HUME COAL PROPOSAL

Submission by 350.org Australia
29 June 2017

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WHO WE ARE

350 Australia is part of a global movement which is acting to halt the climate crisis. We work with a network of campaigners and local groups across Australia in online campaigns, grassroots organising, and mass public actions to keep fossil fuels in the ground and support a transition to a cleaner and fairer economy.

The number 350 means climate safety: to preserve a liveable planet, and to protect our own and future generations from dangerous climate change, scientists tell us we must reduce the amount of CO_2 in the atmosphere from its current level of 407 parts per million to below 350[1].

EXECUTIVE SUMMARY

This submission is written largely from a climate change perspective. Our primary concern is that the mining of additional thermal coal through the Hume Coal proposal, and its subsequent burning, would be inconsistent with the NSW Climate Change Policy Framework. While we know that the Federal Government currently has no effective policies to achieve its own 26-28% emissions reduction target, let alone a policy which would be consistent with the aim of keeping global warming below 2°C, we assert that this policy vacuum should not excuse the Government of New South Wales from taking the Paris goals seriously. Taking them seriously implies that we cannot embark on new fossil fuel projects, including the thermal coal component of the proposed Hume Coal mine.

The economic assessment provided in the EIS is partly based on forecasts for coal prices in the year 2040 which we assert are highly risky. We draw attention to the rapid shift away from coal consumption in Asia in the past few years, and we cite the head of Blackrock's observation that "anyone who's looking to take beyond a 10-year view on coal is gambling very significantly". We also cite the pledge of the new President of South Korea (Moon Jae In) to permanently close old coal-fired plants and to reassess plans to construct nine new plants.

Finally, we comment on the statement in the EIS that "the only long term subsidence risk [and the consequent risk to groundwater] relates to the integrity and stability of the remnant coal pillar system that is left behind after mining is complete". In the light of the "Robertson earthquake" of 22 May 1961, and the lesser earthquake of 11 December 2003, we submit that the "pillars of coal" that are designed to counter subsidence would be at serious risk of collapsing if a similar earthquake should occur again. The consequence of such an event would be major because of the potential impact on Sydney's water supply.

LIST OF RECOMMENDATIONS

Recommendation 1. That the Assessment Report take account of the climate imperative, and the need to rule out further mining of thermal coal, in the light of the clear climate risks.

Recommendation 2. That the Assessment Report take account of the business risks that

[1] James Hansen et al. Assessing dangerous climate change. http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081648

are inherent in the current policies of key Asian countries, including China, India and South Korea, to phase out the use of thermal coal for electricity generation.

Recommendation 3. That the Assessment Report take account of the risks to water resources that arise from subsidence of the proposed mine, given the previous experience of the 1961 and 2003 earthquakes in this locality.

THE CLIMATE IMPERATIVE

This submission is written largely from a climate change perspective. While we will have something to say about risks to local water resources, our primary concern is that the mining of additional thermal coal through the Hume Coal proposal, and its subsequent burning, would be inconsistent with the NSW Climate Change Policy Framework. In particular, it would conflict with the NSW Government policy to "take action that is consistent with the level of effort to achieve Australia's commitments to the Paris Agreement" [2]. 350 Australia strongly supports the Paris Agreement overarching goal "to hold global average temperature increase to well below 2°C and pursue efforts to keep warming below below 1.5°C above pre-industrial levels".

As we pointed out in our submission to the Federal Government's climate policy review[3], the Federal Government currently has no effective policies to achieve its own 26-28% emissions reduction target, let alone a policy which would be consistent with the aim of keeping global warming below 2°C. (By contrast, we cited the effective policies which have been adopted in the United Kingdom). We assert that this policy vacuum should not excuse the Government of New South Wales from taking these Paris goals seriously.

The need for strong and urgent action is apparent, because Australia is already seeing clear warning signs of these climate impacts. In southeast Australia, the summer of 2016–17 saw the highest recorded monthly temperatures for Sydney and Brisbane[4]. We also witnessed massive bleaching events over successive summers that damaged the northern half of the Great Barrier Reef, to the extent that experts fear that the Reef may never recover[5]. There has been an increase in the frequency and severity of natural disasters, with Cyclone Debbie (March 2017) providing another major example following Cyclone Yasi in 2011, Cyclone Oswald in 2013 and Cyclone Marcia in 2015 [6].

