

**IN THE HIGH COURT OF NEW ZEALAND
AUCKLAND REGISTRY**

CIV-2010-404-005092

UNDER the Judicature Amendment Act 1972 and Part 30
of the High Court Rules

BETWEEN **NEW ZEALAND CLIMATE SCIENCE EDUCATION
TRUST** a trust registered under the Charitable
Trusts Act 1957, having its registered office at
Auckland

Plaintiff

AND **NATIONAL INSTITUTE OF WATER AND
ATMOSPHERIC RESEARCH LIMITED** a company
that is wholly owned by the Crown and a Crown
Research Institute, having its principal place of
business at Auckland

Defendant

FIRST AMENDED STATEMENT OF CLAIM

APPLICATION FOR JUDICIAL REVIEW

1 July 2011

Next event: Hearing of plaintiff's interlocutory application for orders for
discovery and further particulars 6 July 2011 at 10 am

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FIRST AMENDED STATEMENT OF CLAIM
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THE PLAINTIFF by its solicitor says:

Parties

1. The Plaintiff is a trust duly registered under the Charitable Trusts Act 1957, whose objectives include the promotion of accurate information regarding the science and policy of climate change within New Zealand.
2. The Defendant (**NIWA**) is a company that is wholly owned by the Crown. It is a Crown Research Institute that is subject to the Crown Research Institutes Act 1992, the Crown Entities Act 2004 and the Public Records Act 2005.
3. NIWA was established for the purpose of undertaking research in the environmental sciences for the benefit of New Zealand and is the Crown's principal advisor on scientific issues related to climate change.
4. Pursuant to the Crown Research Institutes Act 1992, the Crown Entities Act 2004 and the Public Records Act 2005 NIWA is obliged to:
 - undertake research for the benefit of New Zealand;
 - pursue excellence;
 - act efficiently and effectively;
 - comply with applicable ethical standards;
 - act in a manner consistent with a spirit of service to the public; and
 - create and maintain full and accurate public records.
5. In discharging its duties NIWA is required to use the best available information, and to apply the best scientific practices and techniques available at any relevant time.

6. Since 1992 NIWA has been responsible for maintaining the National Climate Database, a scientific database of weather records, dating back to 1863, taken from several hundred weather stations located around New Zealand (283 of which remain in use today). Before 1992 the National Climate Database was maintained by New Zealand's Meteorological Service.

The New Zealand Temperature Record

7. As part of the National Climate Database, NIWA has responsibility for determining the official New Zealand Temperature Record (the **NZTR**), which is a statistical time series of the nationally-averaged annual mean surface temperatures experienced in New Zealand.
8. The NZTR is a public record and NIWA is a controlling authority as defined in the Public Records Act 2005.
9. The NZTR has important public consequences. It provides the historical base for most government policy and judicial decisions relating to climate change within New Zealand, and contributes to the rationale for such policy and decisions.
10. In or about 1999 NIWA determined that the NZTR should be primarily informed by its "Seven-station Temperature Series".

Seven-station Temperature Series (the 7SS)

11. The 7SS comprises a spreadsheet showing adjusted temperatures recorded at seven selected weather stations (Auckland, Masterton, Wellington, Nelson, Hokitika, Lincoln and Dunedin, said to be representative of New Zealand), together with a graph showing movements in the average temperature from approximately 1900 to the present.
12. The 7SS temperature data is sourced from the National Climate Database, but is subject to a number of adjustments (the **Adjustments**) taken from a student thesis submitted in 1981 by Dr James Salinger, a former NIWA employee.

13. According to the 7SS New Zealand has experienced a warming trend of approximately 1.0°C during the twentieth century, a figure which is substantially in excess of the global average.
14. In early 2009 NIWA updated the 7SS to December 2008, but this update did not alter its results.

NIWA's Flawed Reliance on the 7SS

15. NIWA made the decision to rely on the 7SS as the foundation record for the NZTR and to adopt the Adjustments (the **1999 decision**) without:
 - evaluating the methodology contained in the Salinger thesis;
 - considering whether the 1980 methodology required updating;
 - requiring Dr Salinger to make his data and calculations available for review;
 - checking the supporting data and calculations;
 - discovering that the sole copy of the key supporting data and calculations had been destroyed many years earlier;
 - undertaking an internal peer review process, and arranging an external and/or an independent peer review;
 - maintaining any, or any sufficient, record of the decision and the reasons therefore; or
 - applying appropriate scientific scepticism and objectivity.
16. In making the 1999 decision, without taking the steps outlined in paragraph 15, NIWA failed to act effectively and failed to pursue appropriate standards of excellence.
17. In making the 1999 decision, without taking the steps outlined in paragraph 15, NIWA failed to use the best information and failed to apply the best scientific practices and techniques available in 1999.

