HAZELWOOD MINE FIRE INQUIRY

PUBLIC HEARINGS INTO PARAGRAPHS 8-10 OF THE TERMS OF REFERENCE DATED 26 MAY 2015

OUTLINE OF SUBMISSIONS BY COUNSEL ASSISTING

OVERVIEW: THE NEED FOR A STEP CHANGE

1. The question of how to successfully rehabilitate the three open cut brown coal mines in Victoria is an incredibly complex one. Eminent experts advise that filling each void with water, either fully or partially, appears the only viable rehabilitation option. However, presently there is no scientific answer about how exactly this may be done in order to ensure pit stability and water quality at closure and into the future. Further, a serious question exists of whether or not one, or even all, of the mines will be able to access the quantity of water they require to create (and sustain) a pit lake.
2. Some of this complexity arises because there is no standard definition of what final and progressive rehabilitation does and does not include; nor is there agreement as to what "effective" rehabilitation entails. For example, is a pit lake which is insufficiently safe to allow public access effectively rehabilitated? What about a pit lake which requires monitoring in perpetuity to ensure stability and water quality?
3. Significant research and coordination and consultation between interested parties and government departments is required before the pit lake "concept" can be confirmed to be, in fact, viable. The research required will take many years.
4. All of this has been known for some considerable time. Known by the mines and by the government. All have received expert advice over many years to alert them to the fact that much more must be done if these questions are to be solved. Though there have been some recent positive steps forward, the evidence demonstrates a tendency by the mines and the government to put consideration of these issues off for another day.
5. Answering these complex closure questions in itself will be a costly process. The answers will inform the ultimate cost of the pit lake option. Rehabilitating each mine

is likely to cost hundreds of millions of dollars. It may cost significantly less. It may take only years or decades after closure; it may take centuries.

6. In light of these uncertainties, the present rehabilitation bonds of $15 million for the Hazelwood and Loy Yang mines and $11.46 million for the Yallourn mine, intended as they are to ensure that the State does not end up bearing the cost of rehabilitating the mines itself, must be seen as manifestly inadequate. The failure by the regulator to review the bond levels in the 20 years since privatisation, despite the enormous growth in the mines during that time, is an egregious failure of regulation which must be addressed.
7. This Inquiry must, as mine closure expert Corinne Unger urged, mark a "step change" in the planning process for closure.[1] Action is required now in order to ensure that, by the time of closure, rehabilitation can be achieved. The system requires redesign to embed the coordination, tighter regulatory control, transparency and incentivising of research that is required to achieve this goal. A person or entity independent of government is required to monitor this change.
8. With such redesign, there is cause for cautious optimism. We know from the German experience what can be done. However, without re-design there is a danger that either the mines or, as is more likely, the State, will be left in perpetuity with huge, dangerous, unsightly and expensive voids to look after and that the communities of the Latrobe Valley will suffer the result.

THE BOARD'S TERMS OF REFERENCE ('TOR')

9. The Board is required to inquire into and report on, for present purposes, the following:

Term of Reference 8:

Short, medium and long term options to rehabilitate:

i. land on which work has been, is being or may lawfully be done in accordance with a Work Plan approved for the Hazelwood Mine, the Yallourn Mine, and the Loy Yang Mine; and

[1] Unger T:639-15

ii. land in relation to which an application for variation of the Work Plan is under consideration for the Hazelwood Mine, the Yallourn Mine, or the Loy Yang Mine.

Term of Reference 9:

For each rehabilitation option identified under paragraph 8:

(a) whether, and to what extent, the option would decrease the risk of a fire that could impact the mine and if so, the cost of the option relative to the cost of other fire prevention measures;
(b) whether, and to what extent, the option would affect the stability of the mine;
(c) whether, and to what extent, the option would create a stable landform and minimise long term environmental degradation;
(d) whether, and to what extent, the option would ensure that progressive rehabilitation is carried out as required under the Mineral Resources (Sustainable Development) Act 1990;
(e) the estimated timeframe for implementing the option;
(f) the option's viability, any associated limitations and its estimated cost;
(g) the impact of the option on any current rehabilitation plans for each mine;
(h) whether, and to what extent, the option would impact the future beneficial use of land areas impacted by the mines; and
(i) whether the option is otherwise sustainable, practicable and effective;

Term of Reference 10:

Having regard to the rehabilitation liability assessments that have been or will be reported in 2015 by the operators of each of the Hazelwood Mine, the Yallourn Mine, and the Loy Yang Mine, as required by the Mineral Resources (Sustainable Development) Act 1990, and to the outcome of the Rehabilitation Bond Review Project:

(a) whether the rehabilitation liability assessments referred to above are adequate;
(b) whether the current rehabilitation bond system, being one of the measures to provide for progressive rehabilitation by end of mine life as required under the Mineral Resources (Sustainable Development) Act 1990, is, or is

likely to be, effective for the Hazelwood Mine, the Yallourn Mine, and the Loy Yang Mine; and

(c) any practical, sustainable, efficient and effective alternative mechanisms to ensure rehabilitation of the mines as required by the Mineral Resources (Sustainable Development) Act 1990.

Term of Reference 12:

Any other matter that is reasonably incidental to those set out in paragraphs [8] to [10].

Some Key Terms

10. The terms "short, medium and long term" are not defined in the Terms of Reference (the TORs). In its report to the Board dated 16 November 2015, Jacobs proposed the following definitions:

    - Short-term – now until the cessation of mining operations and covering the period of progressive rehabilitation (scheduled mine closure dates are Yallourn 2032, Hazelwood 2033 and Loy Yang 2048);
    - Medium-term – a period after the cessation of mining operations; and
    - Long-term – the period beyond 15 years after the cessation of mining operations.[2]

11. While no basis is provided in the report for these somewhat arbitrary time frames, we submit that these definitions should be accepted by the Board. They are broadly consistent with the other evidence before the Board about relevant timeframes for considering mine rehabilitation and closure questions.
12. Term of Reference 10 requires the Board to have regard to "the outcome of the Rehabilitation Bond Review Project". This expression is defined in paragraph 18 of the TOR as "the current review into rehabilitation bonds and the methodology by which they are calculated, as referred to at page 1612, lines 7-8 of the transcript of the Hazelwood Mine Fire Inquiry dated 10 June 2014".
13. This transcript reference refers to the evidence of Ms Kylie White, who was at the time the Executive Director of the Earth Resources Regulation Branch of the

[2] Exhibit 24 – Report of Jacobs, 16 November 2015, EXP.0011.001.0075.

Department of State Development, Business and Innovation. This was the equivalent position to that currently held by Mr Ross McGowan.[3]

14. Ms White explained to the first Inquiry in 2014 that a project to devise a methodology to assess the rehabilitation liability of all mines in Victoria was commenced in 2010, had stalled, but had recently been re-enlivened.[4]
15. The evidence before this Inquiry is that a 'Rehabilitation Bond Review Project' was commenced within DEDJTR in April 2015.[5] We note that the project plan for this project was approved on 3 July 2015.[6] An earlier version of the project plan dated 24 October 2014 was also produced to the Inquiry.[7]
16. The evidence discloses that the project commenced in April 2015 is, for all practical purposes, the same project to which Ms White referred in her evidence on 10 June 2014.
17. However, the evidence about the "outcome" of that project raises an important question for the Board. It is clear from the project plan that the final step or milestone for the project is 'Finalise bond levels for each coal mine' which was originally scheduled to occur on 30 November 2015.[8] This has not occurred. In his statement dated 20 November 2015, Mr Wilson describes this process as "ongoing".[9]
18. The reason for the delay in the completion of the project that Mr Wilson gave was slippage in the timeframe for completion of earlier stages of the project which had "run-on consequences".[10] As to the current expectations for completing the project, Mr Wilson told the Inquiry that "it will certainly be on the other side of Christmas".[11]
19. The evidence before the Board about the progress of the project is that DEDJTR has received the final reports from AECOM,[12] but may need to consult further with the mines about those reports.[13]
20. In these circumstances, the options for the Board appear to be two-fold:

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[3] McGowan T105:20-21
[4] Hazelwood Mine Fire Inquiry Report 2014, p.190.
[5] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, para 130.
[6] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, Annexure 36
[7] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, para 147, Annexure 37
[8] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, Annexure 37, p.7; see also Wilson T823:23-28.
[9] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, para 156
[10] Wilson T825:2.
[11] Wilson T826:4-5
[12] See discussion below.
[13] Wilson: T824:16-18.

- Report that it cannot complete TOR 10 because a condition-precedent (the completion of the project) has not occurred and is not likely to occur in time for it to be (fairly) considered; or
- Address the requirements of TOR 10 on the basis of so much of the project as has been completed noting the above.

21. We submit that, given the important subject matter involved, option 1 is quite unattractive and that the Board should take the pragmatic and practical approach in option 2.[14]

THE EVIDENCE BEFORE THE BOARD

22. The Board has had the benefit of the following:

- 25 public submissions;
- Documents produced by the Latrobe Valley mines (the mines) and the State pursuant to various Notices to Produce;
- Five facilitated community consultation sessions held on 4 and 5 August 2015 in Traralgon and Morwell, with a total of 72 participants;
- Various meetings with interested parties including Victorian Government agencies and departments and the mines;
- In relation to TOR 8 and 9, two expert reports provided by Jacobs Australia Group as an independent consultant, providing information and advice to the Inquiry regarding mine rehabilitation options, and coordination and planning models. The instructions to Jacobs were necessarily at a high level and required that the options report be a broad and high level assessment of the options for the Latrobe Valley mines collectively rather than individually. The Board also received six other expert reports and statements from Emeritus Professor Galvin and Ms Unger of the Technical Review Board, Professor Mackay from Federation University and the Technical Review Board, Professor Sullivan from Pells Sullivan Meynink retained by AGL Loy Yang, and Drs Haberfield and McCullough from Golder Associates retained by GDF Suez;

[14] Option 2 is analogous to the task of a court striving to give a statutory provision work to do when a literal reading may suggest that it is unworkable consistently with the modern purposive approach to statutory construction – see generally *Project Blue Sky Inc v ABA* (1998) 194 CLR 355 at 382. In any event, the incidental power under Term of Reference 12 would allow the Board to adopt this option.

- A joint expert report in relation to TOR 8 and 9 authored by Professor Galvin, Professor Mackay, Professor Sullivan, Dr Haberfield, Dr McCullough and Mr Hoxley;
- In relation to TOR 10, an expert report from Accent Environmental as an independent consultant, providing information and advice to the Inquiry regarding alternative rehabilitation financial mechanisms together with an expert report from Dr Gillespie, from Gillespie Economics retained by AGL Loy Yang;
- 19 witness statements from 13 witnesses, comprising community members, Government witnesses and mine employees;
- Six days of public hearings in Traralgon on 8–11, 14–15 December 2015 during which there was examination by 6 parties of 25 lay witnesses and experts and 66 exhibits tendered;
- And on 18 December 2015, oral submissions by the parties to be followed by written submissions if they choose.

23. This Board has undertaken its work in relation to TOR 8, 9 and 10 under significant time and cost limitations, having to balance its competing obligations with respect to its other Terms of Reference.

Options for Rehabilitation

24. The evidence before the Board reveals that various options for rehabilitation have been canvassed and considered including full or partial pit lakes for recreational use and fully or partially filling the voids with overburden or other material for agricultural or industrial use – or a combination of these.
25. In the Jacobs report, the preliminary mine rehabilitation options were described as:
    - a pit lake (a large deep lake formed by filling the final mine void to the pit crest);
    - full backfill (filling the final mine void to the pit crest with overburden and inert mineral waste);
    - partial backfill above the Water Table (partially filling the final mine void with overburden and other materials to a level above the natural groundwater);
    - partial backfill below the Water Table (partially filling the final mine void with overburden and other materials, with water up to the natural groundwater level to create a shallow lake);

- lined void (lining the final mine void with clay to create an impermeable lining to inhibit the flow of water in or out of the void); and
- a rehabilitated void (partially backfilled with available overburden and rehabilitation as a dry lowered landform).[15]

26. Of these preliminary options, Jacobs' opinion was that only two options were viable – namely the pit lake or the partial backfill below the Water Table. These were viable based on a consideration of low fire risk, the ability of that landform to achieve weight balance, and the likely availability of material for undertaking the option.[16]
27. The Joint expert report records that the experts consider that the two Jacobs models are variants of the one basic outcome, which is that the final mine void for all mines will be filled with backfill and water to varying degrees. The experts noted that the water levels for the three mines will necessarily differ. The group also opined that the risk assessment undertaken by Jacobs in its report was at a very high, broad-brush level, consistent with its brief from the Inquiry.[17]
28. There was a difference in opinion among the experts about whether the final mine voids could remain as they are while continuing to pump the water from the aquifer in perpetuity. This was an option raised by Professor Galvin.[18] Professor Sullivan and others considered that this was not a viable option as the continued pumping of the aquifer affects the global system.[19] Dr McCullough opined that dry voids would not lend themselves to as many opportunities for community use as wet voids.[20]
29. Because of this broad consensus in the evidence of the experts, the focus of the hearings was, and of these submissions is, evaluating the viability of the option of filling the voids, either partially or fully, with water ("the pit lake option"). This has been the preferred option or "concept" of each mine since SECV days. It has been agreed by various experts to be the only viable option because, it seems, while there are presently significant uncertainties as to how it may be achieved, alternative options appear far less achievable.
30. In these circumstances, it is submitted, the starting point for the Board is to assess the viability of the pit lake option as against the questions set out in Term of

[15] Exhibit 24A – Expert report of Jacobs, 16 November 2015, p.48.
[16] Exhibit 24A – Expert report of Jacobs, 16 November 2015, p.58.
[17] Exhibit 18 - Joint Expert Report, 3 December 2015, p.5.
[18] Galvin T443:27-444:10
[19] Sullivan T444:12-18
[20] McCullough T445:5-22. Though see discussion at [96] below.

Reference 9. That analysis will highlight the degree of uncertainty which presently limits the ability of the Board – or anyone – to answer almost all of the questions raised and to, ultimately, determine that this option will at closure be viable for one or more of the mines.

