FINGERBOARDS MINERAL SAND MINE PROPOSAL

ENVIRONMENT EFFECTS STATEMENT

CLOSING SUBMISSIONS

ON BEHALF OF EAST GIPPSLAND SHIRE COUNCIL

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A INTRODUCTION

1 At this point of the hearing it is instructive to assess how little has changed since the commencement of this case and the extent to which the matters foreshadowed in the Council's opening – and in its detailed original submission[1] – remain unresolved despite the very considerable amount of new information and material which has been brought forth.

2 Since the commencement of the hearing (in addition to changes made before the hearing), it has become apparent, amongst other matters, that:

(a) the area sought to be covered by the mining license is sought to be expanded;[2]

(b) the bore field is not intended to be located in the bore field area;

(c) the commencement of revegetation for the majority of the proposed reserve will not be delivered until the end of the Project (assuming the rehabilitation plan is correct);

(d) the road/rail and transport possibilities sought to be retained as options continue to include the pre-Avon bridge option(s) despite that bridge having been completed. The status of the January option also remains unclear; and

(e) there is no updated Environment Management Framework (**EMF**) or mitigation register for consideration, which has an increased importance in this case in view of the reliance placed by the Proponent on mitigation measures, despite the IAC's direction that the Proponent must update the EMF at regular intervals throughout the Hearing with 'track changes' to reflect the matters discussed.[3]

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1 S716B / TD14.

2 The application has not been provided but a map showing the proposed area has been provided (TD344/345). It is not clear how this interacts with the proposed Infrastructure Options Area and therefore the proposed Planning Scheme Amendment (**PSA**).

3 Direction 39.

3 The Council makes these submissions in the anticipation that more information and documentation will be forthcoming, both in response to requests from parties and the IAC, and on the Proponent's own volition.

4 In particular, the Council notes its submissions are made in advance of any current indication from the Proponent as to what is proposed by way of mitigation measures, or the EMF more broadly. This means the Council is substantially limited in its ability to engage with a critical aspect of the proceeding in the expected and usual manner.

5 In the circumstances, it is likely to become necessary to supplement these submissions. However, consistently with the transparent and balanced approach taken by the Council in its interactions with this Environment Effects Statement (**EES**), these submissions are made in the interests of assisting the IAC in its task, to the fullest extent possible.

A.1 The Council's role

6 To recap from where the Council's submissions commenced:

7 The Council remains committed to participation in this IAC process in fulfilment of two important roles:

(a) first, as the local government with the role of providing good governance for the benefit and wellbeing of its municipal community in respect of the municipal district within which the Fingerboards Mineral Sands Project (**Project**) is proposed;[4] and

(b) second, as the intended responsible authority in respect of the provisions proposed to be included in its Planning Scheme by means of the proposed planning scheme amendment.[5]

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4 *Local Government Act 2020*, s 8 (Role of a Council).

5 This may now be less clear in view of the without prejudice drafting changes proposed by the Proponent per TD244-247.

8 The Council also remains committed to gathering for itself the most reliable, and robust, information it practicably can. It did so on the basis of the EES as it was advertised, and committed significant resources to that task.[6] It has done so in committing further significant resources to the process of this Inquiry.

9 The Council remains very conscious that on a practical level, from the day the IAC's report is handed down, if the EES were to be approved, it will be asked by the community as to every component of the works – was this approved? Where in the EES did the IAC address the impacts of each element of the Project? Why didn't I know that this element was part of the EES after I read it over January? How was the removal of roadside vegetation justified? Where is the road now? Where will it be? Who owns it? Who is responsible for the interim roads and who is liable for accidents occurring on them? How long will this road work last? Who should I complain to, if not the Council?[7]

10 The Council had expected the Proponent to answer some of these questions before the Council's case commenced. It is disappointing that many answers remain elusive, particularly in view of the strong emphasis placed on the concept of adaptive management and mitigation by the Proponent since the commencement of this hearing.

11 The Council remains committed to testing the robustness of the case presented by the Proponent and attempting to obtain information, details and assurances proportionate to the importance of the land on which the Project is proposed to be situated, and the environmental matters on which the Project may have an effect. It remains the case that there is insufficient information to:

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6 Noting that the Ausenco reports exemplify the fact that it is not easy for the Council to access technical information readily in complex areas in which it does not have expertise. It is noted that the second report addresses further material than the first report, and that the circumstances of the second report being produced have been disclosed. In view of the fact that other experts have been called before the IAC on this issue, this information will inform the IAC, noting that experts called by others have addressed and will address the effectiveness of centrifuge technology as proposed.

7 The recent technical note addressing the interrelationship of the governing bodies is of assistance in this regard, although it also serves to underline the complexity in the governance of mine related complaints and the importance of an integrated, reasoned consideration of precisely what needs to be put in place to avoid or minimise impacts, and to respond to them when they arise.

(a) assess or consider the existence, significance or acceptability of the environmental effects of the Project; or

(b) to conclude that those impacts are, or could be managed so as to be, acceptable.

12 The heavy reliance placed by the Proponent on mitigation measures to establish the acceptability of the proposal without specificity as to what those mitigation measures will achieve continues to make this process difficult for the Council and the community. That difficulty could not be more plain, in light of the fact that several of the Proponent's witnesses themselves appeared to have little cohesive knowledge of the Project and in particular matters such as the proposed rehabilitation plans.

13 The proposed mine site remains (as described in the Council's opening submissions) nestled between a heritage river, ephemeral waterways, and part of the Gippsland Lakes Ramsar site catchment. The site contains large communities of *Environment Protection and Biodiversity Act 1999* (**EPBC Act**) listed threatened species and habitat for such species, State listed flora and fauna and vegetation with landscape value which are easily appreciated and enjoyed by those using the area including cyclists, drivers and other people in the public and private domain.

14 The deep ancestral, spiritual and cultural importance of the country to the Brabiralung People of the Gunaikurnai Nation has become more apparent during the course of this hearing, as has the importance of the land and that surrounding it to its current custodians.[8]

15 It appears that the importance of the present agricultural uses of the mine site has not been fully recognised or accepted by the Proponent's witnesses, by reference to soil analysis and on the basis that the agricultural productivity of the land is not so heavily used or independently recognised as the adjacent Lindenow Valley (which has been gazetted for protection from mining).

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8 As submission 662 makes plain.

16 In this context is not clear how the Proponent's reasoning leaps from "this is not protected agricultural land" under the planning scheme or because it has not been exempted from licensing under the *Mineral Resources (Sustainable Development) Act 1990* (**MRSD Act**), to the conclusion that this agricultural land has little value. It is clear that parts of the mine site are being used for agriculture, and that it is not only the most productive agricultural land which requires consideration in this process.

17 All that has been said by the Proponent about the approvals process to follow has reinforced the Council's opening submission's assessment that the outcome of the EES is a fundamentally important step in the approval process, which founds the ability to deprive landowners of valuable rights subject to compensation, and which "turns off" other approval processes. It follows, that in making a recommendation to the Minister, the IAC needs to be fully informed about the parameters of the proposal and also about the how this process has been conducted.

18 Further, the Proponent appears to rely on the fact of future approvals processes to provide for more proper assessment of environmental effects within the required scope of this EES. The IAC will appreciate its role in facilitating the assessment which will inform those approvals, rather than simply as a waystation.

19 Whatever recommendations the IAC ultimately makes, it is submitted that the IAC should report clearly and transparently about the number, scope and extent of changes made during this process, and the extent of further information required. While the Proponent may describe the changes identified as appropriately responsive to submissions, in this instance they have been extensive and iterative. In many instances, information has been provided which was clearly within the scope of what should have been included within the EES or expert evidence, and which was in the Proponent's possession well before the hearing commenced.

20 That is not consistent with the expectations of the *Ministerial Guidelines for Assessment of Environmental Effects under the Environment Effects Act 1978* (7th ed., 2006)[9]

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9 TD286.

(**Ministerial Guidelines**). It has had substantial detrimental impact on the process and has made it difficult (if not impossible) for parties to participate in it in a fully informed manner.

21 In addition, the IAC should be careful to describe what (and which) evidence was provided in the form of witnesses available for cross-examination; and what information was obtained by the substantially less reliable and less transparent provision of technical notes, website screenshots, and material produced by the Proponent.[10]

22 The Council remains conscious of what the Minister said in his assessment of the Crib Point EES:

> *Proponents, DELWP and the other authorities on the technical reference group convened by DELWP all invest heavily in the process by which the EES is prepared. The EES is the primary source of information about the project and its potential environmental effects available to interested parties to inform their decisions about whether and in what terms to make submissions. Accordingly, the EES ought to be central to the consideration of the IAC and other parties at the hearing stage.*[11]

23 The Council has invested heavily in this process, as has the community on the basis of the EES as exhibited.

24 At Attachment A to these submissions, we have again attached the extract from the Ministerial Guidelines that were attached to the Council's opening submissions. These are worth repeating. In particular, the general objective of the assessment process is:

> *To provide for the transparent, integrated and timely assessment of the environmental effects of projects capable of having a significant effect on the environment.*

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10 See for example document 328 relating to comparative benchmarking of the value of the resource.

11 Crib Point Gas Import Jetty and Crib Point – Pakenham Gas Pipeline Project, Minister's Assessment under Environment Effects Act 1978 (March 2021) (**Crib Point EES Assessment**), 15-16.

25 There is no doubt that this is a project capable of having a significant effect on the environment. It is important that the IAC is also satisfied that the manner in which this EES has been brought before you and the community, could realistically be said to allow for a "transparent, integrated, and [or] timely assessment" of the Project.

26 We also note the Proponent's suggestion that it is the responsibility of others (such as the experts called by the Council and MFG) to conduct detailed assessments of, for example, native vegetation not assessed by the Proponent. It is unclear how that can be said to sit with the following specific obligation imposed upon the Proponent:

> *To ensure proponents are accountable for investigating potential environmental and related effects of proposed projects, as well as for implementing effective environmental management measures.*

27 No doubt with unlimited resources the Council could do more. But that does not transfer the Proponent's responsibilities to it. Nor is it appropriate for the Proponent to criticise Council (and its witnesses) for not having undertaken surveys and testing.

28 The Council is deploying its resources here to ensure the correct outcome is achieved, and also to ensure that if, contrary to its primary submission, the EES were approved, it and others would be the beneficiary of a report, assessment, and outcome which is clear and capable of being understood and (to the extent necessary) administered by the Council. The concerns of the Council have been echoed by other decision makers who would be required to make decisions having regard to it such as the Department of Transport.[12] The Council does not of itself claim expertise in the very many detailed areas which its residents will expect to be the subject of detailed impact assessments. It is heavily reliant on certainty and clarity being achieved by <u>this</u> process if it is to administer approvals and controls relating to the proposed Project into the future.

29 The risks and adverse effects here are many and varied. Many cannot be avoided if the Project were to proceed. Some can be off-set, and others mitigated to some degree. The adverse impacts include significant matters such as:

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12 In its capacity as the Head, Transport for Victoria: S632/TD376.

(a) the loss of 249 hectares of native vegetation, with 834 large trees, and including (at least) 1.74 hectares of the nationally significant Gippsland Redgum GGW and 9.91 hectares of the State significant Forest Red Gum Grassy Woodland ecological communities;[13]

(b) the loss of significant roadside vegetation;

(c) the loss of the beauty of the countryside;

(d) disruptions to land use within the Project Area and the Infrastructure Options Area, with little or no recourse to affected people;

(e) the uncertainty caused by the Project in the community;

(f) risk of harm to the wellbeing of the community, through the Project's poorly understood social impacts, and risks of asserted social benefits not being delivered or achieved;

(g) the competition for scarce water resources potentially brought about by the Project;

(h) potential for competition for labour and housing;

(i) the risk of dust escape and its potential to impact farming activities, water supplies and vegetable growers; noting that the Proponent's horticultural expert, Dr Blaesing, accepted that concern around this risk is not ill founded;[14]

(j) amenity impact from the movement of roads, the introduction of B doubles to rural roads, and perceptions of noise in the landscape;

(k) the risk of spills from the site and lack of containment of non-contact water;

(l) the risk of water returned from the DAF plant not being properly treated;

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13 Noting the figures from Mr Lane and Mr Organ's evidence.

14 Cross-examination by Ms Porritt, 12 May 2021.

(m) the risk that the premature closure, or slow down, of the mine will lead to adverse risks; and

(n) the risk of promised benefits, such as the nature reserve not ultimately being delivered, or rehabilitation outcomes not being achieved and maintained in the long term.

30 It is notable that nothing – from the Minister's decision that an EES was required,[15] through the Ministerial Guidelines, or ultimately the Scoping Requirements or this IAC's Terms of Reference – absolves this or any EES from the need to assess these matters in the case of a mine project because there can be expected to be a rehabilitation bond, or because affected landowners might be able to obtain compensation. Rather, the EES must assess the risk of adverse effects (not the risk of adverse effects which might later be the subject of expenditure to remediate).

31 It follows that there is every reason for a project of this nature to go forward only on the basis of a very rigorous assessment.

B UNCERTAINTY AND ADAPTIVE MANAGEMENT

B.1 The question of 'uncertainty'

32 The Minister's EES Decision was made on the basis that, *inter alia*:

> *An integrated assessment is necessary to ensure the range of likely adverse effects and related uncertainties are sufficiently investigated, in terms of both their extent and significance…*[16]

33 The Scoping Requirements provide:

> *The main EES report… should include the following: …*

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15 *Decision on Project: Fingerboards Mineral Sands Project,* dated 18 December 2016 (**Minister's EES Decision**), being Attachment 1 to the IAC's Terms of Reference.

16 Minister's EES Decision.

- *Appropriately detailed assessments of potential effects of the project (and relevant alternatives) on environmental assets and values, relative to the "no project" scenario, together with an estimation of likelihood and degree of uncertainty associated with predictions; …*[17]

34 That does not mean it is necessary to insist upon an absence of uncertainty. Environmental impact assessment necessarily involves a degree of uncertainty, and particularly epistemic uncertainty, which cannot be avoided. In this respect, the evidence of Dr Kiem in respect of hydroclimatology is illustrative. It was his evidence that uncertainty is inherent in all modelling but where the range of uncertainty can be better understood – it should be.

35 The IAC should not simply accept, as the Proponent urged in opening, that there is uncertainty associated with every mine, or every major project. The existence of uncertainty does not entitle us to simply assume that decision makers or the Proponent itself to ensure matters are dealt with as they come to light. To do so would be to avoid carrying out the IAC's task.

36 Rather, it is submitted that the IAC must insist upon a proper understanding of what uncertainty exists.

37 The IAIA *Biodiversity and Ecosystem Services in Impact Assessment: International Best Practice Principles*[18] (**Biodiversity and Ecosystem Services Best Practice Principles**) acknowledge as much. These principles apply to biodiversity and ecosystem services, defined to mean:

> *The benefits people obtain from ecosystems and biodiversity. They include provisioning services (e.g., food, water, timber, and fiber); regulating services that affect climate, floods, disease, wastes, and water quality; cultural services*

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17 Scoping Requirements, p 8.

18 *Biodiversity and Ecosystem Services in Impact Assessment, Special Publication Series No. 8* (International Association for Impact Assessment, 2018).

> *that provide recreational, aesthetic, and spiritual benefits; and supporting services such as soil formation, photosynthesis, and nutrient cycling.*[19]

38 In the context of uncertainty as to the extent of impacts and risks of impacts, they provide that:

> *Assessment of impacts on biodiversity and ecosystem services is complex, often uncertain, and always highly context-specific. The strength of evidence used to underpin predictions and any assumptions made must be clearly explained, so that the need for precautionary approaches can be established in accordance with Principle 8. This is also necessary to justify any "scoping out" of risks and impacts.*[20]

39 As has become apparent in the course of the hearing, a matter of particular consequence to the uncertainty which exists is climate change. The IAIA *Climate Change in Impact Assessment: International Best Practice Principles*[21] (**Climate Change Best Practice Principles**) are worthy of particular note in this regard:

> ***Addressing uncertainties***
>
> *Broad scientific consensus exists that the climate is changing; however, there is significant uncertainty about the precise nature (degree, timing, etc.) of these changes. The IA should address this uncertainty by explicitly considering a reasonable, credible range of possible future climate scenarios and including feasible no-regret adaptation measures that generate net social and/or economic benefits irrespective of the degree to which climate change occurs.*
>
> ***Confidence in the analyses***
>
> *There will also be uncertainties in the analyses of GHG emissions, the effects of climate change on the proposal, and the effects of climate change on impact predictions. For each analysis, the IA should provide an explanation and*

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19 *Biodiversity and Ecosystem Services Best Practice Principles,* 11.

20 *Biodiversity and Ecosystem Services Best Practice Principles,* 4.

21 *Climate Change in Impact Assessment: International Best Practice Principles, Special Publication Series No. 8* (International Association for Impact Assessment, 2018).

justification for how the results were obtained (the sources of data, the choice of methodologies and models). It should also state the degree of confidence and validity that can be placed on the models and data, and on the results. Quantitative analyses are generally desired. However, it is recognized that such analyses may not be feasible or cost-effective and that qualitative analyses must suffice instead. In these cases, the qualitative descriptors should be fully explained and the predictions justified.

Decision-making

Making decisions about proposals that affect and/or are affected by climate change presents significant challenges, particularly since the implications are often long-term and uncertain. Once the climate change implications, including the uncertainties, are understood, decisions about the proposal (accept, modify, or reject) should be based on the precautionary principle of "do no harm" and the principles of sustainable development. [22]

40 Dr Kiem's evidence was instructive as to the equal probability of all presently modelled climate change scenarios – and our lack of understanding of what those scenarios will mean.[23]

41 A substantial role of the science which should go into assessment of environmental effects should be directed to understanding the nature of current impact, the nature of predicted impacts and the scope of uncertainty, and how that scope of uncertainty can be responded to.

42 This should not be controversial. The Proponent's witnesses agree:

- Every good risk assessment should address the uncertainties because there are uncertainties at every step.[24]

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22 Climate Change Best Practice Principles, 3.

23 These matters will be addressed in the course of considering relevant environmental effects.

24 Ms Teague, evidence in chief, 13 May 2021.

- A model is only as good as the data you put in.[25]

43 Uncertainty exists in two critical and unacceptable ways in the present proceeding:

(a) first, there is uncertainty as to baseline conditions. Primarily, this relates to the existing hydrological regime, both as it exists today and in the forms it may probably exist over the proposed lifespan of the Project; and

(b) second, uncertainty exists as to potential impacts. This is the focus of the Proponent's defensive submissions made in opening about the adaptive management regime.

B.1.1 Baseline uncertainty

44 Baseline conditions are the context for the majority of considerations relevant to this Inquiry are to be assessed.

45 The first of those considerations is whether there is sufficient understanding of baseline conditions to inform an understanding of potential or likely impacts, or the risk of any impacts.

