In the High Court of New Zealand
Wellington Registry

I Te Kōti Matua O Aotearoa
Te Whanganui-ā-Tara Rohe

CIV 2021-485-341

BETWEEN **Lawyers for Climate Action NZ Incorporated**

Applicant

AND **The Climate Change Commission**

First respondent

AND **Minister for Climate Change**

Second respondent

APPLICANT'S SUBMISSIONS IN SUPPORT OF APPLICATION FOR JUDICIAL REVIEW

Dated 20 January 2022

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APPLICANT'S SUBMISSIONS IN SUPPORT OF APPLICATION FOR JUDICIAL REVIEW

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Tēnā, e te Kōti:

1. Introduction

The challenge of limiting global warming to 1.5°C

1. Limiting global warming to 1.5°C above pre-industrial levels is one of the greatest challenges for humanity.

2. While 1.5°C of temperature rise would still cause considerable harm, things would be much worse at 2°C (or more) with greater increases in average temperatures, extreme weather, and sea level rise, leading to greater impacts on bio-diversity, ecosystems, human health, livelihoods, food security, water supply, security and economic growth.[1]

3. In light of this, almost every state in the world, including Aotearoa New Zealand, has committed under the Paris Agreement to "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change."[2] This commitment was reaffirmed by the parties to the Paris Agreement at the Conference of the Parties in Glasgow in late 2021 (**COP26**).[3]

4. Reducing greenhouse gas emissions in the decade from 2021-30 is crucial to whether the global average temperature increase can be limited to 1.5°C. Since the Intergovernmental Panel on Climate Change (**IPCC**) published its *Special Report on Global Warming of 1.5°C* in 2018 (**2018 Special Report**, also referred to by some witnesses as **SR18** or **SR1.5**), 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.[4] This will require decarbonisation at an unprecedented rate and significant economic and social change.[5]

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[1] All parties are in agreement about this. See paragraph 12 of the second amended statement of claim (**2ASOC**) and the corresponding paragraphs of the respondents' statements of defence.

[2] Paris Agreement, Article 2, Bundle of Authorities, Tab 17, Page 1012: **BoA/17/1012**.

[3] See the Glasgow Climate Pact: **BoA/35/1763**.

[4] The Commission acknowledges the "useful rule of thumb" that global emissions must halve by 2030 from 2010 levels to limit warming to within 1.5°C, Advice p191: **s**ee the Climate Change Commission's Advice and Supporting Volumes Bundle at page 207: **Advice Bundle/207**. As the Commission notes, this is a simplification of the actual emissions reductions assessed by the IPCC. In the global 1.5°C pathways in the 2018 Special Report, net carbon dioxide emissions are modelled to reduce by around 50% by 2030. Emissions of other gases are modelled to reduce more slowly.

[5] See the 2018 Special Report, especially Chapter 2, in the Applicant's Bundle of Key Documents from page 119: **Key Documents Bundle/119**.

Parliament's response to the challenge

5. Against this background, in 2019 Parliament introduced the Climate Change Response (Zero Carbon) Amendment Act 2019 (**Zero Carbon Act**). This amended the Climate Change Response Act 2002 (**Act**) by giving the Act a new purpose to "provide a framework by which New Zealand can develop and implement clear and stable climate change policies that contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5°C above pre-industrial levels".[6]

6. The framework introduced into the Act by the Zero Carbon Act includes:

   a. Specific targets for net accounting emissions of greenhouse gases other than biogenic methane to be zero by 2050 and for biogenic methane to be reduced by 10% below 2017 levels by 2030 and by 24-47% below 2017 levels by 2050 (together, the **2050 Targets**);[7]

   b. The requirement for the Minister to set budgets for domestic emissions of all greenhouse gases for consecutive periods from 2022 onwards and to ensure that those budgets are met (the **Budgets**);[8]

   c. The establishment of the Climate Change Commission (**Commission**) to provide independent expert advice to the Government on climate change, including advice to the Minister on the Budgets, other matters specified in s 5J and ad hoc advice requested by the Minister under s 5K;[9] and

   d. The requirement for the Commission to monitor and report on progress towards meeting the Budgets and 2050 Targets.[10]

7. In addition to introducing a new purpose for the Act as a whole, the Zero Carbon Act also provided a specific purpose for the budget setting provisions and other provisions referred to in paragraphs c and d above, set out in section 5W of the Act:

   > **5W Purpose of this subpart**
   >
   > The purpose of this subpart and subparts 3 and 4 is to require the Minister to set a series of emissions budgets:

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[6] Climate Change Response Act 2002 s 3(1)(aa)(i). **BoA/16/899.**
[7] Ibid s 5Q. **BoA/16/136**.
[8] Ibid s 5X **BoA/16/939** and, more generally, Part 1B Subparts 2 and 3. **BoA/16/938**.
[9] Ibid Part1A, **BoA/16/930,** Part 1B Subpart 3. **BoA/16/940.**
[10] Ibid s 5ZJ. **BoA/16/947.**

(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 reductions and removals that will be required.

The Commission's advice

8. This judicial review relates to two aspects of the Commission's advice to the Minister under the Act:

   a. The Commission's advice under s 5ZA of the Act on the first three Budgets under the Act for the periods from 2022-25, 2026-30 and 2031-35; and

   b. The Commission's advice in response to a request from the Minister under s 5K of the Act on whether Aotearoa New Zealand's then current nationally determined contribution (**NDC**) under the Paris Agreement to reduce 2030 net emissions to 30% below 2005 gross emissions (**2016 NDC**) was consistent with limiting global warming to 1.5°C.[11]

9. The Commission published its draft advice on both the NDC and the Budgets for consultation on 31 January 2021 (**Draft Advice**). The Commission then provided its final advice to the Minister on 31 May 2021 and published that advice on 9 June 2021 (**Advice**).

10. In the part of the Advice addressing the NDC (**NDC Advice**), the Commission calculated that the 2016 NDC permitted emissions of up to 596 Mt CO_2-e[12] between 2021 and 2030. The Commission concluded that, based on the findings of the 2018 Special Report, this was not compatible with contributing to global efforts to limit global warming to 1.5˚C and that, for the NDC to be compatible, it would need to reflect

[11] NDCs under the Paris Agreement are each country's self-determined target that they intend to achieve to contribute to the global response to climate change. NDCs must be submitted every five years. Each NDC must represent a country's "highest possible ambition" and be a progression on its previous NDC. See paragraph [106] below. "Gross" and "net" emissions have different meanings in the ordinary reporting context, and in context of New Zealand's NDC accounting. In this NDC accounting context, "gross" means without emissions or removals from "LULUCF" (land use, land use change and forestry) and "net" means including LULUCF emissions and removals. See paragraph [93] below.

[12] Mt CO2-e stands for metric tons of carbon dioxide equivalent, i.e. an amount of greenhouse gases whose atmospheric impact has been standardised to that of one unit mass of CO2 based on the global warming potential (GWP) of each gas.

emissions reductions "*much more than 36% below 2005 levels by 2030*".[13] This means emissions of "*much less than 568 Mt CO_2-e over the 2021-2030 period*".[14]

11. The NDC Advice is set out in chapters 21 and 22 and Evidence Chapter 13 of the Advice.

12. In the part of the Advice on the Budgets (**Budgets Advice**), the Commission proposed the following for the upcoming emissions budget periods:[15]

    a. Emissions budget 1 (2022-2025): 278 Mt CO2-e;

    b. Emissions budget 2 (2026-2030): 298 Mt CO2-e; and

    c. Emissions budget 3 (2031-2035): 240 Mt CO2-e.

13. The total of the Budgets for the period from 2022 to 2030 is 576 Mt CO2- e. The Advice notes that when forecast emissions for 2021 are added, total expected net emissions over the period 2021-2030 are 648 Mt CO2-e.[16] The Advice states that there is a gap of 80 Mt CO2-e over 9 years between the recommended Budgets and an NDC of 36% below 2005 levels (568 Mt CO2-e over the 2021-2030 period) which would need to be met by purchasing offshore mitigation.[17]

14. The Budgets Advice is set out in part 1 of the Advice (comprising chapters 4-10). Chapters 5, 9 and 10 are of most direct relevance to the errors alleged in this proceeding. Evidence Chapter 3 relates to the issue of how New Zealand's emissions are measured in the Budgets.

15. The Commission's emissions reduction plan advice, set out in part 2 of the Advice (comprising chapters 11 to 20) and the Commission's advice on eventual reductions in biogenic methane (comprising chapter 23 of the Advice) are not the subject of this proceeding.

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[13] Advice, Executive Summary, para 129 **Advice Bundle/34** and Chapter 21 and 22 summaries, **Advice Bundle/365**.
[14] Advice, chapter 21, paragraph 48 **Advice Bundle/373**.
[15] Advice, table 5.2 **Advice Bundle/90**. The budgets in the Advice are expressed in both "AR4" and "AR5" figures. Except as expressly noted, the budget figures used in these submissions are expressed in AR4 for consistency with the workings in the Advice.
[16] **Advice Bundle/379**, para 24. These figures are AR4. According to one of the Minister's witnesses, Dr Reisinger, the proposed Budgets would result in cumulative net target accounting emissions during 2021-2030 in AR5 terms of 673 Mt CO2-e.
[17] **Advice Bundle/384**. Dr Carr notes in his affidavit at [107] **Carr/28** that the figures for the NDC and Budgets are not directly comparable as they use different starting points. But the Advice treats them as comparable when calculating the gap. The difference in starting points referred to by Dr Carr are illustrated in figure 22.3 of the Advice **Advice Bundle/378**. See also **Taylor 1/76** (para 15 and figure 3.2).

The Amended NDC and next steps for the Budgets

16. Following the Advice, on 31 October 2021, the Prime Minister and the Minister jointly announced that Aotearoa New Zealand's NDC for 2021 to 2030 would be amended to a target to reduce net emissions by 50% below gross 2005 levels by 2030, equating to a budget of 571 Mt CO2-e over 2021-2030 (**Amended NDC**).[18] This was communicated to the United Nations Framework Convention on Climate Change (**UNFCCC**) Secretariat under the Paris Agreement on 4 November 2021.[19]

17. The Minister has not yet formally made a decision on the Budgets but a discussion document released on 13 October 2021, regarding the forthcoming emissions reduction plan required to implement the Budgets, stated that the Government has made an in-principle decision to adopt Budgets in line with the Commission's recommendations.[20]

The reasons for this judicial review

18. Lawyers for Climate Action NZ Incorporated (**LCANZI**) (the **Applicant**) is a non-profit group of over 350 lawyers who have come together to advocate for legislation and policies to ensure Aotearoa New Zealand meets its commitments under the Paris Agreement. It has no private or pecuniary interest in these proceedings. It has brought this judicial review because it considers that it is in the public interest to do so.

19. The Applicant considers that the Budgets recommended by the Commission (and the NDC Advice) lack ambition commensurate with the urgent action required to limit global warming to 1.5°C.

20. The decade to 2030 is critical to this effort before the global emissions budget is spent. Yet, the recommended Budgets will see Aotearoa New Zealand's net emissions increase in the period between 2010 and 2030 which was the focus of the 2018 Special Report.

21. The proposed Budgets correspond to a "demonstration path" of predicted emissions. Measured in Greenhouse Gas Inventory (**GHGI net**) terms (that is, what the atmosphere "sees"),[21] the demonstration path predicts that:

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[18] The Amended NDC is expressed using AR5 figures.

[19] *Submission under the Paris Agreement: New Zealand's first Nationally Determined Contribution - Updated 4 November 2021* (4 November 2021). See: See Supplementary Bundle of Documents for the Applicant at Tab 3, page 209: **Supp/3/209.**

[20] Ministry for the Environment, 2021, *Te hau mārahi ki anamata: Transitioning to a low-emissions and climate-resilient future*, p 10: **Supp/5/242.**

[21] GHGI Inventory reporting is discussed below at paragraph 349.

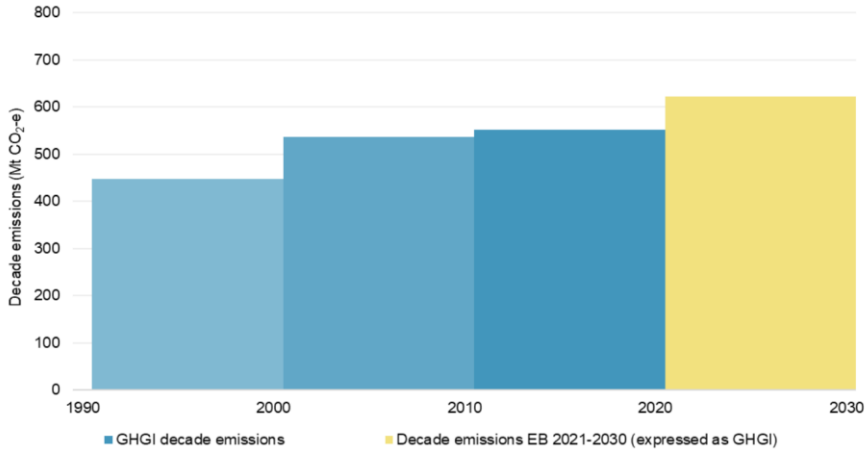
a. our net CO2 emissions will be around 310% higher in 2030 than they were in 2010 (from 5.0 Mt to 20.7 Mt);[22] and

b. our net emissions across all gases will increase by 20% between 2010 and 2030 (from 48.6 to 58.2 Mt CO2-e).[23]

22. The budget path recommended by the Commission is therefore in stark contrast to the pathways in the 2018 Special Report which call for net CO2 emissions to decrease 40-58% and for overall net emissions to reduce significantly (by around half according to the Commission's rule of thumb) over this period on a global basis.

23. The absence of real action on climate change can be seen by looking at the chart of net emissions on a decade-by-decade basis from the evidence of Dr Taylor. On the basis of the Commission's recommended Budgets for the first two budget periods, it is forecast that Aotearoa New Zealand's net emissions will be higher in 2021-30 than in any of the past three decades:[24]

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



24. The lack of ambition can also be seen in the need to spend billions of dollars on offshore mitigation (assuming it is available) to meet our NDC because we are not doing enough domestically (even though our NDC itself has limited ambition).[25] The Commission and Minister propose that Aotearoa New Zealand will continue to rely on purchasing massive

[22] **Taylor Reply/14** (para [65]). This is based on the data available at the time of the Advice. Using updated data, he calculates the increase as 145%.
[23] **Taylor Reply/14** (para [67]). This is based on the data available at the time of the Advice. Using updated data, he calculates the increase as 9%.
[24] Affidavit of Dr William Taylor dated 24 September 2021 at, page 24 (paragraph 114): **Taylor 1/24.**
[25] **Advice Bundle/384-385**, section 22.4.1.

quantities of "offshore mitigation" in the period through to 2030[26] in order to be seen as doing its "fair share" under the Paris Agreement, despite the Commission itself identifying the previous reliance on the purchase of offshore mitigation as one of the problems with Aotearoa New Zealand's efforts to date.[27]

25. These concerns form the background to this judicial review. However the application for review itself is brought on orthodox administrative law grounds of an error of logic in applying the 2018 Special Report pathways, misinterpretation of the statutory framework in relation to the purpose of the Budgets and the measurement of emissions, and unreasonableness.[28]

Ground 1: Error of logic in applying the 2018 Special Report pathways

26. In assessing whether the 2016 NDC was consistent with limiting global warming to 1.5°C, the Commission misapplied the modelling and conclusions of the 2018 Special Report.

27. The 2018 Special Report concluded that, to have a 50-66% chance of limiting global warming to 1.5°C by 2100 with no or limited overshoot, global net CO2 emissions needed to reduce by 40-58% from 2010 levels by 2030 and by 94-107% by 2050.[29] The Commission sought to apply this to New Zealand's emissions to establish a "starting point, based on scientific modelling"[30] for what our NDC would need to be to be consistent with the 1.5°C goal. However, the Commission did so by applying the necessary global rate of reduction of *net* CO2 emissions to our 2010 level of *gross* CO2 emissions (35.0 Mt) instead of our 2010 level of *net* CO2 emissions (5.0 Mt).

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[26] 80 Mt CO2-e on the Commission's advice **Advice Bundle/384** and 102 Mt CO2-e under the Amended NDC: Affidavit of Dr Andreas Reisinger dated 10 December 2021 at page 34, (paragraph 90.3): **Reisinger/34**.

[27] Advice, Executive Summary, paras 86-87 **Advice Bundle/28** and Chapter 21 and 22 summaries **Advice Bundle/365.**

[28] The Applicant understands from the Commission's evidence that it seeks to characterise this judicial review as a substantive challenge to the merits of its decision by an advocacy group that seeks to go "further faster". The Applicant does not accept this characterisation of its application. The Commission has made legal and logical errors that are reviewable by the Court on orthodox principles. If these errors are corrected then this will likely lead the Commission to recommend, and the Minister to adopt, a more stringent NDC and more ambitious Budgets. While the Applicant "advocates" for this approach, it seeks the Court's intervention because this is what is lawfully required by the Act and by standard administrative law principles.

[29] **Advice Bundle/368-369**.

[30] **Advice Bundle/370** (Box 21.1).

28. The Applicant's experts are unanimous that this is a mathematical error.[31] The 2018 Special Report range is a 40-58% reduction in net CO2 emissions. In order to apply the 2018 Special Report range as a starting point for its analysis it was necessary for the Commission to apply the range to Aotearoa New Zealand's net 2010 emissions, not its gross emissions. Given the difference between Aotearoa New Zealand's net and gross 2010 emissions, this error was material and resulted in the Commission adopting the wrong "starting point" for its NDC analysis.

29. The Commission's evidence in response largely attacks a straw man. The Commission's evidence mischaracterises the Applicant's position as an attack on expressing international targets in a "gross:net" formula. It is not. The Applicant accepts that it is permissible under the Paris Agreement to express an NDC target as a percentage reduction from a gross emissions figure in the baseline year to a net emissions figure in the target year. However, the 2018 Special Report range is expressed in net:net terms, not gross:net terms. However a country chooses to express its target, it is not permissible in deriving that target or assessing its compatibility with the global 1.5°C goal to "choose" to apply the 2018 Special Report range to 2010 gross emissions rather than 2010 net emissions. What the Commission describes as a "choice" was not mathematically available.

30. The Applicant says this error invalidates the Commission's NDC Advice which must be reconsidered. It also invalidates the Minister and Cabinet's decision on the Amended NDC, which had regard to, took into account or relied on the Commission's incorrect Advice.[32]

Ground 2: Misinterpretation of the statutory purpose in relation to emissions budgets

31. The Applicant's second ground of review is that, in preparing its Budgets Advice, the Commission made a series of cumulative errors relating to

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[31] Affidavit of Dr Stephen Gale dated 21 September 2021 at page 3 (paragraph 14): **Gale/3**; Affidavit of Professor Piers Forster dated 21 September 2021 at page 2 (para 8): **Forster/2**; Affidavit of Dr Joeri Rogelj dated 26 September 2021 at page 2 (para 11): **Rogelj/2**; Affidavit of Professor Donald Wuebbles dated 21 September 2021 at page 2 (para 8): **Wuebbles/2**; **Taylor 1/2**, (paras 8-17); Affidavit of Dr Ivo Bertram dated 22 September 2021 at page 20 (paras 77-84): **Bertram/18-20**; Affidavit in reply of Dr Stephen Gale dated 20 January 2022 at page 1 (para [6]): **Gale Reply/1**; Affidavit in reply of Professor Piers Forster dated 19 January 2022 at pages 3-4 (paras 6-14): **Forster Reply/3-4**; Affidavit in reply of Dr Joeri Rogelj at pages 1-2 (paras 5-8): **Rogelj Reply/1-2**; Affidavit in reply of Professor Donald Wuebbles dated 10 January 2022 at page 3: **Wuebbles Reply/3** (paras 12-13); Affidavit in reply of Professor Ralph Sims dated 18 January 2022 at pages 1-2: **Sims Reply/1-2** (para 8); Affidavit in reply of Dr Ivo Bertram dated 17 January 2022 at page 1: **Bertram Reply/1** (para 3-4); Affidavit in reply of Dr William Taylor dated 20 January 2022 at pages 1-7: **Taylor Reply/1-7**.

[32] 2ASOC, paragraph 80B.

the nature and purpose of its statutory task. First, it wrongly assumed that its task was only or primarily to recommend Budgets consistent with reaching the 2050 Targets. It did not treat contributing to the global 1.5°C goal as a free-standing purpose, seemingly because its view was that the 2050 Targets are exhaustive of New Zealand's contribution, stating in the Advice that "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".[33] It used the IPCC pathways for contributing to the global 1.5°C goal as a secondary cross-check only.[34] This focus on the 2050 Targets only, without any separate focus on the 1.5°C pathways, also emerges very strongly from Dr Carr's affidavit.[35] As a result of this misunderstanding of its task, the Commission failed to grapple with the extent of reductions in net emissions required in this decade to 2030 for Aotearoa New Zealand to contribute to the global effort to limit warming to 1.5°C. This decade is critical to the global effort; if not enough is done, the global carbon budget will be exhausted well before 2050, even if net zero in 2050 is later achieved.

32. Second, instead of adopting the s 5W purpose as the guiding principle in its Advice the Commission relied on its own construct of the "requirements and considerations under the Act", which it described as grouped around "three key outcomes": "Fair, inclusive and equitable", "Ambitious" and "Achievable".[36] In doing so the Commission erred in elevating this purported synthesis of the mandatory relevant considerations for the Commission under the Act above the statutory purpose.

33. In a related error, the Commission also deviated from the requirement under the Act to recommend Budgets that are "ambitious but likely to be technically and economically achievable",[37] and instead recommended Budgets that we can be assured of meeting and that are "economically affordable".[38]

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[33] Chapter 9 para 31 **Advice Bundle/208**.
[34] Chapter 5, para 36 **Advice Bundle/83**; Chapter 9 para 33 **Advice Bundle/208**.
[35] Affidavit of Dr Roderick Carr dated December 2021 at pages 5, 10, 18, 20 and 23 (paras 24-26, 45, 74.1, 83, 94-95, 97): **Carr/5, 10, 18, 20, 23**. Cf **Carr/14** – paragraph 60 referring to the importance of contributing to the global effort to limit global average temperature increase to 1.5°C.
[36] Advice Chapter 5 **Advice Bundle/78**.
[37] Act s 5ZC(2)(b)(iv) **BoA/16/942.** Note also Paris Agreement Articles 3 and 4(3). **BoA/16/1013.**
[38] The term "economically affordable" does not appear in the Act, which instead uses the term "economically achieveable", but is used repeatedly in the Advice from the first line of the "Letter from the Chair" onwards **Advice Bundle/9**.

34. Finally, when assessing whether the recommended Budgets are compatible with what 1.5°C requires (which appears to have been done as an after-thought) the Commission has repeated the same mathematical error it made in relation to the NDC Advice, using gross emissions rather net emissions as the baseline.[39] Simply by eyeballing the green line on the Commission's figure 9.4 it can be seen that the reductions in net CO2 emissions proposed by the Commission in its budgets do not meet the 2018 Special Report's 40% to 58% reduction range even using the Commission's "modified activity based" approach (**MAB)**.[40]

35. As a result of these cumulative errors, the Commission has recommended Budgets that are not consistent with the statutory purpose of the Act.

Ground 3: Misinterpretation of the statutory provisions relating to the measurement of emissions

36. The Commission has also misinterpreted the statutory provisions around the measurement of emissions for the purposes of setting and meeting the Budgets.

37. The Commission considers that "the selection of an appropriate accounting measure is a matter of expert judgement vested in the Commission under the Act" in which it has a free hand.[41] In the Advice it undertook a "first principles" analysis and chose to adopt MAB, which is a modified version of the accounting rules adopted by New Zealand under the Kyoto Protocol and the approach which the Government has indicated it intends to use to account for the first NDC.[42] This approach, the full details of which are yet to be finalised, is also referred to by the Commission and the Ministry for the Environment as "target accounting" or "NDC accounting".

38. The Applicant says that:

    a. the Commission has no power to determine an appropriate accounting measure as the Act prescribes the use of "net accounting emissions"; and

    b. "net accounting emissions" is defined to refer to all our emissions and removals as reported in our UNFCCC annual accounts (which we refer to as Greenhouse Gas Inventory accounting (**GHGI net**))

[39] See Table 9.1, **Advice Bundle/208**.
[40] **Advice Bundle/209**. And GHGI is much less favourable to the Commission than MAB.
[41] Commission's Amended Statement of Defence (**Commission's ASOD**) para 100.1.2
[42] **Advice Bundle/484**.

and does not refer to or permit the subset and averaged approach of MAB.

39. Which is "better" is not an issue for the Court.[43] However, the Applicant's experts observe that the effect of MAB when compared with GHGI net is to make Aotearoa New Zealand's historic net emissions look worse (by factoring out pre-1990 forests) and near future net emissions look better (by averaging avoiding a steep decline in forestry removals). Accordingly, using MAB as a measure of net emissions risks portraying a false sense of ambition.[44]

Ground 4: The proposed Budgets are irrational, unreasonable and inconsistent with the purpose of the Act

40. The first three grounds raise foundational issues as to the proper approach that should have been taken by the Commission in terms of: how to apply the reduction pathways from the Special Report to Aotearoa New Zealand; the purpose of the Budgets; and the measurement of emissions. The fourth ground directly challenges the Budgets recommended by the Commission on the basis that no reasonable body could have recommended Budgets which will see emissions increasing over the next decade when the scientific evidence and statutory purpose require reductions.

41. The fourth ground of review is that the Commission has recommended Budgets that are nonsensical and unreasonable in the judicial review sense. They are on their face clearly inconsistent with contributing to 1.5ºC degrees and therefore with the purpose of the Act.

The legality of gross:net accounting and MAB in expressing our NDC is not challenged in this review

42. The evidence from the Commission mounts a lengthy defence to a perceived attack on the use of gross:net accounting and MAB in expressing our international targets. The merit or otherwise of these choices is outside the scope of this review. Accordingly, this issue is not addressed in the Applicant's submissions. However, it is not accepted that these constructs facilitate Aotearoa New Zealand taking

[43] MAB and GHGI net each has pros and cons which are addressed exhaustively in the Commission's evidence. The Commission accepts that GHGI net is a better measure of what the atmosphere "sees". The Applicant accepts that there are some advantages to averaging under MAB.

[44] See **Bertram/13, 17**, paras 59, 72-74; **Taylor 1/2-3** (paras 18-25, 45).

meaningful action on climate change as indicated by our lack of progress to date.[45]

2. Context

The climate crisis and required action to limit the average global temperature increase to 1.5˚C[46]

43. The impact of human influence on the climate and the need for urgent action to mitigate the effects of climate change are undeniable and not contested.[47]

44. In its most recent assessment report, the Sixth Assessment Report (**AR6**), the IPCC (the United Nations body for assessing the science relate to climate change) stated:[48]

> It is unequivocal that human influence has warmed the atmosphere and land. Widespread and rapid changes in the atmosphere, ocean and biosphere have occurred.