LEGISLATIVE SCHEME

31. The key legislation governing coal mining in Victoria is the Mineral Resources (Sustainable Development) Act 1990 (Vic) (the Act). The Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2013 (Vic) (the Regulations) provide further detail relevant to the Act and its implementation. The Department of Economic Development, Jobs, Transport and Resources (DEDJTR) has also published a range of guidelines that outline its approach to administering the scheme.
32. Earth Resources Regulation Branch (ERR) is responsible for the regulation of mines in Victoria. In this report, ERR (and its various predecessors) are referred to as the 'Mining Regulator' (noting that other government departments and agencies also have responsibility for aspects of mine regulation in Victoria). The Secretary to DEDJTR is referred to in this report as the 'Department Head'.
33. The stated purpose of the Act is 'to encourage mineral exploration and economically viable mining and extractive industries which make the best use of, and extract the value from, resources in a way that is compatible with the economic, social and environmental objectives of the State.'[21]
34. The Act's objectives (s. 2) are to:

    (a) encourage and facilitate exploration for minerals and foster the establishment and continuation of mining operations by providing for:

        i. an efficient and effective system for the granting of licences and other approvals; and
        ii. (ii) a process for co-ordinating applications for related approvals; and

[21] Section 1.

iii. (iii) an effective administrative structure for making decisions concerning the allocation of mineral resources for the benefit of the general public; and

iv. (iv) an economically efficient system of royalties, rentals, fees and charges; and

(b) to establish a legal framework aimed at ensuring that:

i. risks posed to the environment, to members of the public, or to land, property or infrastructure by work being done under a licence or extractive industry work authority are identified and are eliminated or minimised as far as reasonably practicable; and

ii. consultation mechanisms are effective and appropriate access to information is provided; and

iii. land which has been mined or from which stone has been extracted or removed is rehabilitated; and

iv. just compensation is paid for the use of private land for exploration or mining; and

v. conditions in licences and approvals are enforced; and

vi. dispute resolution procedures are effective

....

35. Under s. 40 of the Act, a licensee must also lodge an approved work plan with the Department Head of the Mining Regulator.[22] Schedule 15 of the Regulations specifies that work plans for a coal mine larger than five hectares must address matters including:

…

(f) a rehabilitation plan, including concepts for the end utilisation of the site [final land use], and proposals for the progressive rehabilitation and end [final] rehabilitation of the site

(g) an environmental management plan

(h) a community engagement plan

[22] Section 40.

(i) for 'declared mines' such as the Latrobe Valley mines, information on mine stability.[23]

36. Rehabilitation plans are a critical element of work plans, as they outline how a mined area will be transformed 'into a state that is suitable for the future use of the site after mining has finished'.[24]
37. Part 7 of the Mineral Resources Act is concerned with rehabilitation. In summary:

- A licensee must rehabilitate land in accordance with an approved rehabilitation plan (s. 78);
- A rehabilitation plan must take into account: any special characteristics of the land; the surrounding environment; the need to stabilise the land; the desirability or otherwise of returning agricultural land to a state that is as close as is reasonably possible to its state before the mining licence, prospecting licence or extractive industry work authority was granted; and any potential long term degradation of the environment (s. 79);
- The Minister may require a licensee to undertake a rehabilitation liability assessment in the manner and form specified by the Minister (s. 79A);
- The Minster may require a licensee to enter into a rehabilitation bond in an amount determined by the Minister and the amount may be varied by the Minister if s/he is of the opinion that the amount is insufficient (s. 80);
- A condition of the bond is that the licensee rehabilitates land as required by s. 78 (s. 80(3));
- A licensee is required, as far as practicable, to rehabilitate the land before the licence expires and, if this has not been done as expeditiously as possible afterwards (s. 81);
- The Minister may require that a licensee engage an auditor to certify that land has been rehabilitated as required by s. 78 for the purpose of deciding whether to return any bond (s. 81A);
- The Minister must return a bond if satisfied that the land has been rehabilitated under s. 78 and that the rehabilitation is likely to be successful (s. 82);

[23] Schedule 15. Each of the LV mines is a 'declared mine' under s. 7C of the Act.
[24] Victorian Government Submission, [3.3].

- If the Minister is not satisfied that land has been rehabilitated as required by s. 78 and that further rehabilitation is required, s/he may take any necessary action to rehabilitate the land (s. 83(1)); and
- The Minister may recover as a debt due to the Crown, any amount by which the cost incurred exceeds the amount of the bond.

TERM OF REFERENCE 9

Fire

38. Term of Reference 9(a) asks "whether, and to what extent, the option would decrease the risk of a fire that could impact the mine and if so, the cost of the option relative to the cost of other fire prevention measures".
39. As the Hazelwood mine fire of 2014 so starkly demonstrated, uncovered coal is a serious hazard. Covering the coal with water clearly eliminates that hazard. In that sense, then, the pit lake option can be presently evaluated as an option which would significantly decrease the risk of fire (at least in the long term).
40. However, none of the three mines propose to (or can) cover every part of every coal face with water. To a greater or lesser extent, they each propose to have a portion of the batters above the final water level covered with overburden and vegetation. The first question that arises in relation to that proposal relevant to fire risk is: what depth of overburden is required in order to reduce to an acceptable level the risk of the ignition of the coal? No witness was able to direct the Board's attention to research which answered this question.
41. James Faithful, Technical Services Manager – Mines, Hazelwood Power Corporation Pty Ltd, gave evidence that coal covered by 1 meter of overburden did not catch fire during the Hazelwood mine fire of 2014.[25] He believed this demonstrated it is a safe and appropriate level of coverage.
42. In contrast, Jacobs considered 2 meters as appropriate.[26] Mr Spiers of Jacobs explained to the Board that the rationale behind choosing 2 meters was that, "in this situation we are talking about treatment of a batter that's got to last hundreds of years".[27] He added that "we really didn't know the right answer so we went for a

[25] Faithful T273:25. The Hazelwood Mine Fire Inquiry Report 2014 noted that "rehabilitation of worked out areas of a coal mine is a recognised means of eliminating or reducing the risk of fire": p.152.
[26] Exhibit 24A- Expert report of Jacobs, 16 November 2015, p.87.
[27] Spiers T502.6-8.

conservative depth that we thought was safe to achieve the outcome and wouldn't be overly costly."[28]

43. Further, planning towards a pit lake option means, on each mine's current plans, that coal faces underneath the proposed final water level will be uncovered and, therefore, exposed until the final water level is reached.[29] On some modelled scenarios, this could be for a period up to 500 years for Hazelwood. The time to fill the Yallourn mine is estimated, by the mine, at 17 years, and 70 years for the Loy Yang mine.[30]
44. Leaving to one side for the moment whether this approach would be suitable from a safety and/or water quality perspective (these issues are discussed below), it is plainly a matter relevant to fire risk. Presently fire risk appears to be managed well by each mine through a combination of training, on hand expertise, equipment and monitoring.[31] Each now has a licence condition to conduct risk assessment in relation to fire.
45. Victoria's Emergency Management Commissioner, Craig Lapsley gave evidence that the mines' involvement in the Coal Mines Emergency Management Taskforce has been "exceptionally good".[32] In relation to Hazelwood, the Implementation Monitor, Mr Comrie, states in his 2015 annual report that GDF Suez has completed most of its implementation actions, those remaining are progressing in a satisfactory manner and that GDF Suez has provided a high level of cooperation to him in undertaking its responsibilities.[33]
46. However, the fire systems are expensive to maintain[34] and some of it is located on the pit floors.[35] It is not clear what the cost or practicalities are of maintaining that type of fire risk prevention system during the period of time (the duration of which is currently unknown) between the commencement of pit flooding and reaching the proposed final water level. It may be that, in fact, overburden is required to be placed on each part of the batters as a fire prevention measure post-closure. The

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[28] Spiers T503.5-8.
[29] Faithful T281:21; Mether T281:10; Rieniets T282:13.
[30] Exhibit 41B – AECOM report, 13 November 2015, p 6; Exhibit 41E – AECOM report, 7 December 2015, p 7
[31] See, for example, Exhibit 13 – Statement of James Faithful, 13 November 2015, paras 158-161, 198.
[32] Lapsley T76.
[33] Exhibit 32 – Hazelwood Mine Fire Inquiry Implementation Monitor Annual Report 2015.
[34] T348:11 (Rieniets)
[35] Exhibit 13 – Statement of James Faithful, 13 November 2015, paras 98, 203

cost of undertaking that work and the degree to which it may require overburden to be obtained from outside the mines, potentially at significant cost, is also unknown.

47. Craig Lapsley has indicated a willingness to participate and assist in further conversations with the mines and DEDJTR in relation to this issue.[36] He has also indicated a desire for some further discussion about covering the coal as a short to medium term option to reduce fire risk.[37]
48. DEDJTR has recently established a Mine Fire Safety Unit which will also assist in answering some of these questions.[38] The role of the MFS Unit will be to "lead regulatory, compliance and education activities related to fire safety and to provide advice to ERR staff, industry and the public".[39] It will have a staff of six and an annual budget of $1.6m.[40] The Unit will contribute to ERR's assessment of fire risk in the RAMPS submitted by the mines as required by condition 1A of their licences.[41]
49. Mr Lapsley saw the unit as providing a "practical understanding and access to the three mine operators to be able to progress standards and assess those standards and ensure that the actions that are set are carried out".[42]
50. In its recently published 'Action Plan'[43] ERR explains that it is presently recruiting to fill the MFS Unit. The work of the Unit will be supported by "risk and fire experts" who will provide a conduit for the regulator to "best practice in other Australian jurisdictions". These initiatives, arising as they do out of the first HMFI report, are to be commended.[44]

[36] T91.7 (Lapsley).
[37] T90.11 (Lapsley).
[38] T133.10 (McGowan).
[39] Exhibit 5C, [6].
[40] Exhibit 5C, [8].
[41] Exhibit 5C, [16]-[19].
[42] T94.18-30.
[43] Exhibit 37 - Earth Resources Regulation Action Plan 2015-16, discussed in detail below.
[44] Exhibit 37 – Earth Resources Regulation Action Plan 2015-16, p. 4. See recommendation 4 of the first Inquiry.

Stability

51. Term of Reference 9(b) requires the Board to consider "whether, and to what extent, the option would affect the stability of the mine". Term of Reference 9(c) directs attention to whether and, to what extent, the option would create a stable landform. We address (b) and (c) together in this section.
52. According to Professor Sullivan, in geotechnical engineering, there is no definition of either "safe" or "stable" and that often these are personal value judgments.[45] In the joint expert report, all experts agreed that there is no universal definition of "safe and stable" and therefore currently no clear acceptance criteria.[46]
53. Professor Galvin informed the Board that "mine stability is particularly important in the Latrobe Valley because of the closeness to mine crests of key infrastructure, such as highways, railway lines, power transmission lines, telecommunication systems, rivers and drains."[47] He noted that there has been a history of ground movement in the vicinity of the mines.[48]
54. The science presently does not allow for an evaluation of the viability of the pit lake option from a stability perspective. According to Ron Mether, Mine Manager of the Yallourn Mine, "stability is a major consideration for our mine when we move to that final rehabilitation stage."[49] Similarly, Steve Rieniets, General Manager of AGL Loy Yang operations, told the Board that "rehabilitation and stability going forward is a complex issue and that needs to be resolved before final rehabilitation can be undertaken in a safe manner."[50]
55. Part of the complexity lies in the unique properties of the Latrobe Valley which Professor Tim Sullivan described as a "complex system".[51] The coal is light and very sensitive to movement as a result of interaction with water. Professor Galvin stated that:

> *As groundwater and coal are extracted, the unmined coal relaxes and moves, allowing natural join, or cracks, to open up. If a crack then fills up*

[45] Exhibit 23 – Report of Tim Sullivan, 27 November 2015, [103].
[46] Exhibit 18 - Joint Expert Report, 3 December 2015, p.7.
[47] Exhibit 17 – Statement of Jim Galvin, 24 November 2015, [22].
[48] Ibid.
[49] T358.4 (Mether).
[50] T254.7-10 (Rieniets). T357.12 (Faithful).
[51] T439.25 (Sullivan).

with water, the water pressure in the crack can cause a whole block of coal to be pushed and slide outwards.[52]

56. Each of the mines has water pressure behind batter walls and the pit floor – though this is far less of an issue at the Yallourn Mine.[53] There are particular stability concerns relating to particular batters, such as the northern batter at the Hazelwood Mine, the solution to which is currently unknown.[54]
57. The process of filling a mine with water may itself create "undue risks"[55] including potentially reactivating the Lewis Anomaly, an anomaly which involves the bending of gas pipes in Morwell towards the mine.[56] How quickly or slowly the void is able to be filled may impact on stability.[57] According to Dr Von Bismarck, a filled void is easier to stabilise so it is desirable to fill the voids as quickly as possible.[58]
58. The use of dirt, or overburden, may be one way to assist.[59] According to Professor Sullivan, "it's the one physical thing that can probably withstand the sort of critical loading events that will happen in the very long term which is what we are talking about here."[60]
59. However, what level of overburden may be required to achieve stability in a pit lake is not known. It may be that different layer levels are required in different parts of each pit.[61] This could end up consuming quite a large amount of the available overburden.[62]
60. Similarly, the requirement to ensure pit walls above the proposed final water level are safely drained may result in more than the presently proposed 1 meter of

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[52] Exhibit 17 – Statement of Jim Galvin, 24 November 2015, [16].
[53] Exhibit 14 – Statement of Ronald Mether, 16 November 2015, para 177; Exhibit 13 – Statement of James Faithful, 13 November 2015, para 42; Exhibit 12A Statement of Stephen Rieniets, 30 October 2015, paras 171-175.
[54] Professor Sullivan notes that he is 'concerned about the impacts of critical loading events on the stability of the northern batter': T440.1 (Sullivan);See also Haberfield, T514.25
[55] T434.9 (Sullivan).
[56] T442.15 (Mackay).
[57] Mr Rieniets conceded studies still had not indicated what was the safe rate to fill the pit lake: T270.2.
[58] T554.2 (Von Bismarck).
[59] T439.3 (Galvin).
[60] T444.19 (Sullivan). Dr McCullough explained some of the dangers of a submerged batter collapse at T459.12.
[61] T504.26 (Spiers).
[62] T437.29 (Galvin). According to Jacobs, irrespective of the final water level, there is a more stable outcome if overburden is used in the pit: T473.8 (Hoxley).

coverage being required.[63] According to Professor Sullivan, "it is too early to talk about a layer thickness".[64]

61. Overburden is a scarce resource[65] because of the coal to overburden ratios in the Latrobe Valley coal mines.[66] As a result, any differences in terms of the level of overburden required to achieve a stable pit lake would impact on the cost of that rehabilitation option.[67]
62. A further unknown is what impact wave erosion may have on a pit lake during filling and after the proposed water level has been reached and what, if anything, will be required to ensure any such erosion does not destabilise the lake. The experts disagreed about the likely need for 'rip rap' in each pit.[68] There are significant cost implications if a measure such as rip rap is determined to be required.
63. AECOM determined that the cost of rip rap should be included in cost liability assessments, including subsequent and ongoing rip rap costs over the period for 500 years for the Hazelwood mine (based on that being the estimated fill time).[69] In questioning by Counsel for GDF Suez, Mr Chadwick of AECOM explained that the costs for rip rap was based on their assessment that the potential erosion in the Hazelwood mine was greater due to the longer timeframe for the final mine void to fill. The use of the rip rap was based on AECOM's conservative opinion that it would be necessary "in the absence of other information suggesting that it is not needed."[70]
64. Hazelwood indicated that further work on wave erosion will be undertaken.[71]
65. What equates to a stable final batter slope angle is also presently unknown. The experts record in the joint expert report that there is no "scientific and engineering" evidence to support the 3H:1V ratio as being the "generally accepted" or "generally adopted" long term slop angle for all rehabilitated mine slopes in the Latrobe Valley.[72] Answering this question may impact significantly on the cost of labour and potentially paying for the sourcing of external overburden.