46 The *Evaluating Performance: Monitoring and Auditing Leading Practice Sustainable Development Program for the Mining Industry*[26] identifies the importance of baselines in this way.

> *Baseline studies are used to identify pre-mining environmental, social and economic values and impacts and to establish monitoring and management programs. This enables companies to commence long-term planning for sustainable development and mine closure before any project-related impacts occur and to develop robust and defensible closure performance criteria.*[27]

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25 Mr Georgiou, evidence in chief, 14 May 2021.
26 DFAT, 2016.
27 Page 3.

47 Principle 5 of the Biodiversity and Ecosystem Best Practice Principles identifies the critical role of the design and conduct of baseline surveys and assessments.

> ***Principle 5***
>
> ***Design baseline surveys and assessments to generate the information and understanding needed to support an evidence-based approach to assessment of impacts on biodiversity and ecosystems***
>
> *Baseline surveys should be designed to generate the information needed by ecologists to assess impacts and evaluate their likely significance using transparent, evidence-based approaches. Robust baselines support a more outcome-oriented approach to IA for biodiversity and ecosystems, allowing explicit consideration of how development will affect ability to achieve NNL/NG [no net loss/net gain] in accordance with Principle 1.*
>
> ***Ecosystems are dynamic, responding to natural pressures and cycles as well as human-induced changes. To evaluate the significance of impacts associated with planned development, assessment of impacts on biodiversity and ecosystem services must be carried out in relation to their existing, pre-development state and their projected future state without planned development. This requires information on external threats and pressures that might contribute to cumulative effects with the direct, indirect, and induced impacts of the specific proposal and means that biodiversity baseline studies often have long lead times and a wider spatial scope than some other specialist studies in IA**.*[28]

48 The Environment Institute of Australia and New Zealand's published Environmental and Social Impact Assessment (ESIA) Good Practice Statements identifies that:

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[28] Biodiversity and Ecosystem Services Best Practice Principles, 4 (emphasis added).

To achieve its purpose, good practice ESIA*:*

1. Is based on a thorough understanding of the environmental and social values and resources in the receiving environment. Baseline studies are of sufficient geographic and temporal coverage to provide for an understanding of seasonal and regional variations in environmental values. Description of the existing environment includes documentation of the interrelationships between different elements of the physical, biological and social environment.

49 Baseline data is also identified as necessary to mine closure planning in the *Mine Closure Leading Practice Sustainable Development Program for the Mining Industry*.[29]

50 Notably, the risk-based approach called for by the Ministerial Guidelines, the principle of proportionality identified in the sustainable development principles of the MRSD Act[30] and the principles of ecologically sustainable development, each relate to the proportionality of *measures adopted to address harm or risk of harm*. Without sufficient baseline data, it is not possible to adequately identify the extent of harm or risk of harm associated with the Project, and it is therefore not possible to identify what would be a proportionate response to that harm or those risks.

51 The recent report produced by the IAC considering the Crib Point Gas Import Jetty and Crib Point – Pakenham Gas Pipeline criticised the absence of baseline information in that EES and the evidence called in support of it in these terms:

A more comprehensive understanding of the existing site specific conditions within Crib Point is required to predict potential impacts from the Project and better describe the baseline conditions.

The lack of information in the EES on existing baseline conditions at Crib Point, within a segment of Western Port Bay creates uncertainty that potential direct

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29 Page 60.

30 Section 2A.

and indirect impacts from the Project to marine biodiversity are measurable and can be acceptably managed. [31]

52 This IAC should expect baseline data to be as accurate as can be realistically achieved, with sufficient information to understand the extent of uncertainty associated with each baseline characterisation.

53 There exists uncertainty in respect of the baseline as might be relevant to several categories of environmental effects, including:

(a) hydrology, including rainfall/runoff and groundwater;

(b) traffic; and

(c) horticulture and amenity effects; and

(d) social and economic impacts.

54 A critical deficiency relates to climate change. "Baseline conditions" are not just what exists now, but what will exist over the life of the Project. Yet there is a paucity of information as to what effect the range of probable outcomes of climate change may have on the Project, or how those outcomes might affect its environmental effects.

55 Each area will be addressed as these submissions turn to address impacts in the context of the draft evaluation objectives.

B.1.2 Uncertainty as to impacts

56 As noted above, a degree of uncertainty is inherent in predictive impact assessment.

57 That does not mean any degree of uncertainty is always acceptable.

58 Relevant matters will be explored below in the context of each of the draft evaluation objectives.

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31 *Crib Point Project Inquiry (EES)* [2021] PPV 11 (**Crib Point EES Report**), 70.

B.2 The role of adaptive management

59 The Proponent has sought to address uncertainty by reference to its intention to implement adaptive management measures. The message is, "Let us manage it – we are experienced miners – we can identify and respond to environmental effects as they arise".

60 The implementation of adaptive management would be supported by the Council, should the Project proceed. Its role in environmental management frameworks is sound and recognised. Indeed, it is somewhat self-evident that the mine will need to adapt as the minepath progresses and the environment around it changes.

61 But adaptive management is not a salve for accounting for deficiencies in knowledge. It cannot be relied upon as a basis to conclude environmental effects will be acceptable (because they will be subject to adaptive management).

62 To seek to give adaptive management that role is to misunderstand its role and purpose and, critically, would be to simply defer any decision in respect of environmental effects to the Proponent itself – or, at highest, to a later decision-maker[32] – and wholly undermine the purpose of this EES process.

63 Adaptive management can be defined in many ways. For example, the Biodiversity and Ecosystem Service Best Practice Guidelines defines it in these terms:

> *Management that is corrected or adjusted to ensure that intended results are achieved, primarily by taking results of monitoring and evaluation of the effectiveness of past actions into consideration. Lessons learned from past practice are thus taken into account.*[33]

64 A past IAC has utilised this definition, derived from a Canadian publication:

> *Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational*

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32 For example, the EPA on a periodic review of a development licence.

33 Biodiversity and Ecosystem Services Best Practice Guidelines, 10.

programs. Its most effective form – "active adaptive management" – employs management programs that are designed to experimentally compare selected policies or practices, by evaluation alternative hypotheses about the system being managed.[34]

65 Whichever definition is preferred, it is clear that adaptive management starts with a regime which can be *corrected or adjusted*, or *continually improved*. Adaptive management is a matter of "fine tuning operational environmental management, not a fundamental management procedure in itself."[35]

66 Adaptive management must proceed on the basis of a sufficient baseline. As the Crib Point IAC noted, that baseline is necessary to produce an adaptive management plan or triggers for remedial action.[36]

67 As Dr Webb noted in his evidence,[37] where there is identification of the use of adaptive management, it is unclear what the actual adaptive management strategies are proposed to be.

B.3 A word about risk and returns

68 The Proponent and Mr Glossop have directed significant attention to Earth Resources Regulation publications identifying risks to miners of not ultimately achieving an approval – or indeed the significantly larger risk of not finding ore.[38] As this Proponent took over the Project after ore had been located, it is clearly not subject to the latter risk.

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34 British Columbia Ministry of Forests and Range Forest Practices Branch, "Definitions of adaptive management", available at <https://testwww.for.gov.bc.ca/hfp/archives/amhome/AMDEFS.HTM> (accessed 25 May 2021), quoted in *Channel Deepening (EES)* [2005] PPV 13, 58.

35 *Channel Deepening (EES)*, 59.

36 *Crib Point Project Inquiry (EES)* [2021] PPV 11, 77.

37 In cross-examination by Mr Watters.

38 For example, Mr Glossop's witness statement dated 29 January 2021 (TD80), at [49], appears to reproduce text from the ERR website at <https://earthresources.vic.gov.au/community-and-land-use/understanding-exploration> (accessed 25 May 2021).

69 That there are risks in not achieving an approval is self-evident and acknowledged within the Proponent's publicly available material:

> *"These days new projects tend to be in Africa or other parts of the developing world and you often have to build a whole country [around the Project] so your capital costs might be $300-400 million, whereas our PFS defined it as $106 million," Bishop explains that Kalbar's capital costs are reduced by almost three quarters to a comparable project, aided by the available infrastructure.*
>
> *However, with the abundance of infrastructure comes the established agricultural and forestry businesses and their associated communities. Bishop says that Kalbar is aware of its responsibilities as the proponent of a major new business in the region and that it must ensure that the mine will have minimal impact on the surrounding businesses and communities, and indeed that the local community are key beneficiaries of this fantastic resource.*[39]

70 The Proponent goes on to welcome a rigorous assessment,[40] stating:

> *"Some will say that approvals are our biggest risk, indeed that would be the case for any project at this stage because if you don't get approved then you don't have a mine," Bishop says. "In Victoria, there is a rigorous approvals process, and this is a good thing. We want to be held to the highest standard. What many people don't realise is that Victoria was the most recent mineral sands province in Australia. While mining wound down in Western Australia, Victoria approved four major mineral sands mines, and several other projects. The last mine finished in 2014, and Iluka has recently announced the idling of the Hamilton Mineral Separation Plant. Consequently, the regulator has a good and up-to-date knowledge of mineral sands, and we are confident in the approvals process.*

71 The notion that the extraction of resources in this location is cheaper due to the existing infrastructure seems self-evident, as is the understanding that the cost of this is the

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39 Resource Global Network | Kalbar Resources (accessed 26 May 2021).

40 Resource Global Network | Kalbar Resources (accessed 26 May 2021).

Proponent's need to demonstrate its acceptability within the surrounding environment and the risk that the proposal will not be approved. Further, hand in hand with this, is the self-evident proposition that the risk is shared with the community where there is existing infrastructure but also existing residents.

72 None of this necessarily assists the IAC's task directly but the IAC should not be persuaded that the fate of other unknown projects or exploration exercises should determine the outcome of the exercise the Minister has defined within the Scoping Requirements.[41]

C THE EES PROCESS

C.1 The nature of this Inquiry

73 Having regard to submissions made by the Proponent, it is appropriate to consider the precise nature of the present Inquiry under the Environment Effects Act 1978 (**EE Act**), and the role that the EES process has to play.

74 Relevant aspects of this question are addressed in the Proponent's Part B submission[42] under the heading: "THE DECISION-MAKING FRAMEWORK". In the apparent context of a review of "the decision-making framework", the Proponent's Part B submission gives primacy to the "strategic support" offered by the MRSD Act, carefully selected planning policy, and the "locational rarity of economic mineral deposits".

75 There is no dispute that the purpose of the MRSD Act is to encourage mining which is compatible with the economic, social and environmental objectives of the State.[43] That purpose, and the MRSD Act's objectives, would be relevant to the application and interpretation of its provisions, and decisions made pursuant to it – for example,

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41 Noting that Mr Glossop's evidence and the Part B Submissions on behalf of Kalbar Operations Pty Ltd (TD359) at [13] appear to rely on the notion that the Proponent's case is assisted by the fate of other proposals.

42 TD358, p 6: "Economic, social, and environmental considerations, ecologically sustainable development, and acceptable outcomes".

43 By way of summary of the relevant words of s 1.

decisions of the Minister,[44] or as will ultimately become relevant should this Project proceed, a decision in respect of an application for approval of a work plan. In other words – the MRSD Act is the central part of the decision-making framework in respect of the work plan itself; like the EPBC Act is to the approvals in respect of matters of national environmental significance; like the Environment Protection Act is to the relevant works approval; like the Water Act is to the relevant take and use licence; and so on.

76 In the context of the present Inquiry under the EE Act, the purpose and objectives of the MRSD Act do not take centre stage. The provisions of the MRSD Act provide an understanding of the context in which activities associated with the Project would ultimately be undertaken, but do not come to bear upon the significance or acceptability of environmental effects, or on the assessment of any benefits the Project might have. If positive benefits exist, they exist to be taken into account in the determination of the acceptability of the environmental effects of the Project.[45]

77 The fact that an Act which deals with mining identifies that it exists to encourage and facilitate exploration and to foster mining operations says nothing about whether, in environmental terms, it is a good idea for those mining operations to take place or to take place in a particular location.[46]

The context within which the EES has been prepared and is to be assessed: the EE Act

78 Before considering the ultimate "decision-making framework", as the IAC will appropriately come to do, it is necessary to understand the baseline, i.e.: to look to the EE Act process undertaken in this case.

79 On 18 December 2016, the Minister for Planning decided that an EES should be prepared for the Project, pursuant to s 8B(3) of the EE Act.[47] The Minister made that

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44 Per e.g. ss 7 to 7C.

45 Ministerial Guidelines, pages 2 (definition of 'environment'), and 27.

46 Or whether the relevant location and proposal are consistent with the purpose of the MRSD Act, of ensuring compatibility of the activities it encourages with the economic, social and environmental objectives of the State: s 1.

47 Minister's EES Decision.

decision on the basis that the Project is likely to have a number of significant adverse environmental effects, but also because:

> *An integrated assessment is necessary to ensure the range of likely adverse effects and related uncertainties are sufficiently investigated, in terms of both their extent and significance, and how significant effects can be avoided and minimised to acceptable levels.*[48]

80 In giving notice of that decision under s 8B(4)(a)(i) of the EE Act, the Minister specified the procedures and requirements applying to the EES process as required by s 8B(5). Those procedures and requirements, as specified in the Minister's EES Decision, include the following:

> *(i) The EES is to document the investigation and avoidance of potential environmental effects of the proposed project, including for any relevant alternatives (such as for the mining extent, methods for mining and processing, water supply and transport of mining outputs), as well as associated environmental mitigation and management measures.*
>
> *…*
>
> *(iii) The level of detail of investigation for the EES studies should be consistent with the scoping requirements issued for this project and be adequate to inform an assessment of the potential environmental effects (and their acceptability) of the project and any relevant alternatives, in the context of the Ministerial Guidelines.*

81 Throughout its submissions (and like other parties) the Council will take the IAC to the Ministerial Guidelines made pursuant to s 10 of the EE Act. The Ministerial Guidelines identify specific objectives of the EES process including:

- *To provide for the transparent assessment of potential environmental effects of proposed projects, in the context of applicable legislation and*

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48 *Reasons for Decision under Environment Effects Act 1978*, dated 18 December 2016.

policy, including principles and objectives of ecologically sustainable development …

- *To provide a basis for monitoring and evaluating the effects of works to inform environmental management of the works and improve environmental knowledge.*[49]

82 The Minister's EES Decision[50] and the Ministerial Guidelines, each identify the need to prepare, and the benefit of preparing and scoping requirements for the EES. In turn, they identify the scoping requirements as set out, "in detail", the "matters to be investigated and documented in [the] EES".[51] In addition to the s 8B(5) requirement that the EES address the specific matters set out at paragraph (i) of the Minister's EES Decision, the EES was required to address the scoping requirements.

83 The IAC has been taken to the Scoping Requirements. The Council will take the IAC to them in the context of specific environmental effects.

84 The requirement to produce an EES complying with the Scoping Requirements (and the s 8B(5) requirements) is not limited in importance to the EE Act. Pursuant to clause 4.3(c) of the Schedule to the *Bilateral Assessment Agreement*,[52] the assessment of a controlled action must proceed on the basis of an EES prepared in accordance with the Ministerial Guidelines and with the Scoping Requirements. That is key to the assessment of the environmental impacts that the controlled action has, will have, or is likely to have, to the greatest extent practicable, as the State has undertaken and as the *Bilateral Assessment Agreement* requires.[53]

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49 Ministerial Guidelines, p 3.

50 Particularly paragraphs (ii), (iv) and (v).

51 Ministerial Guidelines, p 3; Minister's EES Decision, (ii). See also the Scoping Requirements themselves at page 1.

52 Bilateral agreement made under s 45 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) relating to environmental assessment, between Commonwealth of Australia and the State of Victoria made 27 October 2014.

53 Clause 6.1.

85 The next step in the process was the Minister's appointment of the IAC to hold an inquiry into the environmental effects of the Project under s 9(1) of the EE Act. That appointment is made in the terms set out in clause 5 of the Terms of Reference.

86 The text of clause 5(b) is becoming quite familiar, but its meaning has not been properly unpicked. It relevantly reads:

> *… The IAC is to: …*
>
> *(b) consider and report on the potential environmental effects of the project, their significance and acceptability, and in doing so have regard to the draft evaluation objectives in the EES scoping requirements and relevant policy and legislation; …*

87 This term has three relevant parts.

88 First, the text requires the IAC to consider and report on the potential environmental effects of the Project. This necessarily means that the IAC must be in a position to identify those effects.

89 Second, it requires that in considering and reporting on the potential environmental effects of the Project, the IAC must consider and report on the *significance* and *acceptability* of those potential environmental effects. Both concepts are addressed in the Ministerial Guidelines.

90 *Significance* is dealt with at page 19. It provides as follows:

> *An EES should provide an analysis of the significance of potential effects. This analysis will require the integration of several aspects, including:*
>
> - *potential effects on individual environmental assets, in terms of magnitude, extent and duration of change in the values of each asset*
> - *relationships between different effects*

- *the likelihood of effective avoidance and mitigation of potential adverse effects*

- *the likelihood of adverse effects and associated uncertainty of available predictions*

- *implications of likely effects for implementation of statutory provisions, including policy, as well as consistency with principles and objectives of ecologically sustainable development.*

91 In this way, statutory provisions are relevant to the question of the *significance* of effects only insofar as an effect may be of a particular significance if it has implications for the implementation of those provisions.

92 The next question then is how statutory provisions are relevant to the *acceptability* of effects. *Acceptability* is dealt with at page 27 of the Ministerial Guidelines, in these terms:

> *An assessment of the environmental effects of a proposal is the final step in the process. Often referred to as the 'Minister's assessment', this step determines whether the likely environmental effects of a project are acceptable. It will provide:*
>
> - *findings on the potential magnitude, likelihood and significance of adverse and beneficial environmental effects of the project*
>
> - *conclusions regarding any modifications to a project or any environmental management measures that are needed to address likely adverse effects or environmental risks*
>
> - *evaluation of the overall significance of likely adverse effects and environmental risks of the project, relative to likely benefits of the project, within the context of applicable legislation, policy, strategies and guidelines.*

93 Again, it can be seen that relevant legislation and policy are relevant to *acceptability* of effects in confined terms.

94 They do not determine whether a risk of any beneficial or adverse environmental effect exists, or influence any finding of the magnitude, likelihood or significance of any risk.

95 The third part of clause 5(b) of the Terms of Reference has received particular attention. It reads (as emphasised):

> *… The IAC is to: …*
>
> *(b) consider and report on the potential environmental effects of the project, their significance and acceptability, and in doing so have regard to the draft evaluation objectives in the EES scoping requirements and relevant policy and legislation; …*

96 These words call for the IAC to have regard to the draft evaluation objectives in the Scoping Requirements and to relevant policy and legislation in considering and reporting on the potential environmental effects of the Project, and their significance and acceptability. The Proponent describes the effect of this part of the text as follows:

> *Clause 5(b) makes clear that the acceptability of an outcome is to be judged by reference to the Draft Evaluation Objectives… of the Project, as well as relevant policy and legislation…*[54]

97 The evaluation objectives are relevant, and that the IAC will have regard to them, as "identify[ing] desired outcomes in the context of potential project effects and relevant legislation".[55] But it is not sufficient for an EES to simply address the evaluation objectives; without addressing the scoping requirements, without which achievement of the evaluation objective cannot be assessed.

