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**BANKABLE FEASIBILITY STUDY**  
**SCOTGOLD**  
**CONONISH PROJECT**

**Report Prepared For:**

Scotgold

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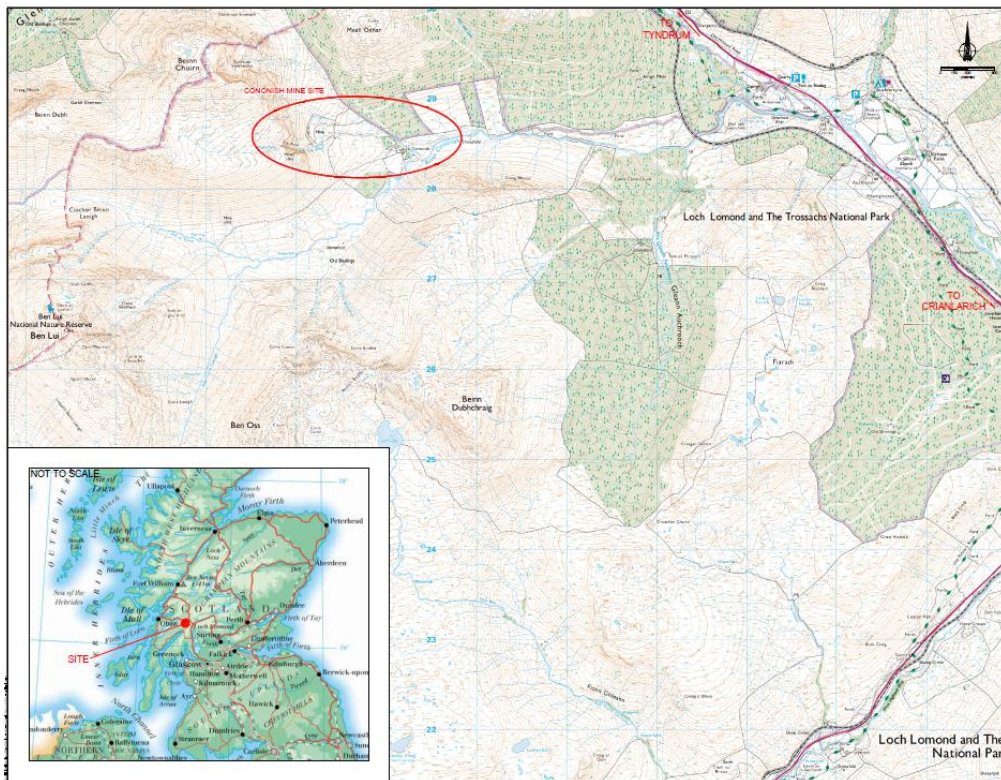
## EXECUTIVE SUMMARY

### Overview

The Cononish gold and silver project is located in the Grampian Highlands of mid-western Scotland and forms the core economic basis of Scotgold’s Grampian Project. The deposit is located on the Cononish farm, near Tyndrum, within the north-western extremity of the Loch Lomond and Trossachs National Park, about 90 km north-west of Glasgow.

Scotgold has access to the Cononish mine under the terms of a lease from the Crown Estate Commissioners. This lease gives Scotgold the right to mine the Cononish project for ten years from “Planning Completion”, as defined within the lease. In exchange, Scotgold will pay to the Crown, a rent; which is in part made up of fixed (certain) rent, and in part a royalty rent totalling 4% of “net realisable” revenue as defined in the lease (excluding transport, smelting and refining charges).

The location of the mine site is shown relative to the town of Tyndrum below (after AMC).



The primary source of information on which this Bankable Feasibility Study (BFS) is based is the “Development Plan” published in April 2013 by AMC. The AMC Development Plan is hereto referred to as the AMC Report for brevity. This AMC Report was a complete repository of all technical work

done up to that date and, as such, is very comprehensive. Wherever possible and appropriate, this BFS report refers to the AMC Report to avoid any duplication and sections of the AMC Report may be repeated in this FS report for consistency and ease of reference. The following additional work has been done to enhance the past work and to address the issues raised as a result of a gap analysis against Bankable Feasibility Study standards undertaken by Bara in March 2015:

- ✓ Updated geological model and resource statement using more advanced geostatistics (CSA).
- ✓ Upgrading the geotechnical investigation from concept level to “bankable” level (Bara).
- ✓ A new mine design and plan based on the updated geological model and more optimised mine access design. This includes more detailed analysis on likely dilution (Bara).
- ✓ Enhanced work on the underground infrastructure engineering (Bara).
- ✓ Update on cost estimates and the financial model (Scotgold/Bara).
- ✓ Production of a project implementation plan (Scotgold/Bara).
- ✓ A project risk and opportunity assessment (Scotgold/Bara).

The gap analysis indicated that, for the majority of the metallurgy and processing, as well as the environmental, social and permitting sections, an appropriate level of work had been performed.

