

**Before the Independent Hearing Panel appointed by
the Canterbury Regional Council and Selwyn
District Council**

IN THE MATTER OF The Resource Management Act
1991

AND

IN THE MATTER OF Applications CRC184166,
CRC200500, CRC201366, CRC201367, CRC201368,
CRC203016, CRC214320 and CRC214321 by Bathurst
Coal Limited for a suite of resource consents to operate,
rehabilitate and close the Canterbury Coal Mine.

FINAL REPLY COMMENTS & RECOMMENDATION

RHETT KLOPPER

CANTERBURY REGIONAL COUNCIL

INTRODUCTION

1. My full name is Rhett David Klover and I have been nominated as the alternative S42A Reporting Officer to provide a response to the directions of the Commissioners outlined within Minute #5 of the Hearing Commissioners. Adele Dawson, Associate Resource Management Planner from Incite, having been contracted by Canterbury Regional Council to act as the s42A Reporting Officer for the applications lodged by Bathurst Coal Limited, is unavailable to provide a response for the reasons as outlined in the Memorandum provided to the Hearing Commissioners dated 1 October 2021.
2. I have been employed by the Canterbury Regional Council (CRC) as a Senior Consents Planner since June 2021, previously within the role of a Consents Planner since June 2017. I hold a Bachelor of Science Degree in Geography from the University of Otago.
3. Although this is not a hearing before the Environment Court, I have read and agree to comply with the Code of Conduct for Expert Witnesses in the Environment Court Practice Note 2014. This evidence is within my area of expertise, except where I state I am relying on material produced by another person. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

SUMMARY OF RECOMMENDATION

4. At the conclusion of the Hearing Ms Dawson's recommendation to the Hearing Commissioners had remained relatively unchanged and she remained of the view that the application could not pass the Section 104D gateway tests, and therefore could not

be granted¹. A number of matters between Bathurst Coal Limited (BCL) were to be discussed in the hopes of reaching an agreed condition set, including:

- a. Water quality parameters to be monitored and the timeframes of monitoring;
- b. The aquatic ecology monitoring requirements;
- c. The level of impact of retrospective activities in terms of discharge quality and hydrology (sought to be authorised) on Tara Wetland/Stream and appropriate remediation or compensation for those; and
- d. The nature and extent of the compensation package to address retrospective wetland loss and future wetland degradation.

SCOPE OF REPORT

5. This report is an addendum to the primary Section 42A Officer's Report prepared by Ms Dawson and circulated on 24 September 2021, and the Addendum to the Section 42A Officers Report, prepared by Ms Dawson and circulated on 29 October 2021.
6. Minute #5 of the Hearing Commissioners directs the Council's Reporting Officers to provide final comments from any technical experts on the Applicant's proposed conditions and compensation package, and the Council's recommendation.
7. This addendum will provide the Hearing Commissioners with information related to the above matters only.
8. In preparing this addendum report, I have reviewed the following information:
 - a. Minute #5 of the Hearing Commissioners; and
 - b. The applicants Right of Reply evidence circulated 25 February 2022.
9. This addendum report does not address matters within the applicant's Right of Reply evidence outside of the Revised Compensation Package, or the proposed conditions.

REVISED COMPENSATION PACKAGE

10. Dr Gary Bramley's supplementary evidence identifies the ecological compensation and enhancement measures that are being proposed by BCL, in particular, sections 40 – 75 of Dr Bramley's evidence. Dr Bramley's evidence provides a sufficient overview of the compensation proposed, and I have not repeated that description here.
11. I have reviewed the revised compensation package and have sought the advice of one of Canterbury Regional Council's technical experts Dr Philip Grove. A copy of Dr Grove's comments on the revised compensation package is appended to this response as Appendix 1.

Canterbury Regional Council technical experts review of the Revised Compensation Package

12. The 'revised' compensation proposal is considered by Dr Grove to remain relatively unchanged from that tabled by Dr Bramley at the post-hearing ecology conferencing sessions held in November 2021. The compensation includes ecological enhancement and restoration of approximately 3.4 hectares at the North Property encompassing wetland, riparian and terrestrial habitats; planting of margins of water treatment ponds within the Mine Operations Area (MOA); planting of drain margins feeding Oyster Gully and fencing the 'raised bog' to exclude livestock.

¹ Supplementary s42A Report, 29 October 2021, para 68

13. Dr Grove states that the compensation package offered at the post-hearing conferencing is inadequate to compensate for the effects of mining activities on wetland, aquatic and terrestrial ecosystems. There remains a fundamental disagreement between the applicant's ecology expert and council's ecologists as to the level of adverse effects of mining activities on significant indigenous biodiversity and ecosystems, and as such, the disagreement over the appropriateness or adequacy of the compensation offered remains.
14. Dr Grove remains of the opinion that there is no compensation for disruption to hydrology and therefore ecology of the remaining seepage wetlands and the 'raised spring' northwest of the MOA. As such, there is ongoing doubt regarding the survival of these seepage wetlands.
15. Further to this, BCL has proposed no actions to compensate for, or remediate adverse ecological effects on Bush Gully Stream and Tara Stream resulting from CCM activities, and the proposed riparian restoration work will have little benefit as the remainder of the stream remains unprotected from activities in the wider catchment.
16. The compensation package focuses on the North Property, where the proposed compensation is considered inadequate, as has been outlined in Dr Grove's hearing evidence.
17. Mr Grove remains of the opinion that any package of compensation will need to address the direct loss of seepage wetland habitats from the MOA and North Engineered Landform and will need to address the adverse effects of mining activities on remaining wetland habitats and wetland degradation, North-West of the MOA, and effects on wetland, riparian and aquatic habitats of Tara and Bush Gully Streams.

PROPOSED CONDITIONS

18. A high-level review of the proposed conditions of consent has been undertaken, noting that Ms Dawson and Ms Hunter, as well as other Council technical experts have provided detailed review and comments on the proposed conditions of consent at the time of the post-hearing conferencing undertaken in November.
19. The proposed conditions have been addressed in a similar manner as set out in Ms Claire Hunter's evidence circulated 25 February 2022.