98 To use the "Cultural heritage" evaluation objective by way of example, any acceptable outcome is likely to "avoid or minimise adverse effects on Aboriginal and non-Aboriginal cultural heritage"; but it is only possible to conclude that an outcome would be

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54 TD359, 6 [19].

55 Scoping Requirements, p 12.

acceptable if each of the relevant matters set out in the Scoping Requirements are identified and assessed.

99 From the above, it can be seen that:

(a) to be adequate, the EES must:

(i) investigate and document the matters set out in the scoping requirements; and

(ii) analyse the significance of potential effects, having regard to those matters set out in the Ministerial Guidelines;

(b) this IAC process involves consideration and reporting on the potential environmental effects of the Project, their significance, and their acceptability, in all of the circumstances; and

(c) the Minister's assessment will depend upon an EES in accordance with the Scoping Requirements, and upon an Inquiry properly informed as to the range of likely adverse effects and related uncertainties.

100 The extent to which the environmental regulation of mines has suffered by dependence on the MRSD Act regulatory arrangements, is reflected by the concerns identified in the report of the *Independent Inquiry into the Environment Protection Authority,* in respect of "concerns about the potential conflict of interest of having the primary mining regulator – Earth Resources Regulation – in the same department that seeks to develop the industry (DEDJTR)".[56]

101 The work of the Victorian Auditor-General provides a sobering assessment of the rehabilitation regime.[57] That is not to suggest the IAC should do anything other than to take the legislation as it finds it, but it is important to assess the proposal before the IAC

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56 *Report of the Independent Inquiry into the Environment Protection Authority*, xiv, 295-302 and Recommendation 17.1.

57 Victorian Auditor-General's Office, Rehabilitating Mines (August 2020), available at <https://www.audit.vic.gov.au/report/rehabilitating-mines?section=> (accessed 26 May 2021).

with an eye to ensuring that any and all commitments made (and which are said to make the effects of this proposal acceptable) are realistically capable of enforcement.

C.2 The role of the Council

102 It is important to remember the Council's resolution in respect of the exhibited EES, as set out in its opening submissions.

103 The Council does not oppose mining – or any other economic, responsible, and environmentally sound use of land, for the private or the public benefit.

104 But the Council does oppose the proposition that a large-scale project, of substantial spatial and social imposition, and with sufficient risk of environmental effects as to warrant an EES process, could proceed to approvals in the presence of substantial deficiencies in the EES, and substantial uncertainty even having regard to the further information provided throughout the course of the Inquiry.

105 To that end, the Council has sought – to the best of its abilities and resources – to interrogate the Project in important ways:

(a) What is the environment into and onto which the Project is intended to sit?

(b) What is actually proposed?

(c) What will result?

106 From the point of view of a Council that has been faced (in very recent times) with fire and flood, and keenly aware of its neighbours' experience of major projects that have gone wrong,[58] ensuring this process is done once and is done right, is absolutely critical.

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[58] For example, the Hazelwood mine fire.

C.3 The role of expert witnesses

107 Senior counsel for the proponent made some remarks in terms of the role of expert witnesses. The Council does not depart substantially from them, noting its submissions in opening in respect of the careful distinctions to be drawn between expert evidence and submissions where the proponent has elected to not provide that evidence, or not obtain the information necessary to fully inform its witnesses.

108 It is important to understand that ultimately, considerations of when certain work is necessary, or whether certain work is necessary to understand either baseline conditions or to assess the significance or acceptability of impacts, remain matters to be determined on the basis of the integrated assessment provided for by this process, and for the IAC itself.

D ASSESSMENT OF SPECIFIC ENVIRONMENTAL EFFECTS

D.1 Resource Development

Draft evaluation objective

To achieve the best use of mineral sands resources, in an economic and environmentally sustainable way, including while maintaining viability of other local industries.

D.1.1 "To achieve the best use of available mineral sands resources, in an economic and environmentally sustainable way"

109 The Proponent's case commenced with a lecture on economic history: framing the case, as Kalbar saw it, as one of benefit in dollar terms.

110 On the first day of the hearing, the IAC was taken to the identities of the directors of Kalbar Operations and its joint venture partner Appian. It is quite unclear what the relevance of these submissions was, except perhaps by submission to address a concern that there may not be sufficient financial resources to complete the Project.

111 It is also of some passing interest that the EES itself relies very heavily on the ties Kalbar has to Victoria, which must now be read in the light of a proposed progressive dilution of that attachment on the basis of material put before the IAC. The fact that ownership changes occur is only demonstrated by this submission.

112 Ultimately short of an enforceable commitment as to the ongoing ownership and control by a particular entity, it is submitted that little or no weight ought be given to such submissions, either positively or negatively, noting that the Proponent's submissions indicate it would ultimately be required to satisfy the regulator as to the viability of the Project and its financial ability to fund the Project.

113 Similarly, evidence at a very high level as to the percentage cost of exploiting the resources versus the likely return and the comparison to other projects, should be given little (if any) weight in the absence of detailed evidence to such effect. These figures do not, obviously, take into account costs such as borrowing costs, hedging margins or other matters which go to the heart of viability. Nor do they attempt to accurately present an analysis of likely tax payable after all expenses are accounted for or anything but a bold assessment of royalties.

114 It is to be remembered of course, that "royalties" are, in fact, a payment for extraction of a commodity owned by the State. Once mined, that commodity is no longer available to be mined by others. The payment means both that the State receives a royalty, and that the mineral resource is no longer available for future exploitation.

115 That said, accepted at face value, this Project stands to generate significant income – such that the value of the effort required to provide many of the assurances sought by the Council and the community, and to do the work identified by both the Proponent's own consultants and SLR and parties' witnesses, appears difficult to reconcile with the case as put by the Proponent.

116 What has not been demonstrated in this assessment, and not in evidence able to be tested, is the assessment required by the scoping requirements to:

> *Assess the project feasibility including the predicted economic costs and benefits from the construction and operation of the project, including capital investment, operating expenditure, employment and business opportunities, taxes and royalties to the regional, state and national economies, and the temporary and permanent impacts on agriculture, forest resources, tourism and business.* [59]

117 The IAC should be cautious about relying on assertions in the absence of a clear, logical and justifiable project feasibility analysis for the purposes of this hearing (as opposed to substituting for this assessment the assertion that the Project has received funding and is therefore to be regarded as feasible).

D.1.2 "Maintaining viability of other local industries"

118 The second important aspect of this draft evaluation objective relates to the viability of local industries.

119 The Council is concerned as to temporary and permanent impacts on local industries including agriculture, tourism, and other businesses. Questions of competition for labour and water, the ability of mining and horticulture to co-exist, and the recharacterisation of historically agricultural land for mining, each have the potential for significant impact.

120 Relevant matters will be addressed in the context of economic impact, later in these submissions. It must be remembered that these matters go not only to question of local impacts, but to this evaluation objective: it is important that the EES demonstrate that the best use can be made of the mineral resource, in an economic and environmentally sustainable way, while maintaining viability of other local industries.

D.2 Biodiversity

Draft evaluation objective

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[59] Scoping Requirements, 15.

To avoid or minimise potential adverse effects on native vegetation, listed threatened and migratory species and ecological communities, and habitat for these species, as well as address offset requirements for residual environmental effects consistent with state and Commonwealth policies.

121 The extent of adverse effects on native vegetation is remarkable – 249 hectares of native vegetation, with 834 large trees, and including (at least) 1.74 hectares of the nationally significant Gippsland Redgum GGW and 9.91 hectares of the State significant Forest Red Gum Grassy Woodland ecological communities,[60] will be lost.

122 The additional area of potential EPBC Act-listed Gippsland Red Gum Grassy Woodland identified by Mr Lane must also be taken into account.

123 The Council considers the loss of biodiversity and native vegetation proposed by this Project to be a substantial environmental effect of this Project. The dramatic extent of vegetation which is lost cannot be recovered and includes trees hundreds of years old.

124 Many aspects of the loss have not been fully identified, including, how many trees are to be lost, how old the trees to be lost are, or how many of those trees are hollow-bearing – noting that Mr Lane did indicate that large old trees do provide a proxy measure for the likelihood of hollows being present

125 This impact, in and of itself, is of such significance that it could only possibly be balanced where the environmental effects of the Project include very substantial, certain, and tangible benefits.

126 Offsets are simply insufficient to serve to balance the extent of loss. The identification and ability to secure offsets has not been sufficiently documented by the Proponent. Given the extent of destruction and removal of native vegetation proposed, it is entirely appropriate to insist absolute clarity in relation to how offsets will be secured, managed

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60 To take the figures from Mr Organ's presentation, TD299 (slide 14), noting Mr Lane's evidence in respect of the extent of ecological communities which will be addressed later in these submissions.

and monitored,[61] – noting Mr Lane's evidence that these must be identified at the commencement of the project.

127 While the Council understands the need for sensitivity around the location of potential offset locations, without that information it is not possible to assess whether and how those offsets would benefit the community in the vicinity of the permanent losses to vegetation and landscape values, including those impacts on the amenity of rural roads by means of the loss of recognised significant vegetation.

128 The Council otherwise notes the position of DELWP and its lack of satisfaction as to offset arrangements and the Biodiversity Offset Management Strategy.[62]

129 It might be said that the Proponent has implicitly acknowledged offsets alone will not suffice to balance the extent of loss, in proposing the creation of an artificially seeded reserve.

130 Mr Lane was criticised for not undertaking a higher standard of assessment or survey of flora within the Project area. As Mr Lane said in cross-examination, that was not his job.

131 The Council has applied substantial resources in seeking to understand what is proposed in the EES, and of the success with which it identifies and assesses the environmental effects of the Project. Its resources are limited and it cannot properly use public funds to attempt to fill gaps in an EES for a private project. Its expenditure is not offset by the requirement that the Proponent pay for the cost of the IAC within which the Council has diligently, and, to the best of its ability, fairly participated.

132 The Council accepts that, in respect of the property to which Mr Organ was denied access, there was a practical constraint on the Proponent's ability to conduct detailed surveys. But the suggestion that Mr Lane's evidence is somehow lacking because he could have, and did not, or any suggestion that the other matters Mr Lane identifies can somehow be impugned by reason of an absence of the most detailed possible

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61 Scoping Requirements, p 17.

62 TD521 (Submissions of DELWP Gippsland Regional Directorate Forest Fire and Regions Group), 19.

assessment, flies in the face of the fact that it is for the Proponent and the Proponent's EES to identify and assess these matters.

D.3 Catchment Values

Draft evaluation objective

To minimise effects on water resources and on beneficial and licensed uses of surface water, groundwater and related catchment values (including the Gippsland Lakes Ramsar site) over the short and long-term.

133 These submissions address these issues by reference to the Council's witnesses have been involved.

D.3.1 The water balance

134 The Council had hoped to assist the IAC and the community to understand the issues relating to water because it is well aware that the use of water by the mine is contentious and affects the community.

135 It does so because it affects those who have, or wish for, water and also because it underpins an important part of the Council's economy from both an economic point of view and also as an area in which the Council takes justified pride.

136 The Minister's declaration that the Lindenow Flats is not available for mining is a significant in its recognition of that proposition.

137 So are the stipulations in:

(a) the Minister's Reasons for EES Decision as to the likelihood of the Project to have significant effects on hydrology, water quality, and water availability, and protected beneficial uses;

(b) the Scoping Requirements as to the significant extent of "Key issues", and requirements for characterising the existing environment, design and mitigation measures, and assessment of likely effects.[63]

138 The Scoping Requirements recognise not only the need to fully assess the Project's demand for water, but also the availability of water for the Project and any risks it may have in respect of availability for others. They recognise the need to consider questions of availability:

> *… accounting for climate risks and the potential effects of climate change.*[64]

139 Evidence was provided by the Proponent, through Mr Muller, as to the water balance. It is appropriate that this evidence was called from an expert and that it was the subject of cross examination because it is an important element of the Project. It is required to answer the Scoping Requirements and it takes in the controversial change the Proponent has committed to make to the Project by the introduction of centrifuges.

140 The Scoping Requirements provide at page 9:

> *Project description*
>
> *The EES is to describe the project in sufficient detail both to allow an understanding of all components, processes and development stages, and to enable assessment of their likely potential environmental effects. The project description should canvass the following:*
>
> - *water resources for operational use, including details on storage provisions, daily and annual use (including an operation and post-closure water balance);*

141 The evidence of Mr Muller made it clear that he has not interrogated the information he has been given, such that:

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63 Scoping Requirements, 18.

64 Scoping Requirements, 18.

(a) he did not know the source of the original error in the water balance; and

(b) despite the criticality of entrainment rates to the overall model, Mr Muller was unable to do more than point to the proponent itself as the source of key data, with an indication that Mr Georgiou had suggested the data seemed appropriate. Mr Georgiou, in turn, pointed back to the proponent.

142 Accordingly, Mr Muller could not explain with any precision why the seepage/recovery figures and % split had changed from:

(a) 1699/2548 in the original water balance

to

(b) 1151/1151 in the revised report.

143 Nor had Mr Muller sought to confirm the reason for this change.

144 Mr Muller's evidence was that some of the issues with the water balance model may have resulted from his taking over the model from a previous employee.

145 Mr Muller's evidence was also notable for his confirmations:

(a) in answer to the IAC's questions, that the water balance makes no allocation for dust suppression in the mine or pit area because an assumption that it would not be required; and

(b) that he had not used post-1975 or post-1997 rainfall data to account for climate change in accordance with either the 2016 or 2020 Guidelines.[65]

146 Climate change is addressed further below.

147 Having regard to the question of and influence of entrainment and water recovery rates, it is clear that process engineering information may provide answers the IAC does not

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65 *Guidelines for Assessing the Impact of Climate Change on Water Supplies in Victoria* (DELWP, 2016), 24; *Guidelines for Assessing the Impact of Climate Change on Water Availability in Victoria* (DELWP, 2020), 30-31.

have. Certain information has been provided from Mr Wolmerans of Wave Technology in this matter. However, he has not been called as an expert witness in accordance with the IAC's directions and not at all in relation to this issue. It is assumed that the Proponent proposes to proceed on the basis of the technical note containing the views of Mr Wolmerans in place of any explanation from a witness, thereby effectively asking the IAC to put the water balance together for itself.

148 It is self-evident that this is unsatisfactory and should not be given significant weight by the IAC.[66]

149 Should it be given weight, we have attempted to quantify the impact of the centrifuges delivering a lower percentage of dewatered product (which is understood to be closer to the figures provided in the conclave meeting). The comparative table in Attachment B indicates this to be a significant change adding a requirement for more than 800 ML. This points to the inevitable conclusion that this is a matter which should be clearly defined before the Project could be considered to be acceptable.

150 It follows that the water balance does not meet the Scoping Requirements.

151 It is anticipated that the Proponent will submit, as Mr Muller appeared to say, that it does not matter because they had relied upon the notion that there would be 3ML available from the river and 3ML from ground water. It is submitted that it follows that, so long as the predicated water usage is less than 6ML, then the modelling is "conservative" and no greater precision is required.

152 In view of the fact that no take and use licence (or other allocation) has been obtained; and in the absence of an indication as to where any groundwater would be transferred from; nor the impacts on those providing the transfer – it is submitted that such a response is inadequate in informing this process and does not allow an assessment of the extent of water usage on the site which underpins analysis of the Project.

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66 We note that this does not constitute an invitation to submit further material at the end of the hearing to supplement the material deficiency in the Proponent's case.

153 Had the Minister intended that this process would result in nothing more than issues relating to water licensing being passed on to Southern Rural Water without clarity as to the water balance and what is sought, or without assessment of impacts on others, it is difficult to see why the Scoping Requirements and Terms of Reference were framed in the way that they are.

154 The Proponent relies upon previous decisions to justify acceptance of adaptive management regimes where certainty as to water use cannot be achieved. While it is not completely clear, it would appear that in the *Ombersley* quarry permit case, in which the Advisory Committee considering the matter accepted a permit condition relating to an adaptive response was considering water use in the order of 20 ML in a situation in which there was an existing 20 ML water licence. The acceptance of an apparently well developed adaptive management response in that case, appears to have little relevance to an application which involves two orders of magnitude more water.[67]

155 The conclave on surface water provides useful guidance on the use of the words "where practicable" as agreed by the experts.

156 Where the Committee is invited to accept such qualifications, it is invited to consider in each instance whether clear and measurable specifications of outcomes should be included to ensure that the mitigation measures in fact achieves the purpose of mitigating risk.

D.3.2 Centrifuges

157 A key input into the water balance is the analysis of the effectiveness of centrifuges.

158 There can be no debate that this is a key input into the Committee's analysis because the impact of the introduction of centrifuges is said to:

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67 TD370, 58 and 72.

(a) provide certainty about water recovery from the fine tailings that is independent of climatic and soil conditions;

(b) remove the need to construct the temporary tailings storage facility (**TSF**) or the in-pit fines TSFs if centrifuges are used, as they create a dry cake from fine tailings;

(c) allow the continuous backfilling of the mined voids without the need to rip and remove in-pit fine TSFs before the commencement of rehabilitation operations, which means that the disturbed mining area is smaller, and rehabilitation can occur sooner after the completion of mining in any particular area; and

(d) allow the continuous mining and backfilling operation significantly reducing overburden haul distance, which in turn reduces noise and dust generation;

(e) remove the risk of seepage from fine tailings is removed as this material is fully dewatered to a state that will only retain capillary moisture that cannot seep to the environment..[68]

159 The evidence given by the Proponent's witness Mr Saracik has demonstrated that the analysis of the effectiveness of centrifuges on this site is not complete and in fact requires significantly more work.

160 Mr Saracik's evidence was notable for his frank concession that he had never been involved in a mineral sands project which used centrifuges. Further the only project in which he has been involved which used centrifuges did not use them for the same purpose as proposed here – i.e. for a uranium project, at low level, for different purposes of filtration.

161 It was also notable that he did not know why centrifuges were not pursued in 2018 despite being considered then. Indeed no explanation has been provided by he, or anyone else, as to why this technology was not included in the options paper despite being considered prior to the EES being exhibited.

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[68] As described in the letter from White and Case dated 18 January 2021 (TD42) accompanying TN01.

