Carr, the process of formulating emissions budgets required the Commission to weigh up the Act's competing considerations.[81] These decisions were made by the Commissioners utilising their own expertise but also relying on the evidence and modelling compiled by the Commission's specialist staff.[82]

66. Dr Carr's evidence highlights five key aspects of the Advice where the Commissioners were required to exercise judgement:

66.1 The first – in many ways, the crucial - judgement call related to the **pace** of emissions reductions.[83] Time is of the essence, but moving too quickly risks the sustainability of emissions reductions, and may cause unnecessary pain to particular communities: given sufficient time, industries and communities may be able to decarbonise while minimising lost livelihoods. If emissions reductions are not socially acceptable, they will not be maintained.

66.2 Second, the Commission was required to consider the **distribution of impacts** across communities and generations.[84] Generational considerations are somewhat intuitive: delaying action increases the burden on future generations. Conversely, the impact on different communities is not always easy to anticipate. Dr Carr uses the example of petrol prices: a uniform rise in the cost of petrol will have uneven impacts across communities – depending on factors such as household income, the accessibility of public transport, and commuting distances.

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77 At 82.
78 At 82 – 83.
79 At 83 – 86.
80 At 86.
81 Carr at [30].
82 Carr at [30] – [31]; and Advice Bundle at 67 – 75.
83 Carr at [33] and [35]; and Advice Bundle at 30, 39 – 40, 77, 962 – 963, and more generally Chapters 5 (76 – 101), 7 (114 – 153) and 8 (154 – 299).
84 Carr at [36] – [37]; and Advice Bundle at Chapters 8 (154 – 299), 19 (341 – 353), and 20 (354 – 363), as well as in the Supporting Volumes in Chapter 15 (943 – 1011) and 16 (1012 – 1048).

66.3 Third, setting an emissions budget requires striking a **balance between emissions *reductions* and carbon *sequestration* and afforestation.**[85] Reducing emissions and increasing sequestration / afforestation both move Aotearoa New Zealand towards net zero emissions. Each has benefits and drawbacks. Planting more forests offers relatively low cost carbon dioxide removals, but there is a limit to how many new forests can be planted. Moreover, over-reliance on afforestation creates a moral hazard, in that it provides a rationale for delaying decarbonising industry and deferring changes in behaviour toward lower emission lifestyles.

66.4 Fourth, the Commission needed to consider the role that **pricing and the market** should play in incentivising emissions reductions.[86] Markets (such as the Emissions Trading Scheme) and "the market" more generally will inevitably have a role in decarbonising the economy. However, market-based solutions do not always provide the most equitable or effective solutions to complex social problems.

66.5 Finally, the Commission needed to take into account the inherent uncertainty arising from **assumptions about the future**.[87] Each of the models presented in the Advice required innumerable predictions about how various actors would react to changing circumstances. Dr Carr gives the example of the Tiwai Point Aluminium Smelter, which consumes 13 percent of New Zealand's total electricity production and is responsible for one percent of New Zealand's total emissions. Would it close, and when? And how would Meridian Energy (which supplies Tiwai Point) do with the freed-up electricity production? Such questions needed to be grappled with in order to make useful predictions about emissions pathways.

67. The core point is that designing the emissions budgets was not a matter of science or mathematics. There are literally infinite budget permutations that would allow New Zealand to achieve the 2050 target. Different options will have a fundamentally different impact on Aotearoa New Zealand's environment, society, and economy – measured over generations. Choosing which pathway to pursue was a massively

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85 Carr at [38] – [39]. See also the discussion on the reliance on removals from forestry in the Advice: Advice Bundle at 107 – 108.

86 Carr at [40]; and Advice Bundle at 172 – 173, and generally Chapters 11 (225 – 239), 13 (253 – 275) and 17 (319 – 329).

87 Carr at [41] – [44]; and Advice Bundle at 164, 182, 188, 194, 297 and 535.

complex policy judgement that required the Commission to trade-off different socio-economic, moral, environmental, and Treaty considerations.

68. The result of that process were the proposed emissions budgets for 2022–2035 set out in the table below:[88]

		2019 emissions	Emissions budget 1 (2022–2025)	Emissions budget 2 (2026–2030)	Emissions budget 3 (2031–2035)
AR4 values ($MtCO_2e$)	*Total*	74.9	278	298	240
	Annual average		69.5	59.7	47.9
AR5 values ($MtCO_2e$)	*Total*	78.0	290	312	253
	Annual average		72.4	62.4	50.6

69. The slight increase shown in the totals between the first and second budgets reflects the longer budget period (the first budget period is only four years, as compared with five years for periods 2 and 3). The annual averages correctly show a real step down reduction in allowed net emissions from budget to budget.

70. The total emissions contemplated by the budgets over the three budget periods (2022 – 2035) are accordingly 816 $MtCO_2e$ (AR4) or 855 $MtCO_2e$ (AR5).

71. These are not the figures that LCANZ refers to in its pleadings or submissions, as LCANZ is working with an estimate of what the budgets would provide for if they had been set for the 10 year period of 2021 to 2030 to match the NDC. LCANZ' reasons for using those numbers are not clear, but may relate to its now withdrawn ground of review that the Act obliged the domestic budgets to align with the NDC, and hence requiring the NDC to be met without off-shore mitigation (the NDC is for the period 2021 – 2030). LCANZ' figures essentially take the first two budgets only (which start in 2022,

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88 This data is taken from Table 5.2: Advice Bundle at 90. The emissions volumes are expressed as megatons of carbon dioxide equivalents. Greenhouse gases are generally treated as equivalent quantities of carbon dioxide for accounting and modelling purposes. To determine how much of a certain gas (for example, methane) is equivalent to a megaton of carbon dioxide, it is necessary to calculate their relative impact on global warming. The GWP_{100} (global warming potential over 100 years) values used for doing so changed slightly between the IPCC's *Fourth Assessment Report* (AR4) and *Fifth Assessment Report* (AR5). The AR5 values have been mandated by the IPCC since 2021. This is discussed in the Supporting Volumes to the Advice Bundle at 499 – 501.

not 2021, and span only nine years), and add an estimate for the 2021 year. The Commission undertook that exercise as part of its advice on the NDC.[89]

72. The totals for the first two budget periods (above) are 602 $MtCO_2e$ (AR5) / 576 $MtCO_2e$ (AR4). The AR4 figure was then adjusted to include projected net emissions for 2021, resulting in the 648 $MtCO_2e$ figure that LCANZ uses in its submissions. It is important to be clear however that this figure of 648 $MtCO_2e$ is a construct, and by adding in 2021 and excluding 2030 – 2035 does not fairly reflect the budgets set by the Commission.

73. The omission of the period 2030 – 2035 from LCANZ' 'calculations' is particularly significant for two reasons:

73.1 The third budget period is where the steepest emissions reductions are required, reflecting that emissions reductions initiatives take time to bed in deliver results, but by the third budget period emissions should be reducing rapidly if that early work has been effective. So just focussing on the first two periods substantially understates the level of ambition across the three.

73.2 The 2030 -2035 period is also where steeply increasing removals from forestry are projected start, which if included in LCANZ' 'recalculations' of the budgets using national inventory reporting (discussed below) would considerably undermine LCANZ' position that national inventory reporting 'shows' that deeper cuts are required.

[89] Advice Bundle at 379.

LCANZ 'HEADLINE' IRRATIONALITY CLAIMS ARE WRONG AND MISLEADING

74. LCANZ say in submissions, contrary to what has just been described of the Commission's Advice:

74.1 Instead of reducing emissions to around half the 2005/2010 level as the IPCC global pathways to the 1.5°C goal indicate is required by 2030, **the Commission's budgets provide for a 310% *increase* in domestic net CO_2 emissions** for New Zealand. LCANZ say this is "a stark contrast" and "flies in the face" of the uncontested need for action, and shows that the Commission's Advice is that there should be no "real action" on climate change.[90]

74.2 **The Commission's Advice on the NDC "purports to show** that **a *doubling* of net CO_2 emissions between 2010 – 2030** is consistent with limiting global warming to 1.5°C". LCANZ say it is "logically impossible" for the Commission to "claim to be following" the IPCC pathways and have overall net emissions *increasing* in this period.[91]

75. LCANZ claims are wrong and misleading, and substantively misrepresent the Commission's Advice.

76. Here is what the Commission's Advice actually provides for (if the Advice is implemented effectively into emissions reduction action, that is):[92]

76.1 New Zealand's emissions in real terms **reduce for each budget period,** and by **the early 2030s net CO2 emissions will have reached** the IPCC 'rule of thumb' of a **50% reduction from 2005/2010** emissions;[93]

76.2 New Zealand's **CO_2 domestic emissions will reach net zero by 2038**, well before the IPCC goal of 2045 – 2055.[94]

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90 LCANZ submissions at [21] – [23], [321] and [393].

91 LCANZ submissions at [252] – [253].

92 Advice bundle at 28, 200 and 208 – 209.

93 On a gross-net basis net CO_2 reduces to 55% below 2010 levels by 2030, and on a net-net basis reaches to 50% by 2033; for the gross-net figure see Advice Bundle at 208, Figure 9.4 and 209, Table 9.1, and for the net-net figure see the Commission's published paths and scenario dataset available at https://www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/modelling/

94 Advice Bundle at 209.

77. In graphical form, the Commission's proposed budgets are:[95]

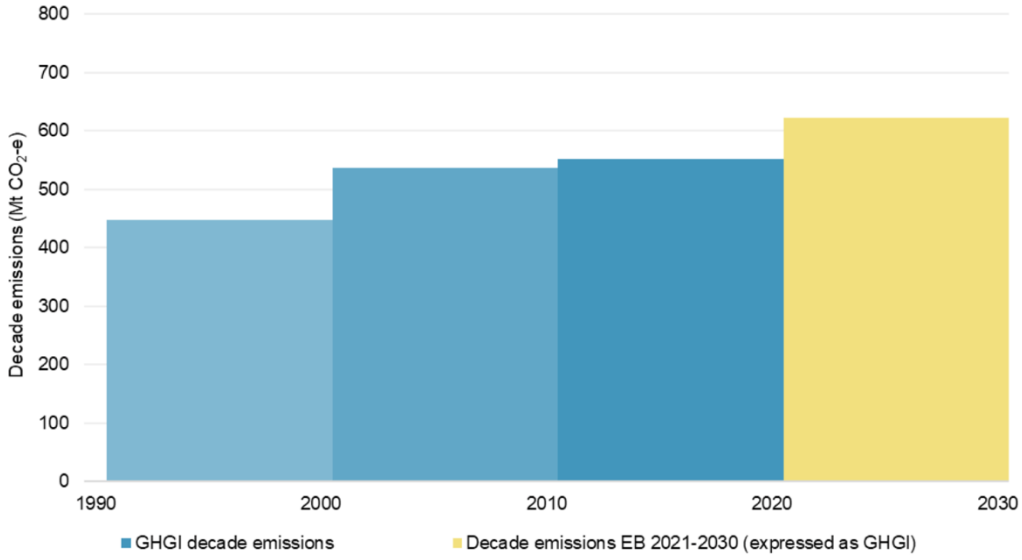
Figure 5.3: These three figures show how our proposed emissions budgets would step Aotearoa towards its emissions reduction targets. The top figure shows long-lived greenhouse gases, the middle figure shows biogenic methane, and the bottom figure shows all gases combined as CO_2-equivalent.
Source: Commission analysis.

95 Advice Bundle at 97.

78. So what is going on?

79. LCANZ (through Dr Taylor) have 'recalculated' the Commission's proposed budgets using the national inventory reporting methodology, and they use his figures for their irrationality 'headline' claims above. LCANZ say the combined three budgets actually look like this (the yellow being the budgets):[96]

Figure 4.4: Annual historic GHGI net emissions by decade 1991–2020 and CCC Emissions Budgets 2021–2030



80. This is in essence nothing more than an accounting artifice. In lay person's terms,[97] here is how LCANZ have managed to change a budget showing a *decrease* in emissions to a budget showing a *310% increase* in emissions.

81. The difference is the trees.[98] Trees when they grow are carbon sinks – they remove CO_2 from the atmosphere. When a tree is harvested and the wood used, that carbon is released back into the atmosphere.[99] The tree becomes a carbon emitter.

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96 LCANZ submissions at [23]

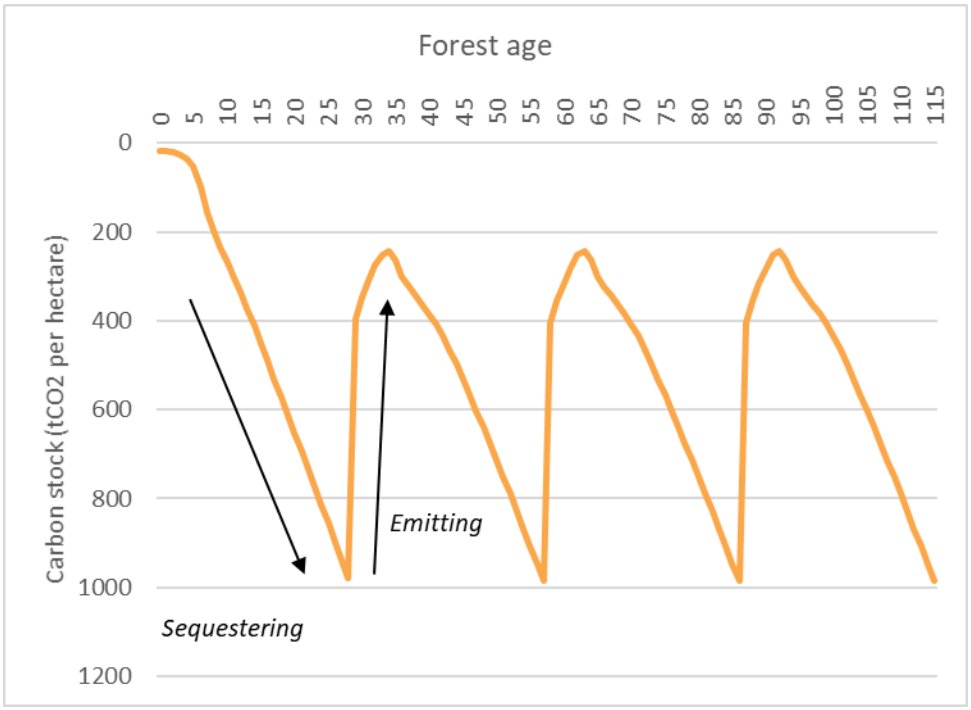
97 Noting this is highly simplified: more detailed discussions of these issues are set out in in the Commission's Advice at Chapters 10 (Advice Bundle at 211 – 223) and Supporting Volumes Chapter 3 (Advice Bundle at 470 – 513), and with further detail in the affidavits of Stephen Walter, Eva Murray, Paul Young and Matthew Smith (which are most usefully read in that order). Helen Plume, Dr Brandon and Dr Reisinger providing evidence from the Ministry for the Environment also set out more technical detail.

98 See generally for the following discussion Murray (entire), Young (entire) and Smith at [36] – [55].

99 Most of it: some remains sequestered in the roots and harvest residue, see Murray at [25.1]. And noting that the stored carbon is not released all at once and there are a range of assumptions and accounting rules to try and address the timing issues – the rate of release is for example very different if the wood is burned or turned into paper, vs being used to build a house or furniture, referred to by Murray at fn 6.

82. This means that commercial forests that are harvested and replanted and harvested and replanted over again have a clear cycle where they sequester carbon from the atmosphere and then release it again. The usual cycle is around 23 – 28 years.[100]

83. For a single forest, the emissions profile over time (ie the amount of carbon stored and released by the trees through this cycle) would look something like this:[101]



84. Because of this cycle, in terms of climate action – ie positive steps taken to reduce or offset our actual emissions – a commercial forest only makes a real contribution when it is *first* planted and grows to maturity, that is when it becomes a new source of carbon sequestration (this is called land use change). After that, the cycle just keeps running and whatever CO_2 the forest takes out of the atmosphere, we know it is going to release again in due course.[102] So while on a year by year basis ('what the atmosphere sees') the forest may be adding or removing carbon, it represents no real sustained change to the level of greenhouse gases in the atmosphere, and no real change to our actual emissions over time.

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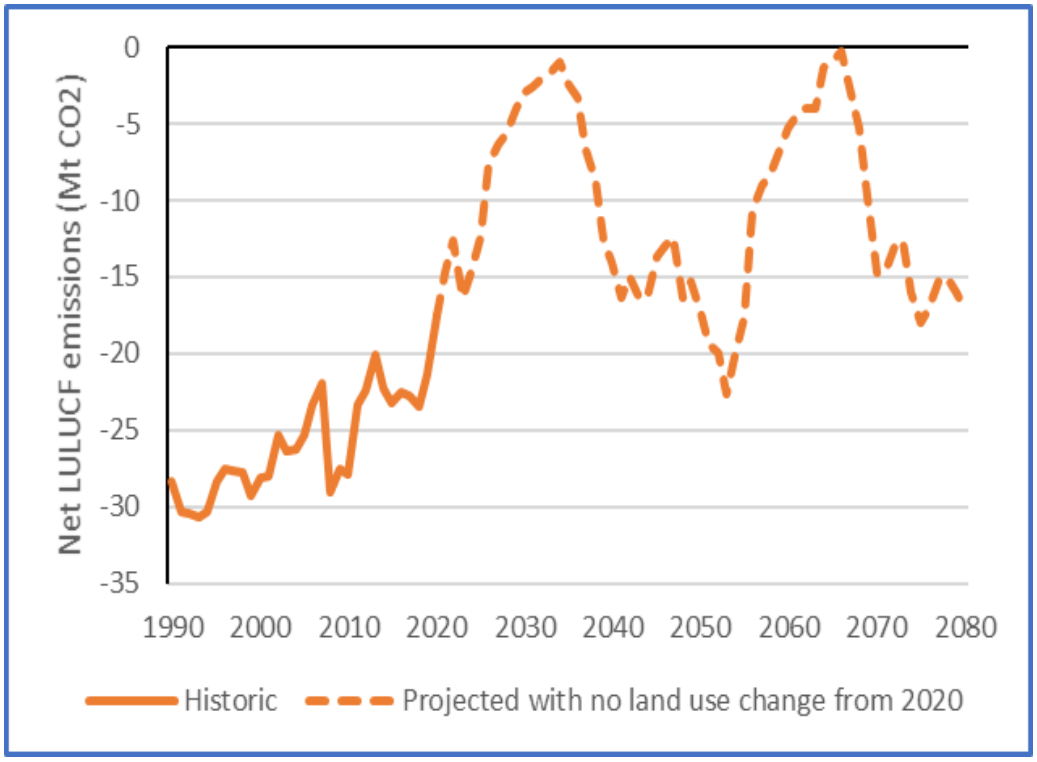
100 Murray at [53].

101 This figure shows the level of carbon stored in a given hectare of production pine forest from when it's planted, and shows how the level of carbon stored increases as it grows and drops as it is harvested. In basic terms, an increase in carbon stored represents removal of carbon from the atmosphere, and a fall in carbon stored represents emissions. This is an inverted version of the graphic in Murray at [58], taken from the Commission's Advice: Advice Bundle at 487.

102 If the forest is not replanted, then the emissions released on harvesting are permanent – that is another example of land use change. See more generally the discussion in Murray and Smith.

85. Relative to our size, New Zealand has a lot of commercial forests going through this cycle.[103] Had they been planted at a steady rate over the years, the cycles of the individual forests would have largely balanced each other out over time: when one forest was being harvested, another might be at peak sequestration, and so on.

86. New Zealand however did not plant forests at a steady rate. For a range of reasons New Zealand experienced some periods of intensive planting followed by years of nearly no planting at all. So we have a lot of forests going through this cycle, and by an accident of timing, many of our forests have end up roughly on the same planting-harvesting cycle.[104] New Zealand's forests taken all together generate a projected overall emissions profile that in broad terms looks like this (noting the profile is all below zero: these are always net removals or 'negative emissions'):[105]



87. This cycle has a major impact on our overall year by year ('what the atmosphere sees') emissions profile reported in our national inventory reports. The impact of the tree

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103 Murray at [29] – [31]

104 Murray at [24] – [31]; in more detail Young at [41] (see also more generally at [32] onwards) and Smith at [39] – [41].

105 Murray at [27]. It is important to note that the cycle is not projected to stray into positive emissions – New Zealand's land sector cycle is projected to *always* remain an overall a source of removals, as the above graphic shows – it never goes above zero. So by excluding the tree cycle from target accounting New Zealand is not 'hiding' a source of emissions or somehow cheating – New Zealand is just not taking the (variable) benefit of these removals: Smith at [43]

cycle in New Zealand is now so big that any other changes in emissions and reductions are basically swamped[106] – at a headline level all we see is the repeating cycle of harvest and planting, none of which makes any overall change to the level of greenhouse gases in the atmosphere long term. And none of which reflects any change in climate response action, or any new source of emissions or removals.

88. They also provide a very misleading picture of progress. When the tree cycle is heading towards its peak removals, the country can look like it is performing very well. When the cycle moves on and the trees are being harvested, suddenly net emissions skyrocket, *with no change at all to the country's actual emissions from other sources, and no change at all to climate response action*.[107]

89. That is why these tree cycles are effectively removed under target accounting for emissions budgets:[108] because they do not represent any long term sustained change in the level of greenhouse gases in the atmosphere, and they do not represent any actual change a country's sustained removals over the long term.

90. This is also not New Zealand's idea: the State parties to the United Nations Framework Convention on Climate Change[109] made this decision when the Kyoto Protocol set the first binding targets on parties.[110] The Kyoto Protocol introduced these target accounting rules for setting targets and measuring progress against the mitigation commitments made under the Protocol, setting a base year from which the repeating tree cycle of existing forests would be excluded from emissions accounting.[111] These are *mandatory* rules under the Kyoto Protocol. New Zealand, like all other parties with target commitments under Protocol, was obliged to adopt them.[112]

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106 See Murray and Young, above.

107 Smith at [41].

108 This is a major simplification of the relevant accounting rules, which are outlined in the affidavits of Walter, Murray, Smith, Young, Plume and Brandon.

109 United Nations Framework Convention on Climate Change 1771 UNTS 107 (opened for signature 4 June 1992, entered into force 21 March 1994), CBD at 1 – 23..

110 Kyoto Protocol to the United Nations Framework Convention on Climate Change 2303 UNTS 162 (opened for signature 16 March 1998, entered into force 16 February 2005), CBD at 24 – 47.

111 For New Zealand that base year was 1990, so the impact of the repeating cycle of emissions and removals for forests planted before 1990 is excluded under the Kyoto Protocol. The modified activity based approach in NDC accounting, discussed further below, addresses this issue for forests planted after 1989.

112 See the more detailed discussion of this in the affidavits of Stephen Walter, Eva Murray and Matthew Smith at [151] (responding to Dr Bertram).

91. So New Zealand, like every other developed country who signed up to the Kyoto Protocol, has two different reports:

91.1 its national inventory reports[113] which include the tree cycles ('what the atmosphere sees'[114]); and

91.2 its target accounting reporting under Kyoto, which do not include the tree cycles (for forest planted before the 1990 base year).[115]

92. The difference can be illustrated by the approach to measuring sea level rise. If the sea level is measured on a beach one day at low tide, then a month later at high tide, the measure shows the sea has risen 3 metres. That is a catchy headline – sea level rises 3 metres! It is 'true' in the sense that the measurements are accurate and it is 'what the beach saw'. But is it false, because the tide is going to go out again: the repeating tidal cycle tells us nothing about what is really happening with sea level rise. If you wanted to measure this accurately by measuring what happens on a beach, you would have to find a way to neutralise out the repeating tides – for example using mean high tide measures.

93. That is what target accounting does.

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113 Also referred to as GHG Inventory reports. LCANZ refers to these also as GHGI net, GHGI accounting or net emissions accounting.

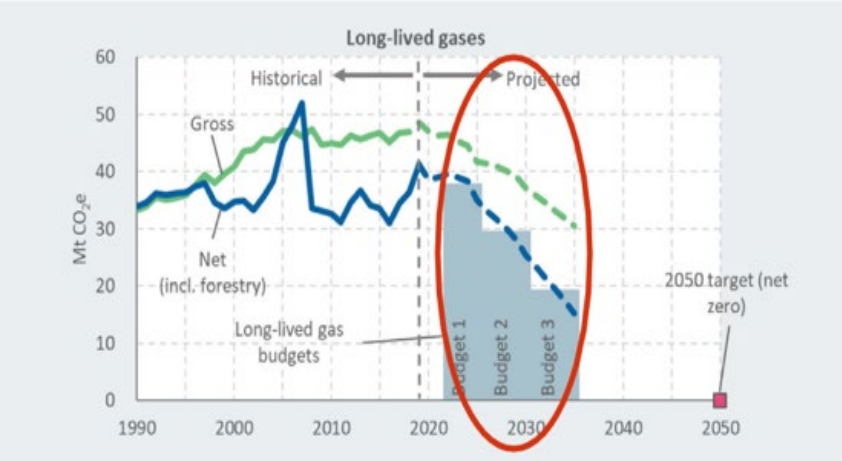
114 Noting that this is also a misleading term: national inventory reporting does not record all the emissions and removals that the atmosphere sees. States have a level of discretion as to what parts of their emissions they measure and report on, and how they approach those tasks (measuring can be complex and expensive, as well as highly variable in accuracy: see for example the discussion by Dr Glade on the challenges of LULUCF estimations, and more generally Walter at [24] – [26] and Murray at [21] – [23]). Due to this discretion, national inventories can and do exclude entire categories (or sources) of emissions. If the focus was truly on what the atmosphere truly sees, then the guidance for compiling national inventories would be far more prescriptive and demand that all countries report emissions in a more uniform and consistent way, as the climate change response would need to take all these emissions sources into account. In addition, reflecting the objectives of the UNFCCC the national inventory reports are focused on anthropogenic emissions (caused by human activity), and so of course do not include any geological or other 'natural' sources of emissions such as volcanoes, even though they can be major sources of greenhouse gas emissions that are 'seen' by the atmosphere.

115 Noting not all countries have the same base year. New Zealand has opted to continue with the same activity-based target accounting for its NDC under the Paris Agreement, with some modifications, consistent with the emphasis on consistency under the Paris Agreement. See Smith at [49] – [50], also noting that many other countries have also adopted a similar approach. The modified activity based approach in NDC accounting, discussed further below, addresses this issue for forests planted after 1989.

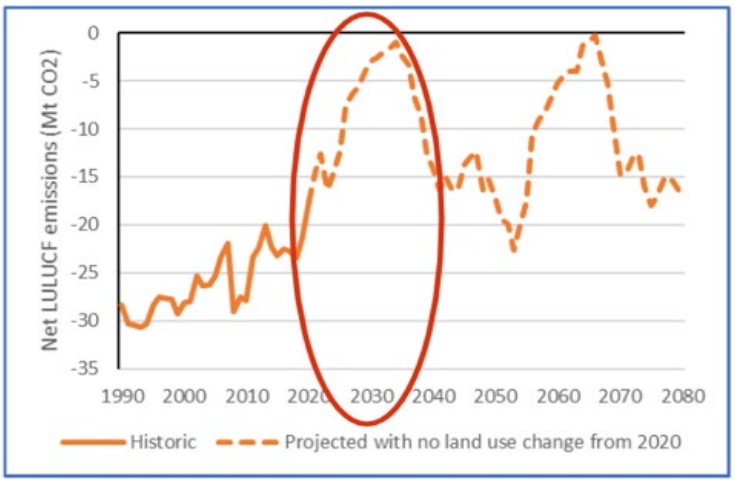
94. So, returning to LCANZ and the Commission's budgets. In basic terms all that LCANZ has done is put the tree cycle back into the mix (that is the effect of using national inventory reporting as Dr Taylor has done, instead of target accounting).

95. What that does is this:

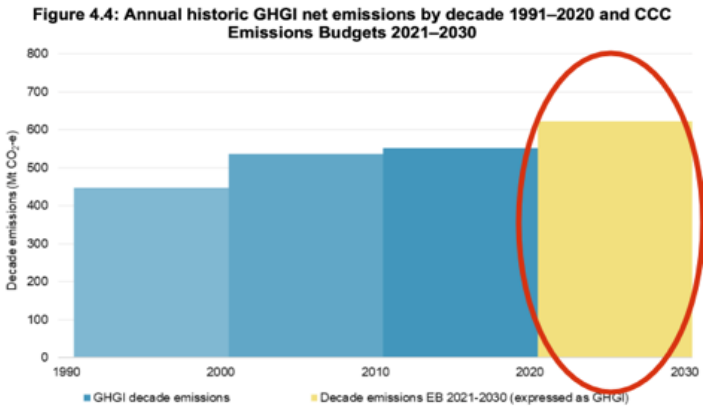
95.1 This picture (the budgets):



95.2 Is combined with this picture (the trees):



95.3 Which gives us this picture (LCANZ 'headline' that the budgets provide for a 310% *increase* in emissions):



96. It is that simple. The upward slope of the tree cycle overwhelms and reverses the actual downward slope of the budgets.[116]

97. But it is nothing more than an 'accounting trick' – New Zealand has always used target accounting to set its targets and measure progress towards them, starting from the binding obligation to do so in the Kyoto Protocol. It has never used national inventory reporting for this purpose and there is no sound basis for it to do so now.[117]

98. There is one more point to note about the analytical integrity of LCANZ' approach, which the abrupt end of Dr Taylor's graphic at 2030 hints at, above (the first three budgets actually extend to 2035, which Dr Taylor presumably knows but has not allowed for).

99. Dr Taylor doesn't extend his projection beyond 2030 for very good reason. Where New Zealand is on the tree cycle at the moment clearly supports LCANZ' political objective: as the above graphic show, our tree cycle is on the upward swing and is capturing less and less CO_2 so the effect of adding it into the mix makes our emissions

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116 The apparently 'low' emissions recorded by Dr Taylor in the decade 1990 – 2000 suffer from the same distortion: in that decade (as the above graphic shows) New Zealand's forests were at an all-time peak of emissions removals, off-setting huge amounts of actual emissions and making New Zealand's relative performance look very positive.

117 On the contrary, there are strong reasons why it would not do so. This was an issue considered in depth by the Commission: see Advice Chapter 10 (Advice Bundle at 211 – 223) and Supporting Volumes Chapter 3 (Advice Bundle at 470 – 513). See also the affidavits of Murray (entire); Young at [27] – [66]; Smith at [30] – [55]; Walter at [16] – [19], [32] – [35] and [42], noting there the importance of consistency affirmed in the Paris Agreement (Walter also confirms that the national inventory reports have not been used to account for targets at [27]); and Glade at [71] – [94].

profile look poor. The cycle just happens to top out around 2030.[118] So just by adding the tree cycle back in *at this point in time*, LCANZ can "show" that New Zealand's emissions are going up! And – despite the Commission's demonstration pathway in the Advice showing real and sustained emissions reductions in sector after sector across New Zealand's economy – LCANZ can "show" the proposed budgets will make emissions go up!

100. But that changes – and LCANZ know that changes[119] – shortly after 2030. Then the tree cycle turns and removals increase at a sharp rate. The twenty years that follow 2030 show a very different story, and *no matter what New Zealand does or does not do in terms of climate action,* using LCANZ' approach, our emissions profile will steeply decline.[120]

101. Ironically, using LCANZ' approach (ie national inventory reporting) would see New Zealand meet and exceed the 2050 zero carbon *by changing nothing at all* between now and 2050. If we keep doing exactly what we are doing now in terms of policy settings for climate change response, this is what the tree cycle will do to our net emissions profile:[121]

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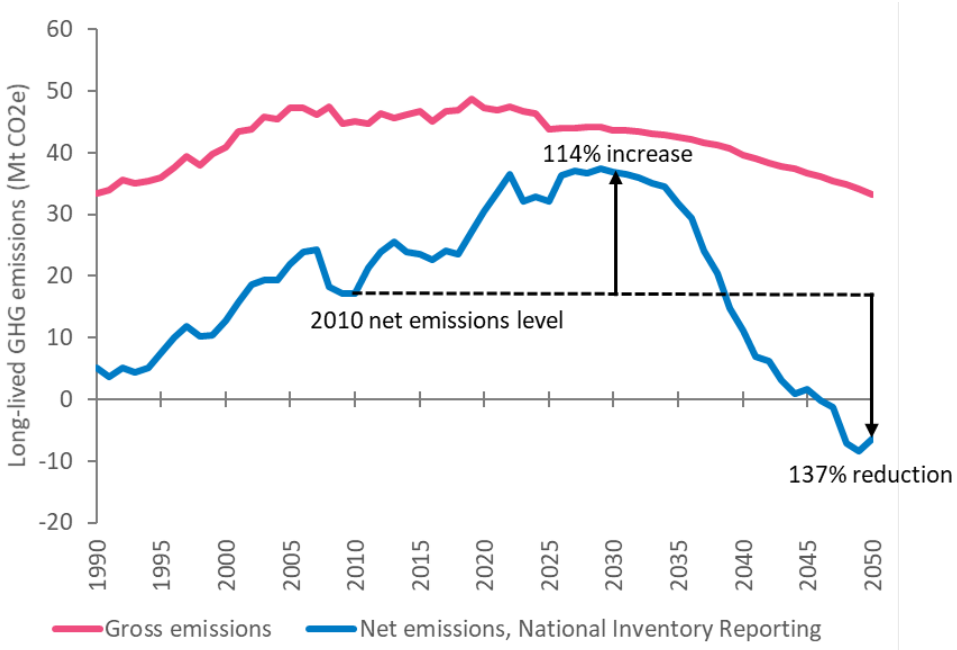
118 Murray at [25]; see also Young at [41] – [56].

119 See Young at [72]. Drs Taylor and Bertram both recognise this: see Taylor 1 at [23] – [24] and [124] – [128]; Taylor 3 at [41]; and Bertram 2 at [70] – [71].

120 Young at [41] – [56] and [71] – [72]; and Smith at [39] – [41].

121 See the detailed discussion in Young at [31] – [66].

Figure: Percentage change in long-lived greenhouse gas emissions in 2030 and 2050 relative to 2010 in the Current Policy Reference Case under net-net national inventory reporting



102. The red line shows what we expect to see for our emissions profile if there were no change in current policy settings for climate change response: our profile would stay pretty steady, reflecting lack of action.

103. In terms of holding government to account, that is a headline we need to see.

104. LCANZ' approach – the blue line – would have the target not only met but met early and exceeded by 2050, totally hiding the lack of government action.[122]

105. All these matters are explained in more detail in the Commission's Advice at Chapters 10[123] and Supporting Volumes Chapter 3,[124] and with further detail in the affidavits of Stephen Walter, Eva Murray and Paul Young and Matthew Smith (which are most usefully read in that order).

106. None of these basic points are disputed by LCANZ' witnesses.[125]

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122 LCANZ' witnesses in fact suggest that the governments of the day should take advantage of this to reduce the stringency of emissions reductions after 2030: Taylor 1 at [124], Bertram 2 at [70] – [71].

123 Advice Bundle at 211 – 223.

124 Advice Bundle at 470 – 513.

125 Other than at a policy level by Dr Bertram who has a strong philosophical objection to the use of target accounting at all. Dr Bertram does not however challenge the implications of LCANZ' approach.

PART B: CLIMATE CHANGE ACCOUNTING AND SETTING BUDGETS

107. LCANZ' alleged errors of law all engage with climate change accounting. Grounds one and three are direct challenges to specific accounting related decisions made by the Commission, while grounds two and four (the 'headline' irrationality claims referred to above) are presented on the flawed basis that the national inventory reporting approach is the only correct way to view New Zealand's NDC, 2050 target and proposed budgets.

108. Understanding these concepts and the context in which they developed is therefore fundamental to understanding these claims and the Commission's response to them, and to address some of LCANZ' more generalised propositions and assumptions that are woven through its submissions.

109. These submissions include a summary sheet for fast reference of the key concepts, at Annex 1.

Evolving international obligations

110. The basic narrative of the international agreements responding to climate change is set out in the affidavits of Stephen Walters and Eva Murray (for the Commission) and Helen Plume (for the Crown).

National inventory reports under the UNFCCC

111. The starting point is the UNFCCC (the United Nations Framework Convention on Climate Change), which entered into force in 1994. New Zealand has *reporting* obligations under the UNFCCC. The focus of the UNFCCC reporting is to give as comprehensive and accurate picture as possible of a nation's total emissions and removals in that year, and in each year in the time series. It does not involve the comparison of emissions against any kind of target or benchmark.[126] Nor does it distinguish between reductions that are sustained and those that are merely part of a cycle.

112. These reports are referred to in this proceeding as 'national inventory reports', but they are also referred to as GHG Inventory reports, UNFCCC inventory reports or as reports using a 'land based' approach. LCANZ describe their use of these reports as GHGI accounting or GHGI net.

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126 Walter at [15], [16] and [20] – [27]; Murray at [65] – [68]; and Young at [27] – [66].

113. It is important to note that these reports are not static, nor do they represent an 'unchanging truth'. The whole time series of emissions back to 1990 is updated with each new report as new information becomes available and better methods of estimating emissions are applied.[127]

114. It is also important to recognise that while these reports are often described as reflecting 'what the atmosphere sees' on a year by year basis, they are in fact not fully comprehensive in terms of providing a complete picture of the greenhouse gases 'seen' by the atmosphere each year. States have a discretion as to what parts of their emissions they estimate and report on, and how they approach those tasks,[128] reflecting the reality that estimating emissions and removals can be complex and expensive, as well as highly variable in accuracy.[129] Due to this discretion, national inventories can and do exclude entire categories (or sources) of emissions, and even for categories that are covered, the estimates can in some cases be highly uncertain. In addition, reflecting the objectives of the UNFCCC the national inventory reports are focused on anthropogenic emissions (caused by human activity), and so of course do not include any geological or other 'natural' sources of emissions[130] such as volcanoes, even though they can be major sources of greenhouse gas emissions that are 'seen' by the atmosphere.

Targets under Kyoto and the introduction of 'target accounting' – activity based and gross-net vs net-net for LULUCF

115. The Kyoto Protocol to the UNFCCC entered into force in 2005 and was the first time that countries agreed to take on individual binding emissions reductions targets.[131]

116. The Protocol committed the Annex 1 Parties (in basic terms, developed countries) to limit greenhouse gases in accordance with individual economy wide absolute emission reductions targets for the first commitment period (2008 – 2012). A second

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127 See for example Brandon at [19].

128 See Walter at [24] where he explains that under the UNFCCC reporting framework, the reporting requirements for Annex 1 countries are detailed to a high level of precision, while also allowing some flexibility to cater to particular national circumstances.

129 See for example the discussion by Dr Olia Glade on the challenges of LULUCF estimations, and more generally Walter at [24] – [26]; and Murray at [21] – [23].

130 As noted by Murray at [21.3].

131 For this section, see Walter at [17] – [19] and [28] – [36]; Murray at [32] – [46]; and Smith at [29] – [55].

commitment period (2013 – 2020) was established under the Doha Amendment to the Protocol. Commitment for this period was optional.[132]

117. With binding targets came 'target accounting': the development of the highly prescriptive rules that the Parties collectively agreed would govern how their individual targets were set and how progress against those targets would be measured.

118. The focus of this *accounting* approach, as opposed to UNFCCC *reporting* approach, is to track the mitigation impact of human activities, not to simply reporting a stocktake of 'what the atmosphere sees'. It is called 'accounting' quite literally because it reflects what States (and governments) should be held to account for – what actions are they taking now and in the future to reduce emissions? This principle of 'additionality' – what new actions are being taken - is fundamental to target accounting.[133] States do not get rewarded (or penalised) for the legacy effects of decisions made and actions taken in the past, before the Kyoto Protocol commitment base year (1990 for New Zealand).

119. In line with that fundamental objective, one of the key features of target accounting under Kyoto was to effectively remove the impact of repeating forestry cycles for already established forest sinks (ie for forests planted before 1990).[134] As already explained, these cycles do not represent any long term sustained change in the level of greenhouse gases in the atmosphere. These repeating cycles also would not represent any *additional action* by the relevant State party – they are just legacy effects of decisions and actions taken in the past that will continue without any additional effort. In setting and meeting targets they also had potential to distort the net emissions profile of individual countries, to either their unfair favour or disadvantage compared with other countries making commitments under the Protocol.[135]

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132 New Zealand elected to take an emissions reduction target for this period under the UNFCCC, rather than commit under the Protocol: Walter at [31] and Plume at [48] – [50].

133 Brandon at [58]; Murray at [35] – [38] and [45].

134 Murray at [35] onwards.

135 Unless this was addressed, two countries at different points in the cycle could end up with very different levels of obligation, depending on where their forestry cycle was in their base year. So for example, if country A was at peak forestry removals at the base year and country B's removals were at their lowest, country A's emissions reduction target would be much harder than country B's, just by the selection of the base year.

120. Kyoto did this with the LULUCF rules (LULUCF meaning "land use, land use change and forestry"). For New Zealand, the main significance of these rules is forestry.[136]

121. In summary terms, the Kyoto Protocol required all parties to adopt activity based approach to account for its land use emissions and removals (LULUCF), and also required those countries for whom forests were a net sink of emissions in the base year to adopt gross-net accounting (that is, net emissions in the target year and compared against gross emissions in the base year to measure progress).[137]

122. As New Zealand's forests were a carbon sink in 1990 (and have been ever since[138]), this meant that under the mandatory Kyoto Protocol target accounting rules, New Zealand was required to adopt an activity based approach to LULUCF and gross-net accounting to set its targets and measure progress to meeting them.[139]

123. ***Gross and net*** in the context of these international target accounting rules (and carried forward into the definitions in the CCRA, and New Zealand's NDC under the Paris Agreement) mean:[140]

123.1 Gross **excludes** LULUCF;

123.2 Net **includes** LULUCF.

124. That rule – that countries were to use a gross-net approach unless their land sector was a net source in the base year, while all other countries used a net-net measure – reflects the following context:[141]

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136 See Murray at [21] – [58] for more details of this and the following paragraphs.

137 Walter at [35]; Murray at [41] – [46]; Brandon at [29] – [34]; and Plume at [25] – [30].

138 Smith at [43].

139 Murray [36] – [46]; Smith at [29] – [55]; and Plume at [30].

140 Contrary to LCANZ' submissions at [211.a] and [213], **there is no 'definition dispute'**. Matthew Smith's evidence in reply to Dr Gale's evidence (Smith at [30], responding to Gale at [8]) simply pointed out that *Dr Gale* appeared not to understand the meanings of these terms as they are used in climate change accounting. That criticism remains sound: the fact that the IPCC 2018 Special Report (which did not engage with gross accounting at all) unusually refers to gross and net in a more traditional sense does not alter the fact that in international climate change accounting rules gross and net have the specialised meanings described. Nor does it alter the fundamental point that Dr Gale was not aware of this – even though these terms are also defined in this way in the CCRA. The IPCC's unusual description of 'gross' in its report (which deals only with net-net pathways) also does not affect the evidence of Matthew Smith and Dr Olia Glade, as Professor Forster possibly suggests in reply (Forster 2 at [16]): Professor Forster is incorrect when he states that the IPCC Report has a different definition of 'net' emissions than the Kyoto accounting rules: the IPCC Report has an unusual approach to describing gross emissions but its definition of net emissions (as including LULUCF) is orthodox, and the relevant commentary of these witnesses is directed to those net-net pathways.

124.1 For countries like New Zealand whose forests were acting as an overall sink in the base year, the higher figure for their emissions in the base year is their *gross* figure (and legacy forest removals are excluded from their commitment starting point);

124.2 For other countries whose forests are acting as a source of emissions in the base year (due to high amounts of deforestation), the higher figure for their emissions in their base year is their *net* figure (and emissions from deforestation were specifically included in their starting point).

125. ***"Activity based"*** has the deliberate effect of excluding from the accounting for all State Parties the legacy impacts of land use activities that had already occurred in the decades leading up to the base year, even though the effects of these activities (in terms of emissions and sinks) were continuing. For New Zealand that means that forests planted before 1990 were put into the "baseline" and all emissions and removals from the ongoing cycle of harvesting and replanting those forests are not counted towards our net emissions in the target period. In line with the objectives of target accounting, what is counted is any *new* activity (hence the name "activity based"): if after the base year (1990) land was converted into forestry (afforestation and reforestation) or if forest land was cleared and not replanted (deforestation) then those changes would be counted towards a party's emissions and reductions. The repeating cycle of emissions and reductions from pre 1990 forests was excluded.

126. It is important to be clear that target accounting includes both the activity based approach to LULUCF and the rules on gross-net vs net-net.[142] The two are interconnected and their analytical integrity is interdependent. Adjustments to how one is applied requires consideration of adjustments to the other (and many other aspects of the technical rules developed under international best practice) to ensure that the core concept of additionality and the fundamental climate change accounting principles of environmental integrity, transparency, accuracy, completeness, comparability and consistency are met.[143]

127. These are highly specialised, complex and technical matters, as Matthew Smith describes and as is illustrated by the discussion in Helen Plume's affidavit of the

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141 See for a more detailed description Smith at [44] – [45]; and Murray at [43] – [45].

142 Murray at [41]; and Smith [29] – [55].

143 Paris Agreement, art 13, CBD at 65 – 67.

international efforts to develop common approaches and improve these rules and guidance as to best practice.[144]

Paris Agreement, the NDCs and the modified activity based approach (NDC accounting)

128. The Paris Agreement was adopted by the Parties to the UNFCCC in December 2015. It entered into force in November 2016 although some key obligations did not apply until 2020.[145]

129. The Paris Agreement commits all parties to take action on climate change, not just the Annex 1 (developed) countries. However it does not set targets or prescribe what actions must be taken. Rather, the obligation on each party is to prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. It is this obligation to prepare, communicate and maintain an NDC that is binding, not the achievement of the NDC goal itself. The Agreement provides considerable latitude as to the types of NDCs that can be set (for example, especially for less developed countries an NDC may well not be in the form of an economy wide emissions reductions target).

130. The Agreement provides that Parties' successive NDCs should represent a progression and reflect its highest possible ambition.

131. It is also important to be clear that the Paris Agreement does not provide for comparing NDCs one against the other, as a way of benchmarking their adequacy or sufficiency. Nor, as LCANZ (and some of its witnesses) appears to suggest, is there any suggestion that compliance requires parties to commit to some sort of proportion of an averaged-out assessment of global efforts to contribute to the 1.5°C goal.

132. That proposition would be contrary to the framework of *nationally determined* contributions, which were in deliberate contrast to the 'top down' imposition of targets agreed in the Kyoto Protocol. It would also be contrary to the fundamental principles recognised in the Agreement of "equity and common but differentiated responsibilities and respective capabilities in the light of different national circumstances",[146] as well as being practically impossible given the wide latitude as to the form and content of NDCs.

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144 Plume at [13] – [16], [25] – [32] and [60] – [63]; and Smith at [42], [47] and [52].

145 For this section, see Walter at [37] – [43]; Murray at [47] – [59]; Young at [27] – [66]; and Smith at [17] – [28] and [49] – [55].

146 Paris Agreement, preamble, CBD at 50 – 51.

133. The reality of "highest possible ambition" is a *national* assessment reflecting national circumstances, and even in developed countries that could vary widely. So, for example, New Zealand's national circumstances include the fact that we are already largely decarbonised in our electricity sources, so the 'fast gains' that other countries such as the UK and large parts of the EU can make by turning from coal fired power stations to fossil gas let alone renewable energy, are not available here. Further, no other developed economy generates nearly 50% of its greenhouse gas emissions from agriculture where few if any alternative technologies to abate emissions are commercially available today. A 30% reduction target, for example, for New Zealand may be in fact far more ambitious than a 50% reduction target for the UK.[147]

134. In terms of accounting methodologies, as Stephen Walter outlines, in order to accommodate the resulting diversity of NDCs the accounting framework under the Paris Agreement is also significantly, and necessarily, less prescriptive than that under the Kyoto Protocol, but there is an emphasis on countries maintaining internal consistency with past practice. Mr Walter explains (references omitted):[148]

> Under the Paris Agreement, each Party is under an obligation to account for its NDC. The Agreement provides that in doing so each Party must "promote environmental integrity, transparency, accuracy, completeness, comparability and consistency, and ensure the avoidance of double counting, in accordance with guidance adopted by the Conference of the Parties serving as the meeting of the Parties to this Agreement" (Article 4.13). This guidance was adopted in Katowice in 2018 (Annex II to decision 4/CMA.1). It includes special emphasis on two types of consistency: the importance of parties using, to the extent possible, methodologies that are consistent with those that the country has used previously (in particular, under the Kyoto Protocol); as well the importance of maintaining methodological consistency, including on baselines, between the communication and implementation of NDCs. The Agreement also provides that Parties should take into account the existing rules and guidance under the Convention (Article 4.14). Otherwise however, Parties are necessarily given significant latitude with respect to the accounting methods they adopt to measure progress towards their NDC.

135. New Zealand has adopted an economy wide emissions reduction target as its NDC. It has also advised the Conference of the Parties that New Zealand has set this target and will measure progress against this target in the land sector using a modified activity based and gross-net accounting approach: essentially following the Kyoto Protocol rules with a slight adjustment (discussed below).[149] As Eva Murray notes, the guidance under the Paris Agreement specifically requires parties to describe how they are going

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147 See similar discussion in Smith at [156].

148 Walter at [41] and quoting [42]. See also Murray at [48] – [49].

149 Murray at [50] and [52].

to address the effects of age class structure in forests (ie the legacy effects of forestry cycles).[150]

136. New Zealand's current nationally determined commitment is to reduce net greenhouse gas emissions to 50% below gross 2005 levels by 2030[151] on a point year approach or, expressed on a like for like basis with the previously communicated NDC (that is, on a budget-based approach), 41% below 2005 levels.[152]

137. New Zealand will provide its first report on progress against its NDC no later than 31 December 2024.

138. ***The modified activity based approach*** that New Zealand is adopting for this purpose is, in simplified terms, the same as the activity based approach required by Kyoto, except in its treatment of forests planted *after* 1989. Under Kyoto, forests planted after 1989 are 'counted' in perpetuity – their emissions and reductions count towards the target even though as they mature these forests move into the same repeating cycles as forests planted before 1990. As time goes on and more forests are planted, that cyclical swing becomes a bigger feature in the emissions profile, with the same issues: emissions and reductions are not permanent and make no long-term change to greenhouse gases in the atmosphere, while the cycle itself can dominate the profile and obscure genuinely new action (or inaction).

139. The modified activity based approach essentially provides for these new, post-1989 forests to be counted as reductions for part of their first cycle of growth (until they reach their 'average long term carbon stock') and then they are moved into the baseline, and don't register again unless and until they are permanently harvested and not replanted (deforestation).[153]

140. This effectively does for forests planted after 1989 the same thing that Kyoto did for forests planted before 1990: after initial credit for the new forest's first growth the repeating cycle of emissions and removals as forests are harvested and replanted is excluded from the accounts.

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150 Murray at [49].

151 Smith at [28]. The base year of 2005 is not important: as the various expressions of the NDC illustrate, it is simple mathematical conversion to express the % reduction in relation to any particular base year: see Smith at [51] – [55]. Note also that for target accounting under both Kyoto and the NDC have the same 'activity start year' of 1990 for forestry: Smith [49] – [51].

152 See the affidavit of Minister Shaw at [36].

153 See the more detailed description in Murray at [52] – [59]; and Commission's Advice in Advice Bundle at 486. See also: Brandon at [46] – [55] and [66] – [69].

141. Under the modified activity based approach New Zealand gets much less credit for a new forest than would be allowed if we looked only at what the 'atmosphere sees' from year to year, but the credit we do get represents the sustained and long term overall reductions that the new forest actually represents.

142. This ensures that only long term sustained reductions in emissions (ie only new additional activities) are counted towards the NDC target, in accordance with the core concept in climate change accounting of additionality.[154]

143. The modified activity based approach is also referred to as **NDC accounting**.

The IPCC – not part of the UNFCCC or the Paris Agreement, and its pathways do not translate to national budgets

144. The Intergovernmental Panel on Climate Change is the United Nations body for assessing the science related to climate change, formed in 1988 by the World Meteorological Organisation and the United Nations Environment Programme. The IPCC's objective is to provide governments at all levels with scientific information they can use to develop climate change policies.[155]

145. It is not a 'sitting' panel of experts. Rather, as its name implies it an intergovernmental body (currently with 195 member states), and its reports and guidance are the work of various scientists and teams of authors nominated by member governments from time to time.[156] Its work is important and influential, and it is recognised as the most authoritative source of evidence on the science of climate change.

146. The IPCC Reports are however only guidance and information (albeit highly valued) for governments to inform their own policy: the IPCC does not (and has no status to) 'direct' governments or impose obligations on States, under the Paris Agreement or otherwise. Nor do they purport to do so. The IPCC describe its work as neutral, that its reports are policy relevant, but not policy prescriptive.[157]

147. LCANZ' proposition apparent in its submission on ground two, that 'application' of the global pathways outlined in the 2018 IPCC Special Report have somehow become obligatory under the Paris Agreement (and thus the CCRA) is accordingly misconceived.

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154 Murray at [52] – [80]; and Commission's Advice Chapter 10 (Advice Bundle at 211 – 223) and Supporting Volumes Chapter 3 (Advice Bundle at 470 – 513).

155 This section is discussed in Walter at [44] – [45].

156 Sims 1 at [6]

157 IPCC website: <www.ipcc.ch/>.

148. It is also contrary to established judicial authority that confirms that the obligations under the Paris Agreement are procedural only, to communicate an NDC.[158]

149. Nor is there any foundation for the apparent assumption by LCANZ that the IPCC pathways are intended to be used to set national targets based on some sort of 'averaging' assessment as a 'fair share', and are suitable to be used for that purpose. None of its qualified expert witnesses agree with that proposition. Professor Forster, in the context of providing advice to the Commission during the development of its Advice, warned against taking such an overly simplistic approach.[159] Dr Rogelj in his evidence in this proceeding expresses his opinion that "from an international climate equity perspective it is conceptually questionable to apply reductions from global emissions pathways directly the national context of an individual country."[160]

150. Dr Olia Glade similarly explains that the IPCC global pathways were never intended to be applied at a domestic level (references omitted):[161]

> Some of the witnesses for LCANZ appear to assume that the IPCC pathways can be directly applied to set national budgets, as a sort of mathematical exercise. This is incorrect.
>
> The purpose of the IPCC 2018 Special Report was not to create a methodology for setting national carbon budgets. This was outside of the scope of the Report. The purpose of the Special Report was to project different pathways for net emissions (defined as "anthropogenic emissions reduced by anthropogenic removals") that are consistent with limiting global warming to 1.5°C above pre-industrial levels.
>
> There are many international reports and publications that provide guidance to countries on how to set, calculate, and account for, carbon budgets. The Special Report is not one of them.

151. The Commission also explains in its Advice that while the IPCC pathways can provide useful insights for considering how New Zealand is contributing to the global 1.5°C effort, they represent global averages and do not set out prescriptive pathways for individual nations, and care needs to taken when comparing the IPCC pathways to

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158 This limited nature of the obligations under the Paris Agreement (as procedural not substantive) is confirmed by the Courts in a number of cases: *Thomson v Minister for Climate Change* [2017] NZHC 733, [2018] 2 NZLR 160 at [139] (LBA at 192), citing art 4 pf the Paris Agreement. See also: *R (Plan B Earth) v Secretary of State for Business Energy and Industrial Strategy* [2018] EWHC 1892 (Admin) at [30], [37] – [39] and [41] (permission to appeal declined by the Court of Appeal: *R (Plan B Earth) v Secretary of State for Business Energy and Industrial Strategy* [2019] C1/2018/1750 (Civ)); and *R (Friends of the Earth Ltd) v Heathrow Airport Ltd* [2020] UKSC 52, [2021] PTSR 190 at [70] – [72] and [122]. See also *Elliott-Smith v Secretary of State for Business, Energy and Industrial Strategy* [2021] EWHC 1633 (Admin), [2021] PTSR 1795.

159 Smith at [155] – [156].

160 Rogelj 1 at [12].

161 Glade at [38] – [40].

New Zealand's emissions reductions for a number of reasons, including that New Zealand's emissions profile differs greatly from the global emissions profile.[162]

152. LCANZ' position here is also directly contradicted by the evidence from possibly their most qualified expert witness, Professor Forster, who says in his reply affidavit:[163]

> Mr Smith and Dr Reisinger both say that there is no one right way to determine what 1.5°C degrees requires for an individual country. It is true that SR1.5 does not attempt to allocate what is required at a global level to states or regions and there are lots of choices and value judgements involved in doing so.

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[162] Advice Bundle at 207. See also the more extensive discussion by Matthew Smith on the practical impossibility of directly 'applying' the IPCC global pathways to New Zealand's national circumstances: Smith at [67] – [72].

[163] Forster 2 at [4] and [13].

PART C: LEGAL PRINCIPLES

THE ROLE OF THE COURTS IN CLIMATE CHANGE LITIGATION

General principles

153. This application for judicial review is overtly an attempt to achieve a policy outcome that LCANZ has failed to achieve through the select committee process for the Climate Change Response (Zero Carbon) Amendment Bill, through its lobbying of the government in the resetting of New Zealand's Nationally Determined Contribution, and through its submissions to the Commission in the consultation process for its Advice.

154. LCANZ are open as to their motivation here, but they also acknowledge (at least in principle if not in the thrust of their evidence and submissions) that the Court's supervisory jurisdiction here is narrow.

155. That is critical: climate change policy – if it is to be effective – is going to have major impacts on society, and every piece of advice that the Climate Change Commission will give over the coming decades is likely to be highly contentious. Challenges from special interest groups from across the spectrum are likely to continue, given what is at stake. In this context it is more important than ever for the Court to be conscious of and respect the institutional boundaries between its role and that of the independent expert advisory body established by Parliament.

156. Climate change is undoubtedly a very important issue. The importance of the issue however does not mean that the courts should abandon proper constraint and dive into the merits: on the contrary, the very importance of the issue means that the courts should be more cautious so that they do not accidentally step into the role of an appellate body and arbiter of the technical, social, economic, political and policy assessments required in the design of New Zealand's climate change response.

157. Judicial review should not be allowed to become a de facto 'appeal' against the Commission's expert advice: the Courts are not equipped to sit in judgement over the Commission on these issues, either in terms of institutional expertise (noting the highly expert composition of the Commission and its staff), nor in terms of process – the Commission developed its advice over a 17 month period, with a wide range of inputs,

and conducted more than 700 hui and considered over 15,000 submissions in formulating its advice.[164] Only one of those submitters is here before the Court.

158. Parliament vested this advisory function in the Commission for strong policy reasons, and the courts must exercise due caution to ensure that this function remains with the Commission.

159. As the Court of Appeal in *Smith v Fonterra* observed (in the context of striking out claims in tort):[165]

> In our view, the magnitude of the crisis which is climate change … is quintessentially a matter that calls for sophisticated regulatory response at a national level supported by international co-ordination.

160. And further:[166]

> … Courts do not have the expertise to address the social, economic and distributional implications of different regulatory design choices. The court process does not provide all affected stakeholders with an opportunity to be heard, and have their views taken into account. Climate change provides a striking example of a polycentric issue that is not subject to judicial resolution.

161. The Court of Appeal described the role of the Courts in this context in the following terms:[167]

> All of that is not to suggest that the courts have no meaningful role in responding to the exigencies of climate change. They do in fact have a very important role in supporting and enforcing the statutory scheme for climate change responses and in holding the Government to account. Our point is simply that it is not the role of the courts to develop a parallel common law regulatory regime that is ineffective and inefficient, and likely to be socially unjust.

