6.4 IPCC SPECIAL REPORT – GLOBAL WARMING OF 1.5 °C

Submitting Councillors: Cr Josh Fergeus, Cr Brian Little, Cr Lynette Saloumi

MOTION

That Council:

1. *Notes the Intergovernmental Panel on Climate Change's recent Special Report on the impacts of global warming of 1.5 °C[1];*
2. *Notes in particular the following findings of the report, issued with a high degree of confidence by the IPCC:*
   - *i) To date, Human activities are estimated to have caused approximately 1.0°C of global warming above pre-industrial levels;*
   - *ii) Global warming is likely to reach 1.5°C by as early as 2030;*
   - *iii) Warming from anthropogenic emissions from the pre-industrial period to the present will persist for centuries to millennia and will continue to cause further long- term changes in the climate system, such as sea level rise, with associated impacts;*
   - *iv) Climate induced impacts on health, livelihoods, food security, water supply, human security, and economic growth are projected to increase with global warming of 1.5°C and increase significantly further (in many cases double) with a 2°C rise;*
   - *v) Most adaptation needs will be lower for global warming of 1.5°C compared to 2°C;*
   - *vi) Limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings);*
   - *vii) Stated mitigation ambitions as submitted under the Paris Agreement would not limit global warming to 1.5°C, even if supplemented by very challenging increases in the scale and ambition of emissions reductions after 2030;*
   - *viii) Avoiding overshoot and reliance on future largescale deployment of carbon dioxide removal (CDR) can only be achieved if global CO2 emissions start to decline well before 2030;*
   - *ix) Strengthening the capacities for climate action of national and sub-national authorities, civil society, the private sector, indigenous peoples and local communities can support the implementation of ambitious actions implied by limiting global warming to 1.5°C;*
3. *Acknowledges the unprecedented levels of urgency declared by the IPCC, and other scientific bodies, with regard to the need to drastically reduce emissions and limit global warming to 1.5°C. The Special Report in particular predicts that a 2°C* rise in average global temperature would most likely:
   - *i) See the Arctic entirely ice free one year in 10, compared with one year in 100 at 1.5°C*

[1] http://report.ipcc.ch

ii)	*Lead to the death of 98% of corals, almost certainly leading to the death of the Great Barrier Reef*
iii)	*Reduce the yields of global fisheries by 3 million tonne, twice that of a decrease at 1.5*°C.
iv)	*See the loss of species of between 200% and 300% worse at 2°C as opposed to 1.5°C*

BACKGROUND

UNFCCC

In 1992, countries joined an international treaty, the United Nations Framework Convention on Climate Change, as a framework for international cooperation to combat climate change by limiting average global temperature increases and the resulting climate change, and coping with impacts that were, by then, inevitable.

By 1995, countries launched negotiations to strengthen the global response to climate change, and, two years later, adopted the Kyoto Protocol. The Kyoto Protocol legally binds developed country Parties to emission reduction targets. The Protocol's first commitment period started in 2008 and ended in 2012. The second commitment period began on 1 January 2013 and will end in 2020.

The Paris Agreement

The Paris Agreement's central aim is to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius. Additionally, the agreement aims to strengthen the ability of countries to deal with the impacts of climate change.

The Paris Agreement requires all Parties to put forward their best efforts through nationally determined contributions (NDCs) and to strengthen these efforts in the years ahead. This includes requirements that all Parties report regularly on their emissions and on their implementation efforts.

To date, 183 Parties have ratified of 197 Parties to the Convention.

IPCC

The Intergovernmental Panel on Climate Change (IPCC) is a United Nations body, founded in 1988, which **evaluates climate change science**.

The IPCC assesses research on climate change and synthesises it into major 'assessment' reports every 5–7 years. The most recent, fifth, assessment report – often referred to as AR5 – was published in 2013-14 in four volumes and totals more than 2,800 pages.

Assessments of climate change by the IPCC draws on the work of hundreds of scientists from all over the world collaborating in international working groups. They access

thousands of peer-reviewed scientific papers published by eminent scientists in well recognised journals. This enables policymakers at all levels of government to take sound, evidence-based decisions. IPCC represent extraordinary value as the authors volunteer their time and expertise.

IPCC Special Report 2018

Climate change represents an urgent and potentially irreversible threat to human societies and the planet. In recognition of this, the overwhelming majority of countries around the world adopted the Paris Agreement in December 2015, the central aim of which includes pursuing efforts to limit global temperature rise to 1.5°C. In doing so, these countries, through the United Nations Framework Convention on Climate Change (UNFCCC), also invited the IPCC to provide a Special Report on the impacts of global warming of 1.5°C, compared with 2°C, above pre-industrial levels and related global greenhouse gas emissions pathways.

The first UNFCCC document to mention limiting global warming of 1.5°C was the Cancun Agreement in 2010. The Cancun Agreement established a process to periodically review the 'adequacy of the long-term global goal (LTGG) in the light of the ultimate objective of the Convention and the overall progress made towards .. the LTGG, including a consideration of the implementation of the commitments under the Convention'. The definition of LTGG in the Cancun Agreement was 'to hold the increase in global average temperature below 2°C above pre-industrial levels'. The agreement also recognised the need to consider 'strengthening the long term global goal on the basis of the best available scientific knowledge...to a global average temperature rise of 1.5°C'.

Countries' pledges to reduce their emissions are currently not in line with limiting global warming to 1.5°C and in many cases there appears to be a lack of visible action to achieve commitments made in Paris. Australia is a case in point: CO2 levels dropped quite dramatically between 2012 and mid 2014 when the carbon tax was in operation but have risen each year since and at a national level there is a vacuum of policy.

