

Scotgold: Developing the Cononish Gold Mine and Exploring for Gold in Scotland

Charlie King



Location



Gold Mine/deposit

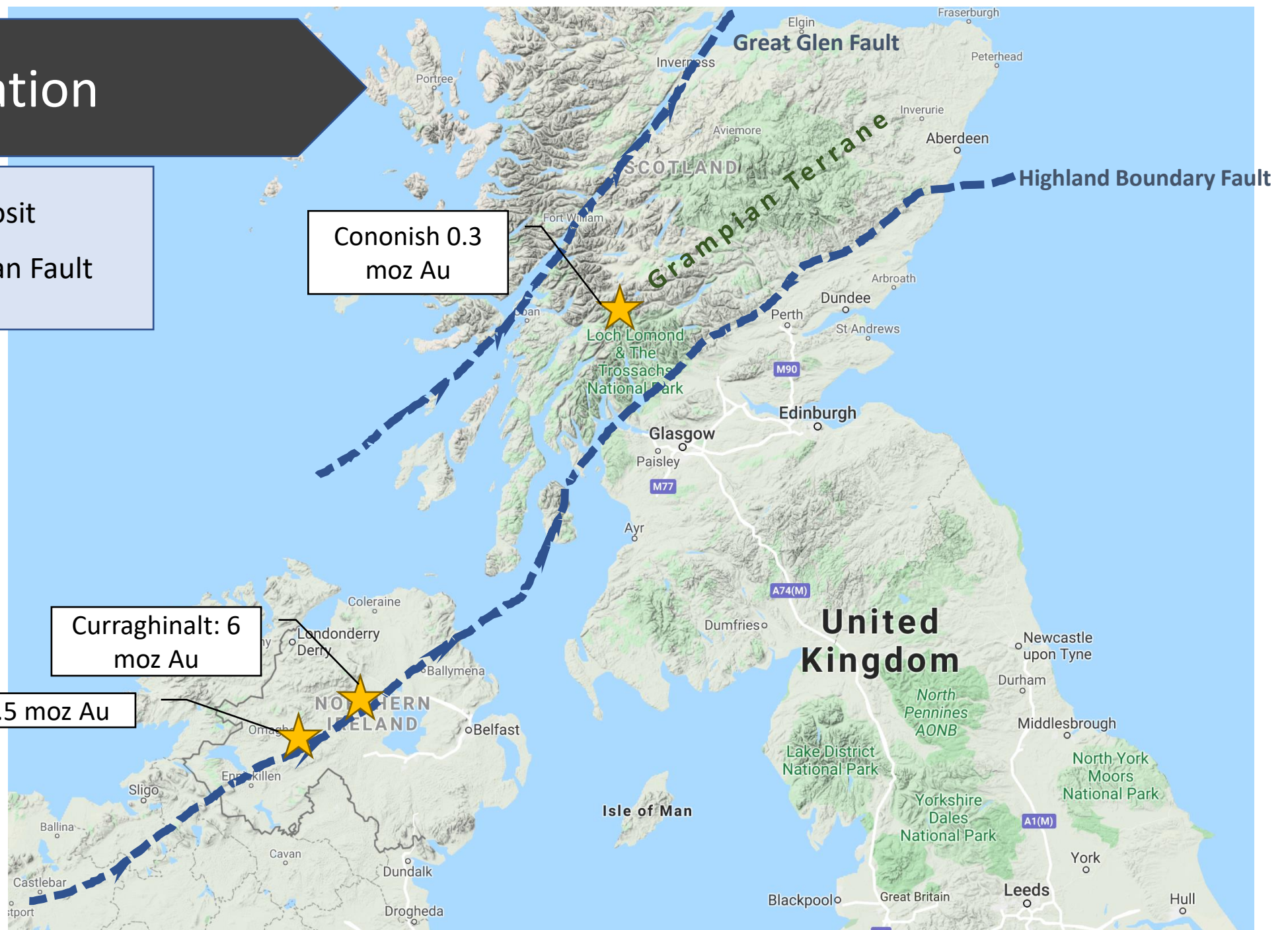


Major Caledonian Fault

Cononish 0.3
moz Au

Curraghinalt: 6
moz Au

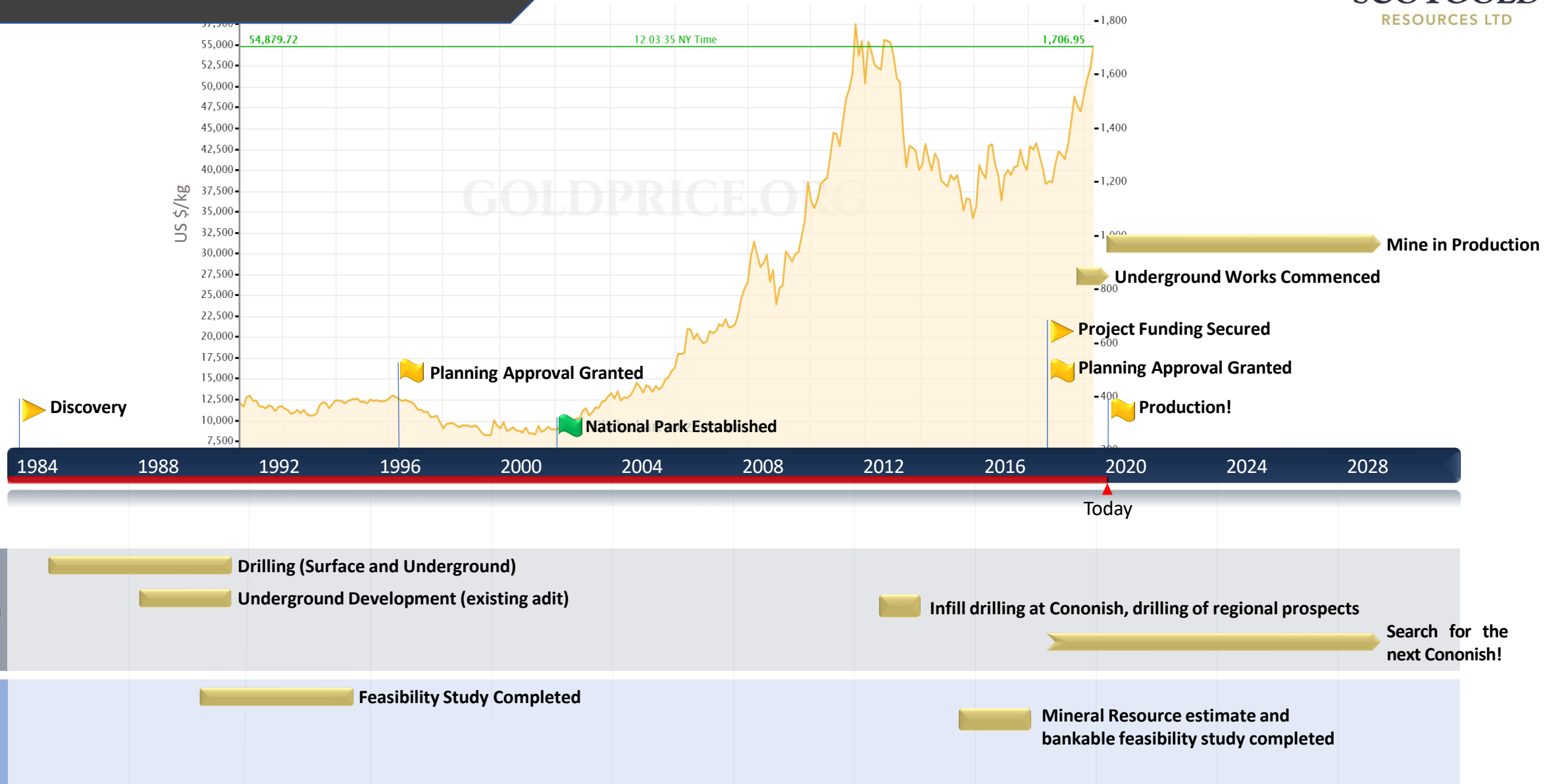
Cavancaw: 0.5 moz Au



Location

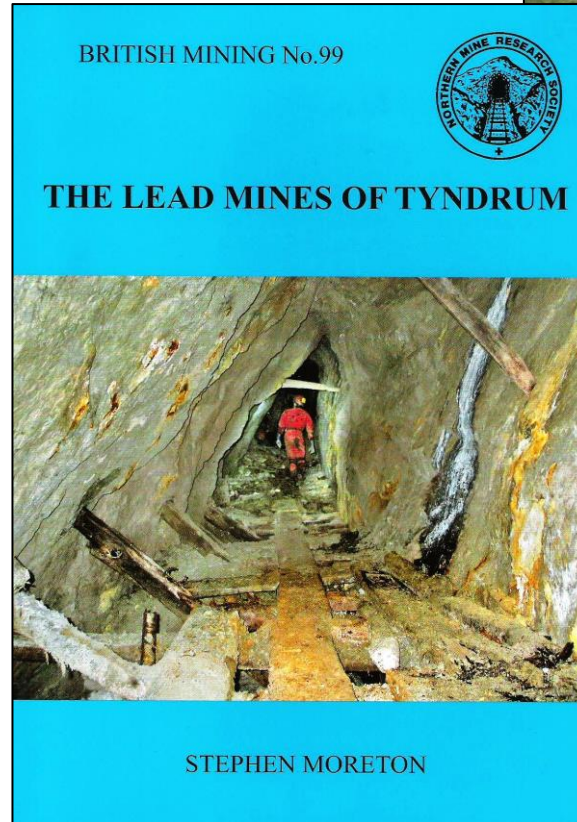


Project Timeline



Tyndrum Mining Heritage

- 1730 Sir Robert Clifton took out a 38 year lease to search for precious and base metals. In 1741 discovered vein of lead ore. In total more than 5000 tonnes of lead produced between 1742 and 1925.
- Numerous other small lead trials in the area (including at Cononish).
- Popular location for gold panners, records of gold being found in Scotland since the 1500's.



Discovery

CONONISH FARM
MINERAL RECONNAISSANCE 1982

Recent Work. (Map C6)

In view of the significant gold values in samples from the Tyndrum - Glen Fyne fault zone at Ardkinglas, R.P. carried out sampling of mineralised material associated with the same fault at Tyndrum.