162. Respectfully, that point is equally well made in relation to the court inadvertently becoming a de facto appellate body reviewing the merits of the expert advice from the Climate Change Commission to the government.

163. Similar observations are made in other jurisdictions engaged with climate change litigation. See for example most recently from the England and Wales High Court in *R (Plan B Earth) v Prime Minister*, referring to the UK Climate Change Act:[168]

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164 Hendy at [66] and [76].

165 *Smith v Fonterra Co-Operative Group Ltd* [2021] NZCA 552 at [16].

166 At [26], noting that this claim – had it been allowed to proceed – would have been a civil claim allowing for far more extensive evidence than an application for judicial review.

167 At [35].

168 *R (Plan B Earth) v Prime Minister* [2021] EWHC 3469 (Admin) at [49] – [54].

> That framework includes and contemplates the role of the [Climate Change Committee] in advising on, and assessing, polices and measures. That framework is constantly evolving. …
>
> Moreover that framework consists of high level economic and social measures involving complex and difficult judgements … Whilst all the circumstances must be taken into account, it remains the position that the judgment of the executive or legislature in such areas "will generally be respected unless it is manifestly without reasonable foundation."
>
> That approach respects the constitutional separation between the Courts, Parliament and the executive. It also reflects the fact that the Court is not well equipped to form its own views on the matters in question. I am being invited to adopt the views expressed in selective quotations from the work of the [Climate Change Committee] and others. When I refer to selective quotation I am not questioning the good faith of any of the parties. Rather I am pointing out that the Court does not have and cannot acquire expertise in this complex area, and will always be dependent on competing extracts from a global debate. Even if I could overcome the problem of selective quotation, I would not be equipped to assess the correctness of what is being quoted.
>
> …. these claims invite the Court to venture beyond its sphere of competence. In my judgment the framework established by the 2008 Act should be allowed to operate. It contains provision for debate, and that debate occurs in a political context with democratic, rather than litigious, consequences.

164. The point is also well expressed in the recent decision of the High Court of Ireland in *An Taisce – the National Trust Board for Ireland v An Bord Pleanāla and others*. After recording that reasonable people could disagree with the government's policy objectives, arguing for example for more ambitious targets, the Court observed:[169]

> Courts are good at commutative justice but not equipped for questions of distributive justice that such issues raise, because they simply don't have the instruments of policy investigation and analysis at their disposal. In our system, such policy questions despite or maybe because of their critical importance generally have to be left to the electoral process and the political system in the absence of a much more explicit basis for review. Courts can't get involved in deciding which premise is better without some justiciable instrument mandating forensic involvement … To borrow Carl von Clauswitz's aphorism … law impermissibly becomes "politics by other means" … when it annexes, for inflexible judicial determination, territory that properly belongs to open and democratic policy debate.
>
> At the same time, the mere fact that something can be characterised as policy does not give it immunity from judicial scrutiny if in fact there is some justiciable standard …

165. The line must be carefully drawn however, and the courts should not be drawn into reviewing the merits of the Commission's Advice under the guise of 'irrationality' or 'unreasonableness' outside the clearest cases, where a decision "is manifestly without reasonable foundation". The courts should be equally cautious about arguments that

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169 *An Taisce – the National Trust Board for Ireland v An Bord Pleanála and others* [2021] IEHC 254 at [43] – [44].

require a strained interpretation of the Act to give effect to a particular policy outcome advocated for by a special interest group representing only one facet of this complex and polycentric issue.

Application to this claim

166. LCANZ here is alleging that the Commission's Advice on the emissions budgets was both unreasonable and contrary to purpose of the CCRA. That is an all-encompassing and direct challenge to the core of the Commission's Advice and the judgements and assessments it made on matters within the scope of its areas of expertise.

167. The Commission's Advice involved assessing and predicting complex interactions of social, economic, scientific, technical and distributive justice considerations. Their task required them to look forward and envisage anticipated technology, behaviours and outcomes stretching years in the future. They designed budget settings and advised on response plans canvassing every key sector of society and the economy in the face of huge uncertainty.

168. As well as the complex and fast moving science of climate change, they considered and considered how to balance a huge range of issues, including how the budgets could realistically be met, the costs and benefits of early adoption of technology, the need for budgets that are ambitious but likely to be technically and economically feasible, the input from extensive consultation and public engagement, the likely impact of emissions reductions action including on New Zealand's ability to adapt to climate change, the regional and generational distribution of those impacts, economic circumstances and the likely impact on taxation, public spending and public borrowing, the impact on communities, social, cultural, environmental and ecological circumstances and differences between sectors and regions, the Crown-Māori relationship, and te ao Māori.

169. It is difficult to envisage a more policy and judgement laden context than the exercise undertaken by the Commission. Even aside from issues of expertise, there is simply no way that the Court in the context of an application for judicial review can replicate that assessment nor fairly judge its reasonableness or its alignment with the broad statutory purpose, short of obvious and incontrovertible error.

170. Respectfully, "how fast" and at what cost and to whom are not questions for the courts.

JUDICIAL REVIEW OF ADVICE FROM AN INDEPENDENT EXPERT ADVISORY BODY

171. This is a relatively unique feature of this proceeding: it is a claim for judicial review of *advice* provided by an independent expert advisory body that in this context has no decision-making function or power.

172. LCANZ is seeking to challenge advice that is provided to the Minister, from an independent body, which the Minister has no obligation to accept or act upon. Further, as the process that has been followed in respect of the advice on the NDC illustrates, this is not the only advice the Minister receives. For the reset of the NDC the Minister received extensive advice from the Ministry for the Environment – including advice that critiqued the Commission's Advice, and also received submissions from interested parties, including LCANZ.[170]

173. The Commission's Advice is therefore far removed from departmental advice to a Minister which in effect can be treated as a record of the decision and the factors taken into account in the final decision. It is independent, stand-alone, and forms only part of the matrix of the Minister's eventual decision making.

174. While there is no doubt that the content of the Commission's Advice might be considered by the court in the context of a judicial review of a decision *by the Minister* that took that advice into account, there is a real issue as to whether the Advice itself is separately justiciable, especially when no decision has yet been made on the matters it covers.

175. Even if advice per se is separately reviewable, there is an issue as to the appropriate boundaries of judicial review in that highly unusual context.

176. Both of these issues are discussed below.

Is the Advice separately justiciable?

177. The Commission's statement of defence pleads at [123] that its Advice is not by itself within the scope of the things specified in subsection (2) of section 5 of the Judicial Review Procedure Act 2016. LCANZ in reply recorded that it was not required to plead to this but that the Advice is subject to judicial review under the JRPA and/or common law.

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170 Advice Bundle at 6, and more generally Chapter 2 (35 – 50). See also Hendy at [76] and [79] for the discussion of the submission from LCANZ.

178. The Advice by itself is not within the scope of the Judicial Review Procedure Act. That Act applies to challenges to an exercise of a statutory power, which is defined in section 5 as:

> **Meaning of statutory power**
>
> (1) In this Act, *statutory power* means a power or right to do any thing that is specified in subsection (2) and that is conferred by or under—
>
> (a) any Act; or
>
> (b) the constitution or other instrument of incorporation, rules, or bylaws of any body corporate.
>
> (2) The things referred to in subsection (1) are—
>
> (a) to make any regulation, rule, bylaw, or order, or to give any notice or direction that has effect as subordinate legislation; or
>
> (b) to exercise a statutory power of decision; or
>
> (c) to require any person to do or refrain from doing anything that, but for such requirement, the person would not be required by law to do or refrain from doing; or
>
> (d) to do anything that would, but for such power or right, be a breach of the legal rights of any person; or
>
> (e) to make any investigation or inquiry into the rights, powers, privileges, immunities, duties, or liabilities of any person

179. While this definition is wide, and intended to be broad,[171] it is nonetheless a statutory definition that must be given meaning.

180. The Commission's Advice does not fit within any of the things described in subsection (2). Hence, while there is doubt that the Commission was exercising a statutory function when delivering Advice to the Minister, it has not exercised a statutory power within the scope of the JPRA.

181. The Commission agrees with LCANZ that the Judicial Review Procedure Act does not extinguish the common law rights of judicial review, which procedurally may stand outside that Act and be progressed under Part 30 of the High Court Rules 2016. LCANZ has however not pointed to any authority that would support a common law right of judicial review of the content of advice issued by an independent expert advisory body.

182. LCANZ in submissions argue for a "generous view" of the scope of judicial review, "consistent with the purpose of judicial review in constraining the potential abuse of

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171 *Wilson v White* [2005] 1 NZLR 189 (CA) at [22], referring to the equivalent section in the Judicature Amendment Act 1972.

power".[172] However, that purpose is simply not engaged in the context of advice of this nature: the Commission has no powers in that sense, and there is no "potential for abuse" by the Commission.

183. This does not mean that the Commission is beyond the law, but it does appropriately focus attention on what it is that the Commission is said to have done that is outside the law. Had it failed to meet a statutory requirement to provide advice, or failed in its procedural obligations, its conduct would be subject to review. Here however the challenge is only to the *content* of advice, which has no effect on anything unless and until it is reflected in a decision made by the Minister.[173]

The *NZ Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* case

184. LCANZ at footnote 158 to paragraph [190] of their submissions refer to the High Court decision in *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* where Venning J expressed the view:[174]

> … NIWA is a public body established by statute [a Crown Research Institute], with its shares held by Ministers who are both responsible to the House of Representatives and ultimately to the electorate. NIWA carries out its research functions for the benefit New Zealand. Because the findings of research undertaken by NIWA may be used in developing Government policy, NIWA's actions have the potential to adversely affect the rights and liabilities of private individuals.

185. His Honour thus concluded that NIWA's publication of revised data on changes in sea temperatures (which the applicants alleged were scientifically incorrect) was amendable to judicial review. His Honour however considered that the scope of review would be extremely limited, as discussed further below.

186. Respectfully, Venning J's conclusion that the content of a publication by a Crown Research Institute is amenable to judicial review is outside even the broadest tenable interpretation of s 5 of the Judicial Review Procedure Act. His Honour appears to have relied on the definition of 'statutory power of decision' in s 43 of the Judicature

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172 LCANZ submissions at [189] – [199].

173 Advice from an entirely independent expert body must be even less amenable to judicial review on this basis than a preliminary decision by the statutory decision maker, recognised by the Court of Appeal likely to arise only in exceptional circumstances: *Singh v Chief Executive Ministry of Business, Innovation and Employment* [2014] NZCA 220, [2014] 3 NZLR 23. See also *Mercury NZ Ltd v Waitangi Tribunal* [2021] NZHC 654, [2021] 2 NZLR 142 (noting that the Supreme Court has this month heard a 'leap frog' appeal from the *Mercury* decision, but counsel understands that the appeal did not encompass this issue).

174 *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2012] NZHC 2297, [2013] 1 NZLR 75 at [27] (footnotes omitted).

Amendment Act 1972 (carried over in the same terms to s 4 of the JRPA), which includes the exercise of "a power or right conferred by or under any Act … to make a decision deciding or prescribing or affecting - (a) the rights, powers, privileges, immunities, duties or liabilities of any person."

187. The 'decision' relied on appears to have been the decision to publish the reports, though it is not clear that there was any exercise of statutory power involved. The real issue with his Honour's approach however is that the link between the 'decision' to publish data which "may be used in developing Government policy" which in turn might "potentially affect the rights and liabilities" of "private individuals" is too tenuous and too remote to sensibly fall within the definition of a "statutory power of decision" in s 4. Government policy is based on many things, and it cannot be the case that all inputs that may be taken into account in future policy decisions by the executive, by that means alone "affect the rights and liabilities of individuals" and are thus reviewable on a stand-alone basis.

188. It is noted that this aspect does not appear to have been the subject of argument before Venning J. The argument on justiciability outlined in the judgment instead is focussed solely on the public nature of NIWA as a Crown Research Institute, and the level of control exercised over its operations by its shareholding Ministers.[175]

189. In particular, it does not appear that the Court's attention was drawn to the contrary authorities, discussed next.

Case law confirms Advice not separately justiciable

190. The authorities contrary to Venning J's approach to s 4 of the JPRA in the *NIWA* case include *Christchurch City Council v Attorney-General,* where Gallen ACJ struck out an application for judicial review of a report prepared for Cabinet by a government appointed committee, the Roading Advisory Group. His Honour considered that the report was outside the scope of judicial review as it "does not directly affect the rights of New Zealanders and has no more than the potential to do so if ultimately after the necessary processes [by the executive] have taken place, it is translated into [a decision]."[176]

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175 See at [20] – [27]. Notably the Climate Change Commission is in the opposite position in terms of independence, as outlined above.

176 *Christchurch City Council v Attorney-General* [2005] NZAR 543 (HC) at 552 – 553. Noting that on appeal the Court of Appeal found there was no error of law in the report and considered it

191. Gallen ACJ's approach was approved by the Full Court of the Court of Appeal in *Milroy v Attorney General*, in the context of a challenge to advice by officials to their Minister relating to proposed legislation. The Court of Appeal in *Milroy* dismissed the appeal, and addressed this issue in the following terms:[177]

> Immediately after the hearing began in this Court the case for the appellants ran into difficulties. The emphasis by counsel at the outset on the advice of officials rather than on any reviewable decision or decisions … was said to reflect the way the case had been run before the High Court. There being no statutory power of decision within the Judicature Amendment Act 1972, counsel was asked to identify the common law prerogative writ being sought. He contended that there is at law a duty on officials to advise according to law, which duty is enforceable by mandamus, or, alternatively, declaration. He submitted further that the appellants' case should be seen as a conventional attack on orthodox judicial review grounds on the process leading up to the minister's involvement and her decision making.
>
> In reality the argument outlined represents an attempt to draw the Court into an examination of the accuracy and completeness of the advice of officials in the course of formulation of government policy even though no rights are affected by the advice. This would take the Courts into the very heart of the policy formation process of government. We were not referred to any authority for such a course...
>
> … counsel was driven to accept that the provision of advice in issue does not affect the rights of any persons or even have the potential to do so. It is the resulting legislation and Executive acts in accordance with it that will have that impact...

192. While post-dating Venning J's decision in the *NIWA* case, this approach was again affirmed by the Court of Appeal in *Attorney-General v Ririnui*, with the Court overturning the High Court's decision that there was jurisdiction to separately review the advice provided by the Office of Treaty Settlements to Landcorp and the relevant Ministers.[178]

193. In the Supreme Court in *Ririnui* the attention had shifted from whether the advice from officials in OTS was separately unlawful: rather, its relevance was that the errors in the advice had materially affected the consequent decisions of the Ministers and

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unnecessary to engage in the question of justiciability, as "Even if there is here something amenable to intervention by the Court, we can see no tenable basis for such intervention …": *Christchurch City Council v Attorney-General* [2005] NZAR 558 (CA) at 561. See also *New Zealand Maori Council v Attorney-General* [1996] 3 NZLR 140 (CA) at 160; and *Re Lee* [2017] NZHC 3263, [2018] 2 NZLR 731 at [93].

177 *Milroy v Attorney General* [2005] NZAR 562 (CA) at [10] – [12], referring with approval to the *Christchurch City Council* decision.

178 *Attorney-General v Ririnui* [2015] NZCA 160 at [25] – [34], noting the reference to *Milroy* at fn 21.

Landcorp, which were at that stage the focus of the review.[179] The majority of the Supreme Court however confirms the Court of Appeal's approach that such advice is not separately justiciable, stating:[180]

> As Mr Goddard QC submitted for the Crown, the fact that advice given by an official or an agency is erroneous (whether in law or in fact) does not mean that the official or agency has acted unlawfully. What is important is (a) whether a decision is made or a power is exercised on the basis of the erroneous advice and whether those decisions are reviewable, a matter to which we now turn.

194. It is also noted that despite the current prevalence of climate change cases in the UK, as far as counsel has been able to ascertain there are no cases where judicial review has been entertained against the UK Climate Change Committee, which has an equivalent function to this Commission.[181]

Even if justiciable, the scope for review of Advice is narrow

195. Justice Venning in the *NIWA* case however was also clear about the limited scope of review of an expert body of this nature,[182] confirming:

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179 *Ririnui v Landcorp Farming Ltd* [2016] NZSC 62, [2016] 1 NZLR 1056: Elias CJ and Arnold J at [35] – [39] and further at [56] – [63] (LBA at 92 – 95 and 101 – 103) explaining how those issues were derived from the pleadings, following which the claim challenging the official's advice is discussed no further. O'Regan J dissents on that approach to the pleadings, holding that the challenge to the officials' advice cannot be extended to a challenge to the Ministers' decisions based on it, but does not otherwise consider the separate claim relating to the advice (see at [154] and [169] – [175] (LBA at 126 and 128 – 129)). William Young J at [194] (LBA at 133) records a tentative view (without discussion of the Court of Appeal's decision) that on the facts of the case, "going perhaps a bit further than Elias CJ and Arnold J" he would be "inclined to think that the OTS assessment would have warranted proceedings under the Declaratory Judgments Act 1908 and would, in that practical sense, have been reviewable." A Declaratory Judgment Act process would not be available in the present case, however, given the very different nature of the Advice at issue. See also more recently the confirmation in by the Supreme Court in *Ngati Whatua Orakei Trust v Attorney-General* that the courts will not be drawn into the examination of the accuracy and completeness of the advice of officials in forming government policy where no rights were affected: *Ngati Whatua Orakei Trust v Attorney-General* [2018] NZSC 84, [2019] 1 NZLR 116 at [36] – [40].

180 At [55] (LBA at 100 – 101).

181 The closest case appears to be *R (Plan B Earth) v Secretary of State for Business, Energy and Industrial Strategy* [2018] EWHC 1892 (Admin) where judicial review was sought of the Minister's decision, including on the basis that the Minister and the Climate Change Committee (in its advice to the Minister) had misunderstood the Paris Agreement. The Committee was named as an interested party. The High Court declined leave for the judicial review to proceed, and the Court of Appeal confirmed that result: *R (Plan B Earth) v Secretary of State for Business, Energy and Industrial Strategy* [2019] C1/2018/1750 (Civ).

182 Noting some commentators advocate for an even narrower approach to judicial review of scientific work: see Marcelo Rodriguez Ferrere "Judicial Review of Scientific Findings" [2012] NZLJ 380 (cited with apparent approval by White J (in dissent but not on this issue) in *New Zealand Pork Industry Board v Director-General of The Ministry of Agriculture And Forestry* [2013] NZCA 65 at [104], fn 23); and Laura Hardcastle "Can't See the Science for the Solicitors: Judicial Review of Scientific Research in Light of *Niwa's Case*" (2014) 12 NZJPIL 291.

> It is well established that the Court, in considering an application for judicial review, with be cautious about interfering with decisions made by a specialist body acting within its own sphere of expertise.
>
> … I consider this Court should be cautious about interfering with decisions made and conclusions drawn by a specialist body, such as NIWA, acting within its own sphere of expertise. In such circumstances a less intensive, or, to put it another way, a more tolerant review is appropriate.
>
> There is a further point. At times the witnesses have identified a difference of opinion about scientific methods applicable to climatology. There are a number of examples where the Court stated its reluctance to adjudicate on matters of scientific debate …
>
> Unless the decision maker has followed a clearly improper process, the Court will be reluctant to adjudicate on matters of science and substitute its own inexpert view of the science if there is a tenable expert opinion …
>
> I consider that unless the Trust can point to some defect in NIWA's decision-making process or show that the decision clearly wrong in principle or in law, this Court will not intervene. This Court should not seek to determine or resolve scientific questions demanding the evaluation of contentious expert opinion.

196. The *NIWA* decision was appealed, but the appeal was abandoned during the course of argument. The Court of Appeal in its costs judgment however confirmed that it agreed with Justice Venning's refusal to adjudicate on the scientific dispute (the court records that it was this firm agreement expressed during the course of argument that led to the appeal being abandoned).[183]

Deference and the standard of review

197. LCANZ state in their submissions that they anticipate that the Commission will argue that the Court should show 'deference' to the Commission's expertise.[184] While the point may be expressed as deference, as the cases above emphasise the issue is more about respecting the constitutional separation of powers as well as the institutional limitations of the court process.[185]

198. LCANZ also argue for a 'hard look' or 'lower threshold' approach to its irrationality and unreasonableness claim in ground four,[186] citing Palmer's decision in *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council*.[187] The facts of that case are very different from the present, involving no issue of expert judgement,

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183 *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] NZCA 555 at [8] – [9] and [14].

184 LCANZ submissions at [192] and [251].

185 See also more generally *Z v Dental Complaints Assessment Committee* [2008] NZSC 53, [2009] 1 NZLR 1 at [139]; and *Unison Networks Ltd v Commerce Commission* [2007] NZSC 74, [2008] 1 NZLR 42 at [55].

186 LCANZ submissions at [388] – [399].

187 *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council* [2020] NZHC 3228, [2021] NZRMA 22 at [50] – [51], LBA at 21 – 22.

but rather a political decision to commit to climate change action. With respect to his Honour, *if* his observation was intended to be of general application: that all climate change issues should be approached with heightened scrutiny by the courts, similar to the approach to review of decisions affecting fundamental human rights, then it would be contrary to well established authority (it does not appear that any relevant authorities were referred to his Honour).

199. The cases outlined above all confirm that in climate change litigation, far from taking a close look (in the sense of being more willing to engage in the substantive merits of the decision) the Courts take the opposite approach, recognising the high policy content of the issues, the constitutional separation of powers and the institutional limitations of the court process.

200. As outlined above, those factors operate even more strongly in the context of reviewing expert Advice by an independent and highly expert body vested by Parliament with the task of considering and advising on the very issues under challenge.[188]

201. As the England and Wales High Court in *Spurrier v Secretary of State for Transport* expressed the point:[189]

> … [It is] well established and good law [that] the court should accord an enhanced margin of appreciation to decisions involving or based upon "scientific, technical and predictive assessments" by those with appropriate expertise. The degree of that margin will of course depend on the circumstances: but, where a decision is highly dependent upon the assessment of a wide variety of complex technical matters by those who are expert in such matters and/or who are assigned the task of assessment (ultimately by Parliament) the margin of appreciation will be substantial.

202. The Commission also notes the developing approach to intensity of review laid out by Cooke J in *New Zealand Council of Licensed Firearms Owners Inc v Minister of Police* and *Mercury NZ Ltd v Waitangi Tribunal*.[190]

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188 See also the discussion in *R (Mott) v Environment Agency* [2016] EWCA Civ 564, [2016] 1 WLR 4338 at [69] – [82] with the Court affirming: "A reviewing court should be very slow to conclude that the expert experienced decision-maker assigned the task by statute has reached a perverse scientific conclusion" (at [77]).

189 *R (Spurrier) v Secretary of State for Transport* [2019] EWHC 1070 (Admin), [2020] PTSR 240 at [176] and [179].

190 *New Zealand Council of Licensed Firearms Owners Inc v Minister of Police* [2020] NZHC 1456 at [80] – [83], *Mercury NZ Ltd v Waitangi Tribunal* [2021] NZHC 654, [2021] 2 NZLR 142 at [64] – [67]. See also in agreement (for example) Fitzgerald J in *Tesimale v Manukau District Court* [2021] NZHC 2599 at [95] – [96]; Churchman J in *X and Y v Chief Executive, Oranga Tamariki* [2021] NZHC 2449 at [193]; and Grice J in *Financial Services Complaints Ltd v Chief*

203. However, even if the Court considers that 'intensity of review' is a useful concept, the UK climate change cases provide consistent authority acknowledging both the utmost importance of climate change action and the need for constraint by the courts exercising their supervisory jurisdiction in that context, expressly rejecting arguments that the nature of the issue justifies a higher intensity of review.

Parliamentary Ombudsman [2021] NZHC 307, [2021] 2 NZLR 475 at [70] – [71]. Noting also the brief discussion of the issue by the Court of Appeal in *Kamal v Restructuring Insolvency and Turnaround Association of New Zealand* [2021] NZCA 514 at [26] – [29].

PART D: THE PLACE OF *EX-POST* EVIDENCE IN JUDICIAL REVIEW

204. Closely linked to the above point is the question of the proper place – and admissibility – of post-decision evidence in an application for judicial review.

205. In this proceeding, LCANZ has filed 253 pages of so called 'expert' testimony, challenging a very wide range of aspects of the Commission's Advice, including its analytical processes and its substantive conclusions. None of that evidence was before the Commission when it finalised its Advice.[191]

206. LCANZ then in submissions invites the Court to determine its claim that the Commission's decision was unlawful based on this ex-post evidence, including asking the Court to draw adverse inferences against the Commission for not supporting its Advice by filing more ex-post evidence from other independent expert witnesses, that again would not have been before the Commission when it formulated its advice.[192]

207. This approach is misconceived. First, the Court in this application for judicial review is assessing the lawfulness of the Commission's expert Advice. The expert support for the Commission's Advice is the Commission itself, who authored the Advice and who is undoubtedly collectively far more expert and experienced than any witness put forward by LCANZ.

208. LCANZ appear to simply disregard the Commission's specialist expertise, and treat this case as a 'contest' between witnesses who have provided affidavits to the court – including suggesting that the weight of Commission evidence responding to particular criticisms is reduced *because* the witness works for the Commission. This is not the correct framing: if there is any 'contest' in expert views, the Commission's Advice is the primary statement of the Commission's expert position.

209. In addition, ex-post evidence of this nature is generally inadmissible, save in limited circumstances.

210. There are also clear and well-established rules as to how the Court resolves conflicts of expert evidence in the context of judicial review, reflecting the principles outlined above.

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191 Noting the two experts giving evidence for LCANZ who had made submissions on the Commission's draft Advice did not raise the alleged error that LCANZ now proffers their evidence to the court on: Smith at [142] and [172] – [173].

192 LCANZ submissions at [251].

211. These issues are discussed below.

The admissibility in judicial review of ex-post evidence: respondent's evidence

212. The Commission primarily relies on the terms of its Advice and supporting volumes. It acknowledges that there is limited scope for a decision maker (assuming the Commission is being treated as such) to file any further evidence to supplement or 'improve' its decision, and it has not done so.

213. The Commission has filed evidence that falls broadly into four categories. The first is evidence from Ms Hendy about the expertise of the Commissioners and key staff and the process the Commission followed in preparing the Advice. This evidence does not touch on the substance of the Advice but it provides context for the Court. Given LCANZ' apparent challenge to the Commission's relative expertise, this is also relevant evidence in response to those submissions.

214. Ms Hendy also provides evidence in a second category, being further evidence about the information and materials before the Commission at the time it finalised its advice. Ms Hendy's evidence in this context outlines and produces for the Court LCANZ' submission, correspondence and one-on-one meetings with the Commission concerning the issues it now raises with the Court.

215. The third category is evidence in the nature of 'elucidation', of the kind referred to in the recent discussion by the England and Wales Court of Appeal in *R (United Trade Action Group Ltd) v Transport for London*.[193] The Court there set out the relevant principles for the admission of ex-post evidence by or on behalf of the decision maker.[194] The Court describes the law governing the admissibility of "ex post facto" evidence in proceedings for judicial review as "already mature". It emphasises the limited nature of evidence that may be admitted as "genuine elucidation", which may sometimes be necessary and appropriate.

216. In this case, much of the evidence of Commission staff: Matthew Smith, Paul Young, Stephen Walter and Eva Murray, falls into that category, given the highly technical and specific nature of two of the challenges brought by LCANZ (to the NDC comparator modelling in ground one and the selection of the modified activity based accounting as part of the rules to measure progress in ground three).

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193 *R (United Trade Action Group Ltd) v Transport for London and others* [2021] EWCA Civ 1197.

194 At [125].

217. The fourth category is evidence directly responding to the evidence filed by the applicant.[195] The Commission's position is that the majority of LCANZ' evidence is not relevant or admissible to this proceeding, and that it should not have been put to the cost of responding to it (especially in terms of limited staffing resources given the Commission's intensive work programme under the Act). However, as a matter of caution the LCANZ evidence has been addressed: staff evidence, especially that of Matthew Smith and Paul Young falls within this category, as does the evidence of the Chair of the Commission, Dr Carr. Brief and narrowly focussed affidavits from independent experts, Dr Olia Glade and Dt Michael Toman are also within this category.

218. If the Court rules that LCANZ' evidence is not admissible, then much of the Commission's evidence in response would also fall away.

Ex-post evidence filed by an applicant in a judicial review

219. The general and uncontentious rule is that evidence challenging the merits or substance of the decision under review is not admissible, simply on the basis that it is – by definition – not relevant to the issues before the Court. This reflects the basic principle that the Court in judicial review can only consider the lawfulness of the decision and is not concerned with the substantive merits. In a case involving the exercise of expertise by an expert decision maker, expert evidence challenging that expert assessment is simply challenging the correctness of the decision maker's approach.

220. The inadmissibility of such evidence in support of an application for judicial review has been confirmed in many cases. See for example the Court of Appeal in *Roussel Uclaf Australia Pty Ltd v Pharmaceutical Management Agency Ltd*:[196]

> What is under review is a challenge to the integrity of the earlier decision-making process, on which the new material does not impinge in any significant way. New opinion evidence, not presented to the decision maker, can seldom help to demonstrate that a decision on what is essentially an evaluation exercise was unreasonable when made. It is not appropriate to allow in this

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195 The admissibility of such reply evidence is referred to for example in *Taylor v Chief Executive of the Department of Corrections* [2015] NZCA 477, [2015] NZAR 1648 at [33] – [37].

196 *Roussel Uclaf Australia Pty Ltd v Pharmaceutical Management Agency Ltd* [1997] 1 NZLR 650 (CA) at 658. See also *Mothers Against Genetic Engineering Inc v Minister for the Environment* HC Auckland CIV-2003-404-673, 7 July 2003 at [2] and [251]; *Attorney-General v Problem Gambling Foundation of New Zealand* [2016] NZCA 609, [2017] 2 NZLR 470 at [81] – [85]; *Coromandel Watchdog of Hauraki (Inc) v Minister of Finance* [2020] NZHC 1012 especially at [14] – [18]; *CD v Immigration and Protection Tribunal* [2015] NZCA 379, [2015] NZAR 1494 at [22], and the cases referred to therein.

> material which was not before the decision maker, and was largely brought into existence after the impugned decision was made, and to do so essentially for the purpose of casting doubt on the substantive reasonableness of the decision.

221. Even in an ordinary appeal where the merits of the decision under appeal is in issue, the Courts do not allow ex-post evidence (other than updating evidence) without leave, and the admission of further evidence is strictly limited.[197] So, even if Parliament had provided in the CCRA for a full right of appeal against the correctness of the Commission's Advice, this sort of extensive ex-post evidence would not generally be admissible.

222. A recent article on the approach to fact finding and expert evidence in judicial review in the UK sets out a useful discussion of the principles on the scope of evidence that may be brought in an application for judicial review.[198] The recognised starting point are the criteria set out in *R v Secretary of State for the Environment ex parte Powis*, which confirmed that the Court can receive evidence of what material was before the decision-maker, but only limited factual evidence in other instances, being:[199]

222.1 evidence relevant to the determination of a question of fact on which the jurisdiction of the decision-maker depended;

222.2 evidence relevant in determining whether a proper procedure was followed; and

222.3 evidence relied on to prove an allegation of bias or other misconduct on the part of the decision-maker.

223. These categories were expanded in *R (Lynch) v General Dental Council* to allow for a narrow category of expert evidence.[200] The Court accepted that where irrationality is advanced as a ground for judicial review, expert evidence can be adduced if a layman would need assistance understanding the technical context of the decision. The

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197 The approach to further expert evidence in an appeal (by way of rehearing) against the decision of an expert body is discussed by the Court of Appeal in *Commerce Commission v Woolworths Ltd* [2008] NZCA 276, [2009] NZCCLR 12 at [50] – [54], quoting with approval from an earlier decision: "in exercising these powers [to admit new evidence] the Court must be alert against the danger of allowing what the legislature intends to be genuine appeal against a decision of an expert body – and a decision reached, it may be added, after a somewhat distinctive process of investigation, draft decision and conference – to be converted to into a new trial, the prior proceedings being but a prelude, or as some counsel put it in argument, a dummy run."

198 David Blundell *Of Evidence and Experts: Recent Developments and Fact Finding and Expert Evidence and Judicial Review* (2018) 23 JR 243.

199 *R v Secretary of State for the Environment, ex parte Powis* [1981] 1 WLR 584 (CA) at 595.

200 *R (Lynch) v General Dental Council* [2003] EWHC 2987 (Admin), [2004] 1 All ER 159 at [24].

reason a court will admit such evidence is to enable it to perform its function, and the extension is narrow. The evidence should only explain the process, rather than assert why the decision maker was incorrect: "it is not the place of an expert, no matter how esteemed, to perform the court's function for it".[201]

224. These authorities were endorsed by the England and Wales Court of Appeal in *R (Law Society) v Lord Chancellor*, with the Court confirming:[202]

> It follows from the very nature of a claim for judicial review that expert evidence is seldom reasonably required to resolve it. That is because it is not the function of the court in deciding the claim to assess the merits of the decision of which judicial review is sought. The basic constitutional theory on which the jurisdiction rests confines the court to determining whether the decision was a lawful exercise of the relevant public function. To answer that question it is seldom necessary or appropriate to consider any evidence which goes beyond the material which was before the decision-maker and evidence of the process by which the decision was taken – let alone any expert evidence.

225. After referring to the 'classic statement' in *Powis* and the 'extension' in *Lynch*, the Court went on to outline a further 'extension' for the admissibility of expert evidence, in the following terms:[203]

> We would extend this principle [in Lynch] to a situation where – as in the present case – it is alleged that the decision under challenge was reached by a process of reasoning which involved a serious technical error. …
> … A decision may be irrational because the reasoning which led to it is vitiated by a technical error of a kind which is not obvious to an untutored lay person (in which description we include a judge) but can be demonstrated by a person with relevant technical expertise. What matters for this purpose is not whether the alleged error is readily apparent but whether, once explained, it is incontrovertible.
> The corollary of this is that, as was recognised in the Lynch case … if the alleged technical error is not incontrovertible but is a matter on which there is room for reasonable differences of expert opinion, an irrationality argument will not succeed. This places a substantial limit on the scope for expert evidence. In practice it means that, if an expert report relied on by the claimant to support an irrationality challenge of this kind is contradicted by a rational opinion expressed by another qualified expert, the justification for admitting any expert evidence will fall away.

226. In New Zealand the basic approach is the same, although under s 25 of the Evidence Act 2006 the inadmissibility of this opinion evidence would normally be expressed in terms of it not being of substantial help to the court.

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201 David Blundell *Of Evidence and Experts: Recent Developments and Fact Finding and Expert Evidence and Judicial Review* (2018) 23 JR 243 at [22].

202 *R (Law Society) v Lord Chancellor* [2018] EWHC 2094 (Admin), [2019] 1 WLR 1649 at [36].

203 At [39] – [41].

Addressing disputes between expert witnesses and the expert decision maker

227. The cases above confirm that expert evidence from an applicant may be admissible for the limited purpose of assisting the court to understand the technical context of the decision, or to demonstrate a technical error of a kind which is not obvious to an untutored lay person but can be demonstrated by a person with relevant technical expertise. However, as the Court in the *Law Society* case emphasised: "What matters for this purpose is not whether the alleged error is readily apparent but whether, once explained, it is incontrovertible."[204] That principle has been confirmed in numerous cases, including most recently by the England and Wales Court of Appeal in the 2021 decision in *End Violence Against Women Coalition v Director of Public Prosecutions*.[205]

228. The courts recognise that in the context of an application for judicial review it is not for the court to resolve any technical disputes where expert evidence conflicts with the assessments of an expert decision maker. As recently expressed in the *Spurrier* decision:[206]

> Both the claimant and the Secretary of State have filed a vast quantity of evidence, some of it from experts. As they rightly acknowledged during the … [hearing], it is not the role of the court in judicial review proceedings to resolve conflicts of this evidence, particularly not in favour of a claimant on whom the burden of proof lies. In addition to it being generally outside its role, proceedings for judicial review are not well-suited to resolve conflicts of evidence.
>
> [Refers to the *Law Society* decision] … although expert evidence might be admissible in an irrationality challenge to show that a decision was reached by a process of reasoning which included a serious technical error, if that error is not incontrovertible but is a matter on which there is room for reasonable experts to agree, that ground cannot be established.

229. Authorities in New Zealand confirm the same approach.[207]

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204 At [40].

205 *End Violence Against Women Coalition v Director of Public Prosecutions* [2021] EWCA Civ 350, [2021] 1 WLR 5829 at [20] – [21]. See also *Transport Action Network Ltd v Secretary of State for Transport* [2021] EWHC 2095 (Admin), [2022] PTSR 31 at [80]; *Gardner v Secretary of State for Health and Social Care* [2021] EWHC 2946 (Admin) at [3]; *Keir v Natural England* [2021] EWHC 1059 (Admin) at [44]; *Maxey v High Speed 2 Ltd* [2021] EWHC 246 (Admin) at [39]; *Raja and Hussain v London Borough of Redbridge (Rev 1)* [2020] EWHC 1456 (Admin), [2020] PTSR 2129 at [24] – [25]; and *University College London Hospitals NHS Foundation Trust v MB* [2020] EWHC 882 (QB) at [20].

206 *R (Spurrier) v Secretary of State for Transport* [2019] EWHC 1070 (Admin), [2020] PTSR 240 at [173].

207 See also *Lab Tests Auckland Ltd v Auckland District Health Board* [2008] NZCA 385, [2009] 1 NZLR 776 at [340]; *SmithKline Beecham (New Zealand Ltd) v Minister of Health* HC Wellington CP49/02, 15 May 2002 at [80]; and *Mothers Against Genetic Engineering Inc v Minister for the Environment* HC Auckland CIV-2003-404-673, 7 July 2003 at [2], [246] – [249] and [251].

230. See for example the *NIWA* case discussed above, where there was a difference of opinion about scientific methods applicable to climatology. The High Court declined to resolve this dispute, with Venning J stating (and the Court of Appeal approving):[208]

> There are a number of examples where the Court stated its reluctance to adjudicate on matters of scientific debate …
>
> Unless the decision maker has followed a clearly improper process, the Court will be reluctant to adjudicate on matters of science and substitute its own inexpert view of the science if there is a tenable expert opinion …
>
> I consider that unless the Trust can point to some defect in NIWA's decision-making process or show that the decision clearly wrong in principle or in law, this Court will not intervene. This Court should not seek to determine or resolve scientific questions demanding the evaluation of contentious expert opinion.

231. A similar approach from the Court of Appeal is apparent in *New Zealand Pork Industry Board v Director-General of the Ministry of Agriculture and Forestry*, involving a challenge to the Director-General's decision following receipt of an expert Panel's findings and recommendations. The applicant filed expert scientific evidence challenging the modelling exercise on which the Panel's report was based. In the Court of Appeal both the majority and the minority were in agreement that it was not open to the Court in the context of a judicial review to resolve the disputed matters of science. The majority referred to this as a 'truism', observing:[209]

> In his written synopsis Mr Cooke affirmed the truism that it is not the High Court's function in judicial review proceedings to reach conclusions on contested questions of science. However, this affirmation following his analysis of the competing merits of the two models, based on an affidavit by [expert witness for the applicant]. This argument … could be open to construction as a front for a challenge to the substantive merits of the Director-General's decision. If that is so, we reject it.

232. White J in dissent considered that – in the specific context of that case - the existence of a "genuine and unresolved scientific issue" as to the risks involved in the importation of raw pig meat created a process obligation on the Director-General to re-consult. In doing so he expressly confirmed the same principle as the majority, observing:[210]

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208 *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2012] NZHC 2297, [2013] 1 NZLR 75 at [47] – [48]. As already noted, Venning J's approach was approved by the Court of Appeal: *NZ Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] NZCA 555 at [8] – [9] and [14].

209 *New Zealand Pork Industry Board v Director-General of The Ministry of Agriculture And Forestry* [2013] NZCA 65 at [94] (leave to appeal to the Supreme Court granted, but not on this issue: *New Zealand Pork Industry Board v Director-General of The Ministry of Agriculture And Forestry* [2013] NZSC 50).

210 At [104].

> Acceptance of this fact does not involve the determination of the scientific issue by the Court, which I agree would be inappropriate in a judicial review proceeding of this nature.

233. More recently in *New Zealand Animal Law Association v Attorney-General* the challenge was to the practice and use of farrowing crates and mating stalls for pig sows.[211] The applicants filed expert evidence relating to the needs of pigs in these circumstances, which conflicted with the expert advice received by the defendant in making its decision. Cull J declined to resolve the factual, scientific, and literature disputes among the experts, citing Venning J's quote above and referring with approval to the approach *R (Law Society) v Lord Chancellor*.

234. Notably in these decisions, there is no suggestion that to 'refute' an applicant's expert evidence the respondent must obtain and file further 'independent' ex-post evidence to support the expert assessments it made in reaching the decision under review, as suggested by LCANZ.[212]

235. This approach to contested expert evidence also aligns with the basic rule that where there is a dispute of fact between the applicant and the respondent in a judicial review, the respondent's position prevails in the absence of cross-examination, unless there is objective material which shows that the respondent's evidence *cannot* be correct.[213]

The majority of LCANZ' evidence is inadmissible

236. LCANZ has filed 'expert' opinion evidence from seven witnesses. The substance of the evidence is addressed later in these submissions, but the Commission's primary position is that most of this evidence is inadmissible and should not be considered by the Court.

237. In line with the above authorities, the scope of admissible 'expert' ex-post evidence from an applicant in judicial review is narrow, and the principles can be summarised as follows:

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211 *The New Zealand Animal Law Association v Attorney-General* [2020] NZHC 3009 at [190] — [196].

212 LCANZ submissions at [210] and [251].

213 See *R (Safeer) v Secretary of State for the Home Department* [2018] EWCA Civ 2518 at [16] — [19], cited with approval in New Zealand in *Financial Services Complaints Ltd v The Chief Parliamentary Ombudsman* [2021] NZHC 307, [2021] 2 NZLR 475 at [59]. See also *S v Airedale NHS Trust* [2002] EWHC (Admin) 1780 at [18] – [19]; and *R (McVey and Others) v Secretary of State for Health* [2010] EWHC 437 (Admin) at [35].

237.1 Ex-post evidence that is challenging the merits of the Commission's expert assessments and views is not relevant to the assessment of lawfulness and is not admissible: in the context of an expert decision maker, an expert challenge to the expert assessments made is simply a correctness challenge.

237.2 Where there is a claim of irrationality that relates to a technical matter expert evidence can be adduced if a layperson would need assistance understanding the technical aspects of the alleged error: "A decision may be irrational because the reasoning which led to it is vitiated by a technical error of a kind which is not obvious to an untutored lay person (in which description we include a judge) but can be demonstrated by a person with relevant technical expertise." Acknowledging however that "What matters for this purpose is not whether the alleged error is readily apparent but whether, once explained, it is incontrovertible."[214]

237.3 Such expert evidence must of course be from a person qualified to give expert evidence on the specific technical matter to which the claim of irrationality relates.

238. In terms of the grounds of review pleaded by LCANZ, expert evidence of this nature is potentially admissible only in relation to ground one, the claim that the NDC advice is irrational due to an alleged logical error. This is the issue where much of LCANZ' evidence is focussed.

239. Ground 4 is pleaded as a claim the proposed emissions budgets (in their entirety) are "irrational, unreasonable and inconsistent with the purpose of the Act", but the core of that claim is simply that the budgets do not propose deep enough emission cuts. There are no technical matters pleaded in this ground of review.

Dr Stephen Gale (NZ)

240. Dr Gale is an economist and former Telecommunications Commissioner.[215] He claims "a life long experience of, and expertise in, practical mathematics in particular in a regulatory context."

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214 *R (Law Society) v Lord Chancellor* [2018] EWHC 2094 (Admin), [2019] 1 WLR 1649 at [40].

215 Gale 1 at [1], Gale 2 at [1].

241. Dr Gale's evidence in his first affidavit is directed to the alleged 'logical error' in the technical development of the NDC advice pleaded in ground one, so is potentially within scope of expert evidence that may be of assistance to the Court.

242. Dr Gale however has no relevant expertise or qualifications to provide an expert opinion on this issue. Dr Gale does not claim any expertise or experience in climate change accounting, other than a reference to "over the last 40 years I have worked in energy sector planning, resource management, competition proceedings and climate change policy."[216] Matthew Smith's evidence expressly raised the issue that Dr Gale appeared not to have any experience or expertise in climate change accounting at all.[217] Dr Gale in reply did not contest that in reply.

243. Dr Gale's evidence is nothing more than a lay person's commentary on what he sees to be an error of logic.

244. The assertion that this 'error' is a matter of simple mathematics is at the centre of the dispute between the parties.[218] Hence even if an economist's "lifelong experience in practical mathematics" qualified Dr Gale to provide an expert opinion on mathematical issues (which it would not), Dr Gale has no expertise to comment on whether the IPCC pathways ought to have been applied mathematically (as LCANZ assert), rather than modelled as an indirect comparator (which is what the Commission did).

245. His statements of opinion are accordingly inadmissible under s 23 of the Evidence Act 2006.

246. Dr Gale's evidence is also contested by the Commission.[219]

Dr Ivo Bertam (NZ)

247. Dr Bertram is also an economist.[220]

248. His evidence is wide ranging, covering many issues including:

248.1 Climate change accounting, including the 'gross-net' issue, use of the modified activity based accounting measures, the scope of New Zealand's Greenhouse Gas Inventory, target emissions accounting, comparative expressions of

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216 Gale 1 at [1].
217 Smith at [114.1].
218 Smith [96] – [99].
219 See especially Smith at [96] – [99], [102] – [113] and [114]. See also Annex 3.
220 Bertram 1 at [1] – [7] and exhibit A.

budgets and targets based on different accounting approaches, and recalculations of New Zealand's emissions record;

248.2 Commentary on the consistency of New Zealand's NDC with the 1.5°C goal and the merits of the Commission's approach,

248.3 The merits of the points pleaded in LCANZ' statement of claim, including various 'recalculations' of the Commission's Advice;

248.4 Commentary on the merits of different accounting approaches including transparency, and arguments addressed to the merits of the Commission's judgement on those issues;

248.5 Commentary on the level of ambition reflected in the Commission's advice.

249. None of this evidence is within the scope of the technical explanation that could assist the Court in understanding the alleged technical error in setting the NDC pleaded in ground one. Further, the majority of this evidence is directed to critiquing the merits of the Commission's approach and Advice and is not admissible on that basis.

250. Like Dr Gale, Dr Bertram also has no relevant expertise or qualifications to provide expert evidence. Dr Bertram does not claim any specific expertise and his CV is clear that he does not have either qualifications or experience in the matters covered in his evidence.[221] He records that in 1993 (nearly 30 years ago) he was one of three researchers who carried out a modelling exercise of the impacts of introducing a carbon tax on New Zealand's economy, and in 2010 co-authored a book on the Emissions Trading Scheme and has published research on the international trade dimensions of carbon taxes and emissions trading schemes.[222] None of these are relevant to the matters at issue in the proceeding. Dr Bertram also states that he has been involved in conferences and discussions of climate change policy: engagement in these issues as an interested person does not make him an expert, however.

251. Dr Bertram's opinions are accordingly inadmissible under s 23 of the Evidence Act.

252. Matthew Smith raised the issue of Dr Bertam's lack of relevant expertise.[223] In reply Dr Bertram accepts that he does not have specific expertise in this area but claims that

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221 Bertram 1 at [1] – [7] and exhibit A.
222 Bertram 1 at [3] – [4].
223 Smith at [141].

it is unnecessary, as he has been engaged in "climate change related" research for thirty four years (from his CV and publication list that is clearly a significant overstatement[224]) but in any event:[225]

> [c]lose acquaintance with the complex details of gross-net accounting is not required to answer the simple question: should the Special Report net-net pathway for net CO_2 be applied to New Zealand's 2010 gross CO_2 or 2020 net CO_2 to produce a target for 2030? Commonsense, logic, and science all say net CO_2. No amount of detailed exposition of the highly technical accounting procedures behind the gross-net number can overcome that simple logic.

253. Dr Bertram's views are no more than arguments and 'analysis' put forward by an interested lay person, based on "commonsense" and "simple logic".[226] This is not expert testimony.

254. It also is the direct antithesis of the grounds for admissibility of this form of ex-post expert evidence in the first place: if the matter does not require expert evidence to allow a layperson to understand the technical error, then there is no basis to admit any evidence on the matter at all.

255. Dr Bertram's views are also contested by the Commission.[227]

Dr William Taylor (NZ)

256. Dr Taylor is a consultant economist with NERA Economic Consulting, a global economic consulting firm.

257. He has no experience or qualifications in climate change matters at all, let alone any expertise.[228] Matthew Smith raised this issue in his evidence,[229] and Dr Taylor did not contest this in his reply. His opinions are accordingly inadmissible under s 23 of the Evidence Act.

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224 Bertram 1, exhibit A.

225 Bertram 2 at [35].

226 See also Smith at [142]: Dr Bertram has strong personal views that the climate accounting rules he is critiquing are "a key tool for misinformation" by the government, and that this accounting approach is "specious" and the resulting analysis "obviously untrue".

227 Smith at [141] – [163]; Young at [80] – [92]; Carr at [119] – [131]; and Dr Olia Glade at [94]. See also more generally on the issues covered: Smith at [56] – [113] on the Commission's advice on the NDC; Murray at [60] – [80] on the Commission's advice on the rules for measuring progress; Young at [19] - [66] on the Commission's advice on the rules for measuring progress; Carr at [23] – [57] on the Commission's approach to developing the emissions budgets advice and at [96] – [102] on the level of ambition in the budgets; and Glade at [22] – [53] on the alleged logical error in the NDC advice and at [67] – [93] on the rules for measuring progress. See also Annex 3.

228 Taylor 1, exhibit A page 1.

229 Smith at [164].

258. Dr Taylor's evidence is the most wide ranging, comprising a 50 page report essentially proffering his view on a wide range of matters, including not only matters of climate change accounting and policy, but also setting out how he – as a consultant economist – would have approached the Commission's task, including the framework he would have applied and the steps he would have followed to develop the budgets.

259. His second affidavit addresses the revised NDC (announced in November 2021, well after the Commission's advice was published in May 2021) and the use of offshore mitigation.

260. Dr Taylor's reply affidavit goes on to set out a four step approach he considers should have been adopted by the Commission in preparing the advice on the NDC, and argues that this is preferable because it is "internally consistent", "transparent" and "makes any value judgements explicit". His evidence then proceeds to a further wide ranging critique of the merits of the Commission's approach on many topics.

261. Like Dr Bertram, Dr Taylor's evidence appears to be just one economist's view as to how he could have done a better job than the Climate Change Commission.[230]

262. This evidence does not meet any of the criteria for admissibility in an application for judicial review, as outlined above. It is primarily directed at the merits of the Commission's advice, it is not expert, and to the extent that it purports to be expert (even if Dr Taylor were qualified) it is not focussed on the limited area where expert evidence could assist the Court understand the alleged irrationality in ground one.

263. Dr Taylor's views are also contested by the Commission.[231]

Emeritus Professor Ralph Sims (NZ)

264. Professor Sims' evidence in chief does not address evidence to the NDC issue, or indeed to the Commission's Advice.

265. Professor Sims' evidence appears to be provided in support of the merits of LCANZ' overall policy position (that faster reductions are required), and is in effect an ex-post

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230 Noting Simon France J made a similar criticism of Dr Bertram's opinion evidence in another proceeding: "this appears to be one economist's opinion on what should have been considered as relevant … and what then should have been the first respondents' conclusion on the material." See *Coromandel Watchdog of Hauraki (Inc) v Minister of Finance* [2020] NZHC 1012 at [18].

231 See in particular: Smith at [164] – 170]; Young at [69] – [79]; Carr at [61] – [118]; Glade at [58] – [62]; and Toman at [15] – [28]. See also Annex 3.

'submission', that was not before the Commission. While much of his evidence is not contentious,[232] it is also not relevant to any issue of lawfulness that the Court is required to determine in this judicial review. It is accordingly inadmissible in the context of this judicial review proceeding.

266. The Commission also contests Professor Sims' evidence in its use of Stats NZ data.[233] It also contests an element of the advocacy element of Professor Sims' evidence (that faster cuts in New Zealand would mitigate the global and domestic impact of climate change). However, from Professor Sims reply it appears that there is no disagreement with the statement of fact that (due to our relative size) faster cuts in New Zealand would not mitigate the impact of climate change either globally or domestically, though the parties are in full agreement that despite that, New Zealand must reduce emissions and show leadership in that regard.[234]

267. Professor Sims in reply does seek to put forward an opinion on the content of the Commission's advice, but that is new evidence not properly in reply (this is discussed further below), and in any event is cursory and conclusory only and does not provide the technical assistance on the issue that might be admissible under ground one.

Dr Joeri Rogelj (UK), Professor Wuebbles and Professor Forster

268. These three witnesses are qualified experts, although Dr Rogelj and Professor Wuebbles were asked only to give an opinion on a hypothetical scenario that did not match the Commission's task or the analytical process the Commission actually undertook.

269. Further it appears that neither Dr Rogelj nor Professor Wuebbles have read the Commission's Advice (in any detail or potentially at all), calling into question their specific expertise to provide expert evidence about it.[235] The Commission also has a

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232 Smith at [174].

233 Smith at [175].

234 Smith at [176]; and Sims 2 at [9] – [11].

235 Both refer in their evidence in chief to having read the affidavit of Dr Gale, and neither make any reference to the Commission's Advice (Rogelj 1 at [7] and Wuebbles 1 at [7]). Matthew Smith raised this as an issue in his affidavit in response, expressly questioning whether these witnesses had read the Commission's advice, and postulating that their views were based on a lack of understanding of what the Commission did in its advice and why (Smith at [116] – [119] and [124] – [125]). Both witnesses addressed Mr Smith's query about the scope of their expertise, but neither contested his inference that they had not read the Commission's Advice in any detail, and that they did not have a good understanding of what the Commission actually did and why (Rogelj 2 at [4] and Wuebbles 2 at [3]).

number of other concerns with the relevance (and hence admissibility) of this evidence, which are set out below in response to LCANZ first ground of review.

270. Professor Forster on the other hand was asked to comment directly on what the Commission did,[236] and his evidence in chief would on the broadest approach fall within the category of evidence that may provide technical assistance to the court to understand the alleged error pleaded in ground one. Much of his evidence in reply however goes well beyond that into a critique of the merits of the Commission's approach (as well as raising a number of new matters that the Commission has not had the opportunity to address) and is accordingly inadmissible.

271. The adverse opinions and critical commentary expressed by these three witnesses are also contested by the Commission.[237]

All the adverse expert evidence is contested by the Commission

272. The Commission contests the criticisms and adverse opinions expressed by LCANZ' witnesses in their evidence.[238]

273. The Commission's primary 'evidence' on all the issues canvassed by LCANZ' witnesses is set out in its Advice, with the further detail provided by staff to explain aspects that the published Advice did not need to address in such detail. The undoubted expertise of the Commission in making these assessments and reaching the views it did is not disputed by LCANZ.

274. The additional evidence in response to the applicant's witnesses from staff (and the Commission Chair, Dr Carr) is evidence responding to particular criticisms, making it clear that the Commission has also now considered the evidence of the respondent's witnesses and disagrees with it. All staff confirm they are authorised to provide their evidence on behalf of the Commission.

275. All these staff are also individually highly qualified experts in the areas in which they give evidence. The two independent experts who address quite narrow issues (supporting the merits of the Commission's Advice in response to evidence directly challenging those merits) are also clearly well qualified and experienced in their fields of expertise.

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236 Forster 1 at [3].

237 See Annex 3, and the discussion below in Part E (ground one).

238 This is addressed below in Part E (ground one). See also Annex 3.

276. The Commission's position is also independently supported by the separate evidence of the highly qualified witnesses from the Ministry for the Environment.

277. LCANZ' criticisms of these witnesses are unfounded, and in respect of Dr Reisinger, improper.[239] Regardless, those criticisms at most go to weight only, were the Court undertaking the role of resolving a direct contest between experts (which is not the case here). What is clear is that there is credible expert material before the Court – primarily in the Commission's Advice, and more specifically in the expert evidence filed in response – to counter any admissible evidence put forward by LCANZ.

278. It is also noted that Professor Forster acknowledges the "widely respected expertise" of Dr Glade, Dr Reisinger and Matthew Smith in particular.[240]

279. In accordance with well-established principles outlined above, which the Court of Appeal refers to as so clear as to be a 'truism',[241] this Court cannot engage in resolving the contested expert positions in the context of an application for judicial review ("particularly not in favour of a claimant on whom the burden of proof lies"[242]). To do so would be to enter into the merits of the expert decision maker's judgement on the science and other technical matters at issue. This would place the Court in the position of adjudicating on the correctness of an expert assessment by the decision maker on matters within its expertise, and replacing the Commission's expert decision on these technical issues with the inexpert decision of the court.

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239 LCANZ suggestion that the two agencies are somehow aligned and would thus necessarily support each other's position appears to be based on no foundation, and is directly contrary to the statutory independence under which the Commission operates. The fact that the newly established Commission's expert staff have prior association with MfE is to be expected in this specialist area, but is not grounds to suggest (as LCANZ appear to infer) that officials or Commission staff (or Dr Olia Glade) would compromise their integrity and provide evidence contrary to their own professional views and judgement because of that link. All witnesses have agreed to comply with the Code of Conduct for expert witnesses, and LCANZ has no basis to suggest that any of them have or would compromise their integrity in terms of the evidence they have given. Strong objection is made in particular to the specific suggestion in the LCANZ submissions at [209] that Dr Reisinger would compromise his integrity in order to obtain an appointment as a member of the Climate Change Commission.

240 Forster 2 at [4].

241 See paragraph [231] above, quoting *New Zealand Pork Industry Board v Director-General of The Ministry of Agriculture And Forestry* [2013] NZCA 65 at [94].

242 See paragraph [201] above, quoting *R (Spurrier) v Secretary of State for Transport* [2019] EWHC 1070 (Admin), [2020] PTSR 240 at [173].

PART E – LCANZ GROUND 1: MATHEMATICAL ERROR IN NDC ADVICE

Summary

280. Ground one is a challenge to the Commission's methodology in forming its advice on the NDC, which LCANZ argues is irrational due to a 'mathematical' or 'logical' error.

281. The Commission says that LCANZ has misunderstood: the Commission was clear that – as outlined above – the IPCC global pathways could not be directly applied to set a country's national targets, and *the Commission did not do so.*

282. As Matthew Smith explained in his evidence, had the Commission tried to directly apply the IPCC pathways to New Zealand's circumstances, algebra would be relevant.[243] But the Commission was not undertaking such a mathematical exercise. Rather it used the IPCC pathways as a basis for a modelling exercise to develop a series of *indirect comparators*. Those comparators informed the Commission's advice.

283. The Commission says that this is a challenge to the correctness of its analysis (as is amply illustrated by the extensive evidence LCANZ has filed on this issue), which is not available in judicial review.

The Commission's Advice on the NDC

284. Section 5K of the Act permits the Minister to request advice from the Commission on matters relevant to climate change. On 20 April 2020 the Minister requested that the Commission provide advice on New Zealand's then current NDC under the Paris Agreement. The Minister asked the Commission to advise:

    284.1 whether the NDC was compatible with the global effort to limit warming to 1.5°C; and

    284.2 if not, what changes were necessary.

285. The Commission developed its advice in response to this request in tandem with its advice on the emissions budgets and emissions reduction plan.[244]

286. The Commission's advice was that the NDC was not compatible with the global effort to limit warming to 1.5°C.[245] The Commission advised that in order for the NDC to be

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243 Smith at [98]

244 Advice Bundle at 35 – 50; and Smith at [25].

245 Advice Bundle at 373 – 374.

compatible, New Zealand would need to commit to a reduction to net emissions of "much more than" 36 percent below 2005 gross levels by 2030.