In summary, the key attributes of the project are:

- ✓ Mineralization occurs in a narrow (average width of about 2 m) near vertical quartz vein.
- ✓ The project has a resource (published in January 2015) of 541,000 tonnes at an Au grade of 14.3 g/t and a silver grade of 59.7 g/t. The average Bulk Density is 2.72 t/m<sup>3</sup>.
- ✓ After taking into account various modifying factors, the ore reserves (published in May 2015) are 555,000 tonnes at an Au grade of 11.1 g/t and a silver grade of 47.7 g/t .
- ✓ Access will be from the existing exploration adit and footwall ramps will provide access to ore drives at a 15 m vertical interval. A rock pass system has been included to improve ore handling and the transfer of waste.
- ✓ The mining method will be a retreat top down Long Hole Open Stoping (LHOS) method using conventional trackless equipment. Shrinkage stoping was investigated but was only economically viable in the very narrowest (<1.4 m) areas of the mine and was therefore not considered further.
- ✓ Full production will be at 6,000 tonnes per month. The life of mine at full production is approximately 8 years. The mining production schedule adequately takes into account the constraints mentioned below.
- ✓ Mining permission has been granted but with some conditions. One of the more important of these conditions is that the full capacity of the TMF is restricted to 400,000 tonnes. This means that about 129,000 tonnes of tailings (after taking into account the mass pull) will need to be stored in old stopes towards the end of the mines life.
- ✓ Waste is only allowed to be trucked to surface when required for the building of the TMF and various screening berms (73,000 tonnes). All other waste must be stored in old stopes (163,000 tonnes).
- ✓ Based on extensive testwork by Lakefield, Gekko and AMMTEC, the plant is designed as a conventional gravity and flotation plant. 25% of the gold is estimated to be recovered on site into a doré bar with the balance being produced as concentrate to be treated off site. Overall

estimated recovery is 93% for gold and 90% for silver. The doré and concentrate will be sold “at the gate” to third party processors.

- ✓ The process equipment will be housed in a single multi-use building which will also contain a workshop and office. This is designed to have minimal visual and noise impact on the surrounding area.
- ✓ The following costs have been estimated at an accuracy of between - 5% and +15%:
  - Total capital: £24 million.
  - Maximum funding requirement: £18.5 million.
  - Average operating cost: £110.09 per tonne treated.
- ✓ The following financial results were estimated using a gold price of US\$ 1,100/oz and a silver price of US\$ 15/oz:
  - Pre-Tax NPV@10% - £22.9 million
  - Pre-Tax IRR - 45%
  - Post-Tax NPV@10%\* - £18.5 million
  - Post-Tax IRR\* - 41%
  - Average profit margin - 53%
  - Payback - 19 months
  - Average all in cost - US\$ 729/oz

\* Post tax returns are calculated on an all equity funding basis.
- ✓ There are a number of opportunities to improve return and/or reduce risk:
  - Smelt and refine bullion within Scotland to obtain a “made in Scotland” premium on the price received.
  - It may be possible to reduce peak funding requirements by looking at renting and/or leasing options for equipment.
  - Some costs could be reduced by the use of a competitive tendering process. This is especially true for the multi-use building and the TMF.
- ✓ The highest risk is the project implementation and specifically potential cost overruns and/ or delays to the earthworks schedule as a result of inclement weather and contractor performance.

## Geology and Resources

Scotgold’s 100% owned Cononish Gold Project (“Cononish”) is located in the Grampian Highlands of mid-western Scotland, about 90 km northwest of Glasgow. Cononish is an early Palaeozoic narrow vein quartz vein system, emplaced into a suite of metamorphosed Proterozoic sediments. Mineralisation is associated with a narrow, ~2 m, near vertical quartz-carbonate vein, that strikes NE-SW. Gold occurs as electrum and silver as telluride with minor native gold and silver. The gold electrum is fine grained generally less than 100 microns in size. Visible gold up to 2,000 microns is rare. Both gold and silver are spatially associated with sulphides in quartz.

Excavation during 1990 and 1991 of a 1.2 km adit through the centre of the mineralisation (~400 elevation) along the strike of the vein, followed up by 2 m spaced channel sampling, demonstrated that the historical surface diamond core drilling is representative of both the in-situ vein width and gold and silver grades. Additional underground diamond core drilling and sampling in raise development from the adit support the geometry and grade tenor of the vein.

Samples used in the MRE are presented in the table below and consisted of: chip-channel data sampled in an exploration adit driven along the vein (“AD”); diamond drilling undertaken from both surface and underground (“DD”); chip data sampled from surface outcrops (“OC”); chip-channel samples taken from two raises driven along the vein from the adit (“RS”); and chip-channel data taken from surface trenches (“TR”).

Average sample lengths based on sample type varied from 0.2 m to 1.1 m, with dominant lengths of both 0.5 m (29% of the dataset), and 1 m (26% of the dataset) present. The sampling approach was to honour geological boundaries, rather than specified lengths. Holes and channels were selectively sampled based on proximity of the auriferous quartz vein with approximately 1 m of waste sampled either side of the vein. All samples were composited to 1 m down hole to ensure equal sample weight for grade estimation. Residual samples less than 0.5 m in length were not used in the grade estimate.