18. The 1999 decision was made on the mistaken assumptions:
- that the Adjustments could be replicated readily by applying the Salinger thesis data and calculations to the data in the National Climate Database;
 - that the methodology used in the 7SS had been peer reviewed and published in a scientific journal;
 - that the techniques applied in the 7SS accorded with current international best practice as described in the scientific literature;
 - that the Salinger thesis was available to be used in support of the 7SS in any scientific or public debate or in judicial proceedings;
 - that the New Zealand average temperature had increased by approximately 0.7°C during the period 1944-60; and
 - that one or more of the Adjustments had been undertaken because the altitude of the thermometers had changed.
19. In making the 1999 decision NIWA failed to take into account the following relevant matters:
- the National Climate Database is the outcome of scientific work over a period of more than a century by experienced scientists in the well-regarded New Zealand Meteorological Service;
 - the National Climate Database does not evidence any appreciable increase in average surface temperatures over the last century;
 - contrary to the Salinger thesis, senior meteorologists did not believe there was any warming trend during the period 1930-80 and did not consider that the data should be adjusted;
 - the entire warming trend shown in the 7SS is derived from the Adjustments, which were proposed only by the

untested, unexamined and subjective methodology of the Salinger thesis;

- nine out of 10 of the Adjustments favoured an upwards trend in the series, a ratio which is highly unusual in the absence of bias;
 - the 7SS warming trend was improbable: according to the National Climate Database the average New Zealand temperature in 1867 was warmer than was the 12.58°C average of 1971-2000; the average recorded temperature during 1863-1919, a period which received few Adjustments in the 7SS, was also warmer than the current average; according to the 7SS New Zealand experienced abnormal warming of 0.71°C during the period 1945-75, whilst the rest of the world was reporting that global temperatures were decreasing;
 - the 7SS warming trend of 1.0°C was much greater than the global average – which was counter to expectations, as NIWA believed New Zealand should experience less warming than other countries;
 - the lack of explanation for the unparalleled warming of 1.42°C in the 1944-57 period shown by the 7SS; and
 - the data and calculations for the thesis had been lost, and the Adjustments could be neither documented nor replicated.
20. In making the 1999 decision NIWA was influenced by the expectation that significant NZTR warming would encourage funding for additional climate change research.
21. In making the 1999 decision NIWA failed to abide by ethical standards in delegating the authority to adopt the 7SS and the Adjustments to Dr Salinger who was in no position to assess their validity objectively.
22. As a result of the failings and mistaken assumptions identified in paragraphs 15 to 20 the 1999 decision was unreasonable and illegal.

23. As a further result of the failings and mistaken assumptions identified in paragraphs 15 to 20 the NZTR is not a full and accurate record of changes in the average surface temperatures recorded in New Zealand.

WHEREFORE the plaintiff seeks:

- A. A declaration that the New Zealand Temperature Record is not a full and accurate record of changes in the average surface temperatures recorded in New Zealand since 1900;
- B. An order setting aside NIWA's decision to base the New Zealand Temperature Record on the Seven-Station Temperature Series;
- C. An order preventing NIWA from using the NZTR (or information originally derived from the NZTR) for the purposes of advice to any governmental authority or to the public until it has been scientifically re-determined and independently peer reviewed.
- D. An order requiring NIWA to publish a full and accurate climate record of changes in the average surface temperatures recorded in New Zealand since 1908.
- E. Such further order as may be just.
- F. Costs.

NIWA's Refusal to Repudiate the 7SS and to Suspend the NZTR

24. The plaintiff repeats the allegations contained in paragraphs 1-22.
25. In February 2010, following extensive criticism of the 7SS by the Plaintiff and others, NIWA agreed to re-determine the NZTR but to date it has failed to do so.
26. In view of the flaws in the 7SS and NIWA's 1999 decision the Plaintiff has, on several occasions during 2010, requested NIWA to stop using the 7SS as the base document for the NZTR and to remove it from its website. It has also requested NIWA to suspend the current 7SS-based NZTR.