162 It is unsurprising that centrifuges had been considered prior to the exhibition of the EES, given their use in tailings management has been recognised in the *Leading Practice Sustainable Development Program for the Mining Industry* since at least 2007.[69]

163 Nor could Mr Saracik identify any reason why sufficient testing could not have been done before now.

164 It is apparent that Dr Saracik was not satisfied with the level of information he had received prior to the conclave and started the process of getting more information because he also wanted more. He went further in his evidence indicating that testing was required to work out whether the centrifuges were workable on the site. It is also apparent that there is more information which has not been provided to the parties in advance of the hearing which is disappointing in view of the lengthy adjournment to consider this issue.

165 The output of the centrifuges being a key input into the water balance, it is now a matter for the IAC to decide the timing and nature of the work that needs to be done to establish the extent of water required for the Project noting that there is no disagreement that further work needs to be done and that until it is, the outputs of the centrifuge remain uncertain.

166 We note Mr Saracik's agreement that it would be appropriate to include a condition on any approval that requires that the centrifuge contains no moisture that would seep into the environment and a requirement that the centrifuges separate all free moisture from tailings.

167 While the Council would consider such a measure appropriate if achievable, the views of other witnesses concerning inevitable seepage suggest this view on Mr Saracik's behalf indicates his ability to assess the process outputs (or the process itself) is limited.

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69 *Tailings Management Leading Practice Sustainable Development Program for the Mining Industry* (Australian Government, February 2007), 19 and 57. Centrifuges continue to be identified as tailings dewatering technology in the 2016 revision of this document.

168 Mr Saracik agreed that the proposed pilot (ie larger scale test) would validate the selection of the particular centrifuge size and confirm the confidence that he expressed. In addition, he saw this certainty as important for the mine operator indicating that if they do not have a control requiring the separation of all free moisture from the tailings and preventing any seepage to the environment, dewatering bores could be required to deal with seepage from the centrifuge product. An understanding of the scope of uncertainty around that seepage will be critical to knowing that the mine can deal with seepage by dewatering bores, and how it can be dealt with.

169 The P1 test reflected in Technical Note 23[70] was provided to the parties more than a month after testing carried out prior to the commencement of the hearing. Why that information was provided only after Mr Saracik's evidence, and well after the parties' opportunity to put their own resources into assessment of the centrifuge proposal, was not explained. That test was conducted by Wave Engineering, the Proponent's the lead engineering and study consultant, engaged to produce the Definitive Feasibility Study and providing Project Control services to Kalbar (that is, to produce documents aimed at securing financing and approvals for the Project). It serves to illustrate that the only available data in respect of water recovery rates from centrifuges is significantly below that which is continued to be asserted as achievable.

170 It is submitted that conditions, as endorsed by Mr Saracik, would be a minimum requirement, as would a requirement for the further work to be done to ensure that the centrifuges are in fact capable of delivering the benefits identified, on the basis that the Project not proceed unless and until that is demonstrated.

D.3.3 Groundwater

171 Mr Georgiou's evidence proceeded on the basis of his management of a groundwater study "to assess impacts outlined in scoping requirements".[71]

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70 TD348, dated 17 May 2021.

71 Evidence in chief, 14 May 2021.

172 As Dr Webb noted, the relevant experts agreed to the potential for a nearby boundary high, as indicated in figure 2-48 from Appendix 006B – or for less permeable areas. As Dr Webb explained, that means the drawdown modelled by EMM, which was on the basis of uniformity across the aquifer, are likely to be inaccurate in that the drawdown around basement highs or less permeable areas will be greater than currently modelled.

173 There is also the acknowledged potential for daylighting, which has implications for the engineering of the pit. Mr Georgiou pointed out this is easily overcome by engineering works; the mine needs to be unambiguously planned to take that into account. It should not be limited to the mine void tailings containment cells (per GW15), but to the active pits.

174 Dr Webb noted modelling is often wrong. This means that without further real world data including from pumping test the extent of the aquifer and water availability and impacts on others remain uncertain. This may be able to be confirmed with future planned tests and modelling but is not presently available.

175 Further while a final indication of proposed monitoring and rehabilitation bore locations may not be available having clear indications of how and where this is propose is required to ensure that a level of comfort is achieved at least amongst the experts involved in this process that what is proposed has the potential to overcome potential impacts. The Proponent has declined to do this during the course of Dr Webb's involvement in the hearing.

176 Mitigation measures should be planned for, including in respect of losses greater than planned for – including by greater drawdown at third party bores, or loss at dams, including make good agreements. The agreement at the conclave was that, if there is an impact on a spring fed dam (which will exist as long as the dune sand removal is in place), make good agreements should be in place. The agreements should provide for the operator of the mine to replace any water lost.

177 The proponent's cross-examination proceeded on the basis that the availability of compensation agreements under section 87 of the MRSD Act would answer this need. In this respect, the Council considers it inappropriate to simply rely upon the proponent

to propose or agree to a voluntary agreement, in circumstances where the compensation identified as payable under the MRSD Act relates to the specific matters set out in section 85(1), all of which (in summary) relate to land and amenity, and not to water. There is no obligation or compulsion to either pay compensation or to enter into a compensation agreement – and an affected landowner would have no right to apply to the Tribunal or the Supreme Court under section 88 of the MRSD Act – in respect of compensation relating to water.

178 The precise nature of the "make good agreement" is likely less important than the existence within the project controls of an obligation to enter into such an agreement, or to provide compensation by way of water or otherwise as agreed.

179 The Council notes that, in addition to the possibility of compensation agreements under the MRSD Act, section 56(1)(x) of the *Water Act 1989* provides that conditions on a licence may include:

> *the manner in which the licensee is to compensate any person whose existing authorised use of water may be adversely and materially affected by the allocation or use of water under the licence…*

180 This is potentially available, but applies only to "authorised use" of water, which is defined to mean a use which is expressly authorised by the *Water Act*, any other Act, or a licence, permit or authority.[72] It cannot be presumed that that would cover the field of potential use of water from existing spring fed dams.

181 Further, while Dr Webb indicated this "make good" approach may be acceptable for drawdown effects up to 10-12 per cent, those figures may increase when new pumping tests are performed.

182 Dr Webb considers the new pumping test is well planned, and should be carried out as soon as possible.

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72 *Water Act*, s 3 definition of 'authorised'.

183 The gap in information associated with rainfall recharge means that mounding cannot be properly understood. Given the lack of consideration of climate change in the modelling of rainfall/runoff, and the absence of inclusion of rainfall into the pits as an input into groundwater models, the Council is concerned that impacts in terms of groundwater remain unascertained.

Pumping test results

184 Dr Webb is critical of the method of the pumping test, and considers that the results obtained do not give confidence that the aquifer is as large as modelled. Mr Georgiou's position is that the test adequate for his client's requirements, but that there are improvements required to ensure that a sustainable bore field is possible in the area.

185 Mr Georgiou conceded that the bore results were sub-optimal because the production bore itself had "pretty poor efficiency". As he explained, there was no driller in that area with experience in how to drill a bore that deep, so lessons were learned along the way. He fairly acknowledges that those lessons now need to be implemented.

186 Mr Georgiou agreed that a pumping test is critical – and produces critical information – and that the results from this test are troubling – because:

(a) A pumping test informs the conception of the aquifer, and while what has been done to date is the best that can be done on a modelling basis from one pumping test result, pumping tests give a real world understanding of how aquifer will respond to pumping where the pumping is done. As he says it can't be assumed that it will be precisely the same in another location;

(b) is allow someone to work with the other information to say whether aquifer will the amount or rate of water sought or whether it will hit some sort of unexpected parameter that might see rate of delivery drop off in the second half of the pumping test possibly due to boundary effects.;

187 Mr Georgiou agreed that the bore results obtained might indicate:

(a) that the aquifer is smaller than expected;

(b) the presence of a boundary effect – that a physical boundary has been hit, including potentially the presence of a basement high;

(c) pumping rates used in test are unsustainable – and the sustainable rates are not yet known;

(d) Mr Middlemis also point out that the results could be due to pump interference – may be a bore nearby that started pumping that caused more drawdown.

188 That latter explanation would appear to indicate that the existing pumping from the aquifer sought to be accessed is subject to the sort of interference and effect on other users which is precisely the sort of matter required to be considered in the context of scoping requirements calling for consideration of short and long-term effects on other users. Mr Middlemis agreed, saying the modelling took existing pumping into account – to the extent that looking at real-time, real-life example but this had not been followed up with further investigation.

189 In context of a project of this size, and a hearing of this nature, and a project of this importance to the community, it is submitted that it is entirely appropriate to expect that a greater level of understanding of uncertainty and effort would be undertaken..

190 As noted, it appears that that ”current campaign”, as Mr Georgiou describes it, is now to provide for bores outside of the intended borefield.

191 As Mr Georgiou also agreed, if infrastructure encroaches on the catchment area of a spring fed dam, there is a possibility that water can be affected; and dams should be protected, in preference to make good arrangements being relied upon. He agreed that this is a matter which needs further investigation, including by the delineation of dam catchments and identification of what needs to be done to protect them.

192 It is accepted that the Proponent’s relationship with residents has caused difficulties in this hearing. That does not mean that others are required to do its work and it does not mean it is relieved of the obligation to investigate, for example, the impact on groundwater dependent ecosystems, or spring-fed dams.

193 It is submitted that consistent with Dr Webb's evidence this is an important matter to be resolved prior to an EES being determined to be satisfactory by this Committee.

Perching

194 Mr Georgiou indicated that the campaign of drilling has been primarily limited to the site itself and other areas covered by the mine licence, but not this project area. Two potential issues arise: one is mounding effect of tailings, the other is the effects of digging and that might occur on the site in terms of interception of perched water tables.

195 Dr Webb has indicated that the existence of perched water is significant in that it may indicate the existence of acid sulphate soil which would need to be planned for and managed if the Project were to proceed. In the absence of analysis of chromium-reducible sulphur, it is not possible to the available analysis is not sufficient to identify whether acid sulphate soils will be encountered.[73] It is likely any acid sulphate soils can be managed, but it is important to ensure that is done by way of forward planning at this stage, rather than reactively.

196 Mr Georgiou agreed that seepage of water to the escarpment is a "pretty catastrophic" risk that should be avoided.

197 Mr Georgiou did not hesitate in accepting that monitoring bores would be required noting that in extreme cases he has been involved in projects required more than 300 of them. Here he identified the need for bores to track water movement generally and in particular towards the Mitchell River escarpment, toward the Chain of Ponds (where there was agreement in the conclave to a nested bore site targeting this receptor).

198 It was agreed in the groundwater conclave that daylighting is a risk[74] and that significant in-mine infrastructure would be required to meet remove water at the bottom of the mine pit.

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73 And per Dr Webb's evidence should have proceeded beyond a desktop assessment to consider perched water. See EPA Publication 655.1 *Acid sulfate soil and rock*.

74 TD255, PDF6.

199 Mr Georgiou's evidence was that he "pushed" Kalbar to install nested bores – "so that we can start taking data and start understanding what is going on"[75] – but considered that could wait until after an approval premised despite that lack of that data, and a lack of that understanding.

200 In the course of his evidence, Mr Middlemis agreed that, "Obviously a lot more work will need to be done for SRW licensing".

201 Having regard to the Scoping Requirements, it is submitted that this work needs to be done before any recommendation can be made.

202 He agreed that he had not reached any real any real landing or certainty on is lateral extent of any particular perching. He had focussed on pathways from the site to features such as the chain of ponds rather than dams or others maters outside the mine area.

203 Mr Middlemis indicated general agreement – or at least a lack of having identified any disagreement – with Mr Georgiou's oral evidence.

D.3.4 Surface Water and Climate Change

204 As has been noted, and for the reasons that have been noted, the Council relies upon the evidence of Dr Kiem in respect of the manner in which climate change ought be addressed in the EES.

205 He clearly possesses superior expertise to all other experts in this matter in this regard.

206 The manner in which climate change is addressed is important because it ensures that the planning for the Project proceeds from what is on Dr Kiem's analysis the best available understanding of the range of scenarios which may confront this project and around which it will have to plan. As the Expert meeting statement – Water balance and water management (water balance conclave records) his view is and remained after cross-examination that:

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[75] Answer to Ms Porritt's question in clarification in respect of TD255 PDF11, items 4.20 to 4.25 and 4.36.

> *Revised water balance modelling should be conducted to consider a range of plausible climate change scenarios, so that the proponent can adequately manage water supply security, and ensure that adaptive management strategies and water management systems are adequately scaled to address potential future climate scenarios.*[76]

207 In other words, climate change plays a key part in characterising the environment – in understanding the baseline. The IAIA *Climate Change Best Practice Principles* provide as follows:

> ***Refining the baseline****: Changes in climate and local weather affect the baseline environment against which impacts are assessed. Therefore, for those elements of the environment that are potentially affected by the proposal, the IA should identify how the baseline environment will be affected by climate change, and assess impacts against this changed baseline. At least three climate change scenarios should be addressed: minimum change, intermediate change, and maximum change. Programs and reports on how to estimate climate parameters for these scenarios are available and should be consulted. For proposals where scoping indicates the effects of climate change on the baseline environment are a minor issue, refining the baseline may only require evaluation of minimum or intermediate climate change scenarios. Alternatively, where climate change is an important issue relative to the proposal, all three scenarios should be evaluated.*
>
> ***Vulnerability and effects assessment****: The degree to which elements of the natural, social, and economic systems related to the proposal are vulnerable to or at risk from climate change should be assessed. This includes vulnerabilities due to changes in average and extreme climate conditions in the short and long term under different climate change scenarios. For project proposals, this should also include the degree to which climate change would affect each component of the project. The IA should assess these effects relative to the new baseline for each phase of the proposal.*[77]

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76 See TD254 *Expert meeting statement – Water balance and water management* at PDF9 [3.12].

77 Climate Change Best Practice Principles, 2.

208 Dr Kiem also considers that modelling of the changed catchment characteristics needs to occur to account for climate change.[78]

209 That does not mean that such an analysis would remove uncertainty but rather that it would allow a greater range of potential scenarios to be considered in the planning for this large project. Further as is recorded in the water balance conclave at 3.7 (per Dr Kiem):

> *The precautionary principle is not followed if just the median projected change is used to assess climate change impacts. The text should be revised to present the possible range of model outcomes and emphasise the uncertainty.*

210 When it is not known what water will in fact be available to the Project, it is of particular importance that the limits and understanding of water availability are included in all aspects of the Project. If groundwater is unavailable for transfer as proposed then a greater reliance on surface water would be required and visa versa if surface water entitlements are not available or not able to be used in a particular year.[79]

211 Dr Kiem's recorded opinion at [3.12] of the water balance conclave statement underlines the importance and purpose of the modelling taking in climate change predictions:

> *Revised water balance modelling should be conducted to consider a range of plausible climate change scenarios, so that the proponent can adequately manage water supply security, and ensure that adaptive management strategies and water management systems are adequately scaled to address potential future climate scenarios.*

212 The importance of this is self-evident where the Proponent:

(a) relies on witnesses whose work has informed, and is informed by, the water balance, including in respect of surface water management and impacts; and

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78 TD254, PDF5 [1.17].

79 Consistent with TD254, PDF3 [1.10].

(b) proposes significant reliance on adaptive management strategies.

213 The agreements documented in the water balance and water management conclave appears to indicate a reasonable level of agreement in relation to the potential effects of climate change.

214 The witnesses called on behalf of the Proponent have acknowledged that if less water were available than expected that duration of mining on the site would need to be extended. This outcome is not considered in any detail in the EES and should be considered as a risk not just to the Project but also to the community, in terms of an extension of almost all of the Project's impacts.

215 It is apparent that the form of analysis to account for climate change recommended by Dr Kiem is capable of being done and, it is submitted should be done by the Proponent. No doubt the work and the assessment of its implications would take time and effort, but this is entirely proportionate to the risk to the Project and the community and should occur before any EES is approved.

216 The reluctance to commit to such modelling and vehement rejection of the proposition that stochastic modelling to test the potential limits of uncertainty is surprising and should trouble the IAC. It appears that some of the Proponent's witnesses misunderstood the objective of this exercise as being to reduce uncertainty rather than to identify the likely parameters or uncertainty and to plan around them.

217 For example, Mr Muller expressed a view that there would be no benefit in using the appropriate (post-1975 or post-1997) data or running stochastic modelling, on the basis (it seems) of a view that doing so would tend to produce a result consistent with the median value he has already identified. The IAC may recall Mr Muller answered relevant question with a reference to rolling a die 10 times, and expecting results averaging to around 35. As the IAC will understand from Dr Kiem's evidence, stochastic modelling would in fact account for the equal probability of the full range of climate projections and, rather than serving to allow a median or average or 'most likely' outcome to be identified, would allow the scope of potential climate change impacts (i.e. the scope of uncertainty) to be understood. To use Mr Muller's analogy – what would be important

is understanding that the die could equally turn up a 1 as a 6, and both scenarios, and everything in between, must be accounted for.

218 As Dr Kiem noted, the consequence of modelling on the basis of appropriate inputs may be significant. It is necessary to consider not just duration of drought, but severity, seasonality, spatial extent, and relationship with rainfall events.

219 Without using the proper data and stochastic modelling, we simply do not know what the range of probable circumstances includes.

220 Dr Kiem's comparative level expertise in this field is apparent and renders his evidence strongly preferable.

221 Remarkably, counsel for the Proponent suggested to Dr Kiem that he was in a position to do the Proponent's job of answering the Scoping Requirements even in this respect.

222 The Council notes the IAC's requests of the Proponent in respect of modelling which would be consistent with the Guidelines, and continues to await a response from the Proponent.

223 The expert meeting considering flooding and hydraulic factors reached a greater level of agreement in respect of what had been modelled to date. There was an agreed acknowledgement of matters which would require further attention or approval were granted and which are required to be included within the Environmental Management Framework including an acknowledgement of the statutory duty of care and the need for ongoing commitment to and maintenance of flooding related infrastructure.

D.4 Amenity and Environmental Quality

Draft evaluation objective

To protect the health and wellbeing of residents and local communities, and minimise effects on air quality, noise and the social amenity of the area, having regard to relevant limits, targets or standards.

D.4.1 Air Quality and Green House Gases (GHG)

224 Mr Welchman's evidence in respect of air quality appeared to be more resolved than others giving evidence in this matter having considered the new environmental duty and relevant legislation.

225 The reduction in GHG suggested by the additional GHG modelling,[80] dealing with both centrifuges and the error identified in the EES, is welcomed. In particular, the Council notes the preferable outcomes associated with the Fernbank Siding option is better, in terms of GHG, in each of the circumstances assessed by Mr Welchman.

226 The relationship between Mr Welchman's evidence and that of Ms Teague is of particular note. Mr Welchman's understanding is that his work had been, at least considered in Ms Teague's health risk assessment. He had not made any independent assessment as to how his work had been considered, or how it had been amalgamated into Ms Teague's work. In addition, Mr Welchman had not read TN19 dated 11 May 2021[81] – which assumed a south-west wind in conducting an assessment of dust dispersal[82].

