

October 2018



**AUSTRALIAN
CONSERVATION
FOUNDATION**

Runaway climate change in Wentworth: New extreme summer season would become the norm

Key points

- Climate data modelling by the Science Division of the Queensland Department of Environment and Science (DES)¹ shows that by mid-century the Wentworth electorate would be markedly hotter, nine per cent drier and experience more periods of extreme heat because of current high global emissions rates.
- By 2050, seasons in Wentworth would be unrecognisable. Average winter conditions would not occur. Spring and Autumn conditions would move to the middle of the year and contract to three months combined. The rest of the year would be dominated by warmer temperatures associated with summer and joined by an extended and dangerous 'new summer' period.
- This new climate would pose greater threats to human health and critical public infrastructure in the electorate. It would also require plant and animal species in the area to rapidly adapt to a heightened level of climate change.

Federal electorate climate impact analysis

The Australian Conservation Foundation (ACF) has commissioned design and data experts at the Australian National University (ANU) School of Art and Design to analyse existing climate model projections and apply them to selected federal electorates across Australia ahead of the upcoming national election in 2018 or 2019. The same ANU team previously

¹ Queensland Government LongPaddock project, which uses the SILO database (<http://www.longpaddock.qld.gov.au/silo>) and is operated by DES. The climate 'change factors' used to calculate consistent climate scenarios data have been estimated using: Coupled Model Intercomparison Research Program 3 (CMIP3) patterns of change data (projected changes per degree of 21st Century global warming) supplied by the CSIRO and the UK Met Office/Hadley Centre; and data from AR4 SRES scenario temperature response curves (projected amounts of global warming) supplied by the CSIRO. These data sources are available in the following locations:

- The CMIP3 global model database: http://www.pcmdi.llnl.gov/ipcc/about_ipcc.php
- OzClim: <http://www.csiro.au/ozclim>
- UK Met Office/Hadley Centre: <http://www.metoffice.gov.uk/climate-change/resources/hadley>

Data modelling:

- **Perturbation method:** Linear Mixed Effect State Space (LMESS) - Q5
- **Global warming sensitivity:** High
- **IPCC assessment report:** AR5
- **Emission scenario:** RCP8.5
- **Climate model:** ACCESS 1.3

developed the 'climate coasters' series highlighting already rising temperatures across Australia.²

This project aims to give voters clear information about the dangers runaway climate change presents for their local region if current high emissions rates are not cut through concerted global action – including Australia doing its fair share. Voters will be able to use this information to ask all local candidates about their positions on the established climate science, policies for cutting pollution and plans to help the regions they seek to represent adapt to the changes already in the system.

A hotter and drier Wentworth

This briefing paper presents preliminary results from this project for the Division of Wentworth, given the by-election campaign underway in the seat. Residents of eastern Sydney suburbs like Bondi, Paddington, Bronte, Point Piper and Woollahra will head to the ballot box on October 20, with 16 candidates vying to replace outgoing local member and former Prime Minister, Malcolm Turnbull.

Australia is already feeling the effects of climate change. Average surface temperatures have warmed by approximately 1 degree since 1910.³ The duration, frequency and intensity of extreme heat events has worsened, fire seasons are longer and winter rainfall has declined by 19 per cent since the 1970s.⁴

In Wentworth specifically, increasing temperatures and extreme heat spikes have already become more apparent. In 2017, the maximum average temperature for Sydney was 1.5 degrees above the long-term average and there were monthly and daily heat spikes that were much higher.⁵ The month of January, for example, was 3.5 degrees above the average, while September was 2.8 degrees above average.⁶ These sorts of extremes are projected to continue with the underlying average temperature increasing over time.

The ANU analysis of climate model projections sourced from the Queensland Government LongPaddock project shows that if greenhouse gas emissions continue at high global rates, voters and their children in Wentworth would by 2050 expect to experience:

- On average daily maximum temperatures three degrees hotter than Wentworth's historic average (compared to 1960-1990 baseline).
- More than twice as many days over 30 degrees.
- An average of eight days above 35 degrees each year, up from three now.
- More days above 40 degrees and a new extreme summer season.
- Nine per cent less rain and fewer days with rainfall.
- An overall climate more consistent with NSW Mid North Coast towns like Taree.

