

## **SELECTED ITEMS RELEVANT TO THE EIS FOR THE MCPHILLAMYS GOLD MINE PROJECT**

### **Introduction**

Mines and their neighbours have good relations only when the mine is established first and its neighbours come later, attracted by employment or an opportunity to develop a service business. The opposite situation has arisen in the Kings Plains – Vittoria district. Here agriculture was established in the 1820's and although gold mining arrived 30 years latter it has never been a rewarding pursuit. Mining was mainly pursued by lone miners or small syndicates earning only sustenance wages and undertaken during economic downturns, or when drought or poor wool and meat prices had reduced the market for farm labour. The production from three intermittently operated small hard rock mines was also negligible.

With the increase in gold price, driven principally as its role as a reserve currency (although likely to be replaced in this role by cryptocurrencies) the low-grade deposit at McPhillamys was purchased in 2012 by Regis Resources Ltd (RRL) from Newmont and Alkane in who saw little point in pursuing the limited tonnage deposit. Now the residents of Kings Plains and surrounding rural areas face the prospect of being the unwilling spectators to the development and operation of a polluting mine and processing plant for at least 15 years and likely playing host to at least a processing plant and operating tailings dam for an uncertain significantly longer period.

### **The Tailings Dam Legacy**

When eventually returned to agriculture the tailings dam site will accommodate at least 70 million tonnes of toxic processing plant waste including undesirable concentrations of a range of metals and metalloids including silver, arsenic, cadmium, copper, lead, zinc and selenium, as well as sulphate, chloride in a probably acid pore fluid. Barring a catastrophic failure of the bounding dam or embankments this residue will leak for up to centuries into the groundwater and the Belubula River. It will be capped by a thin layer, compacted clay and top soil and so fragile as to be unsuitable for cultivation or tree growth but deemed appropriate for grazing – the EIS makes no mention of whether internal fencing will be possible or it will have to remain a single at least 260 ha paddock with its stock management difficulties.

### **The WRE and the 'Bunds'**

A further, larger mining inheritance is the waste rock surrounding the ore body, excavated to form the conical pit and mostly dumped in the southeast quarter of the mine site in the 'waste rock emplacement' (WRE). The southern part of the 'emplacement' will be a high east-west elongate ridge system constructed from the broken rock, termed the pit and southern 'bunds'. The steep southern slope of these bunds will extend to close to the Mid-Western Highway.

The bunds are designed to muffle sounds and reduce light pollution from reaching the sensitive receivers concentrated along Walkom Road to the immediate south of the mine site. Without the predicted sound muffling by the bunds these receivers would likely been

entitled to VCAMP triggered purchase although sound modelling results for the earlier mine-site plan, lacking bunds, is not revealed in the EIS.

### **Potential Acid Mine Drainage and the Bunds**

There are two major problems with the waste rock emplacement including its bunds. First concerns the waste rock composition. Some 42% of the waste rock has a composition that makes it susceptible to the formation of acid metalliferous drainage (PAF) which means that it has the potential to form an acid solution from interaction with water and air and incorporating metal ions, some toxic, that may drain out of the rock and interact destructively with the environment. To prevent this happening both in the WRE and else where that waste rock is to be used the company proposes to isolate it in 'cells' enwrapped by at least 5 m of waste rock that is 'non-acid forming' (NAF). I have not been able to discover in the EIS the construction details for the cells nor their likely dimensions. However there appears to me to be a possible shortage of NAF rock excavated from the pit (58% but commonly 'rounded up' in parts of the EIS to 60%) as NAF waste is also planned to be used in construction of the TSF, access roads, and the ROM pad. RRL should supply a budget for the three categories of waste rock including the uncertain material (UC) as well as the two types discussed above.

The geochemical study of the waste rock (Appendix G) envisages AMD entering the groundwater and draining to the pit. It is also possible it may accumulate along the contact between the base of the emplacement and the buried former land surface and drain south into a tributary of the Belubula River affecting the riparian vegetation and trees masking the Highway and the lower part of the WRE; any AMD forming seepages on the face of the bunds will severely affect attempts at early rehabilitation.

### **The Bunds and Visual Amenity – A Residents View**

The second problem with the waste rock emplacement for many sensitive receivers in the south view sector is the imminent destruction of their visual amenity by the replacement of their rural landscape view with a drab jumble of broken rock. In the case of our residence (R18) that is situated 70 metres above and 350 m south of Walkom Road it was the north rural view of grazing paddocks with boundaries often marked by windbreaks, remnant patches of native woodland and stately paddock Eucalypts that attracted us to the property we bought in 2002. My wife and I grew up in a rural environment and though in our working lives lived mainly in suburbia, had always planned to retire early enough to be able to buy and work a small commercial cattle farm. We found this property after a long search on the margin of Kings Plains where we purchased 300 acres, a comfortable house with kitchen, family room, dining room and two bedrooms oriented to the north winter sun and the wide view crowned by a horizon almost completely fringed by native trees. By far the greater part of this is to disappear- windows we left through hedge plantings were placed for sections of the view, in one case we will have a view akin to half a diagonally torn painting the missing part replaced by a structureless toneless dark triangle, perhaps in some future time, past ours, again softened by native flora. Our neighbour's house peeking out from a row of young trees on the ridge opposite our is destined to be entombed under

