

**Martin Shield**  
**VCAT Proceeding No. P1816/2011**  
**Closing submissions**  
**3 February 2012**

## **1 Context**

1. The following submissions relate to my application for review based on grounds under section 33B(2)(a) of the EP Act.
2. The basis on which I ask the Tribunal to reject the Dual Gas Works Approval Application is that if the works are completed in accordance with the Works Approval, the use of the works would result in an emission to the environment of large quantities of greenhouse gasses. The large quantity of emissions and the high emissions intensity of this project would contribute to significant levels of climate change that would unreasonably and adversely affect my interests.
3. In presenting my case
  - (a) I have identified the link between greenhouse gas emissions and climate change.
  - (b) I have identified the adverse and unreasonable impacts, including impacts on myself, of climate change.
  - (c) I have argued that the tribunal must have regard to the manner in which greenhouse gas emissions accumulate in the atmosphere, and should assess the impacts of this project on the basis of the consequences of accumulated emissions.

- (d) While not seeking to diminish the serious impacts of climate change that are already in evidence, and that are expected to intensify as the planet continues to warm, I have identified a science based threshold for global warming beyond which the impacts of climate change, including the impacts on myself, would clearly be adverse, severe, and unreasonable.
- (e) I have identified the emissions reduction required in order to provide some chance that we can avoid crossing that threshold.
- (f) I have argued that this project is not consistent with achievement of the required emissions reduction; that it would therefore contribute to a cumulative impact beyond the threshold identified; and that it would therefore unreasonably and adversely affect my interests.

4. There are a number of aspects of this case that, to my knowledge, are not contested. For the purpose of this written submission I assume the following to be common ground:

- (a) Item (3a) above — the mainstream scientific understanding of the enhanced greenhouse effect, its causes, and the resulting climate change. This has been acknowledged by all parties as an accepted context for the hearing.
- (b) Item (3b) above — the expected impacts of climate change if the atmospheric concentration of greenhouse gasses continues to increase, including the adverse and unreasonable impacts on my

interests. The tribunal has heard expert evidence on this subject and it has not been contested by any of the parties.

- (c) Item (3c) — that it is the cumulative impact of greenhouse gas emissions that the tribunal must consider when assessing the impacts of emissions from the proposed DGDP. I had thought that Dual Gas contested this, but I understand that I was corrected by Counsel for Dual Gas in the course of my opening submissions<sup>1</sup>.
- (d) Items (3d) and (3e) above — the mainstream scientific prescription for the reduction in greenhouse gas emissions required in order to stabilise greenhouse gas concentrations at a level where there is a reasonable chance of avoiding the most serious impacts of climate change, namely a 40% reduction in the emissions of industrialised nations from 1990 levels by 2020.

5. There are then two outstanding issues that I need to address

- (a) While hearing my opening submissions, the Tribunal raised the question of how it should deal with the science based emissions reduction requirement (40% below 1990 levels by 2020) in the context of the requirements of existing legislation for a 20% reduction from 2000 levels by 2020. I will address that question first.
- (b) I believe that Dual Gas does contest item (3f) above — my claim that the proposed project is not consistent with the emissions reductions required. Arguments on that issue will make up the

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<sup>1</sup>Transcript page 670 line 2.

remainder of my submissions in relation to grounds under section 33B(2)(a) of the EP Act.

## **2 Threshold for unreasonable impacts**

6. Section 33B(1) of the EP Act provides that a person whose interests are affected by an EPA decision to issue a Works Approval may apply to VCAT for a review of that decision. Section 33B(2) subsections (a) and (b) then outline two different grounds on which an application for review may rely. Subsection (a) has the effect of allowing an application on the basis that certain kinds of consequences of the works, including the resulting emissions, will unreasonably and adversely affect the interests of the applicant. Subsection (b) has the effect of allowing an application on the basis that certain kinds of consequences of the works, including the resulting emissions, will be inconsistent with the relevant legislative and policy framework.

7. In my submission, therefore

(a) When considering grounds under 33B(2)(b) the Tribunal should have regard to the legislative and policy framework, and make an assessment against that framework. The appropriate legislated emissions reduction targets for consideration should be the 20% reduction from 2000 levels by 2020 required by the state Climate Change legislation, and the 80% reduction from 2000 levels by 2050 required by the federal Clean Energy Future legislation.

(b) When considering grounds under 33B(2)(a) the Tribunal should make an objective assessment of the impacts of the Works Approval on my interests, and whether or not they would be adverse and unreasonable. The appropriate benchmark for that assessment should be whether or not the Works Approval is consistent with the science based prescription for a 40% reduction in emissions from 1990 levels by 2020 in order to avoid extreme impacts from climate change.