The strong advice from climate experts is that policies should aim to reduce emissions to zero as soon as possible. In fact, to have just a 50% chance of staying within the aspirational Paris guardrail of 1.5ºC of warming, the world can emit only 353 Gt of CO_2 from now on. By

[2] NSW Climate Change Policy Framework. http://www.environment.nsw.gov.au/topics/climate-change/policy-framework

[3] 350 Canberra, on behalf of 350 Australia. Climate Policy Review submission, May 2017. http://world.350.org/canberra/climate-policy-review-submission-may-2017/

[4] Bureau of Meteorology. Special climate statement 61 - exceptional heat in Southeast Australia in early 2017. 24 February 2017. http://www.bom.gov.au/climate/current/statements/scs61.pdf

[5] Peter Hannam. Sad truth: Great Barrier Reef may never rebound to previous health: scientists. Sydney Morning Herald, 30 May 2016. http://www.smh.com.au/environment/climate-change/sad-truth-great-barrier-reef-may-never-rebound-to-previous-health-scientists-20160530-gp76wl.html

[6] How will Cyclone Debbie compare to Australia's worst cyclones in history? http://www.australiangeographic.com.au/topics/science-environment/2017/03/how-will-cyclone-debbie-compare-to-australias-worst-cyclones-in-history

contrast, the carbon reserves in currently operating coalfields and oil wells total 942 Gt [7]. This mathematical reality underscores our position that we cannot embark on new fossil fuel projects, including the thermal coal component of the proposed Hume Coal mine.

As for the Great Barrier Reef, experts have maintained that "the biggest threat to the Reef is coal mining" [8].

Recommendation 1. That the Assessment Report take account of the climate imperative, and the need to rule out further mining of thermal coal, in the light of the clear climate risks.

THE BUSINESS RISKS

Section 19 of the EIS provides an economic assessment of the proposed project. As part of this assessment, the proponents (on page 458) estimate gross mining revenues based on the Wood Mackenzie forecasts for coal prices in the year 2040. We submit that there are very large risks attached to these coal price assumptions.

First, we draw attention to the rapid shift away from coal consumption in China and India over the past few years. As the head of a major global investment group (Blackrock) has observed, "anyone who's looking to take beyond a 10-year view on coal is gambling very significantly" [9].

Second, it is possible that Hume Coal, given that it is owned by a South Korean company, anticipates that its planned thermal coal output will be exported to South Korea during the 20 year life of this project. But we draw attention to the fact that the new President of South Korea (Moon Jae In) has pledged to permanently close old coal-fired plants within his five-year term while reassessing plans to construct nine new plants. He recently said "we can no longer delay the pursuit of safe and clean energies. I will reduce coal-fired power plants and nuclear reactors, but increase renewable natural gas power generation" [10].

Recommendation 2. That the Assessment Report take account of the business risks that are inherent in the current policies of key Asian countries, including China, India and South Korea, to phase out the use of thermal coal for electricity generation.

RISKS TO LOCAL WATER RESOURCES

In its EIS, Hume Coal notes that groundwater impacts will be minimised by reducing the risks of subsidence, which in turn will be reduced by the method of mining, which involves leaving "pillars of coal" in place.

It is our understanding that risks from subsidence associated with coal mining include the following:

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[7] Bill McKibben. Recalculating the climate math. New Republic, 22 September 2016. https://newrepublic.com/article/136987/recalculating-climate-math

[8] Experts: Great Barrier Reef's biggest threat today is coal. Renew Economy, 28 October 2014. http://reneweconomy.com.au/experts-great-barrier-reefs-biggest-threat-today-coal-82943/

[9] Nithin Coca. Asia and the fall of coal. The Diplomat, 22 June 2017. http://thediplomat.com/2017/06/asia-and-the-fall-of-coal/

[10] Moon Jae In orders shutdown of old coal fired power plants. The Korea Herald, 15 May 2017. http://www.koreaherald.com/view.php?ud=20170515000815

- groundwater levels can drop as confined aquifers become unconfined;
- topographically high aquifers can drain to lower aquifers through previously impermeable zones that have become fractured by subsidence; and
- streams that are connected to aquifers may lose their permanent base flows, particularly if associated near-surface aquifers are compromised by rock fracturing[11].

We recognise that the "first workings" method of mining proposed by Hume Coal is an established process for reducing subsidence risk. However, we make the following two points relating to this risk.

First, an authoritative report on subsidence due to coal mining activities[12] notes that "the accuracy of subsidence prediction techniques should never be taken for granted" and that "particular care has to be taken when predicting subsidence for a new mine due to a lack of site-specific data". An example of a site-specific issue may be the two earthquakes which have been experienced in this locality during the past 57 years, which are cited below. We can find no reference to these two earthquakes in the EIS.