45. The IPCC considers that human influence is the cause of a range of climate changes across the planet, including, for example, increases in greenhouse gas concentrations, increases in global surface temperatures, the retreat of glaciers, increases in ocean temperatures, and increases in sea levels.[49] The 2018 Special Report estimated that human influence had caused approximately 1.0˚C of global warming above pre-industrial levels (being the period of 1850-1900).[50] Since then, the temperature has continued to increase and the parties to COP26 expressed "alarm and utmost concern" in the Glasgow Pact that human activities have now caused around 1.1˚C of global warming.[51]

46. The aim of the Paris Agreement, signed in April 2016 (and discussed further below), is to keep global warming to well below 2˚C above pre-industrial levels, and preferably below 1.5˚C.[52]

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[45] See [23] above and [84]-[90] below in terms of our performance to date. Some issues with gross:net accounting and MAB as a measure of emissions are discussed briefly at [224]-[228] and [353] below.

[46] In addition to this section of the submissions, the 2018 Special Report Summary for Policymakers and the affidavit of Professor Sims are also useful sources of general background on the climate crisis and the required action.

[47] 2ASOC, paragraphs 5 to 13 and equivalent paragraphs of the statements of defence.

[48] AR6, the physical science basis – summary for policymakers at p. 4. **Key Documents Bundle/647.**

[49] AR6, the physical science basis – summary for policymakers at p. 4-5 **Key Documents Bundle/647.**; 2018 Special Report SPM at p. 4. **Key Documents Bundle/30**.

[50] 2018 Special Report SPM at p. 4. **Key Documents Bundle/30**.

[51] Glasgow Pact clause I.3. **BoA/35/1763.**

[52] Paris Agreement, article 2, 1(a). **BoA/16/1012.**

47. In October 2018, the IPCC published the 2018 Special Report, which was prepared at the request of the parties to the Paris Agreement. This is the most comprehensive and authoritative statement on what is required to limit global warming to 1.5˚C, being the synthesis of more than 6,000 published articles relating to climate change.

48. The 2018 Special Report found that warming of 2˚C will have "significantly greater negative impacts than 1.5˚C".[53] For example, limiting warming to 1.5˚C rather than 2˚C will result in:[54]

    a. 420 million fewer people being exposed to frequent heatwaves, with 65 million fewer people being exposed to exceptional heatwaves;

    b. A decreased risk of increases in heavy rain events and a substantial reduction in the probability of extreme droughts;

    c. The global mean sea level rise being 0.1m less by the end of the 21st century than it would in a 2˚C warmer world; and

    d. Substantially lower impacts on the ocean and ocean life, such as the impact on fisheries productivity, damage to ecosystems, and changes in ocean chemistry (including increases in ocean acidity).

49. Although the Paris Agreement requires global warming to be restricted to below 2˚C and preferably below 1.5˚C, *any* further warming will have negative impacts. Professor Ralph Sims notes in his affidavit that:[55]

> Further warming by each 0.1˚C will accelerate impacts on the increasing variability of the water cycle, long lasting changes in oceans and sea levels, and the cryosphere, as well as on the frequency and intensity of extreme weather and climate events.

50. In AR6, the IPCC recorded that there is a close relationship between the CO_2 in the atmosphere and average global surface temperatures meaning that every ton of carbon emitted contributes to global warming and brings the Earth closer to an average surface temperature of 1.5˚C above pre-industrial levels.[56]

51. In AR6, the IPCC estimated that there is a remaining carbon budget (being the total CO_2 that could still be emitted whilst keeping to warming below a specific level) of 4000 billion metric tons from the start of 2020 for a 67% likelihood of limiting global warming to 1.5˚C above

[53] Affidavit of Professor Ralph Sims dated 23 September 2021: **Sims/4** (see para [13]).
[54] **Sims/4** (see para [13]); IPCC SR1.5 ch. 3 **Key Documents Bundle/201**.
[55] **Sims/3** (para [12]).
[56] See AR6 at D.1.1 **Key Documents Bundle/679**, see **Taylor 1/10** (para [57]).

pre-industrial levels. On current projections, this budget will be spent in less than a decade, meaning urgent action is required to curtail emissions and stay within this budget. As Dr William Taylor notes in his affidavit in support of the Applicant's application:[57]

> To illustrate the urgency of what this budget means, if the world continues to emit CO_2 at the rate it did in 2019, then this budget would be exhausted by the end of 2030.

52. The world therefore has a very limited time to take the action required to mitigate the impact of climate change. The IPCC has found that limiting warming to 1.5˚C depends on emissions over the next decade, with lower emissions in 2030 leading to a higher chance of keeping warming to 1.5˚C. The transformations required to limit warming to 1.5˚C versus 2˚C are similar but require more action over the next decade than is currently projected.[58]

53. The 2018 Special Report makes it very clear that significant transformation of multiple sectors is required. It states:

> "1.5ºC consistent pathways are characterized by a rapid phase out of CO2 emissions and deep emissions reductions in other GHGs and climate forcers. This is achieved by broad transformations in the energy; industry; transport; buildings; and agriculture, forestry and other land-use (AFOLU) sectors."[59]

54. Further:

> "Moving from a 2ºC to a 1.5ºC pathway implies bold integrated policies that enable higher socio-technical transition speeds, larger deployment scales, and the phase-out of existing systems that may lock in emissions for decades…This requires higher levels of transformative policy regimes in the near term, which allow deep decarbonisation pathways to emerge and a net zero carbon energy-economy system to emerge in the 2040-2060 period…Despite inherent levels of uncertainty attached to modelling studies (e.g. related to climate and carbon cycle response), studies stress the urgency for transformative policy efforts to reduce emissions in the short term."[60]

55. To have a greater than 50% chance of limiting global warming to 1.5˚C (and extend the period before the remaining carbon budget referred to above is exhausted), the IPCC has determined that *net* global CO_2

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[57] **Taylor 1/11**.
[58] 2018 Special Report, Chapter 2. **Key Documents Bundle/119**.
[59] 2018 Special Report Chapter 2, para 2.3.2. **Key Documents Bundle/138**.
[60] Ibid para 2.5.1. **Key Documents Bundle/174**.

emissions will need to be reduced by 40% to 58% relative to 2010 *net* CO_2 levels by 2030.

56. The IPCC uses the term "net emissions" to refer to "the gross amount of CO_2 emissions that humans annually emit into the atmosphere reduced by the amount of anthropogenic CDR [i.e. CO_2 removals] in each year".[61] Gross emissions are simply all global CO_2 emissions. These intuitive definitions may be contrasted with the more complex accounting rules adopted under the Kyoto Protocol, explained in the Commission's evidence, under which "gross" means essentially "without emissions or removals from LULUCF" (**LULUCF** being the abbreviation for land use, land use change and forestry) and "net" means essentially "including emissions or removals from LULUCF".[62]

57. The IPCC has also determined the emissions reductions required for other gases. Most pertinently to New Zealand, global agricultural methane emissions will need to be reduced by 11% to 30% relative to 2010 levels by 2030 (and by 24% to 47% by 2050).

International framework

58. Aotearoa New Zealand's international obligations in respect of climate change are set out in a series of related international treaties: the UNFCCC, the Kyoto Protocol and the Paris Agreement.

59. The UNFCCC was drafted in 1992 and signed by Aotearoa New Zealand on 4 June 1992 at the Rio de Janeiro Earth Summit. Aotearoa New Zealand ratified the UNFCCC on 16 September 1993. By 2020, 197 states had become parties to the UNFCCC.[63]

60. Article 2 provides for the following objective of the UNFCCC:

> The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner.

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[61] 2018 Special Report Chapter 2, page 114. **Key Documents Bundle/140**.

[62] Advice, Technical Glossary, definitions of "gross emissions" and "net emissions" **Advice Bundle/413-414**.

[63] https://treaties.un.org/pages/ViewDetailsIII.aspx?src=TREATY&mtdsg_no=XXVII-7&chapter=27&Temp=mtdsg3&clang=_en#1

61. Article 3 of the UNFCCC then sets out a series of principles that guide the parties' actions to achieve this objective, including that the parties should "take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects".[64]

62. The UNFCCC operates by imposing different responsibilities on different states, depending on whether each state is a developed country, a developed country with specific financial responsibilities, or a developing country. Developed countries are listed in Annex I to the UNFCCC and are known as Annex I countries. Annex I countries, including Aotearoa New Zealand, are required to "take the lead" in combatting climate change and its adverse effects[65] and are committed to taking certain steps set out in Articles 4 and 12 of the UNFCCC.

63. The UNFCCC does not impose specific emissions reduction targets on parties. The first such targets were introduced by the Kyoto Protocol, which was adopted under the umbrella of the UNFCCC on 11 December 1997 and came into force on 16 February 2005. Annex B of the Kyoto Protocol set out binding targets for 37 countries, including Aotearoa New Zealand, to reduce emissions by specific percentages (averaging 5%) compared to 1990 levels over the five-year period from 2008-2012 (the first commitment period).

64. The Kyoto Protocol prescribed a number of accounting rules for calculating and measuring progress towards the Annex B commitments. In particular, the effect of Article 3.3 was that removals of CO2 from the atmosphere resulting from LULUCF only counted towards meeting the commitment if they arose from afforestation, reforestation or deforestation since 1990. As Dr Bertram discusses in his affidavit, the purpose of this was to protect countries such as Aotearoa New Zealand for which LULUCF was a net sink from an unreasonably low base against which to measure future emission reductions.[66]

65. On 8 December 2012, some of the parties to the Kyoto Protocol adopted the Doha Amendment which added a second commitment period, from 2013 to 2020. The targets for the second commitment period were increased but remained tied to the 1990 baseline.

66. In 2015, the parties to the UNFCCC adopted the Paris Agreement. Aotearoa New Zealand signed the Paris Agreement on 22 April 2016 and ratified it on 4 October 2016.

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[64] Article 3(2). **BoA/16/962.**
[65] Article 3(1); **BoA/16/962.** Article 4(2). **BoA/16/964.**
[66] **Bertram/11** (see para [50]). See also Advice, Chapter 3. page 20 – **Advice Bundle/36**.

67. The Paris Agreement aims to "strengthen the global response to the threat of climate change" by:[67]

> holding the increase in the global average temperature to well below 2˚C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5˚C above pre-industrial levels, recognising that this would significantly reduce the risks and impacts of climate change.

68. In order to achieve this goal, signatories to the Paris Agreement must "aim to reach global peaking of greenhouse gas emissions as soon as possible" and agree to "undertake rapid reductions thereafter".[68]

69. Unlike the Kyoto Protocol, the Paris Agreement does not set binding targets for individual countries. Instead, it requires each party to submit to the UNFCCC secretariat a "nationally determined contribution" (or NDC) to the global response to climate change that it intends to achieve. NDCs must be submitted every five years.[69] The parties' key obligations in respect of their NDCs are as follows:

    a. Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of their NDCs;[70]

    b. Each party's successive NDC will represent a progression beyond the party's current NDC;[71]

    c. Each NDC will "reflect [the party's] highest possible ambition, reflecting its common but differentiated responsibilities and respective capabilities, in light of national circumstances";[72]

    d. Developed countries, such as Aotearoa New Zealand, should continue to "take the lead" by undertaking "economy-wide absolute emissions reductions targets";[73]

    e. Parties may, at any time, adjust their NDC with a view to enhancing its level of ambition.[74]

70. Whilst the Paris Agreement provides that States are free to set their own NDC, NDCs must be set within these parameters. Therefore Aotearoa New Zealand's efforts in respect of climate action "must systematically

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[67] Paris Agreement, Article 2. **BoA/16/1012.**
[68] Article 4(1). **BoA/16/1013.**
[69] Article 4(9). **BoA/16/1014.**
[70] Article 4(2). **BoA/16/1013.**
[71] Article 4(3). **BoA/16/1013.**
[72] Article 4(3). **BoA/16/1013.**
[73] Article 4(4). **BoA/16/1013.**
[74] Article 4(11). **BoA/16/1014.**

maximise the extent of action to reduce emissions, subject only to the constraint of what is 'possible'".[75]

71. Unlike the Kyoto Protocol, the Paris Agreement does not prescribe any particular accounting method that NDCs must adhere to, but it contains a set of reporting requirements, which aim to promote transparency around states' emissions and their actions to achieve their NDCs.[76]

72. Whilst the parties must pursue domestic mitigation measures with the aim of achieving the objectives of their NDCs, Article 6 of the Paris Agreement also provides that parties may pursue "cooperative approaches that involve the use of internationally transferred mitigation outcomes towards [NDCs]".[77] That is, in essence, that countries may transfer climate mitigation from one country to another. This to allow for "higher ambition in their mitigation and adaption actions".[78]

73. The Paris Agreement does not provide a mechanism for how the Article 6 "cooperation" will work in practice but does provide some broad rules including that "robust accounting" must be used to ensure "inter alia, the avoidance of double counting".[79] Rules for implementing Article 6, including reporting requirements, have now been agreed at Glasgow COP 26.

Aotearoa New Zealand's climate legislation and policy

74. Aotearoa New Zealand has been involved in the international framework for responding to climate change from an early stage, having signed the UNFCCC in 1992. This involvement has continued since, with New Zealand participating in the negotiation of the Kyoto Protocol in 1997[80] and signing the Paris Agreement in 2016.

75. Successive New Zealand Governments have recognised Aotearoa New Zealand's international obligations in domestic legislation.

76. The Act (i.e. the Climate Change Response Act 2002) was introduced with the original purpose of enabling New Zealand to meet its international reporting obligations under the UNFCCC and the Kyoto Protocol by establishing a national inventory agency to record and report greenhouse gas emissions.

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[75] **Bertram/3** (para [12]).
[76] Article 13. **BoA/16/1022.**
[77] Article 6(2). **BoA/16/1015.**
[78] Article 6(1). **BoA/16/1015.**
[79] Article 6(2). **BoA/16/1015.**
[80] **Bertram/3** (para [13]).

77. However, despite signing the UNFCCC in 1992, it was only in 2008 that Aotearoa New Zealand introduced its first substantive climate action policy, being the NZ Emissions Trading Scheme (**ETS**). This was introduced by way of amendment to the Act. The ETS was intended to be New Zealand's main policy tool to reduce emissions but has been widely criticised and has "proved almost completely ineffective in checking emissions" for a range of reasons.[81]

78. On 7 July 2015, Aotearoa New Zealand submitted an intended NDC to reduce GHG emissions to 30% below 2005 levels by 2030. This became New Zealand's first NDC following ratification of the Paris Agreement in 2016. The Commission interprets the 2016 NDC as a commitment to reduce net emissions to 30% below 2005 gross emissions by 2030. When this is converted to a comparison between net emissions (rather than gross:net), the 2016 NDC is in fact a commitment to *increase* net emissions by no more than 1% above 2005 levels by 2030.[82]

79. As discussed above, in October 2018 the IPCC published the 2018 Special Report which confirmed the importance of limiting global warming to 1.5°C and the necessity of making substantial emissions cuts by 2030 if that goal is to be achieved.

80. Against the background of the 2018 Special Report and rising public concern, the Climate Change Response (Zero Carbon) Amendment Bill (**Zero Carbon Bill**) was introduced in May 2019. The Regulatory Impact Statement for the Bill clearly situates the Zero Carbon Bill in the global context and notes the Government's objective for New Zealand to show "leadership at home and internationally". It states:[83]

> The Bill reflects a strong shift in the world's understanding of, and commitment to, the necessary global climate change response. It sends a strong signal and lays the foundations for decisive domestic action – commensurate with New Zealand's emissions profile, comparative advantage and developed country status – while also providing for flexibility and adaptability to insulate the New Zealand economy and society from any abrupt shocks.

81. The Statement explicitly highlights that the Bill will have major impacts, stating:[84]

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[81] **Bertram/3** (para [13]).
[82] **Taylor 1/9** (see paras [46]-[47], Table 2.1). Although denied in the pleadings at paragraph 48, this analysis has not been challenged by any of the Commission's or Minister's witnesses.
[83] Regulatory Impact Statement at p131: **BoA/30/1361.**
[84] Ibid.

> The Bill has significant economic, fiscal and social implications in the short and long term, either by establishing new and enduring institutional architecture, or by signalling policies and plans that, over time, will alter the make-up of New Zealand's economy and society. Macroeconomic modelling (while highly uncertain over such a long timeframe) indicates the Bill's economic impacts will be a significant challenge compared with the 'do-nothing' baseline and status quo. Innovation, afforestation and sectoral shifts will be critical.

82. Parliament unanimously passed the Zero Carbon Act on 7 November 2019.[85] It received assent on 13 November 2019.

83. On 2 December 2020 Parliament passed a motion declaring a climate emergency. In passing the 2020 declaration, Parliament noted, inter alia:[86]

    a. The findings of the IPCC in the 2018 Special Report;

    b. That global emissions would need to fall by around 45 percent from 2010 levels by 2030, reaching net zero by around 2050 to avoid a more than 1.5°C rise in global warming;

    c. The devastating impact that volatile and extreme weather will have on New Zealand and the wellbeing of New Zealanders, and on New Zealand's primary industries, water availability, and public health, through flooding, sea-level rise, and wildfire damage;

    d. That climate change is one of the greatest challenges of our time; and

    e. That New Zealand has committed to taking urgent action on greenhouse gas mitigation and climate change adaptation.

Aotearoa New Zealand's emissions

84. Despite signing up to international commitments to address climate change, Aotearoa New Zealand has not acted on these commitments in a meaningful and effective way.

85. Aotearoa New Zealand is responsible for around 0.16% of total global GHG emissions.[87] However, its emissions per capita are high and well above the average per capita emissions from Annex I countries.

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[85] David Seymour MP had expressed his opposition to the Bill but was absent and did not vote.
[86] (2 December 2020) 749 NZPD 237. **BoA/29/1336.**
[87] **Sims/7** (para [20]), see also **Smith/49**, para [176].

Aotearoa New Zealand's per capita emissions are 16.6 t CO_2-e, whereas the average for Annex I countries is about 12.8 t CO_2-e.[88]

86. The ineffectiveness of the measures taken by Aotearoa New Zealand to reduce emissions and meet its international obligations since signing the UNFCCC is demonstrated by the fact that, through this period, Aotearoa New Zealand's emissions have been increasing.

87. As reported in New Zealand's Greenhouse Gas Inventory (**GHGI**), Aotearoa New Zealand's annual net emissions measured in megatonnes of carbon dioxide equivalent (CO_2-e) have risen from 41.1 Mt CO2-e in 1990 to 54.9 Mt CO2-e in 2019, an increase of 34%.[89] Aotearoa New Zealand's net emissions for each of the three previous decades have been:[90]

    a. 448 Mt CO2-e for 1991-2000;

    b. 537 Mt CO2-e for 2001-2010; and

    c. 543 Mt CO2-e for 2011-2020.

    A chart showing these decadal emissions, together with the emissions projected under the proposed Budgets in GHGI terms is above at paragraph 23 of these submissions.[91]

88. This can be contrasted with the position of other Annex I countries. 34 of the 45 Annex I countries (that is, developed countries) have reduced their gross emissions in 2019, as compared with 1990. New Zealand has the fifth highest percentage increase in gross emissions of the remaining 11 Annex I countries.[92] In terms of net emissions increases, Aotearoa New Zealand has the fourth highest percentage increase from 1990 to 2019.[93] New Zealand is therefore clearly out of line with – and well behind most of – its peer Annex I countries in reducing emissions.

89. All of this demonstrates a divide between what Aotearoa New Zealand says, and what it is doing to mitigate the effects of climate change. This is well summed up by two of the Applicant's witnesses:

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[88] **Sims/7** (para [20)]; **Sims Reply/2** (paras 9-11).
[89] **Bertram/15** (para [67]).
[90] **Bertram/17** (para at [73]).
[91] See also **Taylor 1/7** (figure 2.1) showing annual and decade-on-decade gross and net historic emissions.
[92] **Sims/9** (para [26]).
[93] **Sims/9** (para [27]).

a. Professor Sims, who comments:[94]

> It is therefore of little wonder that New Zealand is often criticised as a country not doing enough to reduce our emissions and therefore not on track to contribute to the world staying below 1.5°C.

b. Dr Geoffrey Bertram, who comments:[95]

> There has been a disconnect between rhetoric and reality in the climate change policies of successive New Zealand Governments, which in my opinion leaves New Zealand exposed both to reputational damage in the context of UNFCCC Conference-of-the-Parties meetings and to future trade sanctions if and when border carbon adjustments are imposed by climate-policy leading countries to protect their economies against laggards.

90. The consequence of our past inaction is highlighted by the Commission in the Executive Summary of the Advice:[96]

> 86. Since acknowledging the need to act on climate change, successive governments have adopted a series of different emissions reduction targets. But while the targets changed, they all shared the same short-term focus on planting trees and purchasing offshore mitigation, rather than what was necessary to achieve actual emissions reductions at source.
>
> 87. Instead of putting policies in place to decarbonise the economy and develop low-emissions technologies, practices and behaviours, Aotearoa used forests planted in the 1990s to offset its emissions and meet its targets. The carbon removal benefits of these forests are now coming to an end. Gross emissions have increased by 26% since 1990 and Aotearoa is in a position that is more difficult than it might have been if it had started developing the structures, strategies and plans it needs to create a low emissions system earlier.

3. The pleadings

91. A pleadings matrix is filed together with these submissions.

92. Following the introduction of the parties, paragraphs 5 to 33 of the statement of claim present a general introduction to the climate crisis, the required action to limit the average global temperature increase to

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[94] **Sims/9** (para [28]).
[95] **Bertram/4** (para [14]).
[96] Advice, Executive Summary, paras 86-87. **Advice Bundle/28**.

1.5°C and the international treaty response. These paragraphs are substantively uncontentious and largely admitted by both the Commission and the Minister.

93. Paragraphs 34 to 61 of the statement of claim cover the New Zealand context leading to the request for and production of the Commission's Advice. With the exception of the Applicant's characterisation of the effect of the 2016 NDC in paragraph 48 of the statement of claim, these paragraphs are again largely uncontentious.

94. Paragraphs 62 to 77 of the statement of claim plead the relevant aspects of the Commission's Advice, and in some cases the Applicant's characterisation of it. Paragraphs 78 to 80C describe the steps taken by the Minister, or to be taken by the Minister, following the Advice.

95. The Applicant's first ground of review is pleaded at paragraphs 81 to 94B. This ground alleges that the Commission made a logical error in the application of the 2018 Special Report to derive its advice on the Budgets and the Amended NDC by applying the 2018 Special Report reductions to New Zealand's 2010 gross carbon dioxide emissions rather than to its 2010 net carbon dioxide emissions.

96. The Commission admits that to provide a starting point for assessing the compatibility of Aotearoa New Zealand's NDC with the global 1.5°C goal, the Commission applied the IPCC's global modelling to Aotearoa New Zealand.[97]

97. The Commission's substantive response is set out at paragraph 87.1 of its statement of defence. It says that the IPCC 1.5°C pathways use a net-net approach, because this is the most appropriate approach at the global level where the forestry sector is a net source of emissions. Aotearoa New Zealand uses a gross-net approach, because the forestry sector has been a net sink of emissions. It says that both of these approaches are consistent with the international target-accounting guidance and appropriate to the circumstances they are being applied to.

98. The Minister admits that he had regard to the Commission's Advice in setting the Amended NDC.[98]

99. The Applicant's second ground of review is pleaded at paragraphs 95 to 99. It is that the Commission misinterpreted the statutory purpose in setting the proposed emissions budgets in particular by failing to

[97] Commission's statement of defence, para 82.3.4.
[98] Minister's statement of defence, para 94A.2.

determine what level of emissions reductions were required to over the relevant periods to contribute to the global effort to limit the global average temperature increase to 1.5°C. This allegation is elaborated at paragraphs 98 and 99 of the claim.

100. This allegation is denied by the Commission and by the Minister. The Minister specifically pleads that Parliament has determined that New Zealand's contribution will be the 2050 Target.[99] As set out later in these submissions, this mirrors the approach taken by the Commission as explained in Dr Carr's evidence.

101. The Applicant's third ground of review is pleaded at paragraphs 100-103 of the statement of claim. This ground is that the Commission erred in adopting a "modified activity-based" measure of emissions. The Applicant says that the Act mandates the use of the data contained in Aotearoa New Zealand's GHGI "inventory reports" lodged under the UNFCCC for this purpose.

102. The Commission's substantive response to this claim is set out at paragraph 100.1.2 of its defence. It says the selection of an appropriate accounting measure is a matter of expert judgement vested in the Commission under the Act.

103. Paragraphs 104 to 111 of the statement of claim are intentionally left blank, following the deletion of one of the originally pleaded grounds of review.

104. The Applicant's final, fourth ground of review is pleaded at paragraphs 112 to 121. It is that the Commission's Budgets are irrational, unreasonable and inconsistent with the purpose of the Act. This is denied by the Commission.

4. Overview of the evidence

The Applicant's evidence

105. The Applicant has filed evidence from 7 independent expert witnesses, including 3 experienced expert economists and 4 highly qualified climate scientists. *All* the Applicant's climate science experts have been lead IPCC authors, including a coordinating lead author and a lead author of the mitigation pathways chapter of the 2018 Special Report, Chapter 2, which contains the analysis and pathways relied on by the Commission in its Advice.

[99] Minister's statement of defence, para 99.1.

106. Each of the Applicant's witnesses confirms that the Commission's use of a gross 2010 emissions figure when calculating the implications for New Zealand of the IPCC's modelling in the 2018 Special Report was an error. Each of them has further confirmed by way of reply evidence that the evidence from the witnesses for the Commission and the Minister does not alter their view.