8. In theory, at least, grounds under 33B(2) subsections (a) and (b) can be considered independently. The Tribunal may refuse to issue a Works Approval based on valid grounds under one of these subsections even if there are no valid grounds under the other. So an application on the basis of grounds under 33B(2)(a) could succeed even if there is no legislative or policy framework to prevent the relevant adverse and unreasonable impacts on the applicant.

9. I would like to say something more about the nature of thresholds. In the course of my submission on standing I referred to the Sorites fallacy. The argument runs as follows: A single grain of sand is not a heap of sand. Adding a second grain of sand does not make a heap of sand. Given any collection of grains of sand, adding a single extra grain does not make enough difference to turn it into a heap of sand. Therefore there can be no such thing as a heap of sand. Another version of the argument uses small increments on the colour spectrum between yellow and red to argue that red is actually yellow.

10. The Sorites fallacy uses the fact that the points immediately to either side of any boundary chosen on a continuous scale are very nearly equivalent. This is used to trick us into reasoning that there cannot be two or more qualitatively different states defined on a single continuous scale, on the basis that there is no sharp boundary distinguishing them. This is obviously not true — as the sand and colour examples show, it is possible to know the difference between two states even if the boundary is unclear.
11. The average emissions intensity of global electricity production is about 0.5 T/MWh. A successful global effort to stabilise atmospheric concentrations of greenhouse gasses will see that average fall quickly over the coming years, as electricity production increases and total emissions from electricity production fall. To achieve this the emissions intensity of new generating capacity will need to be much lower than the average emissions intensity of existing facilities. However difficult the appropriate threshold is to discern, in my submission the Dual Gas proposal, with an emissions intensity of 0.8 T/MWh, is clearly on the wrong side of the boundary for any reasonable choice of threshold.

### **3 Achieving emission reductions**

12. In my opening submissions I suggested that a substantial new source of emissions like the one proposed by Dual Gas could be consistent with the need to reduce emissions if

- (a) It *replaces* an existing source of emissions, and does so with sufficiently lower emissions and at a sufficiently lower emissions intensity.
- (b) It is a necessary step in a viable *pathway* to a low emissions outcome. This could be true of a technology development process.

13. In the course of opening submissions and the presentation of evidence neither Dual Gas nor the EPA has suggested any alternative justification for a large new source of emissions. Dual Gas has spent considerable time covering subjects that suggest that they do in fact hold that the DGDP satisfies one or both of the criteria just listed. I will now outline the reasons why, in my submission, the DGDP fails to meet either of these criteria, and is in fact not consistent with the emission reductions required.

### **3.1 Replacement**

14. There is no commitment to the closure of existing electricity generating facilities as part of this project. Dual Gas has relied on the Federal Government's 'Contract for Closure' program to claim that their facility would be replacing existing high emissions generating capacity. That program is, however, in no way linked to the DGDP project. Because a range of potential projects could enter the market in place of the capacity to be closed, any valid assessment of the impact of the DGDP based on the Contract for Closure program should compare the DGDP with these alternatives (which it would be displacing), and not with

the higher emissions capacity that will be closed in any case.

15. Assuming, however, that this project was linked to an orderly closure of the most emissions intensive units in the existing generating fleet, it would still not be consistent with the emission reductions required. This can be seen with reference to the following scenario, which I presented in the course of my opening submission. If the four most emissions intensive power stations in Victoria (Hazelwood, Yallourn W, Energy Brix and Loy Yang B) were to be closed, a 40% reduction in emissions from 1990 levels would be achieved only if the replacement capacity had an average emissions intensity of 0.21 T/MWh. It is obvious that the DGDP, with an emission intensity of 0.8 T/MWh, is not suitable replacement capacity if this average is to be achieved.
16. The Tribunal expressed an interest in other scenarios, and in particular how the figures would change if a 20% reduction in emissions from 2000 levels was to be achieved, as required by the Victorian Climate Change Act, rather than the 40% reduction from 1990 emissions modeled. While I don't have data on the emissions from electricity generation in 2000, I can provide an indication of what would be required for a 20% reduction from 2009 emissions.
17. The examples that I provided in my opening submission had the following form
  - (a) I proposed an amount of existing electricity generation to be replaced by generation from new facilities.

- (b) I proposed a new level of total emissions from electricity generation.
- (c) I provided a conclusion as to the average emissions intensity of the replacement electricity generation that followed from these two propositions.

To avoid listing a large number of these scenarios, in figure 1 I have included a graph from which any scenario of this form can be read. The graph is based on electricity generation in Victoria in 2009 and the resulting greenhouse gas emission. I will provide a more detailed description of this graph in my verbal submissions.