Second, the EIS (page 362) notes that "the only long term subsidence risk relates to the integrity and stability of the remnant coal pillar system that is left behind after mining is complete". The underground voids will exist indefinitely after the project finishes in 2040, and after Hume Coal has long left the scene. We are concerned that insufficient consideration has been given to the long term geological risks.

In particular, we refer to the "Robertson earthquake" of 22 May 1961, which reached a Richter magnitude of 5.5 and caused significant structural damage in a wide area, with an epicentre around Moss Vale, Robertson and Bowral [13] [14]. According to a report the next day in the Canberra Times, about 2000 homes in the Bowral district were damaged by this earthquake, and a landslide comprising 300 tons of earth blocked the Macquarie Pass[15].

Another (but less intense) earthquake hit the Southern Highlands on 11 December 2003. It measured 4.3 on the Richter scale and had an epicentre between Bargo and Mittagong[16].

If and when a similar earthquake occurs in the same locality, it seems to us that the "pillars of coal" that are designed to counter subsidence would be at serious risk of collapsing.

In this context we note that the Beaconsfield (Tasmania) mine collapse of 25 April 2006 was triggered by a very small earthquake (Richter magnitude 2.1) [17].

If we were to apply a risk assessment framework and take a timeframe of (say) 100 years,

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[11] C. J. Booth. Hydrogeological mechanisms and impacts of longwall mining, in Symposium on Groundwater in the Sydney Basin, Sydney. 2009

[12] Subsidence from coal mining activities / Department of the Environment (Australia) and Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development. See Page 25. https://www.environment.gov.au/system/files/resources/1ebc143e-e796-453d-b9d6-00cdbbabdee3/files/background-review-subsidence-coal-mining.pdf

[13] Wikipedia entry: 1961 New South Wales earthquake. https://en.wikipedia.org/wiki/1961_New_South_Wales_earthquake

[14] G. H. Cooney. The New South Wales earthquake of May 22, 1961. Australian journal of physics, Vol. 15, p. 536-548. http://www.publish.csiro.au/ph/pdf/ph620536

[15] Canberra shaken by earth tremor. Canberra Times, 23 May 1961, page 1. http://nla.gov.au/nla.news-article133980739

[16] Quake - not bomb - rocks southern highlands. http://www.smh.com.au/articles/2003/12/12/1071125602734.html

[17] Earthquake caused mine collapse. The Age, 26 April 2006. http://www.theage.com.au/news/national/earthquake-caused-mine-collapse/2006/04/26/1145861382107.html

we would assert that the *Likelihood* of an earthquake collapsing the pillars of coal would be "Unlikely" (on a scale which uses Rare/Unlikely/Moderate/Likely/Almost Certain), while the *Consequence* would be "Major" (on a scale which uses Insignificant/Minor/Moderate/Major/ Catastrophic). The overall *Risk Rating* from combining "Unlikely" with "Major" is "Significant" (on a scale which uses Insignificant/Low/Moderate/Significant/Major/High/Severe). We assert that the Consequence would be Major because of the potential impact on Sydney's water supply.

We note that the Wingecarribee Reservoir, located about 10 kilometres south-east of Bowral, is part of the Shoalhaven Scheme which during drought tops up Sydney, Goulburn and Illawarra water supplies[18].

Recommendation 3. That the Assessment Report take account of the risks to water resources that arise from subsidence of the proposed mine, given the previous experience of the 1961 and 2003 earthquakes in this locality.

CONCLUSIONS

This brief submission is intended to complement other submissions which are likely to raise impacts of local concern. Our organisation is concerned with climate change, and we have expressed our view that if we take seriously the goal of keeping global warming below 2°C, we must conclude that we cannot embark on new fossil fuel projects, including the thermal coal component of the proposed Hume Coal mine.

We have also asserted that there are very significant business risks associated with the thermal coal component of this project. We cite the observation of the head of the Blackrock investment group that "anyone who's looking to take beyond a 10-year view on coal is gambling very significantly".

We have also raised our concerns about the risk to groundwater posed by a scenario of subsidence into the mining void should an earthquake occur which would be similar to the two previous earthquakes in this locality in the past 57 years.

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[18] Water NSW. Water supply system schematic. http://www.waternsw.com.au/supply/Greater-Sydney/schematic