107. A brief summary of the expertise and principal evidence of each of the Applicant's witnesses is set out below.

    a. **Professor Ralph Sims** is Professor Emeritus, Sustainable Energy and Climate Mitigation at Massey University. He has been a lead author for five IPCC reports and is currently a review editor for the Sixth Assessment Report, Mitigation. He chaired the Royal Society of New Zealand's climate change panel which produced the 2016 report *Transition to a Low-Carbon Economy for New Zealand*. His evidence details the contribution by Aotearoa New Zealand to global warming relative to other countries, our failure to reduce emissions over recent decades, and the likely impacts on New Zealand of increasing global warming. In his reply evidence he confirms that he also agrees with Dr Gale and the other witnesses for the Applicant that the Commission's use of a gross 2010 emissions figure was an error.

    b. **Dr Stephen Gale** has a wealth of regulatory expertise in energy sector planning, resource management, competition and climate change policy. He was Telecommunications Commissioner at the Commerce Commission from 2012 to 2020. His evidence sets out his opinion that it was an error of mathematical logic for the Commission to apply the required 40-58% reduction in net CO2 emissions, consistent with the 2018 Special Report, to New Zealand's level of gross emissions in 2010.

    c. **Professor Piers Forster** is Professor of Physical Climate Change at the University of Leeds and has had 20 years of involvement in the work of the IPCC, including acting as a Lead Author for the mitigation pathways chapter of the 2018 Special Report, Chapter 2 (the mitigation pathways chapter). Most recently he was Coordinating Lead Author for the IPCC's Sixth Assessment Report. He is a member of the UK Climate Change Committee, the UK equivalent body to the Commission. His evidence confirms that the IPCC used net CO2 in its pathways in the 2018 Special Report and agrees with Dr Gale that the Commission was in error to use a gross emission number for baseline 'net' emissions in 2010. Professor Forster also identifies that the Commission has counted

removals from forests prior to 2010 in the 2030 net target figure, despite them not being included in the 2010 baseline, resulting in the Commission's proposed emissions reductions being significantly less than the reductions modelled in the 2018 Special Report pathways.

d. **Dr Joeri Rogelj** is the Director of Research at the Grantham Institute for Climate Change and Environment and a Reader in Climate Science and Policy at the Centre for Environmental Policy at Imperial College, London. He was one of three Coordinating Lead Authors of the mitigation pathways chapter of the 2018 Special Report. He is also a lead author on the annual Emissions Gap Reports by the United Nations Environment Programme and a lead author for the IPCC's Sixth Assessment Report. His evidence confirms that the 2018 Special Report expressed 1.5°C compatible emissions reduction pathways in net-net terms and that using a different method results in the percentages being incomparable. He therefore agrees with Dr Gale that the Commission made a mathematical error.

e. **Professor Donald Wuebbles** is a Professor in the Department of Atmospheric Sciences at the University of Illinois. He has been a coordinating lead author in the first, second and fifth IPCC assessments and a leader in at least three special interim IPCC reports. He has also been a leader in the US National Climate Assessments and served as the White House expert on climate science under President Obama. He agrees with Dr Gale that the Commission's use of gross 2010 emissions in considering the emissions reductions that would be consistent with the 2018 Special Report is an error and stresses that "it is the net emissions that matter".

f. **Dr Geoff Bertram** is an economist and Senior Associate at the Institute for Governance and Policy Studies at Victoria University of Wellington. He has conducted extensive research and consultancy work on climate change policy and co-authored a book on New Zealand's emissions trading scheme. His evidence provides background on the different meanings and uses of "gross emissions" and "net emissions", different emissions accounting methods, and comments on the Commission's use of a gross 2010 emissions figure when calculating the implications for New Zealand of the IPCC's modelling in the 2018 Special Report. Dr Bertram's evidence is that this use of a gross 2010 figure is not consistent with the methodology of the 2018 Special

Report. He also discusses whether the Commission's use of a MAB accounting approach is permitted by the Act and the Commission's failure to adequately consider the maximum level of ambition for the Budgets.

g. **Dr William Taylor** is an economist and Associate Director at NERA Economic Consulting. He has provided two principal affidavits. His first affidavit sets out his view that the Commission should have used 2010 net CO2 emissions rather than gross when applying the 2018 Special Report pathways. He refers to material published by Stats NZ which uses 2010 net emissions to perform the same analysis. He also considers the impact of the Commission using MAB rather than GHGI net accounting. Finally, he explains that the Commission failed to assess the costs and benefits of setting more ambitious Budgets, including by failing to conduct a cost benefit analysis or multi criteria analysis. His second affidavit followed the Minister's Amended NDC decision. In this affidavit Dr Taylor explained the emissions targets set in the Amended NDC and calculated, first, what the targets would be if expressed in the GHGI measure and, second, to what extent the targets are planned to be met by domestic reductions versus offshore mitigation.

Commission's evidence

108. In response to the Applicant's evidence, the Commission has filed 8 affidavits. These include affidavits from its Chair, Dr Rod Carr (the only Commissioner to give evidence), and 5 members of its staff. The Commission has also filed two independent expert affidavits. One is from Dr Michael Toman, an economist, who responds to Dr Taylor's evidence on whether the Commission should have conducted a cost benefit analysis or multi criteria analysis. The second is from Dr Olia Glade. Dr Glade was an employee of the Ministry for the Environment between 2011 and 2019 and was manager of New Zealand's national GHG inventory programme but is now a member of a non-profit institute in the United States (although apparently still involved in the compilation of New Zealand's annual emissions inventory submissions under the UNFCCC).[100] None of the Commission's witnesses appear to have had any involvement with the 2018 Special Report or to have had any experience as an IPCC author.

[100] Dr Glade is acknowledged for "national compilation and cross-sector analyses" under the category of "technical contributors and contracted specialists" in New Zealand's 2021 national inventory submission.

109. Dr Carr says that the use of a gross 2010 emissions figure was not an error but an informed and deliberate judgement by the Commission.[101] He also stresses that the Commission was tasked with designing Budgets that would "put us on a path to achieve those targets" (i.e. the 2050 Targets).[102] His choice of words and use of underlining imply that, in his view, the Commission was *not* required to propose Budgets that were also consistent with limiting warming to 1.5ºC.

110. Dr Carr also explains the Commission's decision not to use a cost-benefit analysis or multi-criteria analysis to check the incremental ambition of its chosen pathway. The independent expert, Dr Toman, also gives evidence on this point.

111. Dr Glade's evidence is that the difference between the IPCC pathways in the 2018 Special Report being net or gross is not a significant feature and does not compromise the Commission's methodology.[103] Dr Glade does not however appear to have had any involvement in the 2018 Special Report or subsequent experience as an IPCC author.

112. The principal detailed defence of the Commission's approach to assessing whether the 2016 NDC was consistent with 1.5ºC is provided by a Commission employee, Matthew Smith. Mr Smith states that he was the lead analyst for the Commission's work on the NDC advice. The Commission's Chief Executive, Joanna Hendy, notes that Mr Smith played a key role in drafting the relevant chapters of the Advice, namely chapters 21 and 22 and supporting evidence chapter 13.[104]

113. Like Dr Carr, Mr Smith's evidence is that the Commission's use of a gross 2010 emissions figure was not a mistake but a deliberate and informed choice.[105] Mr Smith asserts that this was appropriate because:

    a. the 2018 Special Report refers to net CO2 in its modelled pathways because, globally, land use, land use change and forestry (**LULUCF**) is an overall source of emissions, whereas in New Zealand it is a sink;[106]

    b. under the Kyoto Protocol New Zealand was required to adopt a gross-net approach to its target commitment for the 2012-2020

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[101] **Carr/14** (para [58]).
[102] **Carr/6** (para [26]). See also paras [45], [74.1], [83], [94]-[95] and [97].
[103] Affidavit of Dr Olia Glade dated 9 December 2021 at page 4: **Glade/4** (see para [23]).
[104] Affidavit of Joanna Hendy dated 10 December 2021 at page 12: **Hendy/12** (see para [62.3]).
[105] Affidavit of Matthew Smith dated 10 December 2021 at page 5: **Smith/5**, (see para [15]).
[106] **Smith/13, 21** (paras 43, 71.3).

period because, for New Zealand, LULUCF was a sink rather than a source of emissions in the base year (1990);[107] and

c. the NDC was also set by the Government on a gross-net basis so it would be pointless to do a net-net comparison. It would also be difficult to do so because of differences in the reporting parameters for GHGI under the UNFCCC and target accounting under Kyoto.[108]

114. Mr Smith is highly critical of the Applicant's witnesses and their expertise. In particular, he accuses Dr Gale of a "fundamental misunderstanding of what 'gross' and 'net' mean in this context"[109] and accuses Dr Rogelj of a lack of detailed understanding of climate change accounting for national targets and a lack of familiarity with New Zealand's national circumstances[110] (a charge he also makes against Professor Forster)[111]. These criticisms are unfounded but also miss the point of the Applicant's evidence, as explained in the reply affidavits of the Applicant's witnesses.

115. As the lead analyst and drafter of the relevant parts of the Advice, Mr Smith is not an impartial witness.[112] It is also worth noting that, prior to joining the Commission, Mr Smith worked for the Ministry for the Environment from 2007-2015 and then again from 2018-2020, including on matters related to the Kyoto negotiations and the NDC. It is reasonable to assume that he brought his previous experience and perspective to bear on the issues.

116. Stephen Walter, Eva Murray and Paul Young all work in the Commission's Emissions Budgets, Adaptation and Markets team. They give evidence at varying levels of detail explaining the GHGI and MAB reporting and accounting measures and the rationale for the Commission's decision to adopt MAB.

117. The Commission's Chief Executive, Joanna Hendy, gives evidence about the Commission's processes including its consultation on the draft Advice.

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[107] **Smith/13, 31** (see paras 44-45, 108).
[108] **Smith/12, 32** (see paras 42, 110).
[109] **Smith/31** (para 103). See also at paras 9, 30, 107, 108 and 114.
[110] **Smith/34** (paras 115 and 117).
[111] **Smith/36 – 38** (see paras 128, 129 and 134).
[112] An observation that could fairly be directed at all of the Commission's witnesses except Dr Toman and Dr Glade. This is demonstrated in the way Dr Carr and Mr Smith in particular have well and truly "entered the fray" in their evidence, rather than giving a dispassionate account of the Commission's decision-making.

The Minister's evidence

118. The Minister has filed his own affidavit, together with affidavits from Dr Andrea Brandon, Principal Scientist at the Ministry for the Environment; Helen Plume, Principal Analyst at the Ministry for the Environment; and Dr Andreas Reisinger, Principal Scientist for Climate Change at the Ministry for the Environment.[113]

119. The Minister's evidence is that, in approaching the Amended NDC decision, he understood the basis on which the Commission had prepared its NDC advice and also took advice from officials. He says that the decision on the Amended NDC was a complex one that involved consideration of many factors, not just the gross-net issue and that "Ministers were aware that both the Commission's advice on the NDC, and the five proposed NDC options [presented in the Cabinet paper] were underpinned by the use of a particular accounting method which included value judgments about how New Zealand's NDC should be accounted for".[114]

120. Dr Reisinger's evidence is that there is no single way to calculate emissions compatible with 1.5ºC – every attempt relies on value judgments. He accepts that it would have been valid to calculate 1.5ºC consistent emissions on a net-net approach, as the Applicant says the Commission should have done, but says the gross-net approach used by the Commission is also valid.[115]

121. Dr Reisinger's affidavit annexes as AR-2 a paper by the Ministry for the Environment, *Consistency of NDC1 with efforts to limit global warming to 1.5C,* (**MfE Consistency Advice**) which sets out the results of applying a range of different methods of calculating Aotearoa New Zealand's fair share of emissions, namely: equality, capability, responsibility, and need. This paper includes a calculation of the 2018 Special Report pathways applied to New Zealand's emissions on a net-net basis, and shows the identical number to that calculated and pleaded by the Applicant, namely 484 Mt CO2-e.[116]

122. As Dr Reisinger notes, the MfE Consistency Advice shows that: "all other criteria [than the Commission's gross-net approach] indicate smaller

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[113] It was announced in December 2021 that Dr Reisinger has accepted appointment to the Commission as a Commissioner. However, he is still the Minister's witness notwithstanding that he is now a member of the Commission.
[114] Affidavit of James Shaw dated 10 December 2021 at page 11: **Shaw/11** (see para [29]).
[115] **Reisinger/30** (see para [80]).
[116] MfE Consistency Advice, para 83.b. See also **Reisinger/32** (para 86).

emission budgets and more stringent reductions for New Zealand's NDC to be 'consistent with' 1.5C."[117]

123. Dr Brandon gives evidence explaining what is contained in the New Zealand Greenhouse Gas Inventory and in the modified activity-based accounting adopted by the Commission.

124. Ms Plume explains the key international agreements relating to emissions reductions that New Zealand is party to, New Zealand's successive NDCs pursuant to the Paris Agreement and the role of offshore carbon markets in meeting international emissions targets.

The Applicant's reply evidence

125. All of the Applicant's witnesses have filed reply affidavits affirming the conclusions in their principal affidavits and responding to the new criticisms made by the Commission's and Minister's witnesses.

126. The reply evidence of Professor Sims, Dr Gale, Dr Rogelj, Professor Forster and Professor Wuebbles covers the discrete topic of the application of the 2018 Special Report pathways, confirming that they should be applied to 2010 net emissions and that the Commission erred in applying them to Aotearoa New Zealand's 2010 gross emissions.

127. The reply evidence of Dr Bertram and Dr Taylor covers this issue as well, but also the GHGI vs MAB accounting measure issue and the more general issues about the way the Commission has approached its task which are part of the Applicant's challenges under the second and fourth grounds.

5. The Act as amended by the Zero Carbon Act

128. As briefly outlined above, the Zero Carbon Act made extensive amendments to the Act, including to the Act's purpose, set binding targets for emissions, introduced a requirement for domestic emissions budgets, and created the Climate Change Commission.

129. The Act annexes copies of the key international instruments – the UNFCCC, the Kyoto Protocol and the Paris Agreement – as schedules 1, 2 and 2A respectively.

Purpose

130. As amended, s 3(1)(aa) and (a) relevantly provide:

> The Purpose of this Act is to:

[117] **Reisinger/13** (see para [37]).

(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 degrees Celsius above pre-industrial levels; and

(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) […]

131. Section 3(1)(aa) was added by the Zero Carbon Act. The linking of the Act's purpose to the global goal of 1.5ºC and New Zealand's international obligations under the Paris Agreement reflects the context in which the Zero Carbon Act was passed, just over a year after the 2018 Special Report highlighted the critical importance of limiting warming to 1.5ºC and the need for net emissions to be reduced by around half by 2030 for this to be achieved.

132. Section 3(2) specifically requires that "A person who exercises a power or discretion, or carries out a duty, under this Act must exercise that power or discretion, or carry out that duty, in a manner that is consistent with the purpose of this Act".

The role and purpose of the Commission

133. The purposes of the Commission are set out in s 5B of the Act and are:

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 its emissions reduction and adaptation goals.

134. The Commission's functions are set out in section 5J. The Advice engaged the Commission's functions under section 5J(b) to provide advice to the Minister to enable the preparation of the Budgets and under section 5J(i) to provide other reports requested by the Minister (here, the NDC Advice).

135. The requirement for the Commission to act independently is expressly set out in s 5O.

136. The Act sets out in s 5M a list of matters the Commission must consider, where relevant, when performing any of its functions under the Act.

137. The Commission is subject to a requirement in s 5N to proactively engage with persons it considers relevant to its functions and, where it considers it necessary, provide for participation by the public and undertake consultation. There is also a specific requirement in s 5ZA for the Commission to make its proposed advice on the Budgets publicly available and allow time for submissions.

The 2050 Targets for emissions

138. The Zero Carbon Act introduced new binding emissions targets (the **2050 Targets**). These are found in s 5Q and require that:

> (a) net accounting 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; and
>
> (b) emissions of biogenic methane in a calendar year—
>
> (i) are 10% less than 2017 emissions by the calendar year beginning on 1 January 2030; and
>
> (ii) are 24% to 47% less than 2017 emissions by the calendar year beginning on 1 January 2050 and for each subsequent calendar year.

139. While the 2050 Targets are binding, no remedy or relief is available for failure to meet them, except that the Court may make a declaration to that effect which must be brought to the attention of Parliament (s 5ZM). This mechanism resembles an NZBORA declaration of inconsistency.

140. The Act requires the Commission to review the 2050 Targets when preparing its advice on the Budgets for periods beginning on or after 2036, or at any other time the Minister requests a review (s 5S). The Commission may recommend a change to the 2050 Targets only if significant change has occurred or is likely to occur to a range of factors set out in s 5T(2), which include scientific understanding of climate change, New Zealand's economic or fiscal circumstances, technological developments and equity implications (including generational equity). The Government is not required to accept a recommendation by the Commission to change the 2050 Targets but is required to respond and to provide reasons for any departure from its advice (s 5U).

Budgets

141. In addition to the 2050 Targets, the Minister is also required to set Budgets stating the total emissions permitted across each 5-year emissions budget period (s 5X). Before the Minister sets these Budgets, he or she must obtain advice from the Commission on various issues including the quantity of the emissions permitted in each budget period (ss 5ZA, 5ZB and 5ZC).

142. The purpose of the Budgets (and related provisions in subparts 2, 3 and 4 of part 1B of the Act) is set out in s 5W. This states that the purpose 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"; [Emphasis added] 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 reductions and removals that will be required".

143. These three objectives are aligned, not conflicting. The first explicitly links the purpose of the Budgets to the Paris Agreement and the global 1.5ºC goal, as well as the 2050 Targets. As discussed further below, the reference to contributing to the 1.5ºC goal was specifically added during the legislative process to make it clear that the Budgets needed to be consistent with this objective as well as the 2050 Targets.

144. The second objective, of setting the Budgets in a way that allows them to be met domestically, is consistent with the Paris Agreement, which states in Article 2 that "Parties shall pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions [i.e. NDCs]." The Paris Agreement permits offshore mitigation but not as a substitute for domestic action.[118]

145. Similarly, s 5Z provides that "emissions budgets must be met, as far as possible, through domestic emissions reductions and domestic removals" but offshore mitigation may be used if there has been a

[118] See Paris Agreement Article 6 which refers to "voluntary cooperation…to allow for higher ambition". **BoA/16/1015.**

significant change of circumstances that affects the considerations on which the budget was based and the ability to meet it domestically.

146. Section 5ZA requires the the Commission when giving advice on the Budgets to recommend an "appropriate limit" on offshore mitigation and to explain the circumstances that "justify" its use.

147. Parliament's intention in requiring Budgets to be able to be met domestically was therefore not to qualify the purpose of the Budgets, which is established by s 5W(a), but rather to ensure that the Budgets reflect the intention for Aotearoa New Zealand to meet its international obligations as far as possible through domestic mitigation.

148. The required scope of the Commission's advice to the Minister on the Budgets is set out in s 5ZA and includes the recommended quantity of emisssions allowed in each budget period, the rules that will apply to measure progress, how the Budgets (and ultimately the 2050 Targets) may realistically be met, the proportions that will be met by reductions and removals and the amount by which each GHG should be reduced, and, as already mentioned, the appropriate limit on offshore mitigation and the circumstances that justify the use of offshore mitigation.

149. The Act sets out, in s 5ZC, a list of matters the Commission must have regard to when preparing advice to the Minister on the Budgets and the Minister must have regard to when making his or her decision. Section 5ZC(2)(a) provides that the Commission and the Minister must have "particular regard" to how the Budgets and 2050 Targets "may realistically be met", including consideration of:

a. the key opportunities for emissions reductions and removals in New Zealand (which again, places the focus on domestic action); and

b. the principal risks and uncertainties associated with emissions reductions and removals.

150. Section 5ZC(2)(b) then lists further matters that the Commission and Minister must "have regard to", namely:

(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 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.

151. In addition to the factors set out in s 5ZC, the Commission must also have regard to the matters set out in s 5M, to the extent they are relevant. There is significant overlap between ss 5ZC and 5M. However, s 5M contains additional mandatory considerations with regard to the Crown-Māori relationship, te ao Māori (as defined in section 5H(2)), and specific effects on iwi and Māori.

152. As discussed in more detail further below, the Commission must have regard to these considerations in light of the purpose of the Budgets and the Act as a whole, as set out in ss 3(1) and 5W. The Commission does not have discretion to depart from the statutory purpose because it considers that one or more of the factors in ss 5ZC(2) or 5M make it desirable to do so.[119]

153. Finally, like the 2050 Targets, while the Budgets are binding, no remedy or relief is available for failure to meet them, except that the Court may make a declaration to that effect and any such declaration must be brought to the attention of Parliament (s 5ZM).

[119] See argument under ground 2 below.

Provisions relating to the measurement of emissions

154. The unit of measurement for emissions in relation to the 2050 Targets and the Budgets is "net accounting emissions".

155. As set out in paragraph 138 above, s 5Q(1) defines the 2050 Targets by reference to the level of "net accounting emissions" in a calendar year.

156. Similarly, the Budgets are measured in terms of "net accounting emissions". This is clear from s 5X(4) which requires the Minister to "ensure that the net accounting emissions do not exceed the emissions budget for the relevant emissions budget period."

157. An emissions budget itself is simply "the quantity of emissions that will be permitted" for the relevant emissions budget period and expressed as a net quantity of carbon dioxide equivalent (see s 5Y(1) and the definition of an emissions budget in s 4).

158. Net accounting emissions are defined as follows:

> **net accounting emissions** 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); and
>
> (b) offshore mitigation

159. Gross emissions are defined as follows:

> **gross emissions** means New Zealand's total emissions from the agriculture, energy, industrial processes and product use, and waste sectors (as reported in the New Zealand Greenhouse Gas Inventory)

160. Removals are relevantly defined as "greenhouse gases that are removed from the atmosphere".[120]

161. When the Zero Carbon Act was passed, it added the following definition of the New Zealand Greenhouse Gas Inventory into the Act:[121]

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[120] See para (b) of the definition of removals. "Offshore mitigation" is also defined but has been omitted from the text above as it is not relevant to the proceeding. **BoA/16/918**.

[121] The definition was subsequently replaced by the Climate Change Response (Emissions Trading Reform) Amendment Act 2020 and now refers to "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)" **BoA/16/614** and **BoA/17/1033.** A reference to Article 13.7 of the Paris Agreement was also added to s 32(1) by the Climate Change Response (Emissions Trading Reform) Amendment Act 2020. **BoA/17/1036.**

> **New Zealand Greenhouse Gas Inventory** means the annual inventory report under Articles 4 and 12 of the Convention and Article 7.1 of the Protocol, prepared in accordance with section 32(1)

162. Accordingly, the basic concept of "net accounting emissions" is to, for a particular period of time:

    a. sum the emissions into the atmosphere from the agriculture, energy, industrial processes and product use, waste and LULUCF sectors as reported in the New Zealand Greenhouse Gas Inventory;[122]

    b. subtract removals of greenhouse gases from the atmosphere including from the LULUCF sector as reported in the New Zealand Greenhouse Gas Inventory; and also

    c. subtract offshore mitigation.

Measurement of progress

163. The Commission must monitor and report on progress towards meeting emissions budgets and the 2050 Target in accordance with ss 5ZJ to 5ZL, and the Commission's s 5B(b) purpose.

164. Specifically, the Commission must:

    a. report annually on progress against the current budget including the adequacy of steps taken to reduce emissions under s 5ZK; and

    b. report at the end of an emissions budget period under s 5ZJ.

165. In both cases, the Commission is required to "carry out its monitoring function in accordance with the rules" that it has earlier advised the Minister "will apply to measure progress towards meeting emissions budgets and the 2050 target" (ss 5ZA(1)(b) and 5ZJ(2)).

Provisions relating to Commission's advice on the NDC

166. The Commission's advice on Aotearoa New Zealand's NDC under the Paris Agreement falls under s 5K of the Act which allows the Minister to request the Commission to prepare reports on matters related to reducing emissions of greenhouse gases and adapting to the effects of climate change.

167. Section 5K requires the Commission to make the terms of reference for the Minister's request publicly available and to prepare a report in

[122] These are the six standard UNFCCC categories for emissions and removals, see affidavit in reply of Dr Ivo Bertram at p. 11: **Bertram Reply/11** (para 44).

accordance with the terms of reference. In addition, in preparing such a report the Commission is subject to its general obligations under the Act to consider the matters in s 5M where relevant, to consult in accordance with s 5N, to act independently in accordance with s 5O, and to act in a manner consistent with the purpose of the Act as expressly required by s 3(2).

6. Relevant legal principles in interpreting and applying the Act

The Act must be interpreted in accordance with its purpose and with international obligations

168. The High Court has previously held in *Thomson v Minister for Climate Change* that the powers and discretions conferred under the Act must be exercised in accordance with its purpose, and that these must be interpreted consistently with Aotearoa New Zealand's international obligations, including the UNFCCC and the Paris Agreement.[123] This reflects the principle that domestic law must be interpreted in a manner that is consistent with international obligations where possible, as confirmed by the Supreme Court in a number of cases.[124] The Applicant submits that given the importance of the objective of mitigating climate change and its impacts reflected in the Paris Agreement and other international instruments, the Court should expect clear language to have been used if Parliament did not intend to give full effect to New Zealand's international obligations in the domestic legislation.[125]

169. Accordingly, when considering the meaning of specific sections of the Act, it is relevant to consider the provisions of the Paris Agreement that they are intended to give effect to and how those provisions have been interpreted internationally, for example, in the *Urgenda* and *Neubauer* decisions, discussed below.[126]

Relationship between purpose and other considerations

170. The role of legislative purpose in statutory interpretation, alongside text and context, is confirmed by s 10 of the Legislation Act 2019.

171. The importance of an Act's purpose when interpreting specific statutory decision-making criteria was recently reinforced by the Supreme Court in *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation*

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[123] *Thomson v Minister for Climate Change* [2017] NZHC 733 at [88]. **BoA/4/177.**
[124] *Helu v Immigration and Protection Tribunal* [2015] NZSC 28 at [143]-[145], *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2021] NZSC 127 at [99] per William Young and Ellen France JJ and at [246] and fn 398 per Glazebrook J. **BoA/5/240.**
[125] Compare Palmer J in *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council* [2020] NZHC 3228 at [50]-[51]. **BoA/1/21** as to the intensity of review in a climate change case.
[126] See paragraphs [117]-[183] below.

Board.[127] That case concerned the relationship between the statutory purpose of the Exclusive Economic Zone and Continental Shelf (Environmental Effects) Act 2012 (**EEZ Act**) in s 10(1)(b) "to protect the environment from pollution by regulating or prohibiting the discharge of harmful substances…" and the criteria which the EPA was required to consider when issuing consents under the Act, including economic effects.

172. Justice Glazebrook held that the purpose in s 10(1)(b) was "an environmental bottom line…".[128] She went on to say: "the s 10(1) purposes are not merely context for decision-makers. Nor are they factors to be given special weight. Ensuring they are met is the very point of the s 59 assessment."[129] Accordingly, she held that environmental protection could not be balanced against economic effects.[130]

173. Williams J and Winkelmann CJ agreed with this aspect of Justice Glazebrook's decision, with the Chief Justice commenting that "the decision-making criteria and information principles are to be applied in order to achieve the statutory purposes…. In that sense, the s 59(2) factors serve the s 10(1) purposes and therefore are subservient to them".[131]

174. This approach is equally applicable to the relationship between the considerations in ss 5ZC and 5M of the Act and the statutory purpose under ss 3 and 5W. The purpose of "contributing to the global effort to limit the global average temperature *increase* to 1.5° Celsius" creates a "bottom line" for the Commission's Advice on the Budgets. While the Commission must have regard to the factors in ss 5ZC and 5M, it must do so in a way that achieves the statutory purpose. It is not open to the Commission to recommend Budgets that do not contribute to the global effort to limit the global average temperature increase to 1.5° Celsius because, for example, it wishes to avoid adverse economic or social impacts.

New Zealand Bill of Rights Act 1990

175. Section 6 of the New Zealand Bill of Rights Act 1990 (**NZBORA**) requires that, wherever an enactment can be given a meaning that is consistent

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[127] *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2021] NZSC 127. **BoA/5.**

[128] Ibid at [245]. **BoA/5/293.**

[129] Ibid at [248]. **BoA/5/294.**

[130] Ibid at [253]. **BoA/5/296.**

[131] Ibid at [304]. **BoA/5/314.** The minority of the Court did not agree fully with this approach but agreed with the majority that the statutory purpose must remain the objective of the decision-maker, notwithstanding other considerations.

with the rights and freedoms contained in NZBORA, that meaning shall be preferred to any other meaning. In addition, by virtue of s 3, both the Commission and the Minister are required to comply with NZBORA in exercising their powers under the Act.

176. One of the fundamental rights protected by NZBORA is the right to life. Section 8 provides that "[n]o one shall be deprived of life except on such grounds as are established by law and are consistent with the principles of fundamental justice". This right is relevant to the interpretation and application of the Act given the impact of climate change on the ability of both individuals and society as a whole to survive and flourish.

177. The fact that climate change poses a threat to the right to life has been recognised in international decisions, most notably by the Supreme Court of the Netherlands in *Netherlands v Stichting Urgenda*.[132] That case arose from a 2013 challenge to the Dutch Government's target of a 20% reduction in emissions from 1990 levels by 2020. The applicant NGO, Urgenda, argued that the 20% target was inconsistent with the right to life under the European Convention on Human Rights (**ECHR**) due to the scientific consensus (at that time) that a reduction of 25-40% was necessary to keep warming to a maximum of 2°C.