27. NIWA has refused both of these requests (the **2010 decision**), basing its refusal on the continuing validity of the 7SS and on the validity of the recently developed Eleven-station Temperature Series.
28. NIWA's Eleven-station Temperature Series (the **11SS**) comprises a spreadsheet and graph showing unadjusted temperatures recorded at eleven selected weather stations during the period 1955-94, and a diverse number of stations during the period 1931-54. It was produced by Dr Salinger in December 2009, using temperature data sourced from the National Climate Database.
29. In making the 2010 decision NIWA failed to abide by ethical standards in:
 - delegating the authority to select the stations and time periods of the 11SS to Dr Salinger, when it knew that he was likely to be biased in favour of a model which corroborated the 7SS;
 - using the 1931-55 period of the 11SS as corroboration of the 7SS when NIWA knew that the data was incomplete and unreliable;
 - falsely claiming that other writings by Dr Salinger, in regard to sea surface temperatures, corroborated the 7SS.
 - continuing to promote a NZTR which NIWA knew to be seriously flawed.
30. NIWA made the 2010 decision without:
 - assessing the arguments put forward by critics of the 7SS;
 - checking the methodology and calculations applied by Dr Salinger;
 - undertaking an internal peer review process;
 - ensuring that the selection of inputs and the overall methodology was free from bias;

- assessing the objections to the 11SS; or
 - weighing the risks and benefits to New Zealand of continuing to support a NZTR which is wholly reliant upon the 7SS and the 11SS;
31. NIWA thereby failed to act effectively and/or to pursue appropriate standards of excellence and/or to act in a manner consistent with a spirit of service to the public.
32. The 2010 decision was based on the mistaken assumptions:
- that it was safe to continue relying upon the 7SS despite the failings and mistaken assumptions identified in paragraphs 13 to 18 above; and
 - that the 11SS was scientifically sound and provided plausible corroboration for the warming trend shown by the 7SS.
33. In making the 2010 Decision NIWA failed to have regard to the following relevant matters:
- for the reasons outlined in paragraph 16 above the accuracy of the 7SS seemed improbable and its sole support was a private document, relying upon subjective and untested methodology, with inherently suspect results;
 - since 1999, the three land-based compilers of global temperature databases (HadleyCRUT, GISTemp, and GHCN) did not follow the Adjustments contained in the 7SS;
 - the 11SS did not disclose any warming from 11 stations. The claimed warming arose during a period in which data was unavailable from the majority of its component stations.
34. In making the 2010 Decision NIWA had regard to the following irrelevant considerations:
- repudiation of the criticised NZTR might prove politically embarrassing or reduce public confidence in the integrity and objectivity of NIWA's staff; and

- the planned project to redetermine the NZTR might confirm the warming trend of the 7SS.
35. In adopting the 11SS, NIWA failed to create and maintain a full and accurate archive of its affairs, so as to enhance public confidence in the integrity of public records.
 36. The 2010 decision was made for the improper purpose of avoiding embarrassment, inconvenience and loss of public confidence.
 37. As a result of the matters set out in paragraphs 25 to 35 the 2010 Decision was unreasonable and illegal.

WHEREFORE the plaintiff seeks:

- A. A declaration that the New Zealand Temperature Record is not a full and accurate record of changes in the average surface temperatures recorded in New Zealand since 1900;
- B. An order setting aside NIWA's 2010 decision to rely upon the Seven-station Series and the Eleven-station Series as the basis for the New Zealand Temperature Record;
- C. An order preventing NIWA from using the NZTR (or information originally derived from the NZTR) for the purposes of advice to any governmental authority or to the public, pending its redetermination and independent peer review.
- D. An order requiring the defendant to produce a full and accurate climate record of changes in the average surface temperatures recorded in New Zealand since 1900.
- E. Such further order as may be just.
- F. Costs.

NIWA's adoption of the NZT7 following its 2010 review

38. The plaintiff repeats the allegations contained in paragraphs 1–37.
39. On or about 15 December 2010 NIWA decided to adopt a new or revised calculation of New Zealand average temperatures for the period 1909-2009 following a recalculation of the adjustments

underpinning its then current NZTR (the 7SS). It calls this the “the NZT7”.

40. The NZT7 is based on a number of adjustments (“the 2010 Adjustments”) which NIWA selected and quantified after consultation with the Australian Bureau of Meteorology (“BoM”). The adjustments and methodology are described in a 169 page report (“the Review Report”) which NIWA published on its website on or about 16 December 2010.
41. The data and calculations used in the Review Report, in particular the adjustments made to the raw temperature data, differ markedly from those utilised in producing the 7SS. Notwithstanding these significant changes the NZT7 shows a coincidental, and for the reasons set out below a scientifically untenable, century-long warming trend similar to that shown in the 7SS.
42. The NZT7 is flawed and is scientifically untenable in that it fails to take into account the following relevant matters:
 - (a) Some of the raw temperature records of the weather stations chosen for compiling the NZT7 were so contaminated by non-climatic effects as to be unsuitable for use in constructing reliable climate records.