meters of fractured rock and the same fate awaits the ephemeral streams - enlivened by cascading water for just a couple of hours after summer thunder storms. It is all to go to satisfy an uninvited mine, using cyanide and other poisons, driven by man's greed and the false pride of a nearer balanced budget. We've let a hedge dividing garden rooms grow tall to hide some of the desecration, it's a view we won't forget.

### **Light Pollution**

The dark night sky will be dulled by the lights of night work: two 12-hour working shifts will fill each day for 26 fortnights every year. I've long spent a few minutes most nights admiring stars and planets – I can't quite see Mars's Pickering Crater, the geological history of which a colleague and I described in a learned journal but the red planet shines brightly and Venus preages dawn or marks sunset - perhaps light pollution from the mine will kill these visual pleasures. Will you leave a neighbour asks? anxious himself like many who live here. Who would buy and what the discount? Will RRL fill the inevitable loss? 'The financial burden of any decline in property values rests with the existing property owners' declares the EIS Social Impact Assessment (Vol 8, Appendix T, p.174). Offers are made by RRL to provide limited mitigation and the visual impact consultants have a range of helpful screening remedies. Whatever, it is the view that we purchased that will be gone.

### **Health and Environmental Degradation**

There is little consideration given to those residents that suffer a wide range of chronic health problems, some of whom sought residence here because of the perceived healthy environment. While noise and dust models produce reassuring results, certainly falling within government-defined criteria, there is widespread disbelief in the community. The detailed reports are highly technical but little skill is shown in addressing intelligent stakeholders but who lack detailed understanding across a wide subject span. Models are immediately suspected of having parameters adjusted to present a result that suit the client and rely too much from client supplied information and too little from analysis of uncertainty. Criteria for hearing damage and sleep disturbance are moving progressively down with the science outpacing legislative/regulatory adjustments. The combined effect of several different health measures, each below criteria, is not explored. The EIS and the sensitive receptors would benefit greatly if the document contained a critical assessment from a medical specialist suitably qualified in environmental health.

### **Regis Resource's Project Justification**

In chapter 39 of the EIS Main Report (vol 1B p.73-140) an attempt is made by RRL to justify the project as adding to the gross sum of human good. Despite the Governor of the Reserve Bank of Australia wanting to rid himself of gold cluttering up his Sydney premises we are asked to believe that the only course in view of current international insecurity is to salt away more gold in bank vaults. And if the world supply more than satisfies this before McPhillamys production comes on line then it can always be sold to the Asian jewellery trade. Despite the possibility of a world oversupply after 2020 Australia's gold production apparently must be maintained to provide employment in the central west. Cadia Valley Operations has just lifted its production rate and will be looking for several hundred new

employees according to very recent press reports – besides their production McPhillamys planned output is small as is the latter's predicted mining work force and life span. There estimate of a 788-person work force is misleading - their data shows that after the first year their 630-work force will reduce to about 380 and by the end of year two it will reduce to a more stable employment level of about 300. Are there jobs in prospect locally to support these sorts of reductions? One in two jobs disappear over two years!

Discussion of the suitability of the mine site seems to rest on an erroneous assessment of mining history in the area and the discovery of what RRL regard as a unique site for their TSF, atop the upper reaches of a major river that feeds into an important agricultural supply dam (Carcoar) and eventually into the Lachlan River. The location of the TSF produces a decrease in water supply to the dam and raises the risk of catastrophic pollution downstream. The mine site lacks access to a nearby adequate water source and has been forced to organise water supply from 90 km distance, water up to half of which is more accurately described as brine, waste from an industrial plant. Thirteen million litres a day will be pumped to the site, liquid that is misleadingly described as 'excess to Sydney needs' in the EIS, but which in fact has been rejected by Sydney on quality grounds despite the city water restrictions.

The argument that a right to explore leads on automatically to a right to mine is fallacious; there is no such right.

The definition of the precautionary principle used seems a particularly contorted one. My interpretation of the wording is that it tells RRL what course of action should be followed in a situation where 'there are threats of serious or irreversible environmental damage'. It does not give advice as to what to do if there are no threats of serious or irreversible environmental damage, which is so confidently adopted by RRL. What they have sought to establish would tend to satisfy a simpler restatement of the principle: do no harm!

RRL's analysis of the threat of serious or irreversible damage seems to ignore the threat of a major pollution event arising from a serious breach or gross overspilling of the TSF wall or else they are so confident in the stability of the wall and the belief that even a very rare rainfall event will not lead to overspilling.