227 Mr Welchman supported a requirement for a sub-plan that addresses sustainability and energy efficiency by enshrining the commitments. He agreed that a management plan type approach to managing GHG emission would be appropriate including an approach to managing GHG emissions that is accounted for in decision-making. He did not oppose including a commitment or desire to reduce (rather than allow to increase) GHG emissions as part of decision making. Recognising (as Mr Welchman did) that the activity changes over time, and that GHG will be influenced by activities to be undertaken in each year of operation, in the Council's submission, it would be appropriate to include a requirement in that plan to reduce GHG emissions rather than simply to record them (as is likely required by other legislation).

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80 TD277.

81 TD302.

82 It is noted that the Council does not have the benefit of a review of this and other such technical notes which have been produced in this matter after the SLR report was produced, except where an expert called in this matter has had the opportunity to conduct such a review.

228 Climate change has not been explicitly factored into the AQ assessment. While it accounts for a range of meteorological conditions that may contribute to dust generation – and monitoring and management programs must have regard to meteorological conditions relevant at the time – the fact that the model used does not include any allowance or 'factoring' for climate change means the extent to which it may have an impact is unknown. While Mr Welchman considered this would be likely to make little difference, absent any actual consideration, we do not know how rainfall will be experienced in the future predicted range of probable climate change scenarios, or what the consequence be in terms of the volume of water required to avoid dust generation.

229 It is another case of the EES, and the Proponent's witnesses, not attending to the Scoping Requirements.

230 Accepting that the proposed new EP Act regime (and, particularly, the proposed final ERS) moves to more general and aspirational standards – and visibility and systems consistent with human development – Mr Welchman agreed that it is appropriate that any ongoing plan, or anything enshrined in relation to dust, pick up on both those requirements expressed at that level of generality as well as the more detailed work already done.

231 That is particularly important, in the absence of any existing standard in respect of dust deposition on crops.

232 Mr Welchman's dust generation is based upon staging plans – provided at the EES stage, apart from aspects relating to centrifuges.

233 Mr Welchman was not able to identify that Katestone had modelled as dust sources:

(a) The placement of material into Perry Gully, or the filled Perry Gully in its pre-vegetated state;

(b) The short-term placement of tailings outside the mine void until there is sufficient void space to deposit them into the void;

(c) Material left in stockpiles in the vicinity of the centrifuge plant, or left over weekends in temporary stockpiles.

234 While Ms Porritt called for Mr Welchman's instructions as to what to model around the centrifuges, they have not yet been received.

235 Mr Welchman considered it appropriate that the Airborne and Deposited Dust Risk Treatment Plan be updated per paragraphs [64] to [72] of his original statement.[83]

236 Mr Welchman agreed that it is appropriate for dust deposition to indicate a– nt w monthly average as the appropriate metric and agreed to consequential changes consistent with the SLR review and the Peer Review which will be provided by separate note to the IAC.

237 Mr Welchman accepted that a reflection of best practice would be a reasonable goal or target to be set by the mitigation measures.

238 Mr Welchman, for his part, dismissed the knowledge of locals – farmers – in respect of the predominance of south-westerly winds as being relevant to what winds are likely to do on and off site, relying instead on the one station established on the Project area itself. In doing so, he relied upon the siting of that station consistently with AS/NZS 3580.14-2014. As Council explored with Mr Welchman through cross-examination, that Standard makes plain the criticality of siting of meteorological monitoring stations to an understanding of the full domain sought to be characterised. As 2.6, 2.7.1 and 2.7.4 of the Standard make clear, the process of siting a meteorological station is complex, and the data it produces is reliable only to the extent that its siting allows it to account for its specific location. In a situation like this, with a station in a depression (and therefore measuring winds at less than 10 metres above the predominant height of the landscape), with a row of trees down the side, and which produced a set of results very roundly disagreed with by the local community, it would be appropriate to pause and reconsider the measurements undertaken. That is particularly important given the

83 TD84.

limitations of the AERMOD model, which allows for only one station to be used rather than the generation of a wind field.

239 Mr Welchman agreed that controls in respect of air quality/dust management – and particularly the draft plan[84] – should:

(a) be updated to include all receptors (PDF 62) – given his reliance on Kalbar, which had failed to identify the relevant receptors in the area, and not taking any action when the community identified the existence of further receptors;[85]

(b) provide that monitoring should continue beyond the end of the operation phases unless and until the site is revegetated and dust sources are no longer able to create dust – in relevant locations (i.e. where works are undertaken, or where vegetation is established as part of the dust monitoring);

(c) deal with unplanned closures.

240 The Council submits that the Risk Treatment Plan: Airborne and Deposited Dust (TD200) should include:

(a) at Table 6-1, SEPP (AAQ) provisions for 25 ug/m3 for PM10 and 8 ug/m3 for PM2.5, as a monthly average;

(b) at Table 9-1, inclusion of video monitoring for high dust generation activities.

241 Discussion of wind breaks,[86] and wind fences,[87] informs an understanding that it would be possible for Kalbar to take measures to control production, where such measures have the capability of slowing wind at or near sources. It cannot and must not rely on others to do so, particularly when at stake is the cleanliness and marketability of crops, and the social impact which is properly assumed (absent any assessment in accordance

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84 Per TD200.

85 Cross-examination Ms Porter.

86 Cross-examination of Mr Welchman by Ms Porritt, and questions from the IAC (Mr Wimbush) to Mr Welchman.

87 Cross-examination of Mr Welchman by Ms Porter, and questions from the IAC (Mr Wimbush) to Mr Welchman.

with the Scoping Requirements) might accompany the 'clean green' Lindenow Flats becoming a dust bowl. It should.

242 Consideration of dust suppression include dust suppressants, would leave chemical choice to Kalbar to decide what is suitable. As the IAC noted in questions from Mr Wimbush to Mr Welchman, it would be inappropriate for any recommendation to be made that chemical dust suppressants be used or required to be used absent an understanding and assessment of any environmental effects associated with the introduction of additional chemicals. Advertising material produced by manufacturers of such a product is not a valid basis for such an assessment.[88] However, management of dust on haul roads will clearly be critical: to that end, the IAC has heard evidence in respect of the importance of management of traffic and traffic speed.

243 Should the Project proceed, the Council would support the use of conservative 'trigger points' relating to air quality in respect of all dust generating activity, including consistently with the examination of Mr Welchman by counsel for the EPA..

D.4.2 Human Health

244 The Council has specific and particular concerns about the impacts of the Project on the health and wellbeing of residents and local communities.

245 To recall, the relevant draft evaluation objective is:

> *To protect the health and wellbeing of residents and local communities, and minimise effects on air quality, noise and the social amenity of the area, having regard to relevant limits, targets or standards.*[89]

246 The Scoping Requirements identify, as the two relevant key issues:

(a) First, diminished social wellbeing:

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88 TD355 ('Dustex' brochure) and TD366 ('Dustless' brochure).

89 Scoping Requirements, 19.

The potential for diminished social wellbeing due to exposure to dust, air pollution, noise, vibration, lighting, radiation, hazardous materials and public safety (including fire) and transport hazards during construction, operation, decommissioning and rehabilitation of the project.

(b) Second, public health risks:

The potential for public health risks that could arise from elevated levels of airborne pollutants and noise during construction, operation, decommissioning and rehabilitation of the project.

247 The information before the IAC in respect of this draft evaluation objective and the relevant parts of the Scoping Requirements is:

(a) The work done by Ms Teague in respect of human health;[90]

(b) Relevant work done by other experts, including in the specific context of radiation;[91] and

(c) What can be identified in respect of the assessment of the potential for diminished social wellbeing.

248 Ms Teague's work is focused on "issues relating to contaminant releases and exposures to off-site populations", and defers to others in respect of any question of social impact or social wellbeing.[92] She conducted no assessment of social impact or wellbeing as related to human health. Accordingly, the Council will address the first key issue identified above (i.e. of diminished social wellbeing) in the context of the material to which Ms Teague defers.

249 As Ms Teague identified at the outset of her evidence, in understanding any potential for adverse effects on human health, it is necessary to understand:

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90 Namely the Human Health Risk Assessment at Appendix A019 to the EES, and Ms Teague's two witness statements (TD82 and TD136) – together with the relevant parts of the Radiation and Human Health Expert Meeting Statement (TD234).

91 I.e. Prof Mudd, A/Prof Ruff, and Mr Billingsley.

92 Appendix A019, 6 (PDF20).

(a) topography;

(b) groundwater;

(c) surface water;

(d) wind;

(e) land uses;

(f) horticulture.

250 Ms Teague relied upon others in each respect to identify the baseline. She cannot be criticised for doing so; experts should be reliable in their own fields, and should reasonably be able to rely on others.

251 But it is notable that Ms Teague first identified relevant gaps in the data from which her baseline was derived and on which basis the HHRA was conducted,[93] prior to the publication of the EES.

252 It is notable that those deficiencies continue, despite being specifically identified by each of Ms Teague, SLR on behalf of the Council, and by other experts.

253 Ms Teague did not proceed to a Tier 2 assessment because, in part, she did not have data in respect of land uses including habits and activities of residents and users of the land.

254 The situation is therefore that the Proponent's human health assessment depends entirely upon the achievement of certain ends by reliance on mitigation measures, where it is known that:

(a) the inputs upon which those mitigation measures are based are deficient; and

(b) the mitigation measures are vague, with uncertain application and capacity to produce the circumstances assumed by Ms Teague in her work.

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93 I.e. in EES Appendix A019 Human Health Risk Assessment, 11.4.

255 In turn, Ms Teague's work has itself omitted important baseline data, by not including certain people as receptors for certain sources/transport pathways, such as cyclists exposed to volatiles and particulates in air, residents along transport routes exposed to particulates in air, horticultural users exposed to surface or groundwater during irrigation, and any consumer of freshwater biota.[94]

256 The Council shares concerns held by the community, including as expressed by MFG, as to the limited extent to which consultation and public submissions and their contents were taken into account in preparation of the HHRA and Ms Teague's evidence. They present significant insight into concerns about health, but also to matters of clear and direct relevance: the identification of sensitive receptors, how land is used and the environment is experienced, and so on.

257 The presentation of the results is unhelpful in respect of table 8.29. In order to identify where each exceedance occurs it is necessary to go to the appropriate figure in the appendix. This is unhelpful in terms of understanding this material but also makes it harder to understand what is important. If an exceedance is on a flow path that is a more important matter than if it is not.

258 In respect of NOx and SO2, at table 8.31 (PDF83), Ms Teague agreed that she relied upon air quality monitoring data from Traralgon, rather than checking whether or not it is in fact the same as Bairnsdale. She concluded that it was conservative and therefore adopted the value without a clear explanation as to why this was conservative. She agreed that the reason it was included as a data gap is that it is not really satisfactory in terms of assessing baseline conditions for the area. That information should be collected prior to any approval, and well in advance of commencement of any activity relating to the project.

259 Ms Teague presented Kalbar with the table 8.31. The sole matter in respect of which Kalbar indicated more data would be obtained was in relation to crops and

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94 See SLR Human Health Risk Assessment dated 9 December 2020, 4.

the radionuclides in soil.[95] In her view, it was presented, and it was up to Kalbar to decide whether to address uncertainties.

260 Ms Teague did not directly address:

(a) any consequence of a release of mine water into the environment;

(b) filling of Perry Gully, and any water that might run off that;

save to the extent that those matters (as they relate to human health) are addressed as part of surface water assessments. This is a significant matter which does not appear to have been assessed in relation to the revised configuration of the proposed storage in Perry Gully.

261 Ms Teague's work contains no reference to (or assessment of) the potential for chemical contaminants release because of project-related activities, such as the use of chemicals to suppress dust.

262 In those circumstances, it is difficult to understand how it could be possible to conclude risks to human health can be appropriately minimised.

263 In this case, where so many witnesses have demonstrated paucity of information, largely through reliance on instructions from Kalbar representing assumptions and facts that cannot be established or tested, it means Ms Teague's assessment is fundamentally flawed and unable to provide the IAC with an understanding of likely health effects.

264 In response to a question from a submitter[96] as to why noise was not included in the HHRA, Ms Teague answered that the health risk assessment was really targeting hazardous substances. In circumstances where the scoping requirements call for consideration of human health, an analysis of noise impacts on health would have been expected. Noise should be included in the social impact assessment, because it depends on wellbeing rather than quantitative matters.

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95 Cross-examination by Ms Porritt.

96 S484.

D.4.3 Noise and Vibration

265 Almost uniquely amongst the Proponent's witnesses, Mr Delaire's assessment provided the basis for the production of precise and firm mitigation measures and requirements. Mr Delaire's production of a marked up mitigation register,[97] and answers given in the course of cross-examination of Mr Delaire by the Council and by counsel for MFG and the EPA, make it possible to identify improved and adequate measures which will include:

(a) identification of the use of mitigating measures to minimise noise emissions wherever reasonably practicable;

(b) a requirement for all noise mitigation measures to proceed on the basis that best practice is to be implemented;

(c) requirements for noise attenuation measures integrated into the centrifuge plant, and at the location of transformers; and

(d) those changes recommended by the EPA in respect of the particular mitigation measures, as set out in TD310.

266 The Council does not accept that there is any reason why the operator of the Project should be permitted to select plant and equipment which is noisier than that used in the course of modelling, particularly where it is asserted that the modelling proceeds on a conservative basis, and given the interdependency of various assessments in reliance upon those noise levels.

267 It is also apparent that the drafting of existing mitigation measures leaves something to be desired. There is a need for the Mitigation Register and the Risk Treatment Plan: Noise[98] to be redrafted to ensure consistency between them. For example, in respect of the selection of the "quietest possible plant and equipment" called for by NV16 in the Risk Treatment Plan: Noise, there is no sensible need for the words "where feasible"

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97 TD310.

98 TD201 (updated).

to appear. The "quietest possible" plant and equipment will necessarily be the quietest possible plant and equipment that can do the job.

268 Mr Delaire's evidence also provided a justification for the confinement of the Project to use transport option 1 (i.e. the Fernbank siding), on the basis of reduced noise impacts to dwellings.

269 The Council shares MFG's concern in respect of the ability of residents to distinguish between construction and operational noise, and supports a measure requiring construction noise to be managed similarly to operational noise. This is particularly so in this case given both construction and operations will continue concurrently for most of the Project's life.

270 For completeness, the Council notes Mr Hunt's evidence that it would be necessary to understand the actual composition of traffic using local roads (i.e. on a scale more granular than 'heavy vehicles') to understand the magnitude and extent of change which will be experienced as a result of changed traffic patterns. While Mr Delaire's evidence, and his firm's work in preparing Appendix A010 Noise and Vibration Assessment, proceeded on the basis of a certain percentage of traffic comprising 'heavy vehicles',[99] the net amenity impacts associated with a change in the particular makeup of that 'heavy vehicle' component is necessarily identified before any conclusion can be reached as to its acceptability of the broader scale of amenity impacts associated with that traffic, whether in its own right or as feeding into a social impact assessment.

D.4.4 Radiation

271 The Council welcomes the approach of the IAC to this issue in commissioning an independent review of the EES and the approach taken to radiation together with the request for further information relating to the legal issues which have been raised.

272 The Council's primary concern in respect of radiation relates to the adequacy of information in relation to 'baseline conditions'. On the strength of Mr Billingsley's

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[99] Per the figures identified in the Appendix A012 Traffic and Transport Impact Assessment.

evidence, the relevant deficiencies could have been remedied before today but the Proponent has simply elected to leave the stone unturned.

273 Mr Billingsley agreed that:

(a) the ARPANSA *Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing* (2005) (**ARPANSA Code**) identifies that the establishment of baseline conditions is an important part of development of a radioactive waste management plan (**RWMP**);

(b) that, in accordance with the ARPANSA Code, a RWMP is "an integral part of a project and should be addressed from the inception of project planning"[100] – yet consideration of a RWMP is limited at best;

(c) radon and thoron monitoring in key locations should be ongoing;

(d) investigation of the variability of radionuclides present in local crops has not been considered in any detail. Mr Billingsley agreed that it is important that this work encompass a sufficient spatial range to understand the full range of impacted areas, and, in cross-examination, expanded his written view as to the importance of the Proponent having a good understanding of baseline concentrations present in a range of crops[101] to extend to anyone seeking to understand the effects of the Project;

(e) there should be ongoing monitoring of crops and analysis of crops and flora including in the context of consumption by other fauna (such as cows);

(f) insofar as he recommends particulate monitoring including TSP[102] collection is carried out to establish baseline conditions,[103] there is no clear reason why it could not have been done in the past, particularly as Mr Billingsley indicated that

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100 ARPANSA Code, 32 (PDF40), [3.9].
101 TD72 (Witness Statement dated 29 January 2021), 15.
102 Total suspended particles.
103 TD72, 15 [8.6]; TD192, 9 (item 16).

he initially raised this with the Proponent soon after his engagement on the Project in December 2017. In any event, Mr Billingsley considered that work must be done prior to operations commencing. ;

(g) In the context of responding to landowners' concerns, he neither consulted directly with landowners nor was he provided with details of consultation with others before he prepared the witness statements. He has read the submissions on radioactivity and that is the extent of consultation he has relied upon;

(h) ingestion by livestock modelling should be recommended to be undertaken and included in the radiation environment plan. That can be readily undertaken using commercially available software, and a preliminary assessment has now (only after the commencement of the Inquiry) been undertaken.

274 The Council further notes Mr Billingsley's appropriate support for a recommendation that any management licence issued under the *Radiation Act* include a condition requiring compliance with the ARPANSA Code.

275 In cross-examination by counsel for MFG, Mr Billingsley confirmed that radionuclides are already in the water (background and elsewhere) at low levels, but at levels which vary substantially across the site, and the spatial extent of sampling has been limited to date and has showed higher levels in the Perry Gully region. He agreed with Ms Porter that a finer resolution survey (ie a gamma survey at 1m height) needs to be done. In addition, he agreed that testing is further required within and around the Mitchell River.

276 Mr Billingsley also agreed that action and investigation levels of radionuclides need to be specified in the Radiation Management Plan. It appears that the matter will be the subject of upcoming evidence called on behalf of MFG which may make that position clearer.

277 The Council will address this issue further following the evidence to be called on behalf of MFG.

D.5 Social, Land Use and Infrastructure

Draft evaluation objective

To minimise potential adverse social and land use effects, including on agriculture, dairy, irrigated horticulture, tourism industries and transport infrastructure.

278 It is regrettable that no economic or social impact assessment is being called on behalf of the Proponent. Instead the IAC is asked to pull its analysis of the achievement of this evaluation objective together from the EES, the various pieces of information filed in the form of technical notes, submissions or documents produced on behalf of the Proponent, together with the heartfelt submissions made by local people as to the benefits and/or cost of the proposal.

