

Report

20 May 2026

To	Bathurst Resources Limited	Contact No.	[REDACTED]
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From	Tim Mulliner	Project No.	12659028
Project Name	Buller Plateaux Continuation Project		
Subject	Peer Review Memo of Hydrological Assessment – Buller Plateaux Continuation project. Technical Report prepared by Mine Waste Management		

EXECUTIVE SUMMARY

1. This peer review memo provides an independent review of the hydrological components of the Buller Plateaux Continuation Project (**Project**). The review is based on Mine Waste Management's Buller Plateaux Continuation Project Technical Report dated 06 November 2025 (document ID: JNZ0494001RRevA) and subsequent updates issued on 1 December 2025 (RevB), 5 March 2026 (Rev0) and 6 May 2026 (Rev1), together with the relevant supporting statements referenced in those documents.
2. Overall, the hydrological report identifies the key actual and potential effects:
 - a. Changes to flow duration at surface water locations associated with operational development, surface water diversions, engineered landform development and water treatment (both active and passive).
 - b. An increase in low-median flows (relative to baseline) is expected at locations that receive surface water diverted flows, treated water discharges and seepage from engineering landforms.
 - c. A decrease in low-median flows (relative to baseline) is expected at locations in which impacted surface water runoff is diverted from and/or where the proposed mining footprints reduce the catchment.
 - d. The potential for flood risk to some existing and proposed infrastructure as defined by both specific flood modelling and/or proximity of specific infrastructure areas to identified stream channels.
3. The quantification of effects provided is summarised from more detailed water balance assessments associated with each of the four key operational areas – Stockton, Mount Frederick South, Escarpment Extended, and the Upper Waimangaroa Haul Road.
4. The proposed active and passive treatment to treat impacted mine waters appear appropriate based on similar treatment currently been undertaken at the active Stockton site. However, quantification of the volumes and loadings (requiring treatment) are not provided. Adequate detailed design will be required to ensure sizing is adequately addressed and to ensure the success of the treatment systems built.
5. Further hydrological data analysis and collection including additional surface water flow data collated from ongoing and new monitoring locations is recommended to validate the water load

balance models. Bathymetry and channel modification data alongside landform design flood modelling is also recommended to further develop the flood assessments around current and proposed infrastructure. I agree with these recommendations.

INTRODUCTION

6. My full name is Tim Mulliner. I am a Technical Director at GHD New Zealand Ltd.
7. This technical assessment addresses the presented hydrological data and hydrological studies in relation to the proposed Buller Plateaux Continuation project and provides an independent review of the interpretation of this data for use in more detailed water management aspects of the Project.

Qualifications and experience

8. I have the following qualifications and experience relevant to this assessment:
 - (a) I hold a Bachelor of Science (BSc) from Lincoln University and a Master of Science (MSc) from Otago University.
 - (b) I am a Certified Environmental Practitioner (CEnvP) under the Environment Institute of Australia and New Zealand (EIANZ).
 - (c) I have been involved in undertaking mine water management and mine water studies and assessments for the past 20 years. These studies have encompassed hydrological assessments, water balance analysis, water treatment options reviews, and assessment of effects of site discharges and water abstractions on receiving water flows and water quality.
 - (d) Since February 2020 I have been employed at GHD New Zealand Ltd. Prior to that:
 - (i) From 2017 to 2020 I was employed by AECOM New Zealand Ltd.
 - (ii) From 2013 to 2016 I was employed by URS Nordic AB and AECOM Nordic AB.
 - (iii) From 2008 to 2013 I was employed by URS New Zealand Ltd.
 - (e) I specialise in mine water management studies encompassing hydrological assessments, water balance analysis, geochemical studies, water treatment options reviews, and assessment of effects of site discharges and water abstractions on receiving water flows and water quality. My work currently (and/or recently) has included:
 - (i) Waihi North Project (Oceana Gold NZ) – Technical Expert on hydrology and surface water aspects. Guided the water management assessment for the project to assess overall water management strategy and effects on the receiving surface water environment.
 - (ii) Macraes Phase IV (Oceana Gold NZ) – Technical Lead on hydrology and surface water aspects site of proposed site developments.
 - (iii) Rentails Project (Bluestone Mines, Tasmania) – Technical Lead on water management, hydrology and surface water aspects of the proposed tailings reclamation and development.
 - (iv) Exe Tailings Feasibility Study (MGM Australia Ltd.) – Technical Lead on water management, hydrology and surface water aspects of the proposed tailings development.
 - (v) Didipio Water Management (Oceana Gold, Philippines) – Technical Lead on water management and surface water modelling associated with operational tailings facility.
9. I am currently involved with the Bathurst Talley's operated Cypress Open Pit Mine development in the capacity of project manager to the ongoing groundwater assessment(s) associated with the open pit developments.