² <https://gravitron.com.au/climatecoaster/>

³ <http://www.bom.gov.au/state-of-the-climate/>

⁴ <http://www.bom.gov.au/state-of-the-climate/>

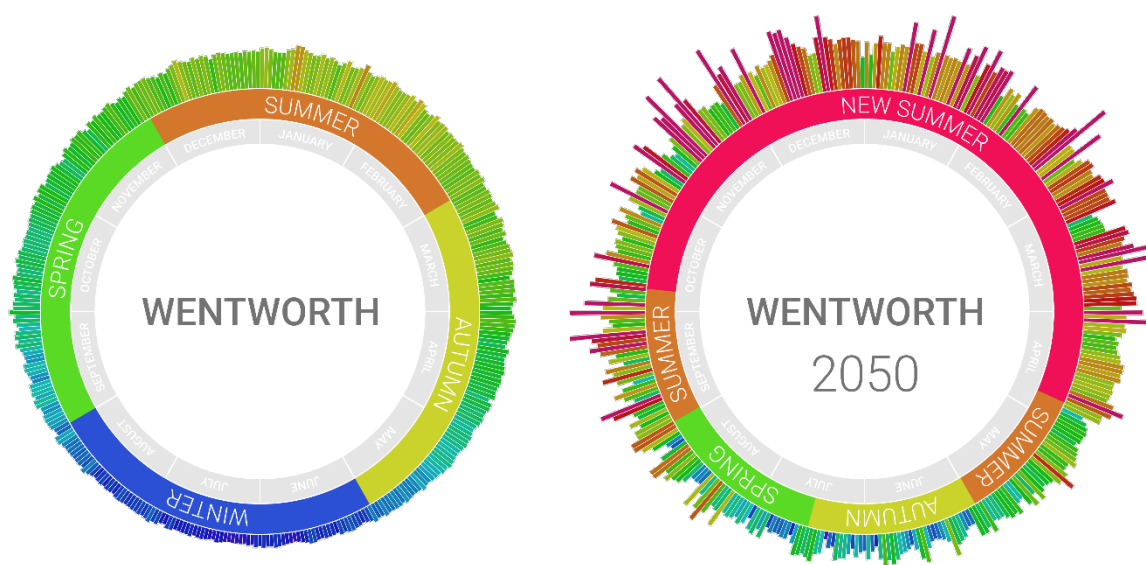
⁵ <https://gravitron.com.au/climatecoaster/>

⁶ <https://gravitron.com.au/climatecoaster/>

Disappearing winter and the new extreme summer

These changes would represent a radical overhaul of Wentworth's current seasonal patterns and temperatures. When the 1960-1990 long-term average for Wentworth is compared with the 2010-2050 average under a high emissions scenario (see Figure 1) winter conditions in the electorate would no longer occur. Autumn and Spring would shift to the middle of the year and contract to a combined three months. The other nine months of the year would consist of current summer conditions and new extreme summer conditions.

Figure 1. Wentworth's disappearing seasons and new extreme summer (1960-1990 average compared to 2010-2050 projected average).



Source: ANU School of Art and Design; visualising data from Queensland Government's LongPaddock project.

These warmer conditions would pose significant challenges for human health and infrastructure in Wentworth. Temperatures over 35 degrees are particularly challenging for human health as they limit the human body's ability to cool itself.⁷ This can be fatal when the effects are left unattended and the body is not given time to cool down during extended warm periods, such as heatwaves. Heatwaves are Australia's deadliest natural disasters, with over 500 people dying from heatwaves between 2000 and 2009.⁸ The elderly, sick and young are considered most at risk.⁹ The 2016 Australian Census indicates there were over 10,000 people in Wentworth aged 75 or older, including almost 4,000 people older than 85 years.¹⁰ There is also emerging evidence that rising temperatures could cause problems for pregnant women and that higher temperatures could be linked to a higher risk of premature births, stillbirths, or other negative pregnancy outcomes.¹¹ The National Climate Change Adaptation Research Facility has also shown climate change impacts, such as greater

⁷ <https://academic.oup.com/heapro/article/30/2/239/561863>

⁸ <http://www.abc.net.au/news/2018-01-18/heatwaves-australias-deadliest-hazard-why-you-need-plan/9338918>

⁹ https://www.dea.org.au/wp-content/uploads/2017/02/DEA_Heatwaves_Health_Fact_Sheet_06.pdf

¹⁰ http://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/CED145?opendocument

¹¹ <https://www.theatlantic.com/health/archive/2017/11/pregnancy-heat-outcomes/546362/>

extreme heat and coastal erosion, also presents severe challenges to urban infrastructure critical to areas like Wentworth, such as public transport, water supply, energy supply and coastal assets.¹²