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[63] T329.23 (Faithful). See also T319.17 (Mether).
[64] T506.28 (Sullivan).
[65] T274.7 (Faithful).
[66] T538.21 (Von Bismarck). This may be contrasted with the German situation: T553.5 (Von Bismarck).
[67] T274.21 (Faithful).
[68] T529.19 (Sullivan).
[69] Exhibit 41C - AECOM report, 13 November 2015, Appendix B.
[70] T980.8 (Chadwick).
[71] T338.6. 355. 356.9 (Faithful).
[72] Exhibit 18 - Joint Expert Report, 3 December 2015, p.3-4.

66. Perhaps the greatest unknown as it relates to stability, however, is the question of how long the pit lakes will require monitoring after filling. Professor Rae McKay stated that, "the research is simply not strong enough to give a clear indication of how quickly we can expect to see stability reached"[73] and that it may be decades after the proposed water level is reached.[74] Any maintenance required "will be a significant expense".[75] Mr Rieniets acknowledged that Loy Yang's current presumption that maintenance requirements "taper off" as flooding occurs, assumes stability.[76]
67. Significant research is required to attempt to solve the present conundrums: how can each pit lake be made stable?[77] And what will that cost? The research itself will be time consuming and expensive.
68. Two studies are to shortly commence to progress knowledge in this area. The Batter Stability Project will take place at Yallourn. The government has provided seed funding of $2.2 million.[78] The second is a jointly funded program by AGL Loy Yang and the government to take place at the Loy Yang mine.[79]
69. While commendable, Professor Galvin has referred to these studies as being "the tip of the iceberg."[80] He notes that "a significant amount of further research directed towards achieving mine stability in the long term is required. Addressing this legacy issue will require significant funding."[81]

Water Quality

70. Term of Reference 9(c) requires the Board to consider whether, and to what extent the option would minimise long term environmental degradation.
71. It is not presently clear how water quality will be maintained in each of the proposed pit lakes – nor what the costs of answering this question and maintaining safe quality will be.
72. The complexities include whether or not flow through (connection to river systems) is possible or even desirable. Dr McCullough gave evidence that flow through can

[73] T456.16 (Mackay).
[74] Ibid.
[75] T412.5 (Mackay).
[76] T268.26-31 (Rieniets).
[77] This was acknowledged by Mr Rieniets at T269.6 and T269.19.
[78] Exhibit 17 – Statement of Jim Galvin, 24 November 2015, Annexure D, p.74.
[79] Exhibit 19 – Statement of Rae Mackay, 27 November 2015, [16]-[18].
[80] T407.13 (Galvin).
[81] Exhibit 17 – Statement of Jim Galvin, 24 November 2015, [28].

create "a number of dangers both for the lake and also for the river and for users of both of those entities."[82] In part this is because of the potentially unsafe interaction between any coal, overburden and/or ash dumps on the one hand, and water systems on the other. These interactions, particularly when evaporation also occurs, may result in environmentally unsafe water.

73. It is possible that these issues may be solved by treatment of the water, by sealing the pit floors and walls or by a combination of these measures. A lot of work must occur in order to determine how and if the pit lakes can be made safe from a water quality perspective.[83] According to Southern Rural Water, "there are significant risks related to groundwater management" inherent in the Loy Yang intended pit lake.[84]
74. It is likely that the prospects for Yallourn in successfully solving these questions is greater than for the other two mines. Professor Mackay told the Board that "I would not expect either Hz or LY to have water levels which would allow a direct movement of water over land back into the river system. They will be enclosed lakes and their primary discharges if left to nature will be evaporation."[85] Evidence provided by the Hazelwood and Loy Yang mines to the Board on 14 December 2015 was that, despite their final voids being significantly larger than the Yallourn void, that the amount of water each intends to fill it with is about the same.[86] This suggests final intended pit lakes well below the ground level.
75. Dr Von Bismarck gave evidence regarding the difficulties faced in Germany of predicting water quality when connecting pit lakes to river systems. He told the Board that they knew that there would be an effect on the groundwater quality when the overburden dumps were penetrated with rebound of the groundwater because of the overburden's chemical composition. They undertook modeling for each mine but the models were not precise enough and required improvement over

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[82] T452.23-25 (McCullough).

[83] T250.1-3 (Rieniets). Mr Faithful stated at T341.8-11: "I can't help you in that regard. All we have committed to or we will commit to in our 2016 work plan variation is an area of work we have ahead of ourselves, so we will address it". See also T445.1-4 (McCullough) and exhibit 8B – Letter from Southern Rural Water, 24 August 2015.

[84] Exhibit 8B – Letter from Southern Rural Water to DEDJTR, 24 August 2015, p. 3

[85] T451.29 (Mackay).

[86] The Yallourn mine is described as about '26 kilometres around the surface and 90-95 metres deep (Mether T260:4-5). The Hazlewood mine is described as about '20 kilometres circumference and 120 metres deep' (Faithful T260:6-8). The Loy Yang mine is described as four kilometres long by 2.5 kilometres wide and 170 metres deep (Rieniets T260:9-12) The Yallourn mine requires 748GL of water to fill (Mether T260:28). The Loy Yang requires "approximately" 700GL water to fill (Rieniets T687:1) and the Hazelwood mine requires "in the order of 750GL" water to fill (Faithful T687:9l).

time. Measures have now improved to reduce the iron-hydroxide content in the groundwater and river system.[87]

76. As with stability, the cost of monitoring water quality in the pit lakes is unknown and represents an uncertainty in the assessment of rehabilitation liability for each mines.[88]

Water Sourcing

77. Term of Reference 9(f) directs attention to the viability of the option(s) and any associated limitations and 9(i) to "whether the option is otherwise sustainable, practicable and effective."
78. An enormous amount of water is required by each mine to fill its pit. Sydney Harbour contains 500GL of water.[89] Each mine says it requires between 700-750GL – a combined total of more than four times the water in Sydney Harbour.
79. It is possible that due to evaporation, ongoing top up will be required – depending on whether there is flow through from another water source.90 Whether or not such flow through is possible is unknown.[91]
80. Presently, the mines have access to groundwater by licence (Loy Yang 19,996ML; Hazelwood 22,680ML; Yallourn 3,285ML).[92] The power stations have access to percentage shares of surface water through bulk entitlements. This presently allows up to 40GL for the Loy Yang stations; up to 36,500ML for Yallourn; and up to 14GL for Hazelwood.[93]
81. The evidence is that it is not at all clear that this water will be available to any of the mines for the purpose of rehabilitation.
82. This is firstly because, in relation to the groundwater licences, the licences expire in 2025 and the purpose for which access to water is granted may not extend to rehabilitation.[94] The bulk entitlements do not expire but are issued to the relevant

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[87] T546.9 (Von Bismarck).
[88] T934.5 (Byrne). This is consistent with the German experience T548.6 (Von Bismarck).
[89] New South Wales Irrigators' Council, *Useful Water Comparisons*, http://www.nswic.org.au/pdf/fact_sheets/USEFUL%20WATER%20COMPARISONS.pdf.
[90] See AECOM reports at 4.2.6.
[91] Exhibit 8B – Letter from Southern Rural Water to DEDJTR dated 24 August 2015.
[92] Exhibit 7 – Statement of Sharon Davis, Annexure 3, Annexure 3.1 and Annexure 3.2.
[93] Exhibit 8A – Statement of Clinton Rodda, 4 December 2015.
[94] Condition 2 indicates that the licence is for the purpose of taking and using groundwater to facilitate mining for coal and generation of electrical energy and purposes incidental thereto. Condition 5 states the licence applies only on land for which licence held. See: T193.13.

power generation company associated with the three mines and tied to the purpose of operating the power station.[95]

83. The various water authorities have confirmed in evidence to the Board that it is not clear to them, and they have not determined, whether any or all of the mines would be able to acquire the water they need to fill the pits.[96] Even if the bulk entitlements could be accessed, one issue is how much a percentage share would equate to in terms of available water in 20-40 years time.[97]
84. The Gippsland Region Sustainable Water Strategy 2011, a State policy document[98] developed by experts over two and a half years of work,[99] states that "current rehabilitation plans for open cut coal mines involve flooding them to create artificial lakes. However, this is not considered to be an entirely viable option any longer because there is insufficient water to fill most of the mines."[100]
85. Similar concerns have been raised elsewhere including:
86. By the TRB in letter dated 2 February 2011 in which it was said that, "the current Yallourn rehabilitation strategy of flooding the mine has been shown not to be feasible because of insufficient water";[101] and
87. By Southern Rural Water in letter dated 24 August 2015 in which it was stated, in relation to the recent Loy Yang Work Plan Variation, that, "there are a significant number of risks related to the long term availability of water for mine void filling and potential consequent impacts on regional water resources to achieve the proposed mine rehabilitation which are not addressed in the Plan".[102]
88. Loy Yang's expert consultant, GHD, in a report relied upon by AGL in support of its recent work plan variation, accepted that "the likelihood of accessing full bulk entitlements post mine closure is unknown at this stage and could potentially be affected by actual climate sequences, in particular during drought periods, so there is some uncertainty associated with relying on this allocation for mine closure planning."[103] Mr Rieniets accepted that the level of proposed water in the Loy Yang

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[95] Davis T197.25.
[96] T193 (Rodda); T198.1 (Davis).
[97] T197.14 (Rodda).
[98] T203.28 (Davis); T799.4 (Wilson).
[99] T204.1 (Mather).
[100] p.132.
[101] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, Annexure 10, p.9.
[102] Exhibit 8B – Letter from Southern Rural Water to DEDJTR dated 24 August 2015.
[103] GHD report, p.595.

pit may alter in the future depending on the answers to questions around water sourcing.[104]

89. This present unknown does not require research in order to solve it. It requires conversations and, potentially, applications or contract negotiations to occur. The ramifications are significant. If the water is not available, the proposed pit lakes may not be viable at all. If it is available but at a cost or only over a significant period of time, then this may impact the viability of this option as compared with others.
90. The failure over 20 years for this issue to even be the subject of a discussion between the affected parties is perhaps the most disturbing aspect of the evidence the Board has heard. It reflects poorly on all concerned – government and the mines. This is further discussed below.

Timeframe

91. Term of Reference 9(e) requires the Board to consider the estimated timeframe for implementing the option.
92. In their report, Jacobs state that it is possible that the Yallourn mine could achieve a partial backfill below the Water Table in the medium term (under 15 years after mine closure). The Hazelwood and Loy Yang mines are not expected to achieve a Pit Lake landform in the medium term, in large part due to the volume of water required to reach the eventual long-term water level.[105] Jacobs also note that based on current indications of closure dates, the Latrobe Valley mines are likely to be filling the final mine voids at the same time – leadings to possible concerns about the impact on the groundwater, the access to water and backfill material and potential integrated closure management to minimise costs.[106]
93. One initial difficulty in considering "timeframe" is determining when an option has been "implemented".[107] In the case of a pit lake, is this when the water has reached the proposed final water level? Or the "stable" fill level? Or when the lake has been determined to be safe and stable overall? For the reasons outlined above, those timeframes may differ by decades or even centuries. Professor Sullivan considers on

[104] T254.28 (Rieniets).

[105] Exhibit 24A, p.83-84.

[106] Exhibit 24A, p.83-84. See also letter of Southern Rural Water, Exhibit 8B – Letter from Southern Rural Water to DEDJTR dated 24 August 2015.

[107] As noted, s 82(1)(b) of the Act provides that a bond must be returned to a licensee only when the Minister is satisfied that "rehabilitation is likely to be successful".

the current "inadequate" knowledge, it likely to be decades;108 Dr Haberfield considered that water quality monitoring goes on "forever" and that some batters may need to be monitored in perpetuity.[109]

94. Resolving the question about where water can be sourced from will dramatically alter the estimated timeframe for filling each pit. The cost of implementing this option will be very different depending on the period of time the void takes to flood.[110]

Future beneficial use

95. ToR 9(h) directs the Board to consider "whether, and to what extent, the option would impact the future beneficial use of land areas impacted by the mines".
96. As above, there is presently a lack of clarity about whether or not the pit lake option will impact the future beneficial use of the land. The issue is tied to the stability and water quality complexities detailed above.
97. Presently, Yallourn's pit lake option is to provide for beneficial use to the community both through allowing direct access by them to the lake for recreational purposes and also providing a flood, drought and fire resource if and when required. However, this aim depends on matters presently unknown such as: can/will the pit lake be connected to the river system? And will the quality of the water and stability of the structure be of sufficient standard to allow public access?
98. Loy Yang has recently determined that, at least at this stage, it does not intend to allow public access to its partially filled pit lake. This was a significant departure from its 1997 approved plan. Dr Sullivan explained that this is because of safety and that "more detailed engineering may well show that can come back into public access of some more limited form" but that he had "no idea when that might be done."[111] Hazelwood is "still working through" whether or not it intends, as part of its 2016 work plan variation, to allow public access after closure.[112]

[108] T456.27 (Sullivan). See also T457.3.
[109] Haberfield T458:29-459:11; McCullough T459:18-29.
[110] See Mether and Faithful at T268:10-17.
[111] T455.27 (Sullivan). See also Rieniets at T277.5 and T306.16.
[112] T275.11 (Faithful).