Mineralised samples and pyritic tailings from the Tyndrum mine were not significantly enriched in gold, but a number of boulder samples collected at Cononish, Crom Allt and Auch contained significant gold values. Of 31 samples analysed, 18 contained more than 0.2 ppm Au. (See Table 1).

The highest gold values were found in mineralised boulders derived from the vicinity of the Eas Anie mine, where sample COR 3 returned 4.3 oz Au/tonne. This sample was taken from a 20 cm boulder of quartz vein material with approximately 10% coarse pyrite, 5% sphalerite, and prominent pink potassic alteration of enclosed quartzite fragments.



Deposit Overview

- 'High grade deposit' – so more gold in less rock.
- Head grade of 11.8 g/t Au, cut off grade of 3.5 g/t Au.
- Life of mine = 9 years.



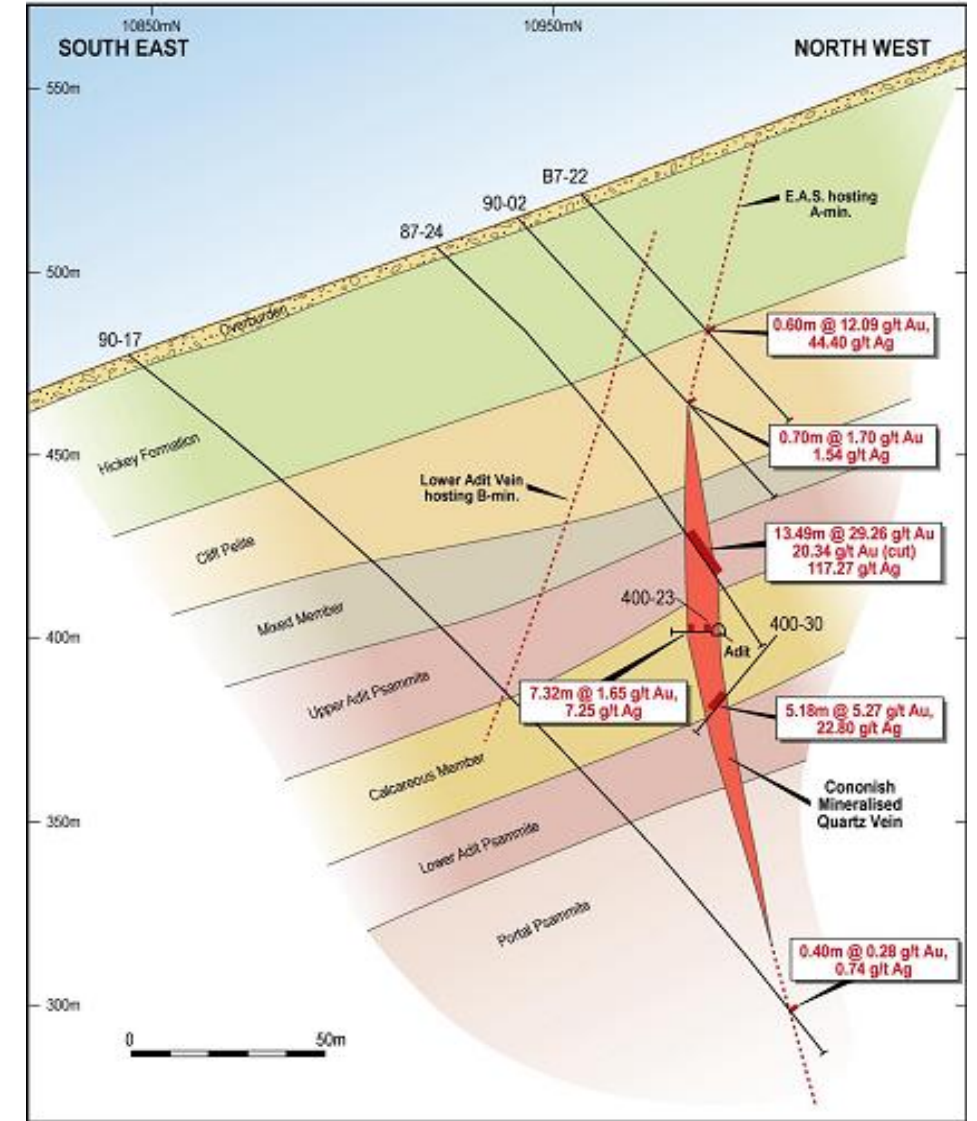
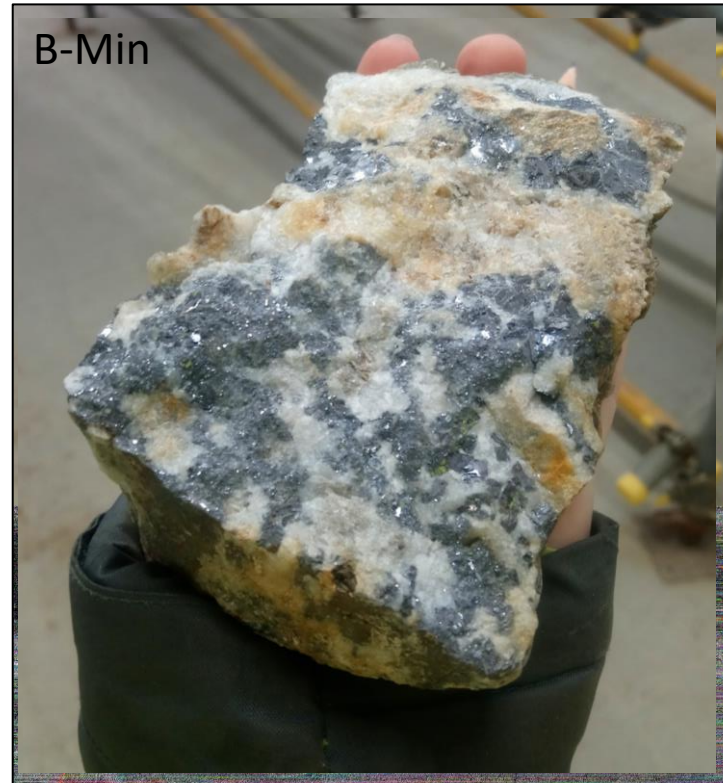
Table: Annual Ore Reserve Statement as at 30/06/2018