Again, I take issue with the self-serving corruption of the concept of inter-generational equity in Chapter 9. What I see as such equity relies on the present generation not benefiting from actions but leaving behind debt and/ or the impossibility of remedying the damage it inflicts on the environment – financial, natural or well-being. Let's take greenhouse gases and climate change with increases in global temperature of possibly 5 degrees C by 2100, with attendant sea-level rise, faunal and floral extinctions, desertification and increased extreme climatic events. It is no good looking back in time at statistical averages of meteorological data to predict the future as is done in a number of studies reported in the EIS. In the EIS RRL pleads that its emissions of greenhouse gases will only be a tiny fraction of total Australians emissions – perhaps we should all adopt this excuse? I searched the RRL website to see if the company has a credible environmental policy. That which I found is short, deficient and lacking in coherence – it should have to do

much better than is indicated before it is allowed to emit any such gases. What about the toxic, buried, millions – of – tonne, seeping mass that will be the remains of the TSF – who is to monitor this and the drainage from the WRE that will be acid (see Appendix G), and who will pick up the bill? Should there be a major polluted hydrous flood moving down the Belubula in say 2060 will the economic benefit the mine is supposedly going to confer on NSW cover the amelioration costs?

And even the 90 km pipeline; will it really ‘remain a valuable infrastructure asset and enhance the water security of the wider Central West region’? Will Sydney decide it needs the less polluted fraction of that previously supplied to the mine? Will there be a requirement, except perhaps in mining, for water of the quality now agreed to be supplied from Lithgow Shire? What will be the cost of maintaining the pipeline and supplying power and maintenance to the associated pumping stations and other necessary infrastructure (I could find no information on these costs in the EIS)? Will RRL donate the facility or expect to be paid for this ‘asset’? What is the duration of land access agreements RRL has negotiated with private landholders along the pipeline?

Void apart, Chapter 39 reports that ‘the project area can be used for agriculture at the end of the mine life’, but elsewhere in the EIS we are informed that the slopes of the rehabilitated WRE will be too steep for grazing and that none of it could be other than ‘crash grazed’ (even this activity will result in the widespread destruction of young native trees).

With considerable audacity RRL argues that as gold is recyclable there will be no overall resource loss attendant on mining the small deposit at McPhillamys - if so, and if as earlier in the chapter they indicate, world consumption is set to fall, then what is the justification for mining it at all?

### **Rehabilitating the Bunds**

Within the Mine Rehabilitation section of the EIS (Appendix U) the potential for erosion of the WRE including the bunds appears as a major concern. Initial study indicated that parts of the WRE were likely to be highly erosive, up to almost 1200tonnes/ha/yr. Utilising ‘topsoil and rock matrices’ in areas of steep slopes (up to about 14 degrees) peak erosive rates were almost magically, as estimated by modelling using SIBERIA, RUSLE and WEPP, reduced to less than 5 tonnes/ha/yr with SIBERIA claimed to provide a method for determining how long the PAF cell(? s) cells would remain protected from erosion. Despite this some worries about erosion especially of the steepest areas and any that are likely to evolve into ephemeral waterways and even gullies remained. Additional measures including the use of logs placed on the WRE batters and the use of sediment traps proposed.

Unfortunately details of the various computer manipulations and anti-erosion measures are virtually unexplained. No examples of the modelling outputs for various situations are presented and none of the amelioration measures sufficiently explained. Questions for at least this reader remain unanswered: what are ‘top soil and rock matrices’ processes? What

were the times indicated for the PAF cells to be uncovered? Is there any potential for mass movement associated with the WRE? Is there any potential for slumping occurring along the WRE - original surface interface? I believe the stability of the WRE and its hidden PAF are important and reflect on the success of the rehabilitation of the largest modification of the original landscape. Appendix U should be revised to answer questions like mine and the revised version subjected to peer review.

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## Finally

At a Community Consultative Committee Meeting two months before EIS submission I enquired about the volume of material in the EIS. A Regis Resources spokesperson answered 'Approximately 2 000 pages including the appendices.' It turned out to be more than 3 times as long, thirteen volumes totalling more than 6500 pages. Several months earlier the Blayney City Council had succeeded in having the period for public exhibition and comment extended to 42 days. Even that presented residents impacted by the project and other interested parties with an impossible task if they wished to do a thorough job. Only a rudimentary 'volume directory' (and that confined to volume 1A)' major topic appendices that themselves contained appendices, tables of contents to consultants reports of varying detail, the absence of a comprehensive or indeed any index, compounded the task. Accordingly, many important aspects of the Project remain untreated in individual submissions. This does not mean that I consider those not commented on here to be of less importance. Other objectors will deal with water issues, in many ways the most important topic in rural Australia today, and further topics. Collectively they will demonstrate that **the McPhillamys Gold Project is one that should not proceed.**

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