

The Cononish gold mine, the new mine waste proposal and our National Park

Description



The Cononish gold mine as it looked on a dreich day in May – the same day as the pre-consultation Tyndrum Village Hall

The failures in the Loch Lomond and Trossachs National Park's consultation system

A couple of weeks ago, at the Scottish Wild Group AGM, I was told that a planning application had been submitted back in August for the new proposal for waste storage waste from the Cononish Gold Mine ([see here](#)). The formal consultation period lasted 28 days and, while I have spent a few days

feeling bad that I had missed this and failed to advertise what is being proposed, what I have realised is very few other people knew about the application either. That is until Scotgold placed a story in the press earlier this week presenting the application as a done deal ([see here for example](#)).

This demonstrates a fundamental flaw in our planning system. There was no a single objection on the Loch Lomond and Trossachs National Park Authority planning portal ([see here](#)) until I lodged one on Wednesday. Although this was outwith the formal consultation period, because the application has not yet been determined, you can still lodge comments and I would urge anyone with an interest to do so.

The lack of public comment until this week – there are three letters of support which all appeared on the same day – is not I believe because people don't care about what is being proposed. There were significant number of objections to earlier applications. The reason is that either people don't know what is being proposed or don't understand. I have checked and it appears that neither the Ramblers nor Mountaineering Scotland were informed about the application even though the Ramblers Scotland tweeted a photo of an unlawful Scotgold anti-access sign at the weekend ([see here](#)). (The sign is unlawful because its placed far beyond the current working site boundary). It should be the business of the Loch Lomond and Trossachs National Park Authority as Planning Authority to make sure that recreational organisations are informed. When the LLTNPA consults RSPB as a matter of course (they did in this case and every hydro application I can recall) – a good thing – why cannot they also consult the Mountaineering Council about similar developments in the hills?

It took me a couple of hours to understand how the 147 documents then on the Park planning portal relate to each other. There is the main Environmental Statement then a jumble of appendices and supporting documents which unfortunately don't appear in the right order. After scrutinising this I realised the first two appendices to the Environmental Statement, the Pre-application Consultation summary and Consultees responses, appear to be missing from documentation:

APPENDICES

Appendix 1	Pre-Application Consultation Report
Appendix 2	Consultee Responses, Pre-app and Scoping
Appendix 3	Tailings Management Feasibility Study
Appendix 4	AMEC 2011 Appendices
Appendix 5	Ecological Data
Appendix 6	Construction & Environmental Management Plan
Appendix 7	Decommissioning and Restoration Plan
Appendix 8	Noise & Blasting
Appendix 9	Archaeological Written Scheme of Investigation
Appendix 10	Socioeconomic Assessment
Appendix 11	Greater Coninish Glen Management Plan
Appendix 12	Appropriate Assessment Appraisal

I have asked the LLTNPA to make these missing appendices public. There seems little point to the current emphasis the Scottish Government puts on open and transparent pre-consultation if that is not reported. I look forward to seeing the responses scotgold has made to the questions I and a friend made when we visited the consultation event at the village hall, which were all about how much more mine waste was going to be dumped on the hillside and the reasons for this.

What's going on at Cononish shows is that there are major democratic deficits in our planning system.

This suits Developers and, it appears, the LLTNPA, because it avoids planning proposals from being subject to external scrutiny. Its really important that the public demand that the Scottish Government address these failures in the forthcoming planning bill.

The main reasons why the new planning application must be refused by the LLTNPA



Its not clear how much of the 8000 tonnes of waste was stored in these bags when this photo was taken – but in visualising the impact of the waste of the new planning proposal assume there is 7000 tonnes of bags and consider what 100 times this amount of waste would look like. That gives an idea of how much is to be dumped – sorry sculpted – onto the slopes below the mine.