#### DRILLING AND SAMPLE DATA USED IN THE MRE

Sample Type	Drillholes or Sample Count	Metres drilled or sampled	Samples Assayed	Metres Sampled	Average Sample Interval
AD	236	634.40	900	604.29	0.67
DD	228	24,744.20	3,033	2,093.00	0.69
OC	69	29.62	74	15.10	0.20
RS	31	81.70	73	61.00	0.59
TR	122	2,323.93	833	921.00	1.10
<b>Total</b>	<b>686</b>	<b>27,813.85</b>	<b>4,913</b>	<b>3,694.39</b>	-

3D wireframes representing the auriferous vein, barren dykes, intrusive and fault zones were modelled. Wireframes for the auriferous vein were produced using implicit modelling based on logged mineralisation sample intercepts. Geological domain boundaries were interpreted and used to limit the extent of the mineralised vein model. The minor faults interpreted from the mapping data indicate minimal offset (sub m to 2 m) and were not used in implicit modelling of the mineralisation. The Eas Anie fault, intersected at 11,400 mE, does offset the Cononish vein by approximately 10 m so the vein model has been offset accordingly. The fault is interpreted as post mineralisation, with no impact on grade either side of the displacement.

Statistical analysis was completed. Cutting of high grade outliers was required to avoid local high grade bias. Modelled variograms show a moderate nugget effect (35% of population variance), which supports the fine grained disseminated distribution of gold within a sulphide matrix which parallels the vein orientation. Ranges of continuity were in the region of 60 to 80 m in the plane of the vein.

A seam filled auriferous vein volume block model was created. Block dimensions were 15 m x seam thickness x 15 m (X x Y x Z). Seam filling creates a single cell in the direction of filling that honours the auriferous vein wireframe thickness.

The block model was regularised for grade estimation to 15 m x 5 m x 15 m with proportional fields representing Mineralisation, Barren zones and Vein volume.

Gold and silver grades were estimated with Isatis software using Uniform Conditioning (“UC”) grade estimation as the final estimation method. The panel size for UC grade estimation was 45 m x 5 m x 45 m (X x Y x Z). A selective mining unit (“SMU”) of 15 m x vein thickness x 15 m (X x Y x Z) is required for detailed mine planning. In order to estimate the expected grade and tonnage distribution at the SMU dimensions and at a gold cut-off grade of 3.5 g/t, the UC results were localised from the 45 m panels to 15 m SMU dimensions using the Isatis software local uniform conditioning (“LUC”) algorithm.

A tonnage factor was applied based on the in-situ dry bulk density measured from diamond core samples. Bulk density checks were completed by Scotgold in 2014 which verified the results of the previous work. A bulk density of 2.72 t/m<sup>3</sup> was used for mineralised vein material.

Validation of the model and grade estimate included grade estimation using alternative methods, reviewing input and output mean grades globally, on trend plots and visually in 2D sections.

The MRE is reported at a gold cut-off grade of 3.5 g/t, which is the anticipated break-even gold grade for this style of deposit, mining method and gold recovery process based on previous scoping and other studies. The MRE has been diluted to a minimum mining width of 1.2 m (pre any mining dilution).

The MRE has been classified as Measured, Indicated and Inferred following the guidelines described in the JORC Code (2012), and after consideration of: Adequate geological evidence and sampling data to support geological spatiality, mineralisation boundaries and grade continuity; Adequate verification of gold and silver grades to provide confidence in the estimated block grades; Adequate in-situ dry bulk density data available to estimate appropriate tonnage factors; and Adequate mining, metallurgy and processing knowledge to imply potential prospects for economic gold and silver recovery.

Depletion of the MRE using a wireframe that depicts the adit excavation compares favourably with the estimated mined tonnage and grade currently stockpiled. This stockpiled material has not been processed so detailed reconciliation has not yet been completed.

The updated MRE for the Cononish Project as at 12<sup>th</sup> January 2015 is presented below. The MRE is reported as Measured, Indicated and Inferred.

**MINERAL RESOURCE ESTIMATE, REPORTED AT A 3.5 G/T AU CUT-OFF**

Classification	K Tonnes	Grade Au g/t	Metal Au Koz	Grade Ag g/t	Metal Ag Koz	In-situ Dry BD t/m <sup>3</sup>
Measured	60	15.0	29	71.5	139	2.72
Indicated - In-situ	474	14.3	217	58.7	895	2.72
Indicated - Mined Stockpile	7	7.9	2	39.0	9	2.72
<b>Sub-total M&amp;I</b>	<b>541</b>	<b>14.3</b>	<b>248</b>	<b>59.9</b>	<b>1,043</b>	<b>2.72</b>
Inferred	75	7.4	18	21.9	53	2.72
<b>Total MRE</b>	<b>610</b>	<b>13.5</b>	<b>264</b>	<b>55.4</b>	<b>1,087</b>	<b>2.72</b>
<i>Reported from 3D block model with grades estimated by Ordinary Kriging with 15 m x 15 m SMU Local Uniform Conditioning adjustment. Minimum vein width is 1.2 m. Totals may not appear to add up due to appropriate rounding.</i>						

***Recommendations***

CSA recommend that Scotgold introduce an appropriate database management system, such as DataShed or Acquire, and transfer all existing information currently held in spreadsheets and hardcopy logs into a central secure database.

