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13 February 2023

**Re: Response to Regis Resources Comments on
My IPC Submission and Presentation on McPhillamy's**

To Whom It Concern,

I note that Regis Resources, proponent of the McPhillamy's gold project in central NSW, has made a response to my presentation at the IPC Public Hearing on 23 February 2023 as well as a response to my written submission to the IPC. I provide my response to these comments, to make sure that both my presentation and submission are clearly understood by the IPC and general public.

1) Response to Oral Presentation: 17 Feb. 2023 – sub-section 3.10, page 53

<https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2022/11/mcphillamys-gold-project/email-and-postal-public-submissions/applicant-submission/regis-submission--170223-redacted.pdf>

- *Regis claim "In his presentation at the public hearing, Professor Mudd suggested that the tailings produced by the project should be stored in the open cut pit void."*

This appears that Regis are claiming that tailings should be deposited into an operating pit (i.e., second half of the above statement). **I never said or implied or in any way wanted people to infer that in-pit tailings should be used during operations.** I was meticulously careful on this matter and a read of the hearing transcript can verify this. I do not understand how my clear statements on the use of in-pit tailings during rehabilitation could be misunderstood or misrepresented, but I repeat that I was proposing the transfer of tailings to the former pit **after the cessation of open pit mining and as part of site closure and rehabilitation** – not during operations as Regis seem to imply.

- Regis note concerns about the potential for resource 'sterilisation' with in-pit tailings.

Yes, the potential for resource sterilisation is an issue, but as I noted in my presentation (and submission), the widespread use of in-pit tailings across Australia – including at operating mines which have now moved to underground only operations – shows that this is not a major concern for companies and regulators. The example of Cadia demonstrates that some resource sterilisation is necessary in order to reduce tailings management problems (even if only for a while at Cadia). The fact that Regis use in-pit tailings disposal themselves proves they accept it as a legitimate strategy and that resource sterilisation is not a large factor in dictating tailings management choices.

- Regis note concerns about declining ore grades making mine footprints bigger.

Declining cut-off grades does lead to bigger site footprints (i.e., more waste rock, larger pits, bigger tailings dams, larger process plants, bigger ponds, etc), which actually JUSTIFIES the case for in-pit tailings transfer during site rehabilitation to reduce the long-term footprint for post-mining land use!! It is unclear why Regis would raise this as a concern.

- Regis note concerns of groundwater contamination from in-pit tailings.

Again, it is disingenuous of Regis to claim low groundwater contamination risks from the TSF (i.e., in the EIS) then argue the opposite for the pit given it's within the same hydrogeological system. Yes, my presentation did not have any specific text points on the slides about groundwater contamination risks from in-pit tailings, but a careful read of the transcript (bottom half of page 13) shows that I was explicitly clear in arguing that the groundwater contamination risks are considerably lower from in-pit storage of tailings after site rehabilitation than leaving them above ground in the TSF. Examples of my statements include:

"that means we have lower risks of groundwater contamination"

"I would say there are groundwater risk with in-pit tails, but I certainly think they are a lot lower, several orders of magnitude lower than what we would face given an above ground tailings storage facility. And ultimately, what that means when you look at this is that we've got much reduced long-term liability."

(edited for readability only, no change in meaning)

I was therefore explicitly acknowledging groundwater contamination risks – and that, in my expert opinion, in-pit tailings delivers considerably lower long-term groundwater and other environmental risks compared to above ground tailings storage. I cannot understand how Regis missed my crystal clear statements on this aspect.

- Regis note concerns that the transfer of tailings from the TSF to in-pit would *"extend the potential environmental and social impacts of the project"*.