Scotgold already has planning permission for the gold mine, subject to certain conditions, and earlier this year Scotgold they were given an additional permission to start work on processing 8000 tonnes of

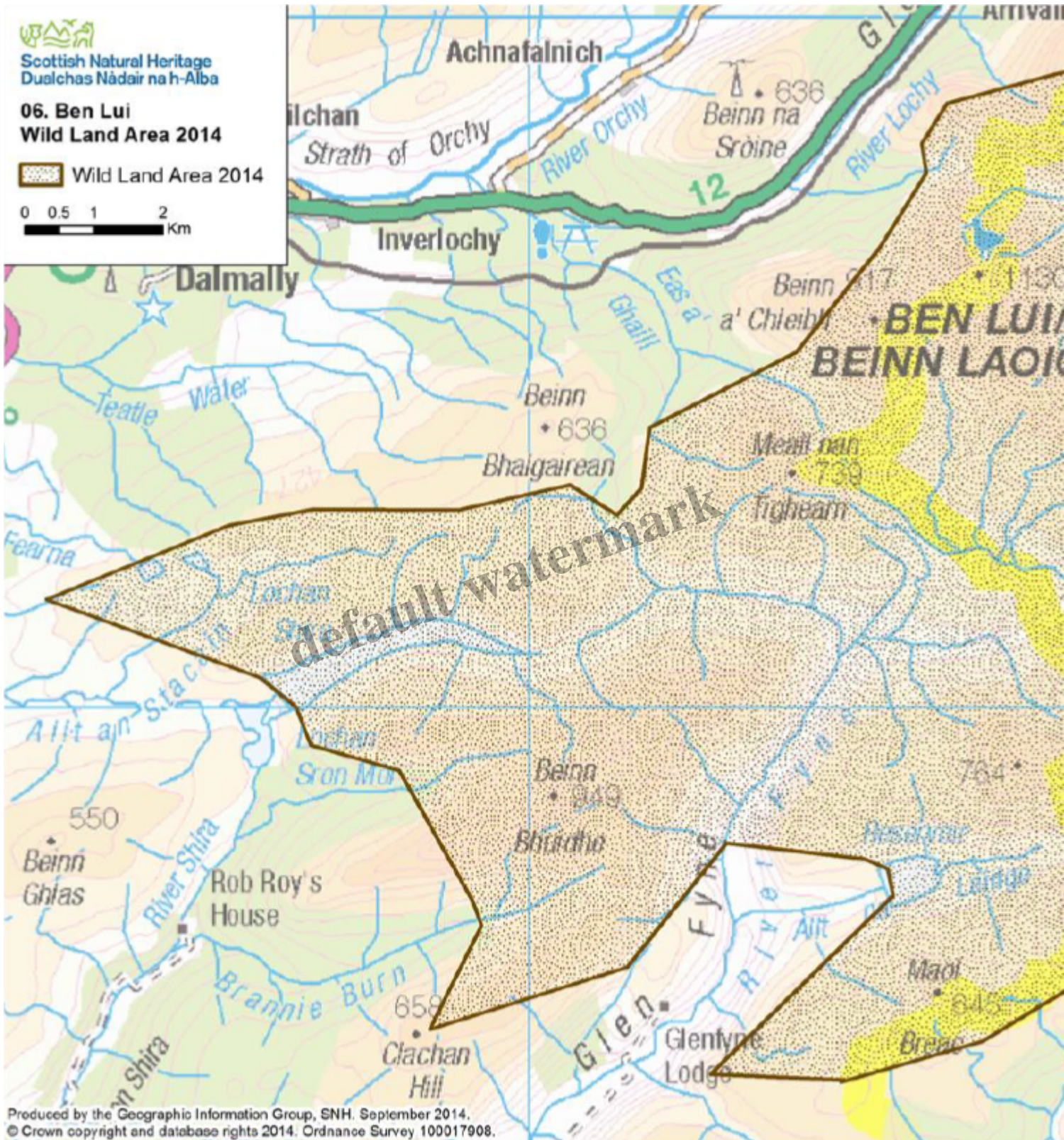
former mine waste to extract gold. For the waste pictured above that produced ten one ounce rounds which the press reported this week were auctioned for £46k, a mark up on nearly 400% over current market price. I will come back to how any of this can be considered sustainable economic development or sustainable use of resources in a future post.

Here I will focus on the two key differences from the earlier planning application. The first is that far more waste will be dumped outside of the mine. The original approval included the following conditions::

- 4 **Extraction Limits:** The total volume of mineral to be extracted shall not exceed 576,000 tonnes of ore. The Planning Application shall include details of annual extraction volumes at no more than 12 months after commencement of extraction.
- 5 **Tailings Management Facility (TMF) Limits** shall not exceed a maximum elevation of 339m AOD and shall not store more than 400,000 tonnes of extractive waste. Deposition shall not commence later than 8 years from the date of commencement of the 'Notification of Initiation of Development', or date determined by the Planning Authority).