CSA recommend undertaking additional bulk density analysis in order to increase spatial and lithological cover across the full deposit.

CSA recommend appropriate production drilling methods during drive and stope development in order to more accurately model the vein 3D position in areas of Indicated and Inferred resource.

***Risks***

Historical drilling was completed using a number of downhole survey control methods, which do not provide the 3D accuracy available with current technology. In areas where historical drilling is dominant, vein position may be compromised.

There is drillhole data that pass through the vein wireframe which has not been used in the MRE, due to uncertainty regarding the intercepts. Recent analysis of these intercepts post completion of the MRE has determined that in a limited number of cases the data should have been included in the estimate. However; the review shows that their omission does not have a material impact on the MRE.

**Geotechnical**

Bara Consulting Limited was commissioned by ScotGold Resources Limited to carry out a geotechnical investigation for the Cononish Project, in order to support the mine development to an operational level of accuracy. Geotechnical data was gathered from geotechnical logging of core, rock testing on selected samples of core, and scanline mapping of underground exposures.

### Summary of stope sizing

The design criteria for mine design are summarised in the table below.

Reference	Category	Design aspect	Sub-category	Units	UNSUPPORTED STOPE
					Based on weakest rock intersections
3a	STOPE SIZING	Maximum vertical height between sill pillars	2m width orebody	m	97.00
3b			4m width orebody	m	85.00
3c			6m width orebody	m	75.00
3g		Maximum strike span between rib pillars	2m width orebody	m	160.00
3h			4m width orebody	m	80.00
3i			6m width orebody	m	60.00
3m		Minimum rib pillar widths	2m width orebody	m	4.00
3n			4m width orebody	m	4.00
3o			6m width orebody	m	6.50
3s		Minimum sill pillar widths	2m width orebody	m	3.00
3t			4m width orebody	m	3.00
3u			6m width orebody	m	4.00
4a		Extraction ratios	Extraction ratios	2m width orebody	%
4b	4m width orebody			%	91.99
4c	6m width orebody			%	85.66

### Summary of support measures

For design purposes, the weakest rock types are used to derive the support pressure, spacing and lengths since in particular the ramps and footwall drives will traverse a series of different rock types. The dimensions of development ends is shown in the following table.



<b>SCOTGOLD DEVELOPMENT END DIMENSIONS</b>				
<b>End Type</b>	<b>Development rock types</b>	<b>Width (m)</b>	<b>Height (m)</b>	<b>Tonnes/m</b>
Ramp	Pelite, Semi-pelite, psammite	3.30	3.40	30.50
Footwall Drive	psammite	3.30	3.40	30.50
Level Cross cut	psammite	3.30	3.40	30.50
Ore Drive	Vein	2.40	3.40	22.20
Ore pass	Vein	2.50	2.50	17.00
Slot Raise	Vein	2.00	2.00	10.90

Suggested support types, lengths and spacing is shown in the following table. Where the span of the excavation is less than the bolt spacing, only a single line of centrally located bolts are required. Cable bolts, shotcrete and/or wire mesh and lace are not viewed as mandatory and should be installed under the conditions stated in the body of this report.

<b>Excavation</b>	<b>Dimensions (w x h)</b>	<b>Support length [m]</b>	<b>Support spacing [m] - square pattern</b>	<b>Support types</b>
<b>Ramp</b>	3.3 x 3.4	1.6	2.2	Minimum 20 mm diameter full resin encapsulated bolt
<b>Footwall Drive</b>	3.3 x 3.4	1.6	2.2	Minimum 20 mm diameter full resin encapsulated bolt
<b>Level Cross cut</b>	3.3 x 3.4	1.4	2.2	Minimum 20 mm diameter full resin encapsulated bolt
<b>Ore Drive</b>	2.4 x 3.4	1.2	2.5	Minimum 38 mm diameter split sets
<b>Ore pass</b>	2.5 x 2.5	1.2	2.5	Minimum 38 mm diameter split sets
<b>Slot Raise</b>	2.0 x 2.0	1.2	2.5	Minimum 38 mm diameter split sets

The type of tendon to be used was selected on the basis of a trade-off study. The resin bolting and split set support system was deemed the most suitable tendon for the operation.

## **Mining, Ventilation and Infrastructure**

### **Mining Method Selection**

A mining method trade off study concluded that shrinkage stoping was the preferred method for vein widths less than 1.4 m, i.e. from 1.2 m to 1.4 m. For widths of over 2.0 m Long Hole Open Stopping (LHOS) was the preferred method and that in vein widths of between 1.4 m and 2.0 m there was no significant difference in the results of both mining methods. When this is considered in the context of the entire mine design the quantity of ore contained in vein widths of less than 1.4 m is 33%. The narrower widths are not confined to specific areas so it is not simple to design a development layout for a mining method per area of the mine. Consequently the decision was made to use LHOS for the entire mine. This decision was taken after consideration of the work done in estimating dilution from LHOS. It will be possible to establish shrinkage stope panels from the development footprint designed for LHOS if this is required once mining commences.

