Submission
on
PWCS Terminal 4 Project

- Critical Climate & Energy Implications Are Being Ignored –

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Summary

- Human carbon emissions are the major factor causing accelerating climate warming. This is occurring faster and more extensively that previously expected, with dangerous climate change already happening.

- The "official" limit of 2°C temperature increase is too high.

- For a realistic chance of staying even below that limit, we have no carbon budget left today.

- The climate science, and empirical evidence, now demands emergency action to have any realistic chance of avoiding catastrophic outcomes, halting new fossil-fuel investment, and rapidly weaning ourselves off established fossil-fuel use.

- Current State and Federal Government policies lack any of this global context. They are wholly inadequate in protecting our national security and providing the Australian community with a sustainable future.

- A fundamental reframing of climate change policy on to an emergency footing is required, to meet the following objectives:
    - Global atmospheric carbon concentrations to be reduced to below 350ppm CO_2, corresponding to a temperature limit relative to pre-industrial conditions below 1.5°C.
    - Australian emission reductions of:
        - 50% emission reduction by 2020 relative to 2000 levels
        - 100% emission reduction by 2040, preferably earlier
        - drawdown of legacy carbon to achieve the 350ppm CO_2 objective.

- The Terminal 4 (T4) Environmental Assessment Report (EAS) takes no account of these critical developments. Accordingly it ignores the primary risks and potential economic damage of T4, which arise from the climate impact of increased coal use

- It is disingenuous and dangerous to claim that, as "*The project does not produce coal or directly use the coal*", its approval can ignore the climate impact of that coal, and that " *– future change to greenhouse gas policy is not a matter that can be considered in assessing the proposal at this time*" (Page 11 EAS Addendum)

- Even based on current climate policy to limit warming to 2^0C it is incorrect to state that " *--- the project could proceed with minimal adverse environmental impacts whilst realising significant benefits --*" (Page 22 EAS Addendum)

- The project is certainly not *" - - in the public interest – -"* (Executive Summary EAS Addendum**)**

- The implications of accelerating global warming must be considered by the NSW Government and its Planning authorities in considering T4, existing policy notwithstanding.

- Given the acceleration climate impact of fossil-fuel use, and increasing pressure for action by global authorities, it would be extremely imprudent for T4 approval to be given at this time.

- The potential for such infrastructure assets to become stranded is now substantial, with inevitable risks to the NSW community and society from such misallocation of funds – particularly around Newcastle.

- In these unprecedented circumstances, it is totally inappropriate for expansion decisions to be left to coal producers and the market in the absence of a re-definition of climate policy.

- Accordingly, approval of T4 should be withheld.

The Global Context - Climate Science, Evidence and Implications

Much new scientific material on climate change has been published in the last year, ranging from the complete IPCC 5th Assessment Reports, to major reviews by various Academies of Science, the military in various countries, as well as specific scientific papers. Some of these reports are documented in the Appendix.

The IPCC Report itself, whilst very important, and the basis for much global policy, is an inherently conservative document, subject to political oversight. Given that it is only produced every 5-6 years through a global scientific consensus process, inevitably it does not always include the latest scientific perspectives. In particular, it mentions, but does not quantify, the so-called "fat-tail" risks of the climate warming probability distribution, understandably so due to lack of scientific information, and to their complexity.

The evidence strongly suggests that we are seeing these "fat-tail" risks beginning to materialize, specifically non-linear positive feedback responses of the climate system that experts have been concerned about for many years. For example, extremely high sea surface temperatures in the Pacific Ocean, rapid Arctic sea ice and permafrost melt, accelerating ice mass loss on the Greenland and Antarctic ice sheets, break up of Antarctic glaciers, extreme drought and water shortages in many areas (California, East Mediterranean), increasing extreme weather, accelerating sea level rise etc.

Once these processes take hold, they are probably irreversible and their impact may occur much faster than expected. We are currently pumping greenhouse gases into the atmosphere at a rate ten times faster than occurred during the Paleocene Eocene Thermal Maximum (PETM) extinction event 55 million years ago. Accordingly we risk very rapid climate disruption if this continues.