Progressive Rehabilitation

99. Term of Reference 9(d) requires the Board to consider "whether, and to what extent, the option would ensure that progressive rehabilitation is carried out as required by the Mineral Resources (Sustainable Development) Act 1990."
100. The starting point for considering this question is to consider what is required under that Act. The answer is very little. Indeed, the term "progressive rehabilitation" is not defined in the Act – let alone are there any specific criteria by which progress in this area may be measured.[113]
101. There appears to be a general presumption by the mines that progressive rehabilitation is about, in essence, adjusting slope angles, moving overburden around and planting vegetation.[114] On this narrow definition, operational constraints of the mines significantly restrict their ability to carry out progressive rehabilitation as does the pit lake option itself.[115]
102. Further, it is submitted, that an option, whether pit lake or something else, cannot "ensure" progressive rehabilitation is carried out. It is regulation, commitment and financial incentives which may "ensure" this occurs. These ideas will be developed below. In this sense, we submit that this Term of Reference is not asking the relevant question.

Cost

103. Term of Reference 9(f) requires the Board to consider the estimated cost of the option.
104. In the 2015 reports submitted by the LV open cut mine licensees under regulation 35 of the Regulations, the following estimates appear for the cost of the pit lakes:
    - Yallourn: $48m – $91m;[116]
    - Hazelwood: $73.4m;[117] and

[113] T138.15 (Wilson).
[114] Though the way in which the Schedule 19 forms were completed suggests a degree of confusion as to what is and is not progressive rehabilitation. See T291.15 (Mether); T333.13 & 333.21 (Faithful); and T353.5 (Rieniets).
[115] Exhibit 13 – Statement of James Faithful, 13 November 2015, paras 98-99, 109; Exhibit 12A – Statement of Stephen Rieniets, 4 December 2105, paras 111, 146-152; Exhibit 14 – Statement of Ron Mether, 16 November 2015, paras 246-256.
[116] Exhibit 14 – Statement of Ron Mether 16 November 2015, Annexure 9.104 (this is the return that was filed in 2015 although it relates to the 2013/14 reporting period).
[117] Exhibit 13- Statement of James Faithful, 13 November 2015, annexure 18.

- Loy Yang: $53.7.[118]

105. The Board also has the independent cost estimates produced for DEDJTR by a consultant, AECOM. We note that these estimates are 'third party estimates' based on early closure and therefore have been arrived at on a basis that differ from the first party costings produced by the mines. AECOM have produced a range of costs as follows:
    - Yallourn: $167m - $262m
    - Hazelwood: $264m – $357m and
    - Loy Yang: $221m-319m

106. We submit that cost should realistically include trials and research. It is submitted that Ms Unger's definition of 'progressive rehabilitation' is far better suited to achieving the aims of the legislative regime (to ensure final rehabilitation is achieved safely and as close as possible to the date of closure – or to do acts which work towards achieving final rehabilitation[119]). Ms Unger's definition includes trialling final rehabilitation concepts and building community and regulatory confidence.[120] As she told the Board, "anyone can push out a slope and throw some seed out."[121] Professor Galvin appears to agree with this type of expanded definition. He stated that "rehabilitation to me is very broad. It's not just putting a dozer down the slope and flattening it and putting a bit of grass on it."[122]

Summary: "There are No Guarantees in Life"[123]

107. In light of the above, we submit that it is simply not possible to evaluate rehabilitation options against the criteria set out at Term of Reference 9. As even the mines themselves concede, "resolution of some of these uncertainties may change the final intended design."[124] According to Dr McCullough, it is possible (though very unlikely) that the results of studies will show a pit lake is not

[118] Exhibit 31D – Schedule 19 Annual Activity Statement.
[119] T289.11 (Mether); T289.18 (Faithful); T289.21 (Rieniets).
[120] Exhibit 28 - Statement of Corinne Unger, 26 November 2015 at para 5.
[121] T621.22.
[122] T462.22 (Galvin). See also T522.8 (McCullough).
[123] T258.4 (Rieniets).
[124] Faithful: 256.11 (Faithful). See also. T256.5 and 252.11 and 251.27 (Mether); T269.23 and 249.6 (Rieniets).

desirable[125] but that there is no reason at this stage to "take the pumping in perpetuity option off the table".[126] Mr Hoxley considered that, "lining the voids and leaving them open has been ruled out through our study because of some of the technical difficulties." But that, "it could well be that in the course of understanding why a pit lake may not work, that some type of lowered landform…that we will then see a solution to that."[127] In his opinion, "often a lot of those constraints come down to the cost that people will bear."[128]

108. It would, though, we submit, be remiss of the Board not to consider, by reference to the incidental power in Term of Reference 12, whether the current system is well placed to ensure these uncertainties are resolved well prior to the estimated date of mine closure.

109. This is because finding the answers will take some significant time[129] and the closer to closure we get the more narrow the options will become[130] if, for example, progressive rehabilitation has been undertaken with a specific (possibly flawed) concept in mind.[131] This appears to accord with Dr McCullough warning that there comes a "Rubicon moment in mine [closure] planning" when an option is "irretrievably lost due to mining design or other achievements"[132] and community member David Langmore's "fairly major concern" that "if flooding the mines doesn't work, have we blown the chances of getting rehabilitation done properly?"[133] In Professor Galvin's opinion, these issues must be examined immediately as addressing them will require "a lot more research and money that people had been anticipating to get on top of the problem."[134]

110. Further, as Mr Rieniets acknowledged, "there are no guarantees in life".[135] These mines could close far earlier than presently intended. Both Mr Faithful and Mr

[125] T446.9 and 445.1 (McCullough).
[126] T452.27.
[127] T448.22.
[128] T449.19. T443.11 and 444.12 (Sullivan).
[129] See, for example, T264.11 (Mether).
[130] T607.19 (Unger).
[131] One example is covering the floor with overburden and ash as has been done by Hazelwood: T338.29 (Faithful). This may impact on water quality T224.28 and 231.5 (Rodda). See also Rieniets re public access T310.15 – somewhat contradicted by T349.9.
[132] T452.27.
[133] T43.12 (Langmore).
[134] T405.7. According to Professor Galvin, the real problem here is the legacy issue; that 20 or 30 years ago someone should have been looking at this problem before we were locked in: T426.12.
[135] T258:4 (Rieniets).

Mether indicated that they were not in a position to guarantee that the mines may not continue to operate until the expected closure dates.[136] Dr von Bismarck informed the Board that the experience in Germany was unexpected – it was the largest producer of brown coal in world 25 years ago but in the early 1990s, the decision was made to close down the coal industry because the mines had become uneconomic or could not reach the rising environmental standards.[137] As indicated by Mr Byrne, AECOM, the costs relating to rehabilitation for early closure are more expensive than at end of mine life closure due to several factors, including that implementing rehabilitation works by a third party (and not the mines) will be more expensive because there are a different set of activities being conducted with different personnel and equipment.[138]

111. It is submitted that, for the reasons developed below, the current system, though it shows signs of improvement, is ill suited to ensuring these questions are answered in a timely and accountable manner.

These issues have been neglected and ignored

112. SECV ignored the issue of mine rehabilitation during its management of the mines. Rehabilitation was considered an issue for future consideration, although there was a presumption that the mine pits would ultimately be flooded at the end of mine life.[139]
113. Upon privatisation, a licensing and regulatory regime was created which required very little of the mines in terms of details on how rehabilitation may be achieved. This represented a second lost opportunity to embed a closure planning process suited for addressing the complexities involved in closure.
114. Unhindered by any requirement to provide timelines and detail regarding rehabilitation, historically, very little information about how in practical terms each mine's intended pit lake option was to be achieved has been included in either the original work plans or the variations to them. Despite this lack of detail, the regulator has approved each original plan and a number of variations.
115. While flexibility may well be required in light of the uncertainties as to how these complex issues can be resolved, it is startling that these documents have not

[136] T258:2 and T258:10 (Mether); T258:3 and T258:11 (Faithful).
[137] T538:6-11 (Von Bismarck).
[138] T927:11 and T928.11-24 (Byrne).
[139] Exhibit 1 – Submission of David Langmore, p.5.

contained details regarding, for example, steps that will be taken to research water quality or to obtain guarantees about water sourcing.

116. The issues identified above about water access, water quality and batter stability are, it was conceded by Mr Wilson of DEDJTR to the Board, "not new issues, they have been around for number of years".[140] One stark example is the licence condition imposed on Yallourn in 2011 to provide a review of its Rehabilitation Master Plan regarding the feasibility of the pit lake scenario as compared to other alternatives. The purpose of this condition was, from the Department's perspective, a laudable attempt to answer some of these long standing issues.[141]
117. The Review provided by Yallourn as required by condition 7 is in evidence.[142] It affirmed that there were clear advantages of the flooded option compared to the non-flooding option but there were issues that required resolution such as stability, water access and water quality. The document concluded with an invitation to the regulator to engage with Yallourn about these issues. Mr Wilson conceded that Yallourn was, through this document, "looking to the Department for some certainty, for example, about access to water, in order for them to continue to work answering these technical issues".[143]
118. Despite this, Mr Wilson gave evidence that the Department did not provide any formal response to Yallourn.[144] We submit that this represented another missed opportunity by the regulator to begin to tackle some of these important and intractable issues. What is so perplexing is that the process that led Yallourn to obtain the report was initiated by the Department in imposing condition 7.
119. Another example is the drafting of the Gippsland Region Sustainable Water Strategy 2011 referred to above which contains the conclusion that the pit lake options are not "an entirely viable option any longer because there is insufficient water to fill most of the mines."[145] It is of note that Dr Davis from DELWP told the Board she agreed with this statement.[146]

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[140] T122.2 (Wilson).
[141] T118.5 (Wilson).
[142] Exhibit 14 – Statement of Ron Mether, 16 November 2015, Attachment 9.55.
[143] T119.9-14 (Wilson).
[144] Wilson T120. Mr Mether confirmed there was no formal response to the tabling of the revised plan but some informal discussions acknowledging the Department had the document. T325.7.
[145] Exhibit 11 – Gippsland Region Sustainable Water Strategy, p.132.
[146] T204.16.

120. On the same page of the strategy document, Action Item 6.8 states that "[DEDJTR] will review mine rehabilitation strategies in consultation with [DELWP, EPA and companies that mine coal in the Latrobe Valley. The mine closure and restoration strategies will consider impacts on GW and surface water resources."
121. Yet again there was no action by DEDJTR, DELWP or any of the mines.[147] This is despite a statutory requirement on DELWP under s. 22J of the Water Act 1989 to report annually on measures being taken to implement the SWS and to identify the priorities that apply to actions required by the implementation plan.
122. There is no doubt that DEDJTR is aware of Action 6.8 of the SWS. That is because it is referred to in the conditions upon which AGL's recent work plan variation was approved. Condition 7.1 requires AGL to perform a "water resources risk assessment" in accordance with Action 6.8. Despite Mr Wilson's evidence that this is not to be read as delegating to AGL the regulator's responsibilities under Action 6.8,[148] that is how it appears to us. We submit that this is an abrogation of the regulator's responsibility.
123. The Department has also ignored expert advice indicating the need for a rehabilitation framework and strategic plan to solve these problems. In June 2009, a GHD report was provided to the Department which identified these needs.[149] Further reports said the same thing.[150] According to Ms Burton, the Director of Coal Resources Victoria, a unit of DEDJTR dedicated to developing long-term plans for the sustainable development of Victoria's coal resources and associated infrastructure, "there is no plan".[151] Instead, as Ms Burton conceded, between June 2009 and 2012 "all that's happened is there has been a restatement of the fact that there is a need for an overarching plan".[152]
124. Perhaps the most significant example, however, is the lack of DEDJTR's response over many years to the advice provided to it by the Technical Review Board ('TRB'). The TRB was established in 2009 as a result of the Mining Warden's Inquiry into the collapse of the North East batter at Yallourn Mine. Its primary function has been to

[147] T206.1-5 (water panel); T799.29 – T800.9 (DEDJTR). As to DELWP's failure to report as required by the Water Act 1989, see the letter of explanation dated 14 December 2015 provided by VGSO (exhibit 38).
[148] T802.29
[149] Exhibit 5B – Supplementary statement of Luke Wilson, 30 November 2015, Annexure 4, p.58-59.
[150] Exhibit 5B – Supplementary statement of Luke Wilson, 30 November 2015, Annexure 7, p.16: 6 mine closure strategy principles: similar to 11 principles.
[151] T145.19 (Burton).
[152] T146.25 (Burton).

provide independent advice to assist the Minister and the regulator and industry to better manage ground control associated with mining in Victoria in order to mitigate risks to public safety, the environment, public infrastructure and security of power supply.[153]

125. The TRB's annual reports starting with 2011-12, advise the Department that the rehabilitation plans are inadequate and based on presumptions.[154] They identify significant uncertainties around stability which are not addressed in the work plans and highlight that "considerable study, assessment, evaluation, implementation and ongoing monitoring with action plans are required."[155] This, they advise, will "take time to develop and will be a costly process." They recommend that "steps are taken immediately to begin an assessment of the issues."[156] Yet still, nothing was done.

126. Subsequent TRB annual reports have repeated these observations with an increasing tone of frustration.[157] Most recently, in its 2014/15 report, the Board made reference to its reporting "since 2012" about these issues. It noted that the "elevated importance of rehabilitation is reflected in the expanded TOR for the TRB".[158] This was a reference to the appointment of Ms Unger as a rehabilitation expert.