287. The Commission did not set a specific figure for the recommended NDC. The Commission took the view that how much more than a 36 percent reduction New Zealand should commit to was a decision for elected officials (in consultation with iwi / Māori).[246] The Commission did, however, set out some factors for the Government to consider.[247]

Common ground – the Commission could approach this task any way it saw fit

288. It is important to be clear that LCANZ acknowledge that there were no constraints at all on how the Commission approached its task of advising on the compatibility of New Zealand's then current NDC with the 1.5°C goal.[248]

289. As Matthew Smith explains, there was (and is) no ready-made methodology or even guidance that the Commission could adopt to make this assessment.[249] The Commission was required to 'start from scratch' and exercise its own expert judgement as to the analytical approaches that might be useful for it in undertaking this task.

290. LCANZ' experts who are qualified on these matters similarly confirm that the Commission was not obliged to use the IPCC pathways for this purpose, and Dr Rogelj went further and expressed strong reservations about such an approach overall. [250]

291. Dr Reisinger for the Crown is equally clear that there was no single correct way to assess what level of emissions reduction in New Zealand's NDC would be compatible with the global 1.5°C pathways.[251]

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246 Smith at [27].

247 Advice Bundle at 365 – 367 and 374.

248 See LCANZ submissions at [245] – [246], where LCANZ refer to the Commission's use of the IPCC pathways as "an appropriate approach for the Commission to take" and at [244.a] – [244.c] setting out Professor Forster's view that the use of the IPCC pathways "remains a good idea".

249 Smith at [62]

250 Forster 2 at [4], [13] and [26] – [27], where Professor Forster accepts there is no one way to set an NDC, nor a requirement to follow the Special Report 1.5°C pathways and notes that it was the Commission's choice to use the Special Report as a starting point; and Rogelj 1 at [12] where he points to the limitations of the use of global emissions pathways in the domestic context (consistent with this, see Matthew Smith's discussion of the limitations of using the IPCC pathways to assess New Zealand's national NDC (Smith at [71] – [72] and his response to Dr Rogelj on this point at [12])). Also see Wuebbles 2 at [14].

251 Reisinger 1 at [22] – [39] at [60] – [67]

LCANZ claim is specific: this was a simple maths error in an algebraic equation

292. LCANZ set out their proposition in submissions as:[252] "The Applicant's position is that the Commission's application of the global reduction rate for net CO_2 to a 2010 gross CO_2 starting point is an error of mathematical logic which renders this part of the NDC Advice unlawful."

293. LCANZ say the Commission set out to directly 'apply' the IPCC pathways to calculate a figure of what New Zealand's contribution should be to meet those pathways. This is confirmed in its pleading, where LCANZ alleges:[253]

> For the purpose of its advice on the NDC, the Commission **calculated** that net emissions between 2021 and 2030 should not exceed 568 Mt CO_2-e in order to be compatible with contributing to limiting warming to 1.5°C.
>
> The **Commission's intention** in deriving the 568 Mt CO_2-e figure **was to calculate** what was required in order to give effect to the 2018 Special Report's conclusions on the required decreases in 2010 emissions by 2030 and before taking into account Aotearoa New Zealand's fair share of reductions.

294. LCANZ says that the error is simple: because the IPCC global pathways are net-net, it was – as Dr Gale says – a mathematical error to apply them to a gross-net NDC target.[254] Dr Taylor describes the issue as a matter of basic algebra.[255] As Dr Bertram says in his evidence in reply, this is – in LCANZ' view – a simple question that can be answered by common sense and basic logic.[256]

If the error was that obvious, it would not have been made

295. As the England and Wales Court of Appeal observed in *Mott v Environment Agency*: "A reviewing court should be very slow to conclude that the expert and experienced decision maker assigned the task by statute has reached a perverse scientific conclusion."[257]

296. Basic errors of algebra can of course occur in expert advice. An independent expert body of the calibre of the Commission would be expected to immediately remedy such errors once they were pointed out to them.

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252 LCANZ submissions at [199].
253 2ASOC at [81] and [82].
254 LCANZ submissions at [197] – [199] and [205]. Gale at [16], see also reply at [17] and more generally.
255 Taylor 2 at [5.a].
256 Bertram 2 at [35].
257 *R (Mott) v Environment Agency* [2016] EWCA Civ 564, [2016] 1 WLR 4338.

297. It is a notable feature of this claim that LCANZ raised this same alleged mathematical error with the Commission in response to the Commission's draft Advice. This was done not only in writing but the Commission also met with LCANZ in one-on-one meetings to discuss it.[258] The Commission understood that LCANZ considered that it had made an error. The Commission disagreed.[259]

298. LCANZ also raised this same alleged mathematical error with Minister, following his receipt of the Commission's Advice.[260] This point was specifically considered by the Minister following expert advice from the Ministry for the Environment.[261] Officials advised that Commission's analysis involved a choice in approach that was an exercise of judgement, and was not an issue where there was a binary right or wrong answer.[262] Again, if LCANZ' alleged error was indeed an incontrovertible basic error of mathematical logic, as it claims, then the well qualified officials in the Ministry would have addressed it. Instead, they explicitly disagreed with LCANZ' proposition.

299. Respectfully, and in line with the authorities discussed above paragraphs [220] – [223], this issue can only be resolved in one direction in the context of an application for judicial review. The Court is in no position to overturn the Commission's view that it: (a) understood the analytical process it was undertaking; (b) exercised its expert and specialist judgement in that process; and (c) was satisfied that it had made no error in its analysis.

The claim also fails on the facts

300. This ground of review is also based entirely on LCANZ' mischaracterisation of the analytical process that the Commission actually undertook.

301. The core of this issue is not about mathematics. Rather, there is a more fundamental factual 'dispute' as to whether the Commission was even engaged in the basic mathematical exercise that LCANZ says it was.

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258 Hendy at [79] – [80].
259 Advice Bundle at 367 and 488 – 489.
260 This is discussed in Joanna Hendy's affidavit at [81], and the letter is included in the respondents' bundle: CBD at 558.
261 Shaw at [24] – [34].
262 Reisinger 1 at [63] – [69].

302. Dr Gale (who appears to be the 'lead' expert for LCANZ on this issue[263]) is clear that he assumes that this was a mathematical exercise where the Commission directly "applied" the IPCC pathways to the NDC in some sort of mathematical calculation.[264] LCANZ' other witnesses repeat that same assertion.[265]

303. The Commission's position is that this is wrong in fact: the Commission had no such intention and was not engaged in a calculation exercise. As Matthew Smith sets out in detail in his affidavit, the Commission was using the IPCC pathways as a foundation for modelling comparator NDCs which it knew would be inexact (a 'blunt' approach, as the Commission records in its Advice[266]).[267] It used those indirect comparators to compare the (then) NDC against what it assessed to be a reasonably estimated approximation of the required global reductions needed to reach the 1.5°C goal.[268]

304. The Commission knew that it faced a challenge given that the IPCC global pathways were all net-net but the NDC set by the government was on a gross-net basis (consistent with Kyoto accounting, and supported by the reasons touched on above and explained further in Mr Smith's evidence). That was not the only complexity the Commission faced in working out a way to use the IPCC pathways to model comparator NDCs, as Matthew Smith explains.[269] Other major complications included that the global pathways reflected the global emissions profile that was very different to New Zealand's emissions profile, and in no way reflected New Zealand's rather unique national circumstances (especially in our energy generation, agricultural and land sectors), and that the pathways were 'split gas' where as New Zealand' NDC was an 'all gas' commitment.

305. As Matthew Smith outlines, the Commission developed an analytical process and made a series of decisions and judgements on how to address those challenges. In the end the Commission was satisfied that while 'blunt' and far from direct comparators, the modelled NDC comparators were useful as "a starting point, based on scientific

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263 Gale 1 at [5]. See also Wuebbles 1 at [7] – [8] and Forster 1 at [4] where they confirm they have been asked to refer to [16] of Gale's affidavit.

264 Gale 1 at [16], and see also Gale 2 at [11], [17], heading to [22], [23a], [23.c] and [24]. See also Gale in reply where he sets out LCANZ' proposition in clear terms: "the question [is] whether the SR 2018 reduction pathway for *net* CO_2 can be applied mathematically to a 2010 *gross* CO_2 starting point" (Gale 2 at [17]).

265 See the more detailed discussion of each witness' evidence below.

266 Advice Bundle at 370.

267 Smith at [56] – [95].

268 Smith at [61].

269 Smith at [71] – [72].

modelling, for addressing the question of whether the NDC is compatible with contributing to the 1.5°C goal."[270]

306. As Dr Carr also confirms, the Commission was well aware of this particular gross-net vs net-net issue, both from its own analysis, and because LCANZ had already raised the point in response to the draft Advice, as noted above. The Commission assessed and tested its rationale and made a deliberate judgement that its approach was reasonable.[271]

307. The Commission's approach to how to use the net-net global IPCC global pathways to inform its advice on the gross-net NDC was not a matter of algebra, but a matter of modelling to establish a range of approximate comparators informed by expert and specialist judgements fully within the area of its expertise.

308. This evidence as to the actual analytical process that the Commission was engaged in cannot seriously be challenged by LCANZ: neither LCANZ nor its experts are in any position to dispute the Commission's own factual evidence on this point.[272]

309. This ground of review accordingly fails on the facts.

The alleged error is in any event not 'incontrovertible'

310. This is where the real difference in the weight of the specialist expertise of the Commission and the other experts who have endorsed its approach is significant. This does not get close to a balancing issue (even were the Court willing to engage in that in the context of a judicial review): it is more that the majority of LCANZ witnesses who give evidence on this point simply do not understand enough about this specialist area to understand the complexities of the issues involved, let alone reach an informed opinion.

311. The principles governing the admissibility of the ex-post 'expert' evidence is addressed at paragraphs [220] – [223] above. Even if the Court is willing to admit some or all of this evidence, the very range and extent of it is sufficient to demonstrate that the alleged error is not even readily apparent, let alone meeting the high threshold of being incontrovertible.

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270 Advice Bundle at 370.

271 Carr at [58]; and Smith at [15].

272 See *R (Safeer) v Secretary of State for the Home Department* [2018] EWCA Civ 2518 at [16] — [19] and fn 213 above.

The evidence

Evidence confirming that the Commission did <u>not</u> make a 'mathematical error'

312. The starting point is of course the Commission's Advice and Supporting Volumes. These provide the primary evidence of what the Commission did and why.[273]

313. Matthew Smith was the lead analyst for the Commission's work in response to the request to provide advice on compatibility of New Zealand's NDC with contributing to the 1.5°C goal. He has extensive expertise relevant to that task.

314. As already touched upon, Matthew Smith's evidence sets out in more detail the analytical approach followed by the Commission and the modelling exercise that was undertaken to develop the comparator NDCs. He explains how the Commission approached the challenge of using net-net global pathways to inform an assessment of a gross-net NDC and the various judgements that were made. Mr Smith provides a detailed critique of LCANZ' evidence, in both general terms and specifically directed to each witness. His evidence is supported and further context provided by Stephen Walter, Eva Murray and Paul Young, who also have extensive relevant expertise on these matters.

315. Matthew Smith's evidence is:[274]

> I confirm that there has been no 'mathematical' or 'logical' error in the preparation of the Commission's Advice on the NDC. The so called 'error' or 'mistake' alleged by LCANZ represents a deliberate and informed choice of approach by the Commission. We were aware from communications with LCANZ, and in particular its submissions on the Commission's draft Advice, that LCANZ takes a different view on how the Commission should have approached its task. We have considered their views carefully, but in the end we did not agree with them.

316. Dr Carr confirms that position in his evidence.[275]

317. Matthew Smith summarises the Commission's response to LCANZ evidence in the following:[276]

> As I have already outlined, the net emissions basis of the IPCC split gas pathways was only one of a number of differences and complexities the Commission had to address in using the IPCC pathways in its modelling. We were aware that this – along with many other factors including those I have already referred to – reduced the direct applicability of the IPCC pathways for

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273 Advice chapters 21 and 22 (Advice Bundle at 365 – 391) and Supporting Volumes chapter 13 (Advice Bundle at 911 – 932).

274 Smith at [15].

275 Carr at [58].

276 Smith at [97] – [99].

> our purpose. This was not considered to be a fatal problem, however: the modelling was always only an approximate tool, to provide guidance. The different parameters of the IPCC pathways and the NDC (such as one being set on a net emissions basis and the other on a gross-net basis) simply meant that we must recognise that the models are not exactly aligned, and approach the comparison exercise with an appropriate degree of caution. This is what we did.
>
> **If we had been engaging an a purely arithmetical or mathematical exercise, trying to 'apply' the IPCC pathways directly to New Zealand's emissions, as LCANZ appears to assume, then the fact that the parameters of the IPCC pathways did not exactly match the parameters of the NDC would be a significant problem, since you could not directly apply one to the other**.
>
> Put in more colloquial terms, we knew we were comparing an orange (the NDC) with a range of apples (the IPCC pathways), and not only because of the net and gross-net issue. We undertook a considerable amount of work and engagement to satisfy ourselves that it was an appropriate approach in the circumstances. We recognise that others may disagree with the judgement calls the Commission made in developing and applying our modelling, but we are very clear that there is no 'mistake' or 'logical error' in our approach: the choices the Commission made were deliberate, considered and well-informed.

318. Dr Olia Glade is clearly the most expert witness before the Court on matters of climate change accounting.[277] She was asked to provide her expert opinion on:[278]

> whether, in producing its advice on New Zealand's NDC, the Commission made a "logical error" in applying modelling from the IPCC 2018 Special Report, which is developed on a net-net basis, to create comparator NDCs for New Zealand on a gross-net basis.

319. Dr Olia Glade states her opinion:[279]

> I do not agree with LCANZ that the Commission was in error in using the modelling from the IPCC 2018 Special Report in order to create comparator NDCs for New Zealand on a gross net basis, to use to assess the compatibility of New Zealand's gross net NDC. In my opinion the approach taken by the Commission was reasonable, and did not involve any mathematical or logical error.
>
> The IPCC 2018 Special Report was not designed to be used to set national budgets. However, I agree that the IPCC pathways could provide a useful starting point for addressing the question on the NDC the Commission was tasked with. The fact that the pathways are net emissions pathways, reflecting that globally LULUCF is a source of emissions not a sink, and does not mean that they can only be used as a basis for comparison with net-net targets. In a modelling exercise such as that undertaken by the Commission the difference between the IPCC pathways being net or gross emissions pathways is not a significant feature, and does not compromise the Commission's methodology.

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277 See Dr Glade's experience in her affidavit at [2] and [6] – [17], as well as her CV (exhibit OG-1).

278 Glade at [19].

279 At [22] – [23]. Noting the implied criticism from Forster raised in reply at [16], that Dr Glade has not been given the opportunity to reply to is refuted: The IPCC's unusual description of 'gross' in its report (which deals only with net-net pathways) also does not affect this evidence. Professor Forster is incorrect when he states that the IPCC Report has a different definition of 'net' emissions than the Kyoto accounting rules: the IPCC Report has an unusual approach to describing gross emissions but its definition of net emissions (as including LULUCF) is orthodox, and Dr Glade's commentary remains on point.

320. Dr Reisinger in providing evidence for the Crown also provides relevant expert critique of LCANZ position on this point. Dr Reisinger has a very high level of relevant expertise and experience, particularly in relation to the IPCC.[280] Under the heading "No single way of being compatible with 1.5°C he says:[281]

> Most of the affidavits filed by the applicant's experts assume there is only one 'scientific' way to calculate what level of emission reductions in New Zealand's NDC would be compatible with global 1.5°C pathways, based on calculating percentage rates of reduction of net greenhouse gas emissions. I consider this assumption is flawed and underlies the applicant's view that the NDC decision is based on a "mathematical error". Every attempt to map a country-level target onto a global pathway relies on value judgements that determine the approach taken; there is no value-free scientific or mathematical way that would then be modified only subsequently by value judgements

321. Dr Reisinger goes on to discuss LCANZ' criticisms of the Commission's approach in more detail, and confirms that in his expert view there was no mathematical error or error of logic involved (original emphasis):[282]

> I now turn to the question of whether using a gross-net approach, using target accounting net emissions, is a defensible *choice* to compare New Zealand's NDC with the emissions reductions in global pathways that limit warming to 1.5°C, or whether this is a mathematical error. I note several of the applicant's witnesses dispute this choice (or do not treat it as a choice) and insist on framing the issue as one of science and mathematics … The mathematical difference between the Commission's budget calculation and those of the applicant's is a direct result of different choices and judgment on the most appropriate way to compare New Zealand's NDC with global pathways. It is not the result of a mathematical calculation error.

LCANZ' evidence

322. The table at Annex 3 these submissions gives a more detailed outline of LCANZ evidence and the evidence filed in response and reply.

323. By way of overall comment however, the analytical approach of developing inexact or indirect comparators is not an unusual approach to forming a view on something that is not readily susceptible to direct measurement or mathematical calculation. It seems surprising that not one of LCANZ witnesses (especially the economists who ought to be familiar with this analytical tool) even acknowledge this. Nor do any of them even mention, let along engage with, the Commission's evidence that this was the process that it actually undertook.

324. Further specific comment is made below.

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280 Reisinger 1 at [1] – [4].

281 Reisinger 1 at [22].

282 Reisinger 1 at [60], see also the more detailed discussion continuing through to [84].

Dr Stephen Gale

325. Dr Stephen Gale's lack of expertise is outlined above. The Commission objects to the admissibility of this evidence on the basis that it is not expert.

326. Even if the Court considered this evidence admissible, Dr Gale's basic misunderstanding of the concepts of gross and net in climate change accounting means his opinion can have no weight.[283] LCANZ' reply evidence that Dr Gale's understanding of gross and net is reflected in the 2018 IPCC Special Report (which does not deal with gross accounting at all) does not alter that criticism:[284] under international practice in climate change accounting, under the Kyoto Protocol, in the NDC under the Paris Agreement, in New Zealand's 2050 target and the Commission's Advice 'gross' and 'net' are used in the specialised sense described, and it appears that Dr Gale was not aware of that. Nor does it appear he was aware of that same definition of those terms in the CCRA itself.

327. An equally fundamental misunderstanding of basic principles is demonstrated by Dr Gale at [22] where he says: "I have found no explanation of why a gross emissions baseline is specifically consistent with 'target accounting'". Dr Gale appears to be unaware that this was a binding obligation on State parties under the target accounting rules in the Kyoto Protocol, unaware of the Kyoto Reference Manual, and unaware of what Matthew Smith describes as "the wide range of UNFCCC technical papers on COP [conference of the parties] decisions providing accounting guidance."[285]

328. Dr Gale's criticism of the Commission's approach to gross and net pathways needs to be seen in the context that he does not understand what those basic terms mean in climate accounting. This casts strong doubt on his ability to fairly critique a complex analytical process in this field of specialisation.

329. Nor does Dr Gale provide any response in his reply affidavit to the Commission's evidence about the analytical process it was actually following in using the IPCC pathways to develop comparator NDCs. Rather, he continues to just repeat his assertion that the Commission directly "applied" the net-net pathways to the gross-net NDC.[286]

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283 Gale 1 at [8]; and Smith at [30].
284 Gale 2 at [18]; Forster 2 at [16]; and Bertram 2 at [9].
285 Smith at [114.1].
286 Gale 2 at [11], [17], heading to [22], [23a], [23.c] and [24].

330. Dr Gale's evidence is contested by Matthew Smith for the Commission,[287] Dr Reisinger for the Crown,[288] and Dr Olia Glade.[289]

Drs Bertam and Taylor

331. The complete lack of expertise of these two witnesses on this issue is outlined above. The Commission objects to the admissibility of this evidence on that basis.

332. Even if the Court considered this evidence admissible, the lack of expertise means it should be accorded very little weight. In addition, there are a number of further issues with this evidence.

333. Dr Bertram was given a wide brief: he states at [16] that he was 'asked to comment' on aspects of the Commission's advice, being (relevantly) ; "the use of a 2010 gross (rather than net) carbon dioxide emissions figure when calculating a New Zealand contribution to the global emissions budgets laid out by the IPCC …"

334. This repeats the basic error above, in assuming that the Commission was undertaking a 'calculation'. Perhaps reflecting the breadth of his instructions, Dr Bertram's evidence in chief is also in the form of a critique of the merits of the Commission's approach, and the use of gross-net accounting as a matter of general principle.[290] For example, Dr Bertram claims that the Commission "simply relied on gross-net target accounting as an excuse" and that its approach failed in delivering transparency, which is "a paramount requirement." His conclusion on the alleged error is:[291]

> In my opinion this procedure cannot be defended as consistent with the methodology of the 1.5°C scenarios in the Special Report. I therefore agree with the Statement of Claim, paragraph 93, that the Advice has erroneously conflated target accounting with the mathematical application of the 2018 Special Report findings to Aotearoa New Zealand's 2020 net carbon dioxide emissions.

335. It is, with respect, difficult to comprehend what Dr Bertram is intending to convey by that 'conflation', but in any event is seems reasonably clear that he is criticising the Commission's methodology *as not being consistent* with the IPCC methodology. In reply his evidence is even more direct that his challenge is to the merits of the

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287 Smith generally in response to all LCANZ witnesses on this point at [96] – [113], and with additional comments in response to Dr Gale's evidence at [114].

288 Dr Reisinger generally in response to all LCANZ witnesses on this point: Reisinger 1 at [60] – [70], see also at [80].

289 Dr Glade generally in response to all LCANZ witnesses on this issue at [22] – [45], and with additional comments in response to Dr Gale at [56] – [57].

290 Bertram 1 at [76], [82] and [92] – [100].

291 Bertram 1 at [82].

Commission's approach: he sets out his view that Commission could have, and should have, taken a different approach, and disagrees with the Commission's reasons for taking the approach it did.[292] None of this evidence is relevant to the issue before the Court and the Commission's position is that it is also inadmissible on this ground.

336. Dr Taylor was asked the following question:[293]

> What 2010 carbon dioxide emissions value is called for to properly apply the 2010 to 2030 percent reduction range of 40 to 58 percent contained in SR18?

337. Again, this was not the exercise that the Commission undertook. Dr Taylor is clear in his evidence that the Commission "has made a simple mathematical error" and its approach is "inconsistent with basic algebra".[294] The substance of Dr Taylor's report discloses however that he bases this on a simple assertion that:[295]

> … **if the Commission is going to apply** the percentage reductions established by SR18 … then the percentage reduction must be applied to *net* CO_2 emissions levels in 2010 and not to gross CO_2 emissions levels.
>
> … **Mathematically**, the percent reduction range **must be applied** to a net CO_2 value, otherwise the result will be in error.
>
> In summary, **applying the SR18 reduction rates to Aotearoa is a matter of algebra**.

338. As Matthew Smith has acknowledged, *if* the Commission had been attempting to mathematically apply the IPCC pathways directly, then it agrees the algebra would be a problem.[296] It was not however what it did.

339. The remainder of Dr Taylor's evidence on this issue is directed to his views on the merits of the Commission's overall assessment of the compatibility of the NDC. Dr Taylor in reply confirms that in his view the Commission should have followed a different analytical process (his "four step process"), and criticises the use of gross-net accounting for the NDC overall.[297] None of this evidence is relevant to the issue before the Court and the Commission's position is that it is also inadmissible on this ground.

340. Like Dr Gale, Drs Bertram and Taylor simply do not engage in their reply evidence with the evidence from Matthew Smith describing the analytical process that the Commission actually undertook.

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292 Bertram 2 at [2] – [17].
293 Taylor 1 at [7.a].
294 Taylor 1 at [8] and [17].
295 Taylor 1 at [78] and [91].
296 Smith at [98].
297 Taylor 2 at [7] – [8].

341. The evidence of Drs Taylor and Bertram is contested by Matthew Smith for the Commission,[298] Dr Reisinger for the Crown,[299] and Dr Olia Glade.[300]

Emeritus Professor Ralph Sims (NZ)

342. Professor Sims was not asked to and did not address this issue in his evidence in chief, but gives new evidence in his reply affidavit, saying that on reflection he "agrees" that using gross emissions from 2010 as a baseline is "not what the atmosphere 'sees' and is inconsistent with the IPCC methodologies". Again, this appears to be a criticism of the judgements made by the Commission (and introducing the idea that it should have adopted a national inventory reporting approach – 'what the atmosphere sees' in assessing the NDC, instead of NDC accounting).

343. If the Court considers this evidence admissible (it being substantive new evidence in reply that the Commission has not had the opportunity to address),[301] it nonetheless does not address the question of whether this is a mathematical error of logic. On the contrary, it appears clear this is a no more than a difference of view on the best approach to be taken.

Dr Joeri Rogelj (UK) and Professor Wuebbles (Illinois)

344. The Commission acknowledges that these two witnesses have expertise in matters of climate change.

345. The first issue with their evidence however is that they were not asked to provide their views on the Commission's Advice: rather they were asked a hypothetical question about how *they* would have approached the following problem:[302]

> Suppose you are assessing the implications for New Zealand of the global average reductions as set out in SR1.5 for a 50- 66% chance of limiting the global temperature to 1.5 degrees Celsius.
>
> In order to determine the range of 2030 net carbon dioxide emissions for New Zealand that would be consistent with this global average, should the percentage reductions (40-58%) be applied to New Zealand's 2010 net carbon

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298 Smith generally in response to all LCANZ witnesses on this point at [96] – [113], and with additional comments in response to Dr Bertram at [141] – [163] and Dr Taylor at [164] – [170].

299 Dr Reisinger generally in response to all LCANZ witnesses on this point at: Reisinger 1 at [60] – [70], and with additional comments in response to Dr Taylor at [71] – [72] and Dr Bertram at [73] – [82].

300 Dr Glade generally in response to all LCANZ witnesses on this issue at [22] – [45], and with additional comments in response to Dr Taylor at [58] – [62].

301 The admissible reply evidence to Matthew Smith's observation at [173] that Professor Sims had not given evidence on this issue was that the Professor had not been instructed to do so. Going further and actually providing new evidence setting out an opinion is beyond the scope of reply evidence.

302 Wuebbles 1 at [6]; and Rogelj 1 at [6].

> dioxide figure, or should they be applied to the 2010 gross carbon dioxide figure?

346. As Matthew Smith records, that question was different from the task the Commission was undertaking.[303] These witnesses' views on that hypothetical question are the not relevant to the issue before the Court as their evidence does not provide the technical assistance that the Court may find helpful in understanding what the Commission actually did. All this evidence tells us is what these two experts would have themselves done in a particular situation. In accordance with the above principles, the Commission's position is that this evidence is not admissible in the context of this application for judicial review.

347. The second issue with their evidence is that it appears that in forming their expert opinions neither Dr Rogelj nor Professor Wuebbles read the Commission's Advice (in any detail or potentially at all). Both of these witnesses state only that "I have been referred to and read the affidavit of Stephen John Gale," and neither make any reference to the content of Commission's Advice in their evidence in chief.[304]

348. Matthew Smith raised this as an issue in his affidavit in response, expressly questioning whether these witnesses had read the Commission's Advice, and postulating that their views were based on a lack of understanding of what the Commission did in its Advice and why.[305] Both witnesses in reply addressed Mr Smith's queries about the scope of their expertise, but neither contested his inference that they had not read the Commission's Advice in any detail in preparing their evidence, or that they did not have a good understanding of what the Commission actually did or the reasons for that.[306] Dr Rogelj does at least refer to the Advice in his reply affidavit, but Professor Wuebbles still makes no reference to it, even in reply.

349. The third issue is that the hypothetical question asked of these witnesses says nothing about New Zealand's circumstances, or even basic matters such as that the Commission's Advice was requested in relation to an NDC that had *already been set by the government on a gross-net basis*. Even in reply evidence, none of this is taken into account by these witnesses.

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303 Smith at [116] and [124] – [125].
304 Wuebbles 1 at [7]; and Rogelj 1 at [7].
305 Smith at [116] – [119] and [124] – [125].
306 Wuebbles 2 at [3]; and Rogelj 2 at [7].

350. Finally, the opinion evidence is directed only to the merits of the approach that these witnesses infer the Commission took. While Dr Rogelj says he agrees with Dr Gale that there has been a mathematical error, he does so on the basis of his judgement that a gross figure is not a good comparator for the IPCC pathways (in other words, he questions the suitability of the approach, rather than its mathematical logic).[307]

351. Professor Wuebbles in his evidence in chief does not even *refer* to the alleged logical error, let alone provide any technical context to explain it to the Court. Rather, his opinion is critical that New Zealand would be doing less than its fair share if it adopted this approach. His reply evidence is to similar effect, and adds a range of critiques to other aspects of the Commission's approach.

352. As with Drs Gale, Taylor and Bertram, neither of these witnesses engage with Matthew Smith's evidence about what the Commission actually did in developing its modelling methodology and the judgements it made (where the alleged irrationality is alleged to have occurred). Rather, Professor Wuebbles merely criticises Mr Smith's 'bias' towards what New Zealand has done in the past.[308] Dr Rogelj merely states that "nothing in the affidavits of Ms Smith, Dr Glade and Dr Reisinger changes my earlier view".[309]

353. With all respect to Dr Rogelj and Professor Wuebbles, and acknowledging that the scope of their evidence likely reflects the scope of their instructions, this is not evidence that is relevant to explaining the technical aspects of the alleged error of logic pleaded in this ground of review. It is no more than a submission 'on the science' (as Professor Wuebbles puts it in his reply affidavit), that was not before the Commission and is not admissible as ex-post evidence in the context of judicial review.

354. If the Court considers the evidence should be admitted, it should be given little weight given the nature of the instructions, the fact that the witnesses are unfamiliar with the Commission's advice and appear to have little understanding of what the Commission actually did or the reasons for doing that, and they do not in fact directly address the point at issue before the Court on this ground of review.

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307 Rogelj 1 at [10] – [11].
308 Wuebbles 2 at [4].
309 Rogelj at [8].

355. This evidence is also contested by Matthew Smith for the Commission,[310] Dr Reisinger for the Crown,[311] and Dr Olia Glade.[312]

Professor Forster (UK)

356. Professor Forster is the only witness for LCANZ that is both qualified to provide evidence on this issue and who appears to have read the Commission's Advice and directed his evidence to it.

357. His instructions however are odd: he says he was asked to give his views on paragraph 16 of Dr Stephen Gale's affidavit, rather than forming his own views.

358. In terms of the point at issue in ground one, Professor Forster in his first affidavit:

358.1 Agrees with the Commission's approach to 'gross-net' with a 1990 baseline and the modified activity based approach as well justified and reasonable,[313] (contradicting LCANZ position in this proceeding and the evidence of a number of its other witnesses). However, as Matthew Smith notes, the fact that Professor Forster was unaware that the gross-net approach was a *requirement* for New Zealand under the Kyoto Protocol indicates his limited experience with target accounting for this category of countries (those whose LULUCF is a carbon sink).[314]

358.2 States he agrees with Dr Gale that an error has been made, but does so on a different basis: he does not suggest that this an error of algebra or logic, rather he expresses the view in the paragraphs that follow that he does not consider it to have been the correct approach to take, given a range of factors.[315]

358.3 This is borne out by his conclusions at [12], [14] and [16]. He says that the Commission's gross-net approach leads to an outcome that "fails the compatibility test"; and that the net-net approach using the national inventory report results in a different outcome that "therefore passes the compatibility

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310 Smith generally in response to all LCANZ witnesses on this point at [96] – [113], and with additional comments in response to Dr Rogelj at [115] – [119] and Professor Wuebbles at [120] – [126].

311 Dr Reisinger generally in response to all LCANZ witnesses on this point: Reisinger 1 at [60] – [70].

312 Dr Glade generally in response to all LCANZ witnesses on this issue at [22] – [45].

313 Forster 1 at [7].

314 Smith at [128]. Professor Forster does not respond to the Matthew Smith's evidence on this point.

315 Forster 1 at [8] – [16].

> test." His ultimate conclusion is: "[a]dopting the Commission's proposed framework and their proposed emissions reduction target would give New Zealand an unambitious 2030 target that does not align to meeting global ambitions of holding global temperature rise to 1.5°C."

359. This is clearly opinion evidence expressing a different view on the overall merits of the Commission's approach that was not before the Commission. It is ex-post expert evidence on the substance of the advice and accordingly is not admissible in the context of this application for judicial review.

360. Professor Forster's reply affidavit reframes his criticism of the Commission's approach and identifies what he claims is an internal inconsistency: this was not expressed in his first affidavit and the Commission has not had the opportunity to respond to it directly. However, it is also clearly based on a misreading of the Commission's Advice. Professor Forster says:[316]

> Mr Smith and Dr Reisinger both say that there is no one right way to determine what 1.5°C degrees requires for an individual country. It is true that SR1.5 does not attempt to allocate what is required at a global level to states or regions and there are lots of choices and value judgements involved in doing so. However, this does not validate the Commission's approach.
>
> **Section 13.2 of the Commission's supporting evidence is clear that the minimum level recommended for the NDC is based on mathematical interpretation** of the SR1.5 report's global pathways. As noted by Dr Reisinger's affidavit, paragraph [65] there are many value judgements applied. Here, the value judgement being applied is that the medial SR1.5 global pathway should be employed as a starting point. Accepting this choice, the global pathway is still not applied in a mathematically correct way by the Commission.

361. Section 13.2 of the Commission's supporting evidence however is to the contrary.[317] The Commission provides a high level description of its analytical process, confirming at 13.2.2 that: "we have developed comparator NDCs to help us assess the compatibility of our existing NDC with the global effort…" The Commission is not describing a "mathematical interpretation" in this section. Notably, Professor Forster also appears to take no account of Matthew Smith's detailed evidence as to the analytical process that was undertaken, which is explicit that this was not a mathematical exercise. If Professor Forster is to seriously challenge the 'internal consistency' of the modelling exercise undertaken by the Commission, at a minimum he needed to have engaged with what that modelling exercise actually was.

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316 Forster 2 at [13] and [14], see also at [2].

317 Advice Bundle at 914 – 916.

362. Even if that objection is put to one side, at most this is one expert's view on a technical matter within the expertise of the Commission. Professor Forster's view is that there is an internal inconsistency. The Commission's clear and well informed view is that there is not, expressly confirmed by Matthew Smith's evidence in this proceeding. Dr Reisinger for the Crown is of the same view, as is Dr Olia Glade.

363. Notably, Professor Forster *himself* in his reply evidence acknowledges the "widely respected expertise" of Dr Glade, Dr Reisinger and Matthew Smith.[318] He simply disagrees with them on this point.

364. This difference in view cannot be resolved by the Court in the context of an application for judicial review. It also does not demonstrate an incontrovertible error, nor provide any basis for a finding of irrationality.

365. Professor Forster in his reply affidavit also goes well beyond this issue into a critique of the merits of the Commission's overall approach, and also raises a number of new matters that the Commission has not had the opportunity to address. The Commission submits that the majority of that reply evidence is not admissible. More generally, Professor Forster's evidence is also contested in more detail by Matthew Smith,[319] Dr Reisinger for the Crown,[320] and Dr Olia Glade.[321]

Other matters raised in LCANZ submissions on ground one

The so-called definition dispute

366. Contrary to LCANZ submissions at [211.a] and [213], there is no 'definition dispute'. The Commission's evidence did not suggest that LCANZ had misunderstood the meaning of the terms 'gross' and 'net' in climate change accounting.

367. Matthew Smith's evidence in reply to Dr Gale's evidence simply pointed out that *Dr Gale* appeared not to understand the meanings of these terms as they are used in climate change accounting and in the CCRA itself.[322] That criticism remains sound, as outlined above.

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318 Forster 2 at [4]

319 Smith generally in response to all LCANZ witnesses on this point at [96] – [113], and with additional comments in response to Professor Forster at [127] – [140].

320 Dr Reisinger generally in response to all LCANZ witnesses on this point: Reisinger 1 at [60] – [70], and with an additional comment on Professor Forster's evidence at fn 12.

321 Dr Glade generally in response to all LCANZ witnesses on this issue at [22] – [45] and with additional comment on Professor Forster's evidence at [63] – [66].

322 Smith at [30], responding to Gale 1 at [8].

368. The IPCC's unusual (in international climate accounting terms) description of 'gross' in its report (which deals only with net-net pathways) also does not affect the evidence of Matthew Smith and Dr Olia Glade as Professor Forster possibly suggests.[323] Professor Forster is incorrect when he states that the IPCC Report has a different definition of 'net' emissions than the Kyoto accounting rules: the IPCC Report has an unusual approach to describing gross emissions but its definition of net emissions (as including LULUCF) is orthodox, and the relevant commentary of these witnesses is directed to those net-net pathways and remains on point.

LCANZ' critique of gross-net accounting

369. LCANZ at [222] – [223] refer to the evidence filed by the Commission and the Crown responding to the LCANZ' witnesses wide-ranging critique of gross-net accounting. LCANZ say that this evidence is "not relevant to the alleged error." The Commission agrees, and reiterates its concern that it should not have been put to the cost of responding to this extensive array of irrelevant evidence from LCANZ witnesses (especially in terms of staffing resources in the context of an intensive statutory work programme).

370. LCANZ however then goes on to express over five pages of submissions its view that gross-net accounting is inappropriate and undesirable, and that it gives a 'false sense of ambition' (noting as above that Professor Forster, giving evidence for LCANZ, is clearly of a different view). These arguments are a direct challenge to the target accounting principles agreed by the States Party to the Kyoto Protocol, a challenge to the substance of the government's decisions in setting the NDC and the 2050 zero carbon target, and a challenge to the substantive Advice of the Commission on the merits of this very issue. These are matters well outside the scope of judicial review.

*The Commission did **not** advise that the NDC should allow "CO_2 emissions to more than double"*

371. The Commission's Advice on the NDC stated that to be compatible with global efforts under the Paris Agreement to limit the global average temperature increase to 1.5°C above pre-industrial levels, the NDC should reflect a *reduction* in emissions of much more than 36% below 2005 gross levels by 2030, with the likelihood of compatibility increasing as the NDC is strengthened further.[324]

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323 Forster 2 at [16].

324 Advice Bundle at 373 – 374.

372. LCANZ however say that the Commission's Advice was that the NDC should allow "a *doubling* of net CO_2 emissions between 2010-2030", the polar opposite of the Advice actually given. LCANZ then note that the IPCC pathways indicate that global emissions must halve by 2030, and say "it is logically impossible to both claim to be following the 2018 Special Report pathways and have net CO_2 and overall net emissions increasing over this period. These internal contradictions are caused by wrongly applying the net reduction rates to a 2010 gross CO_2 starting points."

373. These are not "internal contradictions", and this claim of patent irrationality has nothing to do with an alleged mathematical error by the Commission. LCANZ' extraordinary claim that the Commission's advice allows emissions to double is based solely on its 'recalculation' of the NDC advice using the national inventory net-net approach discussed above at paragraphs [74] – [106]. In other words, all LCANZ has done is re-introduce the repeating forestry cycle that is excluded under target accounting. Just because of where that cycle happens to be in the decade 2020 – 2030, the actual and real sustained emissions reductions over that period reflected in the NDC advice are – under LCANZ' approach – drowned out by this cyclical variation.

374. LCANZ claims here are misleading and substantively misrepresent the Commission's Advice.

"If all countries properly applied the "global averages" in the IPCC Report ….

375. LCANZ submit at [254] that "If all countries properly applied the "global averages" identified in the 2018 Special Report" on a net-net basis "then the total net emissions will add up as envisaged in the Special Report", but if others followed New Zealand's approach the numbers "will not add up".

376. As outlined at paragraph [150] above, this conceptualisation of the IPCC pathways being 'applied' at a national level is wrong, as confirmed by the qualified experts on all sides. Further, as outlined above, there is no concept of each State party doing some sort of averaged share of the global pathways as its contribution to the global effort, either in the IPCC Report or the Paris Agreement itself.

377. In addition, as LCANZ acknowledge, a number of other countries have adopted NDCs based on a gross-net approach.[325] This includes the European Union and its 27 member states, as well as Norway, Japan, Switzerland, Canada and South Korea.[326]

378. LCANZ' views of what the IPCC global pathways require is not in accord with either expert views or international expectations.

379. It is stating the obvious that climate change response is a zero sum game: if one party does not do enough, then other parties will need to do more if the global goal is to be reached. That truism does not however translate into any 'averaging' requirement, nor does it tell us anything about what each country is required to do to meet its obligations under the Paris Agreement or as a good global citizen.

LCANZ counterfactual is misconceived

380. LCANZ and its witnesses appear to be working on the assumption that the counterfactual to the Commission's alleged mathematical error would be that the Commission would have to effectively set a net-net NDC, which LCANZ – by combining that with a national inventory reporting approach – say would have been more ambitious than an NDC set on a gross-net basis using target accounting.

381. In other words, LCANZ say that *if* the Commission wanted to use the IPCC global pathways as a comparison reference for the NDC, those pathways required the NDC to be set on a net-net basis, so the Commission would have to convert the NDC a net-net basis (and apparently using the national inventory reporting approach as well[327]), resulting in a new NDC and advise the government accordingly. Simply to keep the maths straight.

382. However, the dramatic consequences of that approach – including that it would involve a fundamental change New Zealand's target accounting approach that it has followed since 2008, override the government's decision to set the NDC on a gross-net basis without good reason, and reintroduce the forest cycles that had been excluded for very good reasons under the Kyoto Protocol, makes this counterfactual extremely unlikely.

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325 LCANZ submissions at [212].

326 See Smith at [50]; Brandon at [45]; Plume at [63]; Reisinger 1 at [49]; and the advice given by officials to the Minister on the methodologies for defining and accounting for New Zealand's NDC: Reisinger 1, exhibit AR-4 at [47].

327 LCANZ do not explain how the national inventory reporting approach comes into play in this context, as the proposed shift from target accounting to a national inventory approach does not seem to be connected to the alleged mathematical error in ground one.

383. The Commission was clear that its comparator exercise would not be useful if it meant changing the fundamental features of the NDC set by government.[328] This is basic: the point of a comparator is to allow one thing (the NDC set by government) to be compared with or benchmarked against another thing (comparator NDCs modelled from the IPCC global pathways). The exercise would be pointless if the item being assessed had to be altered to make the comparison valid.

384. As already outlined above, it is also clear that the Commission was free to approach this task of advising on the compatibility of the NDC with the 1.5°C goal in any way it saw fit.

385. If the Court accepted LCANZ' proposition that the Commission made an error of algebra and (as LCANZ appear to argue further) that it is in principle mathematically invalid (irrational) to use the net-net IPCC global pathways to assess a gross-net NDC, then the most likely outcome is that the Commission would adopt an entirely different approach to considering the question of compatibility of the gross-net NDC with the 1.5°C goal, as the IPCC pathways would not be useful for that purpose. The Court would have no basis to direct the Commission otherwise, and the Commission does not understand LCANZ to contend otherwise.

Stand-alone JR challenge to Commission's NDC advice is moot

386. The government has since reset the NDC based on its own assessment of the Commission's advice, and having regard to a wide range of other matters.[329] LCANZ is separately challenging the Minister's decision in that regard and the Commission accepts that if the Court considers that the Minister's communication of the NDC to the Conference of the Parties is justiciable, then the lawfulness of the Commission's advice may be relevant to the challenge to the Minister's decision.

387. This *separate* challenge to the Commission's NDC advice however (even if justiciable) is accordingly of historic interest only and effectively moot. The NDC advice was in response to a specific request from government and the Commission has no ongoing role in reviewing the NDC, unless the government makes a further request for advice under s 5K. Should that occur in future then depending on the terms of the request it will be up to the Commission whether – in the circumstances and in light of the science

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328 Smith at [109] – [110].

329 See the discussion in Dr Reisinger's affidavit, in particular: Reisinger 1 at [11] – [69], and the advice provided by officials to the Minister on the NDC (exhibits AR-2 and AR-4).

and understanding of the time – it adopts a similar approach or an entirely new approach to assessing the compatibility of the NDC with the goals of the Paris Agreement. The point at issue in ground one is very specific to the 2021 Advice has no significance for future advice.

The error alleged in the NDC Advice has no relevance to the Advice on the budgets

388. LCANZ' position that the 'error' in the NDC advice pleaded here, if established, then in turn affects the Advice on the budgets is not correct. LCANZ appear to base that on the proposition that the budgets set under the CCRA had to match the NDC (and hence if the NDC was wrong, the budgets were wrong). However, the NDC and the budgets are separate and distinct, and there is no requirement (or expectation) that they align. See paragraphs [420] – [422] and [512] – [517] below.

389. Alternatively, LCANZ may be arguing that if the budgets were to be set by a direct application of the IPCC global pathways (which its qualified experts agree they should not and could not be, and which is not how the Commission set the budgets) then the budgets would also have to be set on a net-net (rather than gross-net) basis. However, that demonstrates a basic misunderstanding. Budgets are not pathways or point targets (see Annex 1), and the concept of gross-net or net-net (which compares emissions in one year to those in another) simply does not apply. Budgets merely set the level of net emissions allowed in the budget period, as (in this case) a single figure of $MtCO_2e$.

PART F – LCANZ GROUND 2: ERROR IN APPLYING THE PURPOSE STATEMENT

390. Ground two is a direct challenge to the proposed budgets, claiming that the Commission misunderstood the statutory framework and was obliged to recommend much deeper emissions cuts in the proposed budgets. The claim is framed as a statutory interpretation issue but, as demonstrated by LCANZ' evidence and submissions, it is in essence an attack on the merits of the Commission's judgement on the core issue of "how fast" emissions could and should be cut in the first three budget periods.

391. The Commission's position is that LCANZ' proposed interpretation of the statutory framework is wrong, and that it properly understood its task.

LCANZ' claim

392. LCANZ read s 5W(1) (part of the purpose provision applying to the budgets and the emissions reduction plans) as specifying that the 2050 targets and the contribution towards the global 1.5°C goal are separate and stand-alone objectives that must be 'met' by the Minister in setting the budgets and by the Commission in advising on the budgets.

393. LCANZ' claim here is not that the Commission failed to *have regard to* all aspects of the purpose of the Act and the budgets (which it clearly did), nor that the Advice did not *reflect* all aspects of the statutory purpose (again, which it clearly did). Rather, LCANZ reads into the statutory purpose in s 5W an entire analytical sequence, which it says that the Commission *was obliged in law* to follow.

394. LCANZ is very specific in its submissions as to what it says the Act required the Commission to do.[330] It says that the Commission erred in law in not taking the following steps, in order:

394.1 **Step one**: The Commission was required to undertake a mechanical exercise of 'applying' the IPCC net-net global pathways to reach domestic budget reduction figures that represented the 'average' contribution to the 1.5° goal, focussed on the shorter term horizon to 2030.[331]

394.2 **Step two**: Only when that exercise was complete, then some of the mandatory factors in sections 5M and 5ZC should be considered to "to

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330 LCANZ submissions starting at [298].

331 LCANZ submissions at [299] – [300].

determine whether national capacity and international equity required greater (or lesser) reductions from this baseline amount".[332] In other words, LCANZ is saying that in advising on the budgets, the Commission itself had to decide what New Zealand's NDC ought to be. LCANZ is explicit on this.[333] It also says that the Act required the Commission to undertake the same sort of assessment that officials in the Ministry for the Environment undertook in advising the government on resetting the NDC, including analysis of a range of processes to allocating contributions between countries.[334]

394.3 LCANZ is explicit that the Commission was required to ask and answer the question "what would be an equitable contribution relative to other countries", and suggests it was an error of law for the Commission to regard that as a matter for the government to decide.[335] It appears that the answer to this question may allow the budgets set under Step one to be adjusted, though LCANZ assumes this would be an adjustment towards deeper cuts given New Zealand's status as a developed country.[336]

394.4 In other words, LCANZ say that the Commission was required to set a new NDC for New Zealand by direct application of the IPCC global pathways, and then set budgets to match that NDC on the basis that the NDC would be met in full by domestic emissions reductions. LCANZ say that this necessary because "offshore mitigation does not fulfil the obligation under the Paris Agreement to pursue domestic mitigation measures."[337]

394.5 **Step three**: Then and only then can the Commission consider the other matters in ss 5M and 5ZC, but only in a limited way. LCANZ state a clear requirement that an adjustment to the budget set through Steps one and two could only be justified if there is an "actual inconsistency". LCANZ define that as "i.e. if the process [in Steps one and two] resulted in a figure that the Commission found on the evidence was not 'likely to be technically and economically achievable' (**ie not possible**) – then the Commission would have

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332 LCANZ submissions at [301].
333 LCANZ submissions at [303].
334 LCANZ submissions at [301] – [305].
335 LCANZ submissions at [310] – [311].
336 LCANZ submissions at [393(b)].
337 LCANZ submissions at [144] and [344], noting that this contrary to the express provision in the Paris Agreement allowing for offshore mitigation in art 6. See also Plume at [87] – [90].

to have considered whether this justified a lower contribution …".[338] LCANZ qualify even that high threshold of "not possible" by reiterating that there does not need to be *any* certainty that budgets could be met.[339]

394.6 **Step four**: the Commission was obliged to cross-check whether the budgets reflected New Zealand's highest possible ambition in accordance with the Paris Agreement, applying 'some sort of' cost benefit analysis process.[340]

395. This is a great deal of prescriptive analytical process to read into a statutory purpose. It is however also notable what LCANZ' process omits. There is for example, no reference in this analytical scheme to the 2050 target itself. This presumably reflects LCANZ' view that the 2050 target set by Parliament is inadequate to meet the IPCC global pathways, and thus is not going to have any operative effect in setting the budgets.

396. Nor is there reference to public participation and consultation, or Te Tiriti o Waitangi, or many of the mandatory considerations listed in ss 5M and 5ZC. As LCANZ confirms in its pleading,[341] its position is that the considerations in these provisions *cannot* be used to 'override' (ie adjust) the budgets necessary to give effect to what LCANZ say should be New Zealand's NDC determined by its version of a direct application of the IPCC global pathways. LCANZ in submissions says that these considerations cannot 'alter' the required budgets, but "they are potentially relevant to the pathway that should be adopted".[342] In other words, in LCANZ' view the majority of the mandatory considerations are relegated from being central to setting the budgets, to potentially influencing the emissions reductions plan on how to give effect to the budgets.

Outline of submissions in response

397. While the Commission does not agree with LCANZ' description in its submissions of the process that the Commission actually undertook, it entirely agrees that it did not follow the prescriptive process above. It says that the Act did not require it to do so. It also strongly doubts that following LCANZ' analysis to set the budgets would be lawful under the Act.

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338 LCANZ submissions at [305].

339 LCANZ submissions at [306]. This appears to accept Dr Carr's criticism that LCANZ seems to expect the Commission to propose budgets based on 'fairy dust and floo powder': Carr at [100.1].

340 LCANZ submissions at [329] – [331].

341 Second Amended Statement of Claim at [98] – [99].

342 LCANZ submissions at [282].

398. These submissions respond to LCANZ' argument as follows:

398.1 First, the Commission addresses a fundamental point that is left somewhat obscure in LCANZ' submissions: there is no requirement in international law that domestic budgets are to be set by applying the IPCC global pathways, and no expectation that countries would so. LCANZ' proposed approach represents only its own policy view on how budgets should be set, not international law or practice.

398.2 Second, what the Commission actually did in its Advice is briefly outlined. The Commission (correctly) took the view that the 2050 targets and the purpose of contribution to the 1.5°C goal were broadly aligned, and that at a high level meeting the former would be giving effect to the latter. It also however separately and directly considered how its budgets would align with that 1.5°C purpose and was satisfied that the purpose was met.

398.3 The Commission was also clear that in this first budget round, it was neither required nor appropriate to set the budgets to align with the NDC.

398.4 Third, what the Act says. The Commission says LCANZ' approach is not to be found in the provisions of the Act. Further, it would be contrary to what that Act does provide, and defeat the intended operation of the statutory framework.

398.5 Fourth, the legislative history. This appears to be the main basis for LCANZ' proposed interpretation of s 5W(1) as bringing in this prescriptive analytical process. The Commission's position is that there was no intention by Parliament to constrain the Commission's analytical approach or dictate the specific content of each budget. LCANZ' proposed 'interpretation' is not supported by the legislative history, and is in fact contrary to Parliament's clear intention.

398.6 Fifth, specific summary submissions are addressed to each step of LCANZ' 'interpretation' set out above, and its reliance on the Supreme Court's decision

in *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* is discussed.[343]

398.7 Sixth, the Commission responds to the various other alleged errors that LCANZ has included in its submissions under this ground of review.

LCANZ' proposed approach does not reflect international law or practice

399. It is important to be very clear that LCANZ concede that the Paris Agreement does not require New Zealand to set its NDC (or its domestic budgets) at any particular level or with reference to any benchmark or guidance.[344] The obligations under the Paris Agreement are to *communicate* a nationally determined contribution. As outlined above, that position has also been confirmed in numerous judicial decisions, including in New Zealand in *Thompson v Minister for Climate Change*.[345]

400. Notably, an argument that compliance with the Paris Agreement required governments to take urgent action in the short-term was considered and rejected by the England and Wales High Court on the basis that it was not for the Court to imply such an obligation into an international treaty: *Elliott-Smith v Secretary of State for Business, Energy and Industrial Strategy*.[346]

401. It is also clear, as discussed above paragraphs [144] – [152], that neither the Paris Agreement nor the IPCC itself requires that the IPCC global pathways be applied to set

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343 *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2021] NZSC 127, LBA at 202 – 331.

344 LCANZ Submissions at [69] – [71].

345 *Thomson v Minister for Climate Change* [2017] NZHC 733, [2018] 2 NZLR 160 at [139], LBA at 192). See also *R (Plan B Earth) v Secretary of State for Business Energy and Industrial Strategy* [2018] EWHC 1892 (Admin) at [30], [37] – [39] and [41] (permission to appeal declined by the Court of Appeal: *R (Plan B Earth and Others) v Secretary of State for Business Energy and Industrial Strategy* [2019] C1/2018/1750 (Civ); and *R (Friends of the Earth Ltd) v Heathrow Airport Ltd* [2020] UKSC 52, [2021] PTSR 190 at [70] – [72] and [122].

346 *Elliott-Smith v Secretary of State for Business, Energy and Industrial Strategy* [2021] EWHC 1633 (Admin), [2021] PTSR 1795 where the Court considered an argument that the Paris Agreement (as a relevant consideration to the decision at issue) "includes as an important component … a requirement to take urgent action, and that in the present case the defendant focussed simply on the longer term and achieving net zero, not the need for short term urgency in limiting greenhouse gases" ([32]). The Court discussed this at [49] – [58], recording (at [55]) that: "The real substance of the claimant's contentions relates to their interpretation of the Paris Agreement and what they contend is the element of urgency contained in particular within article 4.1 for the short to medium term. In my view it is not for this court to resolve definitively any questions of construction in relation to an unincorporated international treaty … The Paris Agreement is an international instrument to which 197 states are parties. It contains a mechanism for enforcing the implementation of the Agreement … along with other mechanisms for dispute resolution. … At most … the court should assess whether or not the defendants' view of the Paris Agreement was one which was tenable …". See also [132].

a country's nationally determined contribution under Paris, or its domestic emissions reductions. On the contrary, the IPCC expressly disclaims that. LCANZ' own experts who are qualified in this area agree with the Commission that this is not a requirement and further that it is also not appropriate or feasible. The expert consensus is that the global pathways are not designed for this purpose and not fit for this purpose.

402. LCANZ accordingly cannot take the position that the Paris Agreement requires New Zealand to set its NDC or its domestic budgets by directly applying the IPCC global pathways. This is not a requirement of international law. Nor is it an expectation from the global community, nor is it accepted practice.

403. This idea – that the domestic budgets should be set by alignment with the IPCC global pathways – is simply LCANZ' policy proposal.

How the Commission actually approached its task

404. The Commission's process is briefly described above,[347] and in more detail in the Advice at Chapter 5.[348] The Advice describes the emissions budgets as "chart[ing] the course for stepping down greenhouse gas emissions over time to meet the emissions reduction targets as set out in the Climate Change Response Act".[349]

405. The Advice acknowledges that the world, including Aotearoa, "needs to reduce emissions *as quickly as possible* to limit warming to 1.5°C and reduce the severity of climate change impacts".[350]

406. The Commission's budgets reflect its informed assessment and expert judgement of what is "as quickly as possible" for Aotearoa in the first three budget periods. As noted above, the question of "how fast" New Zealand must move in its transition to a low emissions economy was the key issue in the Commission's Advice.

407. A high level summary of the stages of developing the Commission's advice is provided in Figure 4.2 in the Advice, set out above but repeated here for convenience:[351]

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347 See paragraphs [62] – [70] above.
348 Advice Bundle at 76 – 101.
349 Advice Bundle at 76.
350 Advice Bundle at 71. See also Advice Bundle at 91 – 92 at Box 5.4, which summarises the Commission's analysis of the benefits and risks around pace.
351 Advice Bundle at 51.

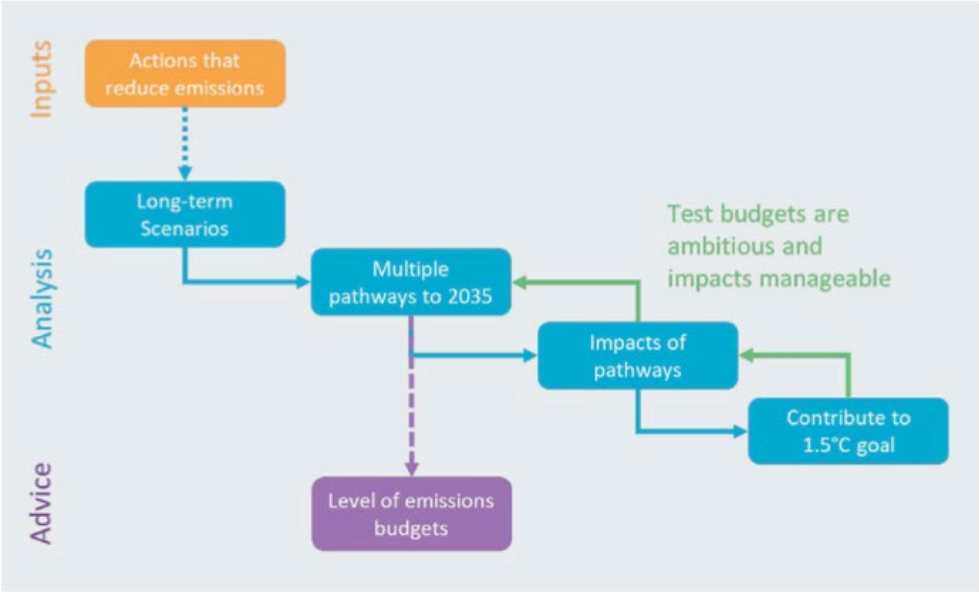

Figure 4.2: Stages of analysis for developing the Commission's advice.

408. In developing its advice on emission budgets, the Commission was fully aware of the importance of the 1.5°C goal as well as the ultimate target of the 2050 zero carbon. A fundamental theme of the Advice was that emissions budgets must be compatible with limiting warming to 1.5°C. Part of the design process for the proposed emissions budgets was testing against the modelling from the SR1.5 models to ensure that they were a "sufficient contribution to the global 1.5°C effort".[352] Contributing to the global effort was also part of ensuring that the budgets were sufficiently "ambitious" – one of the Commission's three key criteria.[353]

409. Discussion of the global effort to limit warming to 1.5°C runs through the Advice and its supporting volumes. Illustrative examples are set out in Annex 2 to these submissions.