We are on track, with current global policies, for a temperature increase in excess of 4°C before 2100, implying a global population reduction from 7 billion to around 1 billion. Even with immediate action, it is inevitable we will overshoot the official target of keeping temperature increase to less than 2^0C above pre-industrial levels, with serious consequences for both society and business. 2^0C warming will itself halt population growth forcing fundamental change on the economic system.

The conclusions of these reports, along with any objective assessment of the science and empirical evidence, support the following view:

- **Human carbon emissions are the major factor causing accelerating global warming**

- **Climate Change is occurring faster and more extensively that previously expected. Dangerous climate change is already happening at the 0.8°C temperature increase we are experiencing now, relative to pre-industrial levels.**

- **The "official" limit of 2°C represents the boundary between dangerous and extremely dangerous climate change. Accordingly the 2°C target is too high – we must aim for around 1.5°C after overshooting, which implies very rapid emission reductions and drawdown of carbon already in the atmosphere, as soon as possible**

- **The much-discussed carbon budget of around 20% of fossil-fuel reserves which can be consumed to stay below even the 2°C target, reduces to zero if the probability of success is increased from an unrealistic 66%, which the 20% of reserves represents, to say, 90%, which is itself not good odds for the survival of much of humanity. In short, we have no carbon budget left today.**

- **To avoid catastrophic outcomes we must take emergency action now to halt new fossil-fuel investment, and rapidly wean ourselves off established fossil-fuel use.**

This view is typically dismissed as unwarranted alarmism and extremism by the political and business incumbencies. Unfortunately, the evidence is piling up, along with the economic cost of extreme weather events, to the point where continued denialism is simply economic illiteracy.

Supporting rationale is given in the following reports:

"Dangerous Climate Warming: Myth, Reality and Risk Management", D.Spratt & IT Dunlop, October 2014: http://www.climatecodered.org/p/myth-and-reality.html

"Carbon Tracker Initiative", multiple reports 2013-15: http://www.carbontracker.org/our-work/

"Unburnable Carbon: Why We Need to Leave Fossil Fuels in the Ground", Climate Council, April 2015: https://www.climatecouncil.org.au/unburnable-carbon-why-we-need-to-leave-fossil-fuels-in-the-ground

"RECO$_2$UNT; It's time to do the maths again", D. Spratt, April 2015:
http://www.climatecodered.org/2015/04/its-time-to-do-math-again.html

Catastrophic Risk Management

Addressing climate change is risk management on a global scale. The existential threat outlined above implies that we have to adopt risk management techniques totally different from those to which business and government are accustomed. This is the management of catastrophic risk at a global level, unlike anything currently applied in commercial operations, financial markets or even high-risk ventures such as deepwater oil exploration.

The components would include:

- **Normative Policy**. *"Politically realistic"*, incremental change from "*business-as-usual*" is not tenable. This must be replaced with a normative view of limits which must be adhered to if catastrophic consequences are to be avoided, based on the latest science. Action is then determined by the imperative to stay within the limits, not by incremental, art-of-the-possible, change from business-as-usual. This will involve both mitigation – *avoiding the unmanageable,* and adaptation – *managing the unavoidable*.

- **Change Mindsets**, to now regard the climate change challenge as a genuine global emergency, to be addressed with an emergency global response.

- **Genuine Global Leadership.** Current responses reflect the dominance of managerialism – an emphasis on optimising the conventional political and corporate paradigms by incremental change, rather than adopting the fundamentally different normative leadership needed to contend with the potential for catastrophic failure.

- **Integrated Policy.** Climate change, though difficult, is only one of a number of critical, inter-related, issues now confronting the global community, which threaten the sustainability of humanity as we know it. The immediate pressure point is the convergence of climate change with the peaking of global oil supply, water and food shortages and the financial crisis. Rather than viewing these issues separately in individual "silos" as at present, integrated policy is essential if realistic solutions are to be implemented.

- **Honesty.** There needs to be an honest articulation of the catastrophic risks and the integrated sustainability challenge we now face, with extensive community education to develop the platform for commitment to the major changes ahead.

Implicit in the above is far greater consideration of moral and ethical aspects than is evident in current debate, particularly the intergenerational implications which were totally ignored in the Federal Government's recent Intergenerational Report.