D.5.1 Social impact

279 The absence of social impact evidence is unusual in the EES context, as a cursory review of EES inquiries of the last five years demonstrates.[104]

280 Casting the net wider, it is possible to see that even on projects of a much more confined nature, such as a boat ramp proposed at Mallacoota, social impacts are tested in evidence.[105]

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104 In reverse chronological order, see *Crib Point Project Inquiry (EES)* [2021] PPV 11; *Yan Yean Road (Stage 2) Upgrade (EES)* [2021] PPV 6; *North East Link Project (EES)* [2019] PPV 57; *Mordialloc Bypass Project (EES)* [2019] PPV 26; *Edithvale Bonbeach Level Crossing Removal Project (EES)* [2018] PPV 78; *West Gate Tunnel Project (EES)* [2017] PPV 115; *Melbourne Metro Rail Project (EES)* [2016] PPV 143. Social impact evidence was not called in the *Golden Plains Wind Farm EES Inquiry (EES)* [2018] PPV 97; the Scoping Requirements in respect of that project did not identify a need to investigate or assess any potential for social impact or diminished social wellbeing other than in respect of the potential for the project to unreasonably disrupt existing land uses, "with associated economic and social effects on households and businesses": *Scoping Requirements for Golden Plains Wind Farm Project Environment Effects Statement* (December 2017), 19. While social impacts were considered in the course of the *Golden Beach EES Project Inquiry (EES)* [2021] PPV 13, that inquiry proceeded on the basis of a submitter conference with no expert evidence called. Looking back further than five years, inquiries such as the *Echuca Moama Bridge Project (EES)* [2016] PPV 8 serve as examples of where social impact evidence is not called due to uniform support for a project and proposed mitigation measures in the social impact context: see discussion at 54-56.

105 See *Bastion Point (EES)* [2008] PPV 107.

281 The recent Crib Point IAC made the following observations and findings about the social impact assessment undertaken in that case.

> *The authors of the SIA did not undertake direct and meaningful social research or engagement with potential stakeholders, nor did the social impact experts. All relied on what was prepared by the Proponents in the Stakeholder Engagement report and various secondary resources, and the technical information in the EES.*
>
> *...*
>
> *Due to the nature of this Project, the IAC is concerned about the low level of meaningful consultation with directly impacted communities. Apart from consultation for the pipeline route, there should have been an attempt to undertake consultation in a more inclusive and rigorous manner. There is no doubt that [a Proponent] attempted to consult in the early phases of planning for the Project, but that did not carry through to the SIA process. It has caused the IAC to wonder whether this did not occur due to early engagement being unsuccessful, and the view that there was 'little point' due to the vehement nature of opposition.*[106]

282 In this case, it appears the socioeconomic impact assessment has proceeded on the basis of secondary material, including:

(a) consultation which "focussed on raising awareness of, and seeking community and other stakeholder feedback on the scope and draft findings of technical studies" – and not on the gathering of data appropriately for use in a social impact assessment;[107] and

(b) input from consultation held by Hamilton SierraCon in the course of its preparation of the Agricultural Impact Assessment[108] —

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106 *Crib Point (EES) Report*, 245.

107 Attachment G Consultation and Stakeholder Engagement Report, 18 [5.3.3]. Notably, the Consultation and Stakeholder Engagement Report identifies that the telephone survey conducted on 29 October and 2 November 2018 by JBS&G and Consentium, referred to at page 7 of Appendix A012, was itself "focussed" in this way.

108 See Appendix A018 Socioeconomic Impact Assessment, 14 (PDF32).

rather than the gathering of primary data as might sensibly be used in a robust social impact assessment.

283 While *consultation* appears to have been carried out consistently with requirements in respect of the EES, that consultation does not amount to the proper social research required for a social impact assessment. As the Minister noted in his assessment of the Crib Point EES:

> *Engagement is essential for gathering data to inform an analytical and rigorous SIA but it is important not to confuse engagement and the SIA. Stakeholder engagement by proponents preparing an EES is intended to inform people about a project and to gather information and feedback which can be addressed through the EES. It fulfills a broader and at times different role to engagement conducted for the purposes of preparing an SIA.* [109]

284 The extent to which the product of engagement and consultation might or might not be a useful input into a social impact assessment in this case is not able to be interrogated.

285 The Council remains unclear as to why, for a project with a demonstrated, substantial degree of negative community sentiment of a broad spectrum of character, and where social impact is squarely raised in very many submissions, the Proponent has elected to not make social impact evidence available to the IAC, whether by way of independent peer review or from the original author of Appendix A012 to the exhibited EES.

D.5.2 Mitigation measures relevant to social impact

286 It noted that significant reliance is placed on matters, including the community support fund, and encouraging and paying workers to volunteer and engage in the local community. There is scant detail of the extent of community support proposed and how it will ameliorate problems created by this approval.

287 It is interesting to contrast this with the clear and targeted approach taken in the recent Crib Point EES, by comparing the EPRs recommended by the Crib Point IAC and the

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109 Crib Point EES Minister's Assessment, 49.

exhibited Mitigation Register. The difference in treatment of the following three themes serve to instantiate the effect of consideration of social impact to a degree greater than that of the Proponent in this case, noting again that even in the Crib Point matter the IAC was critical of the extent of the extent of the social impact assessment.

Matter	**Crib Point recommended EPR**	**This proponent proposes**
Community fund	SO04 **Community fund** Resolve detailed arrangements for the community fund to the value of $7.5 million in partnership with Mornington Peninsula Shire Council and relevant community stakeholders. In particular, there must be community led involvement in: • identifying a Committee of Management drawn from the Crib Point and Hasting areas. • selecting which communities will benefit from the programs and projects to be funded. • selecting appropriate projects and activities. • identifying how the fund will be established, managed and governed. • devising and implementing processes to monitor and evaluate the fund's effectiveness in addressing socio-economic disadvantage and offsetting adverse social impacts. Appoint an independent facilitator to assist the establishment of the community fund and its governance. The operation of the fund should commence as soon as all relevant permissions are finalised to commence construction of the Project and should conclude within ten years from commencement. (The costs of administering the community fund, including the funding of the independent facilitator must be borne by the Project proponent, separate to the $7.5 million.)	SE04 A community fund will be established to support community events and initiatives that encourage social interaction such as sporting teams and community festivals.
Stakeholder engagement	SO05 **Stakeholder Engagement Management Strategy** Prepare a Stakeholder Engagement Management Strategy to facilitate ongoing	SE03 Regular meetings will be held with adjacent residents to discuss any issues or concerns.

	consultation between the proponent and the community (including relevant Councils, government authorities, adjoining affected landowners and businesses and other community groups directly impacted by the Project).
	The Stakeholder Engagement Management Strategy will be a requirement of the EMP for the Gas Import Jetty Works. The Stakeholder Engagement Management Strategy must:
	
	• be coordinated with the Consultation Plan being prepared for the Pipeline Licence
	• identify people and stakeholders to be engaged during the design and construction phases
	• set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the Project
	• identify opportunities to provide information regularly about construction activities, schedules and milestones
	• detail the measures for advising the community and stakeholders in advance of upcoming works (where necessary)
	• set out procedures and mechanisms for engaging with relevant council(s) and government authorities/agencies
	• set out procedures and mechanisms:
	  ○ through which the community can discuss or provide feedback to the Proponent
	  ○ through which the Proponent must respond to complaints, enquiries or feedback from the community
	  ○ to resolve any issues and mediate any disputes that may arise in relation to environmental
		SE05 The community engagement plan and associated activities will be regularly reviewed and adapted based on community feedback so that the community has different ways to receive information on the performance of the project.
		
		SE06 A range of avenues will be provided for those with concerns to contact Kalbar to express their concerns or ask questions.
		
		SE08 Regular updates will be provided to local communities on the progress of the EES.
		
		SE20 A community reference group will be established to provide a point of liaison and communication with the local community during project construction and operations.[110]

[110] In this respect, the Proponent has not included any detail as what this community reference group is to do or how it is to be constituted in the mitigation measures, despite the Appendix A012 socioeconomic impact assessment identifying certain characteristics and membership at p 89 (PDF 107).

	management and delivery of the Project ○ include commentary about the Complaints management system and provide a hyper-link to that document. Implement the Stakeholder Engagement Management Strategy for the duration of the construction works and for 12 months following completion of construction.	
Complaints management	SO06 **Complaints management system** Establish a complaints management system consistent with Australian Standard AS/NZS 10002: 2014 Guidelines for Complaint Management in Organisations that documents: • name of persons receiving complaint • name of person or stakeholder making the complaint • location, date and time of complaint. • nature of the complaint • actions taken to rectify • actions to avoid and minimise risk of reoccurrence • name of person(s) responsible for undertaking the required actions • communication of response to the complaint. Report details on the performance of the complaints management system through both the channels used for EPR-SO01 and the Project website. Reporting must include the number of complaints received within the reporting period, how the complaints were reconciled and closed out, why complaints could not be reconciled and broad themes for the complaint categories (for example, noise, environment, traffic).	SE22 Timely responses will be provided to any community complaints raised. SE26 A community complaints procedure will be developed and implemented.

288 Beyond the mitigation measures, Appendix A012 refers to the preparation of a "Social Management Plan", as, "The process for implementing [socioeconomic] mitigation

measures".[111] We have no indication as to what that plan would contain, in Appendix A012 or elsewhere.

289 There can be no satisfaction as to any legacy benefit to the community on the conclusion of the Project.

290 Absent any social impact evidence, the IAC cannot be satisfied that the proposed mitigation measures:

(a) will address the right impacts;

(b) will address impacts in a proportionate way (i.e. will mitigate impacts to an acceptable level); or

(c) will deliver any benefit – let alone to an extent that would result in net benefit to the community.

291 In answer to the Councils concern about specificity, the Proponent appears to point to the Council's failure to enter a memorandum of understanding with the Proponent in 2019. The Council is of course under no obligation to enter agreements. Indeed, it should not do so unless persuaded of the community benefit. The proposition that the Proponent will not disclose or detail the benefits proposed unless and until it has secured an agreement does not assist the IAC nor Council or the community in making an assessment of this project.

292 It is noted that some detail about the recipients of the proposed community support fund has been published on the Kalbar website and provided to the IAC.[112] This falls short of undertaking the necessary work to establish a community management plan to address the matters in paragraph 275.

293 In all, while some positive impacts on the local economy seem likely, the IAC is invited to conclude that their existence, magnitude and extent are currently too uncertain.

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111 At p 88 (PDF102).

112 TD333.

D.5.3 Economic impact

294 There is a tension here in the assessment of costs and benefits and in particular those to be considered at a State-wide and at the local level.

295 As is the case in respect of social impact, the IAC is not assisted by any evidence supporting the economic benefits asserted by the Proponent. While the Council has sought to engage with the information contained in the EES, it urges the IAC to view that information in light of the manner of its production by the Proponent and, in respect of the BAEconomics work, in an assessment which has not been supported by expert evidence.

296 The nomination of a figure of around 200 jobs, is of itself, unhelpful and uncertain. The figure appears throughout the report and appears to take in an estimate of 200 people during construction, 200 during operations and a further figure of at least 200 for goods and services, such as a maintenance contract. At page 9 of A018 of the socio -economic report:

> *Economic modelling predicts that if the project is approved, gross state product will peak at $375 million higher in 2022 compared to if the project is not approved. Real gross state income for Victoria is projected to peak at $246 million and employment at 189 full time equivalent in 2022.*
>
> *Between 2020 and 2035, gross regional product is predicted to increase in the Gippsland region by just over $1.4 billion in net present value terms. The economic modelling predicts that over the same period, gross regional income will be just over $2 billion in net present value terms.*
>
> *Kalbar has committed to maximising economic opportunities for the local area and Gippsland region from the project. The company will continue to engage and work collaboratively with industry bodies such as Industry Capability Network and Growing Regional Opportunities for Work Gippsland to identify and build the capacity of local suppliers to supply goods and services to the project. Kalbar has also committed to continuing to engage and work collaboratively with education*

and training providers and employment and apprenticeship support networks that operate in the Gippsland region to promote and support local employment on the project.

297 At page 286 (PDF 46) of the socioeconomic impact assessment report at Appendix A018, a little more detail is provided indicating that around half the workforce will be "contractors associated with mining activities and the transport of heavy mineral concentrates". Coffey assumes that workers will be accommodated locally and that there will be no fly in fly out workers.

298 The following tables are provided:

Table 3.1 Project workforce requirements for construction

Employment type	Number of jobs
Kalbar employees	
Project management	10
Engineers	10
Supervisors and planners	10
Mining contractors	50
Electricians	10
Mechanical fitters	10
Instrumentation and IT	10
General construction labourers	90
Total	**200**

The majority of those employed on the project during operation are expected to be from Gippsland. Kalbar's People Policy (2019b) commits the company to attracting, recruiting, developing and retaining staff who demonstrate their shared values and have or can develop the skills required. Kalbar's Stakeholder Relations Policy (2019c) commits to recruit locally where possible and work in partnership with communities to foster local economic development.

Employment type	Number of jobs
Kalbar employees	
Management and administration	17
Mining operations	13
Production	21
Engineering	8
Stores	4
Total Kalbar employees	**63**

Employment type	Number of jobs
Contractors	
Mining unit	8
Equipment operators	68
Maintenance and day crew	19
Supervisors	5
Truck drivers	30
Total contractors	**130**
Total jobs	**193**

299 The evidence of Ms Blaesing is clear that there is a significant risk that those jobs to which agricultural workers can readily adapt pose a risk to the agricultural industry. It is submitted that they cannot be regarded as an unambiguously positive factor. As to the jobs requiring particular skill, (as Mr Georgiou alluded to in his evidence when referring to a job which required him to spend some time intervening in a mine which needed significant intervention) will not go to residents.

300 That said, it is accepted that short term workers may need to eat and replace tyres.

301 The extent to which there is a pool of local workers available to take local jobs is undermined by the analysis of the gaps in the availability of local workers to take up energy and mining jobs and a shortage of trainers to fill those positions.[113]

302 Further, this work undermines the conclusion of BAEconomics that:

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113 Appendix A018, at PDF91, states:

> *Discussions with training providers also indicates that there is currently a shortage of trainers in the region including in the civil and construction areas. There is also a growing demand for the civil construction and Worksafe licensing courses due to the significant public works being carried out by government and demand for people with these skills. One training provider also identified the need for additional VET graduates in the region in engineering and electrotechnology (Allen, pers. com., 2019).*
>
> *The Gippsland Regional Workforce Plan (KPMG, 2016) identified that the energy and mining industry has a number of gaps relating to its workforce. Consultation conducted as a part of the development of the plan identified that the key gaps relate to:*
> *• The need for a stronger pipeline of professional, skilled and full-time employees.*
> *• Limited training opportunities relating to energy and mining in the region and lack of awareness among young people of the employment opportunities in this sector.*
> *• Many students interested in this sector leave to study in Melbourne and do not necessarily return to the region to work.*

Workers on the project have the potential to benefit from higher incomes, training, new skills and experience. Workers on the project are expected to earn on average $101,882 per annum. When compared to the average wage for the local area of $49,543, the net economic benefit for each employee would be $52,339 (BAEconomics, 2020).[114]

303 To the extent that the IAC feels it necessary to reconcile the various conflicting material presented, rather than simply finding it to be unpersuasive and inadequate, it is submitted that in the evidence of Ms Blaesing, that a minor uplift in salary for many involved in mining should be preferred. This brings with it the acknowledged risk of impact on the agricultural sector. A more limited number of higher paid jobs may also be generated although the extent to which they will be filled by local workers is somewhat unclear.

D.5.4 Horticulture

304 The Council does not take issue with much of the evidence of Dr Blaesing but notes that it does not materially advance the IAC's consideration in view of her almost total reliance on the evidence of other experts.

305 There are a limited number of respects in which her evidence was useful being:

(a) Her analysis which confirms that at least in the areas she considered in her written evidence,[115] there is a real and credible threat of agricultural workers being drawn into the mining industry on the basis of approximately 10% greater wages and better security on offer. This is the only evidence called by the Applicant on the issue of workforce impacts or economics.

(b) There is, in her view, significant scope to increase the extent of agriculture within the Lindenow Valley if water is available.[116]

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114 Appendix A018, PDF172.

115 It is noted that she did attempt to minimise the impact of these findings by saying this was not all the workers who would be employed at the mine.

116 Noting that she appeared to believe there was a latent ability to grow more with less water the basis for which was not explained.

(c) On the limited analysis she has completed (noting the uncertainty apparent from her use of outdated figures) there is no basis to conclude that mining will create more jobs per ML water than the agricultural industry.

306 This evidence reinforces the self-evident proposition that the protection of this industry is extremely important.

307 There is no issue taken with the mitigation measures identified as AG01 – AG15, although it is unclear that they will have any realistic impact.

D.5.5 Tourism

308 The analysis of the impact on tourism within the region in the EES is not compelling. While the risk is identified the following conclusion is reached:

> *Management measures will be implemented to reduce the potential for the project to diminish the value of businesses that are reliant on tourists due to changes in amenity and/or increased traffic.*
>
> *Such measures are in addition to those outlined by Katestone Environmental (2020), MDA (2020), Urbis (2020) and Arup (2020) and include:*
>
> - *Conduct ongoing engagement with tourism authorities including BTEG and EGMI on opportunities to promote the region to tourists and minimise any potential impacts of the project on the East Gippsland brand.*
> - *Maintain current levels of access to national parks and other natural assets.*
> - *Engage with short term accommodation providers to discuss the timing of project works and potential peak periods to determine when and where demand is the heaviest and where underutilised short-term accommodation may be available.*

With these and other controls in place, the residual risk of the project diminishing the value of businesses that are reliant on tourists has been assessed as low[117].

309 These comments seek to address the concerns of the tourist authorities outlined in the report by Coffey. It is difficult, however, to see how those comments genuinely address the concerns expressed, such as – the critical importance of not branding East Gippsland as a mining region, or not affecting the reputation East Gippsland is building as a provider of high-quality food and wine, and the potential impact on the reputation of the Lindenow Valley.

310 While maintaining access to the National Park ought be a given, as ought engagement with local tourist businesses, it is unclear how the Proponent engaging with the tourist operators would realistically mitigate the risks identified.

311 The proposed mitigation measures are couched in terms which are incapable of enforcement. They indicate proposals to consult (or to encourage) landowners to seek accreditations which are likely already known or available to them. There may be targeted measures that would assist, such as potentially advertising the area for its clean green image (or others), but these have not been proposed for consideration in order to realistically mitigate the risks of this proposal.

312 In all, while some positive impact on the local economy seems likely, the IAC is invited to conclude that they are overstated by Kalbar and that they are too uncertain.

D.5.6 Transport Infrastructure

313 Consistent with Mr Hunt's evidence, it is not the Council's case that it is impossible to produce and safe and workable traffic outcome.