178. The Supreme Court of the Netherlands held that the right to life imposed a positive obligation on the Dutch Government to take appropriate measures to protect the lives of those within its jurisdiction from a "real and immediate risk" which is "genuine and imminent".[133] It held that the right to life "should be interpreted in such a way that [it] oblige[s] the contracting states to do 'their part' to counter [the] danger" of climate change.[134] On this basis the Supreme Court upheld the lower courts' rulings that the Dutch Government was under a duty to reduce emissions by at least 25% by 2020, consistent with the scientific advice at that time.

179. The success of *Urgenda* has inspired similar challenges in other jurisdictions.[135]

180. In Germany, the Federal Constitutional Court has held that the right to protection of life and physical integrity under Germany's Basic Law

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[132] *The State of the Netherlands v Stichting Urgenda* ECLI:NL:HR:2019:2007 (Supreme Court of the Netherlands, 13 January 2020). **BoA/15.**

[133] At [5.2.2]. **BoA/15/850.**

[134] At [5.8]. **BoA/15/856.**

[135] For example, *Friends of the Irish Environment v Ireland* [2020] IESC 49. The Irish Supreme Court held that the Irish Government's National Mitigation Plan was invalid on other grounds but left open the possibility of cases where the right to life may be engaged. **BoA/10.**

encompasses the right to protection against the risk of climate change and gives rise to an objective duty to protect future generations.[136] In *Neubauer et al. v Germany*, the Court rejected the claimants' argument that Germany had violated this right, finding that, for the time being at least, it had taken adequate steps by ratifying the Paris Agreement and passing the Federal Climate Change Act which, depending on implementation, made it possible – insofar as Germany could do so – to prevent catastrophic conditions from occurring.[137]

181. However, the Court found that the Federal Climate Change Act itself was unconstitutional by failing to provide reduction targets from 2031 onwards until the point when climate neutrality is reached. The claimants provided evidence that the provisions of the Act governing the period until 2030 would lead to "excessive consumption of the remaining budget so that extraordinary efforts would subsequently be required."[138] The Court held that the Act therefore failed to adequately protect fundamental rights in the future, stating that: "one generation must not be allowed to consume large portions of the CO2 budget while bearing a relatively minor share of the reduction effort, if this would involve leaving subsequent generations with a drastic reduction burden and expose their lives to serious losses of freedom".[139] It therefore concluded that "the emission amounts specified until 2030 in [the Act] can ultimately only be reconciled with the potentially affected fundamental freedoms if precautionary measures are taken in order to manage the reduction burdens anticipated after 2030 in ways that respect fundamental rights."[140] Accordingly, the Court ordered the German government to take action by the end of 2022 to set clear reduction targets for the period from 2031 onwards.

182. A number of other cases involving claims based on the right to life are currently proceeding through court systems worldwide, including in the European Court of Human Rights,[141] the South Korean Constitutional Court[142], the Canadian Federal Court of Appeal[143] and the United States.[144]

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[136] *Neubauer and others v Germany* (BvR 2656/18/1 BvR 78/20/1 BvR 96/20/1 BvR 288/20), 2021, at [99]. **BoA/12.**
[137] Ibid at [115]. **BoA/12.**
[138] Ibid at [126]. **BoA/12.**
[139] Ibid at [192]. **BoA/12.**
[140] Ibid at [245]. **BoA/12.**
[141] *Duarte Agostinho v Portugal*, Application Number 39371/20 (filed 7 September 2020).
[142] *Do-Hyun Kim v South Korea* (filed 13 March 2020).
[143] *La Rose v Her Majesty the Queen* (appealed 24 November 2020).
[144] *Juliana v United States*, 217 F. Supp. 3d 1224 (D. Or. 2016), rev'd and remanded, 947 F.3d 1159 (9th Cir. 2020). This claim was originally filed in 2015 and survived initial challenges but was declined by the 9th Circuit Court of Appeals on the basis the plaintiffs lacked

183. Separately, although in a tort law rather than a human rights context, the Federal Court of Australia has found that there is a foreseeable risk of personal injury or death to the existing generation of children of Australia as a consequence of the effects of climate change, giving rise to a duty of care being owed to the children by the Minister for the Environment when considering a request for a permit for an extension of a coal mine.[145]

Te Tiriti o Waitangi and tikanga Māori

184. The Applicant submits that the Act must also be interpreted in a manner that is consistent with:

a. the principles of the Treaty of Waitangi, in particular the obligations of the Crown to actively protect Māori from inequitable levels of detriment and harm and to recognise and adequately provide for the exercise of Rangatiratanga including Māori interests in protecting against harm to the natural environment; and

b. tikanga Māori, in particular mana tangata and mana whenua which include the ability for Māori to uphold and protect the wellbeing of their communities and the natural environment.[146]

185. The Act recognises the Crown's responsibility to give effect to the principles of Te Tiriti o Waitangi in s 3A but it does not specifically require the Commission or the Minister to have regard to Te Tiriti in recommending and adopting emissions budgets or the NDC. However, as noted above, the list of matters set out in s 5M that the Commission must consider, where relevant, when performing any of its functions under the Act include the Crown-Māori relationship, of which Te Tiriti is a fundamental element. More broadly, a Treaty provision such as that in s 3A of the Act is not to be read as ousting the general relevance of Treaty principles to interpretation. An intention to constrain the ability of statutory decision-makers to respect Treaty principles should not be ascribed to Parliament unless that intention is made quite clear.[147]

186. In light of the overarching obligations that Te Tiriti places on the Crown, the Applicant submits that the Minister must respect Treaty principles

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standing. The plaintiffs have applied for leave to file an amended complaint. A decision on the application has not yet been issued.

[145] *Sharma v Minister for the Environment* [2021] FCA 560 at [205]-[247]. **BoA/14/738.**

[146] There is a brief discussion of relevant principles of tikanga in the Advice Evidence Chapter 10, **Advice Bundle/716** (in particular 723-726).

[147] *Trans-Tasman Resources Ltd v Taranaki-Whanganui Conservation Board* [2021] NZSC 127 at [150]-[151] **BoA/5/258** ,per William Young and Ellen France JJ, [237] per Glazebrook J **BoA/5/290**, [296] per Williams J **BoA/5/312** and [332] per Winkelmann CJ **BoA/5/324**.

when making any decisions under the Act. Accordingly, it makes sense that these obligations should also be taken into account by the Commission when preparing its advice to the Minister.

187. Under Article 2 of Te Tiriti the Crown has the obligation to preserve and protect tino rangatiratanga of Māori over their whenua, kāinga and taonga. The Court of Appeal has held that this imposes a duty on the Crown to actively protect Māori use of their lands and waters to fullest extent practicable.[148] Given the implications of climate change, this must encompass a duty on the Crown to preserve and protect Māori lands and waters and other environmental taonga against the effects of climate change, including by take steps to mitigate climate change by cutting emissions. We note a claim has been brought in the Waitangi Tribunal alleging that the Crown is in breach of its Article 2 obligations of active protection towards Maori by failing to take adequate steps to protect Aotearoa New Zealand's natural environment from the damaging effects of climate change.[149]

7. Relevant principles of judicial review

188. The Applicant relies on well-established principles of review which can be stated briefly:

a. Judicial review is a supervisory jurisdiction which enables the courts to ensure that public powers are exercised lawfully. In principle, all exercises of public power are reviewable;[150]

b. All discretionary power has legal limits and must be exercised in accordance with the statutory purpose for which it is conferred: "Parliament must have intended that a broadly framed discretion should always be exercised to promote the policy and objects of the Act";[151]

c. Decision-makers are required to understand and apply the correct legal test for their decision – if a decision-maker has misinterpreted what it is required to do it will have committed an error of law;[152]

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[148] *NZ Māori Council v Attorney-General* [1987] 1 NZLR 641 (CA). See also the Wai 262 Report.

[149] Wai 2607 claim on behalf of the Mataatua District Maori Council. *Standing up for a sustainable world – voices of change* C.Henry, J.Rockstrom and N. Stern ed.(2020) pp179-185.

[150] *Ririnui v Landcorp Farming Ltd* [2016] NZSC 62, [2016] 1 NZLR 1056 at [1]. **BoA/3/81.**

[151] *Unison Networks Ltd v Commerce Commission* [2007] NZSC 74, [2008] 1 NZLR 42 at [53], see also [50]-[55] generally. **BoA/6/347.**

[152] *Anisminic Ltd v Foreign Compensation Commission* [1969] 2 AC 147 **BoA/8**, *Unison Networks Ltd v Commerce Commission* [2007] NZSC 74, [2008] 1 NZLR 42 at [52]

d. A decision-maker will also make an error of law if it correctly interprets its task but applies it in way that is in error or is untenable on the facts.[153]

e. A decision-maker must make its findings on the basis of material of probative value, in the sense that there is some material which "tends logically to show the existence of facts consistent with the finding and that the reasoning supportive of the finding … is not logically self-contradictory."[154] Similarly, the reasoning must be supportable as a matter of logic, on the basis of the material taken into account by the decision-maker in reaching its decision.[155]

189. Both the Commission's Advice and the Minister's NDC decision are exercises of public powers that are plainly amenable to review, either under the Judicial Review Procedure Act 2016 (**JRPA**), which applies to statutory powers, or at common law.[156] As recognised by Palmer J, "New Zealand courts take a generous view of the extent of the rights, powers, privileges, immunities, duties or liabilities of a person that could found a judicial review. That is consistent with the purpose of judicial review in constraining the potential abuse of power."[157]

190. The fact that the Minister may choose to either adopt or depart from the Advice does not immunise the Commission from review. It has an obligation to perform its role lawfully, irrespective of any decision subsequently made by the Minister or Cabinet. Moreover, the Advice has a significant effect and influence on the Minister's decision-making.[158] The Advice has in fact already been relied on by the Minister

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BoA/6/348, *Vodafone New Zealand Ltd v Commerce Commission* [2011] NZSC 138 at [51] **BoA/7/380**. As expressed by Lord Diplock in Secretary of State v Tameside [1977] AC 1014, 1065B, the decision-maker must ask itself the right question and take reasonable steps to acquaint itself with the relevant information to enable it to answer the question correctly. **BoA/13.**

[153] *Vodafone v Commerce Commission* [2011] NZSC 138 at [52] **BoA/7/380**.

[154] *Re Erebus Royal Commission; Air New Zealand Ltd v Mahon* [1983] NZLR 662 (PC) at 671 per Lord Diplock. **BoA/2/49.**

[155] *Vodafone New Zealand Ltd v Telecom New Zealand Ltd* [2011] NZSC 138, [2012] 3 NZLR 153 at [52]. **BoA/7/380**.

[156] The established view of the effect of the Judicial Review Procedure Act (**JRPA) BoA/18** is that, like its predecessor, the Judicature Amendment Act, it simplifies the procedural aspects of judicial review but does not affect the Court's jurisdiction to undertake judicial review. See for example *Wilson v White* [2005] 1 NZLR 189 (CA) at [21]. If an action or decision is amenable to review but does not come within the scope of the JRPA, the only difference is the application must be made under Part 30 of the High Court Rules 2016 and the Applicant does not enjoy the benefit of the JRPA's procedural simplifications.

[157] *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council* [2020] NZHC 322 at [38] **BoA/1/17**. See also *Webster v Auckland Harbour Board* [1983] NZLR 646 at 651.

[158] See *NZ Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] 1 NZLR 75 at [27] where Venning J held "NIWA is a public body

and Cabinet in determining the Amended NDC and in making an in-principle decision to adopt the recommended Budgets. In addition, s 5ZB of the Act requires the Minister to provide a written response to the Commission's advice on the Budgets, and to explain the reasons for any departures from it. It therefore cannot be said that any error in the Advice is unlikely to have any material consequences.[159]

191. There is also no justiciability obstacle to review. The High Court decision in *Thomson v Minister for Climate Change* confirmed that Government action or inaction on climate change is not a "no-go" area in terms of justiciability, despite the policy dimension, and referred to the extensive case law in other jurisdictions on climate issues.[160] More recently, the High Court has held that there is a strong public interest in decision-making on climate change being subject to judicial review and that, "depending on their context, decisions about climate change deserve heightened scrutiny."[161]

192. The Applicant anticipates the Commission will argue that it is an expert body and entitled to deference from the Court on the issues raised by this application. However, the question for the Court is whether, in providing its Advice, the Commission met its obligations as a public body and under the Act. The Court is not being asked to weigh any social, economic or political factors. It is well-established that it is the function of the ordinary courts, "in fulfilment of their constitutional role as interpreters of the written law and expounders of the common law and rules of equity", to determine questions of law.[162] Accordingly, there is no room for deference to administrative decision-makers on such questions.[163]

193. Nor is this a case in which there is a genuine scientific dispute between equally qualified experts which the Court is unable to resolve. The only "scientific" dispute between the parties' witnesses comes down to an

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established by statute, 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 of 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."

[159] Cf *Singh v Chief Executive of the Ministry of Business, Innovation and Employment* [2014] NZCA 220, [2014] 3 NZLR 23.

[160] *Thomson v Minister for Climate Change* [2017] NZHC 733, [2018] 2 NZLR 160 at [133]. **BoA/4/190**.

[161] *Hauraki Coromandel Climate Action Inc. v Thames-Coromandel District Council* [2020] NZHC 3228 at [51]. **BoA/1/22.**

[162] *Bulk Gas Users Group v Attorney-General* [1983] NZLR 129 (CA) at 133, quoting Lord Diplock in *Re Racal Communications Ltd* [1981] AC_374 (HL) at_382–383.

[163] *Wool Board Disestablishment Co Ltd v Saxmere Co Ltd* [2010] NZCA 513, [2011] 2 NZLR 442 at [116].

issue of mathematical logic in the application of the 2018 Special Report pathways. The reasoning of a decision-maker must be supportable as a matter of logic, on the basis of the material taken into account by the decision-maker in reaching its decision.[164] The Court is well-equipped to determine this issue of mathematical logic on the basis of the comprehensive expert evidence before it and it is appropriate that it does so.

8. Ground 1: Error of logic in applying the 2018 Special Report pathways (error of law and irrationality)

Introduction

194. The Minister asked the Commission to advise on whether the 2016 NDC was compatible with contributing to global efforts under the Paris Agreement to limit the global average temperature increase to 1.5°C and to make recommendations on changes to the NDC to make it compatible.[165]

195. In its NDC Advice, the Commission purported to apply the 2018 Special Report to Aotearoa New Zealand to "provide a starting point based on scientific modelling, for addressing the question of whether the [2016] NDC is compatible with contributing to the 1.5°C goal."[166] It purported to do this by "convert[ing] the global reductions for each individual greenhouse gas set out in the IPCC 1.5°C pathways (see Table 21.1 above) to reductions at the national level for Aotearoa".[167] Table 21.1 sets out the "Reductions in emissions, by gas, in IPCC pathways with no or limited overshoot (interquartile range)" for 2030 relative to 2010 which, for "net carbon dioxide emissions", is a range of "-40 to -58%".[168]

196. As correctly recognised by the Commission:

    a. The IPCC assessed emissions pathways for different greenhouse gases that are compatible with limiting warming to 1.5°C above pre-industrial levels.[169]

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[164] *Vodafone New Zealand Ltd v Telecom New Zealand Ltd* [2011] NZSC 138, [2012] 3 NZLR 153 at [52]. **BoA/7/380**.
[165] The request was made under s 5K. Under s 5K of the Act the Minister may ask the Commission for advice on matters related to reducing emissions of greenhouse gases and adapting to the effects of climate change. **BoA/16/933**.
[166] Advice at p 354, box 21.1 **Advice Bundle/370**.
[167] Advice at p. 354, para 21 **Advice Bundle/370**.
[168] Advice at p. 353, table 21.1 **Advice Bundle/369**.
[169] Advice at p 354, box 21.1 **Advice Bundle/370**.

b. In relevant pathways, "rapid emissions reductions of all greenhouse gases [are required] between now and 2030."[170]

c. For "net CO2", the relevant reduction range from the 2018 Special Report was for net CO2 to reduce by 40% to 58% between 2010 and 2030.[171]

197. However, as explained by Dr Gale, the Commission applied these percentage reductions to our 2010 gross CO2 emissions rather than our 2010 net CO2 emissions in order to create a target for 2030 net CO2 emissions. The matter is significant since our 2010 gross CO2 emissions were 35.0 Mt, whereas our 2010 net CO2 emissions were 5.0 Mt.[172]

198. On the Commission's approach, despite purporting to be based on and compatible with the 2018 Special Report:

a. net CO2 can increase from 5.0 Mt to 17.9 Mt between 2010 and 2030 despite the IPCC's findings that net CO2 emissions should halve;[173] and

b. net emissions (across all gases) can increase from 48.6 to 52.6 Mt CO2-e between 2010 and 2030,[174] rather than decreasing significantly as the 2018 Special Report clearly requires.

199. The Applicant's position is that the Commission's application of the global reduction rate for net CO2 to a 2010 gross CO2 starting point is an error of mathematical logic which renders this part of the NDC Advice unlawful.

200. As a consequence of this error, the Commission has not correctly advised the Minister on the changes required to the NDC to ensure it is compatible with global efforts to limit the average temperature increase to 1.5°C.

The Commission's explanation for its approach

201. The Commission's NDC Advice is set out in chapters 21 and 22 of the Advice. The error is part of the calculation of the numbers set out in section 21.2.1 of chapter 21 of the Advice.[175] The calculations themselves are set out in the supporting material, Evidence Chapter 13.

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[170] Advice at p 352, para 14 **Advice Bundle/368**.
[171] Table 21.1 **Advice Bundle/369**.
[172] **Gale/2** (para [9]).
[173] **Gale/3** (paras [12]-[13]).
[174] **Taylor 1/16** (paras [81]-[86]). See also the response in **Taylor Reply/6-7** (paras 22-28).
[175] **Advice Bundle/370**.

202. In its Draft Advice, the Commission set out a table that recorded the global percentage reductions for each greenhouse gas according to the 2018 Special Report.[176] The first row is headed "Net carbon dioxide emissions". This was followed by a second table which purported to apply the reduction ranges to Aotearoa New Zealand's 2010 emissions to produce a 2030 target end point. Again, the first row is headed "Net carbon dioxide" but the data figure used was the 2010 gross CO2 emissions.[177] No explanation was given. It was unclear whether this was intended or a clerical error. As noted by Dr Bertram, this presentation was "obscure in the extreme."[178]

203. The Advice contains a similar sequence of tables,[179] including retaining the 35,031 kT emissions figure (that is, 35.031 Mt) in the "net carbon dioxide" row despite this being the gross figure, but with the added footnote explanation that: "Reductions of net carbon dioxide emissions have here been applied to gross carbon dioxide levels consistent with target accounting. This accounting recognises that land sector emissions need to be reduced, but land sector removals do not need to continue indefinitely."[180] The footnote does not disclose to the reader that not only have the reductions been applied to a gross figure, but the purported 2010 "net carbon dioxide" figure in the table is in fact gross.

204. The pleaded defence to this ground is that: "the IPCC 1.5°C pathways use a net-net approach, because this is the most appropriate approach at the global level where the forestry sector is a net source of emissions. Aotearoa New Zealand uses a gross-net approach, because the forestry sector has been a net sink of emissions. Both of these approaches are consistent with the international target-accounting guidance and appropriate to the circumstances they are being applied to."[181]

The Applicant's evidence in relation to ground 1

205. The Applicant has sought evidence on this issue from a number of well-qualified expert economists and climate scientists. They all conclude that the Commission has made an error of mathematical logic in applying the 2018 Special Report global percentage reductions in net CO2 to a 2010 gross CO2 starting point:

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[176] Draft Advice, Evidence Chapter 10, Table 10.1. **Supp/2/195.**
[177] Draft Advice, Evidence Chapter 10, Table 10.2. **Supp/2/196.**
[178] **Bertram Reply/6** (para [25]). **Sims Reply/1** (para 4).
[179] Table 13.1 and 13.2 in Evidence Chapter 13 **Advice Bundle/920**.
[180] Footnote 6 in Evidence Chapter 13 **Advice Bundle/920**. See also the final two paragraphs in box 21.3 in Chapter 21: **Advice Bundle/367**.
[181] Commission's statement of defence, para 87.1.

a. Dr Gale's evidence is that "it is an error of mathematical logic to apply the percentage reductions to our 2010 level of gross carbon dioxide. Mathematically, the 40% to 58% reduction range should have been applied to the 2010 level of net carbon dioxide emissions."[182]

b. Professor Forster (an IPCC coordinating lead author and a lead author of the relevant chapter of the 2018 Special Report, chapter 2) agrees "that an error is made when a value of 35,031 kt is used for the baseline "net" carbon dioxide emissions in 2010 (see Table 13.2 of the Commission's advice), as this is the gross emission number from the Greenhouse Gas Inventory."[183] He concludes that "[a]dopting the Commission's proposed framework and their proposed emission reduction target would give New Zealand an unambitious 2030 target that does not align to meeting global ambitions of holding global temperature rise to 1.5C.". [184]

c. Dr Rogelj (a coordinating lead author on the mitigation pathways chapter of the 2018 Special Report and a lead author for the IPCC's AR6) agrees that "the Commission has made the mathematical error described in the Gale affidavit" and that the Commission's approach "results in the emissions reductions percentages being incomparable with" the 2018 Special Report pathways.[185]

d. Professor Wuebbles "agree[s] with Dr Gale that it is an error to apply the 40% to 58% reduction range to 2010 *gross* CO_2 in order to determine a target for 2030 *net* CO_2 which is what the Commission has done".[186]

e. Dr Taylor finds that the Commission "has made a simple mathematical error".[187] He explains that on the Commission's approach net CO2 could increase by over 250%, which "is clearly not consistent with the global average reductions set out in [the 2018 Special Report]".[188] Dr Taylor notes that Stats NZ also applies the 2018 Special Report reductions to net, not gross, CO2

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[182] **Gale/3** (para [14].
[183] **Forster/2** (para [8]).
[184] **Forster/3** (para [16]).
[185] **Rogelj/2** (paras [10]-[11]).
[186] **Wuebbles Reply/3** (para [13]). See also Affidavit of Professor Donald Wuebbles dated 21 September 2021.
[187] **Taylor 1/2** (para [8]).
[188] **Taylor 1/2** (para [13]). For net emissions across all gases, he explains that the Commission's approach allows for an increase of 8% between 2010 and 2030 (or 4% based on updated data not available to the Commission), see **Taylor Reply/6** (paras [22]-[28]).

in 2010.[189] He also sets out how the error affects various other calculation conducted and reported by the Commission as discussed below.

f. Dr Bertram describes the Commission as having made a "basic error" in respect of the application of the 2018 Special Report pathways to New Zealand and finds that the resulting calculation are not consistent with the Report's 1.5°C pathways. [190]

g. Professor Sims "agree[s] in principle with the statements made in other expert affidavits filed by LCANZI, that using gross CO_2 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 above pre-industrial levels that are based on net emission reductions."[191]

206. The short affidavits of Dr Gale, Professor Forster, Dr Rogelj and Dr Wuebbles and their respective reply affidavits, and the reply affidavit of Professor Sims can be read in full as relevant to this first ground. The relevant section of Dr Taylor's affidavit is section 3 (paras 60-100) and the summary section 1.3.1 (paras 8-17). The relevant sections of Dr Bertram's affidavit are sections 7 and 8 (paras 75-100).

The Respondents' evidence

207. The Commission has filed evidence in response on this issue from Matthew Smith and Dr Olia Glade. Dr Carr's affidavit does not substantively address this issue, but asserts that the Commission made an "informed and deliberate judgement" and cross-refers to the evidence of the Commission staff.[192] Dr Andreas Reisinger has also provided an affidavit on behalf of the Minister that relates to these issues.

208. The evidence of Mr Smith, Dr Glade and Dr Reisinger seeks to defend the Commission's application of the global reduction pathway for net CO2 to a 2010 gross CO2 figure. They do not directly engage with the logical issue that applying the reduction pathway to 2010 gross CO2 is

[189] **Taylor 1/19** (paras [95]-[97]). The Stats NZ approach appears to have been approved by Professor James Renwick – who is a Commissioner: See **Supp/8/391**. No Commissioner has given evidence on this issue, other than the Chair who has a single paragraph: **Carr/14** (para [58]).
[190] **Bertram/18-20** (para [77]-[84]).
[191] **Sims Reply/1** (para [8]). Professor Sims was not asked to address this in his first affidavit, but he responds as a result of the suggestion by Mr Smith that he might not agree with the other witnesses.
[192] **Carr/14** (para 58).

not in fact an application of the 2018 Special Report on its terms, but rather seek to make collateral challenges to the Applicant's evidence and the qualifications of the Applicant's experts.

209. In terms of the independence of the Respondents' experts, the Applicant notes that: the evidence of Mr Smith has to be read in the light of his leading role in preparing the parts of the Commission's advice that have been said to be in error;[193] Dr Glade was an MfE employee between 2011 and 2019 and this relationship apparently continues in a contracted capacity;[194] and Dr Reisinger was announced as a new appointee as a Commissioner to the Climate Change Commission on 22 December 2021.[195]

210. In order to properly respond to the Applicants' evidence, particularly the evidence of Professor Forster and Dr Rogelj as globally respected climate scientists and contributing authors to the 2018 Special Report in question, one would have expected the Commission to put forward evidence from someone who was both independent (that is, who had not been closely involved in New Zealand climate policy) and also an expert in the matters covered by the 2018 Special Report. Dr Glade is the only one of the three witnesses to have any degree of impartiality (and even that is qualified), but she has no particular expertise in relation to the 2018 Special Report or specific climate science qualifications. As noted by Professor Forster, she appears to be simply mistaken as to how the terms "net" and "gross" are used in the 2018 Special Report which may be due to her lack of familiarity with it.[196]

211. The Respondents' evidence on this ground can be grouped in the following topics (which are discussed further below in the context of the Applicant's reply evidence):

    a. "Gross" and "net" emissions have been wrongly defined by the Applicant's witnesses and correctly refer only to emissions

[193] **Smith/1** (para [2]); **Hendy/12** (para [62.3]).
[194] **Glade/1** (see paras [6]-[17] and CV annexed as OG-1). The continuing contracted work is not referred to in Dr Glade's affidavit but appears from Dr Glade's acknowledgement for "national compilation and cross-sector analyses" under the category of "technical contributors and contracted specialists" in New Zealand's 2021 national inventory submission at p iv. **Key Documents Bundle/14/981**.
[195] https://www.beehive.govt.nz/release/new-appointments-climate-change-commission-board. An application for this position was presumably live at the time his evidence was given.
[196] **Forster Reply/5** (para [16]).

excluding the LULUCF sector (gross), and emissions including the LULUCF sector (net).[197]

b. The Kyoto Protocol requires/justifies the Commission's approach and the Applicant's witnesses are therefore making a "direct attack" on the concept of gross-net accounting as a way of expressing our international targets.[198]

c. The Commission had to make lots of judgements in applying the 2018 Special Report to Aotearoa New Zealand,[199] and applying the reduction range to 2010 gross CO2 was just one such "choice".[200]

d. Applying the reduction range to 2010 net CO2 would penalise Aotearoa New Zealand for having planted trees to meet its past international commitments and would constitute an "undue burden".[201]

The Applicant's evidence in reply

212. The Applicant's evidence in reply responds comprehensively to all of the issues raised by the Respondents' witnesses. All of the challenges are unfounded and the evidence on the error of logic stands. Each is discussed in turn.