Current Business Attitudes

Despite protestations by many companies that they are taking climate change risk seriously, none of the major global fossil-fuel producers, the source of most human carbon emissions, have moved beyond the incremental change paradigm.

The responses and public commentary recently from organisations such as BHP Billiton [i] [ii] [iii], Exxon [iv] [v], Shell [vi] and Peabody [vii], along with their industry bodies, such as the Minerals Council of Australia [viii], suggest a coordinated global campaign to justify the continued expansion of fossil-fuel use built around the following rationale:

- Global population will inevitably grow from 7 billion to 9-10 billion by 2050
- Progression of emerging countries up the Energy Ladder [ix] requires major expansion of fossil fuel use, as "*forecast*" by the IEA (International Energy Agency, OECD) & EIA (Energy Information Administration, USA).
- Poverty alleviation makes this essential as no other energy source is capable of meeting this demand
- Climate change impact can be satisfactorily handled by clean coal technologies, Carbon Capture and Storage (CCS) etc.
- Companies cannot act until governments set the policy framework for transition to a low-carbon paradigm and that is unlikely to happen quickly, say within a decade or so. Therefore continued investment in fossil-fuels is justifiable given market norms, as the risk of stranded assets over that period is low.
- Historically, changes to the energy market structure have taken decades to achieve, hence we should not expect rapid adjustment [x]

There are multiple flaws with this rationale:

- It confirms that these companies either do not understand, or do not want to understand, the climate science or the evidence, which is extremely concerning given that they will be, or should be, receiving the best possible advice. This is in direct conflict with the fiduciary responsibilities of their directors to assess risks to which they are exposed, and to manage them accordingly.

- Global population growth is dependent upon a viable environment. In many parts of the world this is increasingly in doubt, even today (eg Eastern Mediterranean & the Sahel). Even a 2°C temperature increase will almost certainly reverse population growth.

- The IEA & EIA provide scenarios, not forecasts, of energy futures which set out the implications of alternative assumptions on population, energy demand etc. As the IEA have pointed out repeatedly, following a *"business-as-usual"* path of energy development would be catastrophic in terms of climate impact. Top executives from the fossil-fuel companies continually use these scenarios as "forecasts" to justify fossil-fuel expansion. At the same time, they sit on IEA advisory committees and are well aware that it is totally misleading to misrepresent scenarios in this way.

If the world follows the IEA BAU scenarios quoted by most fossil-fuel proponents, more than 70% of all fossil-fuels consumed since the Industrial Revolution will be burnt over the next 25 years.

In a world which today has no further carbon budget, this is simply suicidal. If allowed to happen it would represent a crime against humanity.

- The official solutions such as clean coal and CCS will no doubt contribute to reducing emissions, but it is patently obvious that they will never provide either the extent or the speed of emission reductions now required. The fact that companies, particularly in Australia, have stopped supporting CCS research, confirms the risk of moral hazard in continuing fossil fuel investment,as raised in The Economist in 2009 [xi]. Companies and governments blithely continue fossil-fuel investment in the vain hope that CCS will prove to

be the silver bullet to fix emissions. This is breaches the obligation of corporate directors, to act at all times in good faith, in the best interests of the organization, and of government to act in the best interests of their people.

- History demonstrates that governments are highly unlikely to lead in setting policy on an issue this complex, notwithstanding company preferences to the contrary. It is now up to companies, and investors, in the interests of their stakeholders and themselves, to show the genuine leadership to which they supposedly aspire. Given the risk of negative market reaction if they act in isolation, the creation of innovative coalitions of progressive companies and investors is paramount. This requires preparedness, on the part of directors, to think outside the conventional governance box, and focus on cooperation as opposed to competition in confronting catastrophic risk.

- As the Shell response referenced above demonstrates, changes to energy market structure do take decades to implement, which is why those change processes cannot be relied upon in present circumstances. To achieve the speed of change now required, emergency action will be needed, akin to a wartime situation. In the lead-up to WW11, the US, UK and German economies were transformed from consumer-orientated to wartime–orientated service in a matter of a year or so, once the challenge had crystallised. Today's situation is far more complex, but it is nonetheless the type of change required.