Environment Canterbury General Conditions

20. I believe there is near agreement to the general conditions. However, as detailed in this report, given the disagreement between technical experts on compensation proposed, the enhancement and compensation objectives are not deemed appropriate to capture the level of compensation required. If the compensation package is broadened, this should be appropriately reflected within the objectives of the general conditions.
21. Further refinement of timeframes for certification and reporting are required.
22. In terms of the bond, advice received by CRC solicitors has outlined that there are further changes and additions required within the proposed bond conditions, particularly related to the timeframes around entering into the bond agreement, provision for Suitably Qualified and Experience Practitioner review, the responsibility of costs and the timeframes for review of the bond agreements. I however consider that these matters will be able to be reasonably agreed to if further amendment of the conditions is provided for.

CRC184166 s9 Land use consent to undertake earthworks

Slope stability and monitoring

23. Mr Don Macfarlane has reviewed the proposed conditions relating to slope stability (conditions 6 to 16 inclusive of CRC184166) and has no further comments to make.
24. Based on the expert opinion of Mr Macfarlane, I consider that the proposed conditions relating to slope stability are appropriate.

Wetland Compensation and Monitoring

25. Wetland Compensation conditions are detailed within CRC184166 conditions (22) to (33a). I note although there is general agreement on the form of the conditions, there is ongoing disagreement between Council and BCL experts on content of the conditions, and content of the wetland compensation. Dr Grove has prepared a separate memorandum that is appended to this report that addresses the compensation and wetland conditions and can be viewed in Appendix 1. I have taken into consideration the advice of Dr Grove. It is the opinion of Dr Grove that the wetland compensation proposed remains inadequate.
26. As such, with regards to conditions relating to wetland compensation and monitoring Dr Grove ultimately considers that the management actions are not appropriate or adequate compensation for the effects of mine activities on wetland ecosystems. Dr Grove considers that these compensation package conditions need to be extended to cover effects of mining activities on other terrestrial and aquatic habitats. As a result of the above, Dr Grove considers the monitoring to be inadequate to deal with the required compensation of effects. Monitoring conditions will need to reflect the scale of compensation that is required, which at present, is inadequate.
27. Dr Grove agrees that there should be a form of legal protection and supports the need for effective long-term protection of compensation sites.
28. The comments within Ms Dawson S42A Report on conditions for 'Wetland Compensation', 'Wetland Monitoring', and 'Monitoring of Wetlands Outside of the MOA' reasonably stand in that insufficient compensation has been proposed by the applicant to edit or draft the necessary conditions for wetland compensation and monitoring. There remains disagreement between Council's and BCL's technical experts and the general content of the conditions.

CRC201366 s14 Water Permit to take, divert and dam water

29. If a water take consent is granted, additional conditions will be required limiting annual volume of the take, a requirement for the installation and maintenance of a meter with records collected and provided to CRC. CRC has standard conditions to this effect that can be included and are utilised on almost all water take permits.
30. Outside of the requirements of the Resource Management (Measurement and Reporting of Water Takes) Regulations 2010, water metering records are required for the purposes of ensuring compliance with the rate, daily and annual volumes that are required to be specified within the conditions of consent.
31. Monitoring of the water take will not address or mitigate the effect of taking water within an over-allocated catchment, however, will ensure that the volumes as proposed are adhered to, and no further effects on the catchment occur as a result of a water take greater than that proposed.

CRC200500 – Discharge permit, to discharge contaminants into air (fugitive dust)

32. As noted by Ms Hunter, no significant changes have been made to these conditions, and no further changes by the applicant or Council are considered necessary.

CRC [discharges to Tara Stream]: Discharge permit to discharge sediment, mine influenced water, drainage water and residual contaminants from the treatment of water

33. Dr Michael Massey and Dr Adrian Meredith have provided comments and review of the discharge permit conditions, sampling, analysis, reporting and recording. Dr Massey's and Dr Meredith's comments are appended to this report (as Appendix 2 and Appendix 3) and provide a more detailed assessment of the relevant conditions of consent. I have taken into consideration the advice of Dr Massey and Dr Meredith.
34. There is agreement with the '*general*' conditions of this consent, however Dr Michael Massey recommends for clarity that the methods of sample collection and analysis are specified in the conditions of consent due to the potential for disagreement between SQEP's.
35. In terms of water quality monitoring and limits, recording and reporting, there continues to be a level of disagreement in frequency of sampling and analysis. Dr Massey and Dr Meredith highlight that annual sampling is insufficient to characterise or mitigate potential risks from the contaminants, and contaminants of concern should be analysed monthly. There continues to remain disagreement on the specific contaminants that are to be analysed, notably the exclusion of nickel, and the removal of continuous monitoring of dissolved oxygen. Dr Massey and Dr Meredith highlight that the additional trace elements that are monitored do not have trigger values or limits, and it is recommended they be included. Dr Meredith highlights the need for trigger limits to be specified at the ANZG 95% species protection criteria.
36. Dr Massey and Dr Meredith have continued concern regarding the required trigger points for action and reporting to the consent authority, highlighting that as they are currently proposed there is significant room for non-compliance to continue to occur post identification of trigger limits being breached. Further to this, Dr Massey is of the opinion that the trigger limits are set to limit risks to the environment, and at present, the follow-up actions will continue to allow non-compliance of the trigger limits by allowing assessment of the risks of these breaches, as opposed to immediate action.
37. Timeframes, documentation, and reporting remain in disagreement throughout the water quality monitoring conditions. In particular, I note the requirement for notification to CRC only in the red TARP levels, which Dr Massey considers to be the most extreme scenario. Dr Massey considers the level of risk within the orange TARP level also justifies notification to CRC. Annual reporting of TARP outcomes and MSR maintenance is also not included. I further note that the conditions do not adequately define or address the purpose of the green/orange/red system and the intended outcomes of each level.
38. Dr Massey highlights, and I agree, that the review clauses proposed allow the applicant to make changes to the TARPs without certification from CRC, unless these changes relate to the trigger levels. This means, as noted by Dr Massey, that changes can be made to monitoring frequency or actions without CRC certification.
39. Dr Massey concludes that his commentary is reflected within the post hearing expert conferencing comments on the draft conditions, which provide more detail and are largely applicable as the proposed conditions provided are largely similar to the post hearing expert conferencing versions.