Definition of "gross" and "net"

213. Mr Smith regards the Applicant's evidence as demonstrating a "fundamental" definitional error. This appears to be the primary point of disagreement with Dr Gale.[202] Dr Gale defined net CO2 as referring to gross CO2 emissions (for example, from fossil fuel combustion) less CO2 removals (for example from forestry). Mr Smith says that this is wrong and that gross and net are "globally understood and accepted" as meaning, respectively, without and with LULUCF.[203]

214. There are two responses to this definitional point.

215. First, Mr Smith and Dr Glade are wrong. As explained by Dr Gale, Dr Bertram and Professor Forster, net CO2 is used in the 2018 Special

[197] See **Smith/9, 31** (paras [29]-[43] and [107]). This is also the way the terms are defined by the Commission in the Technical Glossary to the Advice. See **Advice Bundle/413-414**.
[198] See **Smith/9, 13, 22, 31** (paras [30], [44]-[55], [71.5], [105] and [108]-[110]); **Glade/4** (paras [24]-[37]).
[199] See **Smith/18** (paras [61]-[66]); **Reisinger/7** (paras [22]-[69]).
[200] See **Reisinger/23** (paras [60]-[61]).
[201] See **Reisinger/26** (paras [65]-[67]).
[202] See **Smith/31** (para [107]). See also **Smith/4, 9, 31, 33** (paras 9, 30, 103, 108 and 114).
[203] See **Smith/9** (para [33]).

Report in exactly the way that Dr Gale uses the term.[204] The difference in terminology between the 2018 Special Report and under Kyoto accounting does not appear to be appreciated by either Mr Smith or Dr Glade.

216. This lack of understanding is apparent from the Commission's statement of defence which, as noted above, pleads that "the IPCC 1.5°C pathways use a net-net approach, because this is the most appropriate approach at the global level where the forestry sector is a net source of emissions. Aotearoa New Zealand uses a gross-net approach, because the forestry sector has been a net sink of emissions."[205] This source/sink distinction is irrelevant to the 2018 Special Report since it uses "gross" and "net" in a different way as correctly identified by Dr Gale. In terms of the 2018 Special Report, gross CO2 is higher than net CO2 globally and for all countries individually.[206] It develops pathways for net CO2 and does not treat the LULUCF sector any differently from other sources of emissions and removals.[207]

217. Secondly, the definitional issue is a red herring. As Dr Gale states, "the issue of whether the SR 2018 reduction pathways for net CO2 can be applied mathematically to a 2010 gross CO2 starting point does not depend on the particular definitions of net and gross."[208] Dr Bertram confirms that this definitional issue "leaves untouched the fact that directly comparing gross-net with net-net numbers is a not a like-with-like exercise."[209]

Kyoto Protocol and gross-net accounting are not relevant to the error

218. Mr Smith appears to consider the application of the 2018 Special Report pathways to net CO2 as a "direct attack" on the concept of gross-net accounting which is based on the Kyoto Protocol.[210] Gross-net accounting involves setting an international target (such as our NDC) for *net emissions* in a particular year (2030 in the case of our NDC), by reference to a percentage reduction from *gross emissions* in the base year (2005 in the case of our NDC). This has previously been an implicit understanding,[211] but is now expressly stated in the new NDC. Mr Smith

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[204] See **Bertram/5-7** (paras 21-33); **Gale Reply/3** (paras [18]-[20]); **Bertram Reply/2** (paras [8]-[9]); **Forster Reply/4** [15]-[17].
[205] Commission's statement of defence, para 87.1.
[206] See **Forster Reply/5** [16]-[17].
[207] See **Gale Reply/5** (para [23(c)]).
[208] See **Gale Reply/1, 3** (paras [3]-[6], [17]).
[209] See **Bertram Reply/2** (para [8]).
[210] See **Smith/31** [108].
[211] The gross:net nature of our international commitments has not been clearly communicated by the Government. For example, in the *Thomson* case the 2016 NDC was described as a "30 per cent reduction in greenhouse gas emissions by 2030 (using 2005 as

also makes the point that some other countries also express their NDCs on a gross-net basis.[212] However, there is no evidence that any other States have calculated their NDCs by applying the 2018 Special Report reduction pathways on a gross:net basis.

219. As explained in the Applicant's reply evidence, this is a misconceived attack on a straw man.[213] The Applicant's challenge is not to the Commission's adoption of a gross-net approach per se.[214] The Applicant's challenge is rather to whether the Commission has correctly calculated its starting point in the way it has applied the 2018 Special Report.

220. As noted by Dr Reisinger and a number of the Respondents' other witnesses,[215] the accounting format used to express an emissions target does not determine the level of ambition, which is a political decision separate from the choice of accounting methodology. This is correct, any given level of ambition can be expressed in whatever format is chosen. In other words, the resulting figure from correctly applying the global reduction ranges from the 2018 Special Report can be re-expressed in gross-net terms if desired. But it is necessary to do the calculation correctly in the first place by applying the 2018 Special Report reduction ranges to a starting point of net emissions.[216]

221. Dr Taylor's reply evidence notes that the response to his critique of the Commission's application of the 2018 Special Report is "based on the incorrect premise that I am arguing that SR18 percentage reductions must be used to *mechanically* determine the percentage reductions that New Zealand should [adopt]."[217] He reiterates that the ultimate level of ambition is a political matter, but that if the global net emissions reduction pathways from the 2018 Special Report are to be used as a starting point, then internal consistency and transparency require these to be applied to 2010 net CO2.[218]

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a baseline year) (**30 by 30**)" (at [48]) without any discussion in the judgment of gross-net accounting.

[212] See **Smith/15** (para [50]).

[213] See **Bertram Reply/2** (para [10]) and **Taylor Reply/1** (paras [4]-[12]).

[214] Although the Applicant is concerned that the Commission and the Minister have not done this in a way that is transparent to the reader, allowing the targets to be misunderstood as being more ambitious than they actually are.

[215] See **Reisinger/16, 23, 27** (paragraphs 43, 58-59 and 68). See also for example **Smith/39** (paragraph 140); Affidavit of Helen Plume dated 10 December 2021 at page 19: **Plume/19** (para [73]); and Affidavit of Paul Young dated 10 December 2021 at pages 7, 15, 22 and 26: **Young/7, 15, 22, 26** (paragraphs 29, 54-55, 76 and 88.3).

[216] See **Gale Reply/2** (para [12]). **Forster Reply/7** [24].

[217] See **Taylor Reply/1** (para [4]).

[218] See **Taylor Reply/1** (paras [5]-[10]).

222. The Respondents' evidence spends a great deal of time explaining and justifying the background to the Kyoto approach and the use of gross-net accounting as a way of expressing international targets. This is not, however, relevant to the error alleged. As Professor Forster explains, it "seems that Mr Smith and Dr Glade are defending the use of gross:net accounting itself, whereas the Applicant and its experts point out that it is rather its use to compare to the analytical approach in SR1.5 which is at fault".[219]

223. While the Applicant's position is that how we express our international targets is irrelevant to the mathematical error, the Applicant should not be taken as accepting that gross-net accounting as applied by the New Zealand Government is appropriate or desirable as creating an incentive effect to drive governments to greater ambition as asserted by the Respondents' witnesses. New Zealand's track record of applying gross-net accounting and yet having net emissions (GHGI) increase decade-on-decade suggests that any beneficial incentive effects are not strong.[220]

224. Without wishing to be drawn into a debate on the merits of gross-net accounting, the Applicant would simply make two observations.

225. First, the use of gross:net accounting risks giving a false sense of ambition. For example, the 2016 NDC was a commitment for 2030 net emissions to be 30% below 2005 gross emissions. However, in 2005 our net emissions were already over 30% below gross emissions. Accordingly, expressed in net:net terms, our commitment was that our net emissions would not increase by more than 1% between 2005 and 2030.[221]

226. As Professor Forster notes, "Using a gross:net approach to setting targets can portray a misleading level of ambition. This can be simply illustrated. If a country had gross CO2 of 100 MtCO2 and net CO2 of 70 Mt CO2 in 2010 and set a target of reducing net CO2 in 2030 to 30% below gross CO2 in 2010, then it could achieve this apparent ambition but with no reduction to either gross or net CO2."[222]

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[219] See **Forster Reply/5** (para [17]).
[220] As the Commission acknowledges, the policies Aotearoa New Zealand has adopted in response to the incentives of gross-net accounting have not driven decarbonisation and have allowed gross emissions to increase by 26% since 1990: Advice, Executive Summary, paras 86-87. **Advice Bundle/28**. See also **Bertram Reply/16** (para [57]).
[221] See **Taylor 1/9** (paras [45]-[47]).
[222] See **Forster Reply /4** at [12]. See also **Taylor Reply/4** (paras [15]-[21]).

227. This seems to match the New Zealand experience of having reduction targets that are met but having gross and net emissions increasing over time.[223]

228. Secondly, New Zealand has departed from the original Kyoto approach in three ways which all have the effect of increasing apparent (but not real) ambition:[224]

    a. New Zealand now uses 2005 as the base year for the gross starting point, rather than 1990 as under the Kyoto Protocol. Since 2005 gross emissions were much higher than 1990 gross emissions (82.5 versus 65.1 Mt) our level of ambition appears much higher from a 2005 starting point.[225] That is, any given target will appear as a much higher headline percentage reduction.[226]

    b. When this change was made, the 1990 baseline for the "net" or "target" part of the gross-net equation was not changed. This means that the forest sink prior to 2005 is counted in the 2030 emissions target but not in the 2005 baseline: we have a "head start" equivalent to 15 years of forestry when meeting a target expressed relative to our 2005 gross emissions.[227]

    c. New Zealand is about to introduce averaging of forestry sequestration (MAB accounting) just at the start of a harvesting cycle.[228] As Dr Bertram notes, 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 [by disregarding significant emissions associated with harvesting] and effectively writing-off forestry removals that are already above their long-term average even where we have relied on these excessive removals for Kyoto compliance purposes under the previous target-accounting methodology."[229] One of the Commission witnesses (Paul Young) was the co-author of a report that identified by changing the rules around accounting for planted forests to mature forests means "New Zealand can keep all the

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[223] See **Taylor 1/7** (paras [39]-[55]).
[224] See **Bertram Reply/16** (para [58]).
[225] This approach is not consistent with the Kyoto Protocol (or the subsequent Doha Amendment) which was explicitly tied to a 1990 baseline: see **Plume/5-6, 11 and exhibit HP-1 at p. 6**; **Bertram/15** (para [67]); **Taylor 1/9** (para (46]).
[226] **Smith/16** (para [54]) concedes that the 2016 NDC of a 30% reduction on 2005 gross levels is equivalent to only an 11% reduction on 1990 gross levels.
[227] See **Forster 1/2-3** (paras 10-15); **Bertram Reply/16** (para [58(b)]); **Forster Reply/1, 6** (paras [2(b)] and [18]-[23]).
[228] See [345(c)] below.
[229] See **Bertram Reply/14** (para [52]).

> credits received up until then, but doesn't have to pay any back".[230]

Applying the reduction range for net CO2 to gross CO2 was not a mathematically valid "choice"

229. Mr Smith and Dr Reisinger say that there are lots of factors involved and focussing in on the issue of the application of the 2018 Special Report ranges implies spurious precision.

230. Dr Reisinger says at [60]-[61] that the Commission made a "choice" to apply the global rate of net CO2 emissions reductions specified in the 2018 Special Report to New Zealand's gross 2010 CO2 emissions and that this is not an issue of science or mathematics.

231. The Applicant does not dispute that there are many factors involved in setting the NDC. However, the Commission adopted the application of the 2018 Special Report ranges to Aotearoa New Zealand as a scientifically-based starting point. It then used its calculation of what the 2018 Special Report ranges require directly to specify the minimum "36%" emissions reduction it found was required of Aotearoa New Zealand as a minimum, before introducing the question of its additional ambition as a developed country. Therefore, the Commission miscalculated its starting point before any of the other factors came into play.[231]

232. Professor Forster puts it this way:[232]

> Mr Smith and Dr Reisinger both say that there is no one right way to determine what 1.5ºC 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 judgments 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 median SR1.5 global pathway should be employed as a starting point. Accepting this choice, the

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[230] Quoted in **Bertram Reply/14** (para [52]).
[231] See **Forster Reply/3** (paras [7]-[11]) re the task undertaken by the Commission and the error made.
[232] **Forster Reply/4** (paras [13]-[14]).

> global pathway is still not applied in a mathematically correct way by the Commission.

233. As Dr Gale says, mathematically, one cannot simply "choose" to apply a net:net range to a 2010 gross starting point.[233]

234. This is the case even if a gross:net pathway would be similar to a net:net pathway as Dr Glade appears to claim at [36]-[37]. This evidence is unsupported, and based on Dr Glade's interpretation of "gross" and "net" in this context meaning "without LULUCF" and "with LULUCF". Even if this evidence survives Dr Glade's apparent misinterpretation of the meanings of "gross emissions" and "net emissions" as used in the 2018 Special Report, as Dr Gale notes in response, "the global SR 2018 net reductions (essentially halving 2010 net CO2 emissions by 2030 and taking overall net emissions to zero by 2050) will not achieve their aim (a targeted chance of avoiding a temperature rise greater than 1.5 degrees) if countries like New Zealand only halve a baseline higher than their 2010 net CO2 emissions (the net values relied on by the IPCC) by adding back in removals in that year. In other words, Dr Glade's evidence about gross:net pathways does not speak to the mathematical problem that I have identified."[234]

235. Dr Rogelj agrees and puts it this way:[235]

> This 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 net emissions reductions consistent with pathways limiting warming to 1.5°C in 2100 from SR1.5. That is, regardless of whether the gross-net and net-net reduction rates for CO_2 happened to be similar, SR1.5 is a net-net analysis and so the global average emissions reductions need to be applied to 2010 net CO_2 for the totals to add up as SR1.5 has modelled. In other words, the Commission has still made the mathematical error referred to in my first affidavit.

236. This is not to say that there was only one way in which Aotearoa New Zealand could determine its final NDC. As the Advice and the MfE Consistency Advice both recognise, there are a number of ways that Aotearoa New Zealand's "fair share" of the global burden could reasonably be determined. But the existence of choices in how to determine an equitable contribution does not alter the fact that there is only one way to correctly apply the 2018 Special Report pathways to Aotearoa New Zealand's emissions. That is on a net:net basis.

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[233] **Gale Reply/5** (para [23(a)]).
[234] See **Gale Reply/5** (para [23(b)]); and **Forster Reply/4** [15]-[16].
[235] **Rogelj Reply/2** (para [7]).

Applying the 2018 Special Report reduction ranges to 2010 net CO2 does not "penalise" New Zealand

237. Many of the Respondents' witnesses express the view that applying the 2018 Special Report global pathways to our 2010 net CO2 would "penalise" New Zealand or create an "undue burden".[236]

238. The idea is that such an approach would include forestry removals in the starting point for making further reductions and so we would be "penalised" for trees planted from 1990-2010. The Commission appears to have applied the 2018 Special Report ranges to 2010 gross CO2 rather than net CO2 emissions to avoid such an outcome.[237]

239. The Applicant rejects that there is anything in this argument.

240. First, this is a question for fairness that cannot trump mathematics. If the 2018 Special Report pathways are to be correctly applied to New Zealand, then the pathways must be applied to net CO2.

241. Any other approach amounts to treating ourselves as a special case rather than applying the global reductions.[238] This is evident from the fact that the Commission's approach of excluding forestry removals in 2010 net CO2 can increase, rather than decrease, between 2010 and 2030. This is the opposite of what the 2018 Special Report requires in terms of the science. It also creates the potential for value judgements to be "masked" as explained by Dr Taylor in his reply evidence.[239] Accordingly, any fair distribution issues must be addressed separately. This is also important for transparency.[240]

242. Secondly, applying the global reduction ranges to our net CO2 does not "penalise" New Zealand for forestry, it simply takes it into account. New Zealand relied on those removals to meet our first commitment period obligations under the Kyoto Protocol so it makes sense that they become part of our new baseline (as would be the case if we had met our Kyoto commitment by reducing gross emissions).[241] This point is made by Professor Forster:[242]

> The thrust of the evidence of Mr Smith, Dr Glade and Dr Reisinger is that the Commission applied SR1.5 to 2010 gross CO2 to avoid being "penalised" for trees planted from 1990-2010. But New

[236] **Reisinger/26** (paras [65]-[67]).
[237] **Reisinger/26** (para [65]).
[238] **Gale Reply/5** (para [23(d)].
[239] **Taylor Reply/2** (para [9]).
[240] **Bertram 1/22-24** (paras 92-100); **Gale Reply/5** (paras 23(d) and (e)).
[241] **Taylor 1/19** (para 93).
[242] **Forster Reply/6** (para [23]).

> Zealand relied heavily on those 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.

243. Of course, achieving the level of reductions that would be required if Aotearoa New Zealand adopted the global average pathways on a net:net basis would not be easy, but the science shows that a rapid reduction in net emissions is required, whether we like it or not, and this is not easy for any country.[243] The Commission's NDC Analysis finds that our net emissions can increase between 2010 and 2030. This simply increases the burden for others as well as for ourselves in the future and is certainly not following the science set out in the 2018 Special Report.[244]

Conclusion re the misapplication of the 2018 Special Report

244. The overall position in relation to the mathematical error is helpfully summarised by Professor Forster:[245]

> 26. It is well understood by all parties that subject to the relatively broad constraints of the Paris Agreement, New Zealand can, in theory, set whatever target it likes and deem this fair (although an unambitious target may of course affect its standing in the international community). Further, if New Zealand wants to continue to use gross-net accounting this is also its prerogative, as this approach has both precedent in New Zealand and other countries.
>
> 27. However, in its advice on whether New Zealand's NDC was compatible with the global effort to limit the average temperature increase to 1.5ºC, the Commission clearly chose to set its minimum ambition recommendation based on the mid-range global interquartile reduction in IPCC SR1.5, based on net-net accounting.
>
> 28. This remains a good idea but it is my expert opinion that the Commission does not do this correctly. If it did this correctly, it would set a minimum level of CO2 emission reductions in its gross-net framework that is significantly larger than 36%.

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[243] IPCC science has moved on from Kyoto as Professor Wuebbles explains in his reply affidavit and is now focussed on net:net pathways: **Wuebbles Reply/2, 3**.
[244] **Taylor 1/15** (paras [78]-[86]).
[245] **Forster Reply/7**.

29. If the baseline ambition was based on net:net accounting it could still be reported within the gross-net framework preferred. These emission reductions would then provide a scientifically justifiable baseline to which national circumstances and global equity considerations could then be applied as considered appropriate.

The Commission's error is reviewable in an administrative law sense

245. The task the Commission embarked on was to use the global reductions set out in the 2018 Special Report to determine a "starting point" for assessing the 2016 NDC. This was to be based on "scientific modelling" by "convert[ing] the global reductions for each individual greenhouse gas (set out in the IPCC 1.5C pathways) to reductions at the national level for Aotearoa".[246]

246. The Applicant agrees that this was an appropriate approach for the Commission to take. However, in carrying out this task the Commission has made a reviewable error by its misapplication of the 2018 Special Report's findings to Aotearoa New Zealand.

247. The Commission must act on the basis of evidence that logically supports its findings. That is, it must make its findings on the basis of material of probative value, in the sense that there is some material which "tends logically to show the existence of facts consistent with the finding and that the reasoning supportive of the finding … is not logically self-contradictory."[247]

248. The reasoning of a decision-maker must also be supportable as a matter of logic, on the basis of the material taken into account by the decision-maker in reaching its decision.[248] A decision will be reviewable if the decision-maker has "made an error which is of fundamental significance to its decision-making".[249]

249. In this case, in its NDC Advice, the Commission determined it was consistent with the "scientific modelling" in the 2018 Special Report for

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[246] Box 21.1, **Advice Bundle/370**.
[247] *Re Erebus Royal Commission; Air New Zealand Ltd v Mahon* [1983] NZLR 662 (PC) at 671 per Lord Diplock **BoA/2/49**. This principle has been applied in many cases, which are helpfully summarised at [53.5.2] of Matthew Smith *The New Zealand Judicial Review Handbook* (2ned ed., Thomson Reuters, Wellington, 2016). **BoA/24.**
[248] *Vodafone New Zealand Ltd v Telecom New Zealand Ltd* [2011] NZSC 138, [2012] 3 NZLR 153 at [52]. **BoA/7/380**.
[249] Ibid. **BoA/7/380**.

New Zealand's net CO2 to increase from 5.0 Mt in 2010 to between 14.7 Mt and 21.0 Mt (average = 17.9 Mt) in 2030.[250]

250. As set out above, the Applicant's clear evidence is that this is an error of mathematical logic because the global reductions have been applied to our 2010 gross CO2 instead of our 2010 net CO2 and is no way justified by references to taking a "gross:net approach" or otherwise.

251. This is not a case where deference to a specialist body is required or appropriate.[251] As the cases cited above show, errors of logic and findings that are not supported by logically probative evidence are reviewable in the usual way. Furthermore, the Applicant has provided clear evidence from the leading experts in the world that the Commission has made an error of logic by applying the global reduction range to 2010 gross CO2 emissions. The response by contrast suffers from partiality (Mr Smith is an author of the work under review, and Dr Reisinger is now a Commissioner and would have had a live application when he gave his affidavit) and a lack of specific expertise (Dr Glade appears to have no expertise in relation to the 2018 Special Report and fails to understand how the terms "net" and "gross" are used in the 2018 Special Report). If there was an independent expert of comparable standing to Professor Forster and Dr Rogelj who thought that the global reduction rates for net CO2 could be applied to gross CO2 then one can assume the Commission would have been able to provide their evidence.

252. The Commission's calculation purports to show that a doubling of net CO2 emissions between 2010-30 is consistent with limiting global warming to 1.5°C. However, there is no evidence to support such a finding. The evidence that the Commission purports to rely on (that is the 2018 Special Report) supports exactly the opposite conclusion. That is, the 2018 Special Report finds that net CO2 must decrease by 40% to 58% by 2030.

253. Another way of putting it is that the Commission's analysis is logically self-contradictory or internally inconsistent: it purports to apply the scientific modelling of the 2018 Special Report (which says net CO2

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[250] Evidence Chapter 10 at p 10, **Advice Bundle/920**. And **Gale/3** (paras [11]-[13]). This comparison is expressed in GHGI terms. It is clear from the Commission's figure 9.4 that although expressing the comparison in MAB terms would "improve" the numbers, it does not come close to achieving the 2018 Special Report's 40 to 58% reduction in 2010 net carbon dioxide emissions by 2030: **Advice Bundle/209**.

[251] See *Z v Dental Complaints Assessment Committee* [2008] NZSC 55, [2009] 1 NZLR 1; *Lab Tests Auckland Ltd v Auckland District Health Board* [2008] NZCA 385, [2009] 1 NZLR 776; and *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] 1 NZLR 75.

emissions must halve) but finds that net CO2 emissions can more than double between 2010 and 2030. The *increase* in net emissions (for all gases) from 48.6 to 52.6 Mt CO2-e between 2010 and 2030 is also inconsistent with the significant reductions required by the 2018 Special Report.[252] It is logically impossible to both claim to be following the 2018 Special Report pathways and have net CO2 and overall net emissions increasing during this period. These internal contradictions are caused by wrongly applying the net reduction rates to a 2010 gross CO2 starting point.

254. If all countries properly applied the "global averages" identified in the 2018 Special Report to their 2010 net CO2 emissions, then the total net emissions will add as envisaged in the Special Report. However, if countries like Aotearoa New Zealand apply the IPCC's reduction range to 2010 gross CO2 (or any other number higher than our 2010 net CO2 emissions), then the numbers will not add up globally in the way that the Special Report envisages.[253] As the Commission acknowledges, emissions reductions are a zero sum game: if one country reduces emissions by a smaller amount, another country must reduce emissions by more if the world is to remain on track.[254]

255. In the case of Aotearoa New Zealand, the 2018 Special Report implies as a starting point that net CO2 should fall to between 2.1 Mt and 3.0 Mt, average 2.6Mt.[255] All of the Applicant's experts are clear that this is the mathematically correct way to apply the emissions reductions pathways of the 2018 Special Report to New Zealand. This results in a 2030 limit for total net emissions of 32.6 to 42.0 Mt, with a midpoint of 37.3Mt.[256] To the extent that this is considered an "undue burden" this must be part of a separate fairness exercise where there is a transparent explanation of why New Zealand will do less than the global averages require.[257]

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[252] **Taylor 1/16** (paras [81]-[86]).

[253] See **Gale Reply/3** (paras [14]-[16]); **Forster Reply/4** (para [11]); and **Rogelj Reply/2** (para [7]). As Gale notes at [8], this is true regardless of what an equivalent gross:net rate of reductions would be. Also **Taylor 1/18** (paras [15], [86]); **Wuebbles 1/3** (para 13); **Wuebbles Reply/2** (para 12).

[254] **Advice Bundle/372**.

[255] Evidence Chapter 10 at p 10, **Advice Bundle/920**. **Forster 1/3** (para 13). **Taylor 1/2** (para 16). And **Gale/3** (paras [11]-[13]).

[256] **Taylor 1/2** (para 16); **Bertram 1/22** (paras 90-91).

[257] As noted at [242]-[243] above, it is far from obvious that this burden is "undue"; it simply represents what a global average approach requires based on the scientific methodology of the 2018 Special Report. As noted in the MfE Consistency Advice, on various ways of looking at our fair share of the remaining emissions, far greater cuts are required. See [303] below.

Consequences of the error

The "568" and "36%" figures are also incorrect

256. Based on its erroneous approach, the Commission calculates in section 21.2.1 of the Advice that applying the global average level of reductions from the 2018 Special Report to New Zealand equates to:[258]

a. an NDC budget between 2021-30 of 568 Mt CO2-e; and

b. a 36% reduction in emissions between 2005 and 2030 on a gross:net basis.

257. As a result, the Commission's NDC Advice was that the then current NDC (30%; 596 Mt CO2-e)[259] was not consistent with contributing to limiting global warming to 1.5ºC. Instead, it said that a compliant NDC would have to be a 36% reduction (2021-30 emissions less than 568 Mt CO2-e) in terms of global averages, and that "much more" was required of Aotearoa New Zealand as a developed country.[260] It did not provide a recommendation as to how much more was required. It said, "science alone cannot determine the share Aotearoa should contribute to those global reductions [in the 2018 Special Report pathways]. Reaching a conclusion on this also depends on social and policy judgements about international equity. These should be made by the Government of the day."[261]

258. If the 2018 Special Report reduction rates are applied properly to net CO2, then these figures changes:

a. the maximum for the NDC budget between 2021-30 would become 484 Mt CO2-e (not 568 Mt CO2-e);[262] and

b. minimum reductions of 55% (not 36%) are required between 2005 and 2030.[263]

259. Given it is accepted that Aotearoa New Zealand must do *at least* the global average (on the Commission's advice, it should do "much more"), this is the advice that the Commission should have given the Minister in

[258] Advice at p. 355 – **Advice Bundle/371**.
[259] **Advice Bundle/366**, para 3.
[260] **Advice Bundle/373**, para 48.
[261] **Advice Bundle/350**, para 7.
[262] **Taylor 1/16** (paras [79]-[80]), **Bertram/20** (paras 85-89). This calculation is confirmed by Dr Reisinger in para [86] of his affidavit (**Reisinger/32**) and in the MfE Consistency Advice annexed to Dr Reisinger's affidavit at para 83. (**Reisinger/31**).
[263] **Taylor 1/20** (paras [99]-[100]).

relation to the NDC as a minimum level of ambition consistent with the science in the 2018 Special Report.[264]

The Minister's decision in relation to the NDC relies on the Commission's incorrect advice

260. The Government announced a new NDC on 31 October 2021 which was formally communicated to the UNFCCC on 4 November 2021.[265] The new NDC is gross:net but adopts a headline "point-year target" of 50%, but this equates to a "41%" reduction in terms of the other numbers above.[266]

261. The decision in relation to the new NDC is reviewed on the basis that it was made in reliance on the Commission's incorrect NDC Advice.