- Poverty, rather than being alleviated by escalating fossil-fuel consumption, is far more likely to be created, as climatic impacts hit the poorer parts of the global economy disproportionately

Current State and Federal Government Attitudes

The above outline gives the global context against which any sensible policy must be tested. On that basis, reviewing the wide range of initiatives taken by the Federal Government in the climate and energy arena since it was elected, inter alia the Carbon Tax Repeal process, the Energy White Paper, Direct Action policy, the appointment of numerous anti-science and anti-climate change advisors, consequent funding cuts, and the destruction of the renewable energy market, it is clear that the Federal Government, far from admitting the truth of the science and accepting the evidence, is intent upon dismantling any serious attempt to reduce emissions and address climate change.

The dominant themes of the government appear to be that:

- Strong conventional economic growth is the objective to which all other issues must be subservient
- Our high-carbon export model, particularly coal and gas, can continue ad infinitum on the back of Chinese and Indian demand
- There is no linkage between extreme weather events occurring around the country and climate change.
- Australia has no need to take leadership on reducing emissions. It might follow if the rest of the world acts, but even that is by no means clear.
- Market forces alone will deliver solutions to any scarcities which may arise.
- Climate policy, energy policy and agricultural policy can be developed independently, in separate silos without the need for integrated, systems-based solutions.

These themes are, in essence, a continuation of our 20th Century high-carbon, dig-it-up and ship-it-out economic model, reflecting primarily the demands of the fossil-fuel industries. They fail to recognize that the 21st Century requires fundamentally different thinking and strategic direction, recognizing that the biophysical constraints now confronting us demand an emergency response.

Similarily it is time to discard blind adherence to free-market economics. Markets are important, but they must operate within rules and fit the global context. That context has now changed markedly as energy, climate, water and food constraints become real, requiring new rules and market frameworks. As former UK Prime Minister Margaret Thatcher put it: "*They (free markets) would defeat their objective if, by their output, they did more damage to the quality of life through pollution than the well-being they achieved by the production of goods and services".*

That is exactly the point we have now reached. Economic growth in the conventional 20th Century sense, with improved quality of life, is no longer possible given the biophysical constraints which now confront us. New models of growth have to be designed to allow genuinely sustainable progress.

Current policies only reinforces the old, unsustainable, model and are designed to give the impression of action whilst doing nothing of substance to address the real climate challenge.

"They go on in strange paradox, decided only to be undecided, resolved to be irresolute, adamant for drift, solid for fluidity, all-powerful to be impotent……Owing to past neglect, in the face of the plainest warnings, we have now entered upon a period of great danger….. The era of procrastination, of half-measures, of soothing and baffling expedients, of delays, is coming to a close. In it's place we are entering a period of consequences….. We cannot avoid this period, we are in it now…..

Winston S. Churchill - 12th November 1936

The National Dilemma

The Australian community have benefited greatly from our 20th Century economic model, particularly from the China boom of the last few years. However the full costs of that economic expansion have only recently begun to materialize.

The high dollar generated by expanding mining and fossil fuels exports has led to cost inflation within the economy generally, forcing much manufacturing to the wall and putting great cost pressure on other sectors such as agriculture. Those same, subsidized, fossil-fuel exports are contributing to accelerating warming and climatic change which, science can demonstrate, is now seriously damaging our water availability and agricultural productivity, adding to both drought and, less frequently, damaging flooding. Other aspects of fossil-fuel development, particularly coal seam gas, further damage that productivity.

The Federal Government currently proposes that growth is to be driven, in particular, by infrastructure development in facilities such as roads, freeways, ports and airports which assume the ready availability of fossil-fuels. Such policy completely ignores the looming environmental and resource constraints outlined above which are steadily destroying the efficacy of these facilities.

If this 20th Century development pattern continues, it is likely that manufacturing will largely disappear, rural Australia will be decimated and the vast investment in fossil-fuel expansion and related infrastructure will become stranded assets within a decade as consumers, particularly China and India move away from fossil-fuels due to the severe pollution and adverse climatic impact they are already causing.