Wentworth by-election candidates' position on climate change

This climate future for Wentworth is not inevitable. It can be avoided through rapid cuts to climate pollution and ultimately bringing net global emissions to zero. The climate change choices we make now will have real world implications for our communities tomorrow. Australia, like all countries, must do its fair share to stop greenhouse gas emissions from activities like burning coal, razing forests and the use of petrol-fuelled vehicles. Climate Change Authority analysis, factoring in Australia's wealth, population and industry mix, has found the country should cut its emissions by 45 to 65 per cent below 2005 levels by 2030 if it is to do its fair part of the global effort to keep global warming below two degrees, and must cut emissions even further under a 1.5 degree limit to help prevent the worst impacts of climate change.¹³ Australia's current target – set by the Abbott Government – is a reduction of 26 to 28 per cent below 2005 levels by 2030.¹⁴ Australia's absolute emissions are currently rising, up 1.3 per cent in the year-to-March 2018,¹⁵ and have been on an upward trend since the Federal Government repealed the national carbon price in June 2014.¹⁶

Recent emissions projections indicate a significant shortfall in meeting even the government's current inadequate target for 2030.¹⁷

Most candidates in Wentworth have stated they accept the science of climate change and that something should be done in response. This briefing does not have space to consider all candidates' positions, but focuses on those expected to poll the highest:

- **Liberal Party candidate, Dave Sharma**, is reported to have said climate change is both real and needs addressing,¹⁸ and that he would be “a strong voice in government ensuring that we meet out international commitments”.¹⁹ Mr Sharma has said he favours “technological advances” to meet Australia's climate goals,²⁰ but has not yet explicitly supported specific emissions reduction policies and there is nothing about climate change on his campaign website.²¹ The Coalition has recently: dumped

¹² https://www.nccarf.edu.au/sites/default/files/attached_files_publications/INFRASTRUCTURE_A4-Webview.pdf

¹³ <http://climatechangeauthority.gov.au/sites/prod.climatechangeauthority.gov.au/files/Final-report-Australias-future-emissions-reduction-targets.pdf>

¹⁴ <https://www.environment.gov.au/system/files/resources/c42c11a8-4df7-4d4f-bf92-4f14735c9baa/files/factsheet-australias-2030-climate-change-target.pdf>

¹⁵ <http://www.environment.gov.au/climate-change/climate-science-data/greenhouse-gas-measurement/publications/quarterly-update-australias-national-greenhouse-gas-inventory-march-2018>

¹⁶ https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/6614/attachments/original/1538361044/201803_Background_Brief_-_Quarterly_emissions_result_-_March_2018.pdf?1538361044

¹⁷ <https://climateworks.com.au/sites/default/files/documents/publications/climateworksaustralia-tracking-progress-report-2018.pdf>

¹⁸ <https://www.theguardian.com/australia-news/2018/sep/25/wentworth-byelection-dave-sharma-and-his-battle-to-make-voters-forget-turnbull>

¹⁹ <https://www.theguardian.com/australia-news/2018/oct/06/wentworth-byelection-john-hewson-says-seat-ripe-for-protest-vote>

²⁰ <https://www.smh.com.au/environment/climate-change/best-way-labor-s-wentworth-candidate-tim-murray-backs-carbon-price-20181003-p507jq.html>

²¹ <https://nsw.liberal.org.au/candidate/wentworth>

the pollution reduction element of the National Energy Guarantee;²² stated it will not pursue emissions cuts in energy policy;²³ is investigating options to prolong the life of coal-fired power plants;²⁴ and emphasised greater use of the Abbott Government-era Emissions Reduction Fund to pay industry and farmers for pollution cuts.²⁵

- **Independent candidate, Dr Kerryn Phelps**, states on her website “real action on climate change” and “fast-tracking renewable energy” are among her priorities.²⁶ She has released a climate plan which includes: a ban on political donations from fossil fuel companies; opposition to subsidies for the Adani coal mine; a rejection of government support for new coal power plants; an aim for 50 per cent renewable energy by 2030; and a desire to “restore credibility” to the Climate Change Authority.²⁷
- **Labor candidate, Tim Murray**, states “meeting the challenge of climate change” is a personal concern on his candidate website.²⁸ Mr Murray has also said in the media: “I think the current Labor policy is excellent and should the Labor Party form government we'll very quickly get ourselves a very rational, good quality climate policy.”²⁹ The ALP has committed to a target of 45 per cent emissions reduction from 2005 levels by 2030, and a 50 per cent clean energy target for 2030, but is yet to detail the exact national policies it would implement to deliver these goals.³⁰ However, Mr Murray says he favours a national emissions trading scheme.³¹
- **Greens candidate Dominic Wy Kanak** states on his campaign website that he believes residents of Wentworth care about climate change.³² He has challenged the role of coal and fossil fuel companies in national politics.³³ The Greens’ national policy is for net zero or net negative Australia greenhouse gas emissions by 2040 and 100 per cent renewable energy “as soon as possible”.³⁴
- **Independent candidate, Licia Heath**, states on her website that she would “acknowledge” climate change is real and ensure: Australia stays committed to the Paris Agreement; reduces its emissions; and “plans for a future” that reduces reliance of fossil fuels and increase the use of renewable energy.³⁵