As at 25 May 2015 (JORC 2012 Code)			
Classification	Proven	Probable	Total
Tonnes ('000)	65	490	555
Au Grade (g/t)	11.5	11.1	11.1
Au Metal (k oz)	24	174	198
Ag Grade (g/t)	51.5	47.2	47.7
Ag Metal (k oz)	108	743	851
(Bara Consulting Limited Ore Reserve Statement dated May 2015)			

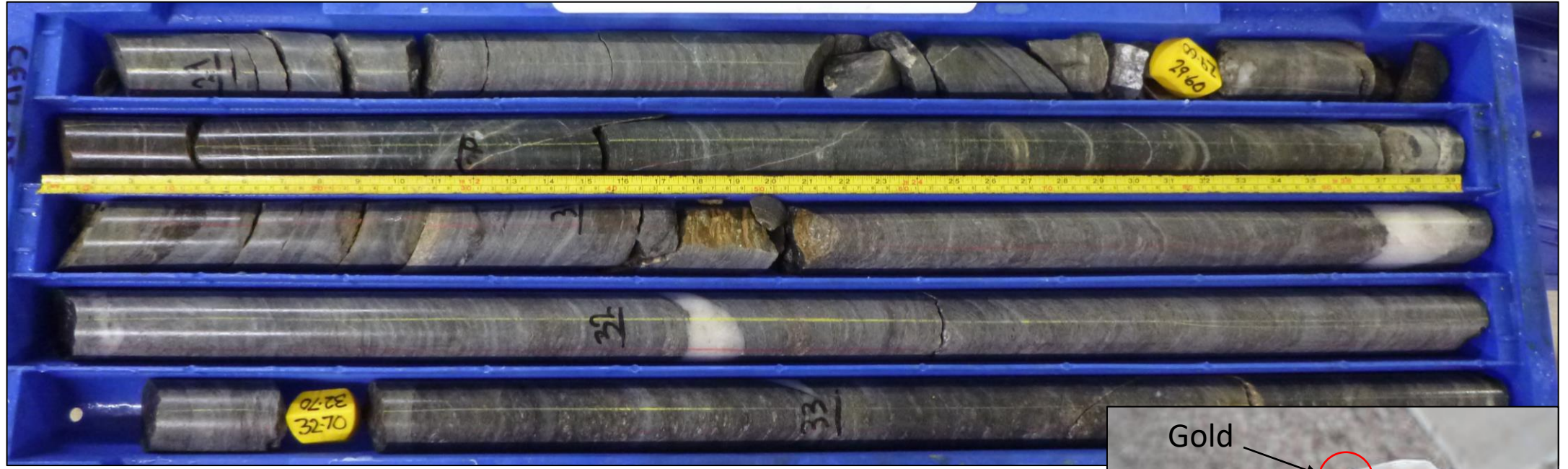


Deposit Mineralisation

- 'A-Min': Steeply dipping quartz vein which pinches and swells, hosting gold and silver mineralisation.
- 'B-Min': Quartz vein hosting Pb mineralisation.
- Minor mineralisation in nearby host rocks.
- Several faults, minor displacement of the vein.
- Cross Cutting quartz-diorite dyke.



Host rock- quartzites and schists

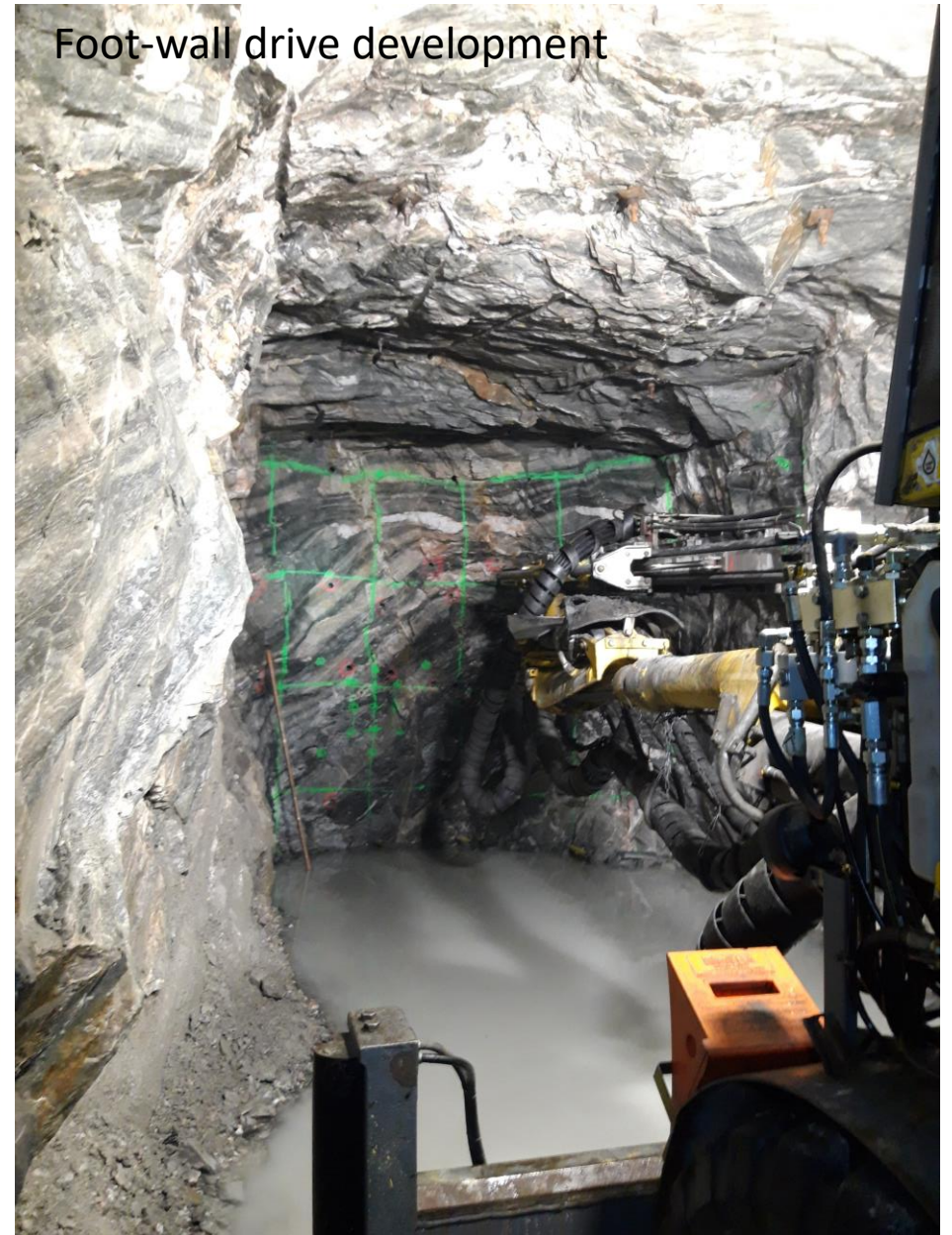
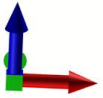
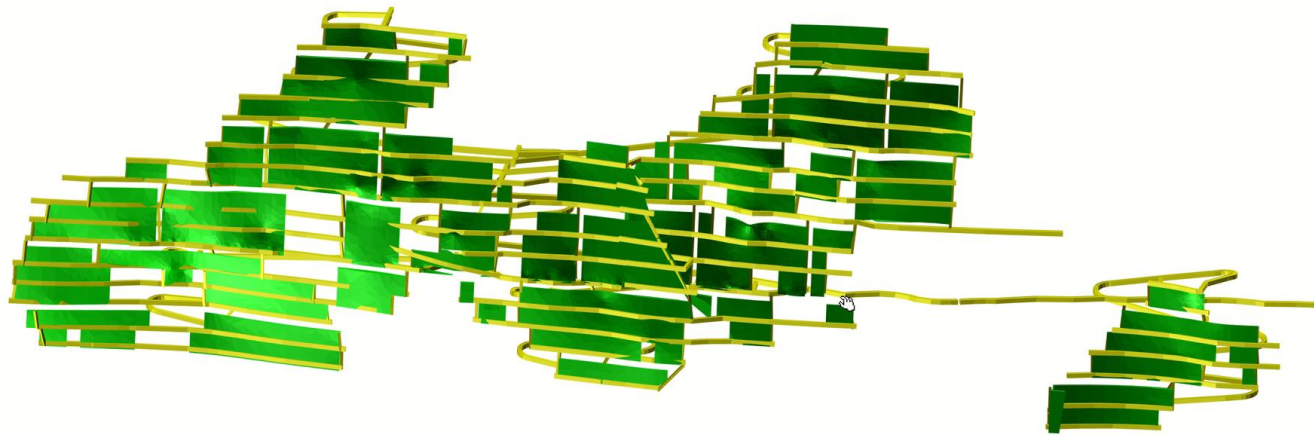