262. The Commission's "36% advice" was clearly of significance to the decision to update our NDC.[267]

263. The 2016 NDC was due to be updated by 2020 and indeed a more ambitious NDC had been anticipated following the 2017 General Election.[268] However, this process was paused to allow for the Government to receive advice from the Commission as to an appropriate NDC. As explained in the 22 April 2020 update on the NDC under the Paris Agreement:[269]

> The objective in establishing the Climate Change Commission is to avail the Government of the best available expert advice on New Zealand's climate change settings. Under the legislation described above the Minister for Climate Change has requested the Climate Change Commission to provide advice and recommendations to the Government on whether the NDC should change to make it consistent with the global 1.5°C temperature goal and, if so, how. The

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[264] With regard to the idea of "minimum share" see *Urgenda* at 6.3: "Although determining the share to be contributed by the Netherlands in the reduction of greenhouse gas emissions is...in principle a matter for the government and parliament, the courts can assess whether the measures taken by the State are too little in view of what is clearly the lower limit of its share...". **BoA/15/857**.

[265] See **Plume/21** (paras [80]-[82]).

[266] See **Taylor 2** and **Taylor Reply/7** (paras [29]-[33]) as to the level of ambition in the new NDC.

[267] At paragraphs 80B and 94A of his statement of defence, the Minister admits that "Cabinet and the second respondent had regard to the Commission's advice". And see the Minister's evidence on how he and Cabinet had regard to the NDC Advice in their decision: **Shaw** generally.

[268] The Court in *Thomson v Minister for Climate Change* [2017] NZHC 733 did not make a final decision as to the need to reconsider the 2016 NDC on the basis that the new Government elected at the 2017 Election intended to update our national targets (at [72] and [99]). **BoA/4/174, 178**.

[269] **Key Docs Bundle/4/12.**

> Climate Change Commission will be providing its advice in early 2021.

264. The NDC Advice was also front and centre in the Cabinet Paper relating to the decision to adopt the new NDC:[270]

> 35 In early 2020, I requested advice from the Commission on the compatibility of New Zealand's NDC1 with contributing to global efforts to limit global warming to 1.5°C above pre-industrial levels. The Commission was also asked to recommend any changes to NDC1 that would make it compatible.
>
> 36 The Commission advised that the current NDC1 is not compatible.[5]
>
> 37 In order to be more likely to be compatible, the NDC should reflect a reduction of net emissions of "much more that 36 per cent below 2005 gross levels by 2030, with the likelihood of compatibility increasing as the NDC is strengthened further". [6]
>
> 38 The Commission reached its recommendation of much more than 36 per cent by assuming that New Zealand's emissions should reduce by *at least* at the same rate as global emissions of those gases in the average of pathways consistent with the global pathway to 1.5°C.

265. The idea that "36%" represents a path on which "New Zealand's emissions … reduce by at least at the same rate as global emissions of those gases in the average of pathways consistent with the global pathway to 1.5°C" is repeated in the table at page 20 which states that at 36% "New Zealand's emission reductions would be the same as the average of the modelled global rate of reductions of IPCC pathways."

266. The press release from the Prime Minister and the Minister also refers to the Commission's advice:[271]

> In May this year, the Climate Change Commission provided its final advice to the Government, which said New Zealand's previous NDC (which was lodged in 2016) was incompatible with limiting warming to 1.5°C. The Commission recommended a new NDC should be much more than 36 per cent reduction on 2005 levels by 2030.

267. It is submitted that the "36%" will clearly have had an anchoring effect in the decision over the new NDC and that it provided the context for determining what our level of international commitment should be. That is, it is clearly likely that a different NDC may have resulted if Cabinet had been correctly advised that the IPCC pathways imply an NDC with at least a 55% reduction for New Zealand (when the pathways are properly applied to 2010 net CO2 and then the resulting figure re-expressed as a gross-net target).

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[270] See **Shaw/7** (para [20]).
[271] See **Supp/4/231**.

The error also affects the budgets proposed by the Commission

268. The error also flows through to the Commission's assessment of whether its proposed Budgets are consistent with the 1.5°C target in two ways (as discussed below in relation to ground 2):

a. the Budgets permit domestic emissions of 648 Mt of emissions in 2021-30, this should be compared against the 484 Mt calculated by Dr Taylor rather than the 568 Mt calculated by the Commission;[272] and

b. despite the Budgets being based on net CO2 increasing from 5.0 Mt in 2010 to 20.7 Mt in 2030, the Commission refers to this as a 55% reduction in net CO2 over this period in table 9.1 as a result of the same mathematical error.[273]

9. Ground 2: Misinterpretation of the statutory purpose in relation to emissions budgets

Introduction

269. The Applicant says that the Commission made a series of cumulative errors in preparing its Budgets Advice. First, despite the express reference to "contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5 Celsius" in the purpose of the Act in s 3, and in the purpose of subpart 3 of Part 1B in s 5W, it wrongly assumed that its task was only or primarily to recommend Budgets consistent with reaching the 2050 Targets. It did not treat contributing to the global 1.5°C goal as a free-standing purpose, seemingly because its view was that achieving the 2050 Targets was deemed to be sufficient.[274] It therefore used the IPCC pathways for contributing to the global 1.5°C goal as a secondary cross-check only.[275] As a result of this misunderstanding of its task, the Commission failed to grapple with the extent of reductions in net emissions required before 2030 for Aotearoa New Zealand to contribute to the global effort to limit warming to 1.5°C.

270. Second, instead of adopting the s 5W purpose as the guiding principle in its Advice the Commission relied on its own construct of the "requirements and considerations under the Act", which it described as grouped around "three key outcomes": "Fair, inclusive and equitable",

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[272] See [298] below.
[273] See [317]-[318] below.
[274] Chapter 5, para 35: "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/82**. Chapter 9 para 31 **Advice Bundle/208**.
[275] Chapter 9 para 33 **Advice Bundle/208**.

"Ambitious" and "Achievable".[276] In a related error, the Commission also deviated from the requirement under s 5ZC(2)(b)(iv) to recommend Budgets that are "ambitious but likely to be technically and economically achievable",[277] and instead recommended Budgets that have a low degree of risk and that are "economically affordable".[278]

271. Finally, as discussed under ground 1, when assessing whether the recommended Budgets are compatible with what the 1.5°C target requires, the Commission has repeated the same mathematical error it made in relation to the NDC Advice, using gross emissions rather net emissions as the baseline.[279]

Statutory framework

272. As discussed above, s 5W requires the Budgets to be set "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". The fact that the Budgets must also be set in a way that allows them to be met domestically does not qualify this aim, but simply underscores Parliament's intention to prioritise domestic mitigation.[280]

273. The 2050 Targets and the 1.5˚C goal are two compatible but separate objectives. Meeting the 2050 Targets alone is not sufficient to limit the global average temperature increase to 1.5˚C above pre-industrial levels, as the 2018 Special Report makes very clear. The Commission itself recognised that "limiting warming to 1.5°C above pre-industrial levels requires rapid emissions reductions of all greenhouse gases between now and 2030" but failed to address its Advice to this goal.[281]

Legislative history confirms importance of 1.5˚C

274. The legislative history of the Zero Carbon Act clearly shows that Parliament understood the distinction between the 2050 Targets and the 1.5°C goal and wanted to make sure that the Budgets supported both, including by amending the Bill to incorporate an express reference to the 1.5°C goal into what is now s 5W.

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[276] Advice Chapter 5 **Advice Bundle/78**.
[277] Act s 5ZC(2)(b)(iv) **BoA/16/942**. Note also Paris Agreement Articles 3 and 4(3). **BoA/16/1013**.
[278] The term "economically affordable" does not appear in the Act, which instead uses the term "economically achieveable", but is used repeatedly in the Advice from the first line of the "Letter from the Chair" onwards **Advice Bundle/9**.
[279] See Table 9.1, **Advice Bundle/208**.
[280] See discussion at paras 142-147 above.
[281] Chapter 21, para 14 **Advice Bundle/368**.

275. Introducing the Zero Carbon Bill at its first reading on 21 May 2019, Minister Shaw referred to the amended purpose of the Act and stated: [282]

> "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"

276. This was consistent with popular support for the Bill. The Departmental Report on the Bill records that:[283]

> "The vast majority of submitters indicated support for the purpose of the Bill, including the establishment of a framework to reduce NZ's GHG emissions, and the need to contribute to the global effort to limit the global average temperature increase to 1.5 degrees Celsius above pre-industrial levels."

277. The Departmental Report also agreed with a number of submissions recommending that the Budgets should be explicitly aligned with the overall purpose of the Bill, saying that: "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."[284]

278. The Departmental Report discusses the 2018 Special Report and the fact that it calculates the remaining "budget" of emissions available before the 1.5°C temperature goal is exceeded. It clearly assumes that the Commission's budget advice will be consistent with 1.5°C, stating:[285]

> "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."

279. The Minister's report to Cabinet following feedback from Select Committee, dated 19 February 2019, adopted the Departmental Report's recommendations, including to add express reference to the 1.5°C purpose in relation to the budgets.[286] At the second reading of

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[282] (21 May 2019) 738 NZPD 11027. **BoA/25/1218**.
[283] Ministry for the Environment, Department Report on the Climate Change Response (Zero Carbon) Amendment Bill 2019, September 2019 at p. 28: **BoA/31/1565**.
[284] Ibid at p. 73: **BoA/31/1610**.
[285] Ibid **BoA/31/1610**.
[286] See **BoA/33/1729**.

the Bill, the Minister again noted the amendment to make explicit that the 1.5°C goal applied to the budgets set under the Act: [287]

> "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."

280. The legislative history accordingly confirms that Parliament intended the Act to require the Commission to propose Budgets that are consistent with *both* the 2050 Targets and the 1.5°C goal, consistent with the plain meaning reading of s 5W.

Requirement to have regard to factors in s 5M and s 5ZC

281. In preparing its Budget Advice, the Act specifically requires the Commission to have regard to a range of matters set out in ss 5M and 5ZC, including, under s 5ZC, the results of public consultation, distribution of impacts across regions and communities of New Zealand and from generation to generation, and responses to climate change by other parties to the Paris Agreement. The Commission is also specifically required to consider New Zealand's international obligations. As discussed above, these factors must be weighed in a manner that achieves the purpose of the Budgets, not balanced against it.[288]

282. These mandatory considerations do not alter the need for Budgets to be aimed at achieving the 2050 Targets and the 1.5°C goal, but they are potentially relevant to the pathway that should be adopted to reach those objectives and to whether Aotearoa New Zealand's "contribution" to the global effort should be more or less than implied by the 2018 Special Report's percentage reduction pathways.[289]

Meaning of "contributing to the global effort … to limit the global average temperature increase to 1.5° Celsius"

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[287] Hansard Debates, Second Reading of the Climate Change Response (Zero Carbon) Amendment Bill, (5 November 2019) 724 NZPD 14719 **BoA/26/1248.**
[288] See the discussion at paras 170-174 above.
[289] See [229]-[234] above.

283. To "contribute to" a goal means to have a share in bringing it about, or to help cause it to happen.[290] A contribution can be small or large. However, in this context, the use of "contributing to" instead of "achieving" reflects the fact that the 1.5°C goal is not something that Aotearoa New Zealand, or any one state, can achieve on its own. It can only be achieved by a collective effort in which all states do their part, as the parties to the Paris Agreement have committed to do. The use of this phrase therefore cannot be taken to mean that any contribution, however small, is sufficient.

284. Further, this is not a case where any reduction in emissions will "contribute to" the goal. As the Advice and MfE's Consistency Advice state, limiting warming to 1.5°C is a zero-sum problem.[291] If Aotearoa New Zealand reduces its own emissions by less than the global average, that would require another state to do more than the global average, or the required threshold will be exceeded. Accordingly, doing less than "our part" is not consistent with "contributing to" the global effort.

285. The meaning of "contributing to" must also be interpreted in light of the UNFCCC and Paris Agreement and can be usefully informed by the interpretation of these Agreements in other jurisdictions.

286. The UNFCCC and the Paris Agreement require States to each do their part to prevent dangerous climate change. As the Supreme Court of The Netherlands held in *Urgenda*:[292]

> The UNFCCC is based on the idea that climate change is a global problem that needs to be solved globally. Where emissions of greenhouse gases take place from the territories of all countries and all countries are affected, measures will have to be taken by all countries.

287. The Court explains further that, in light of this:[293]

> the defence that a state does not have to take responsibility because other countries do not comply with their partial responsibility, cannot be accepted. Nor can the assertion that a country's own share in global greenhouse gas emissions is very small and that reducing emissions from one's own territory makes little difference on a global scale, be accepted as a defence. Indeed, acceptance of these defences would mean that a country

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[290] See Collins Online Dictionary, https://www.collinsdictionary.com/dictionary/english/contribute-to; Merriam Webster Online Dictionary, https://www.merriam-webster.com/dictionary/contribute.
[291] **Advice Bundle/372**; MfE Consistency Advice, para 14, 99; **Reisinger/Exhibit AR-2**.
[292] At 5.7.2.
[293] At 5.7.5.

> could easily evade its partial responsibility by pointing out other countries or its own small share. If, on the other hand, this defence is ruled out, each country can be effectively called to account for its share of emissions and the chance of all countries actually making their contribution will be greatest, in accordance with the principles laid down in the preamble to the UNFCCC.

288. Thus, while the Netherlands' output of GHG emissions was relatively small when looked at on a worldwide scale, this did not excuse it from action. On this basis, the Supreme Court upheld the lower courts' rulings that the Dutch Government was under a duty to reduce emissions by at least 25% by 2020, consistent with the scientific advice at that time.[294]

289. Similarly, in *Neubauer et al. v Germany*, the German Federal Constitutional Court found that the Paris Agreement depends on mutual trust between parties, giving rise to an obligation to take national action that will help build mutual trust and avoid creating incentives for other countries to undermine cooperation.[295]

290. The reasoning in these decisions directly contradicts the argument made by Matthew Smith in his affidavit that: "New Zealand reducing emissions faster will not change the global impacts of climate change to any material degree…".[296] This is not only inconsistent with the scientific evidence that each additional ton of emissions adds to warming but overlooks the fact that climate change is a collective problem and a collective responsibility as the above cases recognise. Even taking a self-interested view, our national interests are likely to be best served by supporting collective action, rather than undermining it.

291. At a minimum therefore, "contributing to" the global effort under the Paris Agreement requires us to comply with our obligations under that Agreement. This is also consistent with the purpose of the Act in s 3(1)(a) of enabling New Zealand to meet its international obligations under the Paris Agreement, and the fact that New Zealand's relevant obligations under international agreements are a mandatory consideration under s 5ZC in setting the Budgets.

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[294] The fact that climate change requires collective action was recognised by the US Supreme Court in the landmark decision of *Massachusetts v Environmental Protection Agency* 549 U.S. (2007) at p 525-526. **BoA/11.** For the need to address the cumulative impact of myriad small sources of emissions see *Gloucester Resources v Minister for Planning* [2019] NSWLEC 7 at [516], [519], [525].

[295] At 202-203. **BoA/12**.

[296] **Smith/49** (para [176]).

What does the Paris Agreement require?

292. The Paris Agreement does not provide a fixed allocation or a methodology for allocating the burden of global emissions reductions between parties. Rather, it permits each party to determine its own contribution by way of its NDC. However, it places an obligation on all parties to adopt NDCs which reflect their "*highest possible* ambition".[297] It further requires all parties to undertake domestic measures with the aim of achieving the objectives of their NDCs.[298]

293. The Paris Agreement also adopts the principle of "common but differentiated responsibilities and respective capabilities, in light of national circumstances".[299] However, that principle is intended to accommodate the needs of developing countries and allow for considerations of equity in burden sharing, not to allow wealthy developed countries with high historical and current per capita emissions to do less or to move more slowly than others for fear of incurring economic or social transition costs.[300]

294. The meaning of "highest possible ambition" under the Paris Agreement must be considered in light of the consequences for humans, in New Zealand and globally, and for the planet as a whole, of failure to limit global warming to 1.5°C, as detailed exhaustively in the 2018 Special Report. Indeed, Parliament has declared that we are in a climate emergency. The urgency of action and scale of response required was thoroughly articulated by the 2018 Special Report – the level of ambition must be commensurate with this. Finally, our "highest possible ambition" must reflect the fact Aotearoa New Zealand is a developed country with an obligation to do more than developing and less developed countries.

Relevance of NZBORA and Te Tiriti and tikanga Māori to interpretation of the statutory purpose

295. The relevance of the right to life under the NZBORA and of the Treaty of Waitangi and tikanga Māori are discussed in the principles of interpretation section of the submissions.

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[297] Articles 2, 3 and 4. **BoA/16/1012 – 1013.**
[298] Article 4(2). **BoA/16/1013.**
[299] Article 2. **BoA/16/1012 – 1013**.
[300] See for example Rajamani et al. *National 'fair shares' in reducing greenhouse gas emissions within the principled framework of international environmental law*, Climate Policy, 21:8. 983-1004, at 990: "the principle [of common but differentiated responsibilities] has been interpreted to require developed country leadership in addressing environmental and climate harm." **Supp/9/403**.

296. The Applicant does not suggest that the right to life under NZBORA requires an interpretation of the Act that is any different to that which would otherwise apply on the straightforward application of the approach required by s 10 of the Legislation Act set out in the preceding discussion. However, NZBORA underscores the need to interpret and implement the Act in a manner that gives full effect to the purpose of contributing to the global effort to limit the average temperature increase to 1.5ºC and provides a further reason why competing factors, such as economic and political considerations, cannot be used to justify a departure from this objective.

297. As in relation to NZBORA, the Applicant does not suggest that Te Tiriti o Waitangi or tikanga Māori require an interpretation of the Act that is any different to that which would otherwise apply. However, they reinforce the need to interpret and implement the Act in a way that promotes the Act's purpose of limiting global warming to 1.5ºC.

What was the Commission required to do?

298. In light of the urgent need to approximately halve emissions from 2010 levels by 2030 to limit warming to 1.5˚C, in preparing the Budgets Advice the Commission needed to give at least equal weight, if not primacy, to that aspect of the statutory purpose, rather than simply focusing on the 2050 Targets.

299. Accordingly, the first task the Commission should have undertaken in preparing its Budgets Advice was to consider what "contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels" required. This is the same question the Commission was required to address in its NDC Advice. It is partly a matter of science but also, as discussed above, partly a matter of considerations of national capacity and international equity as informed by the Paris Agreement.

300. The science part of the question is what the 2018 Special Report addresses. As discussed in relation to ground 1, when the 2018 Special Report pathways are properly applied to New Zealand, they imply a reduction of total annual net emissions from 48.6 to 37.3 Mt CO2-e between 2010 and 2030 (a decrease of 23%),[301] and a 2021-2030 budget of 484 Mt CO2-e.[302] Accordingly, 484 Mt CO2-e should have been the starting point for consideration of our initial domestic Budgets for the period from 2022-2030. (In the event the Court finds that, contrary to ground 1, the 2018 Special Report pathways can be applied on a

[301] **Taylor 1/2** (para 16).
[302] See **Taylor 1/16** (paras [79-[80] and figure 3.2).

gross:net basis then the starting point should have been 568 Mt CO2-e).

301. The second step the Commission should have taken was to consider the mandatory considerations in ss 5M and 5ZC to determine whether national capacity and international equity required greater (or lesser) reductions than this baseline amount.

302. The MfE Consistency Advice provides an example of the type of analysis the Commission should have done to assess what Aotearoa New Zealand should do to "contribute to" the global effort. It considers a similar range of approaches to allocating contributions between countries, namely:

    a. **Equal** rate of emission reductions;

    b. **Equality** (equal emissions per capita);

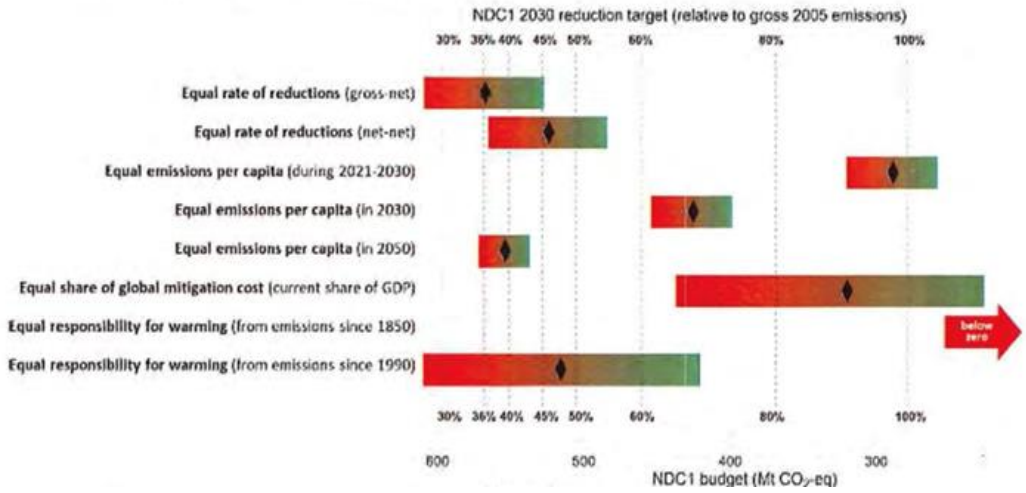
    c. **Capacity** (equal share of the global cost of mitigation);

    d. **Responsibility** (equal overall responsibility for global warming including from historical emissions); and

    e. **Need** (equal right to sustainable development).

303. The results of this analysis are illustrated by figure 1 from the MfE Consistency Advice copied below. The advice does not clearly explain how the remaining emissions budgets have been derived from the 2018 Special Report or how the allocative metrics have been calculated and applied, so the figures are not accepted. However, it illustrates the kind of analysis that should have been undertaken by the Commission to determine Budgets that contribute to limiting global warming to 1.5°C in accordance with the principles of the Paris Agreement. The Budgets recommended by the Commission are less ambitious than the minimum NDC recommended by the Commission which is the first row on the figure and the least ambitious.

Figure 1: Illustrative ranges of NDC1 budgets and 2030 reduction targets that would be consistent with 1.5°C based on different equity principles.



304. Therefore, in the Applicant's submission, to be consistent with the statutory purpose of "contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels" the Commission was required to consider and recommend Budgets that:

    a. Started from the best scientific evidence of what is required to limit temperature increases to 1.5°C. There is no dispute that this is the 2018 Special Report. The pathways for 2010-30 reductions set out in the 2018 Special Report imply a budget for 2021-30 of 484 Mt CO-e or 568 Mt CO-e (depending on the Court's view of the first ground of review);

    b. Took into account the mandatory considerations in ss 5M and 5ZC, including issues of international equity based on the kind of analysis contained in the MfE Consistency Advice referred to above; and

    c. Were consistent with its reasonable assessment, based on a proper evidential basis, of Aotearoa New Zealand's "highest possible ambition" which sits alongside the requirement in s 5ZC that the Budgets must be ambitious but "likely to be technically and economically achievable".

305. In the event of an actual inconsistency between these requirements – i.e. if the process under (a) and (b) above resulted in a figure that the Commission found on the evidence was not "likely to be technically and economically achievable" (i.e. not possible) - then the Commission would have to have considered whether this justified a lower contribution under the "common but differentiated responsibilities and respective capabilities" principle.

306. However, it is important to recognise that the Act does not require there to be certainty that the Budgets will be able to be met. They must merely be "likely" to be achievable.[303] The meaning of the word "likely" can range from "a real and substantial risk" to "more likely than not" depending on the statutory context.[304] Whichever interpretation applies, it means less than certain. Accordingly, the mere risk that the Budgets might not be met is not a basis to reduce their ambition.

What the Commission did in the Advice

307. The Commission failed to properly interpret the statutory framework in relation to the setting of Budgets that contribute to limiting global warming to 1.5°C and represent our highest possible ambition and, as a result, followed a very different process to that explained above.

Commission failed to ask the right question and misinterpreted the Act

308. First, the Commission has failed to properly address the dual requirements of s 5W(a) to set Budgets with a view to meeting both the 2050 Targets **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".

309. Rather, the Commission has focussed on the first limb (the 2050 Targets) at the exclusion of ensuring the budgets contribute to 1.5°C and represent our highest possible ambition. This is apparent from the number of places in the Advice where the Commission refers to the objective of the Budgets as being to meet the 2050 Targets, without reference to the 1.5°C purpose. For example:

    a. In the Executive Summary: "Aotearoa has committed to reaching net zero emissions of long-lived greenhouse gases by 2050, and to reducing biogenic methane emissions between 24-47% by 2050. In delivering this advice, He Pou a Rangi, the Climate Change Commission (the Commission) has presented ambitious, achievable and equitable paths that Aotearoa can take to meet these targets and contribute to global efforts to address climate change".[305]

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[303] Section 5ZC. **BoA/16/942**.

[304] It has been interpreted as "a real and substantial risk" in the context of the Commerce Act and Securities Act (see *Port Nelson Ltd v Commerce Commission* [1996] 3 NZLR 554 at 562, *Colonial Mutual Life Assurance Society Ltd v Wilson Neill Ltd* [1994] 2 NZLR 152 at 161) and as "more likely than not" in the context of s 135 of the Companies Act (see *Yan v Mainzeal Property and Construction Ltd (in liq)* [2021] NZCA 99; *Banks v Farmer* [2021] NZHC 1922).

[305] Executive Summary, paras 69-70 **Advice Bundle/26**.

b. Chapter 4 Summary "The Commission's focus has been on developing advice that is ambitious and achievable and puts Aotearoa on track to meet its targets… We want Aotearoa to reach the 2050 targets and sustain them beyond 2050."[306]

c. Chapter 4 para 9 "The Act requires the Commission to advise on the levels of the emissions budgets that will help Aotearoa achieve the targets."[307]

d. Chapter 5 summary "Emissions budgets chart the course for stepping down greenhouse gas emissions over time to meet the emissions reduction targets are set out in the [Act]".[308]

e. Chapter 6 para 25 "We modelled a series of long-term scenarios that would deliver the 2050 targets."[309]

310. Accordingly, the Commission did not prepare its Advice by asking what Budgets consistent with "contributing to limiting warming to 1.5˚C" would look like and then working out how to achieve that. Indeed, there is very little discussion in the Advice of how Aotearoa New Zealand's domestic "contribution" to the global 1.5˚C effort should be assessed or calculated or what would be an equitable contribution relative to other countries.