Particulars

- (i) The maximum and minimum temperatures recorded at Albert Park, Mangere and Auckland Aero weather stations in Auckland were seriously contaminated by shelter, urban heating, or both, for all or most of the period covered by the NZT7, and flawed data was carried from station to station;

- (ii) The temperatures recorded at Kelburn weather station in Wellington were similarly contaminated during the period 1928–2009;
 - (iii) The peer-reviewed scientific literature, which NIWA said it relied upon, stipulates that data from such contaminated stations be excluded from a temperature series such as the NZT7;
 - (iv) The Auckland station alone accounts for one third of the reported increase in average surface temperatures of 0.9C degrees.
- (b) A number of the 2010 Adjustments are reliant upon comparisons with other contemporaneous temperature records that are themselves contaminated as aforesaid.

Particulars

Adjustments made to weather station data from stations situated in Masterton, Nelson, Hokitika, and Dunedin were calculated by reference to Auckland and Wellington data which were contaminated and should have been excluded.

- (c) The 2010 adjustments rely upon a novel and flawed methodology which involves the making of comparisons between the contemporaneous temperature records of non-neighboring weather stations.

Particulars

- (i) The Review Report cites peer-reviewed papers published in scientific journals and other texts

("the scientific literature") which were relied upon by NIWA as authority and precedent for the techniques used in calculating the NZT7;

- (ii) Although the scientific literature sanctions adjustments based on certain data comparisons between neighbouring weather stations, which share climatic conditions, it does not contemplate NIWA's method of comparing the data of geographically isolated stations, which do not share the same climatic conditions.
- (d) The calculations of the 2010 Adjustments do not accord with the relevant scientific literature, and are therefore not best scientific practice.

Particulars

The scientific literature (and particularly Rhoades & Salinger (1993)) sets out a series of steps which should be taken in performing Adjustments. In calculating the NZT7, NIWA failed to apply most or all of those steps. The Adjustment techniques used by NIWA do not follow any precedent described in the scientific literature.

- (e) The 2010 Adjustments wrongly include temperature alterations which are not statistically significant or which carry scientifically unacceptable uncertainty levels.

Particulars

- (i) The scientific literature recommends that standard statistical techniques be used to measure the

confidence levels of any proposed adjustment, and that adjustments which exceed their own error margins ought not to be applied;

- (ii) The Review Report records that NIWA's measurement of confidence levels is incomplete, and yet all adjustments are included, however uncertain.

- 43. In adopting the NZT7 NIWA has failed to pursue excellence, failed to act efficiently and effectively and has failed to create and maintain a full and accurate record of changes in New Zealand's average surface temperatures over the last century.
- 44. The defendant has further failed to use the best available information, and to apply the best scientific practices and techniques available to it when producing its NZT7 temperature data series in 2010.
- 45. Given the differences in data and calculations utilised by NIWA in producing the 7SS and the NZT7 there is no known scientific basis upon which it could have arrived at the coincidence between the results of the two series. The defendant must therefore have been affected by bias or actuated by some ulterior and/or irrelevant purpose, including:
 - (a) The advantages of finding a warming trend broadly consistent with the advice on climate matters that NIWA has been offering to judicial, administrative and legislative bodies during the past decade;
 - (b) The avoidance of political embarrassment, or reduction in public confidence in NIWA's scientific advice on climate matters, which might arise if the NZT7 failed to align with the warming trend shown in the 7SS.
- 46. NIWA's decision to adopt the NZT7 is therefore unreasonable and unlawful being contrary to its statutory obligations.

WHEREFORE the plaintiff seeks:

- A. A declaration that the NZT7 series is not a full and accurate record of changes in the average surface temperatures recorded in New Zealand during the last century;
- B. An order setting aside NIWA's decision to rely upon the NZT7 Series as the basis for the New Zealand Temperature Record;
- C. An order preventing NIWA from using the NZT7 series or any earlier temperature series produced by it, or any information originally derived from those series for the purposes of giving advice to any governmental, or judicial authority or to the public;
- D. An order requiring the defendant to produce a full and accurate climate record of changes (if any) in the average surface temperatures recorded in New Zealand during the last century, which record accords with best available scientific practice, and is a proper discharge of its statutory obligations.
- E. Such further order as may be just or necessary in the circumstances.
- F. Costs of and incidental to this proceeding.