127. The mines too have historically failed to address these issues. Detail has not been included in work plans that sets out concrete steps the mines intend to take to solve the problems. For example, the recent Loy Yang Work Plan Variation 2015 rather than set out criteria for dealing with water quality issues, instead indicates that AGL will "develop water quality objectives and water level criteria prior to lake filling."[159]

128. Significantly, each of the mines has submitted work plans and variations which rely on modelling for filling the pit lakes and include models which assume access to bulk entitlements and ground water. Yet none of the mines have initiated any formal conversation with DEDJTR or DEWLP to obtain an assurance that water can

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[153] Exhibit 5A, annexure 6, page 4.
[154] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, Annexure 6, p 17.
[155] Exhibit 5A– Statement of Luke Wilson, 20 November 2015, Annexure 6, p 17.
[156] Exhibit 5A– Statement of Luke Wilson, 20 November 2015, Annexure 6, p 17; Annexures 10-15.
[157] Exhibit 5A– Statement of Luke Wilson, 20 November 2015, annexure 7, pages 4-5 (2012/13); annexure 8, page 14 (2013/14).
[158] Exhibit 5A– Statement of Luke Wilson, 20 November 2015, annexure 9, pages 14-15 (2014/15).
[159] Exhibit 12B – Supplementary Statement of Stephen Rieniets, 3 December 2015. Annexure B-2, p. 81.

be accessed.[160] This is most starkly seen in the evidence of Mr Rieniets who acknowledge that AGL "assumed" it would have access to both its bulk entitlements and the groundwater licence allocation but that this assumption is not based on any assurances from anyone in control of that water and that AGL had not sought to have any discussions with government about that.[161]

129. Further, the mines have traditionally operated with a competitive and siloed approach to research and knowledge which has negatively affected progression in knowledge development in this area.[162]

Some positive signs of improvement

130. In 2015, there have been some commendable improvements to the way in which the Department and the mines are addressing these issues. It appears that all are genuinely committed to finding solutions. However, as discussed below, these good intentions are not being promoted and enhanced by the current system. Exhibit 37 is a document titled "Earth Resources Regulation 2015-16 Action Plan". It sets out a series of commitments to reform and improvement to the governance and performance of ERR and to legislative reform. The contents of this document and the degree to which implementation of its commitments ought be viewed as likely to address various deficiencies in the current model will be addressed in more detail below. For present purposes, it is sufficient to say that this document clearly seeks to address many of the problems that besiege this area. The government should be commended for this reform process and the Board should take any steps open to it to ensure such commitments result in actual reform.
131. It is plain from the way in which the recent Loy Yang Work Plan Variation of 2015 has been processed by the Department that such reform is sorely needed. In approving that plan, the Department imposed a set of conditions upon AGL aimed at addressing the shortcomings in the plan.[163] This, Mr Wilson, explained, was part of a move by the regulator to require risk-based work plans[164] whereby the mine

[160] T263.16; 263.23; 353.18 (Mether) and T334.28; 265.10; 266.4 (Faithful)
[161] T261.19; T261.24; T.261.29 and T262.3.
[162] 477.18 (Galvin).
[163] T165.15 (Wilson). Similar types of conditions will be imposed on Hazelwood and Yallourn in relation to future work plan variation applications: T140.22 (McGowan). Wilson accepted that the conditions represent a new and more onerous approach by the department to conditioning approvals of this type: T155.28
[164] T112.6

operator is required to identify risks and report them to the Department.[165] Under the conditions to which the approval is subject, timeframes (though broad and, for the most part, approximate) are set.[166]

132. However, these conditions do not, it is submitted, indicate a sufficient improvement to the regularly system that is likely to ensure that the answers to the significant questions we discuss above are achieved prior to closure. Firstly, as identified by Professor Galvin, the conditions are convoluted and lack clarity.[167] Secondly, there are no criteria to determine the robustness of the various risk assessments which are required[168] nor any criteria to assist AGL in determining how it may satisfy the regulator it has complied with certain conditions.[169]
133. In answer to this last criticism, Mr Wilson stated that, "there would be conversations with the proponent to talk through each condition and lay out what the expectations are. We would work through points where it was unclear."[170] Such a process lacks transparency, accountability and consistency among mines. It is not well suited to assisting in the resolution of such significant issues.
134. Professor Galvin highlighted the importance of a strong regulatory process and structure. Each of the issues, such as failure to communicate about water or community engagement are, according to him, "just symptoms of the problem"[171] He believes that "Victoria is a decade behind practice in mine approval processes."[172]
135. We note that transparency is highlighted as a 'compliance principle' in the Action Plan referred to above[173] and that the document recognises the need for transparency guidelines and for publication of criteria, applications, reports submitted by mines and regulatory decisions.[174] These commitments are long overdue but nevertheless must be commended.
136. Further, the Action Plan indicates that ERR has committed to drafting a guideline for providing clear information to industry about requirements under risk-based

[165] T168.2.
[166] T172.19.
[167] T428.27 and 429.13.
[168] T428.16 (Galvin). See also: 421.26 and 475.1.
[169] See Unger on the importance of clear criteria: T613.5 and T609.2.
[170] T173.19-22.
[171] T417.6 and T419.3.
[172] 425.6.
[173] Exhibit 37, p.3.
[174] Exhibit 37, p.11.

work plans.[175] This is also overdue. There are national examples of guidelines and rehabilitation criteria which, it is submitted, highlight the deficiencies of the current Victorian model.

137. Ms Unger produced a copy of the Western Australian Guidelines for Preparing Mine Closure Plans 2015 which she considered to contain principles worthy of review.[176] Some salient features include: sign off of closure plans by all affected government agencies; upfront planning for mine closure being an integral part of mine development and operations planning; reviews of plans to enable continual improvement; government-set standards and frameworks for closure processes and closure plans.[177] Ms Unger stated that the benefit of have that level of detail in the work plan 'is the evidence that you need that these issues are being well addressed and that the right people are in the room when the risk assessment is done'.[178]
138. Similarly, Emeritus Professor Galvin provided the Board with a recent approved work plan from NSW: a Project Approval under s75 J of the Environmental Planning and Assessment Act 1979 (NSW) for the Maules Creek Coal Project dated 23 October 2012 as an example to demonstrate the required administrative conditions, environmental performance conditions and environmental Management, reports and auditing conditions.[179]
139. These examples should inform the ERR review process. The identification of their merits by persons of such experience and standing as Professor Galvin and Ms Unger suggest that they ought be used as a starting point for the development of guidelines in Victoria. There is no need to re-invent the wheel.[180]
140. A further recent example of the deficiencies in the current system is highlighted by the failure of the Department to appropriately utilise the expertise available to it from the TRB in assessing the Loy Yang Work Plan Variation and developing appropriate conditions. The LYWPV was referred to the TRB at very short notice.181 Ms Unger was not provided with the draft conditions or asked to

[175] Exhibit 37 – ERR Branch Action Plan 2015-16, p.6.
[176] T605.22.
[177] T605.21-610:28.
[178] T611.3-5.
[179] Exhibit 26 – Project Approval Maules Creek Coal Project 23 October 202; see T429.7.
[180] 606.1 (Unger).
[181] T367.9 (Galvin). See also T428.13.

provide advice on best practice despite her expertise in closure planning.[182] This is despite the commendable addition of Ms Unger to the Board and the expansion of the TRB's Terms of Reference to include rehabilitation.

141. Again, there appears to be some recognition of this in the current reform process. At page 4 of the Action Plan there is a commitment to improve consulting in this area:

- The Technical Review Board will provide more strategic advice to the Government in response to technical matters;
- An expert panel will provide operational technical capability in areas such as mine stability and water and chemical risks, and also support development of staff skills in these areas. The panel's operation will be aligned with best practice in other Australian jurisdictions;
- ERR has also committed to engage risk and fire experts to assist it in assessing the Risk Assessment and Management Plans that the Latrobe Valley coal mine operators must submit in accordance with their licence conditions.

142. As part of this expansion of the range of expert advice available to the regulator, we submit that the Board should recommend that one or more experts in mine closure and mine closure costing be retained. This expertise will be invaluable in the regulator's efforts to progress the many issues that this Inquiry has examined. In particular, such expertise could be utilised to activate the liability assessment process envisaged by s. 79A of the Mineral Resources Act. We discuss this issue below.

143. Having an expert advisory board independent of government and the mines is, it is submitted, of fundamental importance to progressing rehabilitation of the three mines. Its members must be respected, valued and appropriately utilised. Ms Unger's role must be continued and embedded in that process so that rehabilitation and closure issues are part of the strategic advice provided. The publication of the TRB's annual reports on the internet must continue.

144. A further recent issue is that the various relevant government departments continue to demonstrate an inexplicable lack of communication on key issues such as water. The Water Panel which gave evidence on 9 December 2015, stated that at no time had any of the three of them been asked formally for their views on whether the mines will be able to use their present water entitlements[183] or be able to divert one or more rivers.[184] Indeed, none even knew how much water the

[182] T604.19 (Unger).
[183] T194.5 (Rodda). T194.9 and 198.9(Davis).
[184] T208.

mines were seeking.[185] Despite recent correspondence highlighting the concerns both of SRW and DELWP regarding water allocation and quality issues and the identification of their being an essential need for a meeting between DEDJTR and the water authorities, no such meeting has occurred or is even planned.[186]

145. Mr McGowan, in response to questions about why the Loy Yang Work Plan Variation was approved in light of the concerns raised in the SRW letter, stated that "over time application of water from particular water authorities and particular companies' changes. So, at the end of mine life I would have thought there would have been conversations with respect to the use of water and the use of entitlements and perhaps the use of those entitlements for other matters, including mine flooding."[187] This relaxed attitude ill befits the regulator of such a complex and important area.
146. The Action Plan refers specifically to establishing and enhancing collaborative arrangements with other agencies such as DELWP.[188] This is clearly required. It must be noted, however, that these relationships already exist and a previous action plan (Action 6.8 of the Gippsland Region Sustainable Water Strategy 2011) appears to have been ignored. The government must ensure that the present commitments do not end up suffering a similar fate.
147. A further present deficiency highlighted in the processing of the recent Loy Yang Work Plan Variation is the lack of community consultation or transparency before it was approved. This is despite it having altered the mine's intention in relation to beneficial use of the land from a closure concept of a pit lake available for public recreational activities to a partial pit lake on land that the public will be prohibited from entering.
148. Stakeholder engagement, or "progressive rehabilitation for people" is a requirement of successful rehabilitation.[189] The absence of it can result in final rehabilitation not being able to be completed.[190] As Ms Rhodes-Ward highlighted,

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[185] T207.
[186] Exhibit 8B – Letter from Southern Rural Water to DEDJTR dated 24 August 2015; T200.29 and T203.12.
[187] T124.27 – 125.3.
[188] Exhibit 37, p.1.
[189] T612.11 (Unger). Exhibit 18- Joint expert report, 3 December 2015, p.2.
[190] T611.25.

"if it's about us, you need to involve us."[191] The joint expert report refers to community consultation as a fundamental principle of successful rehabilitation.[192]

149. There has been no explanation about why this important change in the AGL plan was not conveyed to the community by either the Department or by AGL.[193] Indeed, Mr Rieniets' response to questions on this, particularly in light of AGL's commitments in its Community Engagement Plan, appear glib.[194] The lack of transparency is of concern. It needs to change.

150. It is also worth noting that Mr Rieniets' statement and oral evidence to the Board about the conditions recently imposed upon AGL as part of its work plan variation approval suggested a lack of transparency of process. Mr Rieniets confirmed that AGL's view was the original work plan variation without conditions was adequate and sufficient including as to rehabilitation[195] and that AGL will "engage with the Department to come to a resolution on those conditions."[196]

151. Closed door negotiations about legal conditions imposed by a regulator, particularly in light of the advice provided by the TRB and SRW, is, we submit, inappropriate and not conducive to an accountable regulatory regime in this important, complex area. Such a practice stands in stark contrast to Mr Langmore's concern that processes should ensure that a change of plans is part of "clear, formal, public processes"[197] and not a matter of "striking a deal between a particular single department of the State Government and a particular private company."[198] We share these sentiments. For too long, such decisions have been shrouded in secrecy.

152. ERR's Action Plan includes a commitment to establishing a Community Advocate to support informed community participation in regulatory decisions[199] and to enhanced communication and transparency.[200] These commitments must be translated to processes embedded in the legislative regime and in guidelines in order to guard against backroom deals being done (or the perception that that is

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[191] T44.18 (Rhodes-Ward).
[192] Exhibit 23, 1(j).
[193] The Community Engagement Plan is at pages 94 to 111 of the September 2015 LY WP Variation (annexure B-1 to Stephen Rieniets supplementary statement dated 3.12.15).
[194] T307.19. 307.28. 309.14. 278.15; 278.31.
[195] T297.7.
[196] T297.14
[197] T45.23 (Langmore).
[198] T46.6.
[199] Exhibit 37, p.2.
[200] p.11.

occurring) on matters affecting communities. The commitment by Mr Wilson to at least consider providing some funding for the position is supported.[201]

153. One very significant positive sign is the improvement in cooperation and knowledge sharing by the three mines and some recent research initiatives in the area of stability (detailed above). Professor McKay has observed a "demonstrated commitment by the mines to examining a number of these issues."[202] Such research initiatives and increased cooperation is commendable.

154. However, much more still needs to be done by the mines in these areas. A significant body of research is required to be undertaken and the results of each study must be shared.[203] Although each mine indicated it is happy to work together and have coordination,[204] each placed caveats upon integration based on "elements that apply to us all"[205] or "where there's common issues."[206] Reports are not shared as a matter of course[207] despite a general recognition that this could be mutually advantageous. GHERG is not able to use information from the TRB without explicit permission of the mines.[208]

155. Further, the evidence suggests a residual reluctance on behalf of the mines to take the initiative in solving some of these questions. For example, while Mr Faithful indicated that he would liaise with water authorities if obliged to do so as part of Hazelwood's work plan,[209] he agreed both that he could ask the question without such a requirement[210] and that he had not done so.[211] Neither Yallourn nor Loy Yang had taken the initiative and made any such recent approach to the water authorities.