Mineralised quartz vein





Mining



Problems/Considerations



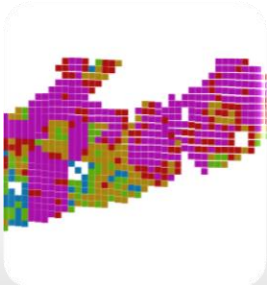
Grade

- Ore or waste?
- What grade Au and Ag?
- Other minerals present? – sulphide concentration is important for the processing plant to know.



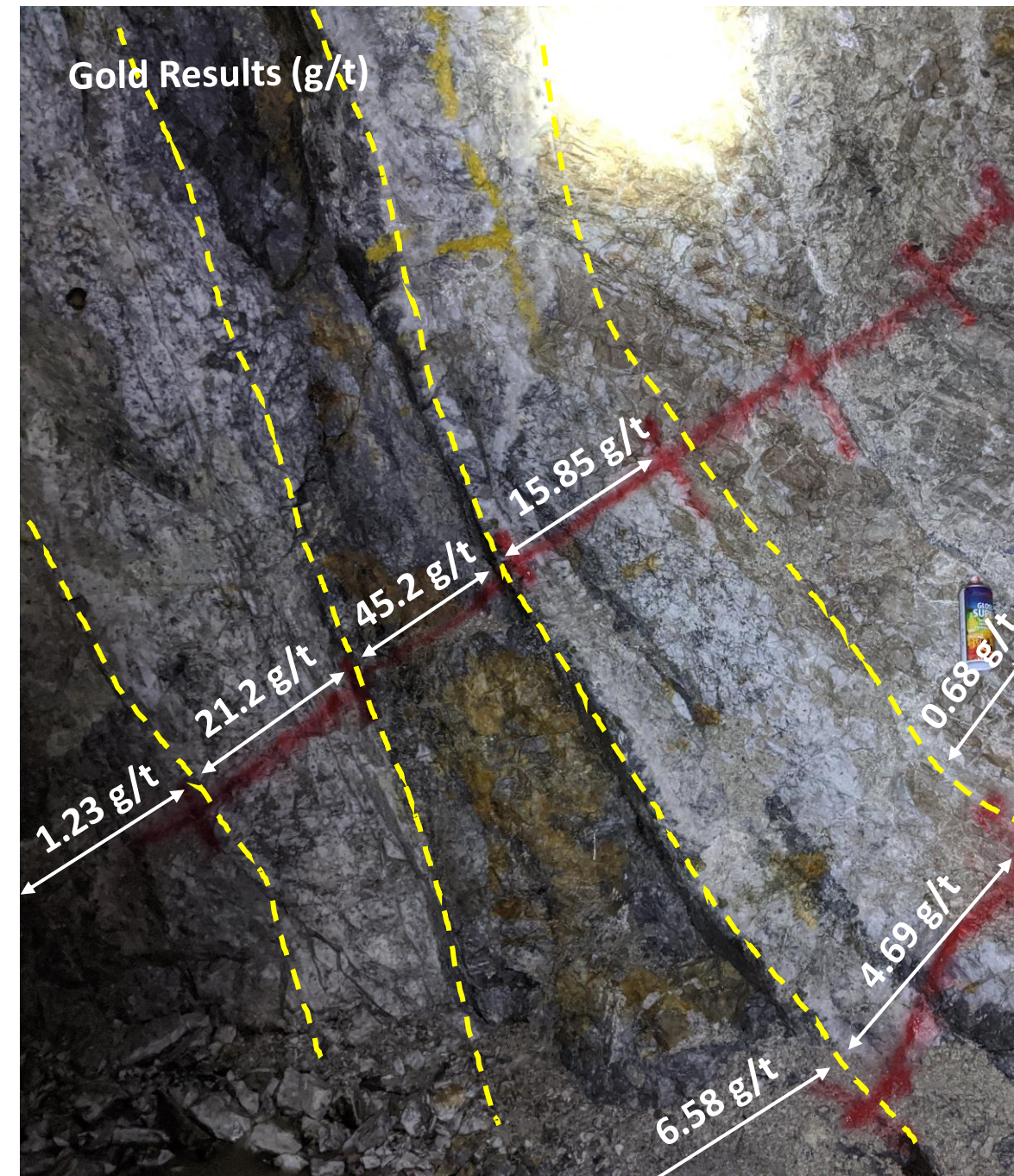
Structure

- Width of the vein.
- Faults displacing the vein.
- Changes to rock competency – geotechnical implications.
- Location of vein contact in the tunnel (implications for stoping).