“REASON: To minimise the adverse landscape and visual impact and ensure that the site is restored to a satisfactory standard in this sensitive area of the National Park.”

The key bit is under point 5, the amount of waste to be stored outside the mine was limited to 400,000 tonnes because of the sensitivity of the National Park. Since the original application, the areas of the gold mine has been included in the Ben Lui Wild Land area so any protection of that sensitivity should be even stronger than before.



In my posts earlier this year, I drew attention to the fact that that amount of waste Scotgold wanted to dump outside the mine had increased to 530,000 tonnes of tailings. It now that this was a vast

underestimate and that in addition to this scotgold wants to dump another 170,000 tonnes of unprocessed rock waste outside the mine. That makes 700,000 tonnes of waste in all, a 75% increase in the amount of waste that is to be dumped on the hillside outside the mine. Nowhere in the application is this enormous increase clearly stated. It appears no-one wants the public to know. One consequence, if this is approved, is that the waste is now going to be disposed over a far wider area than would be needed if it was limited to 400,000 tonnes as previously.

It appears money has driven this change. It would cost far more to replace waste back in the mine because the construction of tailings dams requires large up front capital investment. So the new plan is not only to avoid replacing waste back into the mountain, its to create 10 tailings stacks of approximately 72,000 tonnes each. The second main difference to the earlier proposal. This represents one full year's worth of waste if new mining machinery is installed, 6 months if its not. The stacks will be up to 10m high and moulded into shapes Scotgold claim will resemble moraine.

Progressive Development of Tailings Stacks



Extract planning application

One of the interesting things about this is the current proposal is claimed to be much better in landscape terms than the last one – an admission that the tailings dam as approved would in fact have had an adverse impact on the landscape in a sensitive area (and therefore should have been refused by the LLTNPA!). This time though we are told there will be no adverse impact, even though almost twice the amount of mine waste is to be spread over the hillside. I am sceptical and so should the LLTNPA.

A series of ten separate tailings stack areas shall be formed, each relating to around one year's production of tailings month (72,000tpa). The stack areas shall be prepared by initially stripping the vegetation to till which shall be compacted layer (of barren mine rock) and a geotextile fabric in order to separate this layer from the tailings.

Tailings will be dewatered at the plant building as part of the process. The dry tailings will be loaded from the tailings Dump Truck. The tailings shall be placed, spread and compacted in 300mm layers (bulldozed and rolled) to form moraine features, in keeping with this glacial geomorphology. Stack surfaces shall be progressively restored using prepared.

The reason for this is that in order to extract the gold, the quartz ore need to be crushed until it becomes sand and it is this sand which will make up the bulk of the stacks. Now while you find sand in glacial moraine there is also lots of rock and finer particles – silt which goes to make clay – which helps bind the whole lot together. However, if you place sand onto what is a pretty wet hillside – it was sopping when I visited in May – it would all wash away which is no doubt why originally a tailings dam was proposed. Scotgold's proposed solution to this – although storing sand is never acknowledged as far as I can see to be a problem – is to use the rock waste which was to be left in the mine to line the ground, put a geo-textile on top of this and then mould the sand on top of that. Here are the design criteria:

default watermark

Table 4-3: Design Criteria

Item	Description
Location	30 m stand-off from Within site boundary
Seismic	Peak Ground Acceleration = 0.15g
Climate Data	Yearly Mean Precipitation = 1,200 mm Yearly Mean Evapotranspiration = 1,000 mm
Tailings Characteristics	Compacted Density = 1.8 t/m ³ Optimum Moisture Content = 15% P80 = 125 µm Description = Sand Non-acid generating
Mine Rock Characteristics	Compacted Density = 2.5 t/m ³ Maximum particle size = 50 mm Non-acid generating
Production Tonnages	Tailings = 529,090 tpa Mine Rock = 172,363 tpa
Production Scenarios	Base Case - 3,000 tpa Increased Production - 3,000 tpa ramp up then 6,000 tpa
Storage Volumes	Tailings = 330,000 m ³ Mine Rock = 86,000 m ³
Tailings Stacks	Maximum Height = 10 m Steepest Slopes = 1:1
Channel Design Storm	1 in 100 year 24 h

Now it doesn't take an expert to see that there are potentially two major problems with this. The first is there is nowhere I can see that any consideration is given either to the life span of the membrane or what happens when it breaks down as it eventually must. A reasonable assumption is that when this happens the stacks of compressed sand will start to be eroded away from beneath. I suspect by then scotgold will have long gone leaving the public to pick up the tabs for preventing an environmental disaster.