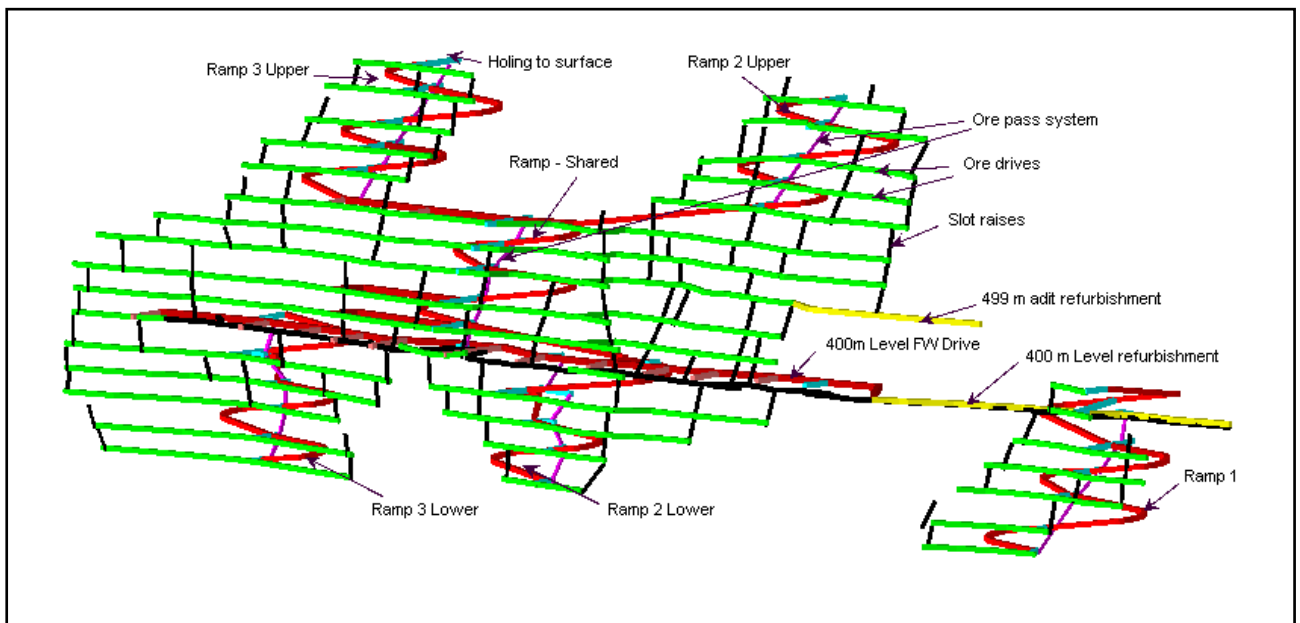
### **Access and level development**

Primary access to the mine will be from the existing adit on the 397 m elevation, referred to in this report as 400 m Level. LHOS requires access to the production levels in the mine for rubber tyred vehicles in the form of loaders (LHDs) and articulated dump trucks (ADTs). Ramps will be developed from the 400 m Level up and down to the upper and lower extents of mining. The majority of the ore under consideration for this mine plan lies above the 400 m elevation. However the indicated resources extend down to the 315 m elevation so ramps will be developed to access this ore below the adit level. The current 400 m level drive is approximately 2.5 m wide by 2.5 m high. This will be stripped to a final size of 3.3 m wide x 3.4 m high. The drive size is determined by the equipment which be utilised in the mine as well as the ventilation requirements. The adit level forms the main intake ventilation excavation. The adit on 449 m elevation, referred to 450 Level, will also be stripped out to accommodate the main fans. It will be used as the main exhaust ventilation excavation and as an emergency egress from the mine.

The access ramps, both up and down from the 400 m Level will be developed at an inclination of  $8^{\circ}$ , or 1 in 7. This is best practice in trackless, mechanised mines the world over and has been proved economically optimum after many years of operation. The level spacing has been set at 15 m vertically. Earlier work in the AMC Report considered level spacing of 14.0 m and 17.5 m with most of the mine designed on 17.5 m. In order to minimise dilution and ore loss the level spacing was set at 15.0 m. This results in a vertical stope height of 11.6 m. Where a sill pillar is required between stopes the spacing is adjusted by the sill pillar thickness of 5.0 m to 20 m footwall to footwall distance. In order to access the ore above 400 m Level a single ramp will be developed between 400 m Level and 480 m Level. In this area the payable ore is fairly continuous. Above 480 m elevation the payable ore is separated by an unpay zone. In order to minimise unpay level development separate ramps are developed above 480 m elevation, one servicing the Eastern and one the Western pay zones. Below 400 m Level the pay ore is situated in three separate zones and consequently requires the development of three separate ramps.