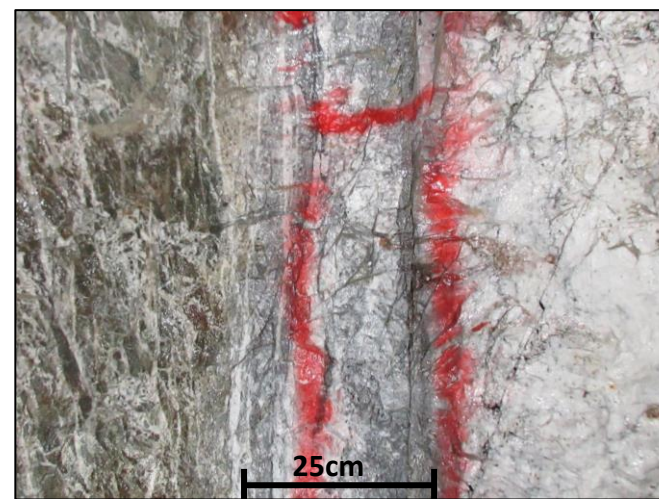
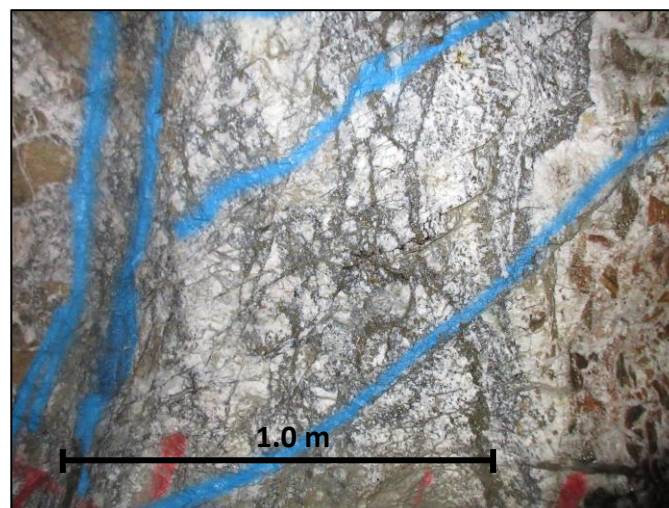
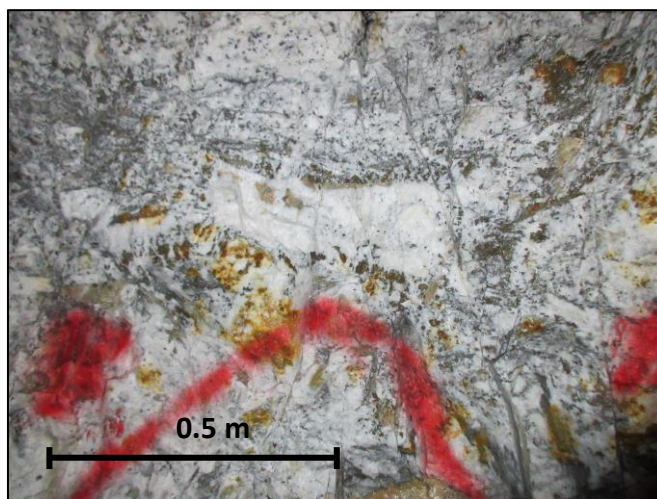
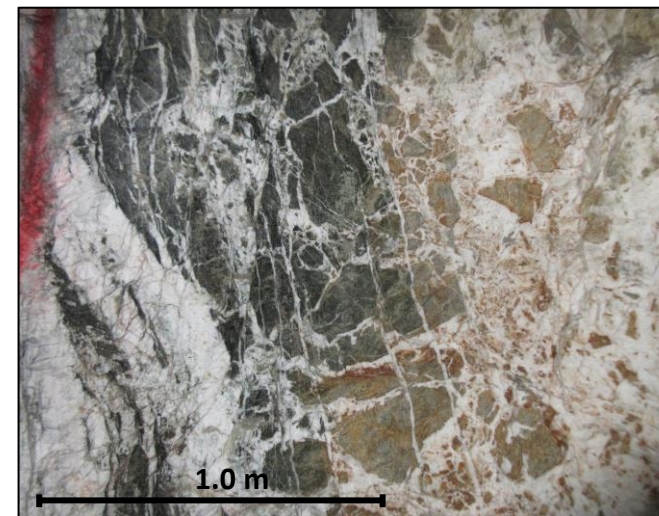
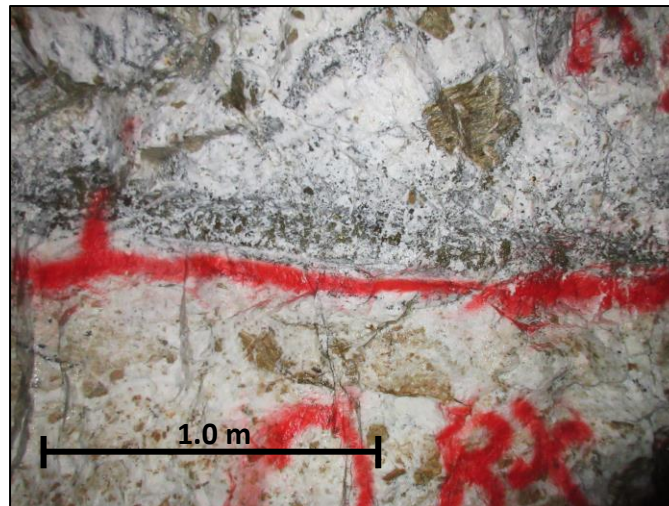
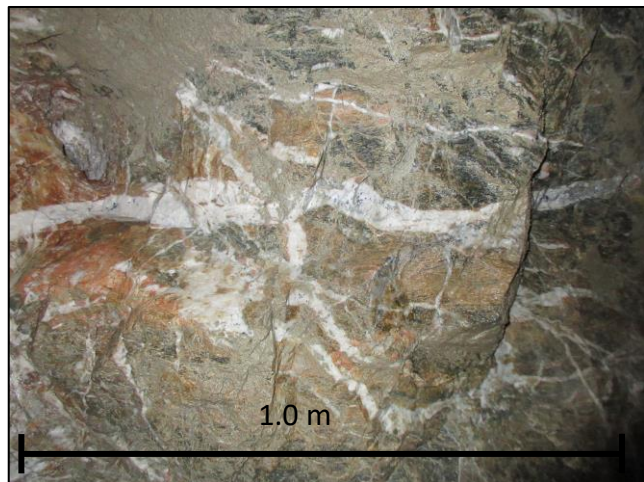
Confidence

- Ore boundary?
- How to deal with areas with less data?
- What can be done to improve confidence and reduce risk?



Variability in Textures

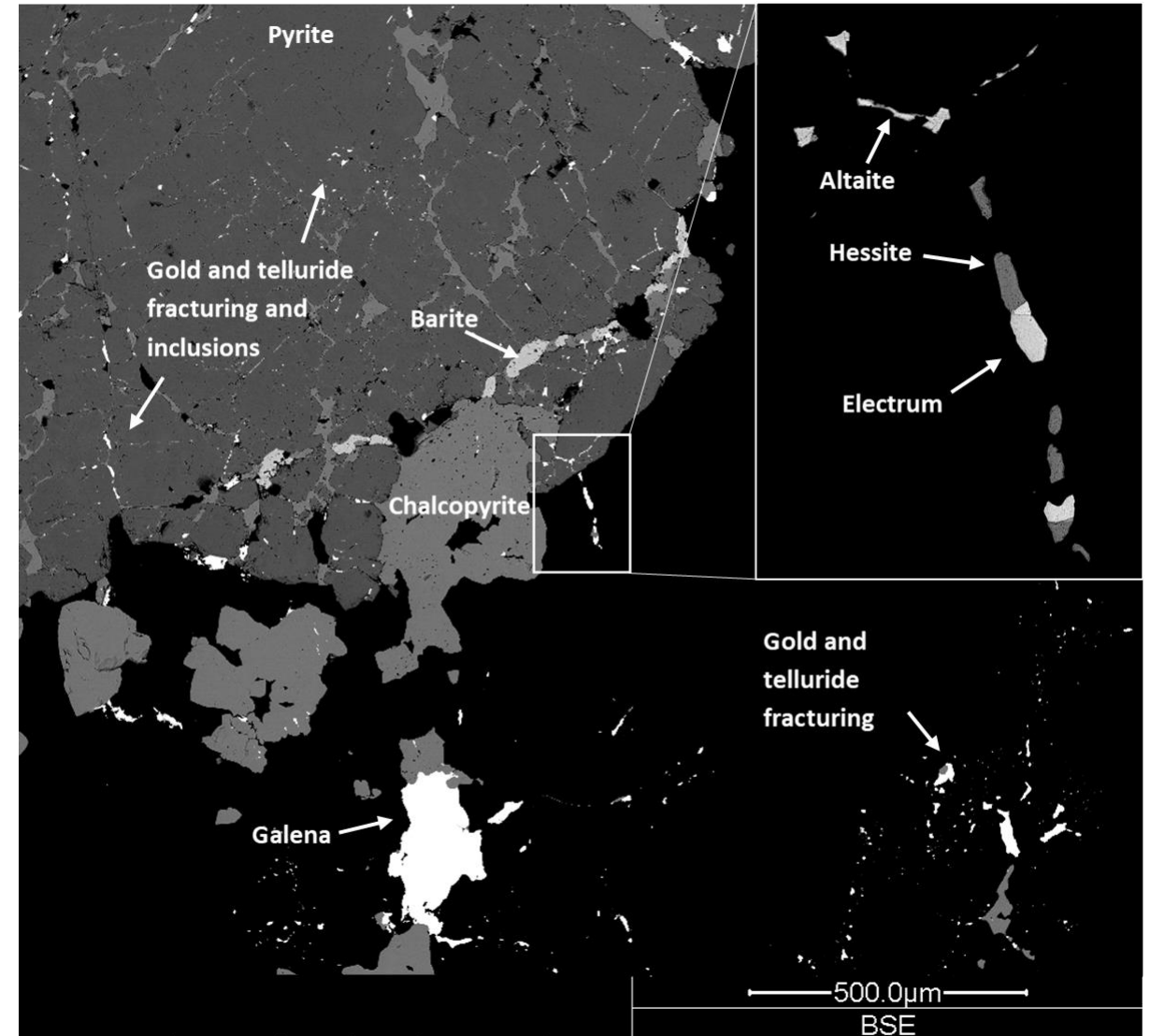
Images from C. Lyell's PhD work – does texture relate to grade?