10. I have previously been involved in geochemistry, surface water and groundwater assessments associated with the Cypress, Stockton and Escarpment areas for both Bathurst Resources, Bathurst Talley's and previously Solid Energy New Zealand Ltd.

Code of conduct

11. I confirm that I have read the Code of Conduct for expert witnesses contained in the Environment Court Practice Note 2023. This assessment has been prepared in compliance with that Code, as if it were evidence being given in Environment Court proceedings. In particular, unless I state otherwise, this assessment is within my area of expertise, and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Purpose and scope of assessment

12. The purpose of this assessment is to provide an independent review of and comment on:
 - a. Hydrological Assessment for the Buller Plateaux Continuation Project as prepared by Mine Waste Management.

Assumptions and exclusions in this assessment

13. I have not reviewed the supporting technical documents referred to in the Hydrological Assessment. Therefore their contents have not been independently reviewed / verified as part of my review.

THE BULLER PLATEAUX CONTINUATION PROJECT

14. The full description for the Project is provided in the AEE and I do not repeat it in my assessment.

METHODOLOGY

Introduction

15. I reviewed the Hydrological Assessment report prepared by Jim Griffiths (herein referred to as the Report).
16. My review involved an initial review of the document (as provided in November 2025) with high level commentary / feedback provided followed by a discussion with the author to talk through my initial review.
17. The revised document together with a detailed response to my initial review outlining updates and corrections (where made) was supplied to me in January 2026.
18. Additional revisions of the draft document were supplied to me between March 2026 and May 2026.
19. Overall, I am satisfied that questions / clarifications in my initial review have been addressed in the revised version as supplied to me in May 2026.

COMMENT ON THE METHODOLOGY USED TO ASSESS THE SITE HYDROLOGY VALUES

20. The Report provides an overview of the surface water aspects relating to the Project separated into the four proposed operational areas - Stockton, Mount Frederick South, Escarpment Extended, and the Upper Waimangaroa Haul Road. The report collates relevant surface water flow, rainfall and catchment data and provides an overview summary of hydrological effects.
21. Existing surface water and rainfall data are summarised as are previous relevant studies. Summarised data is presented with comparisons between areas and locations highlighted.
22. Data gaps and limitations together with uncertainty are highlighted. Where data is lacking and/or limited, equivalent methods to infer flow at specific locations are outlined.
23. The specific methods outlined to extend / infer rainfall and hydrological flow datasets are appropriate based on the data available and presented.
24. Where data is limited, an increased level of uncertainty in terms of surface water flow predictions at specific locations is likely. However, the effects (on flow) appear to be adequately understood and the remaining level of uncertainty is expected based on the large area covered by the application, complexity of the terrain and micro climatic effects.
25. Residual uncertainty can be addressed through additional data gathering which will help reduce data gaps and should be factored in at the detailed design phase. This should enable the required outcomes to be achieved.
26. The report presents the summarised raw data and the results from the area specific modelling, but not the modelling itself including the specific use of the available data, modelling assumptions and/or model application to derive the effects. This is covered in the Mine Waste Management Water Load Balance Model reports which I have viewed but are not part of my review. I would expect that rainfall and climate change factors are consistent between these reports.
27. As mentioned, my review does not include the Water Load Balance Model reports presented as part of the application, However I can confirm that the modelled percentage change in flow from the Water Load Balance Models have been applied to the observed flows in the Hydrology Assessment. I note there are some discrepancies in the actual flow volumes presented and understand this is due to the differences in baseline modelled versus measured flows and/or the time periods that the flows represent.
28. The report summarises the broad water management concepts in the distinct Project areas outlining the need for treatment – both active treatment requirements during operations, passive treatment (with a reliance on the use of mussel shell reactors) post closure, and diversion of surface waters through the duration and following the cessation of the project.
29. Details on design, capacity, operation and compliance were not provided as part of my review.