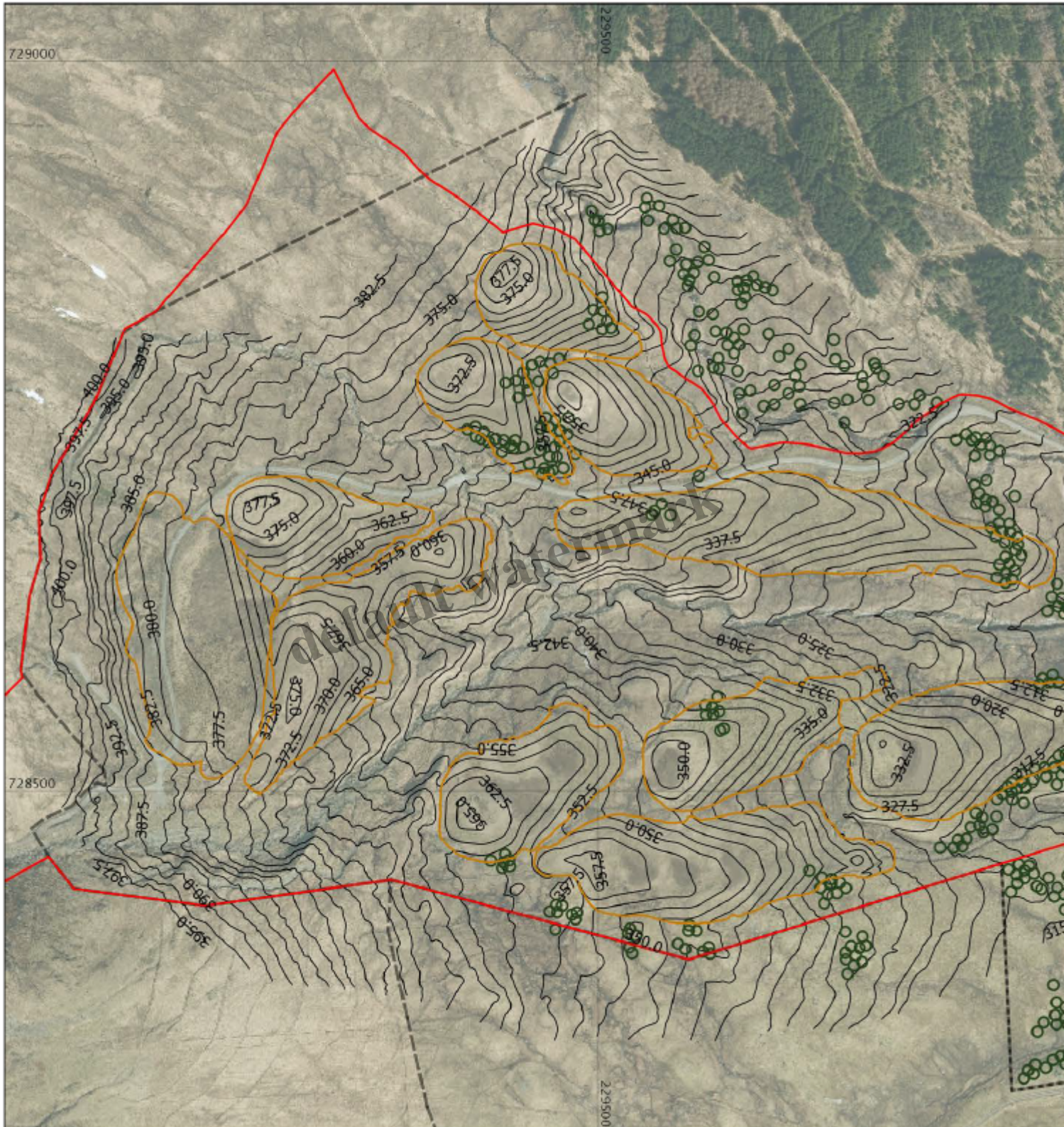
The second is there is no proper consideration that I can see of whether it is possible to revegetate heaps of sand in the Scottish Hills in such a way that they will be able to withstand the erosive force of water from above or from the sides. The re-vegetation plan is to store turfs, up to 30 cm thick and then use them to cover the stacks. How well these will take on dried sand, which should drain quickly and is different in composition to current soils/peat is unclear. Cononish, as the chart helpfully shows, has over three metres of rain a year. Some of that may run off the top of vegetation but some of it will seep into the dried out sand heaps. What will that do? And even if the vegetation does take and provides a waterproof seal, what happens if deer get into the enclosure and start to erode tracks over the mounds? It seems to me there is a high and predictable risk of wash outs of the tailing stacks. And that's without considering the risks of the Alt Anie changing course by more than the 30m safety zone or of other burns running between the stacks which could be subject to flash floods. That sort of scenario lead to catastrophic wash-outs.