314 Indeed given the areas of land and the apparent lack of constraint as to whether land is currently owned or controlled by the Proponent it would be surprising if that were not so.

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117 Appendix A018, PDF 16.

315 The Council's concern is that the EES, taking in the additional material and considerations now proposed, sets up such a wider range of options and possible outcomes which have been assessed at such varying levels of detail, that it is not possible to understand what an approval of an EES would mean in terms of traffic and roads within and outside the Project area.

316 As identified by Mr Hunt, further work needs to be done to identify the existing traffic impacts. Fundamental matters such as pedestrian and traffic counts and the design of significant intersections remain outstanding. This is not fundamentally opposed by the Proponent.

317 The Council notes that both experts have made it clear that all works required to be undertaken would need to be funded by the Proponent at no cost to the Council. Further damage and dilapidation of surrounding roads need be subject to existing conditions plans and a requirement for the Proponent to pay for damage done and clear and unambiguous mechanism to ensure this occurs. This would need to be carefully articulated and considered as a condition of any approval in a manner which ensures that this is done without the need for additional resources to be spent by the Council and at the expense of the proponent.

318 It is apparent from that both Mr Hunt and Mr Carter the preferred option 1 is clearly preferable in traffic terms. Having further regard to Mr Delaire's views, the IAC can find security in endorsing this other assessment.

319 Similarly, in the event of approval and if there was a need to for a route haulage into Bairnsdale (which ought in the Council's submission be discouraged) this should be accommodated by using the existing B-double route via Collins Street on the basis of the evidence before the IAC, and only on an interim basis.

320 Ultimately in respect of other matters such as the need for roundabout treatments on Princes Highway, and even certainty about entrance arrangements to the mine site itself the IAC is left in somewhat of a hiatus. It does not know whether the January plans are proposed to be pursued, or those in the EES which was the subject of public notice, or indeed another plan in the event that more land becomes available to the Proponent.

Further, it is clear that the January plans have not been assessed by other experts giving evidence in relation to other matters.

321 It is submitted that particularly for a proposal which has been on foot for as long as this one that level of uncertainty is unacceptable.

322 Mr Hunt's opinion which is shared by Mr Carter is that more work is required to be done in terms of providing more information.

323 Mr Hunt was of the opinion that the traffic and transport infrastructure assessment needs to be updated on the basis of further work done since it was prepared and the further work identified as needed to be completed by the experts.

324 Contrary to the questions asked of him, he is not an expert in the design of approvals processes but it was his clear view that the TTIA requires amendments and that approval of EES as it stands and with the level of information currently available would result in an approval which is uncertain as to fundamental measures such as whether roundabouts will be pursued on the Princes Highway.

325 Fundamentally, Mr Hunt was concerned to ensure that appropriate mitigation measures were included and outcomes were based on rigorous analysis.

326 It is submitted that the IAC is not yet in a position to form a view as to the appropriate recommendations in respect of traffic. It is simply not in a position to know what the traffic and road outcome would be if the EES is approved. This is significant particular given Mr Carter's evidence that traffic ought be assessed at the local level.

327 If this proposition is not accepted by the IAC, it is submitted that any recommendation should include approval of the Fernbank siding option and require further consideration of any further options and should not include any recommendation of the Railway Parade option presently proposed.

328 It is submitted that Mr Carter's analysis of environmental capacity by reference to planning scheme definitions of "access streets", "local access" and "trunk collectors";

to contextualise what amenity and environmental capacity is does not assist the IAC and is an approach not supported by Mr Hunt.

329 The question of amenity impacts arising from the introduction of new or increased heavy vehicle traffic including B-Double traffic has several potential dimensions – safety and access (as Mr Carter sought to assess), noise and vibration (as is assessed in the context of comparisons between existing traffic levels and nominated additional traffic movements), but also social. That aspect of impact was recognised in the original socioeconomic impact assessment exhibited with the EES. Counsel for the Proponent objected, saying that the noise & vibration assessment exhibited with the EES contained identification of the existing traffic environment. That document clearly identifies existing traffic noise monitoring and vibration monitoring – but it does not identify the composition of the existing use of the traffic network. Nowhere does it provide the information which a traffic engineer would be expected to provide, in terms of traffic counts.

330 The Council's relies on Mr Hunt's view that a safety risk would be removed from the Project by providing for an underpass of the haul Road under the Fernbank-Glenaladale Road. Mr Carter agreed it is a sensible treatment, but disagreed that is necessary. The IAC should prefer Mr Hunt's analysis in this regard noting that it addresses both the broader issue of having a signalised intersection in this rural environment and the safety issues.

331 That said it is acknowledged, as Mr Hunt did, that the level of detail does not exist to consider this treatment finally. This is consistent with Mr Carter's evidence that he had not undertaken an assessment of the spacing of intersections – beyond identifying that they needed a refinement, and in consultation with the responsible road authorities.

332 We note that the Department of Transport (submitter 632) has ongoing concerns about the traffic and in common with the Council about the extent of information provided. It is concerned to properly understand the impact of the Project on the Department's role as road manager. The Council shares this concern.

333 The Department appears to be open to temporary relocation of intersections but consider a bond and security would be required (and the incorporated document has been amended to require this). The Council considers that a similar situation exists in respect of roads for which it is responsible and this should be clearly stated as should a requirement that all proposed road changes be paid for exclusively by the Proponent.

334 What is not clearly addressed or resolved by the Proponent is who is responsible for the diverted roads and how the responsible road authorities are protected in the interim and long term from issues arising from construction and decisions made by the Proponent

335 The DoT identifies the failure to properly finish or reinstate roads as a significant risk for the State. The Council agrees with this proposition with respect to its roads and expects this issue to be addressed by the Proponent.

Movement of Council controlled roads

336 It remains unclear how the Proponent proposes to pursue the movement of Council and State roads where is says that no compulsory acquisition is proposed in this project and it has not identified a willing acquiring authority. DoT has indicated it is not willing to do this and the Council has not decided to do so.

337 It is noted that the Traffic and Transport Impact Assessment indicates at page 70 (PDF 75) the intention of the recommended measures to assist in monitoring the impacts in section 11 is to leave behind a road pavement network in the same or better condition than recorded prior to the use by the project traffic.

338 Any acceptance of the EES should include a clear implementation plan to ensure this outcome is in fact achieved. Like the DoT, the Council considers that a bond securing the achievement of such an outcome is required and appropriate should any approval be given.

339 The Council remains unpersuaded that the MRSD Act rehabilitation bond will extend to roads (or other infrastructure within the Infrastructure Options Area), given the

indications in the Proponent's material as to what has been and will be taken into account in relevant calculations appears to be associated with the mining licence area. It is necessary that the Incorporated Document provide for a rehabilitation bond in respect of the development of the relevant land, or at least that the material in respect of the work plan be amended to unambiguously provide for the mining bond to address those elements associated with the Project but outside the Project Area.

340 In the Council's view, it is substantially preferable that the bond be held by relevant road authorities than ERR. While ERR would undoubtedly administer the rehabilitation bond appropriately according to the relevant material and approvals, it is preferable to allow for its direct use in a manner uncomplicated by the need for inter-agency dealings.

D.5.7 Direct Land Use effects

341 The Council considers the relevance of land use effects relates to:

(a) Land use disruption and alteration, of the agricultural land proposed to be mined; and

(b) Land use effects within the Project Infrastructure Area, as are relevant to the proposed PSA.

342 In this context, the Council considers it is necessary to properly understand the extent of benefits and disbenefits associated with the Project to assess the acceptability of the disruptions of and alterations to land use as a result of the Project.

343 For the reasons set out above, that is not possible.

344 While Mr Glossop is the best placed witness to carry out a net community benefit analysis in support of the proposed land use disruptions, he has not done so. He simply proceeds on the basis that a benefit will follow, either as a result of information in the EES about economic benefit, or because of the existence of policy support for mines generally.

345 As a result, Mr Glossop's evidence adds little to the analysis in the EES.

346 To the extent anything can be taken from his evidence, caution must be exercised in view of:

(a) Mr Glossop's apparent devaluing of the agricultural land in the Farming Zone simply because it is not the highest or most recognised farming land in this municipality, notable for the value of the entirety of its farming districts; and

(b) his express concession that he made no assessment of matters such as vegetation removal, loss of road side vegetation, visual amenity, loss of amenity generally, dust, noise or tourism.

347 Importantly, while accepting that matters such as the ESO and SLO are "first principle constraints", he had not considered that the Bairnsdale Dargo Road is a "scenic road" under the Scheme. It follows that he has not given any consideration to the land use effects of disrupting and resetting that "scenic road", or of introducing traffic associated with the Project to it.

348 The IAC will, presumably, do what it can to conduct the net community benefit analysis which the Proponent and its witnesses have not. It will be much better placed to consider these issues at the conclusion of the hearing.

349 At this stage, it is possible to note the following qualifications to the most relevant planning scheme clauses as relevant to the analysis (emphasis added):

> ***14 NATURAL RESOURCE MANAGEMENT***
>
> *Planning is to assist in the conversation and wise use of natural resources including energy, water, land, stone and minerals to* ***support both environmental quality and sustainable development****. …*
>
> ***14.03-1S Resource exploration and extraction***
>
> ***Objective***
>
> *To encourage exploration of natural resources* ***in accordance with acceptable environmental standards.***

Strategies

Protect the opportunity for exploration and extraction of natural resources ***where this is consistent with overall planning considerations and acceptable environmental practice.***

350 Locally, of course, clause 21.02 recognises the role of mining in the Shire, with clause 21.06-4 focusing on encouraging exploration for and development of mineral resources **in appropriate areas.**

351 Against this is marshalled:

(a) At a State level, the *encouragement* of clause 14.01-2S for sustainable agricultural land use;

(b) At a local level, clause 21.02 and 21.06 identifying agriculture as part of the considerable natural resources of the Shire, with clause 21.06-1 focusing on the, "Protection of Agricultural Land", and clause 21.12-3 specifically recognising the value of the agricultural land in the Lindenow district and supporting the existing agricultural roles of the Lindenow district;

(c) Aligned policies, including in respect of scenic roads and landscape values (cl 21.04-2), vegetation (ESO1 and VPO1), and so on.

352 In the latter regard, while the Council supports the controls which apply to the land being given significant and meaningful weight, it is unclear how Mr Glossop's proposed "measures to address the [ESO1 and VPO1] as appropriate"[118] can be meaningfully implemented.

353 While the planning scheme does not exclude the planning scheme amendment proposed here it is submitted that the balance in favour net community benefit is not clear cut and will be best addressed at the end of the hearing.

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118 See Mr Glossop's recommendations in respect of the Incorporated Document at pp 43 (PDF 47) and 45 (PDF 49) of his witness statement dated 29 January 2021 (TD80).

354 Should the Project proceed, as addressed in the course of Dr Loch's evidence and in Council's submissions, it will be critical to ensure that post-mining land uses can commence as soon as possible following the progression of the mine. Mitigation measures should be precise and clear in that respect, to ensure appropriate environmental assessment and land being promptly available for post-mining uses.

D.6 Landscape and Visual Amenity

Draft evaluation objective

To avoid adverse effects on the landscape and recreational values of the Mitchell River National Park and minimise visual effects on the open space areas.

355 The Proponent has called its evidence and completed its Part B submission without saying anything about landscape values or visual amenity.

356 The IAC is well placed to make its own assessment of the landscape and visual amenity values on the site having visited on a number of occasions. It is also in a position to be informed by the many resident submitters who have provided visual representations and articulately expressed the importance of the landscape and visual amenity to them.

357 It is important to remember that these landscapes – these "open space areas" – have real value to the community. Again, the absence of social impact assessment evidence stands as a gap in the ability to understand environmental effects in this respect.

358 The Scheme recognises landscape values and vegetation as follows.[119]

(a) Clause 15.01-6S of the Scheme deals with Design for rural areas:

Objective

To ensure development respects valued areas of rural character.

Strategies

[119] See also paragraph 351(c) above.

Ensure that the siting, scale and appearance of development protects and enhances rural character.

Protect the visual amenity of valued rural landscapes and character areas along township approaches and sensitive tourist routes by ensuring new development is sympathetically located.

Site and design development to minimise visual impacts on surrounding natural scenery and landscape features including ridgelines, hill tops, waterways, lakes and wetlands.

(b) In the context of tourism policy for Gippsland, clause 17.04-1R provides:

Strategies

Facilitate tourism in strategic tourism investment areas shown on the Gippsland Regional Growth Plan.

Facilitate tourism development in existing urban settlements to maximise access to infrastructure, services and labour and to minimise impacts on the environment and exposure to natural hazards.

Support nature-based tourism proposals that complement and are compatible with the region's environment and landscape attractions or are close to identified strategic tourism investment areas.

(c) Clause 21.04 provides:

ENVIRONMENTAL AND LANDSCAPE VALUES

The Council has an important custodial role in relation to East Gippsland's unique biodiversity and large tracts of intact native vegetation. We will continue to work with owners and developers to restore and maintain the biodiversity of our rivers, waterways, lakes and wetlands. We will protect sites of significance by encouraging sensitive development, sympathetic to the character of the area and its aesthetic values. The ideal of integrity guides many of the following objectives and strategies: aesthetic integrity (including views and vistas); integrity of the natural environment; and, importantly, cultural integrity.

This Clause provides local content to support Clause 12 of the State Planning Policy Framework.

Biodiversity

East Gippsland is a reservoir of biodiversity in south eastern Australia, due to the relatively unspoilt nature of its native vegetation. It is the only place in temperate mainland Australia where large tracts of native vegetation are intact from the Alps to the ocean.

Objective 1

To maintain, conserve and enhance the biodiversity of East Gippsland.

Strategy 1.1

Encourage owners to undertake land care and revegetation programs, restore degraded river frontages and wetlands, protect urban waterways and implement soil conservation measures by incorporating best practice.

Objective 2

To recognise, protect and maintain environmental, cultural and aesthetic values within East Gippsland.

Strategy 2.1

Protect and where possible enhance sites of significance for their ecological, biophysical, geomorphological/geological, cultural, Aboriginal, aesthetic and archaeological values, with particular attention to coastal wetlands identified under the Ramsar Convention.

Strategy 2.2

Direct development away from major wetlands and rehabilitate urban waterways to protect and enhance sensitive ecosystems.

359 In *Deacon v East Gippsland SC* [2017] VCAT 275, Member Paterson referred to the relevant policy matrix as follows:

> *[18] East Gippsland Shire's Municipal Strategic Statement (MSS) seeks to ensure that rural land is used and developed in a way that will support efficient agricultural production. Strategies to achieve this objective include:*
>
> > *Support appropriate tourist-related or other economic development in non-urban areas, where this is consistent with maintaining the generally rural character of the area and with environmental protection.*

[19] Clause 21.09-3 of the East Gippsland Planning Scheme seeks to develop and promote East Gippsland as a major tourist destination. Strategies to achieve this include:

- *Encourage nature based tourism.*
- *Encourage development of a range of types and scales of tourist accommodation options in the region, including 'bed and breakfast', self-contained units or cottages, farm stay accommodation.*
- *Support new 'freestanding' tourist resorts or developments, at a variety of scales, on undeveloped land that is environmentally and aesthetically capable of supporting development and able to be serviced appropriately.*
- *Avoid a major component of private residential (especially where this involves subdivision of land for detached dwellings) in tourist developments outside existing urban areas.*

[20] It is clear that local planning policy is strongly encouraging the provision of a range of tourism accommodation within East Gippsland . However uses which include a major component of private residential, such as the one before me, are discouraged outside of the existing urban areas. Again I note that this proposal is not for farm stay or nature based tourism, but purely for short term residential accommodation.

360 The IAC is well placed to make its own assessment of this issue having thoroughly inspected the site and its surrounds.

D.7 Cultural Heritage

361 At paragraph 1.2 of the Fingerboards Mineral Sands Project EES Scoping Requirements, the EES is required to examine effects on Aboriginal and non-Aboriginal cultural heritage values of the Project site.[120]

362 The Draft evaluation objective and key issues are drafted broadly as follows (at pp 12 and 22):

120 See page 2, Scoping requirements.

Draft evaluation objective

To avoid or minimise adverse effects on Aboriginal and non-Aboriginal cultural heritage values. …

Key issues

- *The potential for adverse effects on known and unknown Aboriginal and non-Aboriginal cultural heritage values, including those of the heritage listed Mitchell River.*
- *The potential for permanent loss of significant heritage values.*

363 The priorities for characterising the existing environment include identifying and documenting previously unidentified places and sites of historic and cultural heritage significance within and adjoining the Project area.

364 It is apparent that the Minister has appropriately required a thorough analysis of this issue as it is important to know, with precision, the extent of cultural and other heritage values which would be impacted by approval of this project.

365 AO17 indicates work that has been done in the form of excavation surveys and other investigations. A close analysis of the report by SLR has identified a number of deficiencies, including but not limited to:

(a) the incorrect reference to the referral status of the site;[121]

(b) flaws in the preliminary site predictive model;[122]

(c) flaws in the methodology of the sub-surface testing;

(d) paucity of apparent consultation with GLaWAC;[123]

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121 TD14 (SLR EES Targeted Technical Review), PDF87.

122 Ibid.

123 Ibid.

(e) failure to address a registered artefact scatter and understatement of the likely risk of the Project;[124]

(f) incomplete nature of subsurface testing;[125]

(g) absence of apparent consultation with the local historical society;[126]

(h) absence of a historian's report;[127] and

(i) the absence of identification of intangible cultural heritage.

366 It is apparent from the Scoping Requirements that the Minister has asked for a detailed identification of the heritage that the community stands to lose if this Project is approved. While the mitigation measures default to the preparation of a Cultural Heritage Management Plan (**CHMP**), this leaves the IAC in the position that it does not know the extent of cultural heritage a positive assessment of this Project would ultimately allow.

367 The Minister's Reasons for Decision specifically identify that the EES process was required to provide for a transparent and rigorous process for consideration of potentially significant adverse effects of the Project, prior to any decision-making under the *Aboriginal Heritage Act 2006*. It is simply unacceptable to defer that consideration to the stage of approval of a CHMP.

368 Further, the historic cultural significance remains unclear as no historic heritage assessment has been provided – although it is noted that TN 008 indicates that an historian has been engaged to undertake this work. This work may fill in deficiencies associated with the original assessment but it unlikely to be available to the IAC for its consideration.

369 The submission on behalf of GLaWAC confirms their view that the report in the EES was inadequate. It appears that a new report is being prepared which has raised matters

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124 Ibid.
125 Ibid, PDF88.
126 Ibid.
127 Ibid, PDF89.

such as the intangible heritage, including the song lines and the connection to country and the impact on the traditional owners of what occurs on this land. It was submitted that the Gurnakurnai traditional owners consider country at a landscape scale, and that archaeological finds are consistent with first nation people traveling along a defined trail in Gippsland. The Project site was said to sit in the middle of this transit route. It appears that work is ongoing.