COMMENT ON EFFECTS AND EFFECTS MANAGEMENT MEASURES

30. Effects on surface flow (in terms of changes to the flow duration curves) during operations and closure are provided in comparison to baseline (existing) conditions.
31. In summary, the main actual/potential adverse hydrological effects identified are:
 - a. Changes to flows in the defined project areas as a result of both operational development, diversions and post closure treatment.
 - b. In the Millerton catchment (Stockton area), flows are predicted to generally decrease (particularly during low – median flow events) at monitoring locations on Granity Stream and Twins Stream as a result of the capture of disturbed footprint runoff in sumps and pumping of this water to the existing Mangatini Treatment System. This water is ultimately discharged to Mine Creek and flows are predicted to increase at monitoring location S6 as a result.

- c. At Mount Frederick South, active treatment during the development phase is expected to result in an increase in low – median flows during mining with a return to baseline conditions at closure. Flows at monitoring locations further up catchment (SW01 and SW03) are expected to increase at closure during low – median flows as a result of increased baseflow from the proposed passive treatment facilities (mussel shell reactors) and higher assumed net percolation into engineered land-forms relative to the natural surfaces.
 - d. In the Escarpment Extended area, flows are expected to increase during the operational period at monitoring locations KEL (within the Whareatea River) and MM1 (V8 Creek, in the Cascade Creek catchment) due to the discharge of treated water from site to locations upstream of these locations. Post closure, modelled increases in flow are the result of proposed passive treatment facilities (mussel shell reactors) and higher net percolation into engineered land forms relative to the natural surfaces. In addition, flows at V62 (V62 Stream, within the Whareatea River catchment) and W07 (Rapid Stream) are expected to increase in the post closure period as a result of increased baseflow from the proposed passive treatment facilities (mussel shell reactors) and higher net percolation into engineered land forms relative to the natural surfaces.
32. The cumulative downstream impacts are presented in the report for the five key downstream locations at Granity Stream (outlet), Mine Creek (MC1), Waimangaroa (17W), Wharetea (WM3) and Cascade (V8). I consider these locations appropriately represent downstream impacts from the proposed disturbed areas.
 33. In general, the cumulative downstream percentage impact on flows are less than modelled further up catchment. Cumulative modelled percentage increases in flow are high (>50%) in the Waimangaroa, Whareatea and Cascade during lower flow events. This is a reflection of a small increase in flow (from increased baseflow and/or treated water discharge) having a relatively large percentage effect on flow during low flows compared to high flows. Absolute changes in predicted flows remain similar (within the same order of magnitude) to the current baseline estimates.
 34. The potential for flood inundation of working areas is noted in relation to the proposed infrastructure footprint and culvert at Smokestack (Waimangaroa River) associated with the Mount Frederick South Access Road.
 35. A 100-year flow event was defined based on the highest observed flow at the Smokestack gauge location in order to assess flood potential at the proposed coal stockpile area and proposed culvert across the Waimangaroa River. A HEC-RAS model was used to evaluate the potential impact of floodplain encroachment and infrastructure as a result of the defined 1:100 year flood event. It is of my opinion that the HEC-RAS model is appropriate to assess this defined risk.
 36. The Smokestack flood modelling recommends both bunding to protect against the modelled inundation of the infrastructure footprint and refinement of the model using higher resolution bathymetry data and planned road alignment (for representation of the culverts) to provide more accurate flood model results.
 37. Other areas of high flood risk are defined – based on their proximity to surface water channels, however detailed flood assessment have not been provided for review and it is stated that it will undertaken during the engineering design stage.
 38. Climate change was taken into account within the modelling undertaken, with the report stating that effects have been taken into account in the summarised results.
 39. The Water Load Balance Modelling reports outline that the relative increases / decreases in rainfall were applied to the modelling undertaken.
 40. The assessment considered downstream users and consented water takes relevant to the project and concluded there are no known surface water users directly downstream of mining areas in Whareatea or Waimangaroa catchments based on the information provided by the West Council Regional Council.
 41. A number of surface water takes are located in the Ngakawau catchment, downstream of the proposed Stockton development. It is noted that these consents pertain to the Stockton Plateau