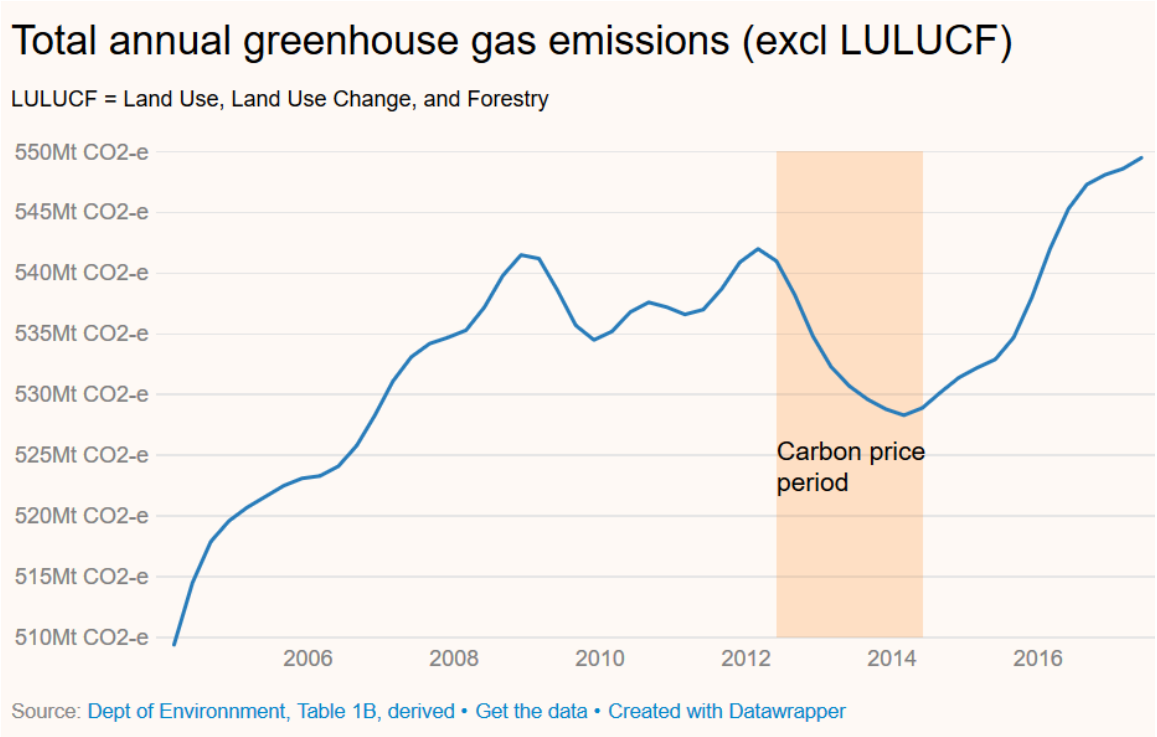

Figure 1 Australian CO2 emissions excluding LULUCF to Jun 2017

To stabilize global temperature at any level, 'net' emissions would need to be reduced to zero. This means the amount of CO2 entering the atmosphere must equal the amount that is removed. Achieving a balance between 'sources' and 'sinks' is often referred to as 'net zero' emissions or 'carbon neutrality'.

A range of responses to Frequently Asked Questions regarding the report can be found here: http://report.ipcc.ch/sr15/pdf/sr15_faq.pdf.

RATIONALE

It is important for Council to note the IPCC report and associated implications. This information also has significant implications for strategic planning and asset management now and into the future.

DIFFERENCE IN IMPACT OF 1.5 VERSUS 2 DEGREES OF WARMING

The IPCC reports the following:

- Extreme heat would be much more common, with 37% of the world population exposed to extreme heat at 2°C rather than 14% at 1.5°C, with the tropics experiencing the biggest increase in "highly unusual" hot days;
- Sea levels would be at least 10 centimeters higher (50 cm as opposed to 40 cm) by the end of the century at 2°C warming than they would at 1.5°C, causing mass migration from areas that may be flooded;
- The rate of sea level rise increase by 30% at 2°C;
- The availability of freshwater in parts of the world will reduce 9% at 1.5C warming but up to 17% at 2°C;

- Heatwaves will increase 1.1 months of the year at 1.5°C and up to 1.5 months at 2°C;
- The Artic would be sea-ice free at least 1 in every 100 years at 1.5°C but an alarming 1 in every 10 years at 2°C;
- The loss of species is between 200 and 300% worse at 2°C as opposed to 1.5°C, with as many as 16% of plant species lost and 18% of insects lost;
- Permafrost melting will be 38% worse at 2°C, leading to further release of methane and impacting on *increased global warming beyond 2°C*;
- 2°C will result in an estimated 3 million tonne ***decrease*** in yield from marine fisheries, *twice* as bad as under 1.5°C;
- Wheat production will reduce by 9% at 1.5C but up to 16% at 2°C;
- 90% of reefs are at risk at 1.5°C and 98% at 2°C, meaning 2°C almost certainly *sounds the death knell for the entirety of the Great Barrier Reef*;
- *If we remain at our current levels of emissions, we are on a path to warming 4°C* by 2100, which if reached would trigger a chain of cataclysmic changes that include extreme heatwaves, declining global food stocks, substantial species extinctions and sea-level rising that would affect hundreds of millions of people.

ALIGNMENT WITH COUNCIL PLANS AND STRATEGIES

This notice of motion aligns with the Environmental Sustainability Strategy 2016-2026, the Healthy and Resilient Monash Integrated Plan 2017-2021, and the Council Plan 2016-2020.