311. The NDC Advice provides "a high-level overview" of some of the considerations relevant to decisions about suitable contributions by individual countries, namely: equality, responsibility, and capability/need. However, it goes on to say, "it is for the Government to decide which approach it wishes to use, and to describe the judgments it wishes to make in doing so."[310]

312. In relation to the Budgets Advice, the issue of international equity and burden sharing is touched on only very briefly in Chapter 9 where the Commission states that it "takes a systems view of Aotearoa and its place internationally" and that judgments about trade-offs and how impacts are spread across countries "must be made from an Aotearoa perspective, taking a te ao Māori view, and must consider environment, economy, society and the broader wellbeing of Aotearoa".[311]

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[306] **Advice Bundle/63**.
[307] **Advice Bundle/65**.
[308] **Advice Bundle/76**.
[309] **Advice Bundle/70**.
[310] **Advice Bundle/387**.
[311] **Advice Bundle/206**.

313. There is no analysis in the Advice comparable to the MfE Consistency Advice, that is, considering what Aotearoa New Zealand's contribution should be, having regard to global equity and the principles of the Paris Agreement.

314. Instead of adopting the s 5W purpose as the guiding principle in its Advice, the Commission relied on its own construct of the "requirements and considerations under the Act", which it described as grouped around "three key outcomes": "Fair, inclusive and equitable", "Ambitious" and "Achievable".[312] The Commission sought to "balance ambition with affordability".[313] In doing so the Commission erred in elevating this purported synthesis of the relevant considerations for the Commission under the Act above the statutory purpose.

Chapter 9

315. The Commission's only substantive treatment of whether the proposed Budgets are, in the Commission's words, "*compatible with the global 1.5˚C effort*", is in Chapter 9 of the Advice, "*Contributing to limiting warming to 1.5˚C"*.[314] The Commission acknowledges in the Summary at the start of this chapter that it is a requirement under the Act for its recommended Budgets to be compatible with contributing to global efforts to limit warming to 1.5C.[315] However, the Commission's assessment of whether its Budgets meet this requirement is flawed in a number of respects.

316. First, the Commission's analysis in Chapter 9 (and elsewhere in the Advice) reflects a fundamental misinterpretation of the Act. It says that, in considering the question of whether the proposed Budgets are compatible with the statutory purpose, it looked at two components, of which the "first and most relevant is whether the emissions budgets are compatible with the 2050 targets in the Act."[316]

317. The reason for this approach is the Commission's view that the 2050 Targets were set "at a level that the Government viewed to be in line with limiting the global average temperature increase to 1.5C" and because the 2050 Targets were "set by the government as our domestic contribution to the global 1.5C effort".[317] Accordingly, the Commission states in Chapter 5 that: "At a high level, this means that any emissions budgets set to meet our domestic targets are also consistent with what

[312] Advice Chapter 5 **Advice Bundle/78**.
[313] Executive Summary, paras 73, 78 **Advice Bundle/26-27**.
[314] **Advice Bundle/200**.
[315] **Advice Bundle/200**.
[316] **Advice Bundle/208**.
[317] **Advice Bundle/184, 185, 186, 192.**

Aotearoa needs to do to meet international obligations."[318] In other words, the Commission's approach is that any Budgets that are on track for the 2050 Targets to be met are deemed to also comply with the 1.5°C requirement.

318. Secondly, due to its misinterpretation of the statutory purpose, the Commission only considered whether its proposed Budgets were *in fact* consistent with contributing to the global 1.5°C effort as an "additional consideration" in its assessment in Chapter 9.[319] It did so by looking at "how the emissions reductions for the different gases in the demonstration path compare to those in the IPCC's pathways".[320]

319. The result of this analysis (but not the underlying detail) is shown in Table 9.1 of the Advice. This shows the IPCC 1.5°C pathways range of reductions for each gas alongside the reductions modelled in the Commission's demonstration path.[321] On its face, it purports to show that the reductions in the Commission's demonstration path fall within the ranges of the IPCC pathways (on the basis that total biogenic methane is taken into account rather than solely agricultural methane).

320. However, the purported "55%" reduction in net CO2 is a reflection of the mathematical error identified in ground one (and amplified by expressing the change using the MAB approach).[322]

321. Expressing the change in net CO2 in net:net terms so that it can be compared against the 2018 Special Report pathway of *a 40% to 58% reduction* in net CO2 between 2010 and 2030, the demonstration path forecasts that net CO2 will increase from 5.0 Mt to 20.7 Mt, an *increase of 310%*.[323] A forecast 310% increase in net CO2 cannot be claimed to be consistent with the 2018 Special Report.

322. In any case, the Commission's flawed attempt at a cross-check on whether the recommended Budgets are consistent with contributing to 1.5°C does not remedy its failure to ask itself the right question in the

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[318] **Advice Bundle/82**.
[319] **Advice Bundle/208**.
[320] **Advice Bundle/208**.
[321] **Advice Bundle/208**.
[322] As noted in the heading to Table 9.1, the reductions for "net" carbon dioxide in the demonstration path are calculated using a gross-net approach, whereas the IPCC figures are net-net. Note that this table differs from the analysis in the Commission's Draft Advice which looked at different categories of CO2 emissions and found that "our path would achieve reductions in the use of coal, oil and gas that are consistent with the reductions seen in the IPCC's global pathways. However, our path would fall short when comparing overall reductions in carbon dioxide emissions from energy and industrial processes." See Draft Advice p. 77, **Supp/1/77**.
[323] See **Taylor Reply/14** (para [65]).

first place. Because of this failure, the Commission didn't properly consider the science on 1.5°C degrees, or what our contribution should be according to the principles of the Paris Agreement and the obligation to adopt measures consistent with our "highest possible ambition".

Inconsistency between the NDC Advice and the Budget Advice

323. The fact that the Commission's recommended Budgets are not compatible with contributing to the global effort to limit warming to 1.5°C is demonstrated by the substantial difference between the Budgets and the Commission's calculation of what the NDC should be to be consistent with contributing to the global effort to limit warming to 1.5°C (which itself is not consistent with 1.5°C as discussed above). The Advice states that there is a gap of 80 Mt CO2-e over 9 years between the recommended Budgets and an NDC of 36% below 2005 levels (568 Mt CO2-e over the 2021-2030 period) which would need to be met by purchasing offshore mitigation.[324]

Evidence of Dr Carr

324. The Commission's mis-interpretation of the Act is also clear from the evidence of Dr Carr. After setting out the 2050 Targets he states that: "The Commission was tasked with designing budgets that would put us on a path to achieve those targets." (emphasis in original).[325] It is clear from the preceding paragraph that by "those targets" he is referring to the 2050 Targets. He emphasizes this point again later: "Parliament set the 2050 target and the Commission was tasked with advising on the budgets and the emissions reduction plan to get there...".[326]

325. Dr Carr's evidence also downplays the importance of timing in relation to achieving emissions reductions: "...with respect to the level of 'ambition' of each budget...this is about the short-term pace of change, not overall ambition. Our advice reflected an approach that was as ambitious as possible while still ensuring that the options we were considering were likely to be technically feasible and economically affordable...".[327] As discussed above, the Act does not require the Budgets to be "affordable" it requires them to be "likely to be technically and economically *achievable*".[328] That is a different standard.

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[324] **Advice Bundle/384**. Dr Carr's affidavit makes the point that the Budget figures and the NDC are not directly comparable due to different starting points (**Carr/28** (para [107])). This is addressed by Dr Taylor (**Taylor Reply/13** para [57]) who states that the data to calculate the difference this makes is not available.
[325] **Carr/6** (para [26]).
[326] **Carr/10** (para [45]). See also **Carr/18, 20-21, 23-24** (paras [74.1], [83], [94]-[95], [97]).
[327] **Carr/23** (para [95]). See also **Carr/23-24, 26** (paras 98, 100.2, 102).
[328] Section 5ZC(2)(b)(iv). **BoA/16/942.**

326. Further, Dr Carr appears to be saying that the pace of change does not matter, at least in the short term. If that is indeed what Dr Carr intended to say, this shows a complete misunderstanding of the need to set Budgets that contribute to limiting global warming to 1.5°C. It is inconsistent with:

    a. other parts of the Advice that recognise that the science shows that net emissions need to drop rapidly between 2010 and 2030 to limit warming to 1.5°C; and

    b. the basic climate science that it is cumulative net emissions that determine temperature impacts.[329]

327. Not all pathways that are consistent with being net zero in 2050 are consistent with contributing to limiting global warming to 1.5°C. Rather, the scientific evidence is clear that substantial reductions in net emissions are required by 2030.

328. Dr Carr's comments about timing are also at odds with the fact that the distribution of benefits, costs and risks between generations is a mandatory consideration under ss 5M and 5ZC of the Act. Less ambitious action to cut emissions now necessarily means greater action will be required in the future. As the German Federal Constitutional Court found in *Neubauer*, "Climate action measures that are presently being avoided out of respect for current freedom will have to be taken in future – under possibly even more unfavourable conditions – and would then curtail the exact same needs and freedoms but with far greater severity."[330]

Highest possible ambition, offshore mitigation and cost benefit analysis

329. As discussed in Dr Taylor's evidence, the Commission did not carry out any form of cost benefit or multi criteria analysis. This is accepted by Dr Carr in his affidavit, but he disputes whether such an analysis was required or would have been helpful.

330. As Dr Taylor explains in his reply affidavit, the point is not that the Commission should have adopted a particular method of analysis but that they did not make any real assessment of whether the Budgets could be more ambitious. Indeed, Dr Carr says that he does not agree that the Commission could or should have defined the "best" option.[331] In other words, in his view, it was not part of its task to identify New

[329] See e.g. **Taylor Reply/12** (para 55]).
[330] *Neubauer at al. v Germany* at 120. **BoA/12**.
[331] **Carr/21** (para [85]).

Zealand's "highest possible ambition", despite this being the obligation under the Paris Agreement which the Act is intended to implement.

331. As discussed in Dr Taylor's evidence, the Commission should have undertaken some form of analysis of whether incremental ambition was likely to be "technically and economically achievable" in a context where:

a. one of the purposes of the Budgets is to contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5 degrees;

b. the Paris Agreement requires parties to undertake ambitious efforts to achieve this goal;

c. the Act also requires the Budgets to be ambitious (but likely to be technically and economically achievable); and

d. there is a shortfall between the NDC and Budgets and therefore we are relying on overseas mitigation to meet our international commitments.[332]

332. Instead, as discussed above, the Commission adopted a demonstration path and then tested it to ensure it was achievable and "affordable".[333] As noted above, the Act does not require the Budgets to be "affordable" but merely that the Commission have regard to the need for the Budgets to be likely to be "technically and economically achievable".[334]

333. Further, the Commission appears to have taken a conservative view of what is "affordable". The GDP impact of the proposed Budgets estimated by the Commission is "an overall reduction to the level of GDP in 2035 of around 0.55%", but as the Commission points out, "This does not consider the significant co-benefits of action or the costs of delaying action."[335] As discussed by Dr Bertram, a change in GDP of this magnitude is within the margin of error for the type of modelling used and does not seem consistent with "maximum ambition".[336] In his reply affidavit, Dr Bertram adds that the Commission's modelled costs are well below the previously modelled costs of potential emission reduction

[332] **Taylor Reply/10** (para [45(d)]).
[333] The Commission's three "key outcomes" include in two separate places that the Budgets are "affordable": **Advice Bundle/76**. The Advice is replete with references to the Budgets being "affordable". The Commission characterises its analysis in Chapter 8 as showing, among other things, that the Budgets are "economically affordable": **Advice Bundle/75**.
[334] Act, s 5ZC(2)(b)(iv). **BoA/16/68**.
[335] Advice, Chapter 8, para 44 **Advice Bundle/162**.
[336] **Bertram 1/27** (para [111]).

policies.[337] –Dr Bertram also acknowledges in his reply, in response to Dr Carr's evidence, that economic cost on its own is not rigidly tied to ambition, but notes that it is one of the consequences of ambitious policies.[338] In other words, as the level of ambition increases, one would generally expect the costs to also increase.

334. However, despite finding the costs of its proposed Budgets to be "affordable", the Commission did not test alternative, higher ambition, paths to see whether greater reductions in emissions would still be affordable, or indeed, "economically achievable", as the Act requires.[339]

335. Nor has the Commission undertaken any cost benefit analysis of meeting our NDC through domestic measures versus meeting it through offshore mitigation. It is by no means obvious that the latter option is likely to be more cost-effective. As the German Federal Constitutional Court stated in *Neubauer*, referring to the results of the UNFCCC's Synthesis Report on Nationally Determined Contributions: "Considering the substantial reduction efforts that the entire international community will still have to make in order to reach the Paris Agreement's temperature target…the competition for transferable surplus reductions is likely to be intense."[340]

336. Dr Carr defends the Commission's Budgets advice in his evidence, saying that moving too fast would impact on people and that higher ambition would result in large scale cuts to economic output.[341] This caution against moving too far and too fast is also reflected in the Advice, which suggests it would place a disproportionate burden on younger generations who would be left without employment or essential services, and would disproportionately affect Iwi/Māori.[342]

337. There are several points to make in response to this. First, it is not clear how much evidence there is to support the Commission's conclusion that meeting the NDC through domestic action would create unmanageable consequences .

338. Secondly, it is widely understood and accepted that addressing climate change will carry costs and cause economic and social disruption (as indeed climate change is increasingly doing in any case). The 2018 Special Report made this clear, and was recognised in the Regulatory

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[337] **Bertram Reply/17** (para [60]).
[338] **Bertram Reply/17** (para [61]).
[339] **Taylor Reply/2**.
[340] *Neubauer at al. v Germany* at 226. **BoA/12**.
[341] **Carr/8** (para [35]). See also the Commission's statement of defence at paragraph 114.
[342] For example at Box 22.1 p 364. **Advice Bundle/380**.

Impact Statement on the Zero Carbon Bill.[343] The fact that some businesses will be forced to close or cut output, or that more marginal land will be converted to forestry, or that changes to transport will be needed, are neither unexpected nor disproportionate impacts in the context of what Parliament has declared to be a climate emergency. They do not mean that such action is not "technically or economically achievable". Rather, these sort of impacts are in line with what the 2018 Special Report says is necessary and what policy makers anticipated when the Bill was drafted.

339. Third, the Commission has not considered the extent to which the negative impacts of greater domestic action could be mitigated by policy measures using the billions of dollars that would otherwise have to be spent on offshore mitigation. The Advice states that it is currently uncertain how much offshore mitigation will cost and that the overall economic impact will be greater than the direct cost due to multiplier effects.[344] It sets out a "plausible range" of costs based on the gap between the proposed Budgets and an NDC of 36% below 2005 emissions of $2.4 to $11.2 billion (based on direct costs only) or $4.3 to $20.2 billion (including indirect costs).[345]

340. Fourth, there is no suggestion that the Commission has considered any intermediate options between domestic action at the level of the NDC and the recommended Budgets. If it considered that meeting the NDC entirely through domestic action would really not be possible, it still had to consider how far we could go towards this. It has not done this analysis and it is not clear from the Advice that a *more* ambitious path, for example, somewhere in between the proposed Budgets and the NDC, would not be "technically and economically achievable".[346]

341. Fifth, while emphasising the potential adverse economic impact on younger generations of emissions reductions in the short-term, the Commission fails to weigh against this the potential consequences for the same generations (as well as generations in the future) of failing to limit warming to 1.5°C, which are likely to be orders of magnitude more severe, and irreversible.

342. Finally, and most importantly for the purpose of this application, the risk of adverse social and economic impacts from reducing emissions in line

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[343] Referred to at paragraphs 81 above.
[344] **Advice Bundle/384-385**.
[345] Ibid.
[346] Dr Taylor's reply affidavit refers to evidence in the Advice suggesting that more ambitious budgets could be met through increased forestry, for example. **Taylor Reply/16 – 17**.

with 1.5°C cannot justify departing from the purpose of the Act. While such impacts are a mandatory relevant consideration under s 5ZC, for the reasons discussed above they do not outweigh the purpose of contributing to the global 1.5°C effort.[347] They inform the assessment as to what that contribution may look like but they do not alter the goal.

343. Dr Carr also defends the Budgets against the charge of not meeting New Zealand's international obligations by saying that domestic Budgets are only one part of New Zealand's contribution.[348] This point is also made in the Advice, which states for example:[349]

> The NDC is different from emissions budgets in that it can involve both domestic action and contributing to action overseas (offshore mitigation). Emissions budgets represent only part of the total contribution Aotearoa makes to limiting warming. As offshore mitigation can be included in the NDC, the difficulty of reducing emissions within Aotearoa is less relevant to assessing the NDC, but remains a mandatory consideration for emissions budgets under the Act.

344. This is partially true, at least under the approach the Commission has taken. However, offshore mitigation does not fulfil the obligation under the Paris Agreement to pursue domestic mitigation measures.[350] Nor does this point address the fact that the Commission has not approached the task of setting the Budgets in the manner intended by the Act and has not given the priority to meeting our Paris Agreement commitments by domestic action that Parliament clearly intended the Act to achieve.[351]

345. The Commission has therefore asked the wrong question, failed to carry out its statutory role as required by the Act, and has recommended budgets lacking in ambition and that are inconsistent with contributing to limiting the global average temperature increase to 1.5°C.

10. Ground 3: Misinterpretation of the statutory provisions relating to the measurement of emissions

Introduction

346. This ground relates to how emissions are measured for the purposes of the 2050 Target and for setting emissions budgets.

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[347] See the discussion at paras 170-174 above.
[348] **Carr/27** (para [105]).
[349] **Advice Bundle/202.**
[350] Paris Agreement Article 4(2). **BoA/16/1013**.
[351] See above at pages 37 – 38 and 72.

347. The Commission's position is that "the selection of an appropriate accounting measure is a matter of expert judgement vested in the Commission under the Act".[352] The Applicant understands the Commission's position to be that this power to select how emissions are measured is to be found in s 5ZA(1)(b) which requires the Commission to "*advise* the Minister on … the rules that will apply to *measure progress* towards meeting emissions budgets and the 2050 target" (emphasis added).[353] In the Advice, the Commission uses the MAB approach, also referred to as NDC accounting or target accounting.

348. The Applicant's position is that Parliament has specified the unit of emissions measurement through the definition of "net accounting emissions" and that this refers to emissions and removals as reported in New Zealand's UNFCCC accounts. We refer to this measure as the Greenhouse Gas Inventory net measure (or **GHGI net**) following the Commission's terminology in Evidence Chapter 3, but it could equally refer to UNFCCC accounting.

349. In terms of the differences between the two measures of emissions:

    a. GHGI net is reported as part of our obligations under the UNFCCC.[354] As Dr Brandon notes,[355] it estimates the emission and removals the atmosphere sees in any given year as the result of all human activities in Aotearoa New Zealand. This includes emissions and removals from all sectors of the economy, including LULUCF. The information can be found in the annual inventory submission in the executive summary and Chapter 2.[356] "By attempting to include all emissions and removals in the year which they occur, it gives a truer representation of 'what the atmosphere sees'."[357]

    b. MAB similarly includes all of our gross emissions, but "only a *subset* of emissions and removals in the LULUCF sector".[358] Instead of attempting to be comprehensive, MAB focusses on

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[352] Commission's statement of defence, para 100.1.2.
[353] Evidence Chapter 3, p 3 – **Advice Bundle/472**.
[354] Evidence Chapter 3, p15 – **Advice Bundle/484**.
[355] Affidavit of Dr Andrea Brandon dated 10 December 2021 at page 20: **Brandon/20** (para [66]).
[356] **Brandon/20** (para [66]).
[357] Advice, Chapter 10, para 26 **Advice Bundle/215.** See also Evidence Chapter 3, p15 – **Advice Bundle/472**. Ms Murray emphasises that GHGI net gives a truer representation of what the atmosphere sees *in a particular year* (emphasis in original), but says that what the atmosphere sees in a particular year is not necessarily indicative or longer-term trends, nor additional or enduring effort in terms of emissions reductions: Affidavit of Renee (Eva) Murray dated 10 December 2021 at page 22 (para 68): **Murray/22**.
[358] **Brandon/20** (para [67]). Advice, Chapter 10, para 27 **Advice Bundle/215**.

additional human caused activities conducted after 1990 and factors out pre-1990 forestry.[359] In this sense, it follows the accounting methods developed under the Kyoto Protocol.

c. In addition, it is intended that NDC accounting (and so MAB) will use a method of "averaging" to account for emissions and removals from afforestation and reforestation of post-1989 forests. Averaging means that removals will be accounted for up until the forest reaches its long term average. In contrast to GHGI net, harvesting will not count as an emission and replanting will not be treated as giving rise to removals going forward.[360]

d. NDC accounting (and so MAB) has not been finalised.[361] The "high-level approach" was communicated in our first NDC and the "broad structure" only was known at the time of the Advice.[362]

e. The Paris Agreement does not prescribe how NDC targets are to be specified or the form of accounting.[363] Parties are required to account for their NDCs in their biennial transparency reports beginning with their second NDC. Accordingly, whether or not New Zealand continues to report on a MAB approach will depend on what form our NDC takes from time to time.

350. The way that emissions are measured is important because different measures produce different results. However, the argument in ground three is purely one of statutory interpretation.

What the Commission did

351. The Commission's analysis of this topic is in Chapter 10 of the Advice and in the supporting Evidence Chapter 3.

352. The Commission considered it had a free hand to take a "first principles" approach to the accounting rules for emissions budgets.[364]

353. It focussed on three alternatives:[365]

- **New Zealand's Greenhouse Gas Inventory (the GHG Inventory)**, the official annual estimate of GHG emissions and

[359] **Brandon/9, 20** (paras [31]-[34] and [67]); and Evidence Chapter 3, p15 – **Advice Bundle/472**.
[360] Advice, chapter 10, para 29 and box 10.1 **Advice Bundle/215-216**; Evidence Chapter 3, p17 – **Advice Bundle/486**.
[361] Advice, chapter 10, para 38 **Advice Bundle/218**.
[362] Evidence Chapter 3, p15 – **Advice Bundle/472**.
[363] **Brandon/12** (para [41]).
[364] Evidence Chapter 3, p 3. **Advice Bundle/472**.
[365] Evidence Chapter 3, p 4. **Advice Bundle/473**.

removals which have occurred in Aotearoa since 1990. This is produced each year as part of obligations under the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. It draws on guidance from the Intergovernmental Panel on Climate Change (IPCC) about GHG accounting best practice and is adapted for the circumstances of Aotearoa.

- The **Nationally Determined Contribution (NDC) target accounting rules**, which have evolved from rules used to account for targets under the Kyoto Protocol and been adapted to reflect our country's national circumstances. NDC target accounting uses GHG Inventory gross emissions estimates but accounts for land emissions differently.
- The **GHG emissions accounts** compiled using the United Nations System of Environmental- Economic Accounting (SEEA) framework, which enable emissions data to be compared to economic statistics. Two sets of national estimates are prepared:
    - production-based emissions by industry and household
    - consumption-based emissions

354. The Commission ended up choosing between the GHG Inventory approach (which we have referred to as GHGI net) and the NDC target accounting approach (which the Commission elsewhere refers to as MAB) on the basis of their different treatments of land emissions.[366]

Issues for the Court

355. The Applicant's case is that the Commission has misapplied the statutory framework in relation to how emissions are to be measured for the purposes of setting and meeting the emissions budgets.

356. The Applicant says that:

a. The Commission has no role in selecting or determining how emissions are measured in relation to emissions budgets and the 2050 Target.

b. Rather, the Act uses the concept of "net accounting emissions" to define how emissions are measured.

c. Under the Act, the 2050 Target and the Minister's obligation to ensure the Budgets are met are described in terms of "net accounting emissions". For example, s 5Q(1)(a) requires that "net accounting emissions of greenhouse gases in a calendar year, other than biogenic methane, are zero by the calendar year

[366] Advice, Chapter 10, paras 30-36 **Advice Bundle/216-217**; Evidence Chapter 3, p 13-25. **Advice Bundle/482**.

beginning on 1 January 2050 and for each subsequent calendar year". In relation to budgets, s 5X(4) requires the Minister to ensure "that the net accounting emissions do not exceed the emissions budget for the relevant emissions period." That is, the core machinery in the Act in relation to the 2050 Target and the meeting of budgets is defined by reference to the level of "net accounting emissions".[367]

d. As described below, the definition of "net accounting emissions" is based on the concept of gross emissions minus removals and offshore mitigation. It references the UNFCCC sectors, and there is no suggestion it only relates to the subset of removals captured by MAB or is to include averaging.

e. In relation to the Minister's duty to ensure that "the net accounting emissions do not exceed the emissions budget for the relevant emissions period" he or she is required to do so on the basis of the categories of emissions and removals specified in the definition of "net accounting emsisions", and is not permitted to disregard emissions or removals within the relevant definitions that occur within the relevant period or calendar year, nor to take account of emissions or removals that do *not* fall within the relevant definitions or that occur outside the relevant period or calendar year. It is a fixed statutory term that cannot be modified by the Minister or the Commission.

f. Under s 5ZA(1)(b), 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 towards meeting emissions budgets and the 2050 Target under ss 5J(f) and 5ZJ-5ZL, and does not relate to how *emissions are measured*.

g. If the Commission can unilaterally change how "net accounting emissions" are to be measured, then it would in substance be re-defining both the 2050 Target and the content of the Minister's obligation to ensure emissions budgets are met. This would be quite an extra-ordinary delegation of legislative power.

357. These points are developed below by reference to the legislative history.

[367] There is no analysis of the concept of "net accounting emissions" in the Advice.

358. The Applicant has provided evidence from Dr Taylor and Dr Bertram explaining the differences between the GHGI net and MAB measures.[368] This includes observations about the consequences of the adoption of each measure for reporting of New Zealand's historic and projected emissions and the risk of misinterpretation of the technical MAB construct by a lay reader. The complexity of the constructs that Aotearoa New Zealand uses to set targets and measure progress makes it very opaque what exactly our level of ambition is or whether our emissions are improving or worsening over time. For example, fig 5.3 in the Advice appears to show "net emissions" reducing between 1990 and 2030. However, this is not true in terms of what the atmosphere sees.[369] Rather, it is the result of using the MAB approach which makes historic emissions look worse than they actually were (by disregarding removals from pre-1990 forests) and then factors out removals associated with harvesting from 2021-30.[370]

359. The Commission's evidence has sought to turn this ground into an assessment of the merits of GHGI net versus MAB. However, their relative merit is not a matter that the Court needs to determine.[371] This ground is an issue of interpretation of the statutory definition of "net accounting emissions".

Original Cabinet decision did envisage advice from the Commission on accounting methodologies

360. The original Cabinet decision approving the amendments that became the Zero Carbon Act did envisage a role for the Commission in relation to the choice of accounting methodologies.

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[368] **Taylor 1/21-27** Question 2 (paras 101-128); **Bertram 1/5-18, 22-24** Sections 4-6 and 8 (paras 21-74, 92-100); **Taylor Reply/8** (paras [34]-[43]); **Bertram Reply/4-5, 9-17, 19-21** (paras 18-21, 36-59, 70-73,77-78).

[369] See **Taylor 1/22** (para [110]-[118]).

[370] **Taylor 1/22-27 (**paras 110-128). See also [228(c)] above. The Applicant notes the absence of any discussion by Commission of this problem and the distorting effect it has on apparent ambition over the 2005/10 – 2030 time period. The Advice provides very little information in relation to converting between GHGI net and MAB. The Commission's key diagram on the path of our "net emissions" (fig 5.3) uses MAB as the measure of net emissions without comment. As noted by Dr Bertram, **Bertram 1/17** (para 74) and **Bertram Reply/21** (para 77) "for most lay readers (including many policy makers) Figure 5.3 in the advice is highly likely to mislead…. At no point does the historic path of emissions measure using [MAB] come close to the generally-understood CRF net emissions recorded in New Zealand's greenhouse gas inventory."