Term of Reference 10 – The 2015 Rehabilitation Estimates

156. We submit that the reference in TOR 10 to "rehabilitation liability assessments" is a reference to the assessments reported by each mine to DEDJTR in 2015 as required

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[201] T794.23-31
[202] T431.5. T477.18 (Galvin).
[203] T414 (Mackay) and Exhibit 18 - Joint Expert Report pp.8-10
[204] T285.
[205] T285.26 (Faithful).
[206] T285.29 (Mether).
[207] T287.11, 287.16, 288.16, 287.24 (Mether); T288.28 (Faithful); T288.30 (Rieniets).
[208] T 374.1 (Mackay).
[209] T335.29.
[210] T354.19.
[211] See discussion above.

by regulation 35(2)(b) of the Mineral Resources (Sustainable Development)(Mineral Industries) Regulations 2013 (Vic.).

157. Regulation 35(2)(b) requires a mining licence holder to submit an annual report to DEDJTR which contains the information set out in Schedule 19. Item 11(e) in the Schedule requires the licensee to advise of "an estimate of the current rehabilitation liability for the licence holder".

158. In the 2015 reports submitted by the LV open cut mine licensees under regulation 35, the following estimates appear:

- Yallourn: $48m – $91m;[212]
- Hazelwood: $73.4m;[213] and
- Loy Yang: $53.7.[214]

159. In each case, the licensee has provided evidence to the Inquiry about the manner in which it calculated that estimate.

160. Yallourn explained that it had utilised a costing model prepared for it by a consultant (Geo-Eng) in 2001, that was further developed by GHD and in relation to which it had made refinements. This had enabled it to assess its current liability. It provided spreadsheets to the Board explaining its methodology.[215]

161. In addition, Mr Mether, on behalf of the Yallourn mine explained to DEDJTR in a letter dated 8 April 2015 that the estimate was provided as a range because of various uncertainties about stability issues:

There are still a number of studies and reviews that will be needed as the mine nears completion before final rehabilitation can be undertaken in a number of areas. These reviews mainly focus on stability during the flooding period along the western batters of Township field and the status of the Morwell River Diversion. The rehabilitation liability can change significantly depending on the final outcome of the reviews; however the current liability is within the range of $46 million for minimum stability work required to a conservative position of $91 million where significant stability treatment is required.[216]

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[212] Exhibit 14 – Statement of Ron Mether, 16 November 2015, annexure 9.104 (this is the return that was filed in 2015 although it relates to the 2013/14 reporting period)
[213] Exhibit 13 – Statement of James Faithful, 13 November 2015, annexure 18
[214] Exhibit 31D –Schedule 19 Annual Activity Report
[215] Exhibit 14– Statement of Ron Mether, 16 November 2015, paras 279, 280 and 288.
[216] Exhibit 14– Statement of Ron Mether, 16 November 2015, annexure 9.104.

162. In his evidence to the Inquiry, Mr Mether explained, by reference to this letter, that the uncertainty arose because "while Energy Australia has identified that some work is required to provide batter stability within the Yallourn mine, it has not yet had a detailed engineering solution prepared that demonstrates the extent of the work required".[217] Mr Mether further explained that the costs of doing the studies were not included in the estimate as they were considered to be operational costs.[218]

163. The Yallourn rehabilitation plan assumes that:

    a. The operator can access existing bulk water entitlements to fill the mine after closure; and

    b. it can connect its lake to existing rivers.

164. The cost estimate also makes those assumptions. As noted earlier in these submissions, they may turn out to be incorrect. Although an allowance is made for possible expensive stability work, none is made for the eventuality that water may have to be purchased on the open market. This alone raises a question about the adequacy of the estimate.

165. The Hazelwood estimate of $73.4 is based on what Mr Faithful described as "detailed calculations" which "constitute the most up-to-date and comprehensive costings with respect to the rehabilitation of the Mine Area".[219]

166. In the course of his evidence about the estimate, Mr Faithful made the following concessions:

    a. The estimate is premised on the assumption that the current bulk water entitlement will be available to fill the mine;[220]

    b. He and GDF do not currently know if this assumption is well founded;[221]

    c. No work has been done to cost alternative sources of water and that work needs to be done;[222]

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[217] Exhibit 14– Statement of Ron Mether, 16 November 2015, para 287.
[218] Mether, T740.14-20
[219] Exhibit 13 – Statement of James Faithful, 13 November 2015, paras [207]-[209]; confidential annexure 5.
[220] Faithful, T695.23-27
[221] Remarkably, the assumption is based on a "discussion that we had or one of my colleagues had with Southern Rural Water which indicated that you could roll those water licences over for a period of 15 years": T695.31-696.3; see also at T770.24-771.1. At T266.22, he explained that he was not present during this conversation. At no point was the GDF employee involved in the conversation identified to the Board.
[222] Faithful, T696.21-24

d. The costing methodology is not probabilistic but includes a contingency of "between 10 to 20 per cent";[223]

e. The estimate does not specifically account for the risk of a batter failure but that is also allowed for in the contingency;[224] and

f. The current estimate makes no allowance for the sorts of research projects that the GDF consultant hydrogeologist, Dr McCullough, prescribes in his report to GDF.[225]

167. In light of these concessions, we submit there must be concerns about the adequacy of the GDF Suez liability estimate.

168. According to Mr Rieniets, the Loy Yang estimate is "based on modelling undertaken in the Loy Yang Power Mine Rehabilitation Whole of Life Cost Report – 2011 Update".[226] The document is labelled 'draft only'.[227] Mr Rieniets was unable to explain why the Board had been provided with a draft report as the basis for AGL's estimate.[228] We submit that the disclaiming footer on each page of annexure Q renders it a document of little worth.

169. Further, as is the case with the other mines, Loy Yang's cost estimate contains assumptions about water availability which may prove unfounded. In the circumstances, we submit that the Board should be hesitant to accept that the 2015 estimate submitted by AGL is adequate.

170. For completeness we note that the cost estimate that AGL has prepared to accompany its recently approved work plan variation is $112m. This is the cost of a 'close now' scenario.[229] We note that Mr Rieniets describes the work that underlies this estimate as "indicative, based on a series of assumptions that are yet to be validated...".[230]

171. Before leaving TOR 10(a), it is necessary to make some reference to s. 79A of the Act. It empowers the Minister to require a licensee to undertake an assessment of

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[223] Faithful T693.29; T697.24

[224] Faithful, T697.29-698.8. Mr Faithful was not prepared to concede that a single batter failure could add millions to the cost of rehabilitation: T698.28-30

[225] Faithful T695.21-22; see exhibit 22B at .0015-.0017; Dr McCullough agreed that at least some of the costs of the research are properly to be regarded as rehabilitation costs – T522.18-23

[226] Exhibit 12A – Statement of Stephen Rieniets, 30 October 2015, [202].

[227] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure Q.

[228] Rieniets, T710.2-5. Counsel for AGL did not ask Mr Rieniets any questions to clarify this answer.

[229] Exhibit 12A - Statement of Stephen Rieniets, 30 October 2015, [244].

[230] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, [220].

the licensee's rehabilitation liability under s 78 for the purpose of determining the amount of a rehabilitation bond or reviewing the amount of a rehabilitation bond.

172. Under s. 79A(2), any such assessment must be undertaken "in the manner and form determined by the Minister". Further, the Minister is empowered to impose the additional requirements that the licensee engage an auditor to certify that the assessment has been prepared in the manner and form required and that it is accurate (s. 79A(3)).

173. Section 79A was inserted into the Act in 2006. The evidence before the Board is that it has only been used on one occasion and has never been used in relation to one of the LV mines.[231] When asked why it has not been used in relation to the LV mines, Mr Pendrigh of DEDJTR explained that it had not been used because "we couldn't specify the manner and form satisfactorily...".[232]

174. We submitted earlier in these submissions that, as part of its current review of administrative arrangements, the regulator should ensure that it has access to expertise about mine closure and closure costing processes. Such expertise should assist the regulator to settle upon a preferred methodology for the conduct of rehabilitation liability assessments so that the Minister is in position to specify the "manner and form" of assessments for the purposes of s. 79A(2)(a) of the Act.

175. Section 79A seems to be an ideal mechanism under which:

    a. The mines (which are best placed to estimate their own liability)[233] bear the cost of the estimate; and

    b. They do it in a manner and form determined by the Minister thus ensuring that it is carried out in a probabilistic manner against an appropriately determined confidence level; and

    c. The Minister has the security of certification from an environmental auditor appointed under s. 53S of the Environment Protection Act 1970 (Vic).[234]

176. As noted in our opening early this week, the Board has available to it a significant piece of work carried out by a consultant to DEDJTR which is relevant to the assessment of the mines' assessments as required by TOR 10(a). The work needs to be approached with caution as it has been conducted for the purpose of setting the bonds. The cost estimates are necessarily performed on a basis which differs from

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[231] Wilson, T806.31-807.3
[232] Pendrigh, T809.8-10
[233] Wilson T807.25-26
[234] See s 77U of the Act.

the basis of the Schedule 19 assessments. However, the stark differences between the AECOM figures and those in the reports of the mines further calls into question the mines' assessments.

AECOM

177. We noted earlier in these submissions that DEDJTR has conducted a Rehabilitation Bond Review Project in 2015.
178. A central aspect of that project was the engagement by DEDJTR of URS Australia ('URS')[235] to estimate the rehabilitation costs of each of the three LV mines.
179. URS performed these estimations by deploying a team of three highly qualified and experienced experts:
    a. Mr Brian Chadwick, a hydrologist, who co-ordinated the project;
    b. Mr Geoff Byrne, a geologist with expertise in mine closure planning; and
    c. Dr Adrian Bowden, a hydrogeologist with expertise in risk assessment methodology.[236]
180. URS was tasked by DEDJTR with providing it with "an independent estimate of cost for closure [for each mine] based on the [mines'] approved work plan[s] and assumptions provided by ERR".[237]
181. The work was performed as a 'desk top study'. As Mr Chadwick explained, URS did not visit the mines. Nor did URS develop detailed closure data such as designs for final slopes, water quality modelling or closure criteria. Nor did URS collect contractor quotations.[238]
182. Mr Byrne accepted that the information obtained from site visits can improve the quality of the ultimate estimates.[239]
183. The work performed by URS is what is referred to as 'third party costing'. Mr Byrne explained that this is a common practice in cost estimates for mine closures.[240] He agreed[241] with the following explanation of third party costing from the DEDJTR publication entitled 'Establishment and management of rehabilitation bonds':

[235] URS Australia was taken over by AECOM Services in 2015
[236] Exhibit 41A - Statement of Bryan Chadwick, paras, [6]-[11]
[237] Exhibits 41B – 41E at 1.1
[238] Exhibits 41B – 41E at 1.2
[239] Byrne, T922.5-9
[240] Byrne, T927.27
[241] Byrne, T929.3-22; see also Byrne, T1009.22-1010.8

*In establishing the rehabilitation liability it must be assumed that the [mine] operator is unable to complete the reclamation works and therefore rehabilitation must be managed by the department using a third party. In the majority of cases, the level of the rehabilitation bond will be significantly higher than the cost for the operator to undertake the wo*rk.

Where an operator has defaulted, the department would not have access to the operator's equipment or personnel on site. The department would not be in a position to complete the works at the operator's costs and instead be subject to current local rates.[242]

184. URS was asked to estimate costs on two bases:
    a. End of mine life closure; and
    b. Early closure.[243]
185. Mr Chadwick explained that 'early closure' means "essentially closure tomorrow" and 'end of mine life' means "predicted maximum extent of mining footprint".[244]
186. URS made a number of assumptions in estimating costs. The 12 assumptions are set out at section 4.4 of each report. Two of the assumptions are particularly significant:
    a. Final pit slopes of 1V:3H will have long-term geotechnical and erosional stability; and
    b. Current power station bulk water entitlements can be used for void filling.
187. Each of these topics has been examined in some detail earlier in these submissions. As we have noted, they are highly contentious issues.
188. In each case the assumptions were made at the direction of DEDJTR.[245]
189. In relation to water access, Mr Chadwick agreed that if the assumption proved incorrect, it could have a very significant impact on the overall cost.[246] The impact would quite clearly increase the cost estimate.
190. Similarly, on the question of batter stability, Mr Byrne agreed that if the assumption proved incorrect that could also have a dramatic effect on the cost.[247]

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[242] Exhibit 5A, annexure 29 at .0004.
[243] Exhibits 41B – 41E at 2.2
[244] Chadwick, T946.10-14
[245] In relation to stability – see Byrne T935.9-13; regarding water availability, see Chadwick T931.14
[246] Chadwick T932.7-12
[247] Byrne, T935.17

He agreed that a single batter failure could require the expenditure of millions of dollars.[248]

191. The costing methodology employed by URS is known as a 'probabilistic costing model' which incorporates a 'Monte Carlo simulation'.[249] The advantage of this model is that "it recognises variables (in this case the cost of individual mine closure items) as probability distributions rather than single numbers".[250] Two thousand trials were conducted using the model to maximise the accuracy of the results.[251]

192. Dr Bowden explained that the model is internationally recognized [252] and is "becoming pretty well a standard approach to carrying out cost estimates".[253] This evidence was:

    a. Unchallenged;
    b. Un-contradicted; and
    c. Supported by other evidence before the Board.[254]

193. In addition to the generally optimistic[255] assumptions made by URS on the instruction of DEDJTR as noted above, URS also identified "key risks" in relation to each mine. These are set out in section 4.6 of each report. As URS explains, "if the assumptions [in 4.4] are not correct then they represent risks within the closure costing and have been incorporated into our closure costing as risk events with estimates of degrees of likelihood of occurrence and consequence".[256]

194. Importantly, four of the 'key risks' listed by URS are:

    a. Batter failure in an area where infrastructure is affected;
    b. Batter failure in an area where no infrastructure is affected;
    c. Coal fire; and
    d. Inability to secure existing water licences.