The claim is without any logical foundation. Tailings transfer would be one element – albeit major – within a large program of works for complete site rehabilitation. Furthermore, how would there be a need for 'rehabilitation of an interim TSF'? What interim TSF? The tailings would simply be transferred from the TSF to the former pit void – through hydraulic sluicing and slurry pumping, a straight-forward system to engineer and implement (as done throughout the mining industry when reprocessing tailings; e.g., former Kaltails in Kalgoorlie, Witwatersrand in South Africa, Minera Valley Central in Chile, etc.). Thus, you would have an operating TSF until all tailings were transferred, then the now 'former' TSF could itself be rehabilitated and the pit also closed (either through additional waste rock or conversion to a lake). There would be no need for an interim TSF at all in any realistically conceivable rehabilitation scenario involving tailings transfer to a ***former*** pit. To imply otherwise is factually incorrect and a misunderstanding of my presentation and submission let alone standard industry practice in these cases now (e.g., Ranger uranium mine, former Woodcutters lead-zinc mine, Century zinc mine, etc).

Overall Comment:

Regis are simply arguing that in-pit tailings is not feasible on the basis of several misrepresentations or misunderstandings of my presentation and submission. The use of in-pit tailings DURING REHABILITATION is indeed technically feasible and environmentally and socially preferable, although it would be an additional cost during site rehabilitation – Regis are therefore arguing purely on cost grounds and not on sound technical, environmental and social grounds.

2) Response to Written Submission: 1 March 2023, sub-section 2.3, pages 7-8

<https://www.ipcn.nsw.gov.au/resources/pac/media/files/pac/projects/2022/11/mcphillamys-gold-project/correspondence/applicant/230301in-applicant-response-to-additional-material--mcphillamys-gold-project-redacted.pdf>

- *Regis questions concerns regarding the risks or impacts of climate change during operations.*

My primary concern around climate change is not *during operations*, as implied by the report, but for rehabilitation – which after mining is a permanent change in the landscape, geology and groundwater-surface water system. For long-term rehabilitation, the implications of a drying climate have **NOT** been adequately assessed, as I argued in my submission (and noted in my presentation). This remains crucial as a drying climate has very significant implications for the long-term behaviour of the tailings – if they were to be kept above ground, based on my expertise and experience, I believe that a drying climate could exacerbate the risks of acidic drainage and seepage from the TSF. As I argued in my oral presentation and written submission, and re-iterated in this response, I firmly believe that this is a strong argument for the adoption of in-pit tailings as part of site rehabilitation (i.e., not 'during' operations).

Furthermore, if they argue that climate change won't be a significant risk during the '15 years of operations' (despite the extreme floods and droughts in the past 20 years in NSW alone), why then are they worried about resource sterilisation? Obviously, as a mining company, they would want to extend mining if they could¹ – meaning that the time frame could realistically be much longer than the current 15 years planned, thereby making climate change an even bigger risk both during operations and site rehabilitation and long-term monitoring and maintenance.

- *Regis reiterate concerns about resource sterilisation.*

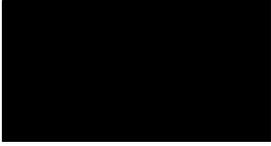
It is illogical for Regis and their consultants to argue the 'short-term' nature of the project then argue they're concerned about resource sterilisation (see response above). In other words, of course they want to mine longer than the 15 years planned (they are, after all, a gold mining company), meaning that climate change will be highly relevant – let alone the risks that climate change presents during 'those 15 years' such as extreme drought or flooding etc and then the risks to rehab and post-mining land use, etc.

Overall Comment:

Regis are downplaying the risks of climate change both during operations as well as site closure, rehabilitation and long-term monitoring and maintenance – with some of the reasons explicitly contradictory to claims concerns regarding the oral presentation. In my view, the extent of analyses and assessment of climate change risks remains unsatisfactory and does not address operations and rehabilitation – especially what climate change risks present for the above ground tailings storage facility (assuming this was permitted over my proposal for in-pit tailings during site closure and rehabilitation).

¹ From my extensive analyses of mining in NSW, Australia and globally, numerous mining projects in NSW, probably the vast majority in fact (especially the big mines), end up mining much more than the original reserves – meaning the footprint is over a longer time period and greater area (i.e., tailings, waste rock, etc). Examples of projects exceeding original reserves include Northparkes, Cadia Valley, Cowal, Mount Thorley, amongst many others. Papers which support this statement can be seen at: <https://scholar.google.com.au/citations?user=6zJTwdIAAAAJ&hl=en&oi=ao>

Yours Sincerely,



Assoc. Prof. Gavin M. Mudd

13 March 2023