[371] The Commission has an apparent concern that GHGI will make it easier to meet targets in the period leading up to 2050 (see Advice, p 201 at [33]). It is submitted that this long-term concern should be taken with a grain of salt when the Commission makes no mention of how MAB makes it easier to meet targets through to 2030. Further, as Dr Taylor notes, this dynamic will create real political pressure to abandon MAB when it starts understating the true level of forestry removals from 2030 onwards (see **Taylor 1/26** (paras [119]-[128])).

361. It was originally envisaged that the Commission's advice would include "the accounting methodologies that will apply (e.g., 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)".[372] This was not to be a decision-making role, but was to be in the form of *advice* for the Minister to accept or reject.[373]

The Bill as introduced determined how emissions would be measured

362. The Bill as introduced, however, took a different approach and hard-wired in a particular accounting methodology.[374] It did not include the Commission making recommendations, or the Minister making any further decisions, in relation to accounting methodologies.

363. The 2050 Target was defined by the level of "net emissions" of greenhouse gases (cl 5O(1)(a)) and the Minister was under an obligation to ensure that the "net budget emissions" would not exceed the emissions budget for the relevant emissions budget period (cl 5U(4)).

364. The Bill defined:

a. "net emissions" for the purpose of the 2050 Target as "gross emissions combined with emissions and removals from land use, land use change, and the forestry sector";

b. "gross emissions" as "New Zealand's total emissions from the agriculture, energy, industrial processes and product use, and waste sectors (as those sectors are defined in the New Zealand Greenhouse Gas Inventory)";

c. "New Zealand Greenhouse Gas Inventory" as "the official annual estimate of all greenhouse gas emissions that have been generated in New Zealand since 1990 by human activities";

d. "net budget emissions" for the purpose of emissions budgets as "gross emissions, offset by removals and offshore mitigation" (cl 5S); and

e. "removals" for the purpose of emissions budgets as "carbon dioxide equivalent greenhouse gases that are removed from the atmosphere".

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[372] Cabinet Paper, December 2018, para [67(b)]: **BoA/32/1688**. Cabinet Minute, 1 May 2019, para 21.2. **BoA/34/1744**.
[373] Cabinet Paper, December 2018, para [70]: **BoA/32/1688.**
[374] Introduced 8 May 2019: **BoA/20/1065**.s

365. The Applicant submits that the Bill resolved the issue of a choice referred to in the Cabinet Paper between NDC accounting, the New Zealand GHG Inventory or some other measure, in favour of the GHG Inventory.

366. For the purpose of the 2050 Target, the "net emissions" calculation would involve:

    a. summing emissions from the agriculture, energy, industrial processes and product use, waste and land use, land use change, and the forestry sectors; and

    b. subtracting removals from the land use, land use change, and the forestry sectors.

367. For the purposes of emissions budgets, the "net budget emissions" calculation would involve:

    a. summing emissions from the agriculture, energy, industrial processes and product use, and waste sectors; and

    b. subtracting removals and offshore mitigation.

368. As will be seen shortly, these definitions were refined at Select Committee, but note that:

    a. the definitions refer to the categories of emissions and removals that are set out in our annual inventory submission under the UNFCCC (which is what we refer to as GHGI net in distinction to NDC reporting);[375]

    b. there is no suggestion whatsoever that Parliament intended to include only a subset of LULUCF emissions and removals or that those emissions and removals could be subject to averaging;

    c. rather, the Bill takes a broad and uncomplicated (what-the-atmosphere-sees) approach to the definitions of "net emissions" and "net budget emissions".

369. The decision as to how emissions will be measured was also reflected in cl 5ZH which provided for annual progress reporting by the Commission based on data in the New Zealand Greenhouse Gas Inventory for "measured emissions" and "measured removals" (now s 5ZK(1)).

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[375] **Brandon/5** (para [16.2]) lists these sectors of the economy as: energy; industrial processes and product use; agriculture; LULUCF and waste. This is confirmed by Bertram: **Bertram Reply/11** (para 44).

370. Consistently with the Bill having chosen an accounting methodology for emissions (in fact, two methodologies with offshore mitigation being excluded from the measurement of "net emissions" for the purposes of the 2050 Target) the Bill did not provide for either:

    a. the Commission to advise on the accounting methodologies that will apply; or

    b. the Minister to make any further decisions in relation accounting methodologies - indeed when an emissions budget is set by the Minister it is simply the quantity of emissions that are permitted in a budget period (cl 5V).

The Bill as reported back from Select Committee made minor refinements

371. The Select Committee proposed formalising the definition of the "New Zealand Greenhouse Gas Inventory" and consolidating the definitions of "net emissions" and "net budget emissions".[376]

372. The Select Committee report noted that "[t]he bill relies on the New Zealand Greenhouse Gas Inventory for reporting emissions and removals to meet the 2050 target and emissions budgets".[377] There is no suggestion that a further decision would be taken by the Commission or the Minister, nor that emissions and removals might instead be measured using the accounting methodologies that will in the future apply to NDCs set under the Paris Agreement (as had been raised as a possibility in the Cabinet Paper).

373. To emphasise that the New Zealand Greenhouse Gas Inventory is a report prepared in accordance with a statute, the Select Committee recommended the following change:

> **New Zealand Greenhouse Gas Inventory** means ~~the official annual estimate of all greenhouse gas emissions that have been generated in New Zealand since 1990 by human activities~~ the annual inventory report under Articles 4 and 12 of the Convention and Article 7.1 of the Protocol, prepared in accordance with section 32(1)

374. The Applicant notes that there is no reference in this definition to the NDC reporting which is to occur under the Paris Agreement.

375. In terms of the definitions of "net emissions" and "net budget emissions", the Select Committee recommended replacing these with a single term, "net accounting emissions", on the basis that offshore

[376] Climate Change Response (Zero Carbon) Amendment Bill, as reported from the Environment Committee: **BoA/21/1106**.
[377] Ibid at p 2. **BoA/21/1107**.

mitigation should count towards the 2050 Target and that there was no other difference between the terms.[378] The proposed definition was as follows:

> **net accounting emissions** 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); and
>
> (b) offshore mitigation

376. The definition of "gross emissions" was also modified to refer directly to what was reported in the inventory:

> **gross emissions** means New Zealand's total emissions from the agriculture, energy, industrial processes and product use, and waste sectors (as ~~those sectors are defined~~ reported in the New Zealand Greenhouse Gas Inventory)

377. The relevant operative provisions remained as they were in the Bill as introduced with references to "net emissions" and "net budget emissions" changed to "net accounting emissions":

    a. the 2050 target in cl 5O(1) was now defined by reference to net accounting emissions;

    b. the Minister's duty to ensure that budgets are met in cl 5U(4) was expressed as an obligation to ensure that net accounting emissions did not exceed the emissions budget for the relevant period; and

    c. as before, there were no powers for the Commission to advise or for the Minister to make further decisions in relation to accounting methodologies.[379]

The Bill as enacted was in the same form

378. The Bill as enacted was in the same form in relation to the definitions of "net accounting emissions", "gross emissions" and the "New Zealand Greenhouse Gas Inventory". The operative provisions around the 2050 Target (now s 5Q(1)) and the Minister's duty to ensure that budgets are

[378] Ibid at p 3: **BoA/21/1108**. See also the Departmental Report (September 2019) which explains at p5, in relation to the definition of net accounting emissions, that "[i]t is recommended that this *measure* is used to account for both emissions budgets and the 2050 target" (emphasis added): **BoA/31/1542**.

[379] The Departmental Report (September 2019) referred to the Commission advising as to the accounting methodologies that would apply (pp 84-85), **(BoA/31/1621**) but this language appears to have been simply taken from the Cabinet Paper and does not match the Bill itself.

met (now s 5Z(4)) also remained the same. As with the original Bill, the setting of an emissions budget simply means specifying the total emissions permitted over that period (now s 5Y(1)).

Conclusion as to how emissions are to be measured under the Act

379. The Applicant submits that it is clear that from the wording of the Act (and confirmed by this legislative history) that:

a. the Commission has no role in "selecting" the accounting methodology and that it was fixed through the definition of "net accounting emissions"; and

b. the "net accounting emissions" refers to the what-the-atmosphere-sees reports under the UNFCCC (which the Applicant refers to as GHGI net).

380. In relation to (a), if the Commission's "advice" under s 5ZA(1)(b) as to "the rules that will apply to measure progress towards meeting emissions budgets and the 2050 target" can modify the way that emissions are measured then this will change the substantive content of both the 2050 Target and what it is that the Minister must ensure does not exceed the budgeted amount. An ability to "select" the meaning of the core concept of "net accounting emissions" under the Act would raise "Henry VIII clause" issues and require an express delegation.[380] (In fact, what the Commission proposes would involve a double delegation to determine the content of the legislation since the Commission is selecting MAB and the meaning of MAB will be defined by the Government in relation to NDC reporting.)

381. To the contrary, the Commission's advice under s 5ZA(1)(b) relates to how it will measure *progress* towards meeting emissions budgets and the 2050 targets. This relates to its function of monitoring progress under ss 5J(f) and 5ZG to 5ZI which expressly cross-references s 5ZA(1)(b) and requires the Commission to carry out its monitoring function in accordance with the rules it has advised the Minister of in advance.[381] This is part of the second purpose of the Commission under s 5B(b) to monitor and review the Government's progress towards its emissions reduction and adaptation goals. These rules, however, have nothing to do with measuring *emissions*.

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[380] While the original Cabinet Paper envisaged that the Commission would advise the Minister as to accounting methodologies, none of the background material suggests it would "select" them or otherwise have a decision-making role. As to delegated legislation, see David McGee *Parliamentary Practice in New Zealand (*4th ed. Oratia Books, Auckland, 2017), Chapter 28, "Delegated Legislation", **BoA/36**.

[381] See s 5ZJ(2). **BoA/16/947**.

382. In relation to (b), it is not credible to suggest that Parliament intended to choose the MAB approach in its definition of "net accounting emissions":

a. The language of reporting under the New Zealand Greenhouse Gas Inventory was used at the time to distinguish annual UNFCCC reports from NDC accounting. For example, the usage in the Cabinet Paper sees Inventory and NDC accounting as alternatives. (Indeed the Commission uses the terms in the same way in Evidence Chapter 3.)

b. The obvious concern for Parliament was the level of our net emissions in the sense of what-the-atmosphere-sees less offshore mitigation. While the what-the-atmosphere-sees component is defined in terms of what is reported in our Inventory, there is no suggestion that Parliament was only concerned about a subset of the LULUCF sector or that it intended to use the overlay of averaging that forms the accounting construct of MAB.

c. The language of "as reported in" the Inventory (from the definition "gross emissions" and "net accounting emissions") and the reference to "measured emissions" and "measured removals" in s 5ZK(1) fit with the uncomplicated concept of what-the-atmosphere-sees.

d. While Kyoto information is "*incorporated* in [the] annual inventory" to provide "the necessary *supplementary information* for the purposes of ensuring compliance" with each country's commitments, this is in the nature of an addendum to the actual "*inventory* of anthropogenic emissions by sources and removals by sinks of greenhouse gases".[382]

e. The definition of the "New Zealand Greenhouse Gas Inventory" in the different versions of the Bill (including as passed) did not refer to reporting under the Paris Agreement. A reference to reports under Article 13.7 of the Paris Agreement was added by the Climate Change Response (Emissions Trading Reform) Amendment Act 2020 which was passed on 22 June 2020 (and which also added a reference to Article 13.7 in s 32(1)(b)(i)).[383] The

[382] Article 7.1, Kyoto Protocol: **BoA/16/992**. Similarly, Article 13.7 of the Paris Agreement Article splits the reporting obligation into: (a) a national inventory report of anthropogenic emissions by sources and removals by sinks; and (b) information necessary to track progress against each country's NDC: **BoA/16/1023**. See also **Bertram 1/7-10** (paras 34-42); **Bertram Reply/11-12** (para 46).

[383] See ss 9(2) and 56 of the Climate Change Response (Emissions Trading Reform) Amendment Act 2020: **BoA/17/1031**. The Explanatory Note to the Climate Change

absence of a reference to reporting under the Paris Agreement in the definition of the New Zealand Greenhouse Gas Inventory at the time the Zero Carbon Act was passed shows that the definition of "net accounting emissions" cannot have been intended to refer to NDC accounting.

f. The rules around NDC accounting were not defined when the Bill was passed and are still not. At the time of the Advice, the Commission refers to the "broad structure" as being settled.[384]

g. The NDC reporting does not have a set form and will not necessarily line up with the definition of net accounting emissions and gross emissions. That is, it matches our NDC which can change from time-to-time. In contrast, the definition of "net accounting emissions" uses the sector terminology which is fixed in UNFCCC reporting.

Consequences of the error

383. The respondents' witnesses argue that target accounting creates desirable incentives and that averaging is desirable as otherwise our net emissions will fluctuate with the forestry cycle.[385] However, whatever these theoretical benefits of target accounting, it has not to date stopped our actual GHGI net emissions from increasing,[386] and the upcoming "fluctuation" of large-scale harvesting is not an artefact but the result of past reliance on planted forests for removals which are now mature and close to harvesting. Averaging under MAB will reduce our apparent emissions over the next decade, but it will not help reduce our real ones. At any rate, it is submitted that Parliament's concern was with our actual emissions and removals, and not with an esoteric methodology of filtering some removals and averaging others.

384. The short point is that the GHGI net and MAB emissions measures differ. If the Court agrees that the Act requires emissions budgets to be measured in terms of "net accounting emissions" and that this is a reference to GHGI net, then the Budgets recommended by the

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Response (Emissions Trading Reform) Amendment Bill explains (at p 6) that the principal Act "now includes the text of the Paris Agreement and is updated to refer to it where appropriate." **BoA/23/1203**.

[384] See Evidence Chapter 3, pp 15-16. **Advice Bundle/484**.

[385] **Smith/14-15** (para 48); **Brandon/9-10, 16-17, 20** (paras 31, 58.2, 58.3, 67).

[386] See **Bertram Reply/15-17** (para 55-59).

Commission will need to be recast so they reflect this common-sense measure of what the atmosphere sees. [387]

385. Leaving aside changes to the Budgets that may be required as a result of the Applicant's other grounds, changing from MAB to GHGI net will show Aotearoa New Zealand's net emissions continuing to increase under the Budgets and being higher in 2021-2030 than in any of the three prior decades.[388] This is not an artefact of the accounting measure, but shows clearly the effect of past policies which have focussed on planting trees and buying offshore mitigation rather than tackling our emissions. This will help make transparent the choice between reducing our net emissions (either by reducing gross emissions or increasing removals by planting more trees) or being increasingly seen as a global outlier.

11. Ground 4: The proposed emissions budgets are irrational, unreasonable and inconsistent with the purpose of the Act

386. The Applicant's fourth and final ground of review is that the Commission has recommended Budgets that no reasonable body could have recommended. Therefore, in addition to being unlawful under grounds 2 and 3, the Budgets Advice is also unlawful on the basis it is "unreasonable" in judicial review terms.[389]

387. Where "unreasonableness" is relied on an independent ground of review it denotes a high threshold. This reflects the fact that the Court is concerned solely with the legality and not the merits of the decision.

388. However, the standard of "unreasonableness" varies with the context and nature of the decision under review.[390] Thomas J articulated the need for a flexible approach in *Waitakere City Council v Lovelock* as follows (with some portions omitted for brevity):[391]

> The standard of reasonableness, or unreasonableness, demanded by the Courts will vary depending on the subject-matter. As Lord Bridge of Harwich put it in *R v Secretary of State for the Home Department, ex parte Bugdaycay* [1987] 1 All ER 940 at p 952, the Courts are entitled, within limits, to subject an administrative decision to more

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[387] The Commission's Dr Young confirms that if the Commission had used GHGI net it would have recommended that the Budgets be set at different levels, because the basis for the Budgets would be entirely different: **Young/21** (para 74).
[388] **Taylor 1/24-25** (paras 114-15 and figures 4.4 and 4.5).
[389] *Associated Provincial Picture Houses Ltd v Wednesbury Corporation* [1948] 1 KB 223 (CA) **BoA/9/466**; *Council of Civil Service Unions v Minister for the Civil Service* [1985] AC 374, at 410; *B v Canterbury District Law Society* [2002] 3 NZLR 113 at [56].
[390] Philip A Joseph *Consititutional and Administrative Law in New Zealand* (4th ed., Thomson Reuters, 2014, Wellington) at 24.4, 24.4.2.
[391] *Waitakere City Council v Lovelock* [1997] 2 NZLR 385 at 402-403.

> rigorous examination according to the gravity of the issue which the decision determines. He spoke of a decision affecting the most fundamental of all human rights, the individual's right to life, as one requiring the most anxious scrutiny…
>
> Nor is this judicial approach restricted to fundamental human rights. A decision interfering with freedom of expression, for example, is likely to attract a more stringent criterion than a decision interfering with trade. Similarly, a more rigorous standard can be expected where the decision is one bearing on a fundamental constitutional document or treaty and the rights which that document or treaty confers.
>
> The modern focus on fundamental human, civil and political rights ensures a close review — what might be said to be a hard look — at any decision affecting those rights. Clearly, the tolerance permitted a public authority in arriving at a decision affecting fundamental human and civil rights will be less than the latitude extended to the same or other authorities where such rights are not involved. It is factitious to suggest that the undiluted *Wednesbury* test should be applied in such cases…
>
> It is incongruent that the Court should ask of an authority's decision affecting, say, the life of an individual, whether the decision is so unreasonable that no reasonable authority could have arrived at it. Such a vital decision surely need not be outrageous, absurd or perverse before the Courts would be prepared to intervene. It is simpler to ask whether a reasonable authority acting with fidelity to its empowering statute could have arrived at the decision it did in the circumstances of that case.

389. Consistent with this, the New Zealand courts have applied a lower threshold to intervention on grounds of unreasonableness in human rights cases.[392] Likewise, Palmer J held in *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council* that decisions relating to climate change should also be subject to a higher intensity of review, stating:[393]

> There is no doubt climate change gives rise to vitally important environmental, economic, social, cultural and political issues in 2020. It can also give rise to important legal issues. In *Netherlands (Ministry of Infrastructure and the Environment) v Urgenda Foundation*, the Supreme Court of the Netherlands examined the obligations imposed on states by articles 2 and 8 of the European Convention on Human Rights regarding the right to life and the right to private and family life. It held that climate change threatens human rights. It held those human rights, in conjunction with the United Nations

[392] See for example, *Kim v Minister of Justice of New Zealand* [2019] NZCA 209; *Taylor v Chief Executive of the Department of Corrections* [2015] NZCA 477.
[393] *Hauraki Coromandel Climate Action Inc v Thames-Coromandel District Council* [2020] NZHC 3228 at [50]-[51]. **BoA/1/21**.

> Framework Convention on Climate Change, oblige the Netherlands to reduce greenhouse gas emissions from its territory in proportion to its share of responsibility because there is a grave risk that dangerous climate change will occur that will endanger the lives and welfare of many people in the Netherlands. Here, as I find above, the inhabitants and environment in the Thames-Coromandel District, and the cost of Council infrastructure, are likely to be significantly impacted by the effects of anthropogenic climate change.
>
> I accept that the intensity of review of decisions about climate change by public decision-makers is similar to that for fundamental human rights. Depending on their context, decisions about climate change deserve heightened scrutiny. That is so here.

390. It is submitted that the case for heightened scrutiny is even stronger in this case, given the far-reaching and long-term consequences of the Commission's Advice for the response of Aotearoa New Zealand to climate change and the potential impacts of that response on the lives of current and future generations, including potential impacts on the right to life.

391. It is also acknowledged that the courts are in principle slow to intervene on unreasonableness grounds in decisions by expert decision-makers within their area of expertise, particularly where they raise contested scientific or technical issues.[394] However, such decisions are nevertheless subject to review and it is appropriate for the Court to intervene where there is a defect in the decision-making process or a decision is "clearly wrong in principle or law", for example.[395] To the extent that the Court considers greater restraint is appropriate in this case due to the Commission's position as an expert body it is balanced out, in effect, by the need for "heightened scrutiny" in light of the very high public interest in the issues involved.

392. Ultimately, however, irrespective of whether the Court accepts that a "hard look" is required in this case, or whether it considers it appropriate to give greater latitude to the Commission as an expert body, the threshold of *Wednesbury* unreasonableness is met in any event as the Commission's proposed Budgets are so unreasonable that no reasonable body would have recommended them. This follows from the fact that the Act requires the Budgets to be set "with a view to meeting the 2050 target and contributing to the global effort under the Paris Agreement to limit the global average temperature to 1.5 Celsius above pre-industrial levels". This objective reflects the uncontested

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[394] *Unison Networks Ltd v Commerce Commission* [2008] 1 NZLR 42 at [55] **BoA/6/348**; *Z v Dental Complaints Assessment Committee* [2009] 1 NZLR 1 at [139].

[395] *New Zealand Climate Science Education Trust v National Institute of Water and Atmospheric Research Ltd* [2013] 1 NZLR 75 at [48].

scientific evidence that warming above this level would lead to much more serious consequences, including for human life and wellbeing, than warming of 1.5°C.

393. It is not contested that limiting warming to 1.5°C requires an approximately 50% reduction in global net CO2 emissions by 2030. Yet despite this:

a. The Commission has recommended Budgets that will see an increase in decadal net emissions in 2021-30 relative to 2011-20 (and to the two decades before this as well) in the GHGI net terms that the atmosphere "sees" and only a modest reduction even under the Commission's MAB construct.[396]

b. The Commission's Budgets forecast net emissions between 2021-30 of 648Mt CO2-e when, on the Commission's own analysis, the maximum consistent with 1.5°C (before taking into account the need for Aotearoa New Zealand to show increased ambition as a developed country) is 568 Mt CO2-e (or 484 Mt CO2-e if the Applicant's argument in ground 1 is successful).

c. The Commission envisages that the purchase of offshore mitigation "will be critical to meeting" the 2030 NDC.[397] Yet the Commission acknowledges that "it is not yet clear how Aotearoa will access offshore mitigation"[398] and "it is uncertain how much offshore mitigation will cost"[399] but with possible economic costs ranging from $4.3b to $30.5b to 2030 depending on the number of units required to be purchased, the price of per tonne and the final NDC adopted by the Government.[400]

d. Net CO2 is forecast to be over 310% higher in 2030 than it was in 2010 (increasing from 5.0 Mt to 20.7 Mt).[401]

e. The Commission's Budgets forecast net emissions in 2030 that will be higher than 2010. The "demonstration path" would see our net emissions increasing by 20% between 2010 and 2030 (from 48.6 to 58.2 Mt CO2-e).[402]

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[396] **Taylor 1/24-25** (paras 114-115 and figures 4.4 and 4.5).
[397] Advice, Chapter 22, para 36 **Advice Bundle/380**.
[398] Advice, Chapter 22, section 22.3.1 **Advice Bundle 382**.
[399] Advice, Chapter 22, section 22.4.1 **Advice Bundle 384**.
[400] Advice, Chapter 22, tables 22.2 and 22.3 **Advice Bundle 385**.
[401] **Taylor Reply/14** (para [65]). This is based on the data available at the time of the Advice. Using updated data, Dr Taylor calculates the increase as 145%.
[402] **Taylor Reply/14** (para [67]). This is based on the data available at the time of the Advice. Using updated data, Dr Taylor calculates the increase as 9%.

394. These forecast outcomes are on their face clearly inconsistent with contributing to 1.5°C and therefore with the purpose of the Act. They also fly in the face of the uncontested need for an urgent collective effort to reduce global net CO2 emissions by around half by 2030. Dr Bertram has completed an alternative analysis of what a compliant analysis could have looked like.[403]

395. Given the unprecedented risks that global warming poses for humanity and the critical role of reducing emissions by 2030 in keeping 1.5°C alive (as identified in the 2018 Special Report, for example) it is irrational and unreasonable to propose Budgets which would see net CO2 emissions increasing over the next decade. Further, given the statutory target (and undisputed scientific necessity) of achieving net zero CO2 emissions by 2050, the actions necessary to achieve this are not avoided but simply made more difficult,[404] while increasing cumulative emissions and contributing to global warming in the meantime.

396. Accordingly, irrespective of the outcome of the other grounds, the Budgets should be set aside as patently unreasonable in the face of a climate emergency.

12. Relief

397. On the basis of each of the grounds set out above, together and individually, the Applicant seeks the following relief as set out in the prayer for relief in the statement of claim:

    a. a declaration that the Commission acted unlawfully in advising the Minister on what would constitute a 1.5°C-compliant NDC;

    b. a declaration that the Minister acted unlawfully in determining the Amended NDC in reliance on the Commission's advice on what would constitute a 1.5°C-compliant NDC;

    c. an order that the Commission re-consider the part of the Advice that relates to the 2030 NDC in accordance with the law as set out in the Court's judgment;

    d. an order that the Minister re-consider the Amended NDC in accordance with the law as set out in the Court's judgment;

    e. a declaration that the Commission acted unlawfully in proposing the first three emissions budgets;

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[403] **Bertram 1/24-29** (para 101-117).

[404] As highlighted in *Neubauer et al. v Germany*, for example. **BoA/12**.

f. an order that the Commission re-consider the proposed first three emissions budgets in accordance with the law as set out in the Court's judgment; and

g. such other relief as the Court thinks fit.

398. The Applicant acknowledges that relief in judicial review is discretionary but, as the Supreme Court has stated, the courts will "generally consider it appropriate to grant some form of relief where they find reviewable error".[405]

399. There are a number of factors supporting granting the relief sought in this case:

a. The materiality of the errors made, which have far-reaching and long-term consequences for Aotearoa New Zealand's response to climate change;

b. The need to remedy these errors promptly, to ensure that appropriate climate action is taken – waiting until the next Budget Advice is due or the NDC is next reconsidered would mean our response would fall further behind what is required and would not meet the Act's purpose of providing certainty to the public;

c. As the Budgets and NDC are forward looking, the relief sought will ensure the consequences of the errors are avoided;

d. For the same reason, there is no prejudicial effect on any third parties as a result of relief being granted;

e. The need to re-consider the NDC and Budgets Advice will impose an additional burden on the Commission, but no more so than is required for it to perform its role as the Act requires; and

f. Finally, it is important that regulatory bodies are required to exercise their powers in accordance with the law enacted by Parliament and that corrective action is taken where this has not occurred.

13. The Minister's outstanding Budgets decision

400. The current statutory deadline for the Minister to set the Budgets is 31 May 2022. The Minister has indicated an intention to adopt the Commission's recommended Budgets with minor updates.[406]

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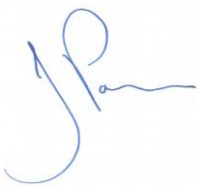
[405] *Ririnui v Landcorp Farming Limited* [2016] NZSC 62 at [112]. **BoA/3/116**.
[406] See paragraph [17] above.

401. In the event that the Minister sets the Budgets before the Court's judgment is released, it will be necessary for the Applicant, the Minister and the Court to consider whether the Minister's Budgets decision can and should form part of this proceeding. That may be straightforward if the decision adopts the Commission's Advice as currently signalled, or less so if the Minister chooses to depart from the Commission's Advice. The Applicant asks that leave be reserved against this contingency.

Dated 20 January 2022



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