195. It is readily apparent that the manifestation of even one of these risks could materially affect the cost estimate. Each report contains a single figure

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[248] Byrne, T941.28-942.1.
[249] Exhibits 41B – 41E at 5.1
[250] Exhibits 41B – 41E at 5.1
[251] Bowden, T943.16-T944.10
[252] Bowden T942.27-29
[253] Bowden T943.7-9
[254] See the report prepared by GHD for the Yallourn mine in 2007 for submission to the EPA about financial assurances sought by the EPA: annexure 14E to exhibit 39B at .0064.
[255] Mr Byrne agreed with the proposition that they are "by and large optimistic or glass half full assumptions": T934.27-31
[256] Exhibits 41B – 41E at 4.6

representing the sum total of the risks. The single figure is expressed at the various confidence levels. For example, for the Yallourn mine, the amount allowed for risk costs for early closure varies from approximately $18m at the P50 confidence interval[257] to approximately $63m at the P95 confidence interval.[258]

196. The evidence about how the URS team calculated the likelihood of each risk and the consequences that would flow from its manifestation is not entirely satisfactory. Dr Bowden explained that these assessments were made by the URS team on the basis of "expert judgment".[259] He expanded on this theme when he referred to the team's reliance on "a lot of experience and understanding of the situation".[260]
197. Unfortunately the product of that experience and understanding is not revealed in the four URS reports.[261] Mr Chadwick explained that it is in the model that was used. The URS witnesses were unable to tell the Board about any of the assessments that were made.[262] However, the Board was informed that it would be possible for URS to produce the figures.
198. As alluded to above, the outputs of the model are presented in the URS reports by reference to three confidence levels. These are described as:
    a. 'P50 Optimistic';
    b. 'P80 Conservative but Realistic'; and
    c. 'P95 Very Conservative'.
199. The reference to 'P50' means that there is a 50% chance that the actual figure will be more than the cost chosen by the model and a corresponding 50% chance that it will be less. By contrast, at the P80 confidence level, there is an 80% chance that the actual cost will be less than the cost chosen by the model.[263]
200. Using the Yallourn report (ex. 41B) as an example, the estimates for early closure liability cost plus risk are:
    a. 'P50' - $167m
    b. 'P80' - $199m; and
    c. 'P95' - $262m.

[257] See below
[258] Exhibit 41B– AECOM report re Yallourn mine, at Table 2.
[259] Bowden T940.2-3
[260] Bowden, T940.7-8
[261] Chadwick T941.18-19
[262] Byrne, T941.20-22
[263] See, for example, the explanation in exhibit 41B – AECOM report re Yallourn mine at .0109

201. In relation to the Hazelwood mine, the equivalent figures are:
    a. 'P50' - $264m
    b. 'P80' - $305m; and
    c. 'P95' - $357m.[264]
202. In relation to the Loy Yang mine (based on the 1997 work plan), the equivalent figures are:
    a. 'P50' - $175m
    b. 'P80' - $223m; and
    c. 'P95' - $303m.[265]
203. In relation to the Loy Yang mine (based on the 2015 work plan), the equivalent figures are:
    a. 'P50' - $221m
    b. 'P80' - $256m; and
    c. 'P95' - $319m.[266]
204. The lack of transparency in the URS reports about the assessments made of the various identified risks and the optimistic assumptions about various matters such as water availability at minimal cost and no batter instability are obvious weaknesses.
205. However, with those caveats, and recalling that the URS estimates are third party costings whereas the mine's estimates are first party costings, we submit that the probabilistic methodology employed by URS and the evident expertise the members of the URS team were able to draw on, mean that the cost estimates generated by URS as part of the Bond Review Project represent the best evidence available to the Board against which to make the judgement required by TOR 10(a).
206. The URS reports provide an added basis for concluding that the assessment produced by the mines of their liabilities are less than adequate.

TOR 10(b): The effectiveness of the current bond system

207. We submit that an examination of the bond "system" necessarily includes an examination of the level of the current rehabilitation bonds.

[264] Exhibit 41C, table 2
[265] Exhibit 41D, table 2
[266] Exhibit 41E– AECOM report re Loy Yang, table 2

208. At present, the licensees of the Hazelwood mine and the Loy Yang mine have entered into bonds with the Minister under s 80 of the Act in the sum of $15m. The licensee of the Yallourn mine has entered into a bond in the sum of $11.4m.[267]

209. At the time of privatisation, each of the mines was required to enter into a bond of $15m on an "interim basis".[268] There is scant evidence about the derivation of this figure. Such evidence as does exist[269] indicates that, at least in the case of Hazelwood, the bond was set having regard to an estimated current liability of $20m but discounted on account of the amount of progressive rehabilitation being carried out ($1m per annum).[270]

210. In response to an argument advanced by the licensee that the bond should be set on the end of mine life cost, the briefing note records that the head of the mining regulator at the time considered that "bonds are usually based on an estimate of the worst case liability during the mine life".[271]

211. The Yallourn bond was reduced to $11.4m in 2004. The reason for the reduction is described in a letter dated 30 July 2014 from the head of the mining regulator, Mr Roberts to Yallourn.[272] Mr Roberts noted that Yallourn needed to carry out further research "into final landforms and hydrology" to address uncertainties about its final rehabilitation plan. Therefore a contingency of 20% rather than the usual 10% was applied in ascertaining the level of the bond. The letter concluded:

> *The Department will be happy to initiate another rehabilitation bond review and to reduce the contingency allowance once the research has been undertaken and the uncertainties related to final rehabilitation are resolved.*

212. While no such further review has occurred, we note that this decision by the regulator is a unique example in the two decades since privatisation of an attempt to use a bond to "reward past good behaviour, encourage future good behaviour and discourage future bad behaviour". These are among the 10 principles for a

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[267] Exhibit 5A – Statement of Luke Wilson, 20 November 2015, paras [115]-[119]
[268] See, for example, exhibit 35– Statement of Kylie White, Annexure 4
[269] Exhibit 35 is a briefing note prepared by the mines regulator in December 1995. At the first HMF Inquiry, Ms Kylie White produced it in response to a request for information concerning the basis upon which the bonds were set – see First Inquiry Report at p. 190.
[270] We noted earlier that in its 2013/14 return filed with DEDJTR, the licensee of the Hazelwood mine reported that it had carried out progressive rehabilitation in the amount of $123,000.
[271] Exhibit 35– Statement of Kylie White, Annexure 4
[272] See exhibit 14- Statement of Ron Mether, 16 November 2015 annexure 9.101

'good security model' first espoused by KPMG in a June 2011 report for the regulator.[273]

213. For this reason, we submit that the approach is consistent with good regulatory practice. We return to this theme in our proposed recommendations.

214. In 2010, DEDJTR published guidelines entitled 'Establishment and Management of Rehabilitation Bonds'.[274] They outline in quite a comprehensive manner the manner in which DEDJTR will administer section 80 of the Act. The evidence before the Board is that the manner in which section 80 has been administered in relation to the three LV mines is quite different to the manner anticipated by the guidelines.

215. The guidelines include the following:

    a. Bonds are "periodically reviewed by the Department to ensure that they remain at appropriate levels during the life of the operation";[275]
    b. "The bond will also be reviewed when a work plan variation is submitted...";[276]
    c. "The amount of the bond is calculated to address in full the rehabilitation liability based on the works specified in the approved work plan...";[277]
    d. For periodic bond reviews, the bond is calculated on the existing rehabilitation liability at the time of the review";[278]
    e. Bonds will be "periodically reviewed during the life of an operation to ensure that the financial security remains at an appropriate level";[279]
    f. Regular assessment of the bond against liability "provides incentive for the operator to minimise environmental impacts and undertake progressive rehabilitation";[280] and
    g. The Minister may also require the bond to be reviewed at any time during the life of an operation if of the view that the amount is insufficient. For instance, where a site inspection indicates insufficient progressive rehabilitation has been undertaken or that the site has not been worked in

[273] *Options for Financial Assurance for Rehabilitation of Mine and Quarry Sites in Victoria* (part of exhibit 5A).
[274] Exhibit 12A – Statement of Stephen Rieniets, 30 October 2015, annexure 29
[275] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 3.
[276] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 3, our emphasis
[277] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 3, our emphasis
[278] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 3, our emphasis
[279] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 4
[280] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 4, our emphasis

accordance with the approved work plan "a bond review will be undertaken".[281]

216. It is entirely unclear why these simple sensible provisions have not been utilised in relation to the LV mines. It is particularly perplexing that the significant workplan variations which have been submitted and approved (Hazelwood 2009, Yallourn 2011 and Loy Yang 2015) have not triggered bond reviews.
217. Further, it is difficult to understand why the rehabilitation liability assessments submitted by the mines (discussed above) have not triggered bond reviews. Even though those assessments are likely to understate the current liabilities of the three mines (for the reasons discussed above), the gap between those figures and the existing bonds is so significant that it ought to have been ringing alarm bells at DEDJTR that the 100% protection that the current system is meant to provide the State is entirely deficient.
218. One possible explanation before the Board for this complete failure of the regulator to implement its guidelines and section 80 of the Act in the LV is provided by an internal risk assessment performed by the regulator in 2015.
219. The assessment considered the risk of a mine licensee refusing to enter into an increased bond. The likelihood of this occurring was rated as 50/50. The assessment is part of the 'project plan' dated 24 June 2015 for the Rehabilitation Bond Review.[282] The plan was approved by Mr Ross McGowan, the head of the regulator on 3 July 2015. We note that the Inquiry's Terms of Reference (which expressly refer to this Review) were promulgated on 26 May 2015. Mr McGowan could have been in no doubt about the importance of the project plan and its likely scrutiny in this Inquiry.
220. In his evidence before the Inquiry, Mr McGowan confirmed that he had read the risk assessment before he approved the plan.[283] He pointed out that he also took note of the mitigation measures.[284] He also told the Board that the risks outlined in the document concern "risks associated with this project and not matters generally".[285]

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[281] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 29, p. 4, our emphasis.
[282] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, annexure 36.
[283] McGowan T820.31
[284] McGowan, T821.1. Curiously, those measures do not include the statutory obligation imposed by s. 80(4A) of the Act for a licensee to comply with a ministerial requirement to enter an increased bond – see T898.1-14
[285] McGowan, T868.7-16

221. With respect to Mr McGowan, that is a distinction which is difficult to understand. The document seems quite clear. In the context of a project the final step of which it to increase the bonds, the regulator is assessing the risks associated with the implementation of the project.
222. The failure of the regulator to implement its bond policy in respect of the LV mines is all the more perplexing given the evidence of bond reviews and increases generally. In a 2012 report entitled 'Inquiry into greenfields mineral exploration and project development in Victoria, a committee of the Victorian parliament noted that bonds under the Act are "periodically reviewed (based on risk) and amended to match the current liability of the site".[286]
223. That Inquiry noted that it had been advised that "the average rehabilitation bond per Extractive Industry Work Authority (e.g. a licence) has increased by 67 per cent between 2000 and 2010".287 It will be recalled that during this same period the only change in bond levels at the three biggest Victorian mines was a decrease.
224. What is perhaps more concerning is that the regulator has not even attempted to obtain the reliable information it needs to administer the system. As the DEDJTR guidelines also point out, the regulator is supposed to use the schedule 19 assessments "to determine whether a bond adjustment may be required when periodically reviewing a rehabilitation bond...".[288]
225. The guidelines provide that the department will "systematically audit a proportion of the rehabilitation liability self-assessments for quality assurance".[289] The evidence of the recently appointed rehabilitation specialist on the TRB, Corrine Unger, was that the best way to verify a rehabilitation bond amount is "with an independent external audit".[290] However, there is no evidence before the Board that this has ever occurred in relation to the LV mines.
226. TOR 10(b) requires the Board to make an assessment of whether the current bond system "is or is likely to be effective" particularly having regard to it being one of the measures to provide for progressive rehabilitation. We have noted earlier in these submissions that it is difficult currently for the regulator to make an assessment of whether licensees are carrying out enough progressive rehabilitation

[286] Exhibit 5A– Statement of Luke Wilson, 20 November 2015,, DEDJTR.1004.001.0199 at .0371
[287] Exhibit 5A– Statement of Luke Wilson, 20 November 2015,, DEDJTR.1004.001.0199 at .0371
[288] Exhibit 5A– Statement of Luke Wilson, 20 November 2015,, annexure 29 at p. 4
[289] Exhibit 5A– Statement of Luke Wilson, 20 November 2015,, annexure 29 at p. 4
[290] Unger, T623.13

in the absence of measureable targets and milestones. In those circumstances, the bond system can only play a very limited role in this regard.

227. There is a further question thrown up by TOR 10(b) which is the meaning to be ascribed to the term 'progressive rehabilitation'. As noted earlier, the term is not defined in the Mineral Resources Act. It seems generally to be understood as referring to covering worked out batters and planting. We submit that, at least in the context of these mines and for the reasons explained by Ms Unger, it should also encompass trialling of final rehabilitation concepts in order to demonstrate that final closure plans are feasible.[291]

228. Understood in this way, we submit that a properly administered bond system could play a part, among other measures, in encouraging progressive rehabilitation. The approach of the regulator in the letter advising Yallourn of a reduction in its bond provides an example. However, the only way that such an incentive can operate is if there are periodic reviews.[292] Implementing the existing guidelines would be a start.

229. We submit that the Board should caution against the view that the bond system alone can do a great deal to encourage progressive rehabilitation. As Dr Gillespie cautioned the Board, one should not try to "get a bond to do everything and that different things required different mechanisms".[293]

230. In conclusion, we submit that a properly administered bond system, where periodic reviews of bond levels are based on accurate rehabilitation liability assessments prepared under s. 79A of the Mineral Resources Act, can be an effective means by which the regulator encourages and incentivises progressive rehabilitation in the broad sense explained by Ms Unger.