A footwall drive will be developed on the 400 m Level so that the mining of the ore blocks immediately above the 400 m Level can be completed early in the life of the mine. This footwall drive serves as the main access to the mine as it is the base from which the access ramps are developed. This level needs to be maintained as permanent access for the life of the mine.

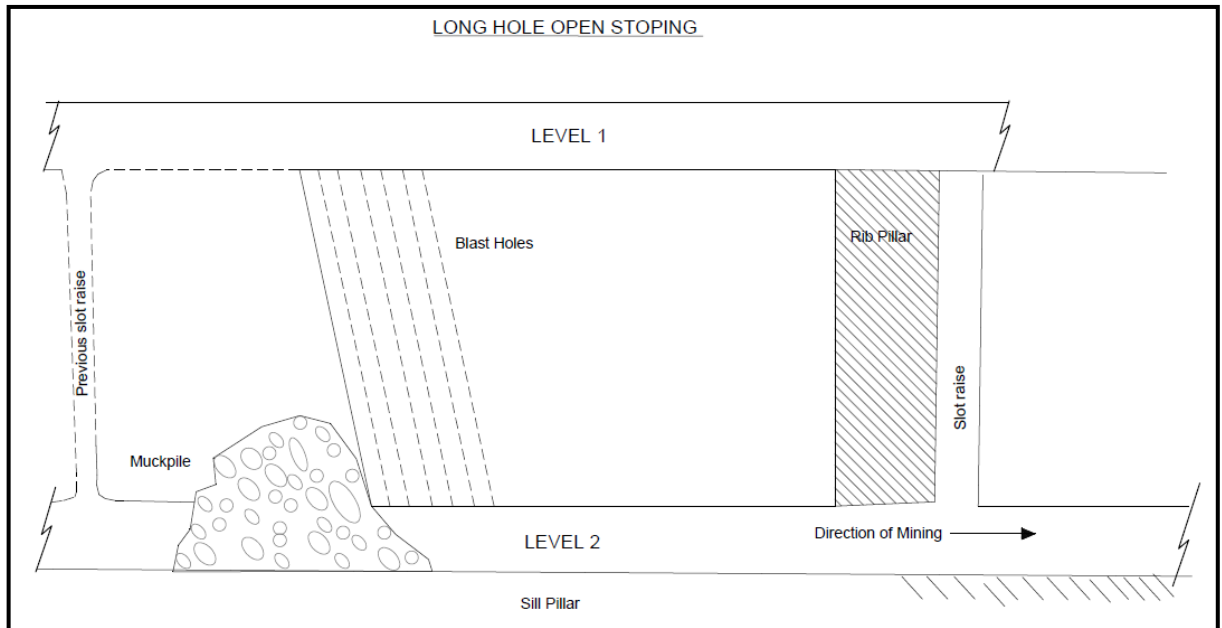
Ore passes will be developed from the levels above 400 m elevation enabling ore and or waste to be tipped by the loaders on the level into the ore passes, where it will report to the 400 m Level to be loaded into trucks. The figure below shows an isometric view of the mine development.



### Mining Method Description

In the long hole open stope method access onto a level, from the ramp, will be via an access cross cut. From the access cross cut ore drives will be developed to the extent of the mining block. The mining block will be split into stopes of a maximum span of 80 m long. This is based on the geotechnical design criteria which allows for a maximum of 80 m strike span and a vertical span of 45 m. Stopes will be separated by a rib pillar of 4 m width, where the payable zone extends beyond the strike length of 80 m.

The figure below shows a schematic of the proposed mining method.



Blasted ore and waste will be loaded in the face by loader (LHD). The loader will move the rock to either an orepass tipping point, a re-muck bay or tip it directly into a truck. On the 400 m Level and all lower levels of the mine the LHD will tip into a truck if one is available. If no truck is available the LHD will tip into a re-muck and re-handle the material into a truck when one is available. The trucks will move ore to the RoM pad on surface and waste to either the waste dump area on surface or into a stope void, when sufficient stope voids are available for waste tipping.

Above the 400 m Level the rock handling system will make use of rock passes. Above the current stoping levels the rock pass system will be used for waste handling in order to bring waste down to the current stoping horizon where it can be placed into an old stope. Below the stoping horizon the rock pass system will be used for ore, delivering ore to 400 m Level, where it will be trucked to the RoM pad at surface.

The mining equipment fleet has been selected with the orebody dimensions and geometry in mind. In order to minimise dilution, small mining equipment will be utilised. Narrow vein mining equipment is available from a number of suppliers who were contacted regarding equipment prices and specifications. The table below shows a summary of the selected equipment.