370 TN 008 also refers to ongoing discussions, but not concluded agreements, in respect of the recognition of cultural heritage in any rehabilitated landform. As was made plain on behalf of GLaWAC, any CHMP does not ameliorate the loss of cultural heritage which is opposed by the aboriginal community but, rather, answers the statutory framework in which GLaWAC operates. The adequacy of any such arrangements are matters on which the Council defers to GLaWAC.

371 There is also reference to the employment of a Year 10 student, 1 day per week as part of a CERT III TAFE Horticulture in Kalbar's seed production nursery and invitations to "GLaWAC" to "partner in several areas related to rehabilitation and landscape management". If the IAC were to place any weight on such statements and to recommend approval of the Project, it is submitted that clear and measurable details of the proposed offer should be set out in the works plan, including the duration of any offer in a manner capable of being monitored, enforced and recognised in the setting of appropriate bonds securing the Project's compliance with its obligations.

372 GLaWAC's submission makes it clear that a large proportion of the Gurnakurnai population have opposed the proposal. As was observed on behalf of GLaWAC, a CHMP is an licence to do harm to cultural heritage.

373 The strong views that have been shared with the corporation are that the Project is opposed. That said, it is also apparent that GLaWAC will play a role in decision making if required depending on decisions of the State.

374 These submissions significantly undermine the assessment of this issue in A018 – Socio-economic Impact Assessment which summarises the conclusions reached 206/302 as follows:

		project throughout its life (SE19).							
People's connection to the land changed and with it their identity from the removal or displacement of Indigenous cultural heritage sites	C, O	A cultural heritage management plan will be prepared and implemented in accordance with the *Aboriginal Heritage Act 2006* (Vic) and Aboriginal Heritage Regulations 2018 (Vic). The plan will include site-specific management and salvage procedures (e.g., collection of surface artefacts and excavation of archaeological sites of significance) (CH01).	Possible	Moderate	Moderate	Collected cultural heritage materials will be stored by a qualified heritage advisor (CH03).	Unlikely	Moderate	Low
Community concern that	C	• Community access will be provided to	e	e	e	• Prior to clearing, nest boxes will	y	e	v

375 It is submitted that the loss of cultural heritage is a significant matter for consideration by the IAC, and the Cultural Heritage Impact Assessment in Appendix A017 ought be carefully scrutinised with the knowledge of the views of the Gunaikurnai in mind.

D.8 Rehabilitation

Draft evaluation objective

To establish safe progressive rehabilitation and post-closure stable rehabilitated landforms capable of supporting native ecosystems and/or productive agriculture that will enable long-term sustainable use of the project area.

376 The Proponent's case largely proceeds on the basis of the benefits of progressive rehabilitation, and on the delivery of the proposed reserve.

377 The Proponent depends on the evidence of Dr Loch, and on submissions on its behalf from Dr Gibson-Roy, who respectively spoke to soil science and restorative ecology.

378 Evidence and information about closure planning is limited.

379 There are substantial and meaningful uncertainties in respect of the delivery of:

(a) the native vegetation reserve, which in large part will not be able to be planted until after the completion of (or at least in the last years of) mining, and which in places appears to be proposed to be "contoured, topsoiled and planted" before being disturbed again up to the indicative year 15. The fact of an impressive restorative ecologist in Dr Gibson-Roy having 'pulled on the Kalbar jumper' was emphasised by the Proponent, in a sign that the reserve depends upon his expertise and retention on the Project. He was not aware of the fact that the

Proponent appears to propose creating the reserve so late, or to disturb and shape it repeatedly along the way; or

(b) the vegetation of gullies downstream of water management dams. Again, the Proponent's work plan indicates some of those gullies will bear coarse sand tailings and overburden at late stages in the life of the mine.

380 To the extent that the work plan's figures are expressed to be "indicative", they are the only indication of how progressive rehabilitation is proposed to be sequenced. In light of the above uncertainties, it is not possible to conclude that the proposed strategies for progressive rehabilitation, or the proposed rehabilitation and closure timetable, can be achieved – including, particularly, the proposition that both revegetation, and other productive uses including agriculture, can follow the mine path.

381 A related and critical issue relates to the absence of identification of contingency measures for an unplanned closure, whether temporary or final.

382 The Scoping Requirements clearly identify that the draft mine rehabilitation and closure plan must include contingency measures for an unplanned/forced closure.[128]

383 This is entirely appropriate, given:

(a) Some 75% of mine closures in Australia are unplanned;[129]

(b) Less than 30 Australian mines have achieved planned closure and relinquishment.[130]

384 This puts some context around the Proponent's repeated efforts to comfort the IAC and parties with reference to the necessary rehabilitation bond.

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128 At page 24.

129 Senate Environment and Communications References Committee, Parliament of Australia, '*Rehabilitation of mining and resources projects and power station ash drams as it relates to Commonwealth responsibilities*' (March 2019), 15. This figure has increased since the 25 years up to 2002, during which some 70% of mines had unexpected and unplanned closures: *Mine Closure Leading Practice Sustainable Development Program for the Mining Industry*, 7.

130 Campbell et al, 'Dark side of the boom – what we do and don't know about mines, closures and rehabilitation' (April 2017).

385 The Mine Closure Leading Practice Sustainable Development Program for the Mining Industry[131] (**Mine Closure Leading Practice Handbook**):

> *… emphasises the need for mining to focus on developing closure objectives and completion criteria that are based on the post-mining land use as the goal of mine closure. It encourages systematised closure planning, as unplanned closures are not cost-effective and often result in substandard rehabilitation. Early recognition of rehabilitation and closure costs promotes improved strategies for operations to plan additional mitigation strategies and anticipate progressive closure and reclamation activities.*[132]

386 In the context of that publication's consideration of closure planning, significant focus is placed on unexpected and unplanned closures. Section 2.2, which identifies the publication's "context and strategy", provides an understanding that the entire publication is predicated on planning equally for unplanned as for planned closure.

387 Despite the Scoping Requirements, and despite the Mine Closure Leading Practice Handbook, all the EES does is:

(a) propose in the risk management plan that "Kalbar will establish and implement a Disaster Recovery/Business Continuity Plan to provide a framework for managing impacts of significant, unforeseen events (including unplanned closure)", with no detail as to the content of that Plan or contingency measures it may contain;[133]

(b) suggest in the draft Mine Rehabilitation Plan that unplanned closure planning is simply addressed as a part of closure planning more broadly[134] (despite there being no effort to identify contingency measures in respect of unplanned closure), and identify that, should an unplanned closure occur, a suspension plan will be prepared.[135]

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131 Australian Government, September 2016.
132 *Mine Closure Leading Practice Sustainable Development Program for the Mining Industry*, 100.
133 See TD198 (Updated risk management plan), PDF63 (row 109).
134 See TD215 (Updated Draft Mine Rehabilitation Plan), 9-11 (PDF109).
135 TD215, 9-6 (PDF123).

388 ICMM publications further support closure planning, at an appropriate degree of detail, from the outset of a project.

(a) The *Integrated Mine Closure Good Practice Guide*[136] is intended to provide guidance for the effective integration of closure across the mining life cycle, to enable miners to be "proactive in identifying and addressing risks early before they become material".[137] It proceeds on the basis that the need to consider closure as an integral part of mine operations' core business is "fundamental" to the process of integrated mine closure,[138] and that the evaluation of contingencies – "what-ifs", addressing disruption caused by unplanned events – is a key element of mine closure planning and implementation.[139] It provides that:

> *A balanced closure approach fully incorporated into mine planning activities will lead to better outcomes across a range of considerations, including health, safety, social, environmental, legal, governance and human resources.*[140]

(b) It identifies as 'good practice' that:

> *Closure planning should be incorporated into the earliest stages of mine planning, including exploration, so closure risks and opportunities are captured from the start and proactively managed in order that closure is fully considered in the mine design and business plan.*[141]

(c) The *Planning for Integrated Mine Closure: Toolkit*[142] identifies that:

> *Circumstances such as economic or market downturns, technical problems or civil unrest may cause an operation to close suddenly, perhaps several years or decades before its scheduled closure. Practical planning for sudden*

136 International Council on Mining and Metals, 2nd ed., 2018.
137 Page 5.
138 Page 6.
139 Ibid.
140 Page 9.
141 Page 12.
142 International Council on Mining and Metals, 2008.

> *closure cannot be done in detail, as the circumstances surrounding the reasons for closure may dictate possible closure scenarios. Being prepared for sudden closure relies on having an updated detailed closure plan, which gives the closure planner the ability to rapidly evaluate the remaining unknowns and risks associated with closure and to develop an appropriate decommissioning plan. Issues that cannot be resolved during the short time span of sudden closure may become elements of a care and maintenance program pending the opportunity to re-enter the operation and implement a closure plan.*[143]

389 As Dr Loch agreed, with a project at a stage that contingency measures could be identified, there is simply no reason (nor explanation) why they have not been.

390 All the draft rehabilitation and closure plan does is identify that, should an unplanned closure occur, plans will be prepared.[144] It would not be appropriate to await the production of a suspension plan, where the circumstances that might give rise to an unplanned closure would be at best disruptive to management, and at worst the product of, or would result in, significant risks to human health and the environment.[145]

391 Further, now that centrifuges are proposed to be used, additional consideration of contingency measures in respect of temporary tailings storage is required. None has been presented.

392 In those circumstances, it is not possible to conclude that the draft evaluation objective can be achieved, in the absence of:

(a) certainty regarding the actual achievement of progressive rehabilitation as proposed;

(b) any identification of contingency measures for unplanned closure.

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143 Page 38.
144 TD198, page 63.
145 As Dr Loch acknowledged in cross-examination by Mr Forrester.

393 Dr Loch's evidence otherwise went to mitigation measures and related content of the rehabilitation plan, which, consistent with the Council's submission, should be implemented:

(a) clarification as to the timing of auditing for post-mining land use compliance, and radiation surveys and monitoring, as applicable to progressive rehabilitation and not just end of mine life; and

(b) clarifications in respect of the information sources used for comparisons between pre-mining and post-mining conditions where pre-mining or better condition is the target.

394 The Council awaits the Proponent's updated EMF and mitigation register in order to engage with the detail of those matters.

E THE DRAFT PLANNING SCHEME AMENDMENT

395 The Council has identified a number of drafting changes to the draft Incorporated Document, on a without prejudice basis, to introduce greater surety as to the outcome in this area.

396 It also notes the contribution of the Head, Department of Transport, in this respect.

397 Further discussion will occur in relation to the form of planning scheme amendment on a without prejudice basis.

398 In respect of the proposed PSA, it is noted that an additional uncertainty arising during the course of the hearing is the potential for the Infrastructure Options Area to now be altered – or at least to include land that is not reasonably required for the purposes of the Project – given the evidence of Mr Georgiou now indicates that bores (presumably co-located with pipelines and other infrastructure) are potentially proposed to be located outside it. This proposition emerged only after Mr Glossop's evidence and some three weeks into the hearing, by reference to a map first produced to the IAC in a PowerPoint during Mr Georgiou's presentation.

399 This came separately to the identification of the Proponent's intention to also change the mine area itself.

400 Nothing is known about the land on which it is suggested bores could be located.

401 Such a change is inappropriate mid-hearing, in the context of both the EES and the proposed PSA. It deprives all parties of the ability to properly consider what is proposed. Council has not had the opportunity to consider these changes or their implications. While the IAC should place significant weight on Mr Georgiou's conclusion that to achieve the necessary groundwater extraction rates it would be necessary to drill bores and install infrastructure outside the land this EES has assessed for use as part of the Infrastructure Options Area, and should readily infer that groundwater is not available on the basis of the Project as proposed (or, at least, that work done to date in respect of groundwater is sufficiently lacking so as to cause the Proponent to entirely change what is proposed), the IAC should not entertain the proposition that it is now appropriate to recommend the use of land outside the scoped area (or to make any recommendation on the basis that that land can be used).

F ENVIRONMENT MANAGEMENT FRAMEWORK AND MITIGATION ISSUES

402 The exhibited EMF and mitigation measures offer no meaningful assurance that, should the Project go ahead, its effects would be managed to be acceptable. Measures are generally so broad as to be nothing more than aspirational, with little relevance to specific elements of the proposal.

403 In many instances, this is a result of the absence of sufficient baseline information.

404 The evidence of some of the Proponent's witnesses illustrated this perfectly. Mr Delaire identified, with a degree of precision befitting his expertise in noise and vibration (and not drafting), precisely what mitigation measures should reasonably achieve to deliver on best practice and to result in the minimisation of noise so far as reasonably practicable.

405 Others, remarkably, had apparently not even read the mitigation register, or sub-plans relevant to their area of expertise.

406 It is understood that the proposed EMF and mitigation measures are still being revised by the Proponent. Notwithstanding the IAC's relevant direction 44, neither the Council, nor any other party, is able to understand what the Proponent actually invites by way of measurable and attainable mitigation measures and management propositions, despite having had its experts' opinions and, in some cases, specific recommendations since before February. The Council will be obliged to attribute yet more resources to the process, which is likely to be further lengthened as a result.

G CONCLUSION

407 In summary:

(a) the EES as published was not a document which adequately characterised the existing environment, identified design and mitigation measures, or assessed the likely environmental effects of the Project;

(b) the evidence and considerable volume of further information provided, so far – with important matters still to come such as an updated EMF and other documentation – has:

(i) made it clear how deficient the advertised EES was;

(ii) identified further deficiencies; and

(iii) raised more questions.

408 As a result, the proper conclusion is that the EES is not adequate to enable the proper assessment of the significance or acceptability of environmental effects.

409 The extent of change which has occurred during the course of this hearing has included:

(a) the use of centrifuges;

(b) changes to the proposed mine licence area;

(c) changes to the location of proposed groundwater bores, outside any land over which it is proposed to implement any control or provide any approval; and

(d) various changes to the extent of water use expected;

there is no greater clarity than before the Inquiry commenced.

410 It is informative to consider the extent to which agencies remain of the view that data gaps exist despite being significantly better able to engage with this process than other submitters:

(a) Department of Environment, Land, Water and Planning (**DELWP**) requires further information about the avoid/minimise elements of the native vegetation function, including elements such a species impact assessment;

(b) DELWP notes absence of information about whether species off-sets are available and able to be secured;

(c) DELWP has concerns about the security of the proposed reserve which is broadly supported but has a lot of uncertainty about how it can be achieved and the values that can be achieved moving forward;

(d) the fire risk associated with off-set areas has not been assessed which is a matter to be considered by DELWP in approving whether a parcel of land is appropriate for an offset. In the absence of information, there is no way to know whether the areas proposed would be approved;

(e) the Department of Transport does not understand whether the proposed road treatments, including round-abouts can be accommodated in the road reserves.

Notably, it has declined to become an acquiring authority and it remains unclear how this will be done outside the Project area;

(f) no willing acquiring authority has been identified; and

(g) the EPA continues to (constructively) inquire with the Proponent's witnesses as to what is proposed, what is likely or possible, and what has been considered.

411 The IAC is left in a position of having to piece together the EES from a variety of technical notes, amended plans, untested 'evidence' from Kalbar staff, submissions and obsolete documents such as the Mitigation Measures and EMF, which have not yet been presented in a form which would allow for meaningful consideration.[146]

412 The difficulty which has become apparent during the course of this proceeding is that the amount of information which is yet to be provided and assessed makes it impossible to conduct the integrated assessment which is sought to be provided by the EES in accordance with the Scoping Requirements.

413 It is not to the point that some other process, such as the water licensing requirements, or the MRSD Act, include third party rights. The point is that this process is the one opportunity for integrated decision making before many rights and privileges are taken away and before decision making becomes "siloed".

414 Further, in respect of many aspects of this Project, provision of further information relevant to this assessment is anticipated.

415 The Council will provide submissions in due course in respect of the evidence yet to be heard, and the information to be provided by the Proponent, including in respect of critical water issues not fully addressed in its submissions.

416 The hearing to date has uncovered (at least) most of the issues which need to be explored were this project to be approved. They have not been resolved. The IAC is

146 As set out at paragraph 3 of the Proponent's Part B Submission (TD358).

neither in a position to conclude that the EES adequately addresses the Scoping Requirements, nor to recommend approval of the EES.

Dated: 27 May 2021

Sarah Porritt

Robert Forrester

Instructed by Planology

APPENDIX A – EXTRACT OF MINISTERIAL GUIDELINES

What objectives and principles underpin the EES process?[147]

The general **objective** of the assessment process is:

> To provide for the transparent, integrated and timely assessment of the environmental effects of projects capable of having a significant effect on the environment.

Specific objectives are:

- to provide for the transparent assessment of potential environmental effects of proposed projects, in the context of applicable legislation and policy, including principles and objectives of ecologically sustainable development
- to provide timely and integrated assessments of proposed projects to inform relevant decisions, in the context of coordinated statutory processes
- to ensure proponents are accountable for investigating potential environmental and related effects of proposed projects, as well as for implementing effective environmental management measures
- to provide public access to information regarding potential environmental effects as well as fair opportunities for participation in assessment processes by stakeholders and the public
- to provide a basis for monitoring and evaluating the effects of works to inform environmental management of the works and improve environmental knowledge. These Guidelines incorporate the following specific principles of best practice:
- a systems approach to identifying, assessing and managing potential environmental effects to ensure that relevant effects and responses are considered
- a risk-based approach to ensure that required assessment, including the extent of investigations, is proportionate to the risk of adverse effects
- an integrated perspective of the relationship between and significance of different effects to inform decision-making
- the need to assess the consistency of proposed works with principles and objectives of ecologically sustainable development.

[147] Extract from Ministerial Guidelines at page 3.

APPENDIX B – SUMMARY OF WATER BALANCES

	Data used in EES model	Data in 2 Feb 2021 – new data[148]	Data in 8 Feb 2021 – (with centrifuges)	**Revised centrifuge balance per Wolmerans at 68.8%**
Sand tails				
Water in sand tails cyclone feed	-17,850	-17,850	11,787	-11,787
Water recovered from sand tails cyclone feed	13,585	13,585	9,483	9,483
Water recovered via tails under drains	-2,560	- 2,560	1,155	-2,304 + 1,152 -1,152
Water lost to seepage	-1,705	- 1,705	1,155	-1,152
Fine tails				
Water in fine tails feed	5,600 (80% recovery)	5,600 (50% recovery)	7,270	7,272
Water recovered	4,490	2,800	5,810	4,989
Water lost to entrainment	1,110	2,800	1,460	-2,283
Total water lost to tails	**2,815**	**4,505**	**2,615**	**3,435**
Dust suppression 3.7.3.2 EES 400ML	400	400	400	400
	3,215	**4,905**	**3,015**	**3,835**

[148] See Appendix C – 2 Feb Muller report