I find it strange that neither SEPA nor SNH in their responses – and they have a duty to protect the River Tay Special Area of Conservation – have asked critical questions about the risks associated with the current proposals or for evidence that the proposed techniques work in very wet climates such as Tyndrum. Perhaps they think its ok for 530,000 tonnes of sand potentially to wash into the river system over say the next 200 years? Smaller heaps, with less material as originally agreed, would of course reduce the size of this risk.



Hummocky moraine in Strathfillan below the gold mine. The slopes of many of these moraines consist of material with a steepness that exceeds 30% but they have held together for thousands of years because of the mix of materials with blocky till set within a matrix and sand and silt which often sets like concrete.

I am no expert on erosion risks and there is some technical documentation in the application which relates to this which needs to be explained in lay terms as well as properly scrutinised. However, from a scan of the documents – there are 100s of pages of engineering documentation – there is some information in the application which suggests storage of sand is problematic. This indicates there are high risks of sand sheering on slopes of more than 30 degrees. This is why the proposed stack heaps do not resemble natural moraine (for an example see above) but are to be moulded across the hillside.



Filename: Cononish2017.qgs

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The Landscape impact of the tailings stacks



One of the landscape visualisations. You can hardly see the enormous green shed below the mine or the tailings. The white/grey patch below and right of the mine represents an unrestored tailings stack.

The Environmental Statement contains a number of visualisations of the landscape impact from different angles (see above). These without exception make the tailings stacks disappear into the hillside. Maybe they will, but there are reasons to be sceptical:

- All the visualisations are from a distance and none show what a 10m high stack will look like from close up either before or after restoration.
- The photos are all browns, a depiction of the area in winter. However, because the stacks will be well drained their vegetation is likely to be very different to the surrounding peaty slopes and therefore stand out from it. How this might look is unclear.

There are no depictions of how the sand heaps will look when they start to erode away as eventually they must.

The landscape impact of the buildings and spoil around the mine is not really covered but is already having a significant landscape impact. The assumption seems to be blots on the landscape, as long as developers can claim they are temporary (in this case it will be for over 20 years not for all time, are perfectly acceptable in our National Parks.

The wider implications of this application

Cononish is not the only potential goldmine in the area and scotgold, when trying to talk up its prospects to attract investors, claims there is potential for several other mines in the area. So what will the cumulative impact be of potentially millions of tonnes of mine waste sculpted onto hillsides around the Tyndrum and Glen Orchy hills?

What needs to happen

The LLTNPA needs to subject the new planning application to critical scrutiny and in particular make a clear statement about the sustainability or not of the tailings stacks.

If the erosion risks can be addressed, in terms of the existing planning permission, it might be better for 400,000 tonnes of waste to be stored in a stacks rather than in a tailings dam. However, the LLTNPA needs to draw a line under the amount of waste it will allow to be stored on the hillside and this should not exceed the existing limit.

Category

1. Loch Lomond and Trossachs

Tags

1. landscape
2. LLTNPA
3. planning
4. restoration

Date Created

November 17, 2017

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