Hydro Scheme (Hydro Developments Ltd) and as outlined in the Hydrology Report, are not likely to be implemented without BT Mining approval and actions. An assessment of the projects potential impact on these takes has subsequently not been provided on this basis.

COMMENT ON THE PROPOSED HYDROLOGY MANAGEMENT MEASURES

42. Diversion of surface water catchments away from the mining areas is appropriate in order to limit the volume of water inundating mined areas and limit the volume of water requiring both storage and/or treatment. Diversions structures need to be designed and constructed appropriately with the site-specific conditions in mind.
43. The proposed diversion of impacted water from historic and current mining activities within the Millerton Block (at Stockton) will alter current flow regimes within Granity Stream, Twins Stream and Mine Creek but should ultimately improve overall water quality within these respective catchments.
44. The use of active water treatment and passive treatment (mussel shell reactors) are both proven technologies at Stockton and are appropriate measures to manage poor water quality associated with both the existing site and the project during the active and closure phases assuming that specific flows and/or loadings (of contaminants) are appropriately considered at the design stage. The projected flows and loadings should be detailed in the specific water load and balance modelling reports.

SUMMARY

45. I have reviewed the Hydrological assessment, evaluating the methodology used to assess rainfall and surface water flow values and likely effects.
46. The specific methods outlined to extend / infer datasets seem appropriate based on the data available and presented.
47. The assessment outlines changes to flows at defined surface water compliance locations as a result of both operational development, higher net percolation into the engineered land forms, surface water diversions and operational and post closure treatment. The relative change in flows (as presented) seem appropriate (based on the high-level concepts presented).
48. The outlined active and passive treatment technologies are currently employed at Stockton. Combined with appropriate surface water diversion, on-site water management and appropriate design (taking into account specific flows and loadings (of contaminants), they are appropriate tools to manage and treat discharge water from the site.

Additional surface water flow data will enable a more accurate representation of flow at specific locations within the mine footprint, provide confidence in the extended / inferred datasets and the proposed mine water management strategies. Remaining uncertainty can be factored in at the detailed design phase.

Tim Mulliner

20 May 2026

Limitations

This report has been prepared by GHD Limited, in accordance with the agreed scope of work. It is intended to support the Bathurst Resources Limited application under the FTAA and may be relied upon by the Expert Panel and relevant administering agencies for the purposes of assessing the application.

While GHD Limited has exercised due care in preparing this report, it does not accept liability for any use of the report beyond its intended purpose. Where information has been supplied by the Client or obtained from external sources, it has been assumed to be accurate unless otherwise stated.

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The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described throughout this report and particularly in this report (refer section(s) 10 and 11 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

Project name		Buller Plateaux Continuation Project					
Document title		Report Peer Review BPCP Hydrology Technical Report					
Project number		12659028					
File name		Peer Review BPCP Hydrology Technical Report.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S4		Tim Mulliner	Stephen Douglass		Stephen Douglass		20/05/2026
[Status code]							
[Status code]							
[Status code]							
[Status code]							

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