40. In terms of the Aquatic Ecology Monitoring Plan (AEMP), Dr Meredith has provided substantial comment in both his appended memo and the conferencing condition comments.
41. Dr Meredith has highlighted that the condition largely requires monitoring of the Bush Gully and Tara streams state or trend without explicit requirement to set rehabilitation objectives or actions to achieve them, and with no mechanisms to enhance instream values of aquatic ecology.
42. Dr Meredith considers that the monitoring to date shows that the Tara stream is a highly degraded state and that there is little ability to demonstrate further degradation. As such, further monitoring is unlikely to demonstrate any change. Dr Meredith highlights that the unique values of the Wainiwaniwa catchments Tara Stream and Bush Gully Stream should support breeding populations of mudfish on the basis of both their size and location. The lack of actions and responses within the proposed plan means that the condition fails to achieve its objective of potentially enhancing instream values and aquatic ecology, or even maintaining them should degradation be observed.
43. Dr Meredith highlights that there remains rehabilitation mitigation measures and compensation options within the CCO2 reach, and within the Bush Gully Stream. However, in not proposing any mitigation or compensation within the CCO2 reach or Bush Gully Stream, condition 38 is as Dr Meredith states, a monitoring and documentation condition that does not outline how it will maintain or enhance the environments in which it monitors.
44. In summary, Dr Meredith concludes that the proposed conditions and mitigations do not address the risk to the values and condition of the receiving environments around the BCL mine site.
45. Ms Dawson within her supplementary report concluded that subject to the conditions, the proposal was more likely to be able to meet the relevant objectives and policies of the NPS-FM, CRPS and LWRP². I consider with further refinement and agreement between technical experts, that the condition set will enable the proposal to meet the relevant objectives and policies. However, at present, on the basis of the advice of Dr Massey and Dr Meredith, I consider there remains a level of disagreement between CRC and BCL technical experts on appropriate monitoring, frequency of monitoring, trigger points / exceedances and trigger actions such that it cannot be guaranteed that discharge limits will be met, nor the maintenance and enhancement of instream values occur. As such, until further refinement and agreement of the discharge consent conditions, the proposal is unlikely to meet the relevant discharge objectives and policies, as outlined by Ms Dawson within her Section 42A Officers Report and Addendum.

CRC[CCR discharges] – To discharge CCR, lime products and mussel shells to land and to water

46. No significant changes have been made to these conditions and planners consider the consent conditions to be appropriate.

OVERALL CONDITION CONCLUSION

47. Whilst the conferencing and further refinement of the condition set has resulted in some agreements between CRC and BCL technical experts, I consider that there remains a high level of disagreement, notably regarding the compensation package conditions, and the water quality and ecology monitoring conditions.

² Supplementary s42A Report, 29 October 2021, para 57, 60 & 61.

48. In addition to the above, the presentation of the conditions requires some further refinement in terms of grammar, punctuation, and cross referencing of general conditions, which understandably is more suited to a condition set that is more complete in terms of agreed upon context and general form.

RECOMMENDATION

49. On the basis of the above comments from technical experts on the conditions of consent and the proposed compensation package, and on the direction of the Hearing Commissioners for Council to provide their final recommendation, I consider it appropriate that in order for Council to provide their final recommendation, that re-evaluation of the Section 104D gateway tests are undertaken. This is due to the fact that the current recommendation is based on the Section 104D(1)(a) 'effects' gateway and the Section 104(D)(1)(b) 'policies' gateway being unable to be passed.

Section 104D(1)(a) 'effects' gateway

50. I continue to hold the views reached by Ms Dawson within her supplementary evidence that the proposed wetland compensation package being considered a positive effect, and the adverse effects of retrospective wetland removal coupled with the consumptive take of water, means the adverse effects of the proposal will be more than minor³.
51. The comments of Dr Grove continue to highlight the inadequacy of the compensation package. I do not consider that the proposed conditions of consent, or the compensation package are able to mitigate the adverse effects of retrospective wetland removal, or the consumptive take of water, resulting in the more than minor determination of the adverse effects.
52. As such, the Section 104D(1)(a) 'effects' gateway continues to remain impassable.

Section 104D(1)(b) 'policies' gateway

53. In Ms Dawson's supplementary evidence, she stated that the proposal was unable to pass the Section 104D(1)(b) 'policies' gateway as a result of the directive nature of the policies relevant to the abstraction of water in over-allocated catchments and the wetland compensation being currently inadequate to ensure that significant wetland values are protected⁴.
54. I believe it may be outside the scope of the direction of the Hearing Commissioners to discuss the policies relevant to the abstraction of water in over-allocated catchments, however as discussed above the conditions of consent are unable to mitigate the nature and effects of the take and therefore on this basis the abstraction of water in over-allocated catchments remains contrary to the policy direction of the CLWRP.
55. With regard to the compensation package, I remain of the opinion, based on the expert advice received from Council's technical expert, that the compensation package offered continues to remain inadequate. On this basis, as detailed within Ms Dawson's supplementary evidence, the proposal continues to remain contrary to the direction of the NPS-FM, the CRPS objectives and policies and the CLWRP objectives and policies. I do not consider, based on the expert advice received, that there has been sufficient change or compensation proposed to warrant an assessment of the NPS-FM, CRPS and CLWRP beyond that already provided by Ms Dawson.

³ Supplementary s42A Report, 29 October 2021, para 65.

⁴ Supplementary s42A Report, 29 October 2021, para 66

CONCLUSION

56. On the basis of the above, I remain of the view that the proposal is unable to pass the s104D gateway tests and therefore cannot be granted.
57. Although some progress has been made towards a more complete condition set, there remains continued disagreement between CRC and BCL experts on the proposed condition set and the nature and extent of the compensation package to address retrospective wetland loss and future wetland degradation.