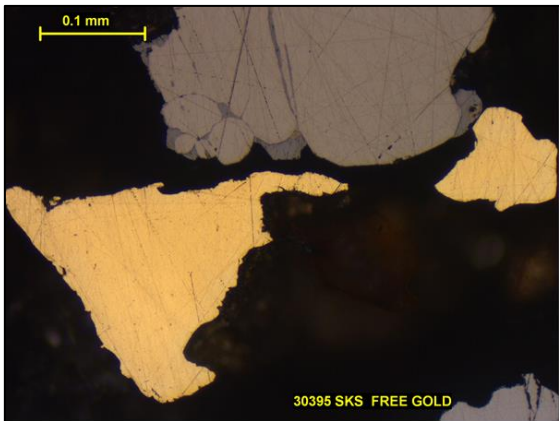
Variability in Textures

'The textural disposition of ore-minerals is strongly controlled by structural overprinting and associated remobilisation within the fault zone. Gold, primarily as electrum, occurs around pyrite nuclei in areas of brecciation, fracturing or as inclusion trails alongside a suite of telluride minerals, galena and chalcopyrite. Rutile and monazite are common accessory minerals and are typically hosted in K-altered wall rock breccia clasts.'

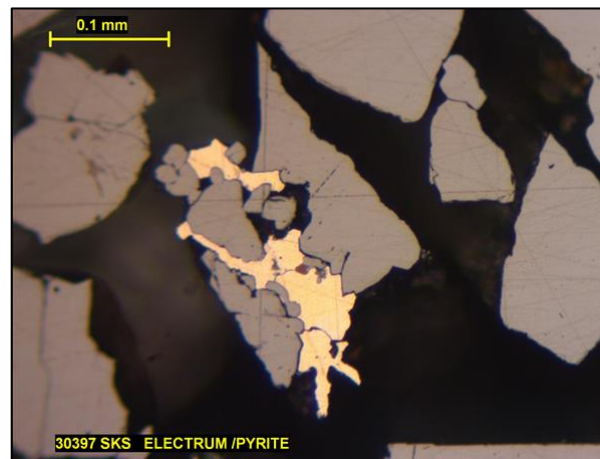
-Lyell et al. (in press)



Processing

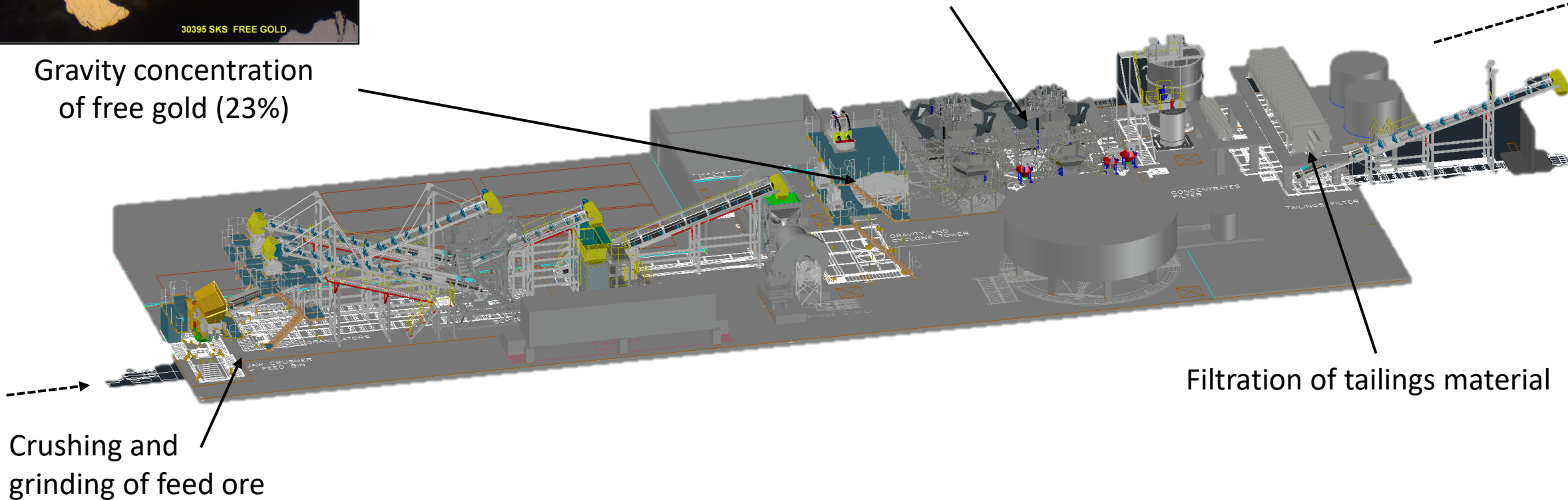


Gravity concentration
of free gold (23%)

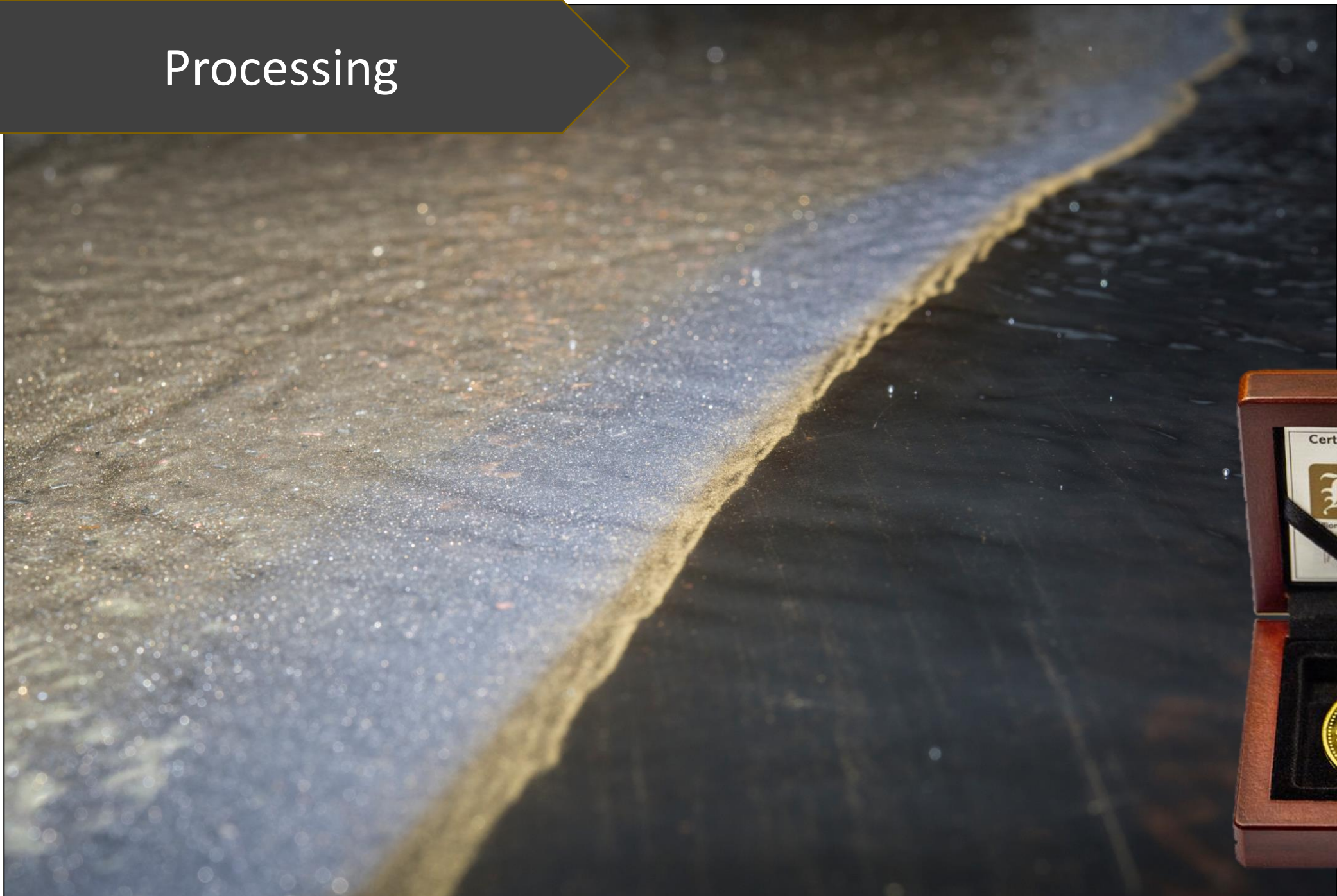


Froth floatation of gold
containing minerals (72%)