The 'rule of thumb': global net emissions to cut by half by 2030

410. LCANZ in submissions at [4] refers to the 'useful rule of thumb' that global net emissions cut by half by 2030:

> Since the [2018 IPCC Special Report], it has been widely accepted that, in broad terms, global net emissions in 2030 must be half of what they were in the 2005/2010 period. This will require decarbonisation at an unprecedented rate and significant economic and social change.

352 Advice Bundle at 64 and 72 – 75.
353 Advice Bundle at 76.

411. The Commission recorded in its Advice that this is a useful rule of thumb for communicating the need for action, but it is a simplification of what the IPCC advised is actually required, noting:[354]

> It is often said that global emissions must halve by 2030 from 2010 levels to limit warming to within 1.5°C above pre-industrial levels. This is a useful rule of thumb, but is a simplification of the actual emissions reductions assessed by the IPCC. In the global 1.5°C pathways, net carbon dioxide emissions are modelled to reduce by around 50% by 2030. Emissions of other gases are modelled to reduce more slowly.

412. It is also important to be clear that this 'rule of thumb' is *global*, and the IPCC did not intend this to be a 'rule of thumb' for individual countries, as discussed above.

413. However, and nonetheless, the Commission's proposed budgets meet that challenge, if implemented by effective government and community action. Under the Commission's demonstration pathway, net CO_2 would reduce to 55% below gross levels in 2010 by 2030[355] (or on a net-net approach would reduce to 50% by 2033[356]). In other words, New Zealand's net CO_2 emissions will drop to half of what they were in the 2005/2010 period by the early 2030s. For all long lived gases (ie not biogenic methane) New Zealand would reach 50% drop in emissions by around 2034/35.[357]

414. The equivalent rule of thumb for methane from agriculture (the closest IPCC pathway equivalent to biogenic methane) is between -11% and -30%. The Commission's proposed budgets would see biogenic methane reduce by -12% by 2030.[358]

415. The Commission also undertook an approximate comparison of its budgets to the IPCC modelled global pathways in Chapter 9 of the Advice, including the following summary table:[359]

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354 Advice Bundle at 207.

355 Advice Bundle at 209, Figure 9.4.

356 See the Commission's published scenario and paths dataset available at <www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/modelling/>.

357 See the Commission's published scenario and paths dataset available at <www.climatecommission.govt.nz/our-work/advice-to-government-topic/inaia-tonu-nei-a-low-emissions-future-for-aotearoa/modelling/>.

358 Advice Bundle at 28, 93, 209 and 894.

359 Advice Bundle at 208.

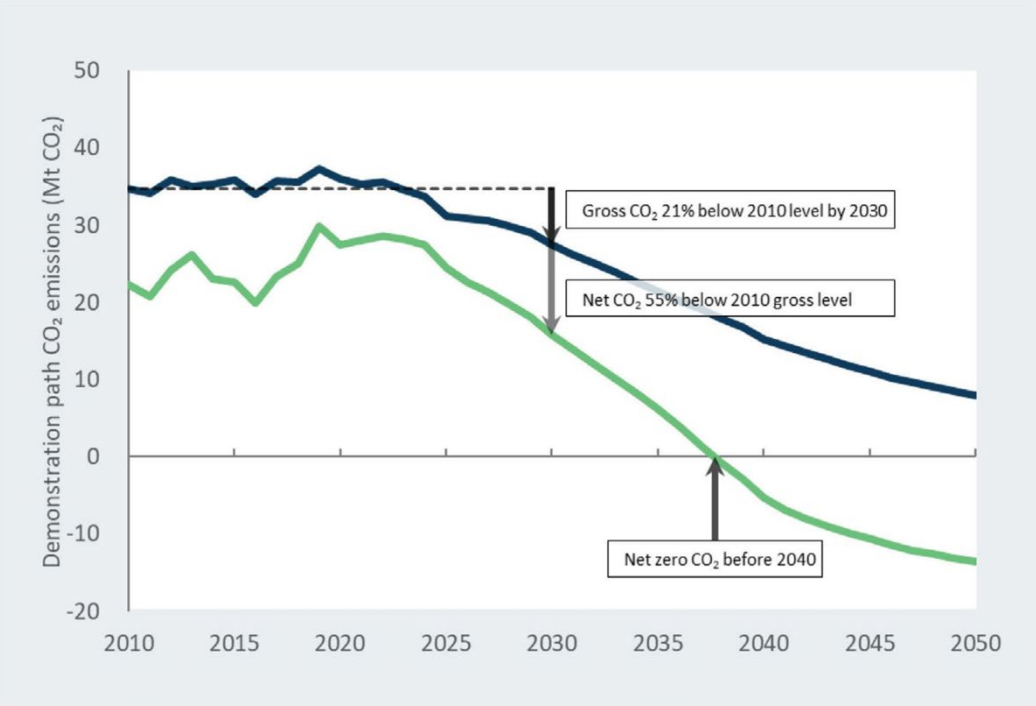
Table 9.1: Reductions in emissions between 2010 and 2030, by gas, in IPCC pathways and in our demonstration path. The reductions for net carbon dioxide are calculated using a gross-net approach. See Chapter 3: How to measure progress of the 2021 Supporting Evidence for more detail on this approach and the basis for its use. We have used the 'interquartile range' of the IPCC's pathways. The interquartile range represents the middle 50% of modelled reductions. This gives a more conservative, but also more likely, range for the emissions reductions that are needed.

	Percentage change between 2010 and 2030	
	IPCC	**Demonstration path**
Net carbon dioxide emissions	-40 to -58 %	-55 %
Agricultural methane emissions	-11 to -30 %	-8 %
Total biogenic methane	-	-12 %
Agricultural nitrous oxide emissions	+3 to -21 %	-3 %

Source: IPCC – Special Report on 1.5°C, Summary for Policymakers, Table SPM.3b. Integrated Assessment Modelling Consortium data, hosted by IIASA.

416. The proposed budgets – if delivered – would also put New Zealand in line to achieve net zero CO_2 by 2038, ahead of the range in the IPCC pathways of 2045-2055.[360]

[36] Figure 9.4 shows that Aotearoa reaches net-zero carbon dioxide emissions by 2038, ahead of the range in the IPCC pathways of 2045-2055.



417. LCANZ in submissions say that all this is wrong, and that these figures "are a reflection of the mathematical error identified in ground one (and amplified by expressing the

[360] Advice Bundle at 209.

change using the MAB approach)". LCANZ say that "expressing the change in net:net terms" (combined with using national inventory reporting) the very same demonstration path would show a 310% *increase* in emissions, which "cannot be consistent with the 2018 Special Report."[361]

418. As outlined above, LCANZ is essentially engaging in an accounting artifice to present a misleading 'headline' that bears no relationship to the Commission's Advice. Recommending an emissions reduction budget that provided for New Zealand to actually *increase* its emissions in real terms by 310% would be absurd. The Court should be very slow to infer that a body of this level of specialist expertise would have – on the core matter before it – engaged in such perverse conduct.

419. The key is of course "in real terms": LCANZ are simply adding in the cyclical effect of established forestry, which at the moment makes our emissions look higher, but in a few decades will make them look extremely low – with no change at all in New Zealand's actual emissions activity. *In real terms*, as the demonstration pathway graphically demonstrates in sector after sector of the economy, the Commission's budgets require the New Zealand economy to change its conduct and *reduce* emissions.

Budgets not set to match the NDC

420. The Commission correctly understood that its proposed emissions budgets were not required to align with the NDC set by government, and also took the view that in this first budget period, such an alignment would not be appropriate.

421. This is discussed in detail in the Advice. The Commission recognised that the NDC and budgets are fundamentally different.[362] Basic differences include the fact that domestic budgets must be met as far as possible though domestic action,[363] while the NDC can be met through a combination of domestic emissions reductions as well as offshore mitigation.[364] The NDC also has a different starting point from emissions budgets as budgets start from where we actually are in terms of net emissions,[365] while the NDC target must represent a progression in ambition on previous targets.

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361 LCANZ submissions at [320] – [321].
362 See also Carr at [108].
363 Climate Change Response Act 2002, ss 5W(b) and 5Z(1), LBA at 939 and 940.
364 Advice Bundle at 376 and 380.
365 Carr at [107].

422. The Commission specifically discussed the 'gap' between the minimum recommended level of emissions reductions it advised for the NDC and the recommended emissions budgets, in response to submitters who proposed setting emissions budgets at the same level as the NDC.[366] The Commission explained that trying to meet the current NDC (or an updated NDC) solely through domestic action at this early stage in New Zealand's transition to a low emissions economy would be highly challenging, and risk severe social and economic impacts on New Zealand communities, people and businesses, have a legacy impact on the quality of life of younger generations and disproportionately impact Māori.[367] The Commission considered that the impacts on people and communities of setting these first three emissions budgets at the same level as the NDC would be unmanageable.[368] The Commission did note however that, depending on how technologies are developed and deployed, there is a possibility that this gap could significantly reduce.[369]

The relevant provisions Zero Carbon Amendment Act

The purpose of the Act

423. The starting point is the title of the Amendment Act, which confirms the primary focus was to legislate to set New Zealand's 2050 zero carbon target. That target – and how New Zealand is going to reach it – is the central feature of the Amendment Act[370]

424. The Zero Carbon Amendment Act amended the purpose of the CCRA by adding a new provision at s 3(1)(aa), in addition to the relevant purpose at (a). Section 3 now relevantly provides:[371]

> (1) The purpose of this Act is to –
>
> (aa) provide a framework by which New Zealand can develop and implement clear and stable climate change policies that –
>
> (i) contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels; and

366 Advice Bundle at 380.

367 Advice Bundle at 378 – 380.

368 Advice Bundle at 380.

369 Advice Bundle at 379 and 384. This would be due to New Zealand being in a position to meet a larger portion of its NDC though domestic action.

370 See for example Minister Shaw's speech to the House (in Committee) 6 November 2019 on the 'four key elements' of the Act ((6 November 2019) 742 NZPD 14820, LBA at 1275) and his discussion of the origins of the Bill being the campaign of Generation Zero in his third reading speech ((7 November 2019) 742 NZPD 14892, LBA at 1311).

371 LBA at 899 – 901.

(ii) allow New Zealand to prepare for, and adapt to, the effects of climate change.

(a) enable New Zealand to meet its international obligations under the Convention, the Protocol, and the Paris Agreement, including (but not limited to) –

(i) its obligation under Article 3.1 of the Protocol to retire Kyoto units …

(ii) its obligation to report to the Conference of the Parties via the Secretariat under Article 12 of the Convention, Article 7 of the Protocol, and Article 13 of the Paris Agreement.

425. The overarching purpose of the Zero Carbon Amendment Act is not to directly give effect to the Paris Agreement or New Zealand's other international obligations in domestic law.[372] It is to "provide a framework by which New Zealand can develop and implement clear and stable climate change policies". It is the climate change policies and their implementation that are to contribute to the global effort under the Paris Agreement and allow New Zealand to prepare for and adapt to the effects of climate change. The Act facilitates (enables) New Zealand to meet its international obligations, but it does not incorporate them into domestic law.

The 2050 target

426. Neither this purpose statement in s 3 nor the purpose in s 5W(1) distinguish between the 2050 target and the Paris Agreement goals, and in fact neither mention the 2050 targets at all, despite the target featuring in the name of the Amendment Act and being the focus of the first operational subpart after the establishment of the Commission. The reasonably clear inference is that the 2050 target was seen as part of the contribution to the global effort towards 1.5°C, and one of the primary means of giving effect to this purpose.[373]

427. It is also important to note that the Zero Carbon Amendment Act set a 'split gas' target, meaning that the target is different depending on the type of greenhouse gas. Parliament actually set three targets – two for biogenic methane and one for all other greenhouse gases (methane is a short-lived greenhouse gas and biogenic methane refers to methane produced from plant and animal sources: essentially New Zealand's

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372 See generally the discussion in *Helu v Immigration and Protection Tribunal* [2015] NZSC 28, [2016] 1 NZLR 298 at [143] – [145].

373 This is confirmed in the legislative materials, discussed below.

waste and agricultural sectors[374]). Importantly in the present context, one of those targets is an interim target, aimed to ensure a specific level of reductions by 2030.

428. The three targets are:[375]

428.1 For all greenhouse gases other than biogenic methane, zero by 1 January 2050 (these gasses are measured in 'carbon dioxide equivalent' units – hence the Zero Carbon Amendment Act[376]);

428.2 For biogenic methane:

(a) 10% less then 2017 emissions by 2030;

(b) 24% - 47% less than 2017 emissions by 2050.

429. Parliament expressly considered setting interim 2030 targets on the way to the 2050 target to mandate a shorter term pace of change, and concluded that it would do so only in relation to biogenic methane.[377]

The purpose and functions of the Commission (which do not include setting the NDC)

430. Section 5B sets out the purposes of the Commission, being:

> (a) to provide independent, expert advice to the Government **on mitigating climate change** (including through reducing emissions of greenhouse gases) and adapting to the effects of climate change; and
>
> (b) to monitor and review the Government's progress towards emissions reductions and adaptation goals.

431. The functions of the Commission are set then out in s 5J.

432. Importantly here, the Commission's focus is firmly directed to the domestic sphere. This domestic focus is reinforced by s 5H which sets out the required areas of expertise of Commission members. None of these areas of expertise focus on the Commission being equipped to determine (let alone second-guess a government's decision on)

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374 Ministry for the Environment "Methane and other major greenhouse gases" (13 April 2021) < environment.govt.nz/guides/methane-and-other-major-greenhouse-gases/>.

375 Climate Change Response Act 2002, s 5Q, LBA at 936 – 937.

376 See the definition of "emissions budget" in s 4: "means the quantity of emissions that will be permitted in each emissions budget period as a net amount of carbon dioxide equivalent", LBA at 909.

377 See also legislative history discussed below, and noting especially the Ministry for the Environment *Departmental Report on the Climate Change Response (Zero Carbon) Amendment Bill 2019* (September 2019) **[Departmental Report]** at 60, LBA at 1597, discussing submitters views that there should also be a 2030 interim target for 'all other gases', including to "Allow early emissions reductions to be prioritized as a contribution to the global response". That submission was not adopted.

LCANZ' proposed step 2: "what would be an equitable contribution [for New Zealand to make] relative to other countries" – in other words, what New Zealand's NDC should be.[378]

433. The Commission is only entitled to express a view on the adequacy of an NDC set by the government if requested to do so under s 5K (as happened in the present Advice).[379] Even then, the Commission's advice would be limited to the terms of reference of the request under s 5K. The Act also 'carves out' of the Commission's statutory independence any advice on New Zealand's NDC: under s 5O the Minister is permitted to "direct the Commission have regard to Government policy for the purposes of – … (b) providing advice about New Zealand's nationally determined contributions under the Paris Agreement (in line with a report requested under section 5K)."[380]

434. The Act does not deal with how New Zealand sets its NDC at all, other than this reference in s 5O. This reflects the fact that in setting and communicating New Zealand's nationally determined contribution under the Paris Agreement the executive is not acting under the authority or control of Parliament, but rather exercising the Royal prerogative to conduct external affairs. It would be a significant step for Parliament to effectively override that function by not only empowering but requiring the Commission to separately determine what LCANZ say is the correct NDC as part of the process of advising on the budgets.

435. Section 5M sets out the matters that the Commission must consider, where relevant, in any exercise of its function or duties under the Act:

> (a) current available scientific knowledge; and
>
> (b) existing technology and anticipated technological developments, including the costs and benefits of early adoption of these in New Zealand; and
>
> (c) the likely economic effects; and

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378 As is reflected in the Commission's Advice on the NDC where it says that "Science alone cannot determine the share Aotearoa should contribute to [the] global reductions. Reaching a conclusion on this also depends on social and political judgments about international equity. These should be made by the Government of the day…. New Zealand's elected officials need to decide how we want to contribute to the global response": Advice Bundle at 34.

379 The Commission would be acting outside its powers if it purported to undertake a review of this nature on its own initiative: see *Commerce Commission v Telecom Corporation of New Zealand Ltd* [1994] 2 NZLR 221 (CA).

380 Departmental Report at 56, LBA at 1593explains that "in advising on New Zealand's NDC under the Paris Agreement, if the government were to seek advice about this from the Commission … **it would be essential that the Commission had regard to foreign policy objectives**, among its other considerations."

(d) social, cultural, environmental, and ecological circumstances, including differences between sectors and regions; and

(e) the distribution of benefits, costs, and risks between generations; and

(f) the Crown-Māori relationship, te ao Māori (as defined in section 5H(2)), and specific effects on iwi and Māori; and

(g) responses to climate change taken or planned by parties to the Paris Agreement or to the Convention.

436. These considerations do not apply to the Minister's exercise of functions or duties under the Act, reflecting the different roles and functions that the framework of the Act requires.

Reviewing the 2050 target

437. The Act also provides for the Commission to form a view and provide advice on whether the 2050 targets themselves are fit for purpose, which is an important indicator of how Parliament intended the Commission to engage with the level of domestic ambition reflected in the target. Section 5S sets a strict regime: the Commission *must* review the 2050 target when setting the budgets for the period commencing 2036 (ie in 2025[381]), and cannot otherwise review or advise on the target unless the Minister requests it to.

438. Section 5T provides that the Commission may recommend a change to the target following such a review, if there has been a significant change in one of the matters listed (including global action and scientific understanding of climate change), and "the Commission is satisfied that the significant change justifies the change to the target."

439. These provisions demonstrate a number of matters. First, Parliament is protecting the stability and predictability of New Zealand's climate change response (being explicit statutory purposes in sections 3 and 5W) by ensuring that the goal posts do not move unless there are strong reasons to justify that, and that *in any event* change is not even considered before 2025.[382]

440. Second, the Commission's assessment of whether a change is justified must obviously be made by reference back to the purpose in s 5W: the Commission will be assessing whether in light of the significant change in one or more of the listed areas, the 2050 target remains fit for purpose. One of those assessments will be whether the 2050

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381 Climate Change Response Act 2002, s 5X(3)(d), LBA at 939.

382 This intention is also reflected in the legislative history: see Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 2, LBA at 1066; and Departmental Report at 62, 67 and 71, LBA at 1599, 1604 and 1608.

emissions reduction target remains effective to meet the purpose in s 3(1)(aa)(i), as part of the framework to deliver clear and stable climate change polices that contribute to the global effort under the Paris agreement to limit the global average temperature to 1.5°C above pre-industrial levels.[383]

The budgets and emissions reductions plans

441. The provisions directing the preparation of the budgets and the emissions reduction plan are in Subparts 2 and 3. The purpose of subpart 2, 3 and 4 of Part 1B of the Act is set out in s 5W. Part 1B is headed "Emission reduction". Subpart 2 is headed "Setting emissions budgets". Subpart 3 deals with the role of the Commission in advising on the budgets but also includes preparation of the emissions reduction plan. Subpart 4 is about monitoring.

442. Section 5W provides:

> The purpose of this subpart and subparts 3 and 4 is to require the Minister to set a series of emissions budgets –
>
> (a) with a view to meeting the 2050 target and contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels; and
>
> (b) in a way that allows those budgets to be met domestically: and
>
> (c) that provides greater predictability for all those affected, including households, businesses, and investors, by giving advance information on the emissions reduction and removals that will be required.

443. Section 5X sets the obligation on the Minister to set the emissions budgets and ensure they are met.

444. Section 5ZA sets out the Commission's obligation to advise the Minister on "matters relevant to setting an emissions budget". These include:

444.1 at (1)(c) "how the emissions budgets, and ultimately the 2050 target, may realistically be met …".

444.2 at (1)(d) " …the amounts by which emissions of each greenhouse gas should be reduced to meet the relevant emissions budget and the 2050 target".

445. This provides a clear indication that the budgets are directly linked to the 'ultimate' goal of meeting the 2050 target. There is no reference in these operative provisions to the IPCC pathways or the 1.5°C goal.

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383 This is confirmed in the legislative history, discussed in more detail below. See especially Initial Briefing to select committee at [77].

446. The Act emphasises the importance of stakeholder and public engagement and consultation. The Commission has a standing obligation for all its functions, duties and powers to proactively engage with relevant persons, and, where necessary, provide for participation by the public.[384] The Minister then has a separate obligation under s 5ZB, before setting emissions budgets, to be satisfied that there has been adequate consultation, and if not, to undertake further consultation themselves.

447. This is a strong indication that issues canvassed in consultation are intended to be central to the setting of the budgets, rather than merely potentially 'tweaking' a budget already set by a mathematical application of the IPCC pathways, as LCANZ propose.

448. The criteria against which the budgets are to be set (and which consultation will be relevant to) are apparent from the mandatory considerations that apply to both the Minister and the Commission when setting or advising on the budgets and emissions reduction plan. These are primarily set out in s 5ZC:[385]

> 5ZC Matters relevant to advising on, and setting, emissions budgets
>
> (1) This section applies to—
>
> (a) the Commission, when it is preparing advice for the Minister under section 5ZA:
>
> (b) the Minister, when the Minister is determining an emissions budget.
>
> (2) The Commission and the Minister must—
>
> (a) **have particular regard** to how the emissions budget and 2050 target may realistically be met, including consideration of—
>
> (i) the key opportunities for emissions reductions and removals in New Zealand; and
>
> (ii) the principal risks and uncertainties associated with emissions reductions and removals; and
>
> (b) **have regard** to the following matters:
>
> (i) the emission and removal of greenhouse gases projected for the emissions budget period:
>
> (ii) a broad range of domestic and international scientific advice:
>
> (iii) existing technology and anticipated technological developments, including the

384 Climate Change Response Act 2002, s 5N, LBA at 935.

385 Climate Change Response Act 2002, s 3A, LBA at 901 – 903, relating to the Treaty of Waitangi (Te Tiriti O Waitangi) also sets out specific requirements on the Minister in preparing and publishing an emissions reduction plan.

costs and benefits of early adoption of these in New Zealand:

(iv) the need for emissions budgets that are ambitious but likely to be technically and economically achievable:

(v) the results of public consultation on an emissions budget:

(vi) the likely impact of actions taken to achieve an emissions budget and the 2050 target, including on the ability to adapt to climate change:

(vii) the distribution of those impacts across the regions and communities of New Zealand, and from generation to generation:

(viii) economic circumstances and the likely impact of the Minister's decision on taxation, public spending, and public borrowing:

(ix) the implications, or potential implications, of land-use change for communities:

(x) responses to climate change taken or planned by parties to the Paris Agreement or to the Convention:

(xi) New Zealand's relevant obligations under international agreements.

449. These mandatory considerations are the 'road map' to navigating the complex and multifaceted challenges on *how* to achieve a just transition to a low emissions economy. They reflect Parliament's view on the key matters that budgets and emissions reductions plans have to take into account, reflecting core values and objectives. They are wide ranging technical, economic, social and distributional factors: each of them involves huge complexity and judgement, including predictive judgements. Combining and balancing them to land a particular budget and action plan requires a whole higher level of judgement again.

450. The Act anticipates that the Commission and the Minister will bring different perspectives to this task: the Commission as expert advisor, the Minister as part of the government of the day responsible to the House and through that the electorate.

The role of international obligations in setting the budgets

451. It should also be noted that Parliament in s 5ZC expressly addresses the prioritisation of these mandatory considerations, including indicating that New Zealand's relevant obligations under international agreements do not have primacy. Section 5ZC

provision prioritises one factor in (a), which requires "particular regard", while the other 11 factors in (b) – including international obligations - require only "regard".[386]

452. This is a strong signal that the obligations under the Paris Agreement are not *the* determinative factor in setting the budgets (though noting, as discussed above, the Paris Agreement does not require anything like the approach proposed by LCANZ).

453. The broader *goal* of the Paris Agreement however is of course given elevated focus through the statutory purposes in ss 3 and 5W. The Commission was required to pay close attention to this purpose, as it did.

The Act is not prescriptive on how each budget is to be set

454. The Act does not prescribe *how* the Commission is to go about developing its advice, or the analysis or analytical processes it is expected to undertake. This is consistent with the overall framework. Having determined that these highly complex matters should be the subject of advice from a specialist independent expert advisory body, it would not make sense for Parliament (and the inexpert select committee) to then seek to dictate the analytical method by which the Commission undertook its work, or dictate the major component of each individual budget. In the context of the framework established by this Act and complexity of its subject matter, it is submitted that very clear words would be required to deliver the sort of prescriptive analytical steps that LCANZ argues the Act requires.

455. It is noted that LCANZ' approach is also static: if, properly interpreted, s 5W(1) requires this approach, then it requires it for every budget over the three decades to 2050, absent amendment by Parliament. Hence the constraint is not only in relation to this budget setting but all future ones, regardless of the evolving global, domestic and technological environment and even just the changes in approach by different Commissions and Commission Chairs over the years. It is inconceivable that Parliament would have intended to impose such a level of restraint on future assessments, especially given the huge complexity of the matters those assessments engage with.

456. In addition, LCANZ argument is based solely on an interpretation of the purpose provision in s 5W(1), which applies equally to the Minister as it does to the

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386 See the discussion in *Helu v Immigration and Protection Tribunal* [2015] NZSC 28, [2016] 1 NZLR 298 at [143] – [145]. Noting LCANZ submissions at [168] – [169] do not reflect the principles endorsed by the Supreme Court in that case.

Commission. LCANZ would accordingly be taking the position that the Minister must equally follow the same prescriptive analytical process as it says is required from the Commission, and set budgets that essentially are pre-set by the IPCC global pathways, subject only to adjustments to increase stringency for global equity or decrease stringency only where demonstrably justified by, for example, being technically or economically impossible.

457. This would be an extraordinary constraint on the executive and the government of the day, given the nature of the judgements that are expected to be made and the significance of those decisions for New Zealand society and economy. As officials described to the select committee (rejecting proposals that budgets be confirmed by Parliament):[387]

> *Emissions budgets are highly complex.*
>
> Setting emissions budgets is primarily a Government decision, requiring planning for significant policy trade-offs that will have multiple policy impacts.

Overall

458. The obvious and clear reading of the Zero Carbon Amendment Act is that the 2050 target represents Parliament's decision on the overall ambition for domestic emissions reduction that New Zealand is to achieve as part of its contribution to the global effort. It is not the only action New Zealand will take to contribute to that goal, as exemplified by the current NDC, which is set at a higher level than the proposed budgets with the difference in commitment anticipated to be met by offshore mitigation.

459. The budgets and emissions reductions plans provide for the steps to implement that longer term goal, and the mandatory considerations in s 5ZC are central to Parliament's intention that there be a just and sustainable transition to a low emissions economy, reflecting core values and objectives. Budgets are to be informed by those mandatory matters, with the purpose in s 5W(1) and the ultimate goal of the 2050 target always in mind.

460. LCANZ proposed interpretation that the 2050 targets and the contribution towards the global 1.5°C goal are separate and stand-alone objectives that must each separately be 'met' by the Minister in setting each budget (through applying the IPCC global pathways) and by the Commission in advising on the budgets is not supported by the

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387 Departmental Report at 90, LBA at 1627.

words or purposes of the Act. The prescriptive analytical process that it alleges are mandated is contrary to the provisions of the Act and would defeat its objectives.

Legislative history to the Zero Carbon Amendment Act

461. LCANZ submissions place strong emphasis on what it argues the legislative history demonstrates was Parliament's intention in enacting the Zero Carbon Amendment Act.[388]

462. There is no disagreement that the legislative history shows that Parliament wanted the budgets and emissions reductions plans to support New Zealand's contribution to the global 1.5°C goal. That is clear from the express terms of s 5W.

463. LCANZ however elevate that intention to a claim that Parliament thus intended the 2050 target and the 1.5°C goal are separate, standalone objectives, rather than the former being a means of implementing the latter.

464. LCANZ then take that argument a major step further, and say that s 5W(1) means that the budgets were not only required to contribute to the 1.5°C goal (which they clearly do), but that Parliament intended that for each budget period, the objective had to be 'met' though the budgets directly aligning with the emissions reductions that would be required if New Zealand were to 'apply' the IPCC global pathways to that budget period (ie align each budget with the NDC set in the way that LCANZ says it should be).

465. The legislative history does not support these propositions. Nor does the legislative history reflect LCANZ' proposition that the mandatory factors in s 5M and 5ZC operate only at the margins, after the budget levels have been set, rather than being central factors to the setting of the budgets.

Parliament set the 2050 <u>target</u> as the domestic contribution to 1.5°C goal, taking into account the 2018 IPCC Special Report and global pathways

466. Zero Carbon Amendment Bill was introduced in the House on 8 May 2019, and the Act came into effect on 13 November 2019. It followed New Zealand's entry into the Paris Agreement on 12 December 2015 (ratified on 5 October 2016). It also followed the publication of the IPCC's 2018 Special Report with its modelled global pathways, published in October 2018.

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388 LCANZ submissions at [274] – [280].

467. Parliament opted to itself set the 2050 target as setting New Zealand's level of ambition in terms of domestic reductions,[389] consistent with the goals of the Paris Agreement. As the Hon James Shaw (Minister for Climate Change) expressed the point in the House:[390]

> To achieve this purpose, the bill includes four key elements. … Second … a **target for 2050**, set in the legislation, **which gives certainty about how much New Zealand's emissions must reduce by**.

468. The explanatory note to the Bill records that extensive consultation on a 2050 domestic target took place during the development of the Bill's proposals in 2018, and that this target took into account the results of the consultation (almost all supported a 2050 zero carbon target), together with extensive underpinning economic analysis, the latest climate science, and New Zealand's greenhouse gas emissions profile.[391] The explanatory note records that the 2050 target was assessed to be consistent with the IPCC's Special Report on 1.5°C.[392]

469. In his speech introducing the Bill at its first reading of the Bill, the Hon James Shaw, Minister for Climate Change, said:[393]

> Today, we begin the task of amending the Climate Change Response Act 2002 to fulfil the commitment that we have made, as a country, to limit global warming to no more than 1.5 degrees Celsius above pre-industrial levels …
>
> The Climate Change Response (Zero Carbon) Amendment Bill … has as its purpose to provide a framework by which New Zealand can contribute to the collective global effort to limit the increase in global average temperature to 1.5 degrees Celsius above pre-industrial levels, as set out in article 2 of the Paris Agreement, thereby significantly reducing the impacts and risks of climate change. As far as we're aware, we are the first country in the world to locate that commitment to hold global warming to no more than 1.5 degrees in primary legislation.
>
> This ensures that whatever else we choose to do, it must further that critical outcome—and nothing we do should undermine it.
>
> …
>
> **This bill outlines an emissions reduction target for New Zealand, in line with keeping global warming to under 1.5 degrees**.

470. Similarly, in the debate on the Bill at first reading the Prime Minister Rt Hon Jacinda Ardern confirmed that the commitment to the 1.5°C goal was being met through the 2050 target:[394]

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389 Departmental Report at 59 and 62 – 63, LBA at 1596 and 1599 – 1600.

390 (6 November 2019) 742 NZPD 14820, LBA at 1275.

391 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 4, LBA at 1068.

392 At 4, LBA at 1068.

393 (21 May 2019) 738 NZPD 11026 – 11027, LBA at 1217 – 1218.

> … in doing so, that consensus must be based on science … . So that is why one of the most important principles of this bill is that we are amongst some of the first countries in the world to embed 1.5 degrees in our legislation … . Please, everyone in this House needs to remember that that is one of the most critical commitments that we are making, because it all flows from there. **If we commit to 1.5 degrees Celsius, what does that mean for our targets?** Well, the science tells us—and this is what Dave Frame would say—that unless you move on carbon, then frankly nothing else matters. We have to make a difference on carbon. **This is why we have moved to net zero on carbon**.

471. The explanatory note,[395] the Department Disclosure Statement[396] and the officials' Initial Briefing to select committee are also clear that the 2050 target was set following consideration of the "latest science" in the IPCC's Special Report on 1.5°C. They explain that the 2050 target would distinguish between biogenic methane and all other greenhouse gases, on the basis that:[397]

> The Intergovernmental Panel on Climate Change (IPCC) special report on 1.5 degrees also recognised the value of different pathways for different greenhouse gases. It concluded that in scenarios consistent with staying within 1.5 degrees of warming with limited or no overshoot:
>
> - global emissions of carbon dioxide reduce to net zero around 2050, and below zero (negative) thereafter
> - global emissions of agricultural methane reduce by 24–47 per cent from 2010 levels by 2050
>
> expressed together using the GWP100 equivalence metric, global greenhouse gas emissions are cut by 81–93 per cent from 2010 levels by 2050.

472. The Initial Briefing also explains:[398]

> *The 2050 target will require emissions of all greenhouse gases, except biogenic methane, to reduce to net zero*
>
> Requiring emissions of all greenhouse gases (except biogenic methane) to reach **net zero by 2050 aligns with New Zealand's commitments under the Paris Agreement**, under which Parties commit to keeping global average temperature rise to well below 2 degrees above pre-industrial levels, while pursuing efforts to keep it to 1.5 degrees.
>
> **The net zero target also reflects the IPCC findings** that, in scenarios consistent with the 1.5 degree temperature goal, global emissions of carbon dioxide reduce to net zero around 2050 (see paragraph 50). It aims for carbon neutrality (i.e. no net release of carbon dioxide into the atmosphere), and is also consistent with the findings of the Productivity Commission in 2018.

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394 (21 May 2019) 738 NZPD 11031, LBA at 1222.

395 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 4, LBA at 1068.

396 Ministry for the Environment *Departmental Disclosure Statement* (3 May 2019) [Departmental Disclosure Statement] at 5.

397 Initial Briefing to select committee at [50], and see also at [179].

398 At [54] – [55].

473. The Initial Briefing also confirms that the Commission's eventual reviews of the 2050 target are intended to address whether the target is still fit for the purpose of contributing to the global 1.5°C effort, noting:[399]

> [providing for review of the 2050 target by the Commission] recognises that circumstances may change and **the ambition of the target may need to be revised** accordingly. **An example would be where greater reductions are required to contribute to efforts to limit global average temperature increase to 1.5 degrees above pre-industrial levels**.

474. The Departmental Report provided to select committee following submissions on the Bill also confirms that the 2050 target are intended to give effect to the commitment to the 1.5°C goal. It expressly states that the 2050 targets in the bill "align with the emissions reduction objectives of the Paris Agreement".[400] Officials also confirmed that the targets "are consistent with the purpose of the Bill and the global achievement of the 1.5°C temperature goal."[401] They confirmed that 2050 zero carbon target was aligned with the "scenarios assessed by the IPCC as consistent with staying within the 1.5°C warming with limited or no overshoot."[402]

475. Parliament in enacting the Zero Carbon Amendment Act understood and intended that the 2050 target itself was the primary means by which New Zealand's domestic contribution to the 1.5°C goal would be met.

The budgets are stepping stones to the 2050 target

476. As outlined above, Parliament set the 2050 target by reference to the IPCC Report on the 1.5° goal and the global pathways. The legislative history is also clear that Parliament intended the budgets to be set by reference to the 2050 target, to providing the 'stepping stones' to meet that commitment.

477. This is clearly stated in the explanatory note:[403]

> Emissions budgets can be understood as interim targets or "stepping stones" to New Zealand's emissions reduction target. A system of emissions budgets will help to manage the transition to a low-emissions New Zealand and avoid any abrupt changes in policy. They will also serve as a valuable tool for tracking progress and determining whether New Zealand is on track to meet the emissions reduction target established under the Bill. In doing so, they will also create accounting across successive governments.

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399 At [77].

400 Departmental Report at 58 and see also at 63, LBA at 1595 and 1600.

401 At 64, noting also similar comment in the discussion of the split gas target at 63, LBA at 1601 and 1600.

402 At 64, LBA at 1601.

403 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 3, LBA at 1067.

> Emissions budgets will signal the reductions required in the short to medium term and will be supported by a plan that includes strategies and policies to achieve the reductions required. In this way, emissions budgets will operate as a market signal, providing households, businesses, and industries with greater predictability and driving investment in low-emissions technology and innovation.

478. See also the Departmental Disclosure Statement:[404]

> The Bill will achieve its purposes by …
>
> …
>
> - establishing a series of emissions budgets to act as stepping stones towards the 2050 target

479. Similarly the Departmental Report to the select committee describes the budgets as "interim targets or 'stepping stones' to New Zealand's 2050 emissions reductions target."[405] Officials also confirmed that the intention of focussing on the 2050 target was to "help manage the transition to a low-emissions and climate-resilient New Zealand and avoid any abrupt changes in policy out to 2050."

480. Similarly the Hon James Shaw (Minister for Climate Change) speech to the House:[406]

> To achieve this purpose, the bill includes four key elements. … Third, a system of emissions budgets and emissions reduction plans to act as stepping stones and to provide a framework for planning.

Parliament intended the mandatory considerations in s 5ZC to play a central role in the budgets

481. The legislative history is clear that while Parliament's intention is that the goal of the budgets is to get New Zealand to the 2050 target, the 'how' this was to be done – the steepness of the slope of emissions cuts in any one period – is set by the mandatory considerations in what is now s 5ZC. This is a central feature of the regime introduced by the Bill.

482. The explanatory note explained that the "overarching purpose" of the Bill represents:

> … a balance of the guiding principles agreed by Cabinet to frame the development of climate change policy: leadership at home and abroad; **a productive, sustainable, and climate-resilient economy; and a just and inclusive society.**
>
> …
>
> The Bill seeks to **strike a balance between flexibility and prescription** in New Zealand's long-term transition, as well as **building in considerations for how impacts are distributed.**

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404 Departmental Disclosure Statement, at 3.

405 Departmental Report at 71, LBA at 1608.

406 (6 November 2019) 742 NZPD 14820, LBA at 1275 .

483. Similarly, the Regulatory Impact Statement outlined that the framework established by the Bill was centred in three key objectives: leadership at home and internationally; a productive, sustainable and climate-resilient economy; and a just and inclusive society. With respect to the third key objective, a just and inclusive society, the RIS outlined the key elements of this objective as follows:[407]

> ***A just and inclusive society***
> - Assessing the merits of early action and **carefully managing the speed and pathways of the transition**
> - Supporting regions and communities affected by transition policies and those needing to adapt to ongoing climate change impacts
> - Recognising the rights and needs of future generations, as well as those of iwi/ Māori under Te Tiriti of Waitangi.

484. The RIS also explained that the recommended 2050 target set clear emissions goals for all of New Zealand to reach in 2050 and beyond, however it did not provide for specific policies or plans. Accordingly, it was emphasised that:[408]

> A long-term, low emissions development strategy will … be necessary to signal government policies required to drive the transition, with support arrangements to avoid or ease uneven distributional impacts across regions and society.

485. The Departmental Disclosure Statement equally highlighted the need to balance flexibility and prescription and the need to consider distributional impacts.[409]

486. The Departmental Report to the select committee noted that a key theme from the public submissions was "the need for a 'just' transition that is fair and inclusive across society and the economy".[410] The Report noted that:[411]

> … the Bill requires the Commission to have regard to a wide range of factors in performing its functions, including considering the distributional impacts across regions and communities of New Zealand, and from generation to generation, when advising on emissions budgets. … We consider that these provisions address submitters concerns.

487. The Departmental Report also recorded that the ability to deliver a just transition was one of the "central tenets" of the Bill,[412] and that the Bill provided for "regular and careful consideration of economic effects of the transition, and how these are

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407 Ministry for the Environment *Regulatory Impact Statement: Zero Carbon Bill* (1 May 2019) at 3, LBA at 1354.
408 At 4, LBA at 1355.
409 Departmental Disclosure Statement at 3.
410 Departmental Report at 25, LBA at 1562.
411 At 29, LBA at 1566.
412 At 74, LBA at 1611.

distributed across the economy and society", noting that economic effects are to be considered by the Commission in all of its advice.[413]

488. It is also relevant to note that what is now s 5ZC(2)(b)(ix) (relating to the impact of land use change) was introduced at select committee stage, in response to concerns about how changes to the forestry sector may impact on rural communities. While acknowledging that such risks would be considered under the general requirement that impacts on communities be considered, the Committee considered that specifying this separately as a stand-alone requirement would appropriately recognise the importance of the consideration.[414]

489. At the second reading of the Bill, Minister Shaw commented:[415]

> … when preparing advice on emissions budgets and emission reductions plans, the bill has been amended to require the commission to have regard to the implication and potential implications of land-use change on communities. This will ensure that impacts on communities are taken into account as the Government makes decisions on the role of emissions reduction and removal options and how impacts can be managed to achieve a just transition.

490. The considerations in s 5ZC were therefore very much front of mind for the select committee and for Parliament. The importance attributed to these factors, the attention given to them in the public consultation and select committee processes, and their role in meeting the central tenet of a just transition, speaks strongly against them being only of peripheral relevance as LCANZ propose. On the contrary, Parliament clearly intended these mandatory considerations to play a major part in the Commission's Advice and the Minister's decision on the budgets and emissions reductions plan, consistent with the overall guiding purposes in s 5W and 3.

491. At a broader level, this focus on a just transition is also aligned with the objectives of the Paris Agreement, as outlined above. There is no inconsistency between Parliament's approach and New Zealand's international obligations.

Parliament did not intend to prescribe each budget and how it would be set

492. This is most obvious from the provisions of the Act itself and the framework it establishes for independent expert advice followed by democratically accountable decision making.

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413 At 21, LBA at 1558.

414 Climate Change Response (Zero Carbon) Amendment Bill 2019 136–2 (select committee report) at 11, LBA at 1116.

415 (5 November 2019) 742 NZPD 14719, LBA at 1248.

493. However, there are a number of references in the legislative history which also confirm this intention. There are general descriptions in the explanatory notice about the importance of flexibility, including:[416]

> The Bill seeks to strike a balance between flexibility and prescription in New Zealand's long-term transition, as well as building in considerations for how impacts are distributed.

494. And, specifically addressing the basic policy 'model' the Act establishes, of setting budgets to meet the target:[417]

> The model set out in the Bill was chosen because it will be enduring. It provides a stable policy environment that sends a strong signal to household, businesses, and industry, while remaining flexible and responsive to changing circumstances. It will allow governments to adhere to the optimal transition pathway and manage any adverse impacts of the transition to a low-emissions economy. The Commission's role will enhance the credibility, transparency and accountability of the emissions budget-system.

495. More specific commentary is found in the Departmental Report to the select committee. This includes, for example:[418]

> We consider it important that the Bill provides enough flexibility to allow the Commission to determine the best approach to its advice about how the 2050 target should be met, including how it considers feasible pathways to the target and the implications for emissions beyond 2020.

496. And:[419]

> While the bill sets out requirements for the Commission's advice and monitoring functions, we expect the Commission to exercise expert judgement about the way in which it considers progress and the recommendations it makes. We consider the Bill is sufficiently flexible to all for this.

497. Officials made the same point in response to submissions that the budgets should be required to reflect New Zealand's equitable share of the global 'remaining budget' for 2022 – 2050 identified by the IPCC. (Noting this is essentially LCANZ' 'step one' that they say Parliament prescribed through enacting s 5W(1)). Officials did not support this proposal. They noted that the remaining global budget estimated by the IPCC is not for the period to 2050 (it goes to 2100), and that the inclusion of what is now s 5W(1) would ensure that relevant matters are taken into account. They also expressly confirmed that if the Commission wanted to calculate New Zealand's cumulative emissions budgets as part of considering whether the budgets were aligned with the

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416 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 1, LBA at 1065.

417 At 4 – 5, LBA at 1068 – 1069.

418 Departmental Report, at 49, LBA at 1586.

419 At 49, LBA at 1586.

1.5°C purpose, it could do so, as "the bill does not prescribe the process for preparing advice on emissions budgets." [420]

498. It is noted that LCANZ in submissions at [278] provides a selective quote from this discussion by officials, which it submits supports its position (that Parliament *required* the Commission to set budgets by applying the IPCC pathways) when officials are making the exact opposite point.

499. The full text of this part of the officials' advice (bold emphasis added, LCANZ selected quote in italics) is: [421]

> <u>It is not necessary to require the Commission to calculate New Zealand's cumulative budget for 2022-2050</u>
>
> The IPCC estimated the remaining global carbon budget from 2018 if the world is to limit average temperature rise to 1.5°C. A number of submitters noted that to limit New Zealand's contribution to the 1.5°C temperature goal requires New Zealand to emit no more than our equitable share of this remaining carbon budget.
>
> While there is value in identifying New Zealand's cumulative budget for 2022-2050, we consider that amending the purpose of emissions budgets to explicitly reference New Zealand's contribution to the 1.5°C temperature goal will ensure that relevant matters are taken into account. **It is also worth noting that the Bill does not prescribe the process for preparing advice on emissions budgets**. This means that the Commission may calculate New Zealand's cumulative budget if they consider it necessary to aligning the emissions budgets with the 1.5°C purpose.
>
> The remaining global carbon budget estimated by the IPCC is not for the period to 2050. **In the 1.5°C pathways** assessed, greater removals (negative emissions) after 2050 compensate for higher cumulative emissions up to that point. In this way, they achieve comparable cumulative emissions until 2100 despite a large range pre-2050. **However, all of these** scenarios **are characterised by net-zero carbon dioxide emissions around 2050, and the proposed 2050 target reflects this**. *Considering views on New Zealand's "fair share" of the remaining emissions budget, and the perception of risk associated with relying on development of negative emissions technologies, the Commission will provide advice on the interim emissions budgets consistent with limiting warming to 1.5°C.*

The evolution of the purpose in s 5W(1) does not indicate a contrary intention, as LCANZ argue

500. LCANZ' argument appears to be based primarily on the amendment to what is now s 5W(1) during the legislative process.

501. When the Bill was introduced the purpose section equivalent to s 5W provided that the purpose of subpart 2 of Part 1B was to require the Minister to set a series of emissions budgets with a view to meeting the 2050 target and providing greater

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420 At 73, LBA at 1610.

421 At 73, LBA at 1610.

predictability for all those affected, including households, businesses, and investors, by giving advance information on the emissions reductions and removals that will be required.

502. The select committee proposed amending the section to provide that purpose of emissions budgets is to contribute to the 1.5°C goal under the Paris Agreement (and to clarify that they need to be set in such a way as to allow them to be met domestically). The commentary in the report from the select committee explained this change in the following terms:[422]

> This would strengthen the obligation to consider the global response to climate change and the 1.5°C temperature goal outlined in the agreement when setting emissions budgets. It would also better align this provision with the purpose statement of the bill [referring to what is now s 3(aa)(i)].

503. This reflected advice from officials to the select committee in the Departmental Report. Officials referred to submissions proposing this change, indicating that this wasn't necessary given the overarching purpose in the bill (which included reference to contributing to the 1.5°C goal) but that there was value in doing so:[423]

> However, there are also benefits in explicitly aligning emissions budgets with the overall purpose of the Bill. This will strengthen the need to consider the global response to climate change when determining the level of emissions budgets, and ensure that the 1.5°C temperature goal remains an active consideration. It will also prioritise early emissions reductions, rather than delaying action.

504. The Minister refers to this proposed change in his speech to the House on the second reading of the Bill, as LCANZ record in their submissions at [279]. The Minister uses slightly looser language than the select committee, but his comment cannot be fairly read as indicating an intention by Parliament to prescribe that budgets be set by applying the IPCC global pathways:[424]

> Third, the purpose of emissions budgets in the bill will now include a reference to the need for New Zealand to contribute to global efforts to limit the average temperature increase to 1.5 degrees Celsius above pre-industrial levels. This will align emissions budgets with the overall purpose of the bill and reinforce the need for decision makers to consider the global response to climate change when determining the level of emissions budgets.

505. LCANZ also rely on the Minister's paper to Cabinet seeking policy decisions on matters that were proposed to be addressed in the upcoming Departmental Report to the

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422 Climate Change Response (Zero Carbon) Amendment Bill 2019 136–2 (select committee report) at 10, LBA at 1115.

423 Departmental Report at 73, LBA at 1610.

424 (5 November 2019) 742 NZPD 14719, LBA at 1248.

select committee.[425] To the extent that the court draws any assistance from a paper of this nature, it is noted:

505.1 The Minister expressly confirms that the budgets are to be in line with the 2050 target;[426]

505.2 The Minister considered that the proposed amendment to s 5W(1) would "strengthen the need to consider the global response to climate change when determining the level of emissions budgets";[427]

505.3 There is no suggestion that the Minister was proposing establishing a stand-alone separate objective (from the 2050 target) that would have to be 'met' by directly aligning the budgets to the IPCC global pathways over the budget period;

505.4 There is no suggestion that the Minister intended to deprioritise the mandatory considerations in s 5ZC and make them secondary to implementing the IPCC global pathways in the budgets.

506. Overall, there is no indication *at all* in the legislative history of any suggestion that Parliament intended that this change to the purpose statement to have the effect contended for by LCANZ. As outlined above and discussed further below, the indications are strongly to the contrary.

507. A key indication is the absence of any material in the legislative history even mentioning that – as LCANZ argues - s 5W sets two separate stand alone objectives that must be 'met' by the budgets, the requirement to set the budgets by applying the IPCC pathways, the prescriptive analytical structure, or the 'side-lining' of the mandatory considerations in s 5ZC.

508. The reports leading to the Bill and the Departmental reports to the select committee are extensive and detailed, canvassing every aspect of the bill's proposals. Had LCANZ' proposals been within contemplation, it would be expected that they would have been referred to, especially given their significance. This would, for example, be a major

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425 LCANZ submissions at [279] referring to the report from the Minister for Climate Change to Cabinet *Policy decisions for Climate Change Response (Zero Carbon) Amendment Bill Departmental Report,* LBA at 1729 – 1741. LCANZ incorrectly describe this report as 'following feedback from the select committee".

426 At [31], LBA at 1734.

427 At [33], LBA at 1734.

change to the level of prescription involved: the 2050 target allows a broad exercise of judgement as to the pace of change towards the 2050 target, but LCANZ proposal requires specific (and effectively prescribed via the IPCC pathways) reductions for each budget period.

509. LCANZ proposal also appears to contemplate that meeting the new objective would necessarily require a greater level of domestic mitigation (ie ambition) than Parliament deliberately set as appropriate for New Zealand's circumstances when it specified the 2050 target.

510. Officials describe over many pages of reports the extensive and in depth analysis that was undertaken in setting the 2050 targets, including as to its level of ambition and the modelling that provided assurances that this could be achieved, and the cost involved.[428] If there were indeed intended to be a second and significantly different 'objective' that the budgets were to 'meet' in the 2030 period, then it would be expected that a similar analysis and discussion of these same issues would occur, along with some consideration of how the two 'objectives' were intended to operate together. There is none.

511. Also notable is the level of consultation that went into setting the 2050 target before the Bill was introduced. The explanatory note to the bill refers, for example, to a process in which more than 15,000 New Zealanders and organisations had their say.[429] If the 2050 target was no longer going to be the operative provision setting New Zealand's level of ambition, then one would also expect that the total absence of consultation on the new objective, which LCANZ suggests should not only have equal weight but 'primacy' over the 2050 target,[430] would have raised a concern.

Parliament did not intend the budgets to align with the NDC, as LCANZ argue

512. The select committee considering the Bill asked officials to provide additional information following the initial briefing. This included advice on the relationship between the 2050 target in the Bill and the 2030 commitment in the NDC.[431]

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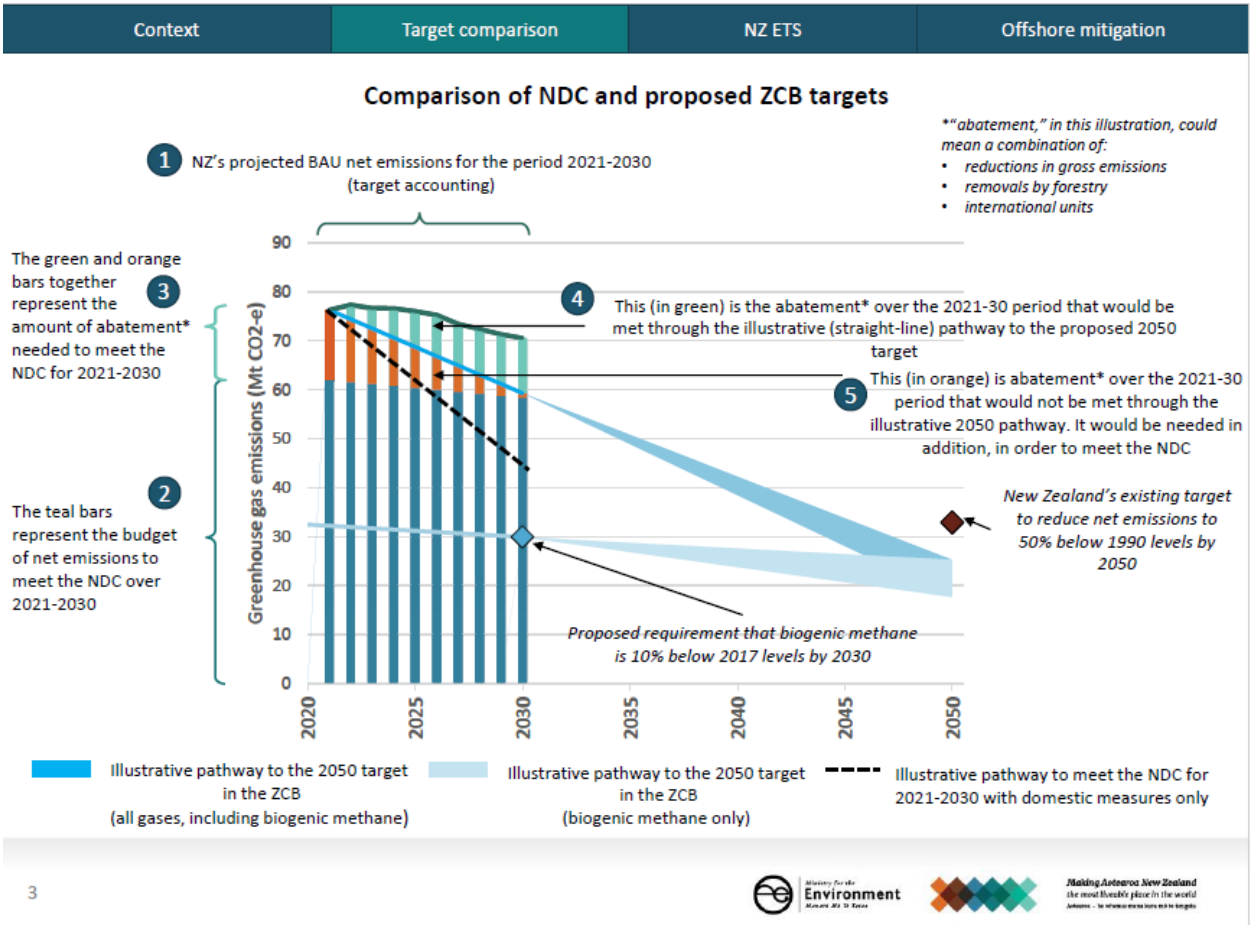
428 See for example: Departmental Report at 58 – 71, LBA at 1595 – 1608; Departmental Disclosure Statement at 5; Initial Briefing to select committee at [49] – [79]; Regulatory Impact Statement at 4, LBA at 1355.

429 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 4, LBA at 1068.

430 LCANZ submissions at [298].

431 Ministry for the Environment *Climate Change Response (Zero Carbon) Amendment Bill: Additional information requested by the Environment Committee – Presentation to the*

513. The publicly available slides for the officials' presentation to the select committee demonstrate that it was always intended that the emissions budgets for the period to 2030 were to be set at a different level to New Zealand's NDC for the same period. For example, the following slide from this presentation demonstrates the different pathways for emissions budgets stepping towards the 2050 target, and the (then) NDC for the period to 2030:[432]



514. The issue of the relationship between emissions budgets and the NDC was also addressed in the Departmental Report to the select committee. Officials noted that some submitters on the bill called for "emissions budgets to have a direct relationship with New Zealand's NDCs under the Paris Agreement (i.e. that emissions budgets will meet NDCs)"[433] Officials did not support this.

515. The Departmental Report emphasised that domestic emissions budgets and NDCs have distinct purposes, and highlighted that if the emissions budgets through to 2030 were required to match New Zealand's NDC the distributional and economic impacts would

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Environment Committee (25 July 2019) at slide 2, (which outlines that "at the last information session, you requested additional information on: how New Zealand's NDC compares with the target proposed in the Bill …").

432 At slide 3.

433 Departmental Report at 45 and 73, LBA at 1582 and 1610.

be significant. Officials advised that this would undermine the ability to deliver a just transition, being "one of the central tenets of the Bill":[434]

> *Emissions budgets and NDCs have distinct purposes*
>
> While emissions *budgets* and NDCs are both essential parts of New Zealand's approach to addressing climate change, they serve distinct purposes.
>
> Successive emissions budgets will guide New Zealand's economic transition to the 2050 target. The Bill requires *emissions* budgets to be met, as far as possible, through domestic emissions reductions and domestic removals. While offshore mitigation can be counted towards emissions budgets, this is intended to be a flexibility mechanism that can only be used in limited circumstances – that is, where unforeseen events affect the ability to meet an emissions budget domestically.
>
> NDCs are an international *commitment* communicated under the Paris Agreement. Unlike emissions budgets, NDCs must represent a country's highest possible mitigation ambition (and progression over previous efforts). This contribution can be delivered both domestically and offshore. New Zealand's NDC for 2021 to 2030 was set recognising that New Zealand may deliver more to the global mitigation effort if it supplements domestic action with offshore mitigation action.
>
> **New Zealand communicated its first NDC for the period 2021 – 2030 under the Paris Agreement in 2016. Nothing in the Bill affects the ability to use offshore mitigation to meet this commitment. If New Zealand's first two emissions budgets were aligned with the first NDC and were met domestically, the economic and distributional impacts would be significant. This would undermine the ability to deliver a just transition, one of the central tenets of the Bill.**

516. Notably, this also directly conflicts with LCANZ interpretation that the factors in s 5ZC (including economic impact and distributional equity) 'cannot override' what it says is the statutory requirement to set budgets in alignment with (what is says should be) the NDC.

517. Further, in recommending a further tightening of the use of offshore mitigation towards emissions budgets[435] the Departmental Report also explains:[436]

> *Clarifying the purpose and use of offshore mitigation in the Bill will help to distinguish between* emissions *budgets and NDCs*
>
> There is confusion about the role of the emissions budgets established under the Bill and NDCs communicated under the Paris Agreement. This is because both emissions budgets and NDCs may be met through a domestic abatement (emissions reductions and removals) and offshore mitigation, and both are multi-year targets. As discussed in relation to section 5T, however, **emissions budgets and NDCs have distinct purposes and should not be conflated**.
>
> Restricting the instances in which offshore mitigation may be counted towards emissions budgets, and clearly communicating that emissions budgets are

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434 At 74, LBA at 1611.

435 At 84, LBA at 1621.

436 At 83, LBA at 1620.

> focussed on New Zealand's transition to low-emissions, will clarify the distinction between emissions budgets and NDCs and their unique purposes.

Parliament did not intend the Act to limit offshore mitigation to meet the NDC, as LCANZ argue

518. This is clear throughout the legislative material, including that described just above. By way of additional example, the explanatory note to the Bill explained:[437]

> Limited use of offshore mitigation and the context of nationally determined contributions.
>
> …
>
> The Bill does not impact New Zealand's commitment to communicating and achieving nationally determined contributions that contain absolute economy-wide reductions at the maximum possible level of ambition, and that demonstrate a progression in ambition over previous efforts. Limiting the use of reductions sourced from overseas to meet the 2050 target does not preclude New Zealand's ability to count reductions sourced from overseas towards achievement of its successive nationally determined contributions, if required, which has previously been agreed by Cabinet (CAB-18-MIN-0248 refers).