²² <https://reneweconomy.com.au/turnbull-dumps-emissions-from-neg-in-final-act-of-capitulation-30161/>

²³ <https://www.afr.com/news/politics/angus-taylor-slams-emission-policies-as-corporate-greed-dressed-up-as-saving-the-planet-20180916-h15ghw>

²⁴ <https://www.theaustralian.com.au/national-affairs/climate/angus-taylormade-package-prolongs-coals-power/news-story/a886a5169745356076ef61c524328a12>

²⁵ <https://www.theaustralian.com.au/opinion/direct-action-back-on-the-agenda/news-story/4a4925083ac3048e5450973339b1e4c9>

²⁶ https://www.kerrynphelps.com.au/what_i_stand_for

²⁷ <https://www.canberratimes.com.au/environment/climate-change/phelps-would-ban-fossil-fuel-firms-political-donations-oppose-adani-20181001-p50731.html>

²⁸ <https://www.alp.org.au/our-people/our-people/tim-murray/>

²⁹ <https://www.afr.com/news/alex-turnbull-john-hempton-spruik-for-labors-tim-murray-in-wentworth-20180902-h14u43>

³⁰ <https://www.smh.com.au/politics/federal/low-expectations-business-loses-hope-in-coalition-s-climate-credentials-as-eyes-turn-to-labor-20180904-p501px.html>

³¹ <https://www.smh.com.au/environment/climate-change/best-way-labor-s-wentworth-candidate-tim-murray-backs-carbon-price-20181003-p507jq.html>

³² https://greens.org.au/nsw/person/dominic-wy-kanak?gclid=Cj0KCQjw6MHdBRctARIsAEigMxHgeqbgL1EEObh9zzYrrWwBh2USAXvWa6pwaAISfyPW_WzQJNoCEg4aAhshEALw_wcB

³³ <http://filefaustralia.org/greens-announce-dominic-wy-kanak-as-candidate-for-wentworth/>

³⁴ <http://filefaustralia.org/greens-announce-dominic-wy-kanak-as-candidate-for-wentworth/>

³⁵ <https://www.liciaheath.com.au/promises>

ACF's priorities for climate action and nature protection can be found in its 2018 National Agenda.³⁶ Among other things ACF's National Agenda calls on all people who seek to represent Australians in political office to:

- Set strong climate pollution reduction targets for Australia that are consistent with achieving zero net pollution well before 2050.
- Ensure clean energy powers 100 per cent of Australia's electricity generation by 2030, and 100 per cent of Australia's overall energy uses as soon as possible, but no later than 2040-2050.
- Make a national plan with policies to support the phased closure of Australia's coal-fired power stations by 2030 in conjunction with a comprehensive transition plan and package for workers and communities affected by the shift away from coal, oil and gas.

Note to Editors

The following quotes can be attributed to ACF Climate Change and Clean Energy Program Manager, Gavan McFadzean:

"Voters in Wentworth want to be represented by an MP who is as committed to climate change action as they are. Malcolm Turnbull had a long history of concern for climate change, even if the hard edge of his party wouldn't let him show it as Prime Minister. The former Liberal Member for Wentworth, Dr John Hewson, is one of our country's strongest climate advocates.

"If we allow runaway climate pollution to continue Wentworth would keep getting hotter and drier. The people of eastern Sydney would lose the seasons as they know them and gain a dangerous new extreme summer. Summer conditions would take over much of the year and more frequent extreme temperatures would put increased pressure on the health of its more vulnerable residents.

"Australia is already experiencing climate damage. The Great Barrier Reef has been hit by successive mass coral bleaching events. Many parts of the country are amid worsening drought conditions. And we've seen numerous unseasonal bushfires throughout the most recent winter.

"We cannot let climate damage get worse. We need concerted global action through the Paris Agreement, with Australia doing its fair share. But Australia's pollution is rising, and we have no sensible national climate plan to turn that around.

"We must stop burning coal and gas, and transition rapidly to clean energy like solar and wind power.

³⁶

https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/5738/attachments/original/1527647927/28pp_ACF_National_Agenda_May_FINAL_WEB.pdf?1527647927

“All candidates seeking to represent the people of Wentworth must make a strong commitment, and produce detailed plans, to stop climate pollution and ensure the future safety of their community.”

For more information or interviews please contact Tom Arup on 0402482910.