Dry placement of
tailings to simulate
natural features



Processing



Community

- Local recruitment
 - Providing training and experience.
- Support of local businesses
 - Scottish jewellery
 - Local shops and services
- Strathfillan community development
 - Development funds
 - Regular community meetings
- Scientific engagement
 - ION4RAW programme
 - PhD and Masters projects



Land Restoration

- Environmental management
 - Grazing management
 - Remedial works to community paths and tracks
 - Way-markers and signs for recreational visitors (walkers, climbers)
- Environmental Enhancement
 - Native woodland planting
 - Peatland enhancement



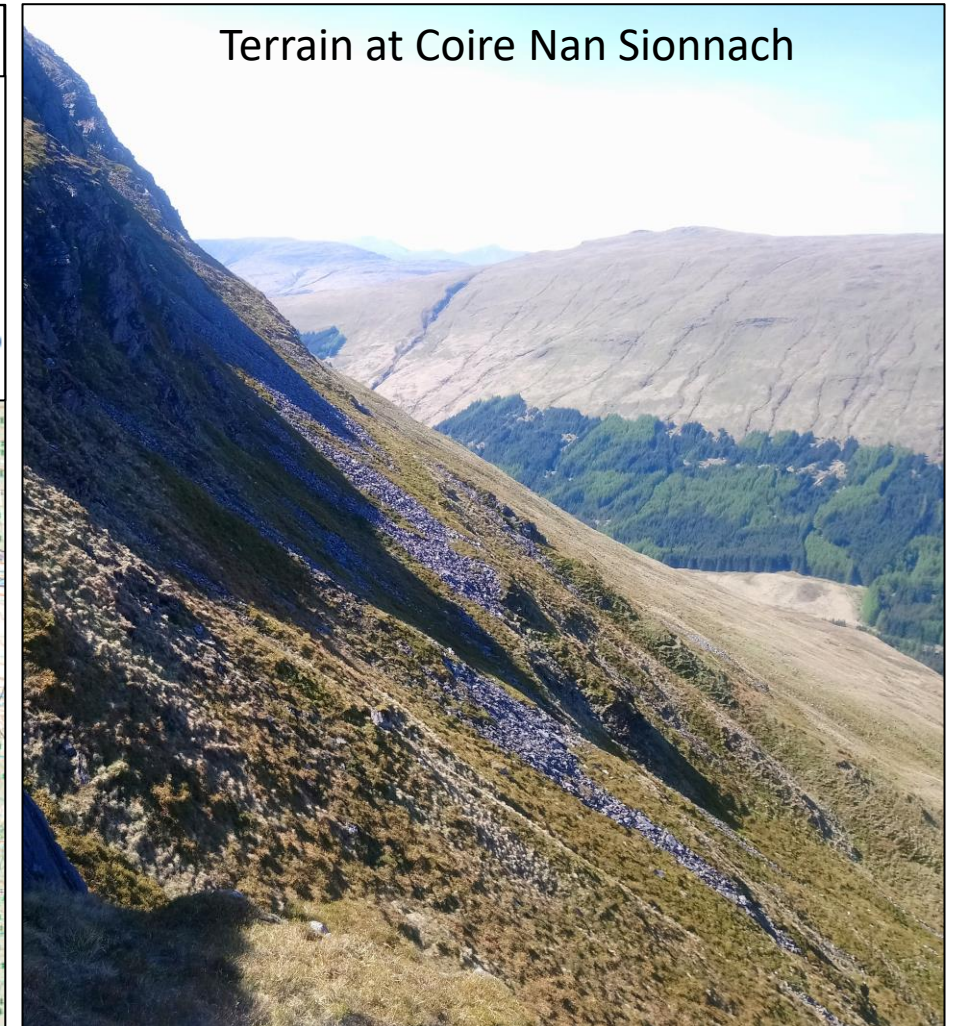
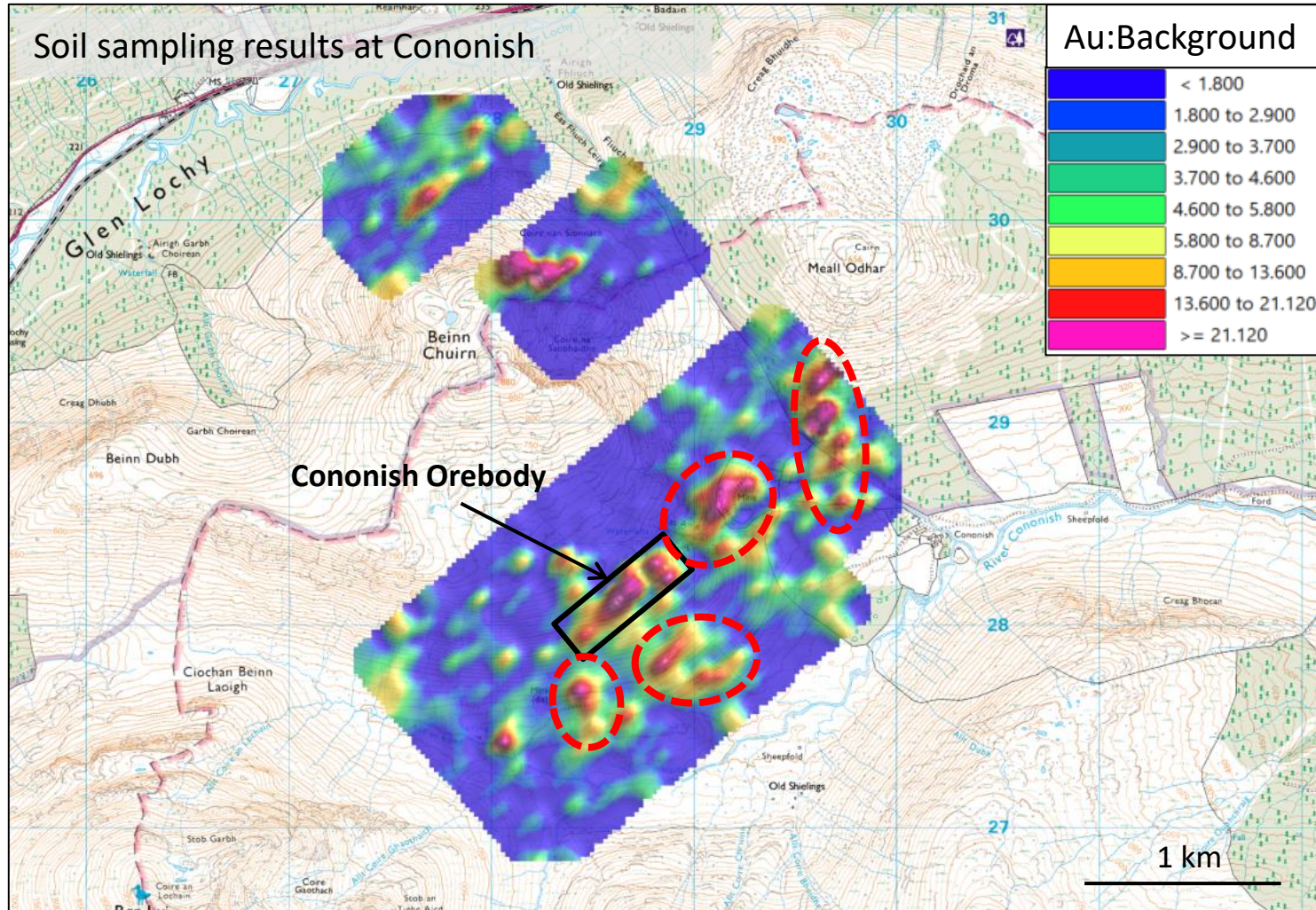
Exploration

What's next?