Signed:



Date: 18 March 2022

Name:

Rhett Kloppe
Senior Consents Planner

APPENDIX 1 – Memorandums of Philip Grove

Memo

Date	13 March 2022
To	Rhett Klopper, Consents Planner
CC	Richard Purdon, Consents Principal
From	Philip Grove, Science Team Leader – land ecology

Comment on ‘Revised Compensation Package’ Bathurst Coal Ltd

Introduction

1. This memo provides comment on the ‘revised compensation package’ contained within the right of reply evidence of Gary Bramley for the applicant.
2. Bathurst Coal Ltd right of reply evidence was provided to Environment Canterbury on 6 March 2022. I have not been requested to comment on the evidence of Dr Bramley (or other expert witnesses for the applicant) beyond the compensation package as described in Sections 40-73 of Dr Bramley’s evidence.

Inadequacy of the revised compensation package

3. The ‘revised’ compensation proposal has not changed greatly from that tabled by Dr Bramley at the post-hearing ecology conferencing session in November 2021. The compensation now proposed is outlined in Sections 44-45 of Dr Bramley’s evidence. It includes ecological enhancement and restoration of approximately 3.4 ha at the North Property encompassing wetland, riparian and terrestrial habitats; planting of margins of water treatment ponds within the MOA; planting of drain margins feeding Oyster Gully; and fencing the ‘raised bog’ to exclude livestock.
4. Council ecologists (CRC and SDC) present at the post-hearing ecology conferencing advised then that the compensation offered was inadequate for effects of mine activities on wetland, aquatic and terrestrial ecosystems. I consider that still to be the case.
5. As stated in the second conferencing notes, there is a fundamental disagreement between the applicant’s ecology expert and council ecologists as to the level of adverse effects of mining activities on significant indigenous biodiversity and ecosystems. For this reason, I believe, there is also disagreement over the appropriateness or adequacy of compensation offered.
6. The key question for decision-makers it seems, is whether they accept the view of Dr Bramley that level of effects on wetland (and presumably other ecological values) has been “very low” (para 68 of Dr Bramley’s evidence). Council ecologists disagree. I consider that direct removal of 1.2-1.4 ha of ecologically significant seepage wetland habitats as a result of mining activities was a severe level of effect as it has resulted in total or near total loss of significant ecological values from these areas.
7. I also consider that past and ongoing mining activities have had/will have other adverse ecological effects on some nearby remaining wetland habitats as well as Bush Gully Stream and Tara Stream catchments downstream of the Mine Operation Area (MOA).
8. If decision-makers do accept the opinion of Dr Bramley as to level of effects, then they should probably also accept the view stated in Section 42 of his Supplementary Evidence tabled at the hearing – that compensation actions are not in fact warranted in this situation. In that context, the ‘compensation package’ offered by the applicant should be considered as simply a voluntary or ‘goodwill’ gesture, and not something to be directed or enforced through consent conditions.
9. However, if the decision-makers agree with evidence of council ecologists that there have been adverse effects on significant indigenous biodiversity and ecosystems from mining activities, then the ‘compensation package’ proffered by the applicant remains inadequate.

Why the revised compensation package remains inadequate

10. The wetland restoration areas within or near the MOA are small, isolated, poorly buffered and therefore unlikely to be ecologically sustainable. They will also have no secure long-term protection because Bathurst Resources does not own the land.
11. Proposed 'restoration' work at the North Property wetland (which is owned by Bathurst Resources) is not creating any new wetland habitats, rather it is enhancing an existing wetland. No new wetlands are being created to compensate for the loss of the seepage wetlands in the MOA.
12. I do not agree that loss of a quantum of wetland habitat can be satisfactorily offset or compensated by improvements in 'quality' of existing/remaining wetland habitats elsewhere. Such an approach is inconsistent with national objectives for no further net loss of wetland extent.
13. No actions have been proposed to compensate for disruption to hydrology and therefore ecology of remaining seepage wetlands and the 'raised spring' northwest of the MOA.
14. No meaningful actions have been proposed to compensate for or remediate adverse ecological effects on Bush Gully Stream and Tara Stream from CCM activities. Proposed riparian restoration work on the short stretch of Bush Gully Stream within the North Property will have little benefit as the remainder of the stream remains unprotected from activities in the wider catchment.
15. Monitoring and financing offered until 2026 are insufficient to guarantee success and long-term sustainability of the (inadequate) compensation actions proposed.
16. By largely focusing proposed compensation actions on the piece of land owned by the applicant (the North Property), Dr Bramley has unnecessarily and unhelpfully constrained his consideration of what ecological compensation could look like. It is inappropriate for such an ecological assessment to be constrained. Ecologists should advise on what is required to compensate for the loss of ecological values. It is the role of others to determine what is practical within planning and legal constraints.

Conclusion

17. Ideas on what adequate and effective ecological compensation might look like were sought from and provided by Council ecologists at conferencing sessions in advance of and shortly after the hearing. These included the suggestion that the applicant could compensate through provision of funds to consent authorities who would then direct and oversee compensation actions.
18. This and other suggestions discussed at conferencing have not been adopted. Instead, the 'revised' compensation package continues to focus on the North Property, despite repeated advice in conferencing and in council ecologists' hearing evidence that this was inadequate.
19. The applicants 'revised' compensation package does not address the direct loss of seepage wetland habitats from the MOA and North Engineered Landform. No new wetlands are being created to compensate for this loss. It also does not address actual or potential future adverse effects of mining activities on remaining wetland habitats NW of the MOA, or effects on wetland, riparian and aquatic habitats of Tara and Bush Gully streams.
20. Meaningful compensation would restore or even increase the extent of, and provide sustained future protection for, wetland and aquatic ecosystems in Bush Gully and Tara Stream catchments. It would also include protection of the ecological and hydrological processes required to maintain the integrity of these ecosystems.

Reference

Bramley G.N. 2022. Statement of Evidence in Reply of Gary Neil Bramley (Ecology) for Bathurst Coal Limited. Dated 25 February 2022.