519. LCANZ proposal that s 5W(1) requires the Act to be interpreted to require the budgets to be set to deliver domestic reductions that meet the NDC that it says should have been set, without recourse to offshore mitigation, would defeat the intent of this clear policy position endorsed by Parliament.

Proposals to require early emissions reductions to be prioritised and to increase ambition were rejected

520. The Departmental Report to the select committee discussed submitters views that there should also be a 2030 interim target for 'all other gases', including to "allow early emissions reductions to be prioritised as a contribution to the global response."[438] Officials did not recommend this change.

521. Officials also record that submitters similarly proposed the date for zero carbon be brought forward to increase its ambition, and that many submitters more generally raised the need for more ambitious targets.[439] Officials did not recommend any change to increase the level of ambition set by the target.

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437 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 6, LBA at 1070. See also the Departmental Disclosure Statement at 7; and the Departmental Report at 83, LBA at 1620.

438 Departmental Report at 60, LBA at 1597.

439 At 60 – 61, LBA at 1597 – 1598.

Parliament did not require the budgets to reflect the IPCC global pathways - LCANZ' submission on the bill

522. As outlined above, the legislative history demonstrates that Parliament set the 2050 target by reference to a range of matters, including the IPCC global pathways. LCANZ' submission to the select committee that in addition the Act should require that each budget be set using the IPCC pathways as a 'starting point' was not accepted.

523. LCANZ' 15 July 2019 submission to the select committee (signed by Ms Cooper QC), under the heading "Mandatory considerations for advising and setting of emissions budgets" proposed an amendment to what is now s 5ZC. LCANZ submitted:[440]

> It is important that the Commission and the Minister take into account the correct considerations when setting emissions budgets. Section [now 5ZC] provides a list of matters to which the Commission and the Minister must have regard. We recommend that this section should specify that the Commission must have regard to the reports from the [IPCC]. The IPCC's reports (such as the IPCC's October 2018 report as to what is required to stabilise global temperature increases at 1.5°C) represent the best guidance for policy makers on climate change science, and should be a starting point for the Commission and the Minister's setting of budgets.

524. Notably, in this point of their campaign, LCANZ is advocating only that the IPCC Reports be a mandatory consideration in setting the budgets, providing 'guidance' and a 'starting point'. It did not propose to the select committee that the Act direct that budgets actually be set to directly apply the IPCC global pathways, as it now argues the Act requires.

525. Officials did not recommend the suggested change.

Response to LCANZ' prescriptive analytical process

526. The Commission's position is that LCANZ' proposed interpretation of the Act and the prescriptive analytical process they say s 5W(1) requires the Commission and the Minister to follow as a matter of law, are not supported by the provisions of the Act, the framework of the statutory regime, and the purpose of the Act reflected in both its terms and its legislative history.

527. In summary, the Commission's position is that section 5W(1) does not prescribe separate and distinct stand alone objectives that have to be 'met' by the analytical process put forward by LCANZ. The 2050 target sets New Zealand's long term level of ambition for domestic emissions reductions as New Zealand's contribution to the 1.5°C goal. Section 5W(1) requires the Commission to also have regard to that goal in

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[440] LCANZ submissions at [20].

advising on the budgets and be satisfied that their proposed budgets and emissions reduction plan align with that purpose. The Commission correctly understood and fulfilled its task.

528. LCANZ proposed prescriptive four step analytical process is contrary to the Parliamentary intention that the Commission as an expert advisory body exercise its own judgement as to how best approach its task of providing advice on the budgets and the emissions reduction plan, bearing in mind the core values and objectives reflected in the mandatory considerations in s 5ZC and the full purposes in ss 3 and 5W. It is also contrary to the Parliamentary intention that the Commission retain flexibility as to its approach to its future advice in the decades to come.

529. With regard to the specific steps that LCANZ say must be read into its interpretation of s 5W(1), set out above:

529.1 Step one (setting the budget by directly applying the IPCC global pathways) is not a requirement of the Act, and the select committee did not adopt similar proposals of this kind from submitters. Further, the Paris Agreement does not require this and all qualified experts agree that the IPCC pathways are not intended, nor fit for, this purpose.

529.2 Step two (determining New Zealand's NDC based on step one) is not only not required by the Act, the Act does not allow the Commission to assess the adequacy of the NDC unless requested by the Minister, and Parliament has directed that if it is requested to provide advice on the NDC then the Commission can be subject to direction by the Minister. Parliament however clearly did *not* intend that Ministerial direction could be engaged in the Commission's Advice on the proposed budgets. Step two is contrary to this basic framework in the Act.

529.3 Step three (ss 5M and 5ZC can only be considered after steps one and two, and only then permitted to 'alter' the budgets if on the evidence an adjustment is demonstrably justified (ie the budgets would be 'not possible')) is contrary to the express words and clear intention of the Act. Sections 5M and 5ZC set out mandatory considerations. Section 5ZC is expressly focused on the budgets, and Parliament has identified these considerations as 'central' to delivering the objectives of a just and sustainable transition to a low emissions economy.

529.4 Step four (assessing whether the budgets represent the 'highest possible ambition' through 'some sort of' cost benefit analysis). The Act does not require this, either in terms of an objective[441] or an analytical process.[442] Nor can such an obligation be inferred from the Paris Agreement.[443] Parliament also recognised that the domestic budgets and the NDC were entirely distinct (noting that the NDC had been deliberately set with off-shore mitigation in mind[444]). The select committee rejected proposals that the Act require budgets to be aligned with the NDC, for strong policy reasons. As officials recorded in the Departmental Report to the select committee:

> If New Zealand's first two emissions budgets were aligned with the first NDC and were met domestically, the economic and distributional impacts would be significant. This would undermine the ability to deliver a just transition, one of the central tenets of the Bill.

530. LCANZ proposed interpretation would run directly counter to what Parliament intended to achieve. Instead of providing a clear and stable framework to enable a just and sustainable transition, LCANZ interpretation would instead result in what officials identified (and the Commission confirmed in its Advice) as "significant" economic and distributional impacts, positively undermining the ability to deliver a just transition.

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441 The Act does not set this as a criteria for the budgets, or mention this concept at all.

442 Noting also that the evidence is that such an analytical tool was not useful or appropriate for the Commission's task: Carr at [68] – [70]; and Toman at [19] and [23] – [25]. Even if the Court allows Dr Taylor's evidence on this topic to be admitted (given his total lack of qualifications and experience in climate change matters), and – contrary to the Commission's submissions on the approach to conflicts of expert evidence – the Court wishes to engage on this issue, this contrary evidence is overwhelming. In addition, whatever the merits of a CBA or an MCA might be, there can be no error of law by the Commission in not conducting such an analysis unless the CCRA required it to do so, which it clearly did not. These challenges in LCANZ submissions at [329] – [345] are nothing more than a challenge to the merits of the Commission's Advice.

443 Contrast art 4.3 and 4.4 (CBD at 53), and noting art 6 (CBD at 56 – 57).

444 The fact that the NDC would be met via offshore mitigation is made clear, for example, in: the explanatory note to the Bill (Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 6, LBA at 1070); and the Cabinet Minute of Decision on the government's position on international carbon markets to which the explanatory note refers (Cabinet *Minute of Decision Proposed Climate Change Bill* (28 May 2018) CAB-18-MIN-0248, at [5]).

The Trans-Tasman Resources decision

531. LCANZ' argument in this ground of review appears to invite the Court to apply the approach of the majority of the Supreme Court in *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board*.[445]

532. However, the cases are not analogous. In the first place, *TTR* involved a statutory regime for the determination of consent applications where a decision maker is faced with a single proposal. While such applications can be complex and difficult, the statutory framework is directed to a decision (to grant or decline) based on the statutory criteria. The present case concerns very different legislation that deals with multifaceted policy judgements on the complex issues of climate change response and a just transition to a low emissions economy.

533. At issue in *TTR* was the role of s 10(1)(b) of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 in determining applications for consent. Section 10(1)(b) stated a purpose to "protect the environment from pollution by regulating or prohibiting the discharge of harmful substances …".

534. The minority did not consider that s 10(1)(b) created an absolute 'bottom line' but rather a 'heightened threshold'.[446] The minority endorsed the 'overall judgement' approach, where the decision maker is to make an overall assessment of the statutory criteria, where the statutory purpose must "always be kept to mind."[447] This is the orthodox and usual approach to the interaction between a statutory purpose and a decision based on statutory criteria.

535. The majority considered that the bottom line in s 10(1)(b) was absolute, with the effect that if it could not be met, then the application *must* in law be declined, regardless of any other factors in the statutory criteria.[448] It was on that basis that Glazebrook J put forward a three-step decision-tree that decision-makers should follow, to ensure that the bottom line requirement is met.[449] Notably, even in this context, the Court did not purport to direct any of the analytical processes to be undertaken by the decision-maker: this is a simple binary decision-tree. This framework would be entirely inapt to

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445 *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2021] NZSC 127, LBA at 202 – 331.

446 At [101], LBA at 240 – 241.

447 At [50], see also [55] (LBA at 221 and 223): "The decision-maker has to consider the criteria in s 59 with a view to ensuring that the statutory purposes in s 10(1) are met."

448 At [3], LBA at 204.

449 At [5], LBA at 205.

the CCRA: there are no binary decisions to be made, and the purpose statements do not contain absolute bottom lines.

536. Finally, the majority's approach is firmly based on the provisions of the EEZ Act, and does not purport to lay down any principle of general application outside the approach to s 10(1)(b) of the EEZ Act.[450] This is clear from the Court's judgment itself, where the majority endorsed the overall judgement approach of the minority in respect of the *other* limb of the purpose statement, s 10(1)(a), stating that for step three of the decision-tree (once the bottom line in s 10(1)(b) had been met) the decision-maker:[451]

> should perform a balancing exercise taking into account all the relevant factors under s 59, in light of s 10(1)(a), to determine whether the consent should be granted.

537. This is the correct approach to ss 3 and 5W of the CCRA in the context of advice relating to the budgets and emissions reduction plan (though given the nature of the legislation and its subject matter, the process is far more complex than a mere 'balancing exercise'). The Commission was required to consider all relevant considerations and exercise its expert judgement to formulate its advice in light of the statutory purposes. There was no error of law in the Commission's approach.

Other alleged errors raised in LCANZ submissions on ground two

538. In submissions LCANZ raise a new (and not pleaded) ground of alleged error: that the Commission relied on its own construct of the considerations in the Act and therefore did not take into account the mandatory relevant considerations in s 5ZC when proposing emissions budgets. LCANZ criticises the fact that the Commission grouped the mandatory considerations from s 5ZC(2) into three criteria: that budgets be fair, equitable, inclusive; ambitious; and achievable.[452]

539. This criticism is not a fair representation of the Commission's approach. The Commission was well aware of the mandatory relevant considerations in the Act, as reflected throughout the Advice and built into the Commission's analytical process. The grouping of multiple matters into broader categories was a useful approach for the Commission to take in a considering multifaceted and complex issue of this kind,

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450 Noting that such an approach would have been inconsistent with the Court's decision in *Environmental Defence Society v The New Zealand King Salmon Co Ltd* [2014] NZSC 38, [2014] 1 NZLR 593, where the Court held that the more broadly worded purpose statement in the RMA (equivalent to s 10(1)(a) of the EEZ Act) was *not* an operative provision in the sense that decisions are made under it, rather it reflects the Act's overall objectives (at [151]).

451 At [5], LBA at 205.

452 LCANZ submissions at [270]

but the Commission is clear in its Advice that in this process it is giving effect to the s 5ZC. This is graphically demonstrated, for example, the following table in the Advice, where the Commission explains how each mandatory consideration is reflected in these broader categories.[453]

540. It is also noted that LCANZ do not point to a mandatory consideration that they claim was not in fact given proper consideration by the Commission. This appears to be a challenge only to the semantics of the expression of the Commission's Advice.

[453] Advice Bundle at 79.

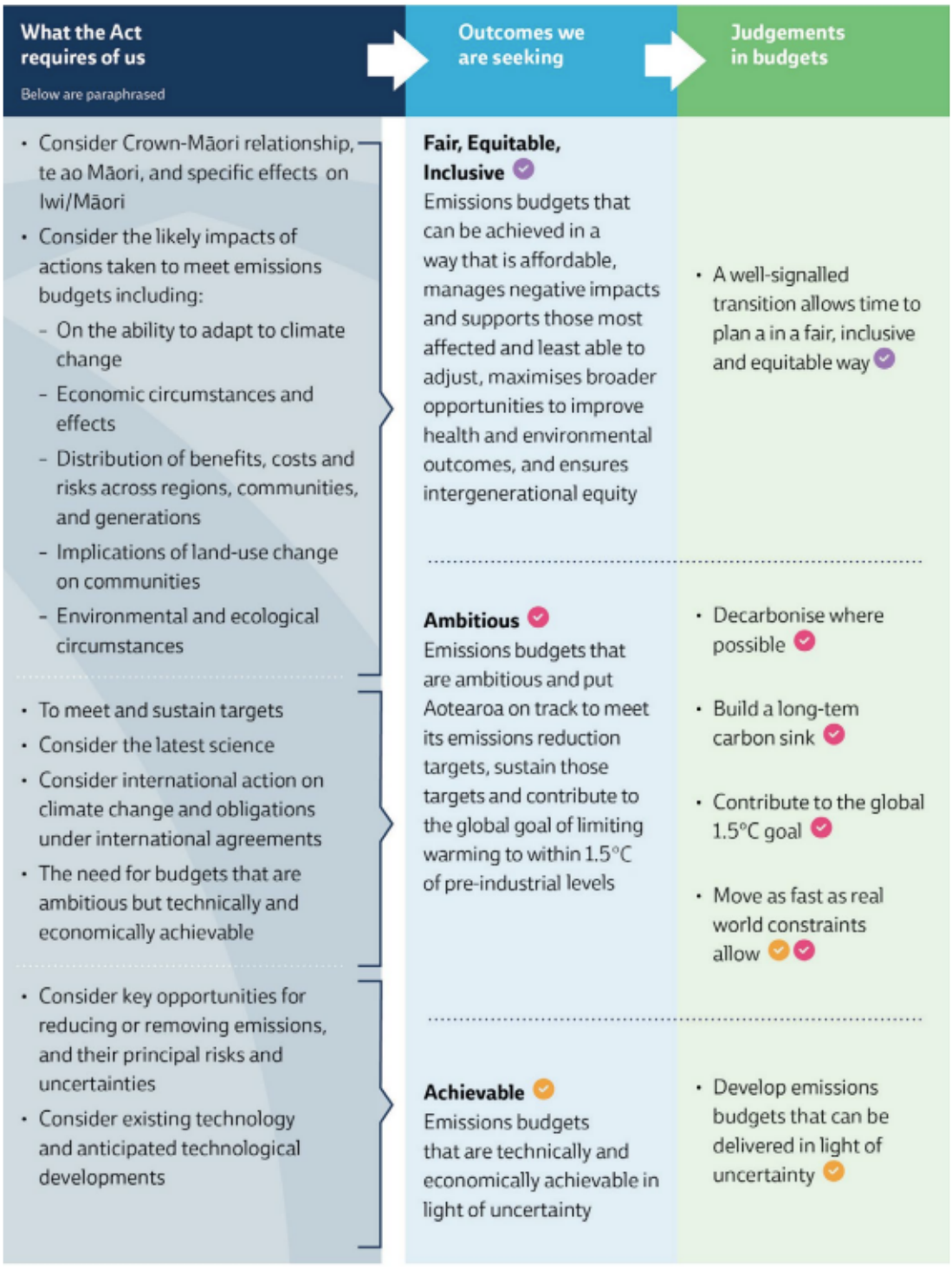
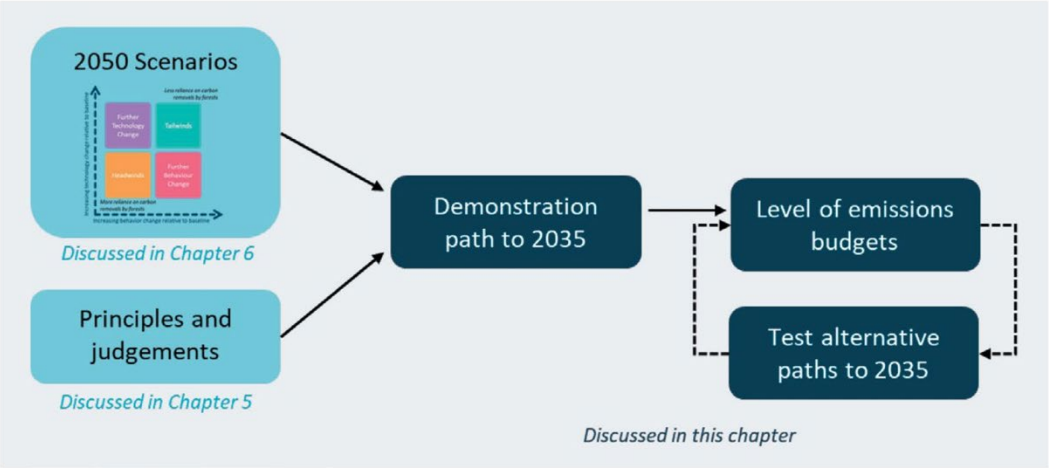


Figure 5.1: The outcomes we are seeking to achieve in recommending emissions budgets, the requirements in the Act that inform these outcomes, and the judgements we have made to achieve these outcomes.

541. In a related submission (also not pleaded), LCANZ argues that the Commission replaced the requirement under s 5ZC2(b)(iv) to recommend budgets that are "likely to be

economically achievable", instead recommending budgets that are "economically affordable".[454]

542. LCANZ' argument is again purely semantic. Paraphrasing a statute is not rewriting it. The Commission was not required to repeat the terms of s 5ZC(2) verbatim every time it was discussing the emissions budgets. It is also not a fair representation of the Advice, which demonstrates that the Commission correct understood its task. See for example the entirety of Chapter 7, which is headed "demonstrating emissions budgets are *achievable*", including the following graphic of how the Commission went about that assessment:[455]



543. LCANZ also challenges the Advice on the basis that there is an inconsistency between the NDC and the Budget Advice, which it says demonstrates that the Budgets are not compatible with contributing to the 1.5°C global effort.[456] This is again another way of saying that the budgets and the NDC are required to align, which has been addressed above. Also addressed above is the fact that there is no inconsistency between the advice on the Budgets and the NDC, as the Commission spells out in Advice in response to this same criticism in submissions on its draft Advice.

544. Finally, the suggestion at [326] of LCANZ' submissions that Dr Carr "appears to be saying that the pace of change does not matter, at least in the short term" is simply

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454 LCANZ submissions at [270] and [325]. It is noted that the emphasis of this criticism has changed from Dr Taylor's evidence at Taylor 1 at [159], where he argues that the Commission was focused on developing budgets that "**are** technically and economically affordable", in contrast to the requirements under the Act for budgets that "are ambitious but **likely** to be technically and economically achievable". At Carr at [100.2], Dr Carr notes that argument too was semantic only: future projections are always only assessing what is *likely*.

455 Advice Bundle at 115, Figure 7.1.

456 LCANZ submissions at [323]

wrong. As set out above, the pace of change was the key consideration for the Commission in preparing its advice.[457]

[457] See also Box 5.4, Advice Bundle at 91 which summarises the Commissions analysis of the benefits and risks around pace.

PART G: LCANZ GROUND 3 – THE RULES TO MEASURE PROGRESS

Summary

545. Ground three is a challenge to one of the 'rules for measuring progress' that the Commission adopted in its Advice: the modified activity based approach to accounting for land sector emissions and removals (mainly forestry). This presented as an issue of statutory interpretation: LCANZ say that Parliament specifically directed the Commission to use the rules for accounting for land emissions and removals in the national inventory reporting under the UNFCCC. The Commission says that Parliament directed the Commission to itself decide the rules for measuring progress and that its choice was open to it.

546. The Commission also says in any event, that even if LCANZ' interpretation of the Act is correct, no error of law arises unless and until the Minister sets the budgets on the same basis.

547. In addition, even if established, this error is immaterial to the substance of the Advice, as it only affects the how the budgets are expressed not the level of ambition they represent. The budgets would have different numbers (and an accounting approach that the Commission assessed as not fit for purpose), but the level of real reductions in emissions would be unchanged.

548. It is noted that LCANZ addresses a great deal of evidence to support the merits of its preferred accounting approach. The Commission again reiterates its objection to the admissibility of this evidence and records that the respondents should not have been put to the cost of responding to it.

The Commission's Advice

549. Section 5ZA requires that the Commission must advise the Minister on a number of matters relevant to setting an emissions budget. These include at s 5ZA(1)(b) "the rules that will apply to measure progress towards meeting emissions budgets and the 2050 target".

550. The 'rules for measuring progress' refers to the system of accounting for greenhouse gas emissions that will be used to track the progress New Zealand makes towards emissions reductions to the 2050 target.[458] The Commission recognised that the

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458 Advice Bundle at 212 and 472.

methods used to calculate and attribute the amount of greenhouse gases emitted or removed from the atmosphere over time are a critical component of effective climate policy. Robust and accurate emissions accounting is therefore essential for setting emissions reduction targets, monitoring and evaluating progress towards meeting targets, and judging compliance.[459]

551. The Commission correctly understood its task was to use its expertise and expert judgement to determine which accounting approaches were best suited for setting the emissions budgets and delivering the 2050 targets.[460]

552. The Commission's advice on the rules for measuring progress is set out in Chapter 10 of the Advice[461] and Chapter 3 of the Supporting Volumes.[462] The Commission in particular discusses accounting choices related to:

552.1 the choice between production and consumption-based emissions estimates;[463]

552.2 voluntary offsetting and carbon neutral claims;[464] and

552.3 accounting for land emissions and removals (LULUCF).[465]

553. LCANZ' challenge the Commission's advice only on accounting for land emissions and removals, but the basis of its argument would appear to potentially encompass all the accounting rules that the Commission determined in its Advice.

Commission's approach

554. The Commission approached its task to advise on the rules for measuring progress from a 'first principles' basis.

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459 Advice Bundle at 213 and 472.

460 Advice Bundle at 212.

461 Advice Bundle at 211.

462 Advice Bundle at 470.

463 Advice Bundle at 214 – 215. Production-based accounting records greenhouse gases where they are released into the atmosphere; consumption-based accounting records greenhouse gases based on the "consumption" of the good or service that led to their creation. For example, under a production-based approach, the emissions of a vehicle with an internal combustion engine are (essentially) its exhaust fumes. Under a consumption-based approach, the emissions of the car would also include all the greenhouse gases produced from the construction of the car, and the mining and processing of all off its component parts.

464 Advice Bundle at 220 – 221.

465 Advice Bundle at 215 – 218.

555. In order to assess potential accounting choices, the Commission set a high-level objective for the overall goal of the accounting system, as well as principles for accounting to provide guidance on how to reach the high-level goal and ensure a coherent approach.[466]

556. The high-level objective adopted by the Commission was to ensure: "A robust, transparent accounting system that tracks genuine environmental gains while balancing completeness with practicality".[467] The principles for accounting provided that accounting for emissions budgets and the 2050 target should:[468]

556.1 **Seek to cover all material human caused emissions sources and sinks**. That is, accounting should, consistent with Paris Agreement expectations, strive for completeness – aiming for full coverage of sources, sinks and gases across all geographic areas. The goal of completeness does however need to be balanced by materiality. IPCC guidance recognises that it is acceptable to prioritise more significant emissions sources and sinks.

556.2 **Be grounded in robust science and evidence**. That is, accounting should reflect the current state of scientific knowledge, drawing on IPCC assessments and guidance. It should be informed by and use evidence and methods appropriate to New Zealand.

556.3 **Send a clear signal for climate action**. A key purpose of emissions budgets and the 2050 target is to drive the policies and actions needed to transition to a low emissions economy and contribute to limiting climate change. Accordingly, accounting should focus on distinguishing the lasting changes in emissions resulting from human actions, rather than capturing variations or changes which cannot be influenced by change human behaviour now or into the future.

556.4 **Be accurate and reduce uncertainty as far as practicable**. Accounting approaches should be accurate and reduce uncertainty as far as practicable to help emissions budgets fulfil the goal of providing greater predictability.

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466 Advice Bundle at 213 and 474 – 475.
467 Advice Bundle at 213 and 474.
468 Advice Bundle at 213 and 474 – 475; and Murray at [72].

556.5 **Be transparent, practical and acceptable**. Emissions budgets should clearly explain and document assumptions and methods; be practical, considering compatibility with existing accounting methods and the resources needed for implementation; and use recognised methods and formats, including IPCC guidelines (though, new accounting methods can be appropriately adopted where there is a strong case for doing so).

556.6 **Be consistent and maintain the integrity of the targets**. That is, ensuring coherence over time and avoiding inconsistencies such as double counting. Accounting methods and coverage can evolve as techniques and data improve. Accounting changes should not however be used to avoid the level of effort committed to when the 2050 target or emissions budgets were adopted.

557. It was against this high-level objective and accounting principles that the Commission assessed the different accounting options in each of the three areas on which it was giving advice.

Commission's Advice on accounting for land sector emissions and removals

558. In advising on the appropriate accounting treatment for land sector emissions and removals, the Commission considered the two broad frameworks already in use: national inventory reporting, which is used for reporting under the UNFCCC; and the activity based approach mandated by the Kyoto Protocol as modified for the NDC, which New Zealand will use for accounting for the first NDC under the Paris Agreement.[469]

Importance of the accounting choices for land sector emissions and removals

559. As explained by Eva Murray, land emissions and removals require particular attention in the development of any accounting framework because of the special characteristics of the land sector.[470] Unlike other sectors, the land sector acts as both a sink and a source of emissions – and as already described above, the land sector has a number of characteristics that can pose significant challenges for accounting and monitoring progress towards emissions targets. These include the fact that the rate of land sector emissions and removals can be (and in New Zealand is) subject to cyclical trends due to

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469 The Commission did not separately consider the 'unmodified' activity based approach used for reporting under the Kyoto Protocol, reflecting the fact that the second commitment period under the Kyoto Protocol ended in 2020 and New Zealand will not be using that approach in its future reporting under the Paris Agreement.

470 The particular features of the land sector that raise challenges for accounting for towards emissions targets are discussed in more detail in Murray at [21] – [23].

the harvest cycles of production forests, and the sector is also subject to the impact of legacy effects (in particular, past management decisions and other actions that affect the age distribution of forests can have a long-term effect on carbon fluxes for decades to hundreds of years).[471]

560. The challenges posed by the land sector for accounting and monitoring progress towards emissions targets are of particular significance in New Zealand. This is for two reasons: first (as already outlined), New Zealand's land sector emissions and removals are subject to pronounced cyclical variations at the national level, due to the particular features of New Zealand's production forests.[472]

561. Second, land emissions and removals play a significant role in New Zealand's emissions profile. For example, under national inventory reporting, in 2018 removals by forests were equal to around one third of New Zealand's greenhouse gas emissions from all other sources and two thirds of the total carbon dioxide emissions.[473]

562. As a consequence, the cycle of land emissions and removals has a major impact on New Zealand's overall emissions profile, and without an appropriate accounting treatment, emissions reduction targets might be very easy to meet without any additional effort, or unjustifiably difficult to meet, depending on where those targets fall in the forestry cycle.[474]

National inventory reporting vs modified activity based approach (NDC accounting)

563. Against this background, the Commission considered the two potential approaches for how New Zealand should account for land emissions and removals: national inventory reporting and the modified activity based approach.[475]

564. These two approaches are described in summary terms above in Part B, but for context a further more detailed discussion is set out here.

<u>National inventory reporting</u>

565. National inventory reporting[476] is the approach used in New Zealand's Greenhouse Gas Inventory for reporting emissions under the UNFCCC. The national inventory reporting

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471 Murray at [21] – [23].
472 Advice Bundle at 482 – 483; and Murray at [25] – [29].
473 Advice Bundle at 482; and Murray at [29].
474 This is discussed in more detail in Murray at [30] – [31].
475 Advice Bundle at 215 – 216 and 484 – 489; and Murray at [63].

approach estimates emissions and removals 'as they happen', including the effects of historical activities such as the regrowth of previously harvested natural forests and the cyclical peaks and troughs caused by the growth and harvest of exotic production forests.[477]

566. The Commission's Advice and Supporting Volumes explained that by trying to record emissions and removals when they occur, the national inventory reporting approach gives *in theory* a "truer representation of what the atmosphere sees".[478] As noted by Eva Murray and Paul Young however, there is a significant caveat to this point. That is, that the national inventory reporting measure gives a "truer representation of what the atmosphere sees" *in a particular year*. What the atmosphere sees in a particular year is not necessarily indicative of longer-term trends, nor is it representative of additional or enduring effort in terms of emissions reductions (or conversely, emissions increases).[479]

567. It is important to note that New Zealand has never used national inventory reporting to account for emissions reduction targets – only for reporting under the UNFCCC.

Modified activity based approach

568. The second option considered by the Commission was the modified activity based approach, also referred to in the Advice as "NDC accounting". This is the accounting approach that has been adopted by government for New Zealand's first NDC under the Paris Agreement, and is a modified version of the activity based approach mandated for target accounting under the Kyoto Protocol, incorporating gross-net accounting.

569. A detailed discussion of the approach prescribed under the Kyoto Protocol accounting framework, and the modified approach that government will take to accounting for the NDC under the Paris Agreement is set out in the Affidavit of Eva Murray.[480] By way of overview, the key features of each approach are set out below.

570. Activity based approach under the Kyoto Protocol.

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476 The Advice and Supporting Volumes also referred to national inventory reporting as a "land based" approach that uses the "stock change" accounting method for both pre 1990 and post-1989 forests". Other short-hand terms are also used in the Advice, such as GHGI accounting. In this proceeding the Crown refers to this as UNFCCC inventory reporting, and LCANZ also use the terms "Greenhouse Gas Inventory accounting" or "GHGI net".

477 Advice Bundle at 215 and 484; and Murray at [67].

478 Advice Bundle at 215 and 484.

479 Advice Bundle at 215 and 484; Murray at [68]; and Young at [57] – [66].

480 Murray at [34] – [59]. See also Brandon at [37] – [55]; and Advice Bundle at 215 – 216.

570.1 The Kyoto Protocol established a new accounting framework for land sector emissions and removals, known as an "activity based approach".[481] Unlike national inventory reporting under the UNFCCC, which aims to include all estimated emissions and removals from land use (regardless of what has caused them, or whether they reflect sustained change to a country's emissions profile), the activity based approach adopted under the Kyoto Protocol sought, in essence, to account only for the impact of *additional*, human-caused activities starting from the base year of 1990.[482] In this way, the accounting would measure and incentivise *changes in human activity* that governments could commit to and should be held accountable for.[483]

570.2 The Kyoto Protocol did this by providing that parties must account for land emissions and removals related to:[484]

(a) afforestation and reforestation (that is, planting of new forests on land that did not contain forest at the start of the 1990 base year); and

(b) deforestation (conversion of any forested land to a non-forested state).

570.3 For countries for whom the land sector was a net sink (source of removals) in the base year, activity based accounting was to be done in conjunction with gross-net accounting.[485]

571. Modified activity based approach, communicated for the first NDC.

571.1 The approach that New Zealand has communicated for its NDC under the Paris Agreement is a modified version of the Kyoto Protocol rules, known as a "modified activity based approach".[486]

571.2 The key change to the approach taken under Kyoto is the introduction of "averaging" for new forests planted post-1989 once they reach their long-term

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481 Murray at [36].

482 Murray at [37].

483 Murray at [37].

484 Murray at [38]. See also the discussion of the treatment of pre-1990 and post-1989 forestry under activity-based accounting in Advice Bundle at 216 and 485 – 486.

485 See the discussion of gross-net accounting in the Supporting Volumes: Advice Bundle at 488 – 489.

486 Murray at [52]. See also Advice Bundle at 215 – 216 and 484 – 489; and *Submission under the Paris Agreement: New Zealand's first Nationally Determine Contribution Updated 4 November 2021* (4 November 2021), CBD at 187 – 206.

average carbon stock.[487] At this point, the amount of carbon stored in the forest is at the level that it will on average contain over multiple harvest cycles.[488] Under the modified activity based approach, once the average carbon stock has been reached, there will be no further credits or debits for business-as-usual forest management activities, including harvesting, so long as the land is kept in forest.[489] Essentially, once a forest reaches its long-term average carbon stock, it is treated in the same way as pre-1990 forest under the Kyoto Protocol. [490]

571.3 In essence therefore, the modified activity based approach (including gross-net accounting and averaging) is designed to "smooth out" the harvest and re-growth cycles of New Zealand's production forests over time.[491] The approach factors out the cyclical trends from harvest and re-planting of production forests, to ensure that only long-term enhancements to New Zealand's forest carbon stocks are counted towards New Zealand's progress to meeting its NDC target.[492]

572. It is significant to note that New Zealand has always used an activity based approach with gross-net accounting in setting and measuring process towards its targets. This was obligatory under the Kyoto Protocol accounting framework for the first commitment period (2008 – 2012), was adopted by New Zealand for the 2013 - 2020 target taken under the UNFCCC corresponding to the second commitment period under Kyoto,[493] and (modified as above) is the approach that has been communicated by government for New Zealand's first NDC (2021 – 2030) under the Paris Agreement.

Commission's adoption of the modified activity based approach

573. Guided by the high-level objective and the principles for accounting that the Commission adopted, the Commission considered that the modified activity based approach that New Zealand will use for its first NDC was the most suitable accounting

487 Murray at [52]; and Advice Bundle at 486 – 488.
488 Murray at [53].
489 Murray at [57].
490 Murray at [57].
491 Murray at [57].
492 Murray at [59].
493 For discussion of New Zealand's 2020 target, see Plume at [48] – [50].

approach for land emissions and removals in measuring progress towards the emissions budgets and 2050 target.[494]

574. The reasons for the Commission preferring the modified activity based approach over national inventory reporting are explained in detail in the Advice in Chapter 10 and in the Supporting Volumes at Chapter 3,[495] with further detail provide in the affidavits of Eva Murray and Paul Young.[496]

575. Fundamentally the Commission preferred modified activity based accounting to national inventory reporting because under national inventory reporting New Zealand's emissions profile is dominated by the large cyclical swings in land sector emissions and removals. These swings do not represent any enduring changes to New Zealand's emissions (what is removed is eventually re-emitted, then sequestered, over and over again), but instead drown out other changes in emissions activity in New Zealand (in particular, genuine long-term reductions or increases in emissions). As a consequence using national inventory reporting would obscure actual progress – or lack of progress - towards targets. [497]

576. As already described above and explained by Paul Young in his evidence, this impact is so extreme for New Zealand that were national inventory reporting to be adopted, New Zealand would not just meet the 2050 net zero target for long-lived gases, but exceed it, with no change <u>at all</u> in the current policy settings – simply because of where New Zealand will be in the forestry cycle in 2050.[498]

577. Further, national inventory reporting also results in emissions estimates and projections that are highly variable and volatile over time. This is because while the cyclical *nature* of the sector is certain, the exact *timing* of when growers will harvest and re-plant commercial forestry comes is difficult to predict. These decisions can have a significant impact on New Zealand's total emissions and removals in a particular year, and consequently, on the ability to achieve emissions reduction targets in a particular year.[499] For example, on this approach a 2035 target that might be easily met if forestry harvesting and replanting had occurred as forecast might be missed by

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494 Advice Bundle at 212, 216 – 218 and 223.
495 In particular: Advice Bundle at 215 – 218 and 484 – 491.
496 Murray at [70] – [79]; and Young at [27] – [66].
497 Advice Bundle at 212, 216 – 218 and 490 – 491; Murray at [75] – [78]; and Young at [41] – [66].
498 Young at [49].
499 Advice Bundle at 217; and Murray at [75].

a significant margin, simply because (for example) market conditions brought forward forest harvesting by a year or two.

578. The Commission considered that national inventory reporting, or "what the atmosphere sees" in a particular year, is fundamentally ill-suited to measuring progress towards meeting the emissions budgets and the 2050 target.[500]

579. By contrast, the modified activity based method provides steady and predictable emissions estimates for these forests that reflect their enduring, long-term effect on carbon stocks, rather than temporary fluctuations.[501] In doing so, the modified activity based approach provides proper focus on the impact people's decisions have on emissions now and into the future, rather than rewarding or penalising decisions made in the past, and gives clear and stable policy signals about the action needed.[502] For these reasons, the Commission considered that the modified activity based approach was far better suited to setting emissions budgets and measuring progress against those budgets and the 2050 target.[503]

580. It is noted that Professor Forster (expert witness for LCANZ), acknowledges that the Commission's adoption of the modified activity based approach was reasonable, and that the Commission's justifications for its adoption set out in the Advice and Supporting Volumes were well argued.[504]

LCANZ' challenge in ground three

581. LCANZ' pleaded ground three alleges that – despite New Zealand never having used its national inventory reports to account for progress in meeting targets – Parliament made a deliberate decision to require the use of national inventory reporting measures to measure emissions and removals in assessing progress towards meeting the budgets and the 2050 target. LCANZ base this on an interpretation of sections 5Q and 5X, combined with the definition of "net accounting emissions" and their reading of the legislative history to the Climate Change Response (Zero Carbon) Amendment Act 2019.

582. The Commission's position is that s 5ZA directs the Commission to advise the Minister on a list of matters relevant to setting an emissions budget, including at (b) the rules

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500 Young at [57] – [66].
501 Advice Bundle at 212; and Murray at [78].
502 Advice Bundle at 212 and 216 – 218; and Murray at [75] – [78].
503 See Murray at [75] – [78]; and Young at [27] – [66].
504 Forster at [7].

that will apply to measure progress towards meeting emissions budgets and the 2050 target. The accounting rules used to set budgets and measure progress towards those budgets and the 2050 target are highly specialised matters, and Parliament deliberately vested the newly created expert advisory body with the task of considering and advising on those issues. The legislative history to the Zero Carbon Amendment Act confirms this intention.

583. Standing back, it is also untenable to infer (as LCANZ argue) that Parliament (and an inexpert select committee) would:

(a) establish an expert advisory body and *at the same time* remove from the consideration of that expert body and take on itself the task of one of the more complex and difficult technical issues in climate change (the relevant accounting rules)[505]; and

(b) itself set those rules on an entirely different basis from the rules that New Zealand has always used to set its emissions reductions targets and report progress towards them, including the rules used to set the 2050 target itself; and

(c) adopt a measure that has never been used for that purpose and is known to be unsuited to that purpose (and noting that the cyclical swings and volatility arising from national inventory reporting would be wholly inconsistent with the Act's purpose to provide "a framework by which New Zealand can develop and implement clear and stable climate policies" and budgets that provide "greater predictability"[506]); and

(d) set those rules in perpetuity (subject only to legislative amendment), despite it being a feature of international climate change good practice that accounting rules should evolve as science and understanding improves; and

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505 LCANZ in submissions at [358] emphasises how complex and specialised these issues are, especially for a lay person.

506 Climate Change Response Act 2002, ss 3(1)(aa) and 5W, LBA at 899 – 901 and 939.

(e) do so without <u>any</u> advice from officials on that topic nor any public engagement or consultation (noting that the Zero Carbon Bill followed years of policy development and extensive consultation[507]).

584. With respect, it would require very clear words in the Act to support an outcome of this significance.

The Act (as amended by the Zero Carbon Amendment Act)

585. The Act sets up a regime under which the Commission must advice the Minister on the rules that should apply to measure progress towards meeting emissions budgets (that is, how to measure or account for emissions). The Commission is then to monitor and report on the government's progress towards meeting emissions budgets, annually and at the end of each emissions budget period, and must do so in accordance with the rules that have been prescribed for measuring progress.

The operative provisions

586. The key provision is s 5ZA(1) of the CCRA, which provides:[508]

> **5ZA Commission to advise Minister**
>
> (1) The Commission must advise the Minister on the following matters relevant to setting an emissions budget:
>
> (a) the recommended quantity of emissions that will be permitted in each emissions budget period; and
>
> **(b) the rules that will apply to measure progress towards meeting emissions budgets and the 2050 target**; and
>
> (c) how the emissions budgets, and ultimately the 2050 target, may realistically be met, including by pricing and policy methods; and
>
> (d) the proportions of an emissions budget that will be met by domestic emissions reductions and domestic removals, and the amount by which emissions of each greenhouse gas should be reduced to meet the relevant emissions budget and the 2050 target; and
>
> (e) the appropriate limit on offshore mitigation that may be used to meet an emissions budget, and an explanation of the circumstances that justify the use of offshore mitigation (see section 5Z).

587. Notably, the Act envisages that this advice on the rules to measure progress is made *on each occasion* that the Commission advises on the next round of budgets. This reflects the expectation referred to above, that international practice in the complex

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507 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 4, LBA at 1068.

508 LBA at 940 – 941 (emphasis added).

sphere of climate change accounting will evolve and develop as science and understanding improves.[509]

588. Section 5ZJ provides that the Commission must regularly monitor and report on progress towards meeting an emissions budget and the 2050 target, and that it must do so in accordance with the rules referred to in s 5ZA(1)(b):[510]

> **5ZJ Commission to monitor progress towards meeting emissions budgets**
>
> (1) The Commission must regularly monitor and report on progress towards meeting an emissions budget and the 2050 target in accordance with sections 5ZK and 5ZL (which relate to reporting requirements).
>
> (2) The Commission must carry out its monitoring function **in accordance with the rules referred to in section 5ZA(1)(b)** (which relates to measuring progress towards meeting emissions budgets and the 2050 target).

589. Section 5ZK requires the Commission to report annually on the results of its monitoring. The Commission must prepare an annual report to be provided to the Minister which includes, for the most recent year of the emissions budget period for which data is available:

589.1 measured emissions and measured removals;

589.2 the latest projections for current and future emissions and removals; and

589.3 an assessment of the adequacy of the emissions reduction plan and progress in its implementation, including any new opportunities to reduce emissions.

590. Section 5ZL requires the Commission to report at the end of each emissions budget period. No later than two years after the end of an emissions budget period, the Commission must prepare a report for the Minister evaluating the progress made in that emissions budget period towards meeting the emissions budget for that period, including:

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509 See for example Brandon at [38] and [40], where Dr Brandon outlines how the IPCC periodically develop and regime the internationally-agreed methodologies for the calculations and reporting of national greenhouse gases and removals. The IPCC's good practice methodologies are binding on parties. See also Walter at [13] and [45] where he discusses the progressive development of the international framework for emissions reporting and accounting and the influential role of the IPCC in this process; and Plume generally for the development of the international accounting regime. In addition, see the Commission's advice on the future work the Commission recommended that government do on accounting for land emissions, which highlights the way in which accounting approaches are evolving and subject to methodological improvement: Advice Bundle at 219 – 220.

510 LBA at 947 – 948 (emphasis added).

590.1 an evaluation of how well the emissions reduction plan has contributed to that progress; and

590.2 recommendations on any banking and borrowing that would be appropriate; and

590.3 an assessment of the amount of offshore mitigation required to meet the emissions budget for that period, taking into account the limit proposed by the Commission under section 5ZA(1)(e).

591. It is also relevant to note s 5ZE, which sets out when emissions budgets that have already been set can be revised. Section 5ZE(1)(a) provides that when providing advice on a future emissions budget, the Commission may recommend revision of earlier budgets if, since the emissions budgets were originally set certain parameters have changed, including:[511]

> there have been **methodological improvements to the way that emissions are measured and reported**

592. This anticipates that the Commission is advising on the way that emissions are measured, and has the ability to advise changes to the budgets if there have been methodological improvements.

593. The statutory scheme established by ss 5ZA(1)(b), 5ZJ, 5ZK, 5ZL and 5ZE(1)(a) gives the Commission not only the power, but the duty to make considered decisions about the appropriate approach to measuring progress – that is, how to measure and account for emissions – towards meeting emissions budgets and the 2050 target.

Constraints on the Commission

594. The Commission's expert assessment of the appropriate rules however is not unfettered.

The statutory purpose

595. The two purpose provisions introduced by the Zero Carbon Amendment Act both contain important directions from Parliament as to the objectives to be met when considering the rules to measure progress.

596. For convenience these are set out again, from above. Section 3 relevantly provides:[512]

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511 LBA at 943 – 944 (emphasis added).

512 LBA at 899 – 901 (emphasis added).

(1) The purpose of this Act is to –

(aa) **provide a framework by which New Zealand can develop and implement clear and stable climate change policies** that –

(i) contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels; and

(ii) allow New Zealand to prepare for, and adapt to, the effects of climate change.

597. Section 5W relevantly provides:

> The purpose of this subpart and subparts 3 and 4 is to require the Minister to set a series of emissions **budgets** - ….
>
> (c) that provides **greater predictability for all those affected**, including households, businesses, and investors, by giving advance information on the emissions reduction and removals that will be required

598. The Act thus priorities clarity and stability and, especially in the context of the budgets, greater predictability. The Commission paid particular attention to this objective in preparing its advice on the rules to measure progress.

599. Given the known issues with major cyclical swings combined with unpredictability in year by year impacts in using a national inventory reporting approach for emissions reductions targets (above), LCANZ' argument that Parliament – at the same time as enacting this purpose statement – also intended to impose that accounting approach on the Minister, seems inherently unlikely.

The description of the target and budgets, and the definition of "net accounting emissions"

600. LCANZ place central reliance on the description in the Act of the 2050 target and the budgets, and the accompanying definitions.

601. Section 5Q is the provision setting out the 2050 target, and s 5Q(1)(a) says that the target 'requires that':

> **(a)** **net accounting emissions** of greenhouse of greenhouse gas in a calendar year, other than biogenic methane, are zero by the calendar year beginning on 1 January 2050 and for each subsequent calendar year ….

602. Section 5X requires the Minister to set the budgets, and at s 5X(4) provides:

> The Minister must ensure that the **net accounting emissions** do not exceed the emissions budget for the relevant emissions budget period.

603. "Net accounting emissions" is a new term, not used in any of New Zealand's reporting or accounting under the UNFCCC, Kyoto Protocol or the Paris Agreement. The term

was developed and adopted during the legislative process of the Zero Carbon Amendment Act (as discussed below). It is defined in section 4 of the CCRA, and means:

> the total of gross emissions and emissions from land use, land use change, and forestry (as reported in the New Zealand Greenhouse Gas Inventory), less
>
> (a) removals, including from land use, land-use change, and forestry (as reported in the New Zealand Greenhouse Gas Inventory), less—
>
> (b) offshore mitigation.

604. "Gross emissions" is defined as meaning:

> New Zealand's total emissions from the agriculture, energy, industrial processes and produce use, and waste sectors (as reported in the New Zealand Greenhouse Gas Inventory).

605. In other words, in alignment with the target accounting rules set under the Kyoto Protocol, net emissions *include* LULUCF and gross emissions *exclude* LULUCF.

606. These provisions constrain the Commissions' discretion as to the accounting rules to measure progress in a number of ways:

606.1 The 2050 target is a *net* target (ie includes LULUCF). As it is set as absolute amount (zero) rather than a percentage reduction on a previous year, the concept of net-net or gross-net pathway does not apply.

606.2 The budgets must use a measure of *net* emissions for the target year (ie including LULUCF), and since they are not set with reference to a particular base year similarly the concepts of gross-net and net-net do not apply. However, they must represent a trajectory from current levels, so will be set from where New Zealand is at the start point of the budgets using that same *net* measure of emissions (ie including LULUCF).

606.3 The emissions and removals data for each sector used to measure progress must be "as reported in New Zealand's Greenhouse Gas Inventory."

607. Within those parameters the question of how to measure and report emissions (including how account for land emissions and removals) for the purpose of measuring progress against the emissions budgets and the 2050 target is left to the Commission to provide advice on in the exercise of its expert judgement.

608. Notably, given LCANZ' proposition that Parliament specified that a national inventory reporting approach was to be used, section 4 does <u>not</u> define "net accounting emissions" as "net emissions as reported in New Zealand's national inventory report",

even though a definition to similar effect is used in defining 'removals' for some purposes of the Act. If Parliament had intended to be equally specific in terms of the definition of emissions it could be expected that similar precision would be used.

"As reported in the GHGI" – a question of fact

609. The phrase "as reported in New Zealand's Greenhouse Gas Inventory" refers to the requirement that emissions and removals data for each sector used to measure progress must be sourced from the official source of data that New Zealand uses to compile its reports under its international commitments: to the UNFCCC (the national inventory reports), in relation to the Kyoto Protocol, and under the Paris Agreement (NDC accounting).

610. The 'as reported' requirement is essentially a practical one. The Inventory is the authoritative source of evidence on New Zealand's greenhouse gas emissions. It is produced in line with rigorous requirements under the international reporting and accounting framework and is subject to annual review by expert review teams coordinated by the UNFCCC secretariat.[513] The task of putting together the Inventory is complex and there are significant technical challenges in gathering the data. The Inventory is also constantly evolving, and being revised in line with evolving obligations under the international reporting and accounting framework and as technical and methodological advancements are made. It would not be feasible, or desirable, for the Commission to attempt to duplicate the Inventory.[514]

611. The Act itself confirms that the reference to the GHG Inventory includes reference to all the different reports New Zealand makes under its international obligations. The Act defines the 'New Zealand Greenhouse Gas Inventory' as follows:[515]

> **New Zealand Greenhouse Gas Inventory** means the reports that are required under Articles 4 and 12 of the Convention, Article 7.1 of the Protocol, and Article 13.7 of the Paris Agreement and that are prepared in accordance with section 32(1)

612. Section 32(1) in turn sets out the 'primary functions of inventory agency', as being to:

> (a) estimate annually New Zealand's human-induced emissions by sources and removals by sinks of greenhouse gases; and
>
> (b) prepare the following reports for the purpose of discharging New Zealand's obligations:

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513 Walter at [46].

514 Advice Bundle at 473.

515 Climate Change Response Act 2002, s 4, LBA at 914.

> (i) New Zealand's annual inventory report under Articles 4 and 12 of the Convention and Article 7.1 of the Protocol, including (but not limited to) the quantities of long-term certified emission reduction units and temporary certified emission reduction units that have expired or have been replaced, retired, or cancelled; and
>
> (ia) any report of information by New Zealand under Article 13 of the Paris Agreement; and
>
> (ii) New Zealand's national communication (or periodic report) under Article 7.2 of the Protocol and Article 12 of the Convention.

613. Despite that clear indication in the Act, LCANZ' in evidence (Dr Bertram) asserted that the GHG Inventory does not include the reports under Kyoto and the Paris Agreement, but were on the contrary limited to only the national inventory report.[516] LCANZ' position on this ground of review as presented in evidence was thus that NDC accounting was not permitted because it was not "as reported in the GHG Inventory".

614. Dr Bertram has no specialist knowledge in this area and his evidence was clearly wrong, as the evidence from the respondents demonstrated (below). LCANZ appear not to be pursuing that line of argument in their written submissions, and the respondents should not have been put to the cost of addressing this evidence.

615. The evidence Dr Andrea Brandon makes clear that at present, the Inventory includes the data required for reporting under the UNFCCC and accounting for targets taken under the Kyoto Protocol and the UNFCCC, as well as the information necessary to demonstrate compliance with New Zealand's emissions reduction targets taken under the Kyoto Protocol and the UNFCCC.[517] From 1 January 2023 onwards, pursuant to New Zealand's obligations under the Paris Agreement, the Inventory will include:[518]

> Information necessary to track progress made in implementing and achieving New Zealand's nationally determined contribution (NDC) under Article 4. This will include New Zealand's reporting on its NDC, which New Zealand has advised will be accounted for using a "modified activity based" approach **(MAB approach)** for target accounting. …

616. As we are now in the compliance period for the first NDC under the Paris Agreement, the information necessary to track progress made in implementing and achieving New Zealand's NDC is already being assembled.[519]

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516 Bertram 1 at [34] – [42]

517 Brandon at [14] – [15]. See also at [16] – [23].

518 Brandon at [14]. See also at [16] – [23].

519 Dr Andrea Brandon explains that because it takes some time to assemble the relevant data and information, there is a lag in reporting. For example, the most recent inventory submission, published in April 2021 is for the period 1990 – 2019: Brandon at [19].

617. Paul Young for the Commission also confirms that both the activity based approach under the Kyoto Protocol and the modified activity based approach that New Zealand has adopted for its NDC are already or will be reported in the Greenhouse Gas Inventory, and the NDC reporting data is currently being collected for the Greenhous Gas Inventory, and will be reported from 2023.[520]

618. None of this evidence was challenged in reply evidence from LCANZ witnesses with Dr Bertram recording only that his evidence may have been misunderstood, and that "it is no simple matter" to locate the relevant data in the inventory reports.[521]

619. It appears that LCANZ now concede that that emissions accounted for using NDC accounting meets the requirement that net accounting emissions be 'as reported in the New Zealand Greenhouse Gas Inventory'.

LCANZ argument: "rules to measure progress" are not about accounting rules, only monitoring

620. LCANZ argument now appears to focus on the correct interpretation of the phrase "rules to measure progress".

621. LCANZ are vague on what they say the "rules to measure progress" are, if they do not include the accounting rules that measure and track emissions reductions to assess whether progress is being made to meet the emissions reductions budgets and the 2050 emissions reductions target.

622. LCANZ submit that s 5ZA(1)(b) – which expressly states that the Commission's advice on the rules to measure progress "is relevant to setting an emissions budget" – means (original italics, bold emphasis added):[522]

> … the Commission is to provide *advice* as to how *progress* is measured. **This relates to its role on reporting on the Government's progress** towards its emissions reduction and adaptation goals under s 5B(b), including progress toward meeting emissions budgets and the 2050 target under ss 5J(f) and 5ZI – 5ZL, and **does not relate to how *emissions are measured*.**

623. The same point is made later in submissions, where LCANZ say:[523]

> These rules however have nothing to do with measuring emissions.

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520 Young at [24] and fn 2. See also Smith at [147].

521 Bertram 2 [36] – [42], noting that in accordance with the principles outlined above, even if there had been a genuine dispute on a factual issue of this nature, in the absence of cross-examination of Dr Brandon and Paul Young their evidence must be preferred.

522 LCANZ submissions at [356.f].

523 LCANZ submissions at [381].

624. This is, with respect, an incoherent argument: the core way to measure progress against an emissions reductions target (in an emissions budget or the 2050 target) is to measure and thus track emissions, so you can quantify how emissions have reduced over time. It is not clear how LCANZ envisages the Commission could be fulfilling its task otherwise, if its monitoring and reporting did not include that basic measure of progress. The cross reference from ss 5J(f) and 5ZG to 5ZI that LCANZ rely on in fact demonstrate that the rules in s 5ZA(1)(b) must include rules on how to measure emissions (and hence changes in emissions) as that is central to the Commission's tasks.

625. The Commission also notes the consequence of LCANZ' view that s 5ZA(1)(b) has "nothing to do with measuring *emissions*", is that it removes from the scope of that provision *any* decision on emissions accounting as part of advising on the budgets, not just those relating to land sector emissions and removals.[524]

626. As the Commission's Advice demonstrates however, there are a range of important matters on which accounting decisions need to be made with respect to the emissions budgets and the 2050 target, aside from the accounting approach to be taken to land emissions and removals. For example, the Commission's Advice covers accounting decisions related to whether emissions should be accounted for on a production or a consumption basis, and the approach to be taken to voluntary offsetting and carbon neutrality.[525] With respect to future emissions budgets, there are any number of accounting questions that could arise, including with respect to matters where there have been methodological and technical advancements (as indicated by s 5ZE).

627. On LCANZ interpretation of the Act however, it appears the Commission would have no power to determine any of these matters. It seems unlikely that Parliament, in setting up an expert advisory body, would have intended to restrict the Commission's role in this way.

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524 LCANZ submissions at [356.f] and [381].

525 Advice Bundle at 214 – 215 and 220 – 221.

Did Parliament intend to remove the Commission's discretion and 'hard wire' the accounting rules?

628. LCANZ also argue that Parliament intended to "hard wire" in a particular approach to accounting for land sector emissions and removals (national inventory reporting) through the definition of "net accounting emissions".[526]

629. The Commission says that the requirements of s 5ZA(1)(b) are clear. Not only does the Commission have the power to advise the accounting approaches to be adopted for the emissions budgets and the 2050 target, the Commission is required to do so. The text and purpose of the Act (outlined above) confirm that, and this is also clear from the legislative history of the Zero Carbon Amendment Act 2019.

Legislative history of the Zero Carbon Amendment Act

630. LCANZ place significant reliance on the legislative history of the 2019 Amendment Act in making their argument that there is no role for the Commission in advising on the accounting approaches to be adopted in measuring progress against emissions budgets and the 2050 target.

631. The Commission says that read correctly, the legislative history of the 2019 Amendment Act supports the opposite view.

Cabinet materials relied on by LCANZ

632. LCANZ rely on cabinet materials in support of its view that the legislation "hard wired" in the national inventory reporting approach for land sector emissions and removals. They argue that while the original Cabinet decision approving the amendments that became the 2019 Amendment Act did envisage a role for the Commission in relation to the choice of accounting methodologies, this was reversed by the time the Bill was first introduced.[527]

633. In support, LCANZ refer to paragraph 67 of the Cabinet Paper providing advice to Cabinet on the proposed contents of the Amendment Bill[528] and paragraph 21 of the Cabinet Environment, Energy and Climate Committee Minute of Decision that recorded Cabinet's decisions as to the content of the Amendment Bill.[529]

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526 LCANZ submissions at [362], and also at [348], [356.b], [365] and [379].

527 LCANZ submissions at [360] – [361].

528 Cabinet Paper "Proposed Climate Change Bill" (19 December 2018), LBA at 1678.

529 Cabinet Environment, Energy and Environment Committee Minute of Decision "Proposed Climate Change Bill" ENV-18-MIN-0053, LBD at 1742.

634. Paragraph 67 of the Cabinet Paper provided:[530]

> I propose that the Commission advises the government on the emissions budget settings that should apply. The involvement of this independent body will increase the government's accountability, and bolster public confidence in the fact that decisions are founded in comprehensive evidence and rigorous analysis. The Commission's advice will include:
>
> (a) the level at which the emissions budgets should be set
>
> **(b) the accounting methodologies that will apply (eg, whether they should align with the accounting methodologies that apply to NDCs set under the Paris Agreement or those used for the New Zealand GHG Inventory)**
>
> (c) plausible pathways for meeting these budgets
>
> (d) an indication of the proportion of the emissions budget that will comprise biogenic methane, all other greenhouse gases, and removals (ie, from forestry) over the budget period
>
> (e) a cap on the number of international units that can be used to meet the emissions budget, noting that accessing international units is a last resort rather than a first choice
>
> (f) an indication of whether the Target remains appropriate or should be revised, to be included with its advice on the fourth, fifth and sixth emissions budgets.

635. The Minute of Decision of the Cabinet Environment, Energy and Climate Committee then records at paragraph 21 that Cabinet agreed that the Amendment Bill should provide that the Commission's advice must include:[531]

> 21.1 the recommended level of an emissions budget
>
> **21.2 the accounting methodologies that will apply**
>
> 21.3 plausible pathways for meeting emissions budgets, including price and policy pathways;
>
> 21.4 an indication of the proportion of the emissions budget that will comprise each GHGs, removals (ie, from forestry), and high-integrity international units;
>
> 21.5 set a cap on the number of international units that can be used to meet the emissions budget, noting that accessing international units is a last resort rather than a first choice;
>
> 21.6 an indication of whether the Target remains appropriate or should be revised, but only as part of its advice on the fourth, fifth and sixth emissions budgets.

636. Matters (a) – (e) of the Cabinet Paper and 21.1 – 21.5 of the Minute of Decision are then reflected in the proposed new s 5X of the Bill as first introduced.[532] Clause 8

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530 Cabinet Paper "Proposed Climate Change Bill" (19 December 2018) at [67], LBD at 1688 (emphasis added).