The continuing refusal of political and corporate leaders to "*join the dots*", recognizing that climate change is already having a major negative impact on the country, and that our high-carbon exports are a significant contributor to it, in the process destroying manufacturing and agriculture, guarantees that Australia will become an economic and social "basket-case" unless we change direction rapidly.

On the other hand, we have the potential to genuinely prosper in a low-carbon world, provided we have the vision to recognize the opportunities within our grasp. These encompass:

- enormous potential to improve energy conservation and efficiency.
- abundant renewable energy sources such as wind, solar, tidal, geothermal, biotech.
- Uranium resources on which to establish new-generation nuclear energy
- Growth potential in the revegetation of the landscape and changed agricultural practices.
- Increased agricultural productivity, provided global warming is contained
- Creation of new, sustainable, manufacturing industries built around the above.

It is time the State and Federal government broke away from the 20th Century model and allowed these new opportunities to flourish.

The PWCS Terminal 4 Project

State and Federal government climate policies lack any of the above strategic context. As such they are wholly inadequate responses to the real challenge of climate change, to protecting our national security and providing the Australian community with a sustainable future.

A fundamental reframing of climate change policy on to an emergency footing is required, to meet the following objectives:

- Global atmospheric carbon concentrations to be reduced to below 350ppm CO_2, corresponding to a temperature limit relative to pre-industrial conditions below 1.5°C.
- Australian emission reductions of:
  - 50% emission reduction by 2020 relative to 2000 levels
  - 100% emission reduction by 2040, preferably earlier
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The implications of accelerating global warming must be considered by the NSW Government and its Planning authorities in considering T4, existing policy notwithstanding.

Given the acceleration climate impact of fossil-fuel use, and increasing pressure for action by global authorities, it would be extremely imprudent for T4 approval to be given at this time.

The potential for such infrastructure assets to become stranded is now substantial, with inevitable risks to the NSW community and society from such misallocation of funds – particularly around Newcastle.

In these unprecedented circumstances, it is totally inappropriate for expansion decisions to be left to coal producers and the market in the absence of a re-definition of climate policy.

Accordingly, approval of T4 should be withheld

Appendix 1. Major Climate Change Reports 2014 -15

- **IPCC AR5:**
  - WG1 Physical Science Basis – September 2013
  - WG2 Impacts, Adaptation & Vulnerability – April 2014
  - WG3 Mitigation of Climate Change – April 2014
  - Complete Synthesis Report – March 2015
    http://www.ipcc.ch/report/ar5/

- **Climate Change: Evidence & Causes**
  - UK Royal Society & US National Academy of Sciences – February 2014
    https://royalsociety.org/policy/projects/climate-evidence-causes/

- **What We Know**
  - American Association for the Advancement of Science – April 2014
    http://whatweknow.aaas.org

- **US National Climate Assessment**
  - US Global Change Research Program – May 2014
    http://www.globalchange.gov/what-we-do/assessment

- **US Quadrennial Defense Review**
  - Pentagon – May 2014
    http://www.defense.gov/home/features/2014/0314_sdr/qdr.aspx

- **National Security and the Accelerating Risks of Climate Change**
  - CNA Military Advisory Board – May 2014
    http://www.defense.gov/home/features/2014/0314_sdr/qdr.aspx

- **Catastrophe Risk Modelling and Climate Change**
  - Lloyds Insurance - May 2014
    http://www.lloyds.com/news-and-insight/news-and-features/emerging-risk/emerging-risk-2014/keying-climate-change-into-catastrophe-models

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  - International Energy Agency – June 2014
    http://www.worldenergyoutlook.org/investment/

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  - International Energy Agency – May 2014
    http://www.iea.org/etp/

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  - International Energy Agency - November 2014
    http://www.worldenergyoutlook.org/publications/weo-2014/

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  - Australian Academy of Science – February 2015
    https://www.science.org.au/climatechange

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https://www.advancedenergyforlife.com

[viii] Don't Demonise Coal, Embrace its Many Benefits, Brendan Pearson, MCA, Australian Financial Review, 2nd June 2014:

[ix] ibid Royal Dutch Shell 16th May 2014

[x] ibid Royal Dutch Shell 16th May 2014

[xi] The Illusion of Clean Coal, Economist, 5th March 2009:
http://www.economist.com/node/13235041