Memo

Date	14 March 2022
To	Rhett Klopper, Consents Planner
CC	Richard Purdon, Consents Principal
From	Philip Grove, Science Team Leader – land ecology

Comment on revised consent conditions Bathurst Coal Ltd

Introduction

1. This memo provides comment on the 'revised regional council consent conditions' contained within the right of reply evidence of Claire Hunter for the applicant.
2. Bathurst Coal Ltd right of reply evidence sent to Environment Canterbury on 6 March 2022. I have not been asked to comment on the evidence of Ms Hunter (or other witnesses) beyond the CRC consent conditions package as appended to Ms Hunter's evidence.
3. My comments are focused on 'Wetland Compensation' conditions 22-25 and 'Wetland Monitoring' conditions 26-33 (some confusion with numbering of these revised conditions). However, I also make comment on other conditions where they touch on ecology matters. From here the memo provides comment on conditions as they occur sequentially in the appendix to Ms Hunter's evidence.

General Condition 2 - Environmental Management Plan and Mine Closure Plan

4. Comment – The Environment Management Plan should also include reference to mudfish habitat enhancement in Tara Stream and Bush Gully Stream as specific listed matters.
5. Comment - In the first round of ecology conferencing (prior to hearing) it was agreed by all participating ecologists including the applicant's that unfortunately we cannot rely on consent conditions and associated management plans to deliver the ecological outcomes sought. Our preference, as recorded in the conferencing notes, was for 'upfront' compensation before activation of consent

General Condition 3g – North Property wetland and ecological enhancement area

6. Comment - As was discussed in Ecology Conferencing and in memo on the revised compensation package, CRC and SDC ecologists consider the proposed North Property wetland and ecological enhancement is *not* appropriate or adequate compensation for retrospective removal of seepage wetlands. Delete this item and replace with appropriate and adequate compensation proposal(s).
7. Council ecologists also consider that restoration and enhancement of Canterbury mudfish habitat in Tara and Bush Gully streams should be part of the environmental compensation package.

General Condition 5 - Environmental Management Plan and Mine Closure Plan

8. Comment - Delete second paragraph of this condition. CRC certification decisions are not always able to be made within a 20 working days timeframe. The consenting authority should not be put in the position of having to accede to what may well be a defective EMP simply because of an unreasonably short timeframe.

General Condition 11a – Bond

9. Comment – see sub-clause (a). The compensation package needs to be broader than just wetlands. Adverse effects on aquatic and terrestrial habitats from mining activities should also be part of the compensation package.

CRC184166 s9 - Condition 1h

10. Comment – As noted above, CRC and SDC ecologists consider that the applicants have not offered appropriate or adequate compensation for retrospective removal of seepage wetlands, and other earthworks, disturbance works and vegetation removal from riparian margins and wetlands.

CRC184166 s9 – Condition 22 Wetland Compensation

11. Comment - Delete this condition. I consider ecologist that the 'Wetland Management and Planting Plan' outlined here is not adequate or appropriate compensation for retrospective removal of seepage wetlands. It also offers inadequate compensation for other effects of mining activities on wetland ecosystems. The 'compensation package' needs to be extended to cover effects of mining activities on other terrestrial and aquatic habitats.

CRC184166 s9 – Condition 23 Wetland Compensation

12. Comment – Delete this condition. The management actions outlined here are not appropriate or adequate compensation for effects of mine activities on wetland, aquatic and terrestrial habitats.
13. I still consider there need to be conditions seeking an appropriate level of compensation for these adverse effects. However, compensation and associated management plans need to be agreed and finalised before consent is granted. The applicant and applicant's ecology consultant have consistently refused to adopt suggestions on what appropriate compensation might look like offered by council ecologists in conferencing and hearing evidence.

CRC 184166 s9 – Condition 24 Wetland Compensation

14. Comment – Delete this condition. Management actions outlined here are not appropriate or adequate compensation for effects of mine activities on wetland ecosystems. The 'compensation package' also needs to be extended to cover effects of mining activities on other terrestrial and aquatic habitats.

CRC 184166 s9 – Condition 25 Wetland Compensation

15. Comment – Delete this condition. Management actions outlined here are not appropriate or adequate compensation for effects of mine activities on wetland ecosystems. The 'compensation package' also needs to be extended to cover effects of mining activities on other terrestrial and aquatic habitats.

CRC 184166 s9 – Condition 26/27 (numbering unclear) Wetland Monitoring

16. Comment – Delete this condition. The management actions with which these monitoring proposals are associated do not constitute appropriate or adequate compensation for effects of mine activities on wetland, terrestrial and aquatic ecosystems.

CRC 184166 s9 – Conditions 28-32 Wetland Monitoring

17. Comment – Delete these conditions. The management actions with which these monitoring proposals are associated do not constitute appropriate or adequate compensation for effects of mine activities on wetland, terrestrial and aquatic ecosystems. There are more ecologically useful alternative compensation actions that should be considered.

CRC 184166 s9 – Condition 33 Legal protection

18. Comment – I agree with and support the need for effective long-term protection of compensation sites. However, management actions proposed for the North Property do not constitute appropriate or adequate compensation for effects of mine activities on wetland, terrestrial and aquatic ecosystems. There are more ecologically useful alternative compensation actions that should be considered.

Conclusion

19. The applicant's revised wetland compensation and wetland monitoring consent conditions still do not adequately address the ecological issues raised in mine and colleague's evidence for Canterbury Regional Council, or those raised in the ecologists' Joint Witness Statements. Wetland management actions proposed in consent conditions will not compensate for the loss of indigenous biodiversity and damage to indigenous ecosystems due to Canterbury Coal Mine operations.

APPENDIX 2 – Memorandum of Adrian Meredith

Memo

Date	17 March 2022
To	Rhett Klopper (<i>Senior Consents Planner</i>)
CC	Michael Massey (<i>Principal Science Advisor</i>); Adele Dawson (<i>Consents Planner, Incite</i>); Richard Purdon (<i>Principal Consents Planner</i>); Sub-contracted consents
From	Adrian Meredith (<i>Principal Scientist – Water Quality and Ecology</i>); Michael Massey (<i>Principal Science Advisor</i>)

Comments regarding revised consent conditions, Bathurst Coal Ltd

1. The purpose of this memo is to provide comment on the revised regional council consent conditions contained within the right of reply evidence of Claire Hunter on behalf of the Applicant, Bathurst Coal Limited. The revised conditions were received by Environment Canterbury in early March 2022, as Appendix D (“Proposed ECan Consent Conditions”) in Ms Hunter’s evidence.
2. I have been instructed to limit my comments to only the CRC consent conditions and the compensation package. This memo does not consider nor responds directly to any of the expert evidence provided in the right of reply, except where it was summarised in the evidence of Ms Claire Hunter. Furthermore, this memo only considers the proposed and consent conditions and TARPs.
3. I have also considered the memo provided by my Ecan colleague Dr Michael Massey on water quality condition and TARP conditions. I agree with all points in Dr Massey’s memo and do not repeat them in this memo. I only reiterate particularly important points or additional points in the conditions not picked up in Dr Massey’s memo. I provide my comments on conditions in the order in which they appear in Appendix D of Ms Hunter’s evidence.
4. My major addition to the memo of Dr Massey is my consideration of condition 38 requiring development of an Aquatic Ecology Monitoring Plan. This has some overlaps with the Wetland mitigation package.