531 Cabinet Environment, Energy and Environment Committee Minute of Decision "Proposed Climate Change Bill" ENV-18-MIN-0053 at [21], LBD at 1744 (emphasis added).

532 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1), LBA at 1065 – 1105.

provided for the insertion of a new s 5X (now s 5ZA in the CCRA), setting out the matters on which the Commission was to advise the Minister:[533]

> **5X Commission to advise Minister**
>
> (1) The Commission must advise the Minister on the following matters relevant to setting an emissions budget:
>
> (a) the recommended quantity of emissions that will be permitted in each emissions budget period; and
>
> (b) **the rules that will apply to measure progress towards meeting emissions budgets and the 2050 target**; and
>
> (c) how the emissions budget, and ultimately the 2050 target, may realistically be met, including by pricing and policy methods; and
>
> (d) an indication of the proposition of the emissions budget that will be met by greenhouse has reductions, removals, and offshore mitigation; and
>
> (e) the appropriate limit on the amount of offshore mitigation that may be used to meet the emissions budget, including the reasons for the proposed limit and how the limit meets the requirement of s 5W(1).

637. LCANZ' submission appears to be that the fact that the Cabinet Paper and Minute of Decision refer to the Commission advising on "accounting methodologies", while the Bill as introduced refers instead to "the rules that will apply to measure progress" demonstrates that the Bill took a different approach to that envisaged in the Cabinet Paper and "hard-wired" in a particular accounting methodology.[534]

638. The Commission says the materials support the opposite conclusion. The Cabinet Paper and the Minute of Decision demonstrate that Cabinet specifically took the decision that the Commission would be required to advise on the accounting methodologies for tracking emissions reductions under the budgets and the 2050 target. The discussion specifically included that the Commission would advise on whether the accounting methodology should align with those used for the NDC or the national inventory reporting. It also linked this issue to the important objective of having such matters determined by an independent expert advisory body, to increase the government's accountability, and bolster public confidence in the fact that decisions are founded in comprehensive evidence and rigorous analysis.

639. Had there been a decision to reverse this clear policy decision and instead 'hard wire' an accounting approach into the Act prior to the introduction of the Bill – which would

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533 LBA 939 – 940 (emphasis added).

534 LCANZ submissions at [360] – [362].

have been a major change in light of that objective – it could be expected that Cabinet would have considered and approved that change. LCANZ do not put forward any such record and it appears none exists.

640. The more likely explanation for the shift from "the accounting methodologies that will apply" to "the rules that will apply to measure progress …" is that this was a drafting adjustment to ensure that the intention of the provision was not defeated by an unduly narrow reading of the phrase "accounting methodologies."

Legislative history materials – the scope of "rules to measure progress"

641. As LCANZ record, it is this phrasing – "the rules that will apply to measure progress towards meeting emissions budgets and the 2050 target" that appears in the Bill as introduced, in what was then a proposed new s 5X(1)(b).[535]

642. The explanatory note described that the Bill "seeks to strike a balance between flexibility and prescription in New Zealand's long-term transition", and focusses strongly on the establishment of the Climate Change Commission "to provide ongoing, independent expert advice". It refers to the decision that Parliament itself establish the 2050 target, but makes no reference to Parliament establishing the accounting methodology that would be used to measure and track emissions.[536]

643. The explanatory note describes the role of the Commission in relation to emissions budgets, saying in that specific context:[537]

> The model set out in the Bill was chosen because it will be enduring. It provides a stable policy environment that sends a strong signal to households, businesses and industry, while remaining flexible and responsive to changing circumstances. It will allow governments to adhere to the optimal transition pathway and manage any adverse impact of the transition to a low-emissions economy. **The Commission's role will enhance the credibility, transparency and accountability of the emissions budget system**.

644. The legislative history shows no indication that the accounting rules were to be 'hard wired' by Parliament, and no indication that the 'rules to measure progress' would "have nothing to do with measuring emissions" as LCANZ argue.[538] On the contrary, the opposite intention is clear.

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535 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1), cl 8, LBA at 1090.

536 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 1 – 2, LBA at 1065 – 1066.

537 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1) (explanatory note) at 4 – 5, LBA at 1068 – 1069 (emphasis added).

538 LCANZ submissions at [381]

645. The first is the Regulatory Impact Statement, referred to in the explanatory note, discusses the role of the Commission in relation to emissions budgets, recording:[539]

> ***Emissions Budgets***
>
> Under the proposed approach, the Commission and the responsible Minister will both have roles in determining the level of emissions budgets and the plans and policies for achieving them.
>
> In the general process, the Commission will advise the government on the emissions budget settings …
>
> The Commission's advice will include:
>
> - The level at which the emissions budgets should be set
> - **The accounting methodologies that will apply**
>
> …

646. This fully rebuts LCANZ argument that a policy decision had been made prior to the introduction of the Bill to reverse Cabinet's policy decision that the Commission should advise on accounting methodologies for the emissions budgets and 2050 target.

647. Also of note is the Initial Briefing from officials to the select committee. Officials set out a table that listed the Bill's proposal for each of the matters that the Commission would be required to advise the Minister on with respect to emissions budgets, and the rationale or explanation for each of those matters.[540] With respect to "the rules that will apply to measuring progress against the emissions budgets and the 2050 target", the briefing explained:[541]

> The **rules that apply to measuring emissions** can change, and new best practice can emerge. Requiring the Commission to provide advice on the rules that should apply to emissions budgets will **ensure that the institutional architecture established under the Bill is responsive to the latest developments and can remain current**.

648. The Departmental Report to select committee similarly tells against LCANZ' position that Parliament intended to hard wire a particular accounting approach into the Act. In again discussing the matters on which the Commission would be required to provide advice on relevant to setting the budgets, the Departmental Report stated:[542]

> The Commission's advice will include:
>
> - the level at which emissions budgets should be set
> - **the accounting methodologies that will apply (eg, whether they should align with the accounting methodologies that apply to NDCs set under the Paris Agreement or those used for the New Zealand GHG Inventory**).

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539 Regulatory Impact Statement at 142, LBA at 1493 (emphasis added).

540 Initial Briefing to select committee at 22.

541 At 22 (emphasis added).

542 Departmental Report at 85, LBA at 1622 (emphasis added).

649. The Departmental report also stated in response to submissions on what is now s 5ZC:[543]

> ***There is scope to amend the rules for measuring and reporting GHG emissions in the future***
>
> The Commission is also required to provide the Government with advice on the rules that should apply to measuring progress towards meeting emissions reductions and removals. If it is no longer appropriate to use GWP100 to calculate carbon dioxide equivalence, section [now **5ZA(1)(b)] provides scope for the Commission to recommend new methods for measuring** and reporting **GHG emissions**.

650. Similarly, the Departmental Report discussed the power to bank and borrow emissions reductions across budget periods (s 5ZF), and in particular provided advice on submissions on the proposed cap on borrowing. In discussing the appropriateness of a 1% cap, officials noted:[544]

> We further note that a 1% cap on borrowing in a New Zealand context is appropriate if we use the same accounting methodologies in respect of NDCs. This is due to the emissions accounting methodologies it takes to forestry, the harvesting of which is the greatest source of inter-annual variability in New Zealand's emissions. **Under section [now 5ZA(1)(b)], the Commission will advise on the accounting rules that will apply in conjunction with their advice on emissions budgets.**

651. As this material makes obvious, the intention of Parliament was that the Commission would advise on the appropriate accounting rules for measuring emissions as part of the rules for measuring progress towards meeting emissions budgets and the 2050 target.

Definitions of "net emissions", "net budget emissions" and "net accounting emissions"

652. LCANZ also argue that their interpretation is supported by the legislative history of the definitions of "net emissions" and "net budget emissions" in the Bill. LCANZ argue that the correct interpretation of these definitions results in the 'hard wiring' of the national inventory reporting approach as the only available accounting methodology measuring emissions (and thus setting budgets).

653. The first response to this argument is that the above legislative history is so clear, that any inference from the development of the definition sections could not overcome the obvious intention of Parliament to empower and require the Commission to advise on these issues, for the policy reasons described.

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543 At 79, LBA at 1616 (emphasis added).

544 At 95, LBA at 1632 (emphasis added).

654. However, again, the legislative history of these provisions is also contrary to LCANZ proposed interpretation.

655. In the Bill as first introduced:

655.1 Clause 8 provided for a new s 5O (now s 5Q), which provided that the 2050 target for greenhouse gases other than biogenic methane required:

> **net emissions** of greenhouse gases in a calendar year, other than biogenic methane, are zero by the calendar year beginning on 1 January 2050 and for each subsequent calendar year

655.2 "Net emissions" was defined to mean "gross emissions combined with emissions and removals from land use, land use change, and the forestry sector".[545]

655.3 Clause 8 provided for a new s 5U (now s 5X), which set out the duty of the Minister to set emissions budgets and ensure they are met, which required that:[546]

> The Minister must ensure that the **net budget emissions** do not exceed the emissions budget for the relevant emissions budget period.

655.4 "Net budget emissions" was defined as "gross emissions, offset by removals and offshore mitigation".[547]

656. The term "net accounting emissions", and the definition as it appears in the CCRA, was introduced at select committee, and replaced both "net emissions" and "net budget emissions".[548]

657. The select committee report to the House noted that):[549]

> The bill as introduced uses the term "net emissions" when accounting for the 2050 target and "net budget emissions" when accounting for emissions budgets. The difference between the terms is that net emissions do not include offshore mitigation. **We see no need for separate definitions since offshore mitigation is intended to be counted towards both the net zero component of the target, and emissions budgets. We therefore recommend replacing these terms with the single term "net accounting emission**s".

658. Similarly, in discussing the 2050 target, the select committee noted that:[550]

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545 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–1), cl 6, LBA at 1081.

546 LBA at 1089 (emphasis added).

547 Clause 6, LBA at 1088.

548 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–2), cls 6 and 8 (new ss 5O(1)(a) and 5U(4)), LBA at 1137 – 1138.

549 Climate Change Response (Zero Carbon) Amendment Bill 2019 (136–2) (select committee report) at 3, LBA at 1108 (emphasis added).

> As stated above, we recommend replacing the term "net emissions" in clause 8, new section 5O(1)(a), with "net accounting emissions". The term "net emissions" in the bill as introduced does not include offshore mitigation. **Our change would clarify that offshore mitigation could be counted towards the net zero part of the 2050 target**.

659. This makes it clear that the select committee in recommending this change to the House was not intending to hardwire the accounting rules for measuring emissions by dint of this definition.

660. The term "net accounting emissions" appears to have originated in the officials' Departmental Report to the select committee, which recommended removing the terms "net emissions" and "net budget emissions" and replacing them with "net accounting emissions" for both emissions budgets and the 2050 target.[551] Officials explained that the new term "net accounting emissions" was recommended to be used in the expression of the 2050 target because:[552]

> The 2050 target should be met primarily through domestic action to provide a signal of New Zealand's domestic transition to a low-emissions, climate resilient economy. Offshore mitigation provides an important flexibility mechanism, and is intended to be available for use against the net zero component of the 2050 target. **The definition of net emissions in the Bill does not provide for the use of offshore mitigation. We recommend that new term 'net accounting emissions' is used to account for the use of emissions reductions, removals, and offshore mitigation in meeting the emissions budgets and the 2050 target. This will also help to avoid confusion with the New Zealand GHG Inventory.** Offshore mitigation is discussed in more detail in relation to new section 5W.

661. Notably, officials advise the select committee that the new term would "help avoid confusion" with national inventory reporting (which officials referred to in the report at the New Zealand GHG Inventory). In other words, far from indicating an intention to set the accounting rules as the national inventory reporting approach, the amendment to the definition was intended, in part, avoid any confusion that it might have inadvertently done so by using the earlier terminology.

662. Similarly, with respect to the use of the term "net accounting emissions" in the context of the emissions budgets, officials advised the select committee:[553]

> **As offshore mitigation can be counted towards both the net zero component of the target and emissions budgets, there is no need for separate definitions of "net emissions" and "net budget emissions".**

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550 At 9, LBA at 1114 (emphasis added).

551 Departmental Report at 5, 34, 64 and 72, LBA at 1542, 1571, 1601 and 1609.

552 At 64, LBA at 1601.

553 At 72, LBA at 1609 (emphasis added).

> We recommend removing the definition of "net budget emissions" from new section 5S. A new definition of "net accounting emissions" will then be added to clause 6(1) that applies to both the net zero component of the target and emissions budgets, and is defined in relation to existing definitions of gross emissions and offshore mitigation. **The use of the term "net accounting emissions" will also distinguish it from the phrase "net emissions" as used in New Zealand Greenhouse Gas Inventory reporting**.

663. The legislative history therefore not only does not support LCANZ' interpretation of the term "net accounting emissions", but positively demonstrates that it was never intended that "net accounting emissions" was to denote the national inventory reporting approach to tracking net emissions.

LCANZ' other arguments

664. LCANZ raise a number of other arguments to support their position that the CCRA requires the use of national inventory reporting for accounting for land emissions and removals.

"Total" can only mean national inventory reporting

665. LCANZ appear to argue that a legislative decision to hard wire the national inventory reporting approach to measuring emissions, and exclude that issue from the Commission's expert advisory role, can be read into the word "total" in the definition of "net accounting emissions".[554]

666. Again, the clear legislative purpose and legislative history outlined above indicates that this is not a tenable interpretation.

667. However and in any event, the definition of net accounting emissions refers to sectors, and requires emissions and removals from each of these sectors to be taken into account. Under the modified activity based approach, emissions from the same emitting sectors as national inventory reporting are taken into account. It is simply that the modified activity based accounting takes a different approach as to *how* it accounts for emissions and removals *within* the land sector by focussing on particular activities in the land sector.[555]

668. The definition of "net accounting emissions" does not require *all* emissions and removals to be counted *within* each sector. That would be contrary to common sense, given the purpose of accounting for emissions reductions and the reasons behind the

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554 LCANZ submissions at [356.d], [368.b] and [382.b]

555 Young at [23].

evolution of the activity based and now modified activity based accounting approaches.

669. Total in this context indicates 'the sum of', not a statutory requirement for every possible emissions and removal to be included: noting that the national inventory reporting would not meet such a requirement either.

670. As already outlined, national inventory reporting is not a fully complete record of all emissions and removals across all the sectors. Methodologies change over time, and while national inventory reporting strives for as full a coverage as possible, the UNFCCC provides States with some discretion as to what parts of their emissions they measure and report on, and how they approach those tasks, recognising that measuring can be complex and expensive, as well as highly variable in accuracy.[556] Due to this discretion, national inventories can and do exclude entire categories of emissions and total coverage is not achieved. In some cases even for categories that are covered, the estimates are highly uncertain. For example, as explained by Dr Reisinger, if New Zealand were to adopt national inventory reporting for accounting under the NDC, a challenge would be posed because sufficiently detailed data is not currently available for key land categories (for example, wetlands and grazing lands), because this data is not currently collected.[557]

Delegation of power to change the target

671. LCANZ also argue that if the Commission were given the power to determine accounting approaches under s 5ZA(1)(b) of the CCRA, this would constitute an "extra-ordinary delegation of legislative power" raising Henry VIII issues.[558] The Commission notes that this issue was not pleaded.

672. LCANZ appear to be operating under the misapprehension that the Commission itself sets the rules to measure progress. The Commission in this Advice only made recommendations to the Minister on this issue.[559]

673. The Commission's role as an independent expert body advising on matters of specialist expertise is not an inappropriate delegation of power. Nor is it constitutionally

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556 See for example Dr Glade at [29] – [37] on the challenges of LULUCF estimations, and more generally Walter at [24] – [26], Murray at [21] – [23]. See also Brandon at [40].

557 Reisinger 1 at [51.3(b)].

558 LCANZ submissions at [356.g] and [380].

559 See Recommendation 5: Advice Bundle at 233. This role is stated explicitly in s 5ZA(1), LBA at 940 – 941.

improper for Parliament to have vested in the executive (the Minister) the ability to consider and act on that specialist and independent advice on the best approach (assessed with regard to the purposes of the Act) to measuring emissions, particularly where it is clear that Parliament anticipated that the approach to measuring emissions would change over time as technology and understanding of climate science evolve.[560]

674. Further, to the extent that the LCANZ argues that the Commission would be fundamentally changing the nature of the 2050 target by advising the Minister to adopt the modified activity based approach to accounting, the Commission notes – as was explained in its Advice, the Supporting Volumes and the evidence of Eva Murray – that activity based accounting is consistent with the analysis that informed the 2050 target.[561] In contrast, as Paul Young explains (and as discussed above), using the national inventory approach that LCANZ favours would in fact defeat the purpose of the 2050 target, by allowing it to be met and exceeded with no change to the government's policy settings at all.[562]

LCANZ' argument that it is not credible to suggest that Parliament intended to choose the modified activity based approach

675. In submissions LCANZ also argue that "it is not credible to suggest that Parliament intended to choose the MAB approach"[563] The Commission does not suggest this, rather its position is the exact opposite: Parliament did not make any decision on the accounting rules that should apply from time to time. Rather it vested the task of assessing and determining (and then advising on) the rules to measure progress with the Commission as part of each round of advice on the budgets.

The alleged error has no effect on the Budgets

676. Even if the Court accepts LCANZ position that the Act requires that emissions and removals are to be tracked using the national inventory reporting approach, this will not change the substance of the Budgets, that is, the level of emissions reductions actually required in each budget period. It will only change how that is expressed.

677. As already outlined, with no change to current policy settings, the national inventory approach would see New Zealand reach net zero by 2050 simply by the cyclical change in the removals from commercial forests. To set a budget using national inventory

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560 Confirmed in the CCRA itself, in s 5ZE(1)(a) (LBA at 943 – 944), and the legislative history discussed above.

561 Advice Bundle at 217 and 481; and Murray at [75] and [76].

562 Young at [49].

563 LCANZ submissions at [382].

reporting that actually required some action, the budget would need to be set at a level that accommodated the forestry cycle. That means the budget figures would veer widely as the cycle progressed. So, by way of a highly simplified example (using purely hypothetical figures):

677.1 If the Commission wanted to propose a budget for period A that allowed the economy to emit 105 $MtCO_2e$ less say 5 $MtCO_2e$ of removals other than from the forestry cycle, then using the NDC accounting approach it would set a budget of 100 $MtCO_2e$ (105 – 5);

677.2 Under LCNAZ' national inventory reporting approach the budget would also need to take into account the removals from the forestry cycle, which in this budget period A are, say, 30 $MtCO_2e$. So now the Commission sets the budget for period A as 70Mt (100- 30);

677.3 Then in period B the Commission wants to cut emissions to a lower level again, and allow for net emissions of 80 $MtCO_2e$, not counting the removals from the forestry cycle. But in this budget period the trees are growing fast and forestry removals are now forecast to be 60 $MtCO_2e$ – so under LCANZ' approach the budget for period B has to be set at 20 $MtCO_2e$ (80 – 60);

677.4 Then in the next period C, the Commission wants to cut net emissions down again, to 60 $MtCO_2e$ not counting the removals from the forestry cycle. But now the trees are being harvested and the tree cycle removals are only 5 $MtCO_2e$. So now under LCANZ' approach the budget has to be for 55 $MtCO_2e$.

678. The level of ambition is the same - the Commission is setting a budget each period that is a 20 $MtCO_2e$ reduction in 'real' net emissions (not counting the temporary removals from the forestry cycle) for each period. Under NDC accounting the budgets would look like:

- Budget A – 100 $MtCO_2e$
- Budget B – 80 $MtCO_2e$
- Budget C- 60 $MtCO_2e$

679. Under national inventory accounting, the same budgets reflecting the same level of ambition would look like:

- Budget A – 70 $MtCO_2e$
- Budget B – 20 $MtCO_2e$
- Budget C – 55 $MtCO_2e$

680. As explained above the progress to meeting budgets would also be subject to considerable volatility arising from the timing of the forestry cycles, as that is inherent in using the national inventory reporting approach. (Noting that neither the headline figures nor the inherent volatility under national inventory reporting would promote the purpose of clear, stable and predictable climate change policies).

681. These changes however have no effect on the substance (ie the level of ambition) of the budgets recommended by the Commission.

The Advice itself is not in any event unlawful

682. Even if the Court accepts LCANZ position that the Act requires *the Minister* to set budgets and measure progress towards the 2050 target using the national inventory reporting approach, that statutory obligation does not apply to the Commission's Advice. It applies only to the Minister in his decision to set budgets.

683. The Commission's function is to provide advice, and the Commission's expert view was that national inventory reporting is not an appropriate measure for accounting for progress to meet the first three the budgets. Regardless of the meaning of "net accounting emissions" it seems unlikely that Parliament intended to prohibit the Commission even giving advice on this topic as part of its advice on the rules to measure progress.

684. If the Court rules that the proper interpretation of the Act requires the Minister to adopt a different approach to that recommended by the Commission, then the Minister has a range of options. These might include seeking to change the Act to align with the Commission's views on what would be the better approach (if the Minister agrees with that Advice), or the Minister could proceed to set the budgets in accordance with the Court's ruling. The Minister may choose to seek further advice from the Commission under s 5K on the details of how that could be done.

PART H: GROUND 4 – NO REASONABLE BODY COULD HAVE RECOMMENDED THESE BUDGETS

Summary

685. Ground four is closely related to ground two and is an even more direct challenge to the correctness of the Commission's advice on the core question of "how fast" emissions could and should be cut in the first three budget periods. LCANZ alleges the Commission's approach is so unreasonable as to be unlawful. The Commission says that its Advice was the exercise of expert judgement on the core issue that Parliament had vested in it, and not unreasonable.

686. Many of the issues relevant to this ground of review have been canvassed already.

LCANZ' claim is extraordinary

687. LCANZ argue for a lower threshold and a higher intensity of review because of the importance of the subject matter. Those arguments are addressed above. LCANZ then submits however that the threshold in *Wednesbury* is met anyway, as "the Budgets are so unreasonable that no reasonable body would have recommended them."[564]

688. LCANZ is clear that its attack is squarely on the substance of the budgets – the level of emissions reductions they propose. This is the "how fast" question that was *the* fundamental question the Commission was addressing in its Advice. This is challenging the rationality of the highly complex and interconnected assessments made by the expert decision making body on the core issue that Parliament tasked it to undertake.

689. This is an extraordinary claim, and should give the Court some pause. It is inherently unlikely that an expert body of the calibre of this Commission, made up of seven highly qualified individuals appointed through a rigorous process involving cross-party support, and itself supported by expert and highly experienced staff, could have jointly and collectively acted so perversely.

690. LCANZ are lawyers, and the primary evidence they bring in support of this claim of unreasonableness is from an academic economist and a consultant economist working for NERA. None of them have any expertise in this area at all, let alone the level of expertise that could counter the heavy weight of the expertise in the Commission.

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564 LCANZ submissions at [392].

691. Even if they did, neither these two economists nor the lawyers who comprise LCANZ have had the benefit of a 17 month process, gathering and analysing evidence on a vast array of matters, hearing from over 15,000 submitters and 700 hui, with extensive inputs from other international and domestic experts. None of them have been party to the robust analytical processes and discussions that have taken place over months and months as advice was developed and tested and evolved.

692. LCANZ proposition seems to be essentially that the Commission acted unreasonably because the Commission did not set the budgets LCANZ say that it should have. LCANZ go further and plead at 2ASOC [119] the specific combined budget that they say the Commission should have set (no more than 400 $MtCO_2e$), apparently alleging that any budget other than this would be so unreasonable that no reasonable body could have recommended it.

693. The criticism made by Simon France J of Dr Bertram's evidence in another proceeding is broadly apt to this ground of review:[565] "this appears to be one economist's [or some lawyers'] opinion on what should have been … the first respondents' conclusion."

The Commission paid close attention to "how fast" (ie how deep the cuts)

694. This issue was the primary focus of the Advice on the budgets, and the analysis extends for some hundreds of pages, incorporating a vast array of inputs and assessment.

695. A useful summary of the Commission's thinking about the costs and risks of going too fast or too slow is set out in Box 5.4 of the Commission's Advice:[566]

565 *Coromandel Watchdog of Hauraki (Inc) v Minister of Finance* [2020] NZHC 1012 at [18].

566 Advice Bundle at 91.

Box 5.4: The consequences of setting emissions budgets more or less ambitious than recommended

In recommending emissions budgets, we have balanced the need for budgets to be ambitious, achievable, and fair, inclusive and equitable.

Some submitters to our *2021 Draft Advice for Consultation* have requested faster transitions, and in particular for deeper reductions starting immediately. More ambitious emissions budgets would mean transitioning faster than real-world constraints for deploying technology, developing supply chains, infrastructure and markets allow. This has a number of consequences:

- Communities may not have time to work together to plan for the changes they'll see in their community, or to determine solutions for supporting those most adversely impacted and least able to adjust.
- Households and businesses could need to prematurely scrap some assets like vehicles and boilers before the end of their useful life, increasing costs.
- Acting too quickly could have unintended consequences for reducing emissions. For example, reducing fossil gas too quickly could increase electricity prices and reduce electricity reliability. However, reliable and affordable electricity is vital for enabling greater emissions reductions by electrifying transport and process heat.
- Some of our industries – like cement and steel – are bespoke and hard to abate. Solutions for decarbonising these industries are further off. Acting too quickly could see some of these industries close before strategic decisions can be made. Once closed, it would be difficult to get these industries back again.
- Some businesses that do have solutions for reducing emissions may not have the time to plan, upskill staff and deploy these solutions. A quicker transition may therefore force these businesses to reduce production.
- Reducing production and closing industries would have significant flow-on effects to jobs, broader society and the economy. This could undermine public support for the transition. It would also reduce our resilience and ability to put in place solutions to make continual and lasting emissions reductions. Environmentally and socially sustainable jobs, a productive economy and the wellbeing of the people who live here are vital for future generations and sustainable prosperity over the long term.

Other submitters requested a slower transition, stating that our draft emissions budgets would be costly to meet. A less ambitious transition would mean transitioning slower than real-world constraints allow and comes with a number of consequences:

- Delaying action on reducing emissions would increase cumulative emissions and our contribution to warming. It would push the burden of reducing emissions to young people and future generations. It would risk other countries following suit. Slower global action would reduce the ability for society and natural systems to adapt to the physical impacts of climate change and expose a greater number of people to climate-related risks, including risks to health, water supply, and food security.
- Businesses would risk missing opportunities for developing new low-emissions products and services, and could lose market share or access to some markets or to investment from delayed action. Businesses could also be left with stranded assets from a delayed but more disruptive transition later. Climate change is a material financial risk, and investors are increasingly taking account of this. Businesses are responding to consumer demand for low-emissions products, and are increasingly looking at emissions across their supply chains and requiring their suppliers to reduce emissions.

- Delaying action could risk a faster, and more disruptive transition later that could have significant impacts on jobs, society and the economy. It risks missing opportunities for economic growth. It risks missing opportunities for driving down costs from deploying solutions and learning by doing. It may not allow time to plan and signal the transition, and ensure that costs do not disproportionately fall on those who are least able to bear those costs. It could also miss opportunities for improving health and health equity.
- It risks Aotearoa not being able to deliver on the 2050 targets as it fails to take account of the time it takes to deploy technologies, scale up supply chains and build infrastructure. In some areas, immediate and concerted action is needed now to build the momentum needed to deliver the emissions reductions needed by 2050.
- A slower domestic transition would require Aotearoa to pay for more offshore mitigation to meet our Nationally Determined Contribution (NDC) under the Paris Agreement. While offshore mitigation could be used to increase our contribution, it should be used in addition to domestic action rather than replace it (see *Chapter 22: Factors relevant to setting the level of the Nationally Determined Contribution*).
- A slower transition could put the country's international reputation on climate change and environmental issues at risk.
- A slower transition would fail to meet the criteria outlined in the Act to balance intergenerational equity and contribute to global action, and has social and economic risks as described in the preceding bullet points.

The irrationality alleged in LCANZ' submissions

696. LCANZ submissions make it clear that this ground of review is founded entirely on Dr Taylor's recalculation of a portion of the Commission's budgets using the national inventory reporting methodology.[567]

697. This is addressed above. It is wrong and misleading, and LCANZ allegations substantively misrepresent the Commission's Advice. As is clear from the Advice, the Commission's proposed budgets require genuine reductions in net emissions in each budget period, and demands real change across all sectors towards transitioning to a low emissions economy.

698. LCANZ does not contest that *under the target accounting approach* adopted by the Commission:[568]

698.1 The budgets show a real decrease in net emissions over the period 2022 – 2030;

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567 LCANZ submissions at [393] – [395]. As noted above, Dr Taylor is not even recalculating the total budgets set by the Commission for the full period 2022 - 2030. Rather, he has excluded the 3rd budget period (when reductions are steepest, and removals from forestry start to steeply increase) and has added in an estimate for 2021, when the forestry cycles removals are much lower.

568 LCANZ submissions at [21] – [23], [252] – [253], [321] and [393].

698.2 If implemented, the proposed budgets would see domestic net CO_2 emissions reduced to a 50% reduction from 2005/2010 emissions by the early 2030s – in other words, that the proposed budgets are broadly in line with the IPCC's global 'rule of thumb';

698.3 If implemented, the proposed budgets would see domestic CO_2 emissions reach net zero by 2038, exceeding the IPCC goal of 2045 – 2055.

699. The claim of unreasonableness is wholly predicated on LCANZ' position that using the national inventory reporting approach (and thus bringing into play the cyclical removals and emissions of commercial forests) is the only appropriate methodology to assess the budgets. In other words, that any other approach is so unreasonable as to be unlawful.

700. The ground of review is in reality a challenge on the choice of accounting methodology. That challenge is untenable, given the weight of highly expert evidence and analysis supporting the Commission's approach.[569]

Other claims made in 2ASOC but not addressed in submissions on this ground of review

Budget advice not consistent with the advice on the NDC – 2ASOC [118]

701. This claim was also made under ground two, and is addressed above.

Commission should have considered increasing budgets to reduce cost of offshore mitigation for NDC – 2ASOC [118B]

702. This was not a matter the Commission was required to have regard to under the Act. However, given the focus of the Commission's Advice and the close attention given to "how fast" (ie how deep the cuts could be) it is obvious that if the Commission thought that deeper cuts (for this purpose or any other) were feasible, it would have proposed them.

703. Dr Carr addressed a version of this argument put forward by Dr Taylor in his evidence.[570] Dr Carr's response was as follows:[571]

> I now turn to Dr Taylor's discussion of the affordability of the budgets through domestic action compared with offshore mitigation, and his view that unnecessary costs will be incurred if offshore mitigation is more expensive than domestic mitigation. The first point to note is that the budgets are intended to be met by

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569 Murray at [70] – [78]; Young at [19] – [92]; and Dr Glade at [67] – [94].
570 Taylor 1 at [138] – [146]; and Carr [103] – [112]
571 At [109] – [112]

> domestic action, so the relevance of the cost of offshore mitigation in setting the budgets is not particularly high.
>
> My response in relation to these points is that Mr Taylor is seeking a level of precision in respect of the projected costing of the different actions in a way that is not possible. Both the domestic and international markets are subject to huge amount of variability and uncertainty and there is immense difficulty in forecasting and projecting.
>
> The Commission did look at the relative costs of domestic and offshore abatement. However, the costs of offshore abatement are so inherently uncertain that any decision on budgets cannot be made with reference to it. Indeed, the range in the advice was between $30 to $140 per tonne. This further highlights why a cost benefit analysis simply would not work in this context. A cost benefit analysis may be appropriate when working within a plus or minus 20 per cent, not 400 per cent.
>
> Further, I note that the Commission's Advice does not lock the government into a particular course of action. If, in time, it transpires that offshore mitigation is indeed more expensive than additional domestic mitigation (which we do not and cannot yet know) and further domestic abatement proves possible, the government can seek to overachieve the emissions budgets and rely less on offshore mitigation to meet the NDC if it chooses.

704. The Commission considered this issue and exercised its expert judgement in how the cost of off-shore mitigation for the NDC might be taken into account in its advice on the budget. The approach it took was open to it, noting that Dr Taylor did not contest Dr Carr's evidence on this point, and nor did any other LCANZ witness.

Commission failed to assess options involving more ambitious targets – 2ASOC [118A] and [118B]

705. This is unfounded factually: the Commission's Advice is focussed on this very issue of "how fast" and the analysis and discussion of options is extensive.

706. LCANZ here may be repeating the claim made in ground two, that the Act required the Commission to undertake "some sort of" cost benefit analysis or multi criteria analysis as part of the analytical framework LCANZ say the Commission should have adopted.

707. That argument is addressed above. In short, there is no requirement in the Act prescribing any, let alone this particular, analytical approach by the Commission in formulating its Advice on the budgets. The legislative history is clear that Parliament intended the Commission to exercise its own expert judgement in that regard.[572]

708. Further, the evidence is that such an analytical tool was not useful or appropriate for the Commission's task.[573]. Even if the Court allows Dr Taylor's evidence on this topic to be admitted (given his total lack of qualifications and experience in climate change

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572 This is discussed above with respect to ground two.

573 Carr at [72] – [91]; and Toman at [15] – [28].

matters), should the Court consider it appropriate to engage in this issue, this contrary evidence is overwhelming.

LCANZ 'only reasonable' budget figure of 400 $MtCO_2e$

709. LCANZ selection of 'no more than 400 $MtCO_2e$' as the only reasonable budget that the Commission could have set is explained in Dr Bertram's evidence at [101] – [107], where he sets to show "how a 1.5°C budget might be validly constructed".

710. Matthew Smith's evidence however sets out in some detail the significant flaws in Dr Bertram's analysis.[574] No evidence in reply contested those criticisms.

[574] Smith at [162].

PART I - RELIEF

711. Should the Court uphold any of the pleaded grounds of review relating to the Commission's Advice, the nature of the appropriate remedy (if any) will obviously depend on the nature and materiality of the error identified by the Court.

712. The Commission's position, as outlined above, is that even if its Advice is wrong in law, that does not mean it acted unlawfully, nor that there is jurisdiction under the JRPA for its Advice to be quashed or set aside.

713. It is also respectfully submitted that the Court should pay close attention to the materiality of any established error, and consider the proportionality of any remedy in light of the public interest issues that would arise in quashing the Commission's Advice and sending the entire process back to the beginning.

714. As LCANZ emphasise in their submissions, action now is important. The budgets are only a number, and the urgency is to get moving on an action plan. All parties agree on the direction of travel: New Zealand needs to head towards the deepest cuts in net emissions that we can fairly manage as a society.[575] The argument is not between doing nothing and doing something, it is only a variation in the figures that we are aiming for. Are we heading to Plimmerton or Raumati Beach? We know for sure that either way we have to get on the motorway and go past Porirua.

715. In the Commission's submission it is critical that in arguing over the detail of the destination we do not hold up starting the journey.

716. It is also important to bear in mind that deeper cuts would never be an immediate option in any event: plans need to be made and options explored, then sector by sector policies developed to implement those plans, and actions taken. This is the work of years. The Commission's submission is that should the Court find a sufficiently material error to warrant intervention, then the Court should exercise its very broad discretion under s 17 of the JRPA to tailor a remedy in such a way that does not compromise the timeframes set under the CCRA for the first budgets and emissions reduction plan.

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575 Noting that LCANZ' expert Professor Sims acknowledges that that New Zealand's contribution to global greenhouse gases is so small that deeper and steeper cuts in New Zealand over the next eight years will in practical terms have no effect on reducing global warming, nor on the impact of global warming in New Zealand. All parties however agree that it is nonetheless important for New Zealand to reduce emissions as quickly as possible and transition to a low emissions economy. See Smith at [176], Sims 2 at [10] – [11].

717. The Commission also makes the following submissions in relation to each specific ground of review.

Ground one – the NDC Advice (alleged irrationality)

718. Ground one relates to the lawfulness of the NDC Advice. As outlined above, considered on its own (as pleaded against the Commission) this claim is of historic interest only and effectively moot. Even if the Court considers that the Commission acted irrationality in its approach to using the IPCC pathways to model comparator NDCs there is no utility in granting any relief, and no orders are required.

719. The Commission makes no submissions in relation to orders against the Minister in connection with the communication of the NDC, but notes that it is open to the Minister to request further Advice from the Commission under s 5K, should the Court require the NDC to be reconsidered. It is not necessary to quash or set aside the Commission's Advice for that purpose.

Ground two – misinterpreted s 5W(1), failed to follow prescribed analytical approach

720. If the Court upholds this alleged error and finds that the Commission was required by law to follow the prescriptive analytical process put forward by LCANZ, this means that the entire Advice on the budgets is fundamentally flawed.

721. As noted, in light of the above authorities, that does not mean that the Commission acted unlawfully in providing the Advice. The Court's findings will however provide an important signal to the Minister as to his obligations, assuming (as above) that LCANZ interpretation of s 5W(1) applies equally to him.

722. What should happen as a result of a finding of this nature is for the Minister to form a view on what he wants to do in response to the Advice, under the process already provided for in the Act in s 5ZB. The Minister also may seek further advice from the Commission under s 5K. It may be that the Minister may want the Commission to start its process all over again, but the Minister has many other options open to him.

Ground three – MAB accounting approach not permitted under the CCRA

723. Even if established, this error is immaterial to the substance of the Advice, as it only affects the how the budgets are expressed, not the level of ambition they represent. The Commission has provided advice on what it considered to be the maximum feasible level of emissions reductions over these budget periods, and changing the accounting approach will not change that assessment.

724. As outlined above, even if the Court accepts LCANZ position that the Act requires the Minister to set budgets and measure progress towards the 2050 target using the national inventory reporting measure, that statutory obligation does not apply to the Commission. It applies only to the Minister in his decision to set budgets. The Commission's advice is accordingly not unlawful: it must always have been entitled to provide advice on relevant matters within its expertise, even if putting that advice into effect may require a legislative amendment.

725. The Commission's expert view was that national inventory reporting is not an appropriate measure for accounting for progress to meet the 2022 – 2030 budgets. If the Court rules that the proper interpretation of the Act requires the Minister to adopt a different measure then the Minister could seek to change the Act to align with the Commission's views on what would be the better approach (if the Minister agrees with that Advice), or the Minister could proceed to set the budgets in accordance with the Court's ruling. The Minister may choose to seek further advice from the Commission under s 5K on the details of how that could be done.

726. Even if the Court considered that the Advice itself was unlawful under this ground, there would be no purpose would be served by setting it aside.

Ground four – the only reasonable budget is for emissions of no more than 400 Mt CO_2e

727. If the Court upholds this claim, there is again no purpose to be served by setting aside the Commission's Advice and requiring it be reconsidered. The finding would be specific enough to inform the Minister of his obligations under the Act, and should he wish for any assistance from the Commission in carrying out his task s 5K allows for that process.

DATED: 14 February 2022

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V E Casey QC/ S A H Bishop / H M L Farquhar

Counsel for the first respondent

ANNEX 1 – FAST REFERENCES

Reporting vs accounting

728. **National inventory reports:** inventory reporting under the UNFCCC that provide a year by year snap shot of emissions and removals. Does not involve targets or benchmarking. Also referred to as GHG Inventory, or UNFCCC inventory. LCANZ also refer to this as "GHGI accounting" or "GHGI net".

729. **Target accounting**: initially developed under the Kyoto Protocol to set binding commitments and measure progress.

730. **NDC accounting**: target accounting from Kyoto, modified for reporting against the NDC under the Paris Agreement.

Key concepts

731. **LULUCF** is the land sector (and does *not* include emissions from agriculture) – land use, land use change, and forestry (see also definition in the CCRA): mainly forestry.

732. **Gross and net** (see also definitions in the CCRA):

732.1 Gross **excludes** LULUCF (ie excludes both emissions and removals from the land sector);

732.2 Net **includes** LULUCF;

732.3 As the land sector in New Zealand is projected to remain a net sink (ie removing greenhouse gases from the atmosphere) gross figures will always be higher than net.

733. **Gross - net targets**:

733.1 A gross-net target requires a % drop in net emissions by the target year, measured against the gross emissions in the base year;

733.2 A net-net target requires a % drop in net emissions by the target year measured against the net emissions in the base year;

733.3 The Kyoto Protocol required that countries whose land sector were sinks in the base year (1990 for New Zealand) adopt a gross-net approach.

734. **Point targets** (eg zero carbon by 2050) are a milestone commitment, and are simply net emissions in the target year (the target is not expressed as a comparison with an earlier year).

735. **Emissions budgets** equally simply specify the amount of net emissions over the budget period (the commitment is not expressed as a comparison with an earlier year).

736. **Activity-based** accounting for the land sector (mandatory under Kyoto): in highly simplified terms this excludes emissions and removals from the repeating cycle for forests planted *before* 1990 (the base year), but includes new forestry activity after the base year.

737. **Modified activity-based** accounting for the land sector (developed for the NDC): in simplified terms this is the same as the activity based accounting under Kyoto (above) with the addition that the emissions and removals from repeating cycles of forest planted *after* 1989 are also excluded once the forests first reach maturity (through 'averaging').

738. **$MtCO_2e$** (metric tonnes of carbon dioxide equivalent): the volume of emissions and removals of all greenhouse gases calculated on the basis of each gas' warming effect in the atmosphere equivalent to a metric tonne of carbon dioxide.

739. **GWP_{100}** (global warming potential over 100 years): the global warming metric used to calculate the carbon equivalent value of greenhouse gasses. There are different GWP_{100} values provided for in the IPCC's Fourth Assessment Report (AR4) and the IPCC's Fifth Assessment Report (AR5).

Headline numbers

NDC

740. IPCC 'rule of thumb' is for *global* net emissions to reduce by 50% from 2010 levels by 2030.

741. Current NDC communicated on 4 November 2021 (after Commission's Advice) is to reduce net greenhouse gas emissions to 50% below gross 2005 levels by 2030. Also expressed as 41% reduction on 2005 levels using an 'emissions budget' approach.

742. Former NDC communicated in 2016 (on which the Commission was advising) was to reduce net greenhouse gas emissions to 30% below gross 2005 levels by 2030.

743. Commission's Advice on the 2016 NDC was that it needed to represent a reduction of *much more than* 36% below 2005 levels by 2030 (on an NDC accounting basis using AR4 values). This meant emissions of *much less than* 568 $MtCO_2e$ over the period 2021 – 2030 (or much less that 595 $MtCO_2e$ using AR5 values).

744. LCANZ 'recalculation' (using national inventory reporting – ie adding in the forestry cycle back in) is that an NDC set at that level would allow for:

744.1 net emissions for CO2 to *increase* from 5.0 $MtCO_2e$ in 2010 to 17.9 $MtCO_2e$ in 2030

744.2 net emissions for all gases to *increase* from 48.6 $MtCO_2e$ in 2010 to 52.6 $MtCO_2e$ in 2030.

745. LCANZ say that the NDC Advice should have identified emissions of much less than 484 $MtCO_2e$ over the period 2021 – 2030.

The Zero Carbon Amendment Act split gas target

746. For all greenhouse gases other than biogenic methane, net zero or below by 1 January 2050;

747. For biogenic methane:

747.1 10% less then 2017 emissions by 2030;

747.2 24% - 47% less than 2017 emissions by 2050.

Budgets

748. Commission's recommended emissions budgets (on an NDC accounting basis) allow emissions over the three budget periods (2022 to 2035) of 816 $MtCO_2e$ (AR4) or 855 $MtCO_2e$ (AR5).

749. Compared with past emissions (also measured on an NDC accounting basis), the Commission's budgets provide for:

749.1 A decrease in net CO2 emissions from 2010 to 2035 of 71%

749.2 A decrease in net emissions across all gases (other than biogenic methane) from 2010 to 2035 of 53%.

750. LCANZ refer to the Commission's budgets as providing for 648 $MtCO_2e$ (AR4) in the period 2021 to 2030. This is only the first two budget periods plus an estimate to cover the 2021 year (as the budgets start in 2022).

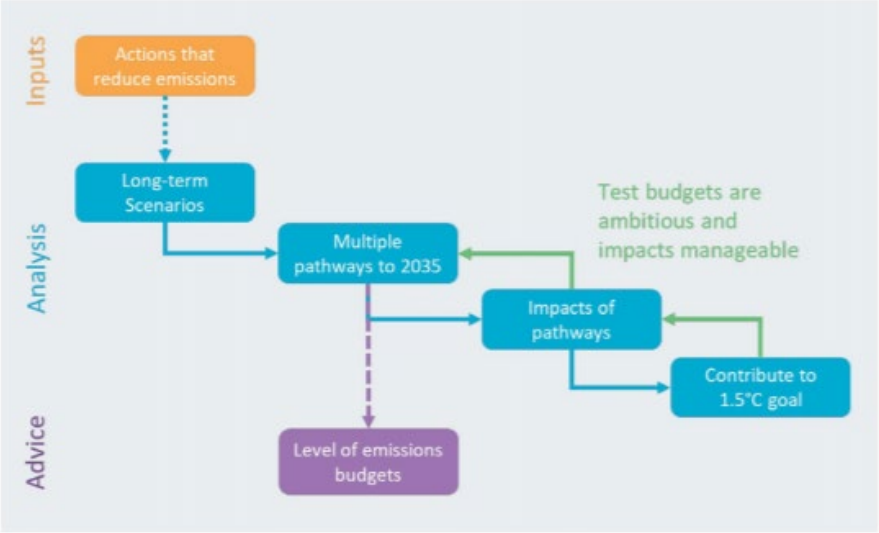
751. LCANZ (Dr Taylor's) 'recalculation' (using national inventory reporting but omitting the years 2030 – 2035) says that the Commission's recommended emissions budgets provide:

751.1 An increase in net CO2 emissions from 2010 to 2030 of 310% (since recalculated by Dr Taylor as 145% - LCANZ refer to this only in footnotes);

751.2 An increase in net emissions for all gases (other than biogenic methane) from 2010 to 2030 of 20% (since recalculated by Dr Taylor as 9% - LCANZ refer to this only in footnotes).

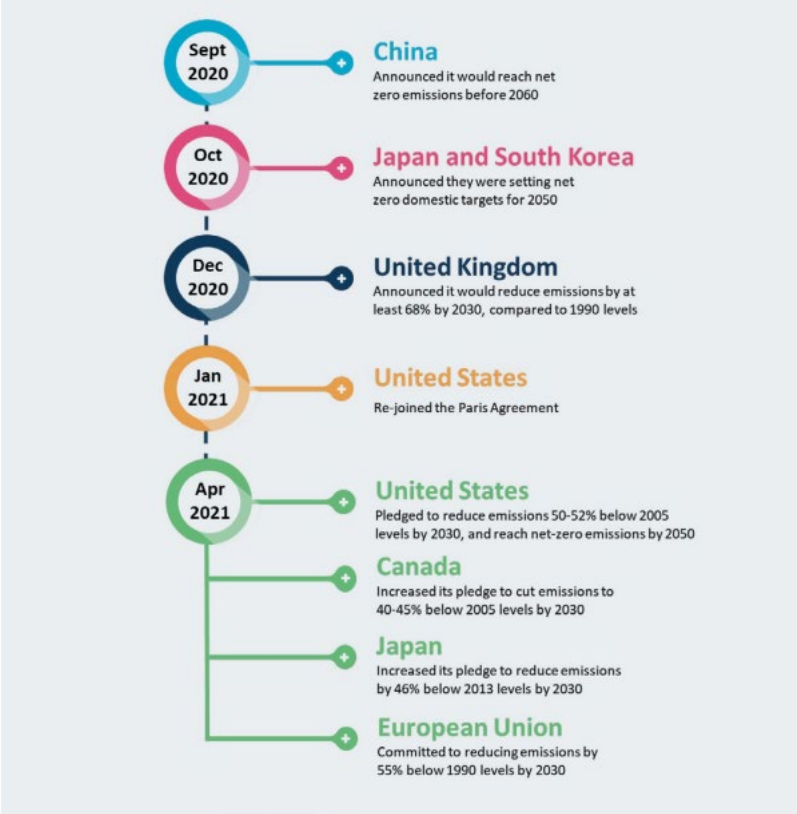
752. LCANZ say that the only reasonable budget that the Commission could have set is to allow for net emissions (using national inventory reporting) of no more than 400 $MtCO_2e$ (based on Dr Bertram's calculations).

ANNEX 2 – ILLUSTRATIVE REFERENCES TO THE OBJECTIVE OF CONTRIBUTING TO THE GLOBAL EFFORT UNDER THE PARIS AGREEMENT TO LIMIT THE GLOBAL AVERAGE TEMPERATURE INCREASE TO 1.5°C

Reference	Quote
Advice Bundle at 67	"Our task has been to recommend the levels of the first three emissions budgets. Key to this is working out how fast Aotearoa can reduce emissions, factoring the considerations within the Act. To do this, we divided our work up into different stages. Figure 4.2 summarises the different stages of our work. We began by pulling together evidence to help us understand the actions that reduce emissions, and data to use as inputs into our models. We then modelled long-term scenarios to 2050 and beyond, and multiple paths to 2035, and used the results to calculate draft emissions budgets. We tested these draft emissions budgets and made adjustments to ensure that they were sufficiently ambitious, they were a sufficient contribution to the global 1.5°C effort, and that any impacts were manageable. We discuss each of these stages in this section".  *Figure 4.2: Stages of analysis for developing the Commission's advice.*
Advice Bundle at 72	"To assess how our recommended emissions budgets would contribute to the global 1.5°C effort, we looked at how paths that would deliver our budgets compared to the IPCC's global 1.5°C pathways. We could not apply these global pathways directly to Aotearoa. Instead we drew out the key lessons and features from the global pathways and considered how these applied in the Aotearoa context".
Advice Bundle at 76	In setting the emissions budgets "We have been guided by the requirements and considerations under the Act": "Ambitious – emissions budgets that are ambitious and put Aotearoa on track to meet its emissions reduction targets, sustain those targets and contribute to the global effort of limiting warming to within 1.5°C of pre-industrial levels".

Advice Bundle at 78	"The Act outlines a series of requirements and considerations for the Commission when advising on emissions budgets. These requirements and considerations" include: "Ambitious – emissions budgets that are ambitious and put Aotearoa on track to meet its emissions reduction targets, sustain those targets and contribute to the global effort of limiting warming to within 1.5°C of pre-industrial levels".
Advice Bundle at 82	"Aotearoa has a strong focus on getting to net zero – the support for the Climate Change Response (Zero Carbon) Amendment Act in 2019 shows that this is a collective goal. At the same time, the Commission also has to consider how Aotearoa is contributing to the global effort of keeping warming to 1.5°C. 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. The targets in the Act were set at a level that the Government viewed to be in line with the effort of limiting warming to 1.5°C above pre-industrial levels. In setting these targets, the Government drew on the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C released in 2018. At a high level, this means that any emissions budgets set to meet our domestic targets are also consistent with what Aotearoa needs to do to meet international obligations".
Advice Bundle at 83	"We have also considered how emissions of the different gases would change under these budgets compared to the IPCC's assessment of global 1.5°C pathways. These global pathways provide useful insights for considering how our recommended emissions budgets contribute to limiting warming to 1.5°C. However, the pathways represent global averages and do not set out prescriptive pathways for individual nations. There is no 'right way' to reduce emissions".
Advice Bundle at 83	"The total contribution Aotearoa makes to the global 1.5°C effort is not limited to what can be done domestically. We have recommended emissions budgets that are ambitious and can be achieved solely through domestic actions. The Government can choose to increase the country's total contribution by reducing emissions offshore. This is discussed in more detail in *Chapter 21: The global 1.5°C effort and Nationally Determined Contribution for Aotearoa*".
Advice Bundle at 87 – 88	The key principles for a low-emissions transition strategy includes: "Take a long-term view to 2050 and beyond. Aotearoa will need to adopt actions that not only set it on a path to meet emissions reduction targets, but which sustain those targets beyond 2050, set up for net negative emissions later and contribute to the global effort to limit warming to 1.5°C. Meeting these goals requires a long-term view of investments and infrastructure developments. Actions that are taken in the next five years will need to set Aotearoa up to deliver the deeper reductions required in subsequent emissions budgets to meet and sustain the 2050 targets".
Advice Bundle at 139	"Being able to meet the budgets in different ways gives us confidence that there is enough flexibility in how the recommended emissions budgets can be met. Putting Aotearoa on track to its emissions targets and playing its part in the global effort to limit warming to 1.5°C requires budgets to be set at an ambitious level that will require hard work to achieve. However, if we make them too hard, there is no flexibility if things do not turn out how we plan".

Advice Bundle at 200	"The domestic emissions reduction targets for Aotearoa are set at a level the Government has judged to be in line with contributing to global efforts to limit warming to 1.5°C. This is a requirement under the Climate Change Response Act (the Act). To make sure the Climate Change Commission's (the Commission's) budgets are compatible with this, we have carried out a detailed assessment".
Advice Bundle at 200	"[The Advice considered] two components when assessing whether our emissions budgets are compatible with the global 1.5°C effort. 1. We looked at whether the emissions budgets are compatible with the 2050 emissions reduction targets. The country's carbon dioxide and methane targets were set by the government as our domestic contribution to the 1.5°C global effort. 2. We looked at how the emissions reductions for the different greenhouse gases in our work compare to the Intergovernmental Panel on Climate Change (IPCC) 1.5°C pathways. We looked at the relative reductions and global trajectories for the different greenhouse gases in the IPCC's work, drew out the key features, and then applied these in the Aotearoa context".
Advice Bundle at 201	"This is a new chapter in our final advice. It answers questions that were raised during consultation about the contribution of Aotearoa to the global 1.5°C effort".
Advice Bundle at 201	"In setting these 2050 targets, the Government drew on the Intergovernmental Panel on Climate Change (IPCC) Special Report on Global Warming of 1.5°C released in 2018. Through the 2050 targets set in the Act, Parliament has set the direction for what domestic contribution Aotearoa will make to the global 1.5°C effort".
Advice Bundle at 201	"This chapter outlines the science of the different greenhouse gases, the global emissions reductions modelled as compatible with the global 1.5°C effort, and our assessment of how our recommended emissions budgets are compatible with contributing to that effort".
Advice Bundle at 202	"During consultation, we received feedback from submitters asking how we could conclude that our draft emissions budgets aligned with contributing to the global 1.5°C effort while concluding that the Nationally Determined Contribution (NDC) under the Paris Agreement did not. The 2050 targets in the Act were drawn from the work of the IPCC and were set by the Government as our domestic contribution to the global 1.5°C effort. Emissions budgets must set Aotearoa on a path to meet the 2050 targets, must be achievable and focus on domestic actions. There are a broad range of factors outlined in the Act that we must consider in recommending emissions budgets – factors that do not always pull in the same direction".

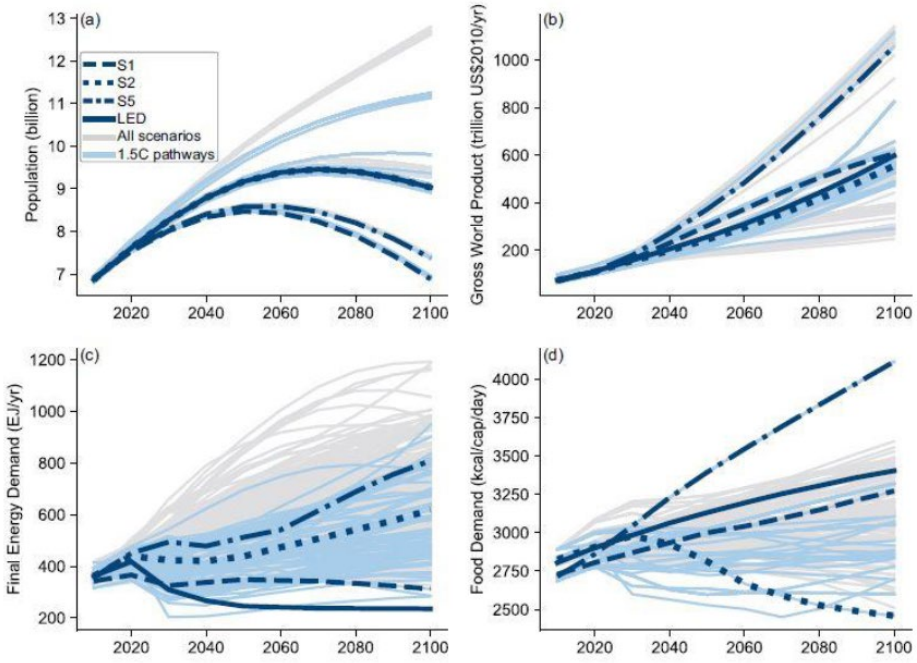
Advice Bundle at 205 – 206	"Reducing emissions requires a global effort – each country needs to do its part under the Paris Agreement. More and more countries are strengthening their international climate change commitments, particularly in the lead up to the next international climate change conference in November 2021. In the last 18 months, many of the world's largest emitters have already stated they would move to more ambitious emissions targets (Figure 9.3)"  *Figure 9.3: Increased climate change commitments since late 2020*
Advice Bundle at 207	"The IPCC has outlined a number of different global pathways that have a likely (50-66%) chance of limiting warming to within 1.5°C above pre-industrial levels. These pathways are drawn from peer-reviewed modelling studies. They are not based solely on atmospheric science, but also on the ease and costs of reducing emissions of different greenhouse gases across sectors, and consider a range of socio-economic scenarios".
Advice Bundle at 207	"Within all these pathways, limiting warming to 1.5°C requires the world to rapidly reduce emissions of all greenhouse gases between now and 2030. Slower reductions are then needed out to the end of the century".