231. We conclude this part of our submissions by referring to the evidence of Ms Unger:

"rehabilitation bonds are applied as a mechanism to cover the cost of rehabilitation should the mine owner, for whatever reason, be unable to undertake the works. It is important that the value of a bond accurately reflects the true costs of rehabilitation. These costs should include realistic sums for the research and development, monitoring and maintenance required to develop and implement rehabilitation".[294]

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[291] T621.15-28
[292] See exhibit 28A – Statement of Corinne Unger, 26 November 2015 at [10]
[293] Gillespie, T1062.9
[294] Exhibit 28A – Statement of Corinne Unger, 26 November 2015, at para [9]

TOR 10(c) Alternative Financial Assurance Mechanisms

232. Our primary submission in relation to the question posed by TOR 10(c) is that it is premature to consider alternative mechanisms in circumstances where the existing conventional and world-wide mechanism has manifestly not been utilised and implemented properly for the reasons outlined above.
233. Having said that, there is one alternative mechanism which we submit is worthy of serious consideration. The Accent report entitled 'High level assessment of alternative rehabilitation financial mechanisms'[295] examines trust funds for rehabilitation. After noting that "if established appropriately, [such a mechanism] sits towards the secure end of the spectrum of risk"[296], the advantages of a trust fund are listed:
    a. If established correctly, the funds will be available even in the event of one of the signatories becoming insolvent;
    b. Demonstrates operator commitment;
    c. Increases the level of assurance that funds will be available to undertake site rehabilitation;
    d. Can be used to supplement other financial assurance instruments, such as rehabilitation bonds; and
    e. As funds can only be used for rehabilitation, this option provides incentive for progressive rehabilitation to be undertaken.[297]
234. While the Accent report notes that there are some disadvantages associated with trust funds it advises that at least some of these can be ameliorated if the trust is properly established.[298]
235. A further reason why a trust fund may be a useful addition to the existing financial assurance arrangements in the LV is that there is already a trust fund in place at the Loy Yang mine under the Loy Yang Complex Agreement ('LYCA'). The LYCA was signed in 1997 by the SECV, the Loy Yang A power station and the Loy Yang B power station and provides for "rehabilitation costs for the Loy Yang mine to be proportionately assigned to the users of coal from the mine".[299]

[295] Exhibit 44 – Expert report of Accent Environmental
[296] Exhibit 44 – Expert report of Accent Environmental, at p. 31
[297] Exhibit 44 – Expert report of Accent Environmental, at p. 31
[298] Exhibit 44 – Expert report of Accent Environmental, at pp 31-2
[299] Exhibit 44 – Expert report of Accent Environmental, at p. 31

236. Contributions to the trust fund are not to commence until 2023. The parties are required to contribute "10% of the cost of the Loy Yang site rehabilitation expenses...on an annual basis for a 10 year period".[300] It is unclear on the evidence how the cost of the site expenses will be determined or by whom.
237. A common rehabilitation trust fund applying to all three mines is consistent with the idea of an integrated rehabilitation plan which we have discussed earlier in these submissions.
238. For the reasons advanced in the Accent report, we submit that a trust fund based on the LYCA model should be implemented:
    a. Extending to all three of the LV mines; and
    b. Requiring contributions as and from 2018.
239. While we do not submit that no consideration should be given to other alternative financial assurance mechanisms, we note the evidence concerning the EPA. Under s. 67B of the Environment Protection Act 1970, the EPA has a range of financial assurance mechanisms available to it. The evidence before the Board is that despite this it has almost invariably sought bonds in the form of bank guarantees.[301] Mr Webb of the EPA agreed that this was primarily because of the high level of security they provide the regulator.[302]
240. We caution against recommending change for change's sake.

A risk-based approach?

241. A matter that has been raised in opening and evidence on behalf of the mines is that the setting of a bond level under s. 80 of the Act should be risk based in addition to having regard to current liabilities. This approach finds support in the evidence of Dr Gillespie.[303]
242. The 'risk' referred to in this context is the risk that the regulator will be left having to rehabilitate the land because of insolvency or sudden departure of the licensee. We note that there was a recognition by the regulator in 1995 when setting the original Hazelwood bond that "the importance of the mine as part of the State's

[300] Exhibit 12A– Statement of Stephen Rieniets, 30 October 2015, para, [207]
[301] Webb T880.9-27
[302] Webb T881.4-12
[303] Exhibit 45– Statement of Robert Gillespie

power supply infrastructure means it is very unlikely to close before the scheduled end of life".[304]

243. The evidence reveals a number of difficulties with the regulator implementing a formalised risk assessment approach to the setting of rehabilitation bonds:
    a. Even if the risk is confined to the financial viability of the licensee this can be very hard to measure as it may depend on:
        i. The viability and priorities of a parent company which may, as is the case with the Hazelwood mine, be located off-shore;
        ii. External events such as changes in government policy;[305]
    b. It is far from clear that the regulator presently has the expertise to carry out such assessments which would necessarily have to be performed periodically on a case-by-case basis;[306] and
    c. The transaction costs for the regulator would be greater than they presently are with a bond system.[307]

CONCLUSIONS

Proposed Findings and Recommendations

244. For the reasons outlined above, it is submitted that the Board should make the following findings in relation to Terms of Reference 8-10 and 12:
    A. The options are a pit lake; full backfill; partial backfill above the Water Table; partial backfill below the Water Table; lined void and rehabilitated void.
    B. Filling each of the three mine voids with water to varying degrees will be, based on what is known in 2015, the most viable rehabilitation option for each mine.
    C. Whether filling one or more of the mine voids with water will be, in fact, viable at the time the mines close is currently unknown as it depends on whether solutions are able to be found to the following complex questions (and at what cost):

[304] Exhibit 35– Statement of Kylie White, Annexure 4
[305] Exhibit 44 – Expert report of Accent Environmental, page 27; exhibit 48
[306] Wilson T860.1-7
[307] Wilson T860.18-30

a. can each site be made safe and stable both during filling and after the preferred water level is reached:
    i. so that internal and external site infrastructure and surrounding waterways are not adversely affected; and
    ii. so that beneficial use of the pit lake may occur.
b. can the water quality for each lake be ensured?
c. can the quantity of water required for each lake be sourced?

D. In the absence of answers to these questions, the Board is unable to determine, in relation to the pit lake option, the questions asked of it under paragraph 9 of its Terms of Reference.

E. The Board is unable to take into account the outcome of the Rehabilitation Bond Review Project because the Government has not yet completed it; however, the Board is able to take into account the information obtained from those parts of the Project which have been completed.

F. The purpose of a bond (or other type of financial assurance) is primarily to provide security to the State in the event that rehabilitation is not done and also to incentivise progressive rehabilitation.

G. The rehabilitation liability assessments by the mines do not sufficiently account for the cost of rehabilitation in light of the uncertainties identified above at [C] nor the cost of research to resolve the uncertainties. In this sense, they are inadequate.

H. The bond system would be more effective if the regulator conducted periodic reviews of the bond levels of the Latrobe Valley Coal Mines as required by its published guidelines.

I. Those reviews will be more effective if they are informed by accurate and reliable assessments of the rehabilitation liabilities of each of the mines.

J. To this end, the regulator must equip the Minister with the ability to require the mines to conduct such assessments in a manner and form specified by the Minister pursuant to s 79A of the Mineral Resources (Sustainable Act) 1990.

245. The Board has heard evidence that a number of experts are optimistic that, with concerted and coordinated effort and advancement in scientific studies, it will be possible in the future to answer the questions the Board is, we submit, presently unable to answer. This evidence included:

- Professor Galvin told the Board that, in relation to stability, "we are well ahead of the game now to where we were six, eight years ago in identifying the problems and also remediating those that are already there."[308] He also opined that, "you can engineer anything if you throw enough money at it."[309]
- Professor Mackay stated that, "I am confident that we will achieve a solution."[310]
- Professor Sullivan noted that, in his opinion, "AGL has started on the journey to progress its state of knowledge about mine stability issues."[311]
- Dr Haberfield indicated that "we are engineers and our job is to find solutions and we will turn those solutions. Yes, some solutions will cost more money than others and will take longer to achieve, but I have no doubt that there is a solution for these pits."[312] He went onto say that, "I believe we can make a solution work and it just requires the science to do it."[313]
- Dr McCullough stated that, "I believe if the studies I recommend are undertaken then we will understand those standards in a timely manner."[314] He said he had a "glass half full view" that a lot of information already out there can be transferred.[315]

246. In order to maximise the likelihood of answers being found, for the reasons set out above, the Board should, find that identifying solutions to these questions requires:
    a. Significant research.
    b. Financially incentivising that research.

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[308] T443.23.
[309] T457.17.
[310] T451.11.
[311] T520.19.
[312] T446.20.
[313] T447.18
[314] T455.9.
[315] T523.30.

c. Coordination (both between the mines; between the mines and the government; and between government departments).
d. The creation of explicit closure criteria which include definitions of key terms, compliance standards, timelines, and monitoring and review processes.
e. Greater accountability and transparency.
f. Community consultation and involvement.

247. For the reasons discussed earlier, the current regulatory system is ill equipped to solve these complex problems. It is submitted that the Board should find that the issues surrounding rehabilitation of the mines have been neglected and ignored by the regulator and the mines. The Board should further find that although there have been some positive signs of improvement, these good intentions are not being promoted and enhanced by the current system.

248. It is fundamentally important that the problems about water access, water quality, and stability be resolved so that the existing conceptual rehabilitation plans can be operationalised.

249. This requires reform of existing regulatory arrangements. The commitments to legislative and regulatory reform outlined in ERR's Action Plan (exhibit 37) are welcome. However, in light of the regulator's past performance they must become embedded through a process of legislative reform, guidelines, increased and improved staffing and cultural change to be effective.

250. The Board should recommend that the legislative review referred to in the ERR Action Plan should consider whether the Act and/or the Regulations should be amended to address the following:

a. Should there be a special scheme for these mines?
b. A definition of 'progressive rehabilitation' should be inserted and should include trialling of final rehabilitation concepts in order to demonstrate that final closure plans are feasible
c. Mandatory stakeholder engagement
d. The requirement for an integrated rehabilitation plan.
e. The requirement for multiple-agency sign off: EPA, DELWP, DEDJTR.
f. Regular review.
g. Transparency:
    i. relevant information published on websites;

ii. full disclosure of applications and decision-making.

251. The Board should also recommend that:

a. the regulator develop a liability assessment methodology that can be used by the Minister under s 79A(2)(a) of the Act to specify the manner and form in which assessments are to be made by the mines.

b. within 3 months of the date on which the regulator has implemented the previous recommendation, the Minister, or the Minister's delegate, should require under s. 79A of the Act each of the licensees of the Latrobe Valley coal mines to undertake an assessment of its rehabilitation liability in the manner and form determined by the Minister.

c. The regulator should identify a panel of suitably experienced auditors for the purposes of s. 79A(3) of the Act.

d. The Minister, or the Minister's delegate, should, when imposing the requirements under s. 79A(1) of the Act, pursuant to s. 79A(3) of the Act, require that each licensee engage an auditor to certify in accordance with the section that the assessment has been prepared in accordance with the Minister's requirements and that it is accurate.

e. The Department review the bonds in a timely fashion.

252. The Board heard evidence from a range of sources recommending an overarching coordinating body to monitor, review and engage. Ms Unger described it as "like an octopus with all these tentacles – it has to connect with a whole range of opportunities."[316] Mr Langmore emphasised the need for it to have expertise and be regionally based.[317]

253. Carolyn Cameron, a provider of strategic advice about natural resource and environmental management issues, provided the Board, through the auspices of Jacobs, with a report entitled 'Analysis of potential coordination and planning models for the Latrobe Valley Brown Coal Mines'.[318] Ms Cameron informed the Board that there are a range of coordinating models and that the starting point is to identify the functions that you want to coordinate and to then select the structure that is most likely to perform the functions identified.[319] Relevant functional attributes include: plan, deliver, report, continuously improve. Structural

[316] T639.25.
[317] T47 (Langmore).
[318] Exhibit 27
[319] T582.11.

attributes include: leadership, legislative mandate, tenure, funding, power, accountability.[320]

254. As Ms Cameron explained, the need for co-ordination of particular activities may not require the creation of a new agency. It may be that an arrangement between existing entities will suffice.[321] Importantly, Ms Cameron advised that regulatory assessments and approvals do not fit well within coordination functions.[322] Importantly, Ms Cameron advised that it may not be a matter of choosing one particular model: over time it may be that different models lend themselves to different aspects of the work of a coordinating body.[323]

255. The Board has heard of the extraordinary achievements of the agency overseeing the rehabilitation and closure of Germany's coal mines.[324] This enormous engineering and environmental project has been driven and overseen by a joint Federal-State body dedicated to the rehabilitation of Germany's brown coal mines. The Agency has expended in excess of 10 billion Euros.

256. However, at least at the present time, there is no need for a Victorian equivalent of the German agency. This may change in the years to come and should be the subject of review.

257. For the reasons explained earlier in these submissions, it is submitted that the Board should find that there is a present need for a coordinating structure to exist outside of government which ensures:

    a. that the ERR commitments in its current Action Plan (exhibit 37) are not only actioned but that they are then followed through over the longer term and evaluated to ensure they are addressing the deficiencies identified in the present system by this Inquiry;
    b. the research identified by appropriately qualified experts such as Professors Galvin and Mackay and Ms Unger is funded and carried out within appropriate time-lines;
    c. that the mines work co-operatively among themselves and with government and research bodies (such as GHERG) to:
    d. develop an integrated rehabilitation plan; and

[320] T581.9.
[321] T582.3.
[322] T591.20
[323] T593.12
[324] Exhibit 21.

e. share the findings of research and rehabilitation trials.

258. There are different models available for achieving this coordination.

259. The relevant functional attributes are to: monitor and publically report on progress in this area. The structural attributes are: leadership, legislative mandate, expertise, tenure, funding, power and accountability.

260. It is submitted that leadership, tenure and public transparency are the paramount attributes required. As Ms Cameron described, "having a leader that comes in and helps through that coordination process give that clarity and stability, transparency and just has the gravitas to say 'let's come together, let's have the conversation', and do it in a very calm and sensible manner that gives people the confidence that the conversation is happening in an appropriate manner."[325]

261. One co-ordination option available to the Board is to recommend that a Commissioner for the Rehabilitation of the Latrobe Valley Coal Mines be established. However, it may be thought that, at least presently, there is insufficient need to justify such a course of action. It is conceivable, consistently with the advice of Ms Cameron, that such a position may be necessary nearer to the time of mine closure.

262. An alternative co-ordination and oversight mechanism is to recommend that the government extend the time period of the Hazelwood Mine Fire Inquiry Implementation Monitor's role to 31 October 2020 so that the implementation of the findings and recommendations of this aspect of the Inquiry can be adequately monitored.[326]

263. As Corinne Unger advised the Board, there is cause for optimism but the key is to ensure that "there is a place for these recommendations to have a life – there's nothing worse than reading other inquiries if something hasn't been followed through." Ms Unger emphasised that, "it is everyone's responsibility to carry [this] forward. Everyone has a part to play. The more that do get engaged in the issue in a positive way, the more likely you will have a good outcome."[327]

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[325] T595.29.

[326] Presently, the Implementation Monitor, Mr Comrie, is required to report annually until 31 October 2017 – see exhibit 32, page 1.

[327] T641.11.

17 December 2015

P. Rozen

R. Shann