Commentary regarding general conditions

5. Dr Massey noted that under *Condition 10 (annual reporting)*: that only compliance monitoring data was required to be reported. Given the conversations that occurred during expert conferencing, I concur with him and recommend that both performance monitoring (required within the TARPs) and compliance monitoring results (required by consent condition) should be included in the annual report, and that the full annual dataset shall be either provided as an appendix, or available upon request (within a reasonable timeframe, such as 2 months).
6. Considerable effort was undertaken in caucusing the scope and content of the TARPs and their performance monitoring requirements. If the TARP performance monitoring

results remain confidential to the applicant and are not reported/visible to other parties, the degree of additional responses required by the TARPs remains unknown. It is important that the uncertainties being addressed by the TARP process are reported annually to capture and acknowledge the degree of additional TARP activities that have had to be undertaken. These responses may not be inconsequential to the overall effects if they require (for example) considerable and ongoing discharge of lime, acid, or alkali to achieve discharge compliance. I recommend the annual reporting should include reporting of TARP response processes. These are best captured firstly by reporting the performance monitoring parameters, and secondly reporting a wider array of tarp responses (orange and red responses).

Water quality monitoring and limits, recording and reporting sections

7. *Condition 20 (contaminants of concern and sampling frequencies)*: I concur strongly with Dr Massey that the proposed conditions should not have included only annual sampling for some additional contaminants of concern. My understanding from the expert conferencing was that the additional contaminants of concern were to be analysed monthly, in-line with the other water quality monitoring sampling and analysis. The discussions indicated that a discharge steady state situation had not been achieved from all areas of the site such that annual samples would not be sufficient to characterise presence or mitigate potential risks from these contaminants should they occur. The additional contaminants of concern (arsenic, cadmium, chromium, copper, lead, mercury) should be analysed monthly. Nickel should also be included for analysis in the proposed conditions.
8. Dissolved oxygen has been removed from the continuous (every 15 minutes) monitoring regime and TARPs at the compliance point. Monthly grab sampling is instead proposed. It was widely discussed that [low] dissolved oxygen concentration at the discharge compliance point must be avoided, due to the risks from low dissolved oxygen from both the MSR treatment system and diluent water and effects of low oxygen both geochemically and ecologically. The mixing system at the compliance discharge point remains poorly specified and so continuous dissolved oxygen measurement is an important compliance parameter to address environmental risk from a number of perspectives.
9. *Condition 22 (water quality limits)*: The trigger values or limits in the proposed conditions continue the criteria from previous discharge consents. These have generally been ANZG 95% species protection criteria excepting Boron (90% species protection criteria). These criteria were selected partially with reference to criteria that could be achieved (achievable compliance). These have not been rigorously justified since despite the presence of a nationally threatened species (mudfish) in the catchments. However, I support the current 95% species protection criteria because of the interplay between the modified/degraded nature of the environment justifying a lower protection level and the potential presence of nationally threatened mudfish potentially requiring high levels of protection. Other trace elements that are monitored that do not have trigger limits specified should therefore maintain the 95% protection criteria.
10. The rationale for Boron maintaining a 90% protection criteria was on the basis of achievable compliance during the active mining period, and some catchment specific

sensitivity assessments. However, the latter only verified that the higher Boron trigger levels would not cause “mortality or reduction in growth of mudfish”. The evidence of Dr Hickey still clarifies that only “mortality and growth” of mudfish are protected and this remains the rationale. However, in perpetuity, discharges should be protecting the ability of the threatened species (mudfish) to successfully reproduce in natural waters below the mine site rather than just not die or show reduced/stunted growth. There remain valid reasons for all contaminants including Boron to have trigger levels specified at the 95% protection level rather than persisting with pragmatic lower trigger levels.

11. I agree with Dr Massey that during expert conferencing, there were substantive conversations regarding the relationship between the TARPs and consent trigger levels. I agree strongly that our commentary on the TARPs and proposed conditions after the expert conferencing, which should have been provided to the commissioners. That commentary is much more extensive and complete than what has been offered herein. The proposed conditions and TARPs are sufficiently similar to previous versions that much of the commentary still applies.
12. *Condition 23 (requirement to re-analyse after non-compliant monitoring results):* I concur with Dr Massey that the “confirmed exceedance” provisions in the conditions allow for excessive degrees of potential non-compliance due to requirements for resampling and reanalysis to “confirm” an exceedance. These potentially allow for non-compliance with the consent for large periods of time, with only occasional compliance. Any exceedance in the monthly monitoring should trigger action to remedy the issue and should not require confirmation. This is especially if results arise from laboratory analyses undertaken.
13. *Condition 24 (response to exceedances in monitoring):* This condition proposes, in part, that the consent holder shall “identify the risk to the environment from the exceedance.” Consent trigger limits alone are the primary mechanism to limit risks to the environment. The consent holder’s proposed ability to further assess the environmental risks of non-compliance generates further environmental uncertainty in the conditions and further risk to the environment.
14. *Condition 36 (notification after TARP trigger levels reached):* I strongly concur with Dr Massey that **both orange and red TARP levels** should be required to be reported in order to ensure mitigation of environmental impacts and compliance with the consent. The proposed condition 36 requires notification only for “red” (i.e., the most extreme) TARP level, which seems insufficient given the level of risk often encountered in the “orange” TARP levels.
15. Condition 36 and 37: I remain concerned that the trigger levels within the TARPs and review/recertification of the TARPs are largely without “teeth” when the performance data and sub-red levels remain unreported. There remains a high degree of “faith” that the consent holder will adhere to the TARPs when they largely remain unreported or undocumented. The TARP processes and the considerable effort spent in refining them necessitate them being a transparent and reported part of the consents to achieve sound environmental management.