<b>SUMMARY OF SELECTED MINING EQUIPMENT</b>			
<b>Equipment type</b>	<b>Model</b>	<b>Capacity</b>	<b>Quantity</b>
Development jumbo	Atlas Copco T1D	180m /month (multiple heading) 80 m/month (single end)	1
Production drill	Atlas Copco T1D	10 m/hour	1
Loader	Paus PFL-10	21 t/hour	2
Truck	Dux DTS-12	20 t.km/hour	2

### **Mine Schedule**

In the AMC Report work was done on establishing the production rate for the mine using two empirical methods namely:

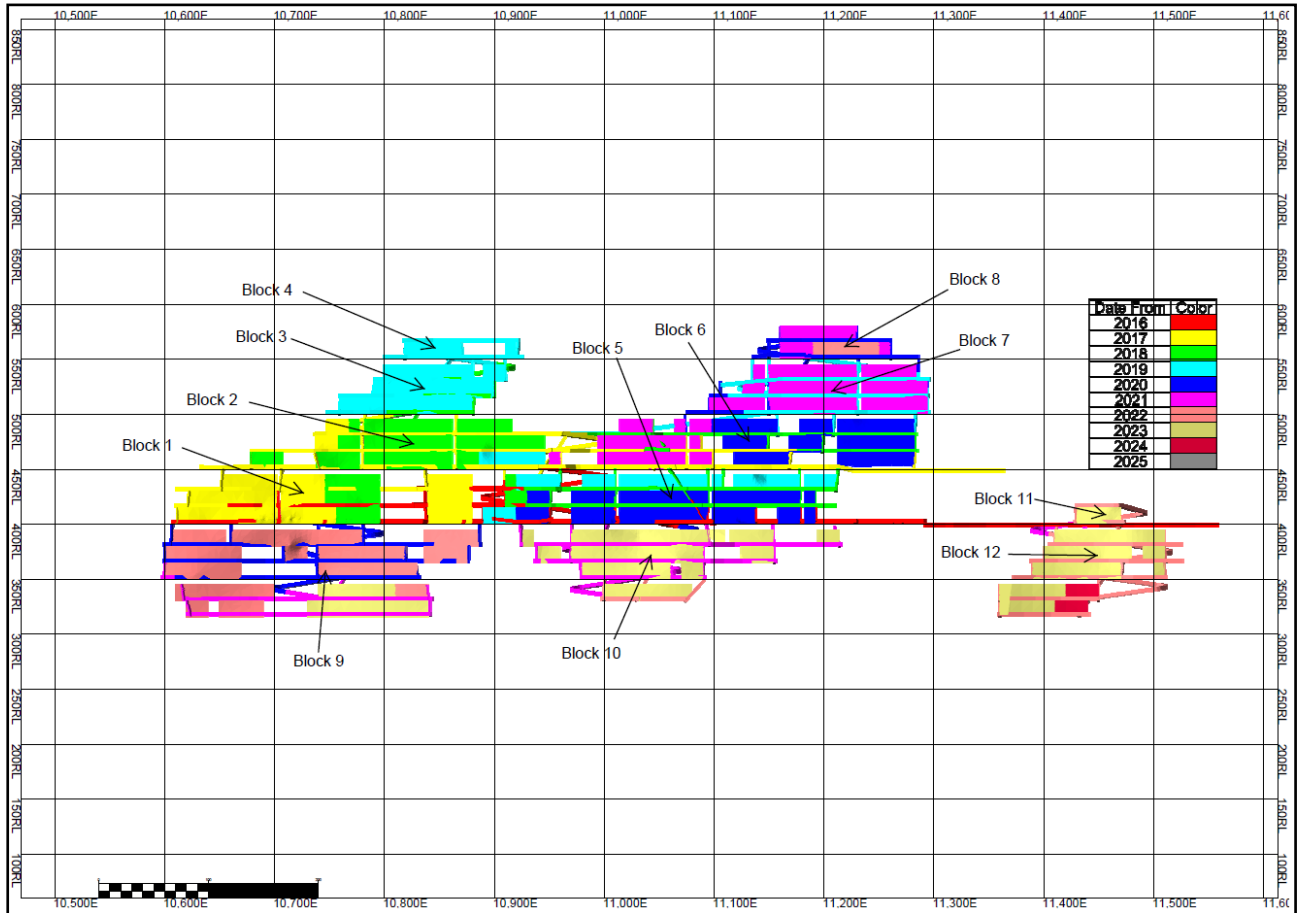
- ✓ Tatman's formula.
- ✓ Mc Carthy's relationship.

Both of these methods estimate the sustainable production rate based on a vertical drop down rate and using the tonnes per vertical metre of the orebody. The AMC Report found that a production rate of 72,000 tonnes per year was appropriate for the Cononish orebody. This was checked against first principles scheduling during preparation of this mine plan and it was confirmed as the appropriate production rate for the mine.

There are a number of other operational constraints that had to be considered in the schedule. These include:

- ✓ Waste storage – the planning permission limits the amount of waste that can be brought to surface. There is no waste dump allowed on surface and only waste that will be used in the earthworks to establish the site, particularly the tailings dam wall and plant building screening berms, is permitted to be brought to surface. All other waste must be stored underground in stope voids. The total quantity of waste that is planned to be used on surface for earthworks is 73,000 tonnes. The remainder of the waste produced in the mining schedule (163,000 tonnes) must be placed into stope voids underground.
- ✓ Tailings disposal – the planning permission allows for a maximum of 400,000 tonnes to be placed on the tailings facility. The mine schedule includes 555,000 tonnes delivered to the mill, which will result in 529,000 tonnes of tailings product (based on a mass pull of 4.75%). This means that the last 129,000 tonnes of tailings produced needs to be placed in underground voids.
- ✓ Ventilation – No stoping can commence until a holing is established between the adit level (400m Level) and the return exhaust ventilation airway on 450m Level. This will serve as a second outlet in case of emergency as well.