18. In my submission the most reasonable scenario involving a 20% emission reduction is as follows. If Hazelwood was to be closed, a 20% reduction in emissions would be achieved only if the replacement capacity had an average emissions intensity of 0.29 T/MWh. Clearly the DGDP is not consistent with this.
19. It is necessary to find a reasonable balance between the amount of existing electricity generation replaced (the effort) and the emission reduction achieved. The replacement of all six existing brown coal fueled generators would result in a 20% emission reduction if the replacement capacity had an average emissions intensity of 0.97 T/MWh. But replacing all these electricity generators would be an unreasonably large effort to achieve a 20% emission reduction, and would mean that the new plants were the most emissions intensive in the resulting fleet, and would have to be progressively shut down to achieve any further cut

in emissions. Similarly, a 20% reduction in emissions from 2009 levels by 2020 could be achieved by the closure of Hazelwood, Yallourn W and Energy Brix if the replacement capacity had an average emissions intensity of 0.81 T/MWh — about the same as the proposed DGDP — but the emission reductions in the following decade (from 2020 to 2030) would require the closure of some of the new capacity in order to remain on track to achieve the 80% emission reduction by 2050 required by the Clean Energy Legislation. Clearly this is not a reasonable or realistic scenario, and the Works Approval is inconsistent with this in any case because it does not require any closure or reduction in emissions from the DGDP in the decade from 2020 to 2030.

20. Victoria is in a unique position to achieve the required emission reductions relatively easily by the progressive replacement of our current brown coal generators. But only if the replacement capacity has reasonably low emissions — replacing the existing fleet with high emissions intensity plants like the DGDP would place us in the difficult position of needing to then close these new plants quite early in their design lifetime in order to achieve the required emission reductions. That would be a perverse, expensive and wasteful outcome.
21. Given the submissions above indicating that the DGDP is not consistent with emissions reduction requirements, the next question is whether it might provide a pathway to the required emissions reductions at some time in the future.

