

# Submission on Human Health, Risk Allocation, and Intergenerational Responsibility

## Hillgrove Mine – DA 98/35 Modification 5

### Purpose and framing

This submission addresses the human health implications of Modification 5, with particular attention to cumulative exposure, intergenerational risk, and the governance of uncertainty associated with an extended mine life and increased processing scale. It responds directly to the proponent’s Human Health Risk Assessment (HRA) and associated environmental assessments and examines whether health risk has been adequately resolved in circumstances where operations are intensified within an already constrained river catchment.

This submission does not seek to retrospectively establish or quantify specific instances of current human health harm. Such outcomes are complex, multi-causal, and difficult to attribute with precision, particularly in the absence of long-term, population-scale epidemiological monitoring. *However*, the absence of definitive attribution does not preclude the presence of harm where exposure pathways are credible but epidemiological resolution is inherently limited, nor does it discharge the responsibility of decision-makers to act conservatively where such pathways persist and environmental baselines are already compromised.

### Baseline conditions and exposure context

Human health risk cannot be assessed against an abstract or neutral baseline. The Macleay River system is an interconnected surface and groundwater catchment whose condition has been documented as subject to cumulative pressures, including water quality stressors, altered hydrology, legacy contamination, and episodic extreme events, as reflected in State and regional water reporting for the North Coast and Macleay catchment. Available monitoring demonstrates that the river does not operate as a pristine system with surplus assimilative capacity, but as a constrained system already carrying environmental load.

Communities within the Macleay catchment rely on this system directly or indirectly for potable water, including surface-water extraction and hydraulically connected alluvial and fractured-rock aquifers, as recognised within NSW groundwater-surface water interaction guidance and drinking-water source protection frameworks. In such contexts, potable water exposure is not hypothetical or incidental, but continuous, essential, and sensitive to both chronic degradation and episodic failure. The confidence of a community in the safety and reliability of its water source is therefore a legitimate component of human health, extending beyond chemical thresholds to include psychosocial wellbeing and long-term security, consistent with public-health frameworks recognising environmental security as a determinant of health.

## Processing scale, duration, and cumulative risk

Modification 5 proposes a substantial increase in processing throughput, approximately doubling annual ore processing relative to the previously approved baseline, alongside an extension of mine life. From a human-health perspective, this represents not merely temporal continuation but intensification of interaction between mining activities and environmental systems over an extended period.

While the HRA assesses health risk under defined operational assumptions, it does not explicitly test whether conclusions of low or acceptable risk remain robust under increased cumulative loading, prolonged reliance on containment infrastructure, or plausible exceedance conditions over decades of operation. Risk that is manageable in the short term under stable conditions may become materially different when exposure duration and operational intensity increase, as recognised in cumulative-risk and chronic-exposure public-health guidance.

## Conditional containment and unresolved uncertainty

Across the supporting environmental assessments, risk management relies on interception, capture, reuse, and containment systems designed to prevent off-site impacts. The HRA appropriately relies on these systems in concluding that health risks are acceptable under assessed scenarios. However, this approach necessarily renders those conclusions conditional.

Where health protection depends on infrastructure integrity, operational discipline, and future management responses, uncertainty is not eliminated but deferred. Monitoring regimes that lack predefined trigger thresholds and mandatory response actions provide information, but do not themselves constitute protective controls. The HRA does not clearly distinguish between risks that are eliminated and risks that persist conditionally, to be managed over time.

In this context, approval does not neutralise uncertainty; it determines where that uncertainty is carried.

## Risk allocation and governance responsibility

Approval of Modification 5 is not a neutral technical act. It is a decision about the allocation of unresolved risk. Where safety depends on modelling assumptions, monitoring regimes, and future management discretion rather than demonstrable elimination of exposure pathways, approval has the practical effect of transferring residual risk from the proponent to downstream communities, future water users, and the river system itself.

While adaptive management and monitoring are often relied upon to address uncertainty, such approaches presuppose timely detection and effective intervention. Where consequences

of failure affect essential resources such as potable water, reliance on post-detection response represents risk management rather than risk avoidance.

Where the benefits of extraction accrue largely to private interests while environmental and health risks are borne by local communities and downstream systems, the absence of demonstrated harm obscures rather than resolves questions of fairness. Government, in this context, does not act merely as an enabler of development, but as steward of shared and intergenerational interests held in trust. A commercial mining operation may be finite; the communities that rely on the river, and the river system itself, must persist beyond the life of the mine. Where these interests are in tension, responsible governance requires that uncertainty be resolved conservatively in favour of long-term human and ecological health, rather than deferred through conditional approval.

## Community experience and limits of health assessment

The publicly available assessment materials do not demonstrate that community experience, concern, or knowledge within the Macleay catchment has informed the framing or evaluation of human health risk. Health risk is treated as a technical endpoint, assessed through guideline compliance and modelling, rather than as a lived condition shaped by environmental confidence, cumulative exposure, and long-term uncertainty.

The absence of structured community engagement on health and water does not invalidate the HRA, but it does underscore its limits. Exposure pathways are lived, not abstract. Where communities rely on constrained systems for essential resources, exclusion of community experience from health-risk framing represents a structural gap in assessment.

## Intergenerational considerations

Modification 5 extends both the temporal horizon and operational intensity of potential exposure pathways. Future populations may rely on different water sources, experience cumulative low-dose exposure over longer periods, or inherit altered environmental conditions following closure. The HRA does not explicitly assess these intergenerational dimensions.

Approval therefore entails a choice not only about current risk, but about whether future communities are asked to rely on continued infrastructure performance and institutional vigilance to protect health. Such reliance constitutes an inherited burden rather than a resolved outcome.

## Conclusion

This submission argues that the manner in which health risk is characterised, bounded, and carried forward matters. The HRA supports conclusions of low risk under constrained

assumptions. It does not demonstrate that health risk has been fully resolved across time, scale, and plausible future exposure scenarios within an already constrained catchment.

Where uncertainty persists, approval constitutes an explicit decision to allocate that uncertainty to communities and the river system rather than to require its resolution through design, scale limitation, or enforceable safeguards.

Responsible environmental governance requires that such decisions be made consciously and conservatively, in recognition of the State's primary obligation to protect human health and the integrity of living systems beyond the life of any single project.

## References

National Health and Medical Research Council (NHMRC). (2022, updated online). *Australian Drinking Water Guidelines*. NHMRC, Canberra.

*(Living guideline; continuously updated. 2022 is the current consolidated citation year used by NSW Health and regulators.)*

Australian Government, enHealth. (2012). *Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards*. Department of Health and Ageing, Canberra.

*(Still the nationally endorsed framework for cumulative risk, uncertainty, and chronic exposure; no superseding guidance issued.)*

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Organisation for Economic Co-operation and Development (OECD). (2014). *OECD Framework for Risk Governance*. OECD Publishing, Paris.