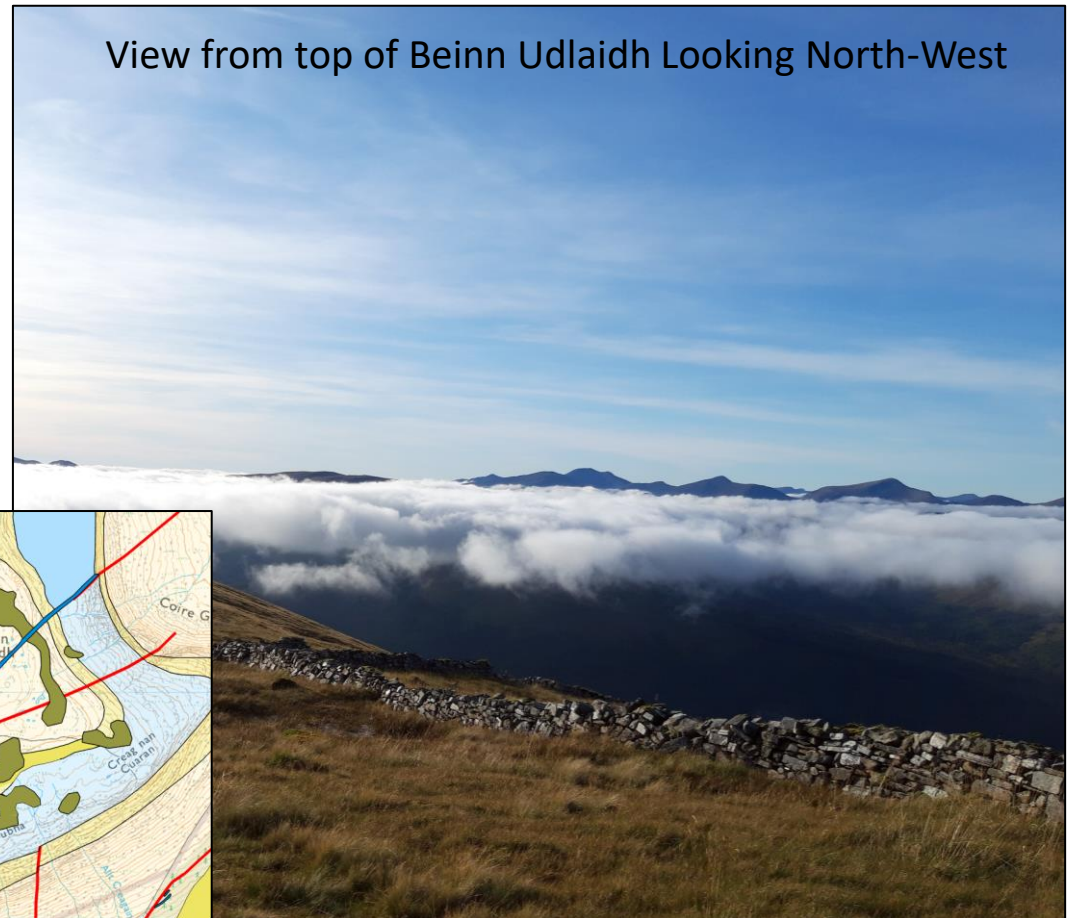
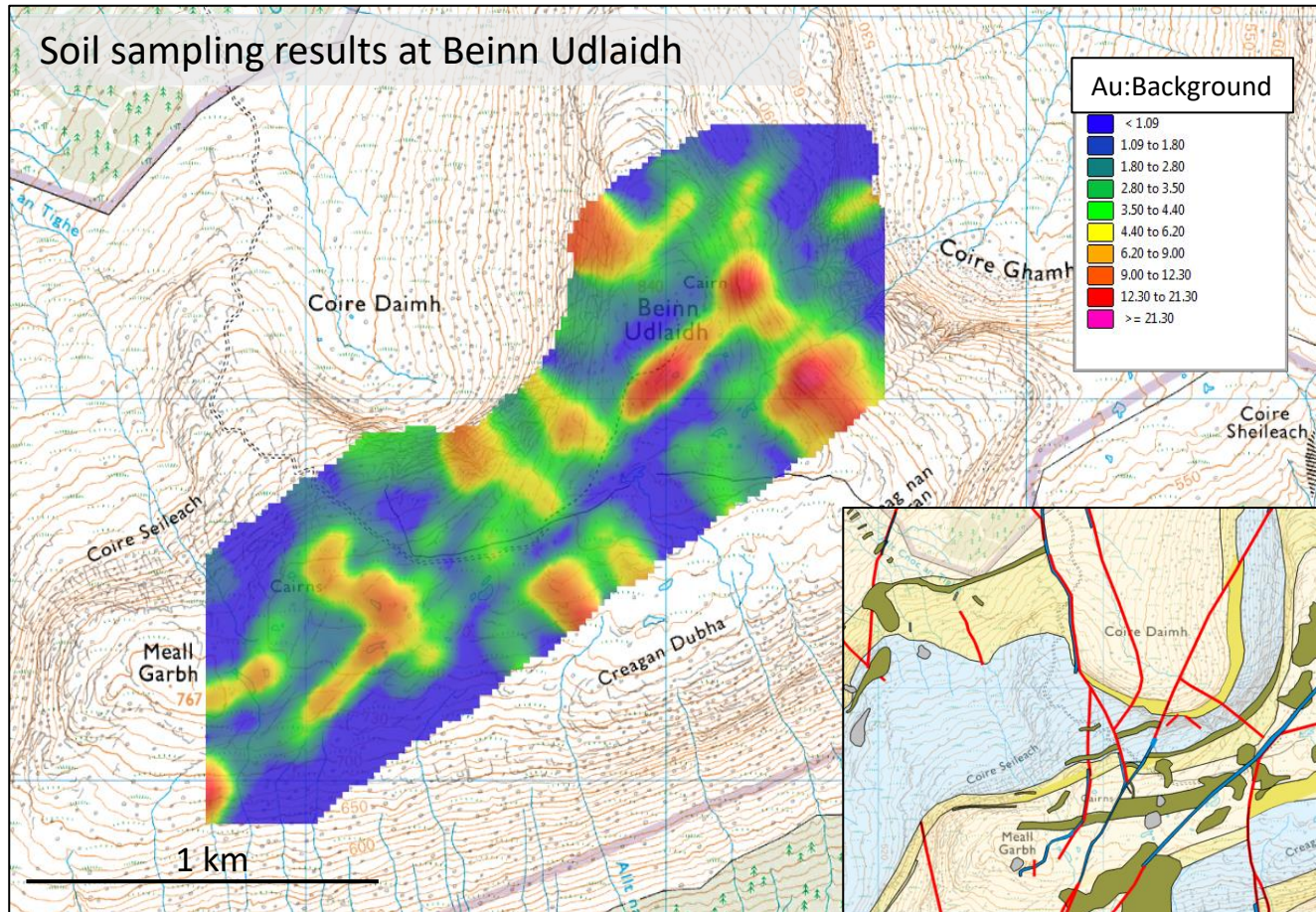
Near Mine Exploration

Cononish remains open at depth, and significant un-drilled anomalies lie to the south and west



Beinn Udlaidh Prospect

Using new soil sampling data in conjunction with historic geophysical and drill-hole data to develop the geological model and new drill targets.



A scenic landscape photograph of a mountain valley. In the foreground, a stream flows over dark, layered rocks, creating a small waterfall. A large, gnarled tree with dense green foliage stands on the left bank of the stream. The middle ground is filled with dry, brownish-yellow grass and shrubs. In the background, there are rolling hills and mountains under a cloudy sky. One mountain peak in the distance has patches of snow. The overall mood is serene and natural.

Thanks for listening!