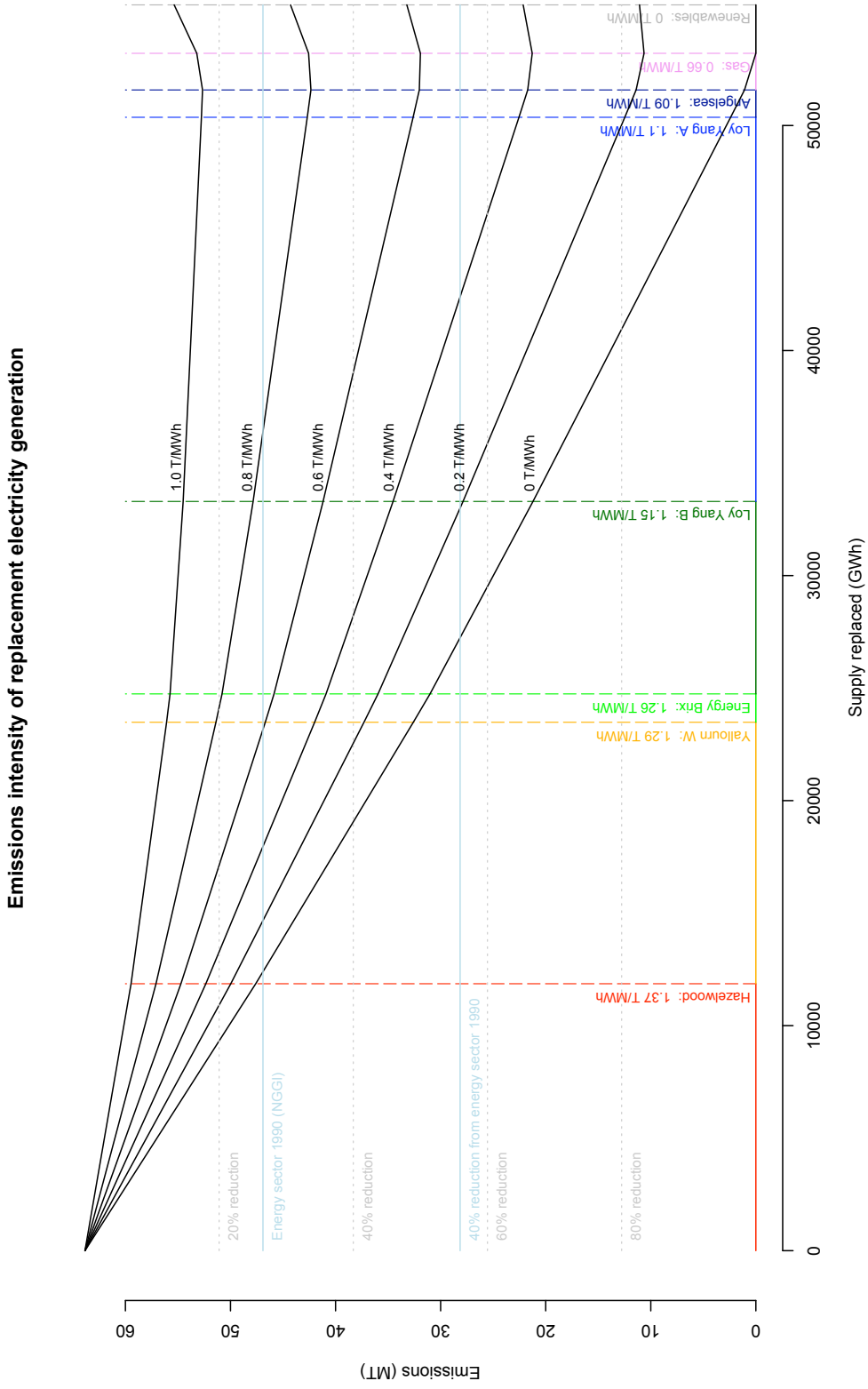


Figure 1: Contour plot of the average emissions intensity of replacement electricity generation. This is plotted as a function of the generation capacity replaced, and the new total emissions from generation after replacement, assuming replacement occurs in descending order of emissions intensity.

## 3.2 Pathway

22. The DGDP project does not provide a pathway to the emission reductions required. Dual Gas has spent a considerable amount of time before the Tribunal discussing carbon capture and storage and has presented evidence to the effect that pre-combustion capture of carbon from the syngas component of this project would be relatively straight forward using existing, proven technology. However, the DGDP would not include carbon capture, Dual Gas has made no commitment to implement it in the future, and there is no condition in the Works Approval requiring it. Dual Gas is in fact asking the Tribunal to remove a Works Approval condition that would require sulphur capture equipment to be installed, despite the fact that this equipment would be a necessary component of the carbon capture process.
23. Based on evidence before the Tribunal, the main obstacle to CCS seems to be the transport and safe storage of captured carbon. It is difficult to see how the DGDP would provide any pathway to this obstacle being overcome.
24. Assuming, however, that this project would at a later date include CCS, the following analysis of the evidence before the tribunal indicates that it would still have a relatively high emissions intensity, and would still be inconsistent with emission reduction requirements.
  - (a) Similar projects in other parts of the world have been able to capture about 50 to 60% of their total emissions.

- (b) To capture that proportion of its total emissions the DGDP would need to extract about 80 to 90% of the carbon from the syngas stream (assuming syngas accounts for 70% of plant emissions, 85% capture of syngas carbon leads to 59.5% of total emissions being captured).
- (c) The auxiliary load required for this rate of carbon capture would be large, probably more than 30% of the plant's output. Assuming 60% capture of total emissions using 30% of otherwise sent out electricity, CCS would reduce the emissions intensity of the plant would be reduced from 0.8 T/MWh to about 0.46 T/MWh. This would still be higher than the emissions intensity of an off-the-shelf F, G or H class turbine running on natural gas, and much higher than genuinely low emissions alternatives like solar thermal and wind.

25. Even if the DGDP was a necessary part of a pathway to CCS, and even if it was required to implement CCS if it existed, and even if CCS existed and was implemented, the project would still have an emissions intensity of around 0.46 T/MWh — more than double the 0.21 T/MWh required to achieve a 40% cut in emissions from 1990 levels following the closure of Victoria's four most emissions intensive plants. The DGDP does not provide a pathway to the required emissions reductions.

## 4 Summary

26. In order to stabilise atmospheric greenhouse gas concentrations at a safe level and avoid the adverse and unreasonable impacts that would result from more substantial climate change, including the impacts on myself, significant emissions reductions must be achieved in the coming years. Whether the Tribunal takes as a benchmark the science based target of a 40% emission reduction from 1990 levels by 2020, or the legislative requirements for a 20% emission reductions by 2020 and an 80% emission reduction by 2050 from 2000 levels, the DGDP is inconsistent with the emission reductions required. In my submission the grounds that I bring under section 33B(2)(a) of the EP Act are therefore reason enough for the Tribunal to reject the DGDP Works Approval Application.
27. I adopt the submissions made on behalf of Environment Victoria and Locals Into Victoria's Environment under section 33B(2)(b) of the EP Act. In summary these submissions show that the Tribunal should reject the DGDP Works Approval application because
- (a) The DGDP proposal does not meet the best practice requirement laid out in the SEPP (AQM).
  - (b) The DGDP proposal is not consistent with the state Climate Change Act or the federal Clean Energy Future legislation.
  - (c) Approval of the DGDP would contradict the principles laid out in the EP Act and the SEPP (AQM).

I ask that my decision not to engage in a repetition of the submissions made on behalf of EV and LIVE not detract from the importance of those submissions as part of my application for review.