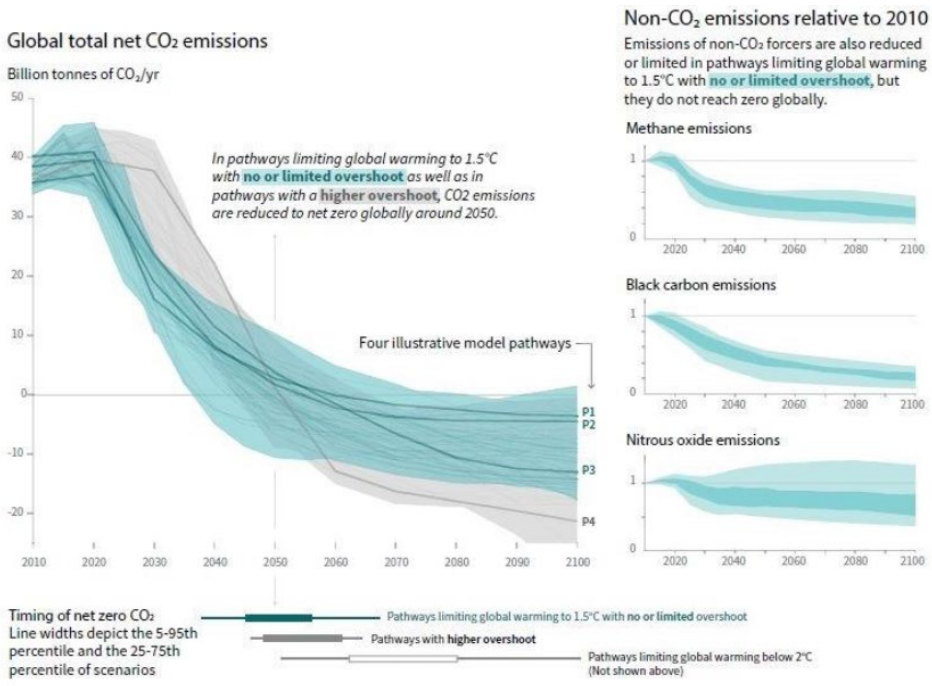
Advice Bundle at 207	"All these 1.5°C compatible pathways show: • Net emissions of carbon dioxide and other greenhouse gases peaking in the 2020s, then rapidly reducing through the 2030s and 2040s. • Emissions of methane reducing substantially through the next 20 years, but not reaching zero by 2050 or 2100, due to the short-lived nature of the gas and the difficulty of eliminating methane emissions from food production. • Emissions of nitrous oxide peaking in the 2020s and then reducing, but not reducing to zero due to the difficulty of eliminating nitrous oxide emissions from food production. • Gross emissions of long-lived greenhouse gases reducing to near zero by 2050".
Advice bundle at 207	"Most of these 1.5°C compatible pathways show: • Some remaining emissions in 2050 from hard-to-abate sectors. This includes things like carbon dioxide from cement manufacturing. As a result, emissions removals are required to ensure emissions reach, and remain at, net zero. • Carbon dioxide being removed from the atmosphere on an ongoing basis, beyond what is needed to keep emissions at net zero, to bring temperatures back below 1.5°C above pre-industrial levels after a temporarily overshoot".
Advice Bundle at 207	"It is often said that global emissions must halve by 2030 from 2010 levels to limit warming to within 1.5°C above pre-industrial levels. This is a useful rule of thumb, but is a simplification of the actual emissions reductions assessed by the IPCC. In the global 1.5°C pathways, net carbon dioxide emissions are modelled to reduce by around 50% by 2030. Emissions of other gases are modelled to reduce more slowly".
Advice Bundle at 207 – 208	"The global IPCC pathways provide useful insights for considering how our recommended emissions budgets contribute to the global 1.5°C effort. However, the pathways represent global averages and do not set out prescriptive pathways for individual nations. There is no 'right way' to reduce emissions. Care needs to be taken when applying the IPCC pathways to Aotearoa for three key reasons: • Many of the emissions reduction opportunities that will be most important for the world will not be as important in Aotearoa given our major sources of emissions. For example, globally, coal power generation accounts for a much larger share of emissions and it is here that the sharpest early reductions in the IPCC pathways occur. Most electricity generation in Aotearoa however is already renewable, so this large reduction opportunity does not exist for Aotearoa. • The IPCC pathways group the emissions of the individual gases in different ways to those in the Act. For example, the IPCC assessed reductions in methane from agriculture, while emissions budgets are set for biogenic methane. • The IPCC pathways are set relative to a 2010 base year, while the targets in the Act are set relative to 2017".

Advice Bundle at 208	"We have considered two components when assessing whether our emissions budgets are compatible with contributing to the global 1.5°C effort. The first and most relevant is whether the emissions budgets are compatible with the 2050 targets in the Act. This is because the 2050 targets were drawn from the work of the IPCC and were set by the government as our domestic contribution to the global 1.5°C effort. Our modelling shows that the emissions budgets set us on a track to meet the 2050 targets, both for long-lived gases and biogenic methane. As an additional consideration, we have also looked at how the emissions reductions for the different gases in the demonstration path compare to those in the IPCC's pathways. These are not directly comparable so we look at the relative reductions and global trajectories for the different gases in the IPCC pathways, draw out the key features, and then apply these in the Aotearoa context".
Advice Bundle at 208	"Table 9.1 shows the percentage reductions in net carbon dioxide, agricultural methane and nitrous oxide between 2010 and 2030 from the IPCC's pathways. The table also shows the reductions in these gases over the same period that the demonstration path would achieve".
Advice Bundle at 209	Net carbon dioxide: "Carbon removals by forests are a major opportunity to reduce net emissions in Aotearoa. Figure 9.4 shows the scale of carbon removals by forests in comparison to gross emissions of carbon dioxide in the demonstration path. Under the internationally agreed accounting rules, all emissions from deforestation are included, as are carbon removals from forest planted after 1989. This is different to the 2010 base year used in the IPCC pathways. However, by 2030 almost all of the forest removals are from forest planted after 2010, so the effect of the different base year is negligible. Figure 9.4 shows that Aotearoa reaches net-zero carbon dioxide emissions by 2038, ahead of the range in the IPCC pathways of 2045-2055".
Advice Bundle at 210	"Overall, our assessment is that our recommended emissions budgets are compatible with the 2050 targets and the requirements of the Act, and with contributing to the global effort to limit warming to 1.5°C above preindustrial levels".
Advice Bundle at 424	"Climate change is already happening, and past emissions have locked in further change. By signing up to the Paris Agreement, the world has committed to take action on climate change. Nations are responsible for determining how they will contribute to global efforts to limit warming to well below 2°C and pursue efforts to limit it to 1.5˚C above pre-industrial levels and reduce the risks and impacts of climate change. Aotearoa has set itself the goal in the Climate Change Response Act 2002 (CCRA) of contributing to efforts to limit temperature increases to 1.5˚C above pre-industrial levels. This chapter explores the science on climate change and sets out why urgent action is needed, looking at what effect our current behaviour has and what is at stake. It examines the forces affecting the global temperature, the role of different greenhouse gases and the possible emissions reduction pathways to meeting the 1.5˚C limit".

Advice Bundle 429	"Aotearoa has recently set out how it will act to reduce its own emissions. Under the CCRA, the government is required to contribute to efforts to limit warming to 1.5°C above pre-industrial levels. The CCRA establishes a domestic emissions reduction target for greenhouse gases for 2050. This target is to reduce biogenic methane emissions to 10% below 2017 levels by 2030 and 24-47% below 2017 levels by 2050 and reduce all other greenhouse gas emissions to net zero by 2050".
Advice Bundle at 429	"The CCRA also established the Climate Change Commission (the Commission). Our role is to provide advice to the government on the reductions in emissions over time that would ensure Aotearoa meets those targets, in the form of five-yearly emissions budgets. Critical for the Commission in providing this advice is an understanding of the size and rate of reductions in different greenhouse gases, and any other actions that may be required to limit warming to 1.5°C above pre-industrial levels".
Advice Bundle at 430	"The following section outlines the scientific understanding of emissions pathways compatible with limiting warming to 1.5°C above pre-industrial levels. The section draws primarily on the IPCC Special Report on Global Warming of 1.5°C as well as other more recent papers and reviews".
Advice Bundle at 431	"The IPCC also produces special reports that go into more detail on specific issues. In 2018, it produced a report on the advantages, opportunities and challenges of limiting warming to 1.5°C above pre-industrial levels. The conclusions of this report have been instrumental in many nations setting goals of limiting warming to 1.5°C, including here in Aotearoa".
Advice Bundle at 431	"The section first outlines the fundamental properties and impacts of the different greenhouse gases humans emit, before presenting the high-level results on global pathways compatible with the 1.5°C goal".
Advice Bundle at 437	"The IPCC Special Report on Global Warming of 1.5°C outlines the science on what global pathways are consistent with limiting warming to 1.5°C. In considering the pathways that are consistent with limiting warming to 1.5°C, the report draws on peer-reviewed modelling studies that are not based solely on atmospheric science, but also consider the feasibility and costs of reducing emissions across sectors and gases, using a range of socio-economic scenarios".

Advice Bundle at 437	"The IPCC report shows that limiting warming to 1.5°C will require rapid emissions cuts of greenhouse gases between now and 2030, then slower reductions until the end of the century. The 1.5°C compatible pathways show different pathways and reduction levels for the main greenhouse gases, which reflect their different warming properties and impacts. However, the compatible pathways have several features in common: • Emissions of carbon dioxide and other greenhouse gases need to peak in the 2020s then rapidly reduce through the 2030s and 2040s. • Gross emissions of long-lived greenhouse gases need to be near-zero by 2050. Most of the pathways have some remaining gross emissions in 2050 from hard-to-abate sectors: for example, carbon dioxide produced from cement manufacturing and nitrous oxide from agriculture. As a result, emissions removals are required in the pathways to ensure net emissions reach zero. • Emissions of short-lived gases such as methane need to reduce significantly through the next 20 years, but not necessarily to zero by 2050 or 2100".
Advice Bundle at 437	"The IPCC pathways for future warming contain a range of assumptions about economic growth, technology developments and lifestyles. The IPCC modelling found 1.5°C compatible pathways that covered a broad range of possible future developments across economic and demographic changes. The IPCC developed four archetype scenarios to illustrate the breadth of possible 1.5°C trajectories the world could take. The four scenarios are: S1 – A pathway based on sustainable development and a global focus on technology and behaviour change S2 – A pathway with moderate assumptions about technology and population growth S5 – A fossil-fuel intensive scenario, with a high reliance on carbon capture and storage and significant overshoot of the 1.5°C threshold LED – Low energy demand. A scenario with a stronger focus on energy efficiency".

Advice Bundle at 438.	"Figure 1.7 illustrates the range of assumptions in these scenarios in population growth, world gross domestic product, global energy demand and global food demand. All 1.5°C scenarios are included in light blue; all other scenarios are included in grey; the four illustrative scenarios are highlighted in dark blue".  *Figure 1.7: Range of assumptions and drivers in scenarios modelled by the IPCC*[44]

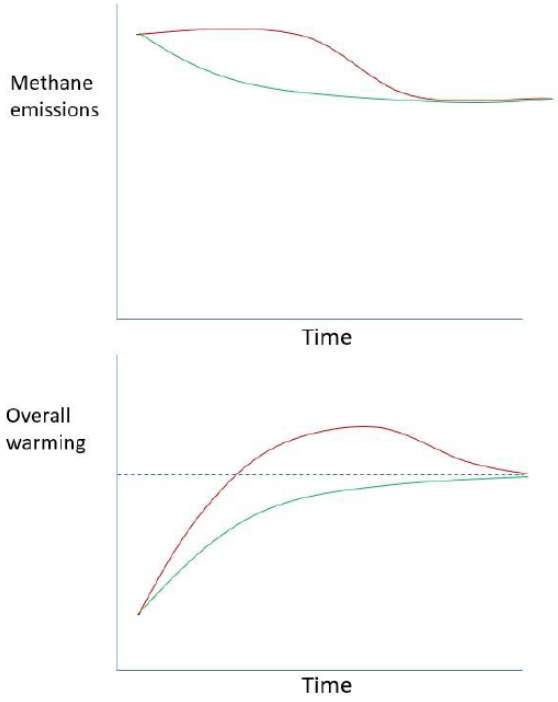
Advice Bundle 438 – 439	"Figure 1.8 illustrates that keeping warming to 1.5°C is not dependent on a particular technology, or any single future pathway for global development. There is a range of possible futures where the 1.5°C goal is achieved. The modelled pathways that were the most difficult to keep warming to 1.5°C were those with significant fossil fuel development (SSP5), low global cooperation (SSP3) or high global inequality (SSP4). The middle-of-the-road assumptions (SSP2) with limited global cooperation, some technological progress and medium population growth, were still compatible with keeping to 1.5°C. A key conclusion from the scenarios that are compatible with limiting warming to 1.5°C is that they all assume global population and food demand will increase over the course of the century, although some of the scenarios expect both population and food demand to drop by 2100".  *Figure 1.8: Global 1.5°C emissions pathways used by the IPCC*[46]

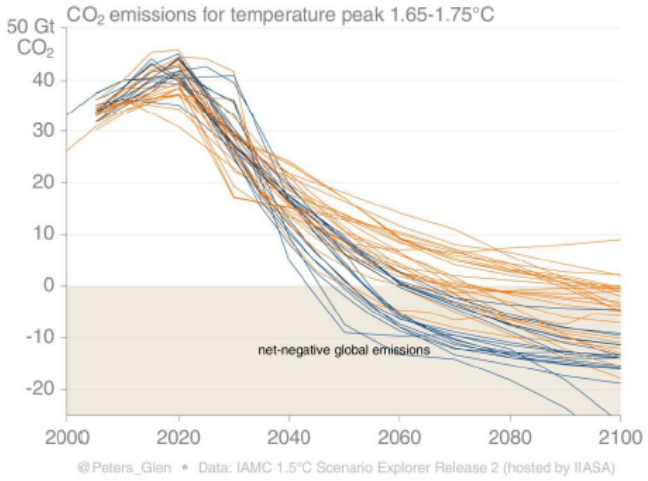
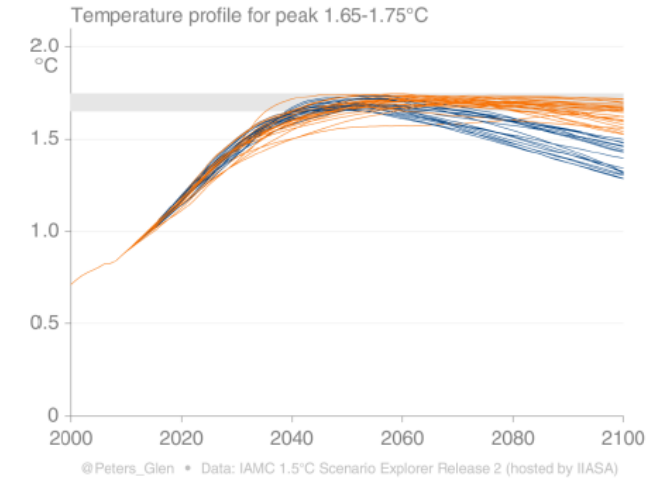
<table>
<tr><td>Advice Bundle at 439—440</td><td>“Most of the scenarios that the IPCC modelled overshoot 1.5°C warming to some extent before returning back to 1.5°C in the second half of the 21st century. To bring warming back down, they require removing carbon dioxide from the atmosphere – for example, by sequestering carbon dioxide in permanent forests or using carbon capture and storage – or deeper reductions in methane and other short-lived gases. The IPCC classified different modelled pathways based on how much they would overshoot 1.5°C (Table 1.1) and concluded that pathways with little or no overshoot were the most likely to limit warming to 1.5°C. These pathways were also assessed as the ones most likely to lead to the best overall social, economic and environmental outcomes”.

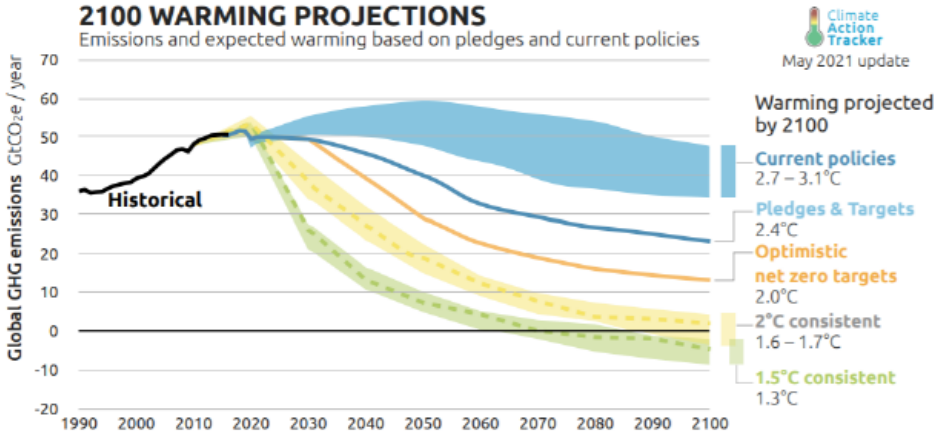
Table 1.1: The IPCC classified the 1.5°C pathways based on how much they would overshoot 1.5°C[48]

<table><tr><th>Level of overshoot</th><th>Description</th></tr><tr><td>No overshoot</td><td>Pathways limiting peak warming to below 1.5°C during the entire 21st century with at least 50% likelihood.</td></tr><tr><td>Limited overshoot</td><td>Pathways limiting median warming to below 1.5°C in 2100 and with a 50–67% probability of temporarily overshooting that level earlier, generally implying peak warming of less than 1.6°C.</td></tr><tr><td>Higher overshoot</td><td>Pathways limiting median warming to below 1.5°C in 2100 and with a greater than 67% probability of temporarily overshooting that level earlier, generally implying peak warming of 1.6-1.9°C.</td></tr></table></td></tr>
<tr><td>Advice Bundle at 440</td><td>“Based on the above analysis, we have excluded pathways with higher overshoot from our analysis of 1.5°C compatible pathways – both for the globe and for Aotearoa”.</td></tr>
<tr><td>Advice Bundle at 441</td><td>“From here on, we refer to pathways that are compatible with limiting warming to 1.5°C with no or limited overshoot as ‘1.5°C compatible pathways’”.</td></tr>
<tr><td>Advice Bundle at 441</td><td>“Within the IPCC 1.5°C compatible pathways there are a wide range of assumptions that feed into the models. Some of these are less likely than others. For example, some of the pathways assume slower reductions in gross emissions which are then offset by removals in the order of 7-13 $GtCO_2$ each year”.</td></tr>
<tr><td>Advice Bundle 442</td><td>“Since the Fifth Assessment Report and the IPCC Special Report on Global Warming of 1.5°C, there have been several comparisons and assessments of the range of available climate models. One factor that has improved in the models over time is how they model the sensitivity of the climate to the greenhouse gases. The updated evidence on the sensitivity of the climate has narrowed the range of possible response to future greenhouse gas emissions. As this revised uncertainty in the earth’s climate sensitivity largely affects the tails of the distribution, the central estimates of projected warming remain similar to those shown in the Fifth Assessment Report and the IPCC Special Report on Global Warming of 1.5°C. This gives us greater confidence that the emissions pathways presented in the IPCC Special Report on Global Warming of 1.5°C provide a sound basis for describing the actions needed at a global level to limit warming to 1.5°C”.</td></tr>
</table>

Advice Bundle 442	"These pathways give the ranges of reductions for each gas that have been modelled to limit warming to 1.5°C. They all require significant and rapid reductions in carbon dioxide and methane. Within them, there are different combinations of reductions of the gases and emissions removals that can potentially lead to the same warming outcomes. However, different combinations of actions can have different implications on longer-term temperatures and impacts, and on the costs people face".
Advice Bundle at 442	"In the IPCC pathways, the level of cuts to methane emissions modelled in the long-term to be compatible with the 1.5°C goal depends on two inter-related relationships: 1. the speed of reaching net zero for long-lived greenhouse gases, and 2. the extent to which we can rely on removal technologies".
Advice Bundle at 444	Metrics are used in a range of contexts where there is a need to aggregate, compare or evaluate emissions of multiple greenhouse gases." They are used in: "Evaluating pathways, to consider trajectories across different gases to reach climate policy objectives, such as emissions reduction targets or the 1.5°C temperature goal".
Advice Bundle 444	"There is wide agreement across scientists that the appropriate choice of metric cannot be determined by science alone but depends on broader policy contexts and goals and underlying value judgements. Different metrics have different strengths and weaknesses and there is no one 'correct' metric that is useful for all purposes. This can be illustrated by considering the GWP with a time horizon of 100 years (GWP100, the metric adopted for reporting aggregate emissions under international agreements) with GWP*. When GWP100 is used to look at mitigation scenarios over long timeframes (several decades or longer) it does not provide robust estimates of actual temperature outcomes. It does not give good information for making decisions about trade-offs between reducing methane emissions visà-vis carbon dioxide emissions when considering trajectories for, or compliance with, temperature targets such as the 1.5°C goal in the CCRA".

Advice Bundle 445 – 446	"Reducing methane emissions earlier rather than later in the century leads to a higher likelihood that temperatures will not overshoot the 1.5°C threshold. Figure 1.11 illustrates two generalised scenarios for a given level of cuts to methane in the long-term. The trajectory of cuts to long-lived greenhouse gases are the same in both scenarios, as are the long-term cuts to methane emissions. Consequently, the final temperature is also the same in both scenarios. However, in one scenario the cuts to methane emissions happen earlier, which leads to temperatures remaining below the final temperature threshold rather than overshooting and then returning to it".  *Figure 1.11: The impact of early action (green line) versus later action (red line) on reducing methane emissions. The same level of reduction in methane would ultimately lead to the same temperature outcome. However, earlier cuts lead to less cumulative warming and reduce the chance of overshooting the goal and experiencing the negative impacts associated with higher temperatures.*
Advice Bundle 446	"As a result, in modelled pathways compatible with limiting warming to 1.5°C, much of the cuts to biogenic methane occur between 2020 and 2030, with slower reductions between 2030 and 2050 and much more limited reductions after 2050 (as illustrated in Figure 1.11). The timing of cuts to methane required to be compatible with the 1.5°C global goal depends on our view of overshoot and how much we value avoiding warming in the near-medium term in addition to reducing warming in the long-term. It also depends on how much we wish to rely on removals to meet our goals and for what purpose we want to use those removals".

Advice Bundle at 447	"Our domestic emissions reduction goal raises an important question about the level of effort that is required to reduce emissions. Aotearoa has set a different goal for its domestic actions compared to what may be required under the wording of the Paris Agreement – Aotearoa has set a domestic target of limiting warming to 1.5°C. The Paris Agreement sets the goal of limiting temperature increases to well below 2°C while pursuing efforts to limit the temperature increase to 1.5°C. How material is the difference of a few tenths of a degree between our domestic and international obligations? Analysis of the 1.5°C compatible pathways compared to pathways that limit warming to well below 2°C shows some key similarities (Figure 1.12). Both sets of pathways require very similar reductions in gross emissions, particularly of carbon dioxide. The rates that global temperatures change out to the peak temperature are also broadly the same (Figure 1.13). Under both temperature goals, carbon dioxide needs to rapidly reduce over the next two decades and reach very low levels by 2050. The main difference is in the amount of carbon dioxide removals required in the different pathways. More emissions removal is needed in the 1.5°C compatible pathways to limit warming to the temperature target, often by bringing the temperature back down to 1.5°C after it has overshot the target".  *Figure 1.12: Reductions in CO_2 required in pathways compatible with less than 2°C (orange) and 1.5°C (blue)*[62]  *Figure 1.13: Peak temperatures in less than 2°C (orange) and 1.5°C compatible with limited overshoot (blue). 1.5°C compatible pathways reach the same temperatures before dropping back down.*[63]

Advice Bundle at 457	"Current policies by countries put the world on track for around 3°C of warming. But countries have been implementing policies to reduce emissions and ramping up future commitments. Projected emissions in 2030 and beyond are now significantly lower than they were projected to be in 2010. 2 Figure 2.1 from the May 2021 Climate Action Tracker update highlights that if all international commitments, including existing Nationally Determined Contribution (NDCs), were achieved, the world would be on track for 2.4°C of warming by 2100 (blue line). This is significant progress, but still not enough to be consistent with 1.5°C or 2°C goals (green and yellow lines respectively). The gap in trajectories before 2030 is particularly stark, highlighting the need for accelerating climate action immediately".  *Figure 2.1: Global warming projections under different policy futures to 2100*[3]
Advice Bundle at 546	"The results of the IPCC's modelling show that instead of pursuing 100% renewable electricity by 2035, more emissions savings could be achieved through accelerated electrification of transport and process heat. However, while using natural gas in the electricity system may be an effective mechanism to minimise emissions and achieve security of supply until 2035, eventually all fossil fuel generation would need to be eliminated and the dry year issue addressed to contribute to efforts to limit the global average temperature increase to 1.5°C above pre-industrial levels".
Advice Bundle at 1051	"We can already see the physical impacts of climate change in Aotearoa today, and these changes are expected to continue. On a global scale, acting earlier to tackle climate change will reduce total emissions and help to reduce the severity of impacts that we experience. The difference in impacts between a global temperature rise of 1.5°C and 2°C is large and serious. Therefore, it is important that Aotearoa is aware of the impact that contributing to global action to reduce emissions could have on our country's ability to adapt".
Advice Bundle at 1051	"Globally, acting earlier to address climate change reduces cumulative emissions and avoids more severe physical impacts of climate change. The Intergovernmental Panel on Climate Change's Special Report on Global Warming of 1.5°C concludes that climate risks would be significantly lower if warming is limited to 1.5°C rather than 2°C".

ANNEX 3 – SUMMARY OF LCANZ EVIDENCE, EVIDENCE IN RESPONSE AND LCANZ REPLY

DR STEPHEN GALE

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
Expertise				
1	Experience of and expertise in practical mathematics, particularly in a regulatory context (at [1]). Over 40 years, has worked in energy sector planning, resource management, competition proceedings and climate change policy (at [1]). Telecommunications Commissioner at the Commerce Commission 2012 – 2020 (at [1]). PhD in physics (at [1]).	It is not apparent that Dr Gale has any experience or expertise in climate accounting (Smith at [114.1])		
Climate Change Commission's Application of IPCC 2018 Special Report Pathways				
2	The IPCC's assessment was that on a global basis, emissions need to reduce by 40% - 58% relative to 2010 level by 2030. I understand net emissions to refer to gross $C0_2$ emissions less CO_2 removals (at [8]).	Dr Gale's understanding of net emissions is incorrect and demonstrates a fundamental error. In climate change accounting, gross and net do not refer to a basic equation of gross = all emissions and net emissions = all emissions minus removals (Smith at [30] – [32]). In climate change accounting gross emissions = emissions from all sectors *except* the land sector (LULUCF) and net emissions = emissions and removals from all sectors *including*		This is not a "definitional issue" in the way Mr Smith identifies (at [17] – [21]): ○ Terminology in my affidavit is consistent with the 2018 Special Report. The Special Report used "gross" CO_2 to refer to actual CO_2 emissions, and "net" CO_2 to mean gross CO_2 less removals of CO_2. ○ Mr Smith and Dr Glade's understanding of the definitions as used in the 2018 Report are

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
		the land sector (LULUCF) (Smith at [33] – [37]).		incorrect.
3	In deriving the level net CO_2 emissions for NZ in 2030 consistent with the IPCC's global modelling, the Commission has applied and required 40 – 58% reduction to New Zealand's level of gross emissions in 2010. This 2030 target for net CO_2 represents a substantial increase on the 2010 net figure of 5.048 Mt (at [13]).	Dr Gale is inaccurately comparing net emissions from the national inventory reporting to net emissions assessed under the Kyoto Protocol accounting approach. The two are set on a different basis and for different purposes, and are not directly comparable (Smith at [114]).		
4	It is an error of mathematical logic to apply the percentage reductions to our 2010 level of gross CO_2. Mathematically the 40 – 58% reduction range should have been applied to the 2010 level of net CO_2 emissions. The result of the error is that countries like New Zealand will not be complying with average obligations (at [14] – [17]).	There is no 'mistake' or 'logical error' in the Commission's approach: the choices the Commission made were deliberate, considered and well-informed (Smith at [97] – [99]). Further: ○ The Commission was cognisant that the IPCC's 2018 Special Report refers to net CO_2 emissions in its modelled pathways (Smith at [71.5]). ○ The net emissions basis of the IPCC split gas pathways was only one of a number of differences and complexities the Commission had to address in using the IPCC pathways in its modelling (Smith at [97]). ○ The Commission was not engaging in a purely arithmetical or mathematical exercise (Smith	The applicant's experts assume that there is only one "scientific" way to calculate what level of emissions reduction in New Zealand's NDC would be compatible with the global 1.5°C pathways. However, this assumption is flawed. Every attempt to map a country-level target onto a global pathway relies on value judgements that determine the approach taken (Reisinger at [22] – [39])): ○ Global pathways do not tell us what an individual country's equitable contribution to such pathways should be. ○ Determining 1.5°C compatibility is not simply a mathematical exercise. ○ There are a range of equity perspectives, and even with one	Remains of the view that the IPCC 2018 Special Report reductions must be applied mathematically to 2030 net CO_2: ○ It is clearly mathematically feasible to apply the IPCC 2018 Special Report reductions to New Zealand's 2010 net emissions, regardless of how New Zealand's net-net emissions are set (at [8] – [10). ○ If the IPCC Special Report range is applied to New Zealand's 2010 net emissions, then the resulting figure can then be re-expressed in gross-net terms if desired (at [12]). ○ If countries like New Zealand adopted higher gross carbon dioxide baselines, then reduction trajectories will not be enough to

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
		at [98]). ○ The different parameters of the IPCC pathways and the NDC simply meant that the Commission had to recognise that the models were not exactly aligned, and approach the comparison exercise with an appropriate degree of caution (Smith at [97]). ○ The different parameters of the IPCC pathways and national inventory reporting net emissions also means that even if the Commission had created net-net comparator NDCs as LCANZ propose, this would still not be a straight apples for apples comparison (Smith at [111] – [112]). Dr Gale's view that, since the IPCC pathways model net emissions, all that is needed is to simply convert the NDC to a net-net basis is incorrect (Smith at [105] – [106]), and: ○ It is based on a basic and fundamental misunderstanding of what "gross" and "net" mean in the context of climate change accounting following Kyoto (Smith at [29] – [55] and [107]). ○ It appears to be a direct attack on	of these perspectives, one has to make further choices and value judgments when answering the 1.5°C compatibility question. ○ The decision about New Zealand's "highest ambition" also needs to consider feasibility, which in turn relies on consideration of a wide range of national circumstances. A recurring theme of the applicant's evidence is that the use of a gross-net approach is a "simple mathematical error". This is incorrect. The question of what rate of emission reductions in New Zealand would be 'consistent with' the global rate of emission reductions in 1.5°C consistent pathways is not a question that can be answered by mathematics alone. The difference between the Commission's budget calculations and those of the applicant are a direct result of different choices and judgments, not the result of a mathematical calculation error (Reisinger at [60] – [69]). If gross-net accounting is illegitimate under the Paris Agreement, many other countries, not just New Zealand would be acting illegitimately. The EU uses gross-net accounting, as well as Norway, Japan, Switzerland, Canada	comply with the IPCC modelling (at [14] – [16]). The application of the 2018 Special Report reduction range for net CO_2 to gross CO_2 was not a mathematical choice that was open to the Commission (at [22] – [23]): ○ Mathematically, you cannot chose to apply a net-net range to a 2010 gross starting point. ○ Dr Glade's evidence about the gross and net pathways globally does not speak to the mathematical problem identified. ○ Dr Glade's evidence defends Kyoto concepts, but this is not relevant to the 2018 Special Report which takes a different approach. ○ Notwithstanding that the Commission was using the Special Report modelling as a "starting point", it still required the Special Report range to be applied in accordance with its usage by the IPCC. ○ Considerations relating to why gross-net accounting might be appropriate should be part of the inter-country fairness assessment.

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
		the core concept of gross-net accounting (Matthew Smith at [45] – [48], [108] and [131] and Eva Murray at [43] and [45]). o The NDC was set by the government on a gross-net basis (Smith at [109] – [110]). o There are important areas in which the national inventory reporting and the IPCC pathways are not aligned and are not directly comparable – so even applying the IPCC pathways on a net-net basis would not be a direct comparator (Smith at [111] – [112]). The Commission was not in error in using the modelling from the IPCC 2018 Special report in order to create comparator NDCs for New Zealand on a gross-net basis. The approach of the Commission was reasonable, and did not involve any mathematical or logical error (Dr Olia Glade at [22] – [23]).	and South Korea (Plume at [63]).	
5	The Commission's explanation for applying the percentage reductions to the level of gross CO_2 relates to the gross-net approach to accounting. However (at [18] – [22]): • I have found no explanation of why a gross emission baseline is	Dr Gale's statement to the effect that he does not understand – and is not aware of international accounting guidance that would assist him to understand – why a 'gross emissions baseline' is consistent with target accounting, suggests that he does not	New Zealand's use of gross-net accounting to express and account for New Zealand's NDC is transparent and follows established practice. The Ministry also recommended that government continue using a gross-net approach for the NDC, because	The Commission's evidence fails to distinguish between the mathematical issue in the proceeding and the separate issue of how New Zealand's international commitments are expressed (at [11]). I am not giving an opinion on the

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
	specifically consistent with target accounting. As far as I understand it, target accounting just refers to the net emission level required in 2030, together with emissions budgets between now and then. • I have found no current international accounting guidance in the IPCC report, and no evidence that the IPCC 2018 Special Report allowed for higher baselines for countries with gross emissions higher than net emissions in 2010.	have any expertise of climate change accounting. Dr Gale appears to be unaware that a gross-net approach was a requirement under the Kyoto Protocol, and unaware of the Kyoto Reference Manual, the wide range of UNFCCC technical papers and COP decisions providing accounting guidance (Smith at [114]). Dr Gale's comments, directed to the core concept of gross-net accounting, are misconceived (at [114]): o There are sound reasons for the adoption of a gross-net accounting approach (Smith at [131]). o The Kyoto Protocol required gross-net accounting for countries such as New Zealand whose land sector acted as a sink in the 1990 base year (Smith at [45] – [48] and [108]; Murray at [43] and [45], also at [21]). o New Zealand and many other countries have used gross-net accounting for many years under both the Kyoto Protocol and now under the Paris Agreement and there are principled reasons for doing so (Smith at [49] – [50], [108] and [131]). o New Zealand's emissions	(Reisinger at [43] – [59]): o Otherwise removals from pre-1990 forests would dominate net emissions trends and de-link the measurement framework from the results of actions taken; o The gross-net approach was seen to provide a better like-for-like comparison of effort between countries whose pre-1990 land sectors were a source of emissions and those that were removing emissions; o A net-net approach would pose significant challenges for New Zealand.	merit or otherwise of gross-net accounting (at [13]).

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
		reporting and accounting is reviewed annually by international experts for compliance with these rules, and no issues of compliance with accounting approaches have been raised (Smith at [108]). It is consistent with New Zealand's obligations under the Paris Agreement, and with international good practice, for New Zealand to use gross-net accounting for NDCs (Dr Olia Glade at [46] – [53]).		
6	I have some sympathy with the proposition that a presumption of continued land sector removals may be seen as unduly onerous. However, in my view this consideration does not switch the basic IPCC requirement from a net to a gross emission baseline. Instead this should be considered as part of considering New Zealand's "fair contribution" (at [23]).	The Commission was not required, in the way Dr Gale suggests, to apply the IPCC pathways to domestic gross emissions. The Commission chose to use the pathways to develop comparator gross-net NDCs, and this modelling approach was deliberate, considered and well-informed (Smith at [71.5], [97] – [99]).	There is no one way to answer the question of what rate of emission reductions in New Zealand would be 'consistent with' the global rate of emission reductions in 1.5°C consistent pathways, and it is not a question that can be answered by mathematics alone (Reisinger at [22] – [39] and [60] – [69]). To the extent that Dr Gale argues that the Commission should have first calculated 1.5°C consistent emission reductions on a net-net approach, and only then argue why the result of this calculation may be too onerous for New Zealand: o This would have been a valid approach, but it too has its shortcomings.	No, and in particular no reply to the evidence that this was a modelling approach to develop comparator NDCs

	Dr Gale's evidence	Commission's evidence in response	Minister's evidence in response	Dr Gale's Reply
			○ The choice the Commission made was a valid choice (Reisinger at [80] – [82]).	

DR IVO BERTRAM

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
Expertise				
7	Senior Associate at the Institute for Governance and Policy Studies at Victoria University of Wellington. Holds BA Honours Degree, and DPhil in Economics from Oxford University (at [1]). Conducted extensive research, modelling, and consultancy work on the economics of climate change policy (at 5]). In past decade, has published research on the international trade dimensions of carbon taxes and emissions trading schemes and participated in conferences and seminars on climate change policy (at [5]). Has acted as an expert economic witness in non-climate related cases (at [6]).	It is not apparent that Dr Bertram has any expertise or experience in climate change accounting. His experience appears to be in economics and finance, including research on international trade dimensions of climate taxes and emissions trading schemes. These are quite different areas to climate change accounting (Smith at [114]).		Close acquaintance with the complex detail of gross-net accounting is not required to answer the simple question of whether the Special Report net-net pathway should be applied to New Zealand's 2010 gross CO_2 or 2010 net CO_2. Common-sense, logic and science all say net CO_2 (at [35]). As an economist for the past five decades, I have worked with a myriad of statistical series produced by organisations, and I have been engaged in climate change related research for 34 years, and my published work includes a book on New Zealand climate policy which made extensive use of the emission statistics being produced under the Kyoto Protocol (at [33] – [34).
Commission's Application of IPCC 2018 Special Report Pathways				
8	Asked by LCANZ to comment on the use of a 2010 gross (rather than net) carbon dioxide emissions figure when calculating a New Zealand contribution to the global emissions budgets laid out by the IPCC in its 2018 Special Report (at [16]).	Generally on this issue as above.	.Generally on this issue as above.	

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
9	The Special Report percentage reductions to meet a global 1.5°C goal have been calculated on the basis of the global composition of total GHG emissions. For countries that have the same emissions mix as the global economy, reducing their net emissions in line with the IPCC a gas-by-gas percentages will result in a reduction of CO_2-e emissions that is consistent with the global 1.5°C goal. For countries such as New Zealand, whose emissions have a higher than average share of methane and nitrous oxide, applying the 2018 Special Report percentages gas-by-gas will lead to those countries contributing less than their strict share. The Advice overlooks this issue. The Commission did not do any adjustment for the different weightings of gases in applying the IPCC pathway (at [76] – [77]).	There was and is no ready-made methodology or guidance the Commission could adopt to make its assessment of the compatibility of the NDC, including that there is no established methodology or approach for apportioning global emissions reductions to individual countries (Smith at [62] – [63]). The Commission determined that it would be guided by the pathways in the IPCC 2018 Special Report. However, the Commission was alert to the limitations and challenges of this approach, including that New Zealand's emissions profile differs quite significantly from the overall global emissions profile (Smith at [71] – [72]). The Commission was clear therefore that the use of the IPCC 2018 Special Report pathways was a blunt approach, and a starting point only (Smith at [72] and [86]). Dr Bertram appears to apply "share of effort" by weighting the percentage reductions the IPCC described on a gas by gas basis, on the basis of average world emissions, and then applying that as an average to each country as their share. Dr Bertram's view appears to be that all		Mr Smith's evidence that my view is that "all countries must meet the average set by the globe's profile of emissions, ignoring national circumstances and ignoring the specifics of what the IPCC said about particular gas reductions". This is a mischaracterisation of my evidence, which is that in order to make a valid assessment of the NDC against the IPCC pathways, the net CO_2 reduction pathway must be applied to 2010 net CO_2, not gross CO_2 to ensure like for like comparison (at [74] – [75]). Also reject Mr Smith's evidence that I conflate the IPCC global pathways with assessment of fair share – I do not do this, nor reference "fair share" (at [76]).

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		countries must meet the average set by the globe's profile of emissions, ignoring national circumstances, and ignoring the specifics of what the IPCC said about particular gas reductions. I do not agree that this is a sensible way of assessing fair share (Smith at [154]). Dr Bertram also conflates the IPCC global pathways with assessment of fair share (Smith at [155] – [156]).		
10	The Commission applied the IPCC net-net pathways to 2010 gross emissions as the base for setting its 2030 targets. In my opinion this is a basic error and procedure cannot be defended as consistent with the methodology in the 2018 Special Report (at [78] – [84]). The error in calculating the 2030 emissions target flows through to the calculation of a total allowable NDC budget of 568 Mt. The budget instead should have been 484Mt (at [85] – [91]).	There is no 'mistake' or 'logical error' in the Commission's approach, as above re Dr Gale's evidence. The Commission was not in error in using the modelling from the IPCC 2018 Special report in order to create comparator NDCs for New Zealand on a gross-net basis. The approach of the Commission was reasonable, and did not involve any mathematical or logical error (Dr Olia Glade at [22] – [23]). Further: ○ The fundamentals of the pathways are the same, whether gross or net (Dr Olia Glade at [24] – [27]). ○ There is high uncertainty in net emissions globally as a result of LULUCF, and LULUCF make up a small contribution to global	Dr Reisinger's evidence, as above re Dr Gales' evidence. At paragraphs [86] – [87] Dr Bertram derives an emissions budget for a 36% net-net reduction of 484 Mt CO_2e. I have confirmed this calculation *if* the previous emissions target is used as a starting point and applied equally for individual gases (Reisinger at [86] – [87]).	Consider that for any comparison between New Zealand's NDC and the Special Report Pathways to be valid, the comparison must be carried out on a like for like basis. This means that the pathways should have been applied to 2010 net emissions (at [2] – [7]). There is no mathematical error in my calculation, and Dr Reisinger confirms that (at [26] – [32]). With respect to the IPCC Report not using precisely the CRF methodology/not being directly comparable (e.g. a difference between the Special Report's "AFOLU" (agriculture, forestry and other land use) and the CRF tables; "LULUCF", the difference is of small enough significance to make little difference to the global total

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		emissions (Dr Olia Glade at [28] – [37]). Dr Bertram appears to have made a mathematical error in his calculations of what he says is a 1.5°C compliance NDC, by drawing a straight line for the CO_2 component of the NDC from the gross start point to a net end point (at [159]).		numbers, especially given that land use emissions are a very small part of global total numbers (see Glade). With this qualification, correct to say that the Special Report net-net pathways are consistent with the GHGI net pathways (at [54]). Dr Glade suggests gross-gross data is a more reliable basis for cross-country comparison than net-net or gross-net. I agree. It remains however that net-net is what the atmosphere sees. Gross-net neither facilitates cross-country comparisons nor escaped the problem of uncertain measurement of LULUCF (at [66]). Agree with Dr Reisinger when he says that the question of what rate of emission reductions in New Zealand would be 'consistent with' the global rate of emission reductions in 1.5°C consistent pathways. I have never claimed that national capacity and international equity are irrelevant to our national commitment. However, the up-front mathematical issue of like with like comparison must be resolved before the consideration of other "real world" issued that arise in setting an NDC (at [79]). Regarding the Commissions' analysis that LCANZ' proposed "net-net" comparator approach is incorrect, in

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
				response: ○ Do not agree with Mr Smith that doing the comparison correctly would be simplifying matters at the cost of robust analysis. Do however agree that the required mathematical exercise is not trivial, and involves a number of technical issues (at [15]). ○ Consider that the IPCC pathway numbers are sufficiently aligned and comparable with the GHGI Inventory series to enable valid conclusions to be drawn (at [16]).
11	The Advice's use of 2010 as the base year for an application of the gross-net procedure places its calculations outside the parameters of the Kyoto Protocol, which is anchored in a 1990 base year and makes no provision for any party to unilaterally declare another base year (at [84]).	For the purposes of our modelling, the Commission adopted the 2010 base year for the IPCC pathways as the IPCC pathways only begin in 2010, and the Commission was not comparing this to a Kyoto Protocol target, so there is no question of "unilaterally declaring" a variation to Kyoto. Further, converting between base years is easy to adjust for (Smith at [158]).		
12	The citing of Kyoto Protocol accounting rules does not deal with the inconsistency in the application of the IPCC pathways. In my opinion, gross-net accounting an appropriate procedure and does not justify the Commissions approach (at [94] –	Dr Bertram's evidence is a direct challenge to the legitimacy of gross-net accounting. Smith notes at [142] – [144] this has been a personal campaign for Dr Bertram (refers to Dr Bertram's submission on the Commission's draft Advice where he	New Zealand's use of gross-net accounting to express and account for New Zealand's NDC is transparent and follows established practice. The Ministry also recommended that government continue using a gross-net approach for the NDC because	There was no such attack on gross-net accounting. One simply has to be aware that an orange is not an apple (at [10]). While Mr Smith says that the government has set its NDC in gross-net terms and it would be difficult

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	[97]).	describes the approach as "a key tool for misinformation" by government Ministers and "obviously untrue") but is misguided: ○ New Zealand's NDC was set by government on this basis (Smith at [49] and [109]). ○ There are sound reasons for the adoption of a gross-net accounting approach (Smith at [131]). ○ The Kyoto Protocol required gross-net accounting for countries such as New Zealand whose land sector acted as a sink in the 1990 base year (Smith at [45] – [48] and [108]; Murray at [43] and [45], also [21]). ○ New Zealand and many other countries have used gross-net accounting for many years under both the Kyoto Protocol and now under the Paris Agreement and there are principles reasons for doing so (Smith at [49] – [50], [108] and [131]). ○ New Zealand's emissions reporting and accounting is reviewed annually by international experts for compliance with these rules, and no issues of compliance with	(Reisinger at [43] – [59]): ○ Otherwise removals from pre-1990 forests would dominate net emissions trends and de-link the measurement framework from the results of actions taken; ○ Gross-net approach seen to provide a better like-for-like comparison of effort between countries whose pre-1990 land sectors were a source of emissions and those that were removing emissions; ○ A net-net approach would pose significant challenges for New Zealand. Disagree with the assertions made in Dr Bertram's evidence that a gross-net approach has no relevance to mapping New Zealand's rate of emissions reductions to global net emission pathways. Consider that both net-net and gross-net have their own merits (Reisinger at [78] If gross-net accounting is illegitimate under the Paris Agreement, many other countries, not just New Zealand would be acting illegitimately. The EU uses gross-net accounting, as well as Norway, Japan, Switzerland, Canada and South Korea (Plume at [63]).	and costly to change it into net-net – this is irrelevant, because the question is whether gross-net and net-net can be directly compared for analytical purposes. In order to answer the question, the Commission ought to have begun by deriving the net-net implications of the NDC, and could then have undertaken their arithmetical calculations on a correct basis (at [12]). It would also not be pointless to compare the IPCC pathways to a net-net NDC, because a proper calculation would compare the scientific modelling in the Special Report as against the actual NDC, but in net-net terms. Dr Reisinger says this would have been a valid approach (at [13] – [14]). Further, gross-net accounting is appropriate for reporting on New Zealand's compliance with commitments made in gross-net terms. However, gross-net accounting cannot reasonably be used in the way the Commission has done to evaluate the consistency of the NDC with the Special Report (at [21]). With respect to my submission on the draft advice, it is true that from the outset I have been personally

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
		accounting approaches have been raised (Smith at [108]). This is consistent with New Zealand's obligations under the Paris Agreement, and with international good practice, for New Zealand to use gross-net accounting for NDCs (Dr Olia Glade at [46] – [53]).		opposed to New Zealand's adoption of gross-net accounting (at [23]). Was surprised that Mr Smith, and apparently Dr Brandon chose to defend the gross-net procedures as having strengthened the NZ government's action on climate change – the record of New Zealand policymaking under the Kyoto Protocol has been the opposite (at [55] – [57]). The changes to gross-net accounting under the NDC as compared to under the Kyoto Protocol reduce, rather than increase, the degree of ambition behind the headline numbers: ○ The gross-emissions starting point for the NDC was changed from 1990 to 2005 - a peak year for emissions. However, when this happened the baseline for 1990 target accounting did not change (at [58]). • Opportunistically making changes that increase our apparent level of ambition and make it easier to meet our targets under gross-net accounting undermines any desirable incentive effects that the original Kyoto Protocol procedures might have had (at [59]).

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				• With respect to the justifications for gross-net, Mr Smith suggests at [41] the variability of net emissions, but this volatility has been substantially greater along the gross-net path than the net-net one (at [67]). • Inescapable imprecision in measurement, and the impact of high variability, are no reason to abandon the attempt to obtain and use the best measurements possible (at [68]).
13	The Advice is evidently concerned about how onerous a 2030 net-net target would be for New Zealand, and is in effect pleading for New Zealand to be a special case because we have relied on forestry to meet our international targets in the past. However this is not transparent in the advice. The Advice should have laid out clearly the stringency of the net-net pathway and transparently made the case for setting emissions budgets at a less stringent level (at [98] – [100])).	No such 'special pleading' is reflected in the Commission's advice. Further, Dr Bertram here can only be referring to the NDC itself – which had already been set by government on a gross net basis. Dr Bertram is also apparently unaware of the number of other countries who have adopted a similar approach to setting a gross net NDC following the Kyoto accounting principles (Smith at [160]).	Regarding the pleading for a "special case" for New Zealand, one can indeed hold concerns about the relative balance of reducing gross emissions and removing CO_2 through afforestation in past and potentially future targets, as the Commission did in its Advice – however, forestry is part of how NZ has contributed and intends to contribute to the global effort alongside deeper reductions in the future. Choices are inevitably required re how to manage forestry (Reisinger at [79]). With regards to the submission that the Commission should have calculated emissions reductions on a net-net approach, and then argue why this approach might be too	

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			onerous for NZ – I consider this would be valid, as was the Commission's approach, though a net-net approach would have the potential to reduce effort on gross reductions in future (at [80] – [82]).	
Commission's recommendation of the modified-activity based approach				
14	Asked by LCANZ to comment on the use of a modified-activity based measure of positive and negative emissions resulting from LULUCF, for the purposes of calculating New Zealand's net greenhouse gas emissions (at [17]).			
Measurement and reporting – the CRF tables				
15	In this affidavit, all references to "gross emissions" and "net emissions" mean GHGI numbers prepared under the authoritative CRF guidelines issued by IPCC, unless otherwise stated (at [28]).	The CRF are not guidelines, and are not issued by the IPCC. The CRF is the set of reporting tables that are to be completed by each Party as part of their national inventory reporting under the UNFCCC. It is essentially a database tool developed by the UNFCCC secretariat reflecting the latest guidelines for reporting national greenhouse gas inventories as agreed to by Parties under the UNFCCC and Kyoto Protocol. The IPCC has issued guidance on how to report and estimate emissions for reporting, but that is separate from the CRF reporter software itself or the CRF	The IPCC does not provide authoritative CRF guidelines. The UNFCC reporting guidelines support the CRF tables, and the UNFCCC secretariat develop the software (Brandon at [64]).	

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		tables it produces (Smith at [147]).		
16	Advised by LCANZ that there is a dispute as to whether the Act's definition of "net accounting emissions" mandates the use of the GHGI net data in New Zealand's CRF tables in the GHGI reports, or some alternative measure. Note that at [34] – [38]): ○ Term net emissions is generally understood to refer to actual GHGI net emissions. ○ Most global modelling work uses global totals for gross and net emissions constructed by adding up country-by-country GHG inventories. ○ The IPCC Special Report modelling is done in terms of global GHGI net emissions as defined in the CRF. ○ The Commission's use of the term "net emissions" is not being used in the conventional sense.	Gross and net have very particular meanings in climate change accounting. Gross means emissions from all sectors except LULUCF, and net means emissions and removals from all sectors including the land sector. The key difference is whether the land sector is taken into account (Smith at [29] – [38]). The claim that the IPCC modelling is done in terms of global GHGI net emissions as defined in the CRF appears to be an incorrect assertion. The 2018 Special Report does not state this, and it seems almost certain that the IPCC could not have used national inventory data as the basis for its global emissions estimates (Smith at [148] – [149]).	Approaches to calculating estimates of "net emissions"/net CO_2e: ○ Net emissions are an estimate of what emissions and removals the atmosphere sees in any given year as the result of all human activities in NZ. The annual inventory submission reporting emissions and removal from all sectors, including the LULUCF sector ○ However, New Zealand does not use all of the emissions and removals included in the annual inventory submission to count towards out emissions targets. Instead "target accounting emissions are used" – a subset of net emissions. These include all gross emissions, but only a subset of emissions and removals in the LULUCF sector (Brandon at [66] – [69]).	Mr Smith makes the fair point that the 2018 Special Report worked with global total emissions figures, but that these cannot solely be from CRF data. I did not say that the Special Report's authors had access to a complete set of CRF country reports (at [53]).
17	With respect to the requirement that net accounting emissions are reported in the Greenhouse Gas Inventory, the crucial element of the GHGI is the CRF Tables. While the supplementary information required under the Kyoto Protocol is reported	It is incorrect that the CRF tables do not include the Kyoto Protocol accounting data. There are specific CRF tables for the Kyoto Protocol data. The Kyoto Protocol figures that are reported separately in the inventory report itself, are also	It is incorrect to say that the CRF tables do not include the supplementary reporting under the Kyoto Protocol. The CRF tables do include the supplementary reporting required under the Kyoto Protocol, including the accounting quantities	What I said was that the CRF tables do not include the calculation of the aggregate gross-net target emissions series used by the government to demonstrate compliance with its commitments. The gross-net target emissions appearing in Fig 5.3 of the

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	in the GHG Inventory, the CRF tables submitted to the UNFCCC are the internationally-authoritative gross and net emissions measures. These tables do not include the calculations related to Kyoto Protocol compliance (at [39] – [42]).	included in the CRF data (Smith at [150]; Young at [25]).	able to be counted towards meeting emissions reduction targets (Brandon at [65]).	Advice, was calculated using data drawn from the CRF tables but are not themselves presented in those tables (at [36] – [39]). The CRF tables do include detailed country data on LULUCF, but it is no simple matter to locate the government's gross-net target emissions numbers in the form of a complete time series from 1990 onwards (at [40] – [43]). Because the CRF tables do not include Parties' Assigned Amounts, they do not proceed beyond recording the limited set of LULUCF removals to be set against Assigned Amounts in deriving gross-net totals (at [44] – [49]).
Target emissions accounting				
18	Under the Kyoto Protocol, New Zealand calculates its own bespoke measure of "target emissions" (at [43] – [44]).	New Zealand's approach to accounting under the Kyoto Protocol is not bespoke, it was prescribed (Murray at [34] – [46]; and Walter at [32] – [35]). Gross net accounting/target accounting is not a New Zealand invention. It was required under the Kyoto Protocol, and using gross-net accounting for NDCs is consistent with New Zealand's use of carbon accounting and calculating carbon budgets under the Kyoto Protocol.	Accounting under the Kyoto Protocol is explained in Dr Andrea Brandon's affidavit at [27] – [36], and New Zealand's accounting for NDCs under the Paris Agreement is explained in Dr Andrea Brandon's affidavit at [37] – [45].	The New Zealand government's reporting of target-accounted emissions to date has been obscure and not widely understood. Clarity and transparency will be further diminished if the Commission's recommended MAB accounting is accepted as consistent with the Act's definition of "net accounting emissions" (at [50]).

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		Further, the Paris Agreement requires parties to use consistent carbon accounting approaches, accordingly the use of gross-net accounting is also consistent with NZ's obligations under the Paris Agreement (Murray at [47] – [53]).		
19	The GHGI record of net emissions is "what the atmosphere sees" – the measure of overall impact of each country's human activities on the atmospheric concentration of greenhouse gases (at [45]).	There is an important clarification to the idea that the national inventory reporting gives a truer representation of what the atmosphere sees. That is, that the national inventory reporting measure gives a "truer representation of what the atmosphere sees" in a particular year. What the atmosphere sees in a particular year is not necessarily indicative of longer-term trends, nor additional or enduring effort in terms of emissions reductions (or conversely, emissions increases) (Murray at [68]). Further, "what the atmosphere sees" from year to year is a poor approach for informing policy and future action (Murray at [68] and Young at [57] – [66]).	I agree that it is the greenhouse gas emissions reported to the UNFCCC that re "what the atmosphere sees" and their reduction matters. I agree that it is those emissions that matter to the climate and need to be reduced as much as possible, but do not agree as a corollary that this is the only scientifically and mathematically correct way of setting a national target "consistent with" a global goal is to set this target on a net-net basis (Reisinger at [73] – [77]).	
20	Target emissions accounting excludes the ongoing effects of LULUCF activities prior to the Protocol base year of 1990 and are prepared for the sole purpose of measuring	The approach to target accounting under the Kyoto Protocol, and New Zealand's first NDC under the Paris Agreement is set out in Murray, Walter, Young and Smith.	Accounting under the Kyoto Protocol is explained in Dr Andrea Brandon's affidavit at [27] – [36], and under the Paris Agreement at [37] – [45]. The effect of the modified activity based	

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	compliance under the Kyoto Protocol. It is appropriate for that purpose, but no other. Further, under the Kyoto Protocol the government has made its commitment for emission reduction and has measured its performance, in terms of "gross-net accounting" (at [45] – [53]).		approach is also explained at [46] – [55]).	
21	It is the reduction of GHGI net emissions that matters for the real world outcomes of climate policy, and that that is modelled in the 2018 Special Report (at [54] – [56]).	Dr Bertram refers to the modified activity-based approach as a "construct" which gives an "incomplete picture of human impacts on global climate". However, both national inventory reporting and modified activity-based accounting are in that sense 'constructs' as they are different forms of tracking emissions following different rules. But the parties subject to emissions reduction commitments under Kyoto adopted activity-based accounting as a means of focussing attention on current and future actions that result in reductions that are enduring and represent real progress, rather than penalising or rewarding countries based on the legacy effects of actions that occurred in the past. Averaging, the "modification" introduced by New Zealand for the accounting for its first NDC, is an evolution of this approach to address the particularly pronounced cyclical effects of our	I agree that it is the greenhouse gas emissions reported to the UNFCCC that re "what the atmosphere sees". I agree that it is those emissions that matter to the climate and need to be reduced as much as possible, but do not agree as a corollary that this is the only scientifically and mathematically correct way of setting a national target "consistent with" a global goal is to set this target on a net-net basis (Reisinger at [73] – [77]).	With respect to Dr Glade's evidence, I did not deny that New Zealand can choose to adopt modified activity based accounting, simply cast doubt on the wisdom of the choice (at [20]).

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		production forests (Paul Young at [83]). It is appropriate for New Zealand to use activity-based accounting generally. It is consistent with New Zealand's reporting and carbon accounting under the Kyoto Protocol. It is also an appropriate approach to use when accounting for progress in reducing emissions: it has lower uncertainty than land based accounting and is more clearly focussed on human activities (Dr Olia Glade at [69] and [71] – [81]). Dr Olia Glade agrees with the averaging approach recommended by the Commission. The methodology is consistent with IPCC methodological guidelines, significantly reduces the uncertainty caused by harvesting cycle fluctuations, and provides stable and consistent signals about whether New Zealand is on track to meet its emissions reduction target (at [70] and [82] – [94]).		
22	For the purpose of measuring compliance with the NDC, the New Zealand government has switched to an alternative version of target accounting – modified activity based accounting. An indication of the way to move MAB accounting changes the historical record of New Zealand's	The idea that the modified activity-based approach "can be expected in due course to feed through to a reduction in the stringency of the NDC when measured using modified activity-based target accounting", is illogical. The NDC was set on this basis. The level of 'stringency' is		Regarding the Commission's evidence that an accounting system does not determine the level of ambition, I agree and add: ○ A set of conversion factors need to be calculated to enable the given degree of ambition to be

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	emissions is Figure 10.1 on page 202 of the Advice, which shows a radical upward revision in the 1990 – 2025 level of "forestry net emissions", which can be expected in due course to feed through to a reduction in the stringency of the NDC when measured using target accounting (at [59]). The Advice's historic "target emissions" between 1990 and 2019 are substantially greater than the GHGI net emissions as reported in New Zealand's CRF tables. That is, they are substantially greater than the net emissions that actually occurred. An important consequence for the Advice is that it makes future reductions look more dramatic than they actually are (at [71] – [73]).	already set and progress towards meeting it will be measured in the way that matches the way it was set. It is not meaningful to compare the emissions reductions required under the NDC, which was set by government on the basis that it would use the modified activity based approach, to figures developed using a national inventory accounting approach. If the NDC had been set on the basis of the national inventory accounting approach, then the target itself would have been expressed differently. The same applies to the budgets recommended by the Commission (Young at [85] – [86]). The idea of an "upwards revision" is misleading (at [88]): ○ It is simply a matter of which accounting approach is being looked at. ○ The revision is nothing more than a difference in how emissions have been accounted for. ○ The Commission presented the historic emissions on a modified activity-based approach to provide a transparent and fully comparable time series to show how its proposed emissions budgets would affect net		expressed in alternative formats; and ○ For purposes of comparison with the Special Report, the appropriate metric (net-net) can be applied (at [11]). MAB will slash the target accounting figure for forestry net emissions over the decade 2021 - 2030, making it much easier to meet the NDC commitment by claiming falling net emissions when in fact GHGI net emissions will be rising (at [51]). The switch to MAB accounting at this point in the harvest cycle looks opportunistic as it lowers the stringency of the NDC for the coming decade (at [52]). Regarding Young's evidence re the apparent inconsistency between my evidence and Dr Taylor's evidence, Dr Taylor's comments are on the period after 2030, and my evidence is on the period 1990 – 2030. I am in agreement with Dr Taylor's evidence (at [70] – [71]).