16. *Condition 38 (Aquatic Ecology Monitoring Plan)*: The AEMP is required to “... *inform achievement of the rehabilitation objectives insofar as they seek to maintain and potentially enhance instream values and aquatic ecology within Tara Stream and Bush Gully Stream post closure of the site*”. However, the further detail of Condition 38 largely requires just routine monitoring of streams’ state or trend without an explicit requirement to set rehabilitation objections or actions to achieve them. The applicants proposed implementation of condition 38 simply remains a monitoring programme to document the condition of sites within the two streams. It does not require, or set rehabilitation objectives, their achievement, and does not set out mechanisms to “*potentially enhance instream values and aquatic ecology*”.
17. The failings in condition 38 are largely justified in Ms Claire Hunters evidence on the basis of “... *[Tara] stream has remained reasonably consistent between 2014 and 2020*” such that there has been “*no significant deterioration in stream values*”. However, the monitoring to date has documented that Tara Stream is in such a highly degraded state that the monitoring data has very little ability to demonstrate further degradation or degradation trends with the methods employed. Quite simply, there is very little capacity for Tara Stream to degrade any more! The proposed Condition 38 monitoring beyond mine closure will further suffer the same limitations of very little ability to demonstrate change from the highly degraded state in the further two years of monitoring proposed.
18. The mine closure proposals for stream rehabilitation are therefore relying upon simple “water quality” and “water quantity” actions (compliance with trigger limits and increased flow (to achieve necessary dilution of mine wastewater contaminants))- but not addressing the fundamental stream habitat limitations of extreme inundation with fine erosional sediments and highly degraded habitats below the mine site.
19. In my evidence I set out the unique values of the greater Wainiwaniwa catchment for the threatened species Canterbury mudfish, and that both Tara Stream and Bush Gully Stream should support breeding populations of mudfish on the basis of both their size and location. BCL however choses only to document that Tara Stream remains in a highly degraded state not supporting mudfish for a considerable distance downstream. As a “monitoring plan with rehabilitation objectives” this condition should be proposing actions to potentially enhance instream values and aquatic ecology, particularly with a nationally threatened species involved, and then monitoring to demonstrate the efficacy of these actions. These are totally missing from the higher level intent and subsequent implementation of Condition 38.
20. In my evidence I proposed rehabilitation mitigations including construction of small nodal habitats to allow colonisation and persistence of mudfish in the CCO2 reach to initiate the rehabilitation. However, rather than exploring these ideas, or additional mitigations, BCL largely refute any necessity or requirement to rehabilitate [mudfish habitat] within the streams and propose ongoing monitoring without any explicit objectives.
21. I was not involved in the expert caucusing on the North Property wetland mitigation. However, within those discussions was an option of a natural on-stream wetland mitigation within Bush Gully Stream. The applicants dismissed this option in favour of the off-stream North property wetland development. This therefore also removed an

option for condition 38 “rehabilitation of values of Bush Gully Stream”. Therefore implementation of condition 38 for Bush Gully Stream therefore also remains as simply a monitoring program documenting state or trend without any rehabilitation or mitigation actions or options for Bush Gully Stream.

22. I recommend that condition 38 should be redrafted to explicitly give effect to its stated purpose, and require setting and implementation of rehabilitation objectives and mitigations for both Tara Stream and Bush Gully Stream. This will ensure that the subsequent aquatic ecology monitoring proposed has the appropriate intent, particularly for maintenance and rehabilitation of the nationally threatened species Canterbury mudfish.
23. Overall I consider the proposed conditions and mitigations do not adequately address the risks to the values and condition of the receiving environments around the BCL mine site. The proposed conditions address water quality discharge requirements largely through highly engineered processes reliant upon significant infrastructure, but also with ongoing uncertainties addressed by a considerable suite of TARPs. There therefore remain significant risks or uncertainties, and a reliance on maintaining water storage and treatment infrastructure (such as dams/ponds) in posterity. Furthermore, the receiving environment is receiving insufficient attention for rehabilitation and mitigation of its highly degraded state below the mine site.

APPENDIX 3 – Memorandum of Michael Massey

Memo

Date	16 March 2022
To	Rhett Klopper (<i>Senior Consents Planner</i>)
CC	Adrian Meredith (<i>Principal Scientist – Water Quality and Ecology</i>); Adele Dawson (<i>Consents Planner, Incite</i>); Richard Purdon (<i>Principal Consents Planner</i>); Sub-contracted consents
From	Michael Massey (<i>Principal Science Advisor</i>)

Comments regarding revised consent conditions, Bathurst Coal Ltd

1. The purpose of this memo is to provide comment on the revised regional council consent conditions contained within the right of reply evidence of Claire Hunter on behalf of the Applicant, Bathurst Coal Limited. The revised conditions were sent to Environment Canterbury in early March 2022, as Appendix D (“Proposed ECan Consent Conditions”) in Ms Hunter’s evidence.
2. I have been instructed to limit my comments to only the CRC consent conditions and the compensation package; this memo contains no discussion of nor response to any of the expert evidence provided in the right of reply. It is not within my area of expertise to comment on the wetland compensation package, so **I have limited my comments to the proposed consent conditions.**
3. I have provided my comments on conditions in the order in which they appear in Appendix D of Ms Hunter’s evidence.

Commentary regarding general conditions

4. *Conditions 5 and 6 (management plan certification)*: there is an inconsistency in the timeframe of certification (20 days or 30 days). I recommend 30 days.
5. *Condition 7 (review and update of management plan)*: I recommend that any updates should go through review and certification, as with conditions 5 and 6. ALSO SEE paragraphs 21 to 23 of this memo, regarding review and certification of amendments to the TARPs.
6. *Condition 10 (annual reporting)*: Given the conversations that occurred during expert conferencing, I recommend explicitly stating that both performance monitoring and compliance monitoring results shall be included in the annual report, and that the full annual dataset shall be either provided as an appendix, or available upon request (within a reasonable timeframe, such as 2 months).