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		emissions. There is an inconsistency between Dr Taylor and Dr Bertram's evidence (regarding whether budgets are easier or harder to meet) which demonstrates that an accounting system is neither inherently ambitious nor unambitious. An accounting system is simply more or less suitable for tracking progress towards the level of ambition that has already been decided on (Young at [29], [54] – [56] and [76]).		
23	Therefore, consider the Advice is misleading as New Zealand's net emissions have actually been increasing for each of the three previous decades. For specialist insiders this problem does not arise, but to lay readers the Advice is likely to mislead. At no point does the historic path of emissions, measuring using target accounting, come close to the generally-understood CRF net emissions recorded in the GHGI (at [74]).	This is a strong claim and I do not agree: policy makers in the area of climate change are highly unlikely to be misled, given familiarity with the accounting principles followed by New Zealand since its first commitment under the Kyoto Protocol (Young at [90] – [91]). These are complex matters and in my view it would have been inappropriate for the Commission to advise the government to adopt an accounting approach that it thought was not fit for purpose, simply on the basis that it would (in LCANZ' view) be easier for a casual reader to understand (Smith at [163]).		
24	Given the political importance of climate change policy, any targets set	While agree that transparency and communication are important, these		Do not agree that the advice is not misleading for the general public,

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	by New Zealand policy makers should be transparently clear to the voting public – "target emissions" are not. They are in house accounts that the New Zealand government compiles for its own compliance purposes (at [92] – [93]).	are complex matters, and climate change accounting is a complex and specialised area. The Commission's advice responding to the Minister's request involved highly complex modelling to support an informed assessment: the Commission's duty was to exercise its expertise to provide the best possible advice, and that would not be assisted by ignoring genuine complexity and simplifying matters at the cost of robust analysis (Smith at [163]; Young at [90] – [92]).		politicians or independent overseas analysts (at [77]). The Commission's presentation of the gross-net figures without explanation is misleading, and dose not accurately represent New Zealand's actual net emissions (at [77] – [78]).
25	It would have been helpful for the Commission to have presented its proposed budgets in terms of projected CRF compliant GHGI net emissions (at [60]).	If the Commission had adopted the national inventory reporting approach for its recommended budgets, then the recommended budgets themselves would have been different as they would have been set on a different basis. Therefore, it would not be a meaningful comparison (Young at [89] and [91])).		Reject the idea that such a comparison would not be meaningful. My approach is to reject making any such direct comparison without undertaking conversion of the gross-net target to net-net terms. It is the Commission's witnesses, not the applicant's, that have made the error identified by Mr Young (at [17]).
Level of the ambition on which the Commission based its advice and LCANZ "only reasonable budget" of 400 $MtCO_2e$				
26	Asked to comment on the level of ambition on which the Commission has based its recommendations to the New Zealand government at [9]).			
27	Outlines how a 1.5°C consistent emissions budget might be validly constructed, concluding that a 1.5°C consistent NDC would allow 397 Mt	There are many problems with Dr Bertram's proposal for a "1.5°C consistent emissions budget", including (Smith at [162]):		

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
	emissions over the NDC period, or approximately 400 Mt (at [101] – [107]).	○ The reductions needed at a global level are based on the global emissions profile which is overwhelmingly CO_2. New Zealand's emissions are mostly methane and nitrous oxide. Dr Bertram overstates the contribution we need to make in reducing CO_2, which is not useful to inform policy decisions or the formulation of New Zealand's climate response plan. ○ It adopts a net-net approach that is inconsistent with New Zealand's target accounting approach under Kyoto. ○ Dr Bertram appears to be debiting New Zealand with the upswing of emissions in the forestry harvest cycle, but ignoring that New Zealand took no credit for the sequestration that occurred while those forests were growing. ○ Dr Bertram is weighting the target by proportion of emissions – this grandfathers in existing emissions as the status quo, unfairly punishing developing countries with low starting emissions, and unfairly benefiting countries like New Zealand.		

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
		○ Dr Bertram makes a fundamental assumption that net figures in the national inventory reporting under the UNFCCC are equivalent to target accounting and are useful for that purpose, which misunderstands how both of those are measured, and how forestry works in New Zealand's targets.		
28	The Advice has recommended emissions budgets for the coming decade that it believes can be achieved almost painlessly in terms of economic sacrifice. The Commission estimates budgets are achievable at an overall reduction to the level of GDP in 2025 of around 0.55%. This is within the margin of error for this sort of modelling. Accordingly, consider that the Advice is not consistent with notion of maximum ambition, and Commission has not asked how much more could potentially be achieved at more significant cost (at [110] – [112]).	Disagree with Dr Bertram's claim that the economic impacts of the budget are "almost painless" or "zero cost". The GDP cost is not "painless" or "zero cost". Dr Bertram's desired higher level of impact on GDP would not be measuring ambition – it would be measuring the lack of care in how the transition to a low carbon economy is managed (Carr at [124] – [128]).		Dr Carr neglects to address my point that the Commission's modelled costs are within the margin of error for the type of modelling used (at [60]). Cost taken on its own is not rigidly tied to ambition – rather it is one of the consequences of ambitious policies, and may be greater or less for a given level of ambition, depending on how the policy is designed (at [61]). I do not "desire" a greater GDP sacrifice – there is a difference between seeking increased ambition while acknowledge that this will likely incur greater costs, and seeking greater costs without reference to the purpose for which those costs are incurred or to the efficiency with which the policy is designed (at [62]).
29	This is in contrast to the assessment in the 2018 Special Report regarding	There are a number of problems with comparing the IPCC 2018 Special		The fact that the Commission's modelling excluded consideration of

#	Dr Bertam's evidence	Commission response	Minister's response	Dr Bertram's Reply
	the cost to global GDP of emissions reductions (at [113]).	Report findings to the Commission's Advice in this way, including that the modelling in the 2018 Special Report is based on investments in both mitigation and adaptation. The Commission has not estimated adaptation costs and in no way are these costs reflected in the estimated GDP impact. Comparing the 2018 Special Report to the Commission's Advice is not comparing like with like (Carr at [130]).		the costs of adaption is true, but does not affect the point made in my evidence (at [63]).
30	Also wonder how, if the Advice's revised NDC target is just compatible with the Special Report's 1.5°C paths, the substantially less stringent emissions budgets in the Advice could be judged to be consistent with New Zealand matching those paths (at [114]).	The Commission assessed how our recommended emissions budgets contribute to the global 1.5°C effort in Chapter 9 of the Advice (at [105]). Offshore mitigation is allowed in meeting the NDC, and in addition the NDC and emissions budgets are also not aligned because they use different starting points (at [107] – [108]).	New Zealand has been clear from the outset that in meeting its NDC under the Paris Agreement, it intends to use international marked mechanisms, cooperative approaches and carbon markets. The ability to do so is expressly recognised under the Paris Agreement (Plume at [87] – [90]).	

PROFESSOR PIERS FORSTER

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
Climate Change Commission's Application of IPCC 2018 Special Report Pathways				
31	Confirms, as an author, that the IPCC 2018 Special Report used net carbon dioxide emissions for its emission reduction estimates (at [5]).	The Commission was cognisant of the fact that the IPCC 2018 Special Report refers to net CO_2 emissions in its modelled pathways (Smith at [71.5]).		
32	A standard accounting practice would use annual net emission estimates similar to the Greenhouse Gas Inventory. However, the Climate Change Commission departs from this in two ways (at [6]): • Commission uses a "gross-net" method with a 1990 baseline; and • They use an "NDC accounting" approach to estimate emissions from forest removals. Both of these departures from standard approaches are justified by the Commission in Evidence Chapters 3 and 13 and overall, I found these justifications were well argued and I accept both approaches as being reasonable (at [7]).	Professor Forster's reference to 'standard accounting practice' would be standard in the UK, given the UK's emissions profile, but not 'standard' in countries with a different type of emissions profile, in particular countries where the land sector is a sink. (Smith at [45] – [50], [108] and [128]; and Murray at [43] and [45], also [21]). However, he refers to this as a 'departure from standard practice' and as the Commission's decision, rather than the government's continuation of an accounting approach mandated under the Kyoto Protocol. This perhaps indicates a lack of detailed familiarity with target accounting for countries where the land sector is a sink rather than a source (Smith at [128]).		Does not dispute error identified by Smith, nor that this indicates a lack of familiarity with target accounting for countries like NZ where the land sector is a sink. Agrees that New Zealand can in theory set whatever target its likes for its NDC, and acknowledges the reasons for adopting a gross-net accounting approach (at [4] and [26]). Says that using a gross-net approach to setting targets can portray a misleading level of ambition – it can allow countries to achieve emissions reduction targets with no reduction to either gross or net CO_2 (at [12]).
33	Agrees with Gale at paragraph 16 that an error is made when a value of 35,031 kt is used for the baseline	Response as above.	Response as above.	Does not engage with modelling exercise actually undertaken by Commission, described by Smith.

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
	"net" carbon dioxide emissions in 2010, as this is the gross emissions number from the Greenhouse Gas Inventory (at [8]).			Agrees with "much of the evidence of Mr Smith, Dr Glade and Dr Reisinger and acknowledge their widely respected expertise" but remains of the view that the Commission made an error when it used 35,031 kt as the baseline for "net" carbon dioxide emissions in 2010 (at [4], [6] and [26] – [28]). Agrees that there is no one right way to determine what 1.5°C requires for an individual country. Says it is true that SR!.5 does not attempt to allocate what is required at a global level to states or regions and there are lots of choices and value judgements involved. However, this does not validate the Commission's approach (at [13]). With reference to the Commission's Advice at 13.2 states that the Commission did not apply the global pathways in a mathematically correct way (at [14]).
34	The forest sink is expected to weaken between 2010 and 2030 and emit CO_2. Therefore, to be consistent with the IPCC 2018 Special Report, a net-net accounting approach should be used requiring that emissions from the non-forest sector would need to reduce by 40 – 58% to be consistent with the IPCC 2018 Special Report	This argument and the compatibility test Professor Forster has designed are equivalent to applying a net-net approach under NDC accounting: that is, applying the range of IPCC cuts to the NDC accounting net CO_2 emissions in 2010 (Smith at [131]). Professor Forster's approach is a	Professor Forster's reference to "the compatibility test" is an example of Professor Forster's assumption that there is only one "scientific" way to calculate what level of emission reductions in New Zealand's NDC would be compatible with global 1.5°C pathways (Reisinger at [22] and	Mr Smith and Dr Glade are defending the use of gross-net accounting itself, whereas LCANZ and its experts point out that it is instead its use to compare to the analytical approach in the 2018 Special Report which is at fault, because (at [16] - [17]): ○ The 2018 Special Report uses

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
	Pathways. The Commission's approach does not do this and fails the "compatibility test" (at [9] – [12]).	direct challenge to the legitimacy of gross-net accounting. This is misguided, evidence references as above. It is consistent with New Zealand's obligations under the Paris Agreement, and with international good practice, for New Zealand to use gross-net accounting for NDCs (Dr Olia Glade at [46] – [53]). Further, it is correct to treat forestry removals (that is afforestation and reforestation) as appropriate mitigation measures. They are recognised as such in the IPCC 2018 Special Report (Dr Olia Glade at [66]).	footnote 12). New Zealand's use of gross-net accounting to express and account for New Zealand's NDC is transparent and follows established practice. The Ministry also recommended that government continue using a gross-net approach for the NDC because (Reisinger at [43] – [59]): ○ Otherwise removals from pre-1990 forests would dominate net emissions trends and de-link the measurement framework from the results of actions taken; ○ Gross-net approach seen to provide a better like-for-like comparison of effort between countries whose pre-1990 land sectors were a source of emissions and those that were removing emissions; ○ A net-net approach would pose significant challenges for New Zealand. If gross-net accounting is illegitimate under the Paris Agreement, many other countries, not just New Zealand would be acting illegitimately. The EU uses gross-net accounting, as well as Norway, Japan, Switzerland, Canada and South Korea (Plume at [63]).	"net CO_2" in the sense of gross CO_2 less negative CO_2 emissions (from forestry now and with the potential for other forms of carbon removal in the future). In contrast to Kyoto Protocol accounting, the 2018 Special report does not use net/gross to refer to with/without LULUCF. Dr Glade's description of gross and net is therefore not correct with respect to the 2018 Special Report. ○ In this sense, for every country net CO_2 within the SR1.5 framework will be less than gross CO_2. ○ Therefore, if every country applied a gross-net framework as applied by the Commission, the total global emissions reduction would fall short of that in the Special Report median global pathway.

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
35	Further, the Commission's 2010 target seems to be estimated from a 1990 baseline, but a gross emission 2010 baseline is chosen for quantifying 2030 net targets. This means the Commission seem to count the NDC forest sink prior to 2010 in their 2030 emission target but not in their 2010 baseline. This means that a large fraction of the 2010 to 2030 emissions reduction was already met by the 2010 forest sink. Under this approach, the Commission's 2030 target requires a far less significant reduction in emissions than under a net-net accounting approach (at [10] - [12]).	Professor Forster raises a valid issue with respect to the 2010 base year: • The Commission used a 2010 base year for the development of its comparator NDCs because this was the base year in the IPCC's analysis. However, because New Zealand's NDC accounting will continue to use a 1990 base year for forestry, CO_2 removals from forests planted after 1990 and before 2010 will be credited towards meeting the 2030 target (Smith at [136]). • The Commission was aware of this inconsistency and undertook some analysis to determine the scale of the problem, and found that the impact was small due to the averaging approach taken under NDC accounting (Smith at [137]). • As a result, only a relatively small portion of removals in 2030 will be from pre-2010 forests. In the context of our modelling exercise for the NDC advice, this was not a significant factor (Smith at [137]). Using the 2010 gross emissions figures is consistent with the gross-net approach that Professor Forster agrees is reasonable – because the	The motivation of this argument relates to undue reliance on and recognition of forestry removals, including from planting efforts that occurred prior to 2010, compared to reductions of gross emissions. This implies a judgement about when planting of trees should counted as 'effort' for the sake of determining 'consistency', and when it is simply treated as historical fact but not as effort to reduce emissions (Reisinger at [83] - [84]). Using a gross-net approach but excluding future removals generated by forests planted prior to 2010 may be considered as a hybrid between the standard gross-net and net-net approaches. This could be possible, but the data is not readily available (Reisinger at [83] - [84]). Further, this is not a matter of being scientifically correct or wrong, but again engages choices about how to treat CO_2 removals at the start year when calculating percentage reductions for New Zealand that are considered to be 'consistent with' the global rate of emission reductions (Reisinger at [83] - [84]).	The Commission's choice to allow pre-2010 actions on forests as part of the effort to cut emissions over 2010 – 2030 makes the Commission's approach inconsistent with the emissions reductions in the 2018 Special Report (at [18] – [22]). The thrust of the evidence of Mr Smith, Dr Glade and Dr Reisinger is that the Commission applied the 2018 Special Report to 2010 gross CO_2 to avoid being "penalised" for trees planted from 1990 – 2010. But New Zealand relied heavily on these forestry removals to meet its first commitment period obligations under the Kyoto Protocol. If New Zealand had instead reduced gross emissions it would be part of the baseline calculation (at [23]).

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
		2010 gross emissions figure includes all sectors that were net emitters during that year (Dr Olia Glade at [64] – [65]).		
36	The Commission's approach can be contrasted with a net-net accounting approach using the annual Greenhouse Gas Inventory. Such a net-net accounting approach would relate more directly to what the atmosphere sees. This would require the 2010 baseline to take the full 2010 forest sink into account, giving a 2010 net emission base of around 5 $MtCO_2$ in 2010 and 40% of 58% 2030 emission targets as given in the Gale affidavit paragraph 15 of 3 Mt CO_2 and 2 Mt CO_2 respectively. This passes the compatibility test (at [13] – [14]).	Professor Forster's suggested net-net approach seems to overlook the fact that the NDC is already *set* on a gross-net basis, and equally overlooks one of the primary reasons for that – being to exclude the obscuring impact of the major cyclical changes in forestry emissions and removals that are a major (and unusual) feature of New Zealand's emission's profile (Smith at [138] and [109] – [112]).		No reply to the issue of the obscuring impact of the major cyclical changes in forestry emissions and removals that are a major and unusual feature of New Zealand's emissions profile. Says applying the 40 – 58 percent reductions to 2010 net CO_2 does not require the adoption of a net- net NDC, because (at [24] and [29]): ○ The issue of how you apply the 2018 Special Report to determine a 2030 global average target for New Zealand is independent of how New Zealand expresses its NDC. ○ Applying the IPCC pathway to 2010 net emissions will imply a higher level of ambition, but it can still be converted into a gross-net NDC. ○ Mr Smith says it would be difficult to do so, but it should be straightforward.
37	Adopting the Commission's proposed framework and their proposed emission reduction target would give New Zealand an unambitious 2030	Professor Forster conflates accounting standards with the ambition of the target itself. Decisions on an accounting approach	The choice of accounting approach will change how New Zealand's NDC is expressed (e.g. different base years giving different 2030	No

#	Prf Forster's evidence	Commission response	Minister's response	Prf Forster's reply
	target that does not align to meeting global ambitions of holding global temperature rise to 1.5°C (at [16]).	are not be made with reference to the ambition of the target. Accounting approaches should be assessed on their own merits, with reference to whether they actually measure and incentivise real change, through accuracy, fairness, transparency, and comparability (Smith at [140]). Professor Forster also appears to have overlooked the Commission's advice that it is for the government to set the level of ambition, with the Commission's modelling providing only guidance as to the minimum level of commitment required to be compatible with the 1.5°C goal (consistent with the expert advice co-authored by Professor Forster at the Commission's request) (Smith at [140]).	percentage reductions), but this choice does not affect the climate impact (ambition) of this NDC, as that depends on the sum total of emissions during the 2021 -2030 period that will result from all the actions New Zealand will take (Reisinger at [43]).	

DR JOERI ROGELJ

#	Dr Rogelj's evidence	Commission response	Minister's response	Dr Rogelj's Reply
Expertise				
38	Director of Research at the Grantham Institute for Climate Change and Environment, and Reader in Climate Science and Policy at the Centre for Environmental Policy at Imperial College London (at [1]). Published over 100 peer-reviewed studies on climate change, greenhouse gas reductions and climate change scenarios (at [2]). Have led major scientific climate change assessments, including (at [3]): ○ A lead author on the Emissions Gap Reports by the United Nations Environment Programme. ○ Contributor to the IPCC 5th Assessment Report and Lead Author for IPCC 6th Assessment Report. ○ Coordinating lead author on the mitigation pathways chapter of the IPCC 2018 Special Report.	Dr Rogelj is a recognised expert in his field, based in the UK, but not aware that this extends to a detailed understanding of climate change accounting for national targets (Smith at [115]).		I am well-qualified to provide evidence on this topic (at [4]): ○ Have published several scientific studies that assess and discuss issues related to the outcome of national targets and their companion to global pathways. ○ For the past decade, have been a lead Author on the annual Emissions Gap Report of the UN Environment Programme, which compares national targets to global pathways.
39	Has read Dr Gale's affidavit (at [7])	Appears not to have read the Commissions' Advice, not clear whether he is familiar with New Zealand's national circumstances, nor		No reply.

#	Dr Rogelj's evidence	Commission response	Minister's response	Dr Rogelj's Reply
		that the NDC the Commission was asked to advise on was set on a gross-net basis (Smith at [118])		
Climate Change Commission's Application of IPCC 2018 Special Report Pathways				
40	Asked by LCANZ (at [6]): • Suppose you are assessing the implications for New Zealand of the global average reductions as set out in the IPCC 2018 Special Report for a 50 – 66% chance of limiting the global temperature increase to 1.5°C; • In order to determine the range for 2030 net carbon dioxide emissions for New Zealand that would be consistent with this global average, should the percentage reductions (40 – 58%) be applied to New Zealand's 2010 net carbon dioxide figure, or can they be applied to the 2010 gross carbon dioxide figure?	The question LCANZ asked of Dr Rogelj is not the question that the Commission was asked to address by the Minister (Smith at [116]).		
41	Agree with Dr Gale that the Commission has made a mathematical error in applying the IPCC 2018 Special Report modelled pathways (at [8] – [11]): • The IPCC 2018 Special Report pathways express net emissions in each individual year. This means that any relative changes	General response as above. The question LCANZ asked of Dr Rogelj is not the question that the Commission was asked to address by the Minister. If Dr Rogelj was considering only that question (of a comparison between the IPCC pathways and what they would require *if they could be directly*	General response as above.	Does not engage with modelling exercise actually undertaken by Commission, described by Smith. The Commission's reasoning is incorrect. Using a different method to express emissions in the start and end year results in the emissions reductions percentages being incomparable with the global average

#	Dr Rogelj's evidence	Commission response	Minister's response	Dr Rogelj's Reply
	in emissions between year are expressed under net-net assumptions. • Using a different method to express emissions in the start and end year, for example by using a gross carbon dioxide figure for 2010, results in the emissions reductions percentages being incomparable with the global average emissions reductions consistent with pathways limiting warming to 1.5°C from SR1 .5. • Accordingly, the pathways from IPCC 2018 Special Report used by the Commission do not limit global temperature increase to 1.5°C with a 50-66% chance.	*applied* to New Zealand with no other constraints), then applying a net-net approach to a net-net outcome would appear to be logical. That was not however the task the Commission was working on, which was to find a way to assess a gross-net NDC (without changing its fundamental character) from modelling based on the IPCC pathways net emissions pathways (Matthew Smith at [116]). The Commission was not in error in using the modelling from the IPCC 2018 Special report in order to create comparator NDCs for New Zealand on a gross-net basis. The approach of the Commission was reasonable, and did not involve any mathematical or logical error (Dr Olia Glade at [22] – [23]). Further: ○ The fundamentals of the pathways are the same, whether gross or net (Dr Olia Glade at [24] – [27]). ○ There is high uncertainty in net emissions globally as a result of LULUCF, and LULUCF make up a small contribution to global emissions (Dr Olia Glade at [28] – [37]).		net emissions reductions pathways in the 2018 Special Report. Accordingly, the global average emissions reductions in the 2018 Special Report need to be applied to 2010 net emission. The Commission has made a mathematical error (at [5] – [8]).
42	A more fundamental reflection however is that from an international	Dr Rogelj criticises the Commission for what he assumes the	Dr Rogelj points to the principle of equity – which is reflected in the	

#	Dr Rogelj's evidence	Commission response	Minister's response	Dr Rogelj's Reply
	climate equity perspective, it is conceptually questionable to apply reductions from global emissions pathways directly to the national context of an individual country. Scholarly literature uses principles of international environmental law to discuss and estimate fair shares of individual countries. For example, a recent peer-reviewed study estimates that New Zealand's internationally fair contribution to a global pathway would keep maximum global warming below 1.7 degrees implies at least a 67 percent reduction in net-net emissions reductions by 2030 relative to 2010 (at [12]).	Commission's approach is of directly applying global emissions pathways to an individual country, referring to international climate equity perspectives. The Commission's advice however is clear that for very similar reasons, the Commission did not take that approach (Smith at [118]. See also at [62], [64] – [65], [71] – [72] and [85] – [86] and [92] – [93] with respect to the limitations of applying global modelling).	Commission's Advice and the Consistency Advice (Reisinger at [27] – [30]). With respect to the peer-reviewed study Dr Rogelj refers to, the paper appears to exclude both emissions and removals from LULUCF for all country targets. This makes it difficult to interpret this (gross-gross) result in New Zealand's emissions profile, but do not see any material inconsistency between the conclusion referred to by Dr Rogelj and the calculations provided to government in the consistency advice (Reisinger at [38]).	
43				Considers that the 2018 Special Report reductions need to be scaled correctly when applied to national inventories, because there is a "mismatch" between house human caused CO_2 uptakes in forests is defined differently in global pathways from the 2018 Special Report compared to national greenhouse has inventories. This means that for a country with circumstances like New Zealand, greater cuts will be required than show on the face of the 2018 Special Report trajectories, and that the Commission is using an incomparable benchmark as the basis

#	Dr Rogelj's evidence	Commission response	Minister's response	Dr Rogelj's Reply
				for their advice (at [12]).

PROFESSOR DONALD WUEBBLES

#	Prf Wuebbles' evidence	Commission response	Minister's response	Prf Wuebbles' Reply
Expertise				
44	Professor in Department of Atmospheric Sciences at University of Illinois (at [1]). Leader in many national and international climate assessments, including IPCC author for a number of reports (at [2]). • Leader in the US National Climate Assessments (at [2]). Written or co-authored over 500 peer-reviewed papers, reports and books relating to climate change and other global change issues (at [2]). From 2015 – early 2017, served as Assistant Director with the Office of Science and Technology Policy at the Executive Office of the President in Washington DC – White House expert on climate science under President Obama (at [2]).	Professor Wuebbles' expertise in climate change matters appears to be extensive, but it is not clear whether he has any particular specialist expertise in climate change accounting (Smith at [122]).		Well qualified to address these issues (at [3]): ○ Extensively involved in emissions analysis for many years, including experience as President Obama's expert on climate science, which involved extensive interaction with the US Environmental Protection Agency on their emissions analyses for the US. ○ Have been a chapter leading author for five different IPCC assessments. ○ Involvement with the IPCC largely concerned the databases of emissions from around the world and how those translated into changes in atmospheric composition and radiative forcing on climate.
45	Has read Dr Gale's affidavit (at [7])	Appears not to have read the Commissions Advice in any detail, and his views appear to be expressed on an incomplete understanding of what the Commission did and why (Smith at [124] – [125]).		
Climate Change Commission's Application of IPCC 2018 Special Report Pathways				

#	Prf Wuebbles' evidence	Commission response	Minister's response	Prf Wuebbles' Reply
46	Asked by LCANZ to comment on (at [6]): • Suppose you are assessing the implications for New Zealand of global average reductions as set out in SR1.5 for a 50 – 66% chance of limiting the global temperature increase to 1.5°C. • In order to determine the range for 2030 net carbon dioxide emissions for New Zealand that would be consistent with this global average, should the percentage reductions (40 – 58%) be applied to New Zealand's 2010 net carbon dioxide figure, or can they be applied to the 2010 gross carbon dioxide figure?	The question Professor Wuebbles was asked does not reflect the question that the Commission was addressing, and Professor Wuebbles makes no reference to the exercise actually carried out by the Commission. (Smith at [124])		
47	In general, meeting the goals of the Paris Agreement towards limiting climate change to 1.5°C requires a focus on net emissions in determining future decreases in national emissions, not gross emissions (at [8] – [14]).	The view expressed by Professor Wuebbles appears to be a direct challenge to the core concept of gross-net accounting. This is fundamentally misconceived: references as above.	New Zealand's use of gross-net accounting to express and account for New Zealand's NDC is transparent and follows established practice (Reisinger at [43] – [59]). There is not just one "scientific" way to calculate what level of emissions reduction in New Zealand's NDC would be compatible with the global 1.5°C pathways (Reisinger at [22] – [39])).	Mr Smith's evidence, and much for the evidence for the Commission shows a bias towards what New Zealand has done in the past and demonstrates a clear misunderstanding of the science (at [5]). The Commission's evidence appears to be aimed simply at arguing that New Zealand should have as low a reduction in emissions as possible (at [5]). This disregards the science. Which is clear that climate change is the most

#	Prf Wuebbles' evidence	Commission response	Minister's response	Prf Wuebbles' Reply
				important issue of our time, and net emissions must be reduced (at [6] – [8]).
48	Regarding paragraph 16 of the Gale Affidavit, it is clear that the IPCC 2018 Special Report treats greenhouse gas reduction policy as being directed at net emissions. It is these emissions that matter for getting to net zero by 2050, and the use of gross emissions makes no sense (at [8] – [9]).	The Commission was alert to the fact that the 2018 Special Report refers to net CO_2 emissions in its modelled pathways, reflecting the fact that globally, LULUCF is an overall source of emissions (Smith at [71.5]).		The IPCC 2018 Special Report and the international assessments clearly state that the science calls for net emissions to be used in policy development on a global basis. The most straightforward way to do this is for every country to use net emissions as the basis of their efforts and reporting (at [9] – [10]). If a country expresses its target for net emissions in 2030 in the form of a reduction from gross emissions in 2010, it must still apply the IPCC 2018 Special Report in a scientifically valid way in setting that target. The IPCC states that that should be done in terms of net emissions, and all countries should use the same approach (at [12]). Accordingly, agree with Gale that it is an error to apply the IPCC 2018 Special Report Pathway to 2010 gross emissions. Anything else is not following the science (at [13] – [14]).
49	The focus in the IPCC 2018 Special Report is on "net human-caused emissions". The question is what constitutes "net human-caused" emissions. LULUCF is positive for	Professor Wuebbes does not express any agreement view on the 'maths error': rather his evidence is a more general explanation of the importance of accounting for human		Does not acknowledge or engage with the modelling exercise actually undertaken by Commission, described by Smith.

#	Prf Wuebbles' evidence	Commission response	Minister's response	Prf Wuebbles' Reply
	some countries, but negative for New Zealand. However, LULUCF has become much less negative over time, largely due to human development activities. In looking at net zero emissions, it is not just the gross human-related emissions that matter, but also changes in carbon storages that are changing because of human activities. This is why it is important to consider the net emissions, not just gross human emissions (at [10] - 11]).	caused emissions, which is a basic principle of target accounting. How that is achieved in any particular context is the more complex issue, and possibly because of the limited nature of the question he was asked, Professor Wuebbles does not seem to have engaged with what the Commission actually did in that regard (Smith at [126]).		
50	In terms of paragraph 22 of the Gale affidavit, New Zealand, as with every other country, needs to base human emissions reductions of greenhouse gases on the net emissions as defined above. Gross emissions alone is not sufficient, and land use change is also extremely important to the amount of carbon affecting the climate system (at [12]).	Professor Wuebbles' broad claim that "every country on our planet" needs to adopt net-net accounting, appears to disregard the Kyoto Protocol and the extensive guidance produced for target accounting and may indicate that Professor Wuebbles does not have specialist expertise in climate change accounting (Smith at [122]).		Past agreements, such as the Kyoto Protocol, were based on "what could be accomplished", not on the best science. The Commission's approach of looking back at the past is not the proper way to move forward on climate action (at [11]).
51	If New Zealand applies the 40 – 58% reduction range to its gross CO_2 emissions from 2010, then it will be doing less than the global average (at [13]).	This is a demonstration of why the direct application of global figures to a national level can be problematic. At a global level deforestation is a major source of carbon dioxide emissions, and the IPCC pathways require this to reduce dramatically. To apply that same dramatic reduction to New Zealand where there is no major deforestation and		

#	Prf Wuebbles' evidence	Commission response	Minister's response	Prf Wuebbles' Reply
		our land sector acts as a sink already is not sensible (Smith at [123]). In addition, Professor Wuebbles looks to be applying a percentage reduction based on figures that exclude harvesting and replanting, to New Zealand figures that include harvesting and replanting. No sound conclusions can be drawn from that comparison (Smith at [123]).		

DR WILLIAM TAYLOR

FIRST AFFIDAVIT – APPENDED REPORT

#	Dr Taylor's evidence	Commission response	Minister's response	Dr Taylor's Reply
Expertise				
52	Economist and Associate Director at NERA Economic Consulting. NERA specialises in applying economic, finance and qualitative principles to complex business and legal challenges. PhD in economics, Honours degree in finance (first class) Consulting practice involves the application of economic analysis to legal issues and energy economics. Lead NERA's regulatory and energy practice in Australasia.	Dr Taylor does not claim to have expertise in climate matters, let alone climate change accounting. Dr Taylor's judgements and assessments reflect this lack of knowledge and experience (Smith at [164]).		
Climate Change Commission's Application of IPCC 2018 Special Report Pathways				
53	"What 2010 carbon dioxide ("CO_2") emissions value is called for to properly apply the 2010 to 2030 percent reduction range of 40 to 58 percent contained in SR18?"			
54	The Climate Change Commission has made a simple mathematical error: • The starting point and the end point of the IPCC's interquartile range are both net CO_2.	General response as above.	General response as above.	Nothing in the Commission's evidence changes my view that the IPCC 2018 Special Report must be applied mathematically to 2010 global average reductions of net CO_2. The approach must be to apply the

#	Dr Taylor's evidence	Commission response	Minister's response	Dr Taylor's Reply
	• However the CCC has applied the percentage reduction using gross CO_2 as the starting point in order to derive a target for net CO_2. (at [8] – [12], [67] – [78] and [94]).			IPCC 2018 Special Report Pathway to 2010 gross emissions, and then convert this into a net-net target (allowing for assessments of what is fair and feasible given national circumstances, as compared to the Commission's approach which is not internally consistent and masks the value judgments (at [5] - [12]).
55	While the SR18 pathways model a required net CO_2 emissions decrease between 40 and 58 percent between 2010 and 2030, the Commission's calculation likely results in a net CO_2 net emissions increase over the same period of more than 250 percent. If the Commission had correctly applied the percentage reduction range to 2010 net CO_2, then it would have determined a 2030 limit for net CO_2 of 2.1 to 3.0 Mt (with a midpoint of 2.6 Mt) and a 2030 limit for total net emissions of 32.6 to 42.0 $MtCO_2$-e (with a midpoint of 37.3 $MtCO_2$-e). Therefore, on the Commission's advice, New Zealand would be under-contributing to global efforts to combat climate change over the NDC period. (at [12] – [16], [79] – [86] and [98] – [100]).	Dr Taylor's analysis appears to be based on the misapprehension that the Commission was 'applying' the IPCC pathways directly to New Zealand's emissions, as a direct mathematical equation to give a clear percentage figure of required reductions. This is exactly what the Commission was not doing (Smith at [166]). Dr Taylor also falls into the error of treating the national inventory reporting measure for land use as if it were an appropriate accounting quantity (Smith at [162.5] and [167]; Murray at [63] – [78]; and Young at [27] – [66]). Dr Taylor appears to have made a mathematical error in calculating 2010 net emissions (Dr Olia Glade at [58] – [62]).		Does not reply to or engage with the modelling exercise the Commission actually undertook as detailed by Smith. No reply other than in response to Dr Glade's view that there is a mathematical error in the calculations of 2010 net emissions in the first affidavit. Says the key point is that based on the Commission's application of the 2018 Special Report, net emissions would increase between 2010 and 2030. This illustrates that this is a mathematical misapplication of a report which says that net emissions must decrease (at [22] – [28]).
56	The Commission justifies its	Dr Taylor's approach challenges to	General response as above.	The fact that the Kyoto protocol

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	methodology by relying on the Kyoto Protocol approach, which requires gross-net accounting for countries whose land emissions were a net sink in the base year, however (at [87] – [90]): • The practice of expressing targets on a gross-net basis can result in little real progress to reduce emissions for countries that have substantial removals from forestry, and this net emissions are substantially lower than gross emissions (at [52] – [55]). • The nature of New Zealand's land sector does not change how one would apply the modelled reductions in the 2018 Special report to determine New Zealand's emissions reduction that would be consistent with the pathways in the Special Report – otherwise there is a maths error (at [48] – [50] and [91] – [92]. • If the CCC is of the view that the reductions in net CO_2 emissions in the IPCC's 2018 Special Report are not achievable or fair, this does not change the application of the 2018 Special Report reductions. Instead, the Climate Change Commission should propose an alternative NDC	the legitimacy of gross-net accounting. This is misguided: evidence references as above.	Disagree with the assertions made by Dr Taylor that a gross-net approach has no relevance to mapping New Zealand's rate of emission reductions to global net emissions pathways. Both gross-net and net-net approaches have their own merits (Reisinger at [78]). Dr Taylor's discussion of the shortcomings of the gross-net accounting approach, and the analogy he uses to discuss it (comparing gross-net targets to a weight loss competition where you wear a winter coat at initial weigh in and then take it off for the final weigh in), is not apposite (Reisinger at [71] – [72]). To the extent that Dr Taylor argues that the Commission should have first calculated 1.5°C consistent emission reductions on a net-net approach, and only then argue why the result of this calculation may be too onerous for New Zealand (Reisinger at [80] – [82]). o This would have been a valid approach, but it too has its shortcomings. o The choice the Commission made	requires the use of gross-net accounting does not justify applying the 2018 Special Report in a mathematically inconsistent way. In the context of a gross-net NDC, the 2018 Special Report reductions can be converted into gross-net equivalents in order to inform judgments about the gross-net NDC (at [11] – [14]). Regarding the use of the weight-loss analogy, still consider the analogy shows how gross-net targets can mask a lack of progress by making international commitments sound more ambitious than they actually are (at [15] – [21]).

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	based on what is achievable and fair. The CCC's current approach of using a gross number in a formula based on net emissions is inconsistent with basic algebra and masks these judgments (at [17] and [93]).		was a valid choice. If gross-net accounting is illegitimate under the Paris Agreement, many other countries, not just New Zealand would be acting illegitimately. The EU uses gross-net accounting, as well as Norway, Japan, Switzerland, Canada and South Korea (Plume at [63]).	
57	Statistics New Zealand takes the approach of applying net 2010 emissions in the 2018 Special Report calculation, in a figure available on their website (at [95] – [97]).	The Commission has significant concerns with the Stats NZ graphic, which is not analytically robust. The Stats NZ graphic makes the gas by gas pathway ranges appear like they are appropriate targets for New Zealand when that is not what they are and not what they can be used for. Once the Commission became aware of the comparison on Stats NZ website, these issues were raised with Stats NZ (Smith at [169] – [170]).	Advice was given to Stats NZ, which cautioned against simply superimposing the rate of reduction in global emission pathways on New Zealand's domestic emissions, since this would inevitably be construed as indicating how much New Zealand ought to reduce its emissions (Reisinger at [40]).	
Advice on the rules for measuring progress				
Differences between MAB and GHGI				
58	The GHGI net accounting methodology is essentially a measure of what the "atmosphere sees" from New Zealand, net of forestry removals. The concern with using GHGI to set budgets and measure progress is the large fluctuations in net emissions due to forestry harvest cycles, which can significantly impact how progress looks when comparing	National inventory reporting is the approach used in New Zealand's greenhouse has inventory for reporting under the UNFCCC (Murray at [65]). It attempts to cover all emissions and removals from all land-use categories, and uses a "stock-change" approach that estimates emissions		

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	one year to the next (at [104] – [105]).	and removals as they happen (Eva at [66] – [67]). There is an important caveat to the national inventory reporting approach being a measure of "what the atmosphere sees": national inventory reporting gives a "truer representation of what the atmosphere sees" *in a particular year*. However, what the atmosphere sees in a particular year is not necessarily indicative of longer-term trends, nor additional or enduring effort in terms of emissions reductions (or conversely, emissions increases) (Murray at [68] and Young at [57] – [66]).		
59	The modified activity-based measure differs from GHGI net in two key ways (at [18] – [19] and [109]): • Pre-1990 forests are ignored; and • Removals from forestry will, from 2021 onwards, be averaged to smooth out the impact of planting and harvesting cycles on net emissions	A general discussion of the modified activity-based approach and why it was adopted by the Commission is set out in: Murray at [50] – [59], [63.2], [69] – [78] and Young at [31] – [66]). It is not correct to say that the modified activity-based approach ignores pre-1990 forests. Instead it is an explicit choice that only emissions and removals resulting from land activities undertaken from 1990 should be counted towards targets (Young at [69]).	Regarding Dr Taylor's description of the modified activity based approach (Brandon at [58]): ○ Pre-1990 forests are accounted for against a reference level – this is not the same as being "ignored". Debits or credits can and will be incurred where net emissions from these forests deviated from reference levels (Dr Andrea Brandon at [58]). ○ The decision to exclude the business as usual net emission from pre-1990 forests in accounting for emissions	

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			reductions targets meets a key principle that is fundamental to driving climate action – additionality. Additionality helps to maintain the environmental integrity of the Paris Agreement. ○ Dr Taylor's description of averaging as being to "smooth out" the impact of planting is incorrect.	
Impact of using MAB to measure historic emissions				
60	Because the modified activity-based measure ignores pre-1990 forests, historic emissions under the modified-activity based approach are overstated. These missing removals are so significant that when the Commission shows "net emissions" using the modified activity-based approach, the trend appears to be that out net emissions are reducing over time, whereas our actual net emissions (as measured by GHGI) shows they have been increasing since 1990 and are projected to continue increasing over the period to 2030 if the emissions budgets proposed by the Commission are adopted (at [21] and [110] – [118]).	It is not correct that the use of the modified activity-based approach (coupled with gross-net accounting) makes it "appear" that New Zealand has achieved (or is budgeted to achieve) a greater percentage reduction in emissions compared to national inventory reporting (coupled with net-net accounting) (Young at [70] – [71]). Net emissions under national inventory reporting are trending upwards at the moment mainly because New Zealand is approaching a peak in its production forest harvest cycle, and will trend down again for the same reasons after 2030 (Young at [71] - [72]). The Commission's figures are not misleading. Instead, the decrease in net emissions under the modified	Modified activity based accounting does not "overstate" historic emissions. Instead, it presents historic and projected net emissions from afforestation, reforestation and deforestation activities. For afforestation and reforestation of planted forests, historic net emissions are limited to the point at which those forests reach their long-term average carbon stock (Brandon at [59]).	Dr Bandon says that MAB does not overstate historic emissions, but explains this with averaging. Averaging however only applies from 2021 onwards (at [39]). With respect to Mr Young's contention that it is not meaningful to compare budgets set on the basis of modified activity-based accounting and "comparator" budgets using national inventory reporting figures – purpose as not to present a counterfactual GHGI budget, but instead determining what actual GHGI emissions would be if the proposed budgets are adopted and met by MAB (at [42]).

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		activity based approach is a reliable indicator of long-term trends, while the current increase in emissions under the national inventory reporting approach and the inevitable decrease in emissions after 2030 is not a reliable indicator of long-term trends or a measure of real change (Young at [57] – [66] and [73]). Dr Taylor compares the proposed emissions budgets set using a modified activity-based approach, to budgets that he has "calculated" on the basis of national inventory reporting, in an attempt to make a point about the level of ambition under either accounting approach. It is not meaningful to compare budgets set on the basis of modified activity-based accounting and "comparator" budgets using national inventory reporting figures because if the Commission had been using national inventory reporting, the Commission would have recommended that the budgets be set at different levels. Ambition is not inherent in an accounting approach (Young at [29], [54] – [56] and [74]).		
Impact of using MAB to measure progress				
61	While there is merit in the averaging approach:	One reason for the difference between the level of removals under the modified activity based approach	"GHGI removals do not fluctuate symmetrically around the MAB line" because (Brandon at [62]):	The effect of using MAB vs GHGHI with respect to the asymmetry (such that MAB will systematically

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	• The fact that removals are only averaged from 2021 means that the MAB time series is not directly comparable before and after 2020 (in effect, it is two different series) (at [22]); and • There is an asymmetry in how GHGI removals fluctuate around MAB, in that GHGI removals drop much further below MAB than they rise above MAB. This asymmetry means that MAB systematically understates forestry removals over time/overstates historic emissions (at [22] and [120] – [123]).	and national inventory reporting (which Dr Taylor refers to as "systematically underestimat[ing] forestry removals over time") is because national inventory reporting includes some additional categories of CO_2 removals that are excluded from the modified activity-based approach on the basis that these are not the result of any climate change mitigation efforts. It is appropriate not to count these removals towards emissions reductions targets (Young at [35] – [40]).	○ Net emissions using MAB accounting are impacted by planting rates, while net emissions under UNFCCC reporting are impacted by harvest rates, which are not uniform due to the uneven age-class distribution of New Zealand's production forest estate; and ○ MAB accounting also claims the abatement from harvested wood products up front, while under UNFCCC reporting it takes multiple rotations for carbon to accumulate in the harvested wood product pool.	overstate emissions relative to the GHGI measure, and that this will mean it is harder to meet a given target than GHGI) does not appear to be in dispute (at [43]).
62	This means that while emissions budgets will be easier to meet under the MAB between 2027 – 2036 (because more removals will be counted), from 2037 onwards MAB will understate the true forestry removals to a significant extent. This means budgets for that period will be harder to meet, and place a significant additional burden on New Zealand (at [23] – [24] and [120] – [127]).	This inconsistency (regarding whether budgets are easier or harder to meet) demonstrates that an accounting system is neither inherently ambitious nor unambitious. An accounting system is simply more or less suitable for tracking progress towards the level of ambition that has already been decided on (Young at [29], [54] – [56] and [76]).	In Dr Taylor's evidence (Figure 1.1], he graphs only the LULCUF removals, not emissions. The LUCLUCF sector includes emissions and removals (Brandon at [60] – [61]). During 2027 – 2036, net emissions from planted forests are projected to increase from forest management activities due to the age-class profile of the forest estate (Brandon at [61]).	Do not accept that it is inconsistent to say that averaging (which will overstate future emissions) will make it harder to meet targets while at the same time saying that the treatment of pre-1990 forests (which will overstate historic emissions) are making targets look more impressive than they are (at [38]). Acknowledge that emissions are forecast to decrease after 2030 – but focus is on period through to 2030 because this is the end of the current NDC, and a period in which emissions must drop steeply (at [40] – [41]).

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63	It could be argued that it is desirable to build in a bias towards over-ambition. However, the additional cost involved suggests MAB is not a durable/politically feasible metric for tracking New Zealand's progress (at [25] and [128]).	The Commission has outlined in detail why it preferred the modified activity based approach to national inventory reporting for a range of reasons (Murray at [50] – [59], [63.2], [69] – [78]). Further, the Commission does not agree that national inventory reporting should be preferred because: ○ Using national inventory reporting credits more $C0_2$ removals over the long term (Young at [32] – [40]). ○ National inventory reporting is dominated by cyclical forest emissions and removals which obscure genuine long-term changes (Young at [41] – [56]). ○ "What the atmosphere sees": from year to year is a poor approach for informing policy and future action" (Young at [57] – [66]). With respect to durability (Young at [78]): ○ The activity-based approach has been applied to New Zealand's and many other countries' target accounting since the first commitment period under the		

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		Kyoto Protocol. It has been applied by Cabinet in setting New Zealand's first NDC and the net zero 2050 target in the Climate Change Response Act, and the Commission has endorsed it as fit for purpose in measuring progress against the first three budgets towards meeting the 2050 targets. ○ The Commission considers that the modified activity-based approach is more appropriate (and thus durable) than the national inventory reporting approach, because it focusses on real additional action to reduce emissions, rather than counting large fluctuations that obscure genuine progress and will simply be balanced out over time. In terms of political feasibility, while the modified activity-based approach may not suit short-term political objectives, that is largely the point: it does not allow governments to take credit for removals that are temporary and that will be cancelled out by equal and opposite emissions in 20 – 30 years' time (Young at [79]). It is appropriate for New Zealand to use activity-based accounting generally. It is consistent with New		

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		Zealand's reporting and carbon accounting under the Kyoto Protocol. It is also an appropriate approach to use when accounting for progress in reducing emissions: it has lower uncertainty than land based accounting and is more clearly focussed on human activities (Dr Olia Glade at [69] and [71] – [81]). Dr Glade agrees with the averaging approach recommended by the Commission. The methodology is consistent with IPCC methodological guidelines, significantly reduces the uncertainty caused by harvesting cycle fluctuations, and provides stable and consistent signals about whether New Zealand is on track to meet its emissions reduction target (at [70] and [82] – [94]).		
Costs and benefits of setting more ambitious budget levels				
64	The Commission, in providing its advice on the emissions budgets, should have conducted a cost benefit analysis and a multi-criteria analysis, which requires the comparison of policy options, and identification of the best option (at [26] – [30] and [131] – [137]).	A cost benefit analysis would not have been an appropriate tool for the task that the Commission was given under the Act (Carr at [72] – [86]) Multi-criteria analysis. A multi-criteria analysis, in the terms that Dr Taylor suggests, was not well-suited to the task the Commission was undertaking (Carr at [77] – [81]). Consideration of multiple policy options. (Carr at [82] – [91]). The		Agree with much of the discussion from Dr Carr and Dr Toman re the difficulty with and usefulness of a cost benefit analysis and a multi-criteria analysis. Agree with many of these points, but they are beside the point – the key point was that the Commission does not appear to have undertaken a meaningful assessment of whether we should aim for higher ambition in the budgets. A cost benefit analysis/multi criteria analysis

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		Commission recommended emissions budgets, develop don the basis of a demonstration path that it considered could be met under a range of possible futures and with different combinations of actions – the Commission was not recommending particular policy options in the way Dr Taylor suggests. Accordingly, the Commission could not and/or should not measurably define the "best option" (Carr at [82] – [91]). The approach the Commission took to advising the Minister under the Act was reasonable and defensible. By contrast, there are a range of practical difficulties with the idea that the Commission should have applied a cost benefit analysis and multi-criteria analysis to the Commission's advice to the Minister (Dr Michael Toman at [15] – [26]).		would help interrogate these issues and provide a framework for thinking about trade-offs (at [44] – [46] and [48] – [52]).
65	While the Commission does compare costs between the demonstration path and the current policy reference, the Commission failed to do a "rigorous options assessment" of different paths (at [146] – [151]).	With respect to the level of ambition dictated by the 2050 target, this was set by parliament and was not for the Commission to revise (Dr Roderick Carr at [92] – [94]). With respect to the level of ambition of each budget, this is about short-term pace of change, not overall ambition. The Commission's approach was as ambitious as		Dr Carr rejects the concept of incremental ambition, however the path as well as the end point maters for ambition (at [53] – [55]).

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		possible while still ensuring that the options we were considering were likely to be technically feasible and economically affordable, and had due regard to the range matters that the Commission was required to consider (Carr at [95].		
66	Due to the Commission's failure to conduct an options assessment around the level of ambition, the Commission has not considered whether a higher level of ambition in the emissions budgets would be technically or economically feasible. There are numerous places in the advice which suggest that it could be likely to be technically and economically feasible to be more ambitious (at [158] – [160]).	With respect to the pace of change of short-term level of ambition of the emissions budgets recommended by the Commission, assessed the amount of domestic action the Commission considered is consistent with the multiple criteria contained in the Act and with the targets set by Parliament, and gives a degree of certainty about the likelihood that they could be achieved. It was not simply a matter of considering the "highest ambition" that would be technically or economically feasible (Carr at [98]). Questions of technical and economic feasibility were however built in to the Commission's analysis and testing of the demonstration path. In particular, our use of the headwinds and tailwinds scenarios and the sensitivity testing of the demonstration path represents our view of the likely parameters of technical and economic feasibility (Carr at [99]).		The Commission focussed on technologies that are commercially available now. This means the budgets do not incorporate technology that is not commercially available now, but is likely to be available during the period of the budgets – there is likely to be a gap between "commercially available now" and "fairy dust and floo powder" (at [72] - [73]).

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		Further, in in setting the demonstration path, the Commission did not want to bank on less likely hypotheticals or rely on luck with respect to the achievability of the emissions budgets. The Commission's approach was to recommend the level of budgets that we assessed would be ambitious and be able to be met under a range of possible futures (at [100] – [102]).		
67	On the Commission's own math, because the emissions budgets are greater than the estimated NDC, New Zealand's emissions budgets fall short of what are required over the period 2012 – 2030 to contribute to the global effort to limit temperature to 1.5°C. Accordingly, offshore mitigation will be required (at [138] – [146]): • The fact that the emissions budgets are not sufficient to meet our international obligation to contribute to the 1.5°C target over the period 2021 – 2020 raises the question of whether the emissions budgets are sufficiently ambitious. • Given prices to ETS units internationally and those in New Zealand, the current level of the	New Zealand's domestic emissions budgets are only one part of New Zealand's contribution to the 1.5°C goal under the Paris Agreement. The Commission assessed how our recommended emissions budgets contribute to the global 1.5°C effort in Chapter 9 of the Advice (Carr at [103] – [106]). In addition to the use of offshore mitigation to meet the NDC, the emissions budgets and the (revised) NDC are also not aligned because they use different starting points (Carr at [107] – [108]). With respect to the relative costs of offshore and domestic abatement, the Commission did look at the relative costs of domestic and offshore abatement, however the costs of offshore abatement are so inherently uncertain that any decision	New Zealand has been clear from the outset that in meeting its NDC under the Paris Agreement, it intends to use international marked mechanisms, cooperative approaches and carbon markets. The ability to do so is expressly recognised under the Paris Agreement (Plume at [87] – [90]).	Dr Carr is correct with respect to the different starting point for the NDC and the budgets. However, this could be adjusted for and is essentially an acknowledgment that the NDC is more ambitious than the domestic budgets. This gap would be even bigger if the NDC was formulated on the correct interpretation of the IPCC 2018 Special Report (at [56] – [58]). Regarding Dr Carr's citing of Chapter 9, Chapter 9 does not discuss the balance of domestic and offshore mitigation. Further, Chapter 9 repeats the mathematical error from the NDC Advice (at [59] – [69]). With respect to Dr Carr's point that the emissions budgets are not New Zealand's full contribution – cumulative emissions are what matters, not just the end point (at

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	emissions budgets could be committing New Zealand to offshore mitigation that is more expensive than additional domestic action.	on budgets cannot be made with reference to it (Dr Roderick Carr at [109] – [111]). The Commission's advice does not lock the government into a particular course of action (Carr at [112]).		[70]).
68	In giving advice that relying too much on forests to meet emissions reduction targets would fail to lock in net-zero (and assuming that New Zealand stops planting trees as soon as the 2050 target is reached) the Commission has not asked the question of whether New Zealand could be more ambitious over the budget period by adding a little more forestry to the demonstration path (at [152] – [157].	The Commission was not "assuming" that there will be no further planting after 2050, but instead that sustaining net zero in a scenario where we relied on removals of greenhouse gases from the atmosphere by forestry would rely on continued afforestation on new land as well as maintaining and replanting all forested land in perpetuity or other actions beyond 2050, unlike if New Zealand actually decarbonised the economy (Carr at [113] – [116]). Further, allowing for unconstrained removals by forests to meet the 2050 target and sustain net zero long life gas emissions thereafter would encourage much more exotic forestry to be planted – and, this does not come without cost and risk (Carr at [117]). The Commission did consider the role of forestry in designing our mitigation scenarios. Ultimately however, the Commission considered that relying on unconstrained removals from		While the Commission declined to rely on extreme situations of unconstrained forestry removals and using offshore mitigation to meet the NDC, this does not mean an intermediate scenario (for example "less constrained forestry removals") might not be desirable (at [74] – [78]).

#	Dr Taylor's evidence	Commission response	Minister's response	Dr Taylor's Reply
		forests was not sustainable (Carr at [118]).		

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Percentage reduction in net emissions under the revised NDC communicated November 2021				
69	Asked by LCANZ "what is the percentage reduction in net emissions between 2005 and 2030 implied by the new NDC using the Greenhouse Gas Inventory measure?" Calculated that: • Using AR5 values, the percentage reduction in net emissions between 2005 and 2030 will be 23.6%. • Using AR4 values, the percentage reduction in net emissions between 2005 and 2030 will be 22%.		Disagree with both Dr Taylor's methodology and calculations (Reisinger at [88] – [89]). o Dr Taylor misrepresents the difference between UNFCCC reporting and net target accounting for the period relevant to the NDC. o Dr Taylor uses outdated forestry projections to calculate the difference between UNFCC reporting and net target accounting emissions. o Dr Taylor conflates domestic and offshore mitigation. Sets out the correct steps for determining how much net UNFCCC reporting emissions in 2030 are expected to be below net UNFCCC reporting emissions in 2005 under the NDC decided by government (Reisinger at [90]).	The cause for the difference in approach re methodology and calculations is driven primarily in differences in methodology and in part due to underlying data. Consider both the question being addressed and the method to be valid (at [29] – [33] and Appendix A).
Offshore mitigation vs domestic reductions				
70	Asked by LCANZ "if the point-year target is met in 2030, to what extent will the reduction in net emissions come from domestic reductions or offshore mitigation?".		Disagrees with Dr Taylor's methodology and calculations, as above.	As above

#	Dr Taylor's evidence	Commission response	Minister's response	Dr Taylor's Reply
	In calculating that the extent to which the Commission's projections anticipate that the 23 percent reduction will be achieved through reducing net emissions and the extent to which it will require the purchase of offshore mitigation, Dr Taylor determines that the Commission's demonstration path and budget imply that GHGI net emissions domestically would not decrease between 2005 and 2030, but rise slightly. Therefore, the reductions in net emissions implied by the NDC for 2030 will be achieved by offshore mitigation rather than reducing New Zealand's net emissions (at [20] – [26]).			

PROFESSOR RALPH SIMS

#	Prf Sims' evidence	Commission response	Minister's response	Prf Sims' Reply
Expertise				
71	Professor Emeritus, Sustainable Energy and Climate Mitigation at Massey University. Expertise in climate change mitigation. Lead author for five IPCC reports, and currently a Review Editor for the 6th Assessment Report, Mitigation. Held roles at the International Energy Agency, UN Food and Agricultural Organisation, United Nations Environment Programme and the World Bank. Chaired the Royal Society of New Zeeland's Climate Change Panel.			
72	Asked by LCANZ to comment on the IPCC framework, the contribution of New Zealand to the climate change crisis, and the impact on New Zealand of warming of 1.5°C compared to 2 degrees or more	Professor Sims is the only LCANZ witness who does not refer to the alleged 'math error' and it appears he was not asked to give evidence on this issue, despite having much more extensive experience in climate change matters than Dr Gale, Dr Bertram or Dr Taylor (although, note that Professor Sims does not claim any expertise in climate change accounting) (Smith at [171]).		Mr Smith implies I do not agree there is an error of mathematical logic, but the only reason this was not commented on was because I was not asked (at [6] – [7]). Having now spent some time looking at the issue, agree in principle with the statements made in the other LCANZ evidence that using gross CO2 emissions from 2010 as a baseline for the 2030 target is not what the atmosphere "sees" and is inconsistent with IPCC methodologies when assessing pathways to stay below 1.5°C (at [8]).

73	General evidence on the IPCC framework and why the IPCC assessments and reports, including the Special Report on Global Warming of 1.5°C are an authoritative source of evidence in relation to the climate crisis. General evidence on New Zealand's contribution to the climate crisis, including historical and current emissions and decade-on-decade movement in New Zealand's gross and net emissions and how these compare to other countries. General evidence on the likely impacts on New Zealand of a temperature increase of 1.5°C and how this might compare with a temperature increase of 1.5°C degrees or more	As a general response to Professor Sims' evidence, the Commission does not disagree with the general points expressed by Professor Sims in his submission to the draft Advice, nor with the broad theme of his evidence in this proceeding, as the Advice reflects. Budgets and commitments are only words and numbers, and worth very little if they are not accompanied by action, and the action required will absolutely need widespread societal commitment and behavioural change to be effective. This is a strong focus of the Commission's Advice. The Commission in its Advice also reiterates that New Zealand is not on track to meet its targets and elected officials need to move fast to implement a comprehensive plan (Smith at [174]). However, if the sense of Professor Sims' evidence is that the urgency for an effective global response should drive New Zealand towards reducing its own emissions faster, without regard to any other considerations, do not agree. New Zealand reducing emissions faster will not change the global impacts of climate		The need for urgency is clearly outlined in the IPCC's 2018 Special Report and the 6th Assessment Report, and while New Zealand's overall emissions are a small percentage of global emissions, New Zealand has one of the highest levels of emissions per capita. Therefore, believe that while New Zealand is responsible for only a small share of annual total emissions, we have a major obligation to take urgent action in order to rapidly reduce our annual and per capita emissions, and show leadership in this regard (at [10] – [11]).

		change to any material degree. New Zealand must reduce its emissions for many good reasons, including to contribute to a global collective action problem and to motivate other countries to also contribute, but there is no causal link between the speed in which New Zealand reduces emissions and the impacts of climate change felt by us or by anyone else (Smith at [176]).		