Commentary regarding discharges to Tara Stream consent

7. *Conditions 6 and 7 (monitoring and water quality analysis)*: There was much discussion regarding specific sampling and analysis methods. These conditions are reasonable, but I recommend specifying methods of sample collection (e.g., field-filtered into laboratory-

supplied bottles with preservative for dissolved contamination, or no filtration into laboratory-supplied bottles with preservative for total) and analysis in monitoring conditions, for the avoidance of doubt or ambiguity. As with other fields such as medicine, even suitably qualified and experienced practitioners can differ in their opinions or interpretations.

8. *Condition 13 (0.5 metres of topsoil)*: As noted in paragraph 70 of my supplementary s42A report, *Pinus radiata* rooting depth can be in the range of 2-3 metres, so 0.5 metres of topsoil may be insufficient to prevent the ingress of oxygen.

Water quality monitoring and limits, recording and reporting sections

9. *Condition 20 (contaminants of concern and sampling frequencies)*: The proposed conditions have included annual sampling for some additional contaminants of concern. My understanding from the expert conferencing was that the additional contaminants of concern were to be analysed monthly, in-line with the other water quality monitoring sampling and analysis. Annual samples are not sufficient to characterise or mitigate potential risks from these contaminants. The additional contaminants of concern (arsenic, cadmium, chromium, copper, lead, mercury) should be analysed monthly.
10. Nickel was not included for analysis in the proposed conditions, despite its association with sulphide minerals and its potential aquatic ecotoxicity. I recommend including nickel in monthly water quality monitoring analysis.
11. Dissolved oxygen has been removed from the continuous (every 15 minutes) monitoring regime and TARPs. Monthly grab sampling is instead proposed. Dissolved oxygen is a biologically and geochemically important parameter, that can change very quickly (on the order of minutes to hours). Monthly grab samples are insufficient to monitor and mitigate potential risks. I recommend that dissolved oxygen be monitored continuously (on an every 15 minutes basis) with appropriate trigger levels and response actions.
12. *Condition 22 (sic) (water quality limits)*: None of the additional trace elements in condition 20 (discussed in paragraphs 9 and 10 above) have trigger values or limits in this proposed condition. I recommend trigger limits of some fraction of the ANZG for protection of freshwater species, but defer to surface water experts regarding the specifics of trigger limits.
13. During expert conferencing, we also had substantive conversations regarding the relationship between the TARPs and consent trigger levels. I refer here to our commentary on the TARPs and proposed conditions after the expert conferencing, which should have been provided to the commissioners. That commentary is much more extensive and complete than what I offer herein. The proposed conditions and TARPs are sufficiently similar to previous versions that much of the commentary still applies.
14. *Condition 23 (requirement to re-analyse after non-compliant monitoring results)*: The “confirmed exceedance” provision remains in the proposed conditions as proposed condition 23. I refer to paragraph 32 in my supplementary s42A report. An exceedance is a “confirmed exceedance” unless it is due to a technical fault. The requirement of resampling and reanalysis to “confirm” an exceedance potentially allows non-compliance

with the consent for large periods of time, with only occasional compliance. Any exceedance in the monthly monitoring should trigger action to remedy the issue, and should not require confirmation. This is especially true if laboratory analyses are undertaken, with turnaround times ranging from days to weeks.

15. The proposed condition 23 also allows for up to 4 consecutive exceedances in the continuous monitoring regime (1 hour). I recommend further capping this at a maximum of 4 consecutive exceedances in a certain period of time (e.g., per 24 hour period). Otherwise, again, it is possible to operate the site out of compliance for a long period of time without triggering action.
16. *Condition 24 (response to exceedances in monitoring)*: This condition proposes, in part, that the consent holder shall “identify the risk to the environment from the exceedance.” From my perspective, the intent of consent trigger limits is to limit risks to the environment. The consent holder’s assessment of environmental risks is secondary to bringing the operation of the site back into compliance with the consent (which is only tangentially mentioned in the proposed condition 24).
17. I recommend that a timeframe for response be explicitly included as a condition of consent, rather than allowing the consent holder to define a convenient response timeframe (as in the proposed condition 24).
18. As discussed in our notes on the TARPs and conditions after expert conferencing, performance monitoring results from proposed condition 35a (not just compliance monitoring results) should also be provided to CRC as part of annual reporting (proposed condition 32) or at most 3-yearly reporting.
19. *Condition 30 (water quality reporting)*: Sampling methodology should also be documented, in order to ensure that it is appropriate (see paragraph 7 in this memo, regarding proposed conditions 6 and 7 of this consent).
20. *Condition 36 (notification after TARP trigger levels reached)*: As discussed in expert conferencing, I recommend notification for **both orange and red TARP levels** in order to ensure mitigation of environmental impacts and compliance with the consent. The proposed condition 36 requires notification only for “red” (i.e., the most extreme) TARP level, which seems insufficient given the level of risk embodied in the “orange” TARP levels.
21. *Condition 37 (amendments to the TARPs)*: The proposed condition 37 says that any changes to trigger levels will require certification by the Regional Council. However, other things such as monitoring frequency or actions triggered by the TARPs would apparently not trigger a need for review or certification under the proposed condition 37.
22. I recommend expanding the certification requirement to ANY substantive changes to the TARPs, including changes to trigger actions, monitoring frequencies, TARP trigger levels, etc.
23. To be clear, my recommendation is that the Applicant (consent holder) should be required to operate under the existing management plan unless and until any substantive

changes are certified by the Regional Council. This is in accordance with similar management approaches at other contaminated sites, such as petrol stations. Generally, at such sites, no changes to management or monitoring plans can be put in place unless first certified by the Regional Council (otherwise, for example, the consent holder can simply cease monitoring, or continue cursory monitoring but take no action in response to the monitoring results).

24. As a general concluding statement, I recommend referencing the commentary provided on draft conditions and proposed conditions as part of expert conferencing. That commentary is far more detailed and complete than this memo, and is still largely applicable since the proposed conditions and TARPs reviewed here are largely similar to the previous version.