The mine has been divided into 12 stopping blocks, each of which can be operated independently. The stopping blocks are shown in the figure below. This figure also shows the mine schedule coloured by year.



### STOPPING BLOCK NUMBERS AND MINE SCHEDULE

The mining schedule commences in Month 1 with the stripping and rehabilitation of the adit level (400 m Level). The size of the drive on 400 m Level will be increased from its current size of approximately 2.5 m wide x 2.5 m high to 3.30 m wide x 3.40 m high. Once this is completed the development of the footwall drive on 400 m Level commences. Once the breakaway position for the Central Ramp is reached, after 225 m of footwall development, the priority becomes the development of the ramp to 450 m Level. The 450 m Level ore drive East then becomes the priority to establish the initial ventilation circuit. This is completed in Month 15, after which stoping in Block 1 can commence.

The Eastern portion of Block 1 is stoped out by Month 20, after which dumping of waste into stopes underground can commence. From Month 20 on no more waste from development is hauled to surface. It is all placed underground.

First ore is produced from ore development in Month 7. Between months 7 and 16, when stoping commences, a total of 21,000 tonnes of ore is produced from development. Once stoping commences in Month 15 the production target of 6,000 tonnes per month of ore is maintained for 6 years until production tails off at the end of the mine life in Year 9.

Tailings will need to be placed underground from Month 81 as this is when the permitted capacity of the tailings facility will be reached. In Month 81 there will be a total of 34,000 m<sup>3</sup> of available stope voids in the mine. There is sufficient capacity to continue to place tailings underground until the end of the current life of mine in Year 9. A summary of the mine schedule is shown below.

<b>SUMMARY OF MINING SCHEDULE</b>										
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>	<b>Year 6</b>	<b>Year 7</b>	<b>Year 8</b>	<b>Year 9</b>	<b>Total</b>
Total Ore Tonnes	8,370	69,171	72,368	75,552	73,819	70,646	69,090	72,970	4,858	<b>516,843</b>
Waste Tonnes	64,281	21,969	13,828	26,237	22,921	24,440	25,893	-	-	<b>199,569</b>
Rehab Metres	274	150	-	-	-	-	-	-	-	<b>424</b>
Waste Development flat	1,320	309	126	187	125	184	166	-	-	<b>2,416</b>
Ramp Development Metre	450	308	327	662	627	618	682	-	-	<b>3,673</b>
Ore development flat	513	1,811	1,332	1,079	1,275	1,228	879	-	-	<b>8,117</b>
Inclined Metres Waste	36	59	47	93	103	110	125	-	-	<b>574</b>
Inclined Metres Ore	203	411	374	330	376	272	233	4	-	<b>2,202</b>
Stope tonnes LHOS	-	41,250	49,845	57,225	57,330	54,750	54,750	72,970	4,858	<b>392,978</b>
Stope tonnes Shrink	-	-	-	-	-	-	-	-	-	<b>-</b>
Ore Development	8,370	27,921	22,523	18,327	16,489	15,896	14,340	-	-	<b>123,865</b>
Low grade development to	2,305	4,351	6,268	3,066	7,579	5,254	2,336	-	-	<b>31,160</b>
Unpay development tonne	2,122	11,080	3,790	4,086	6,028	6,605	2,585	43	-	<b>36,337</b>
Hauled Tonnes	77,078	106,572	96,253	108,941	110,347	106,944	99,903	73,013	4,858	<b>783,909</b>
Tonne.km	62,329	86,323	77,755	88,242	104,461	100,735	90,306	58,840	3,195	<b>672,187</b>
RoM Metal content	-	-	-	-	-	-	-	-	-	<b>-</b>
RoM Au oz - Ore	3,169	35,929	29,757	26,584	21,876	27,895	20,616	26,481	1,065	<b>193,373</b>
RoM Ag oz - Ore	15,087	153,975	144,013	95,086	106,522	133,851	73,509	102,979	1,804	<b>826,825</b>
Au oz - Low grade	240	443	623	304	831	527	281	-	-	<b>12.4</b>
Ag oz - Low grade	1,145	2,613	3,495	1,169	3,720	3,037	509	-	-	<b>-</b>
RoM grades										<b>-</b>
RoM Au g/t	11.78	16.16	12.79	10.94	9.22	12.28	9.28	11.29	6.82	<b>11.64</b>
RoM Ag g/t	56.07	69.24	61.90	39.15	44.88	58.93	33.09	43.89	11.55	<b>49.76</b>
RoM Eq Au g/t	12.62	17.19	13.72	11.53	9.89	13.17	9.78	11.95	6.99	<b>12.38</b>

### **Ore Reserve**

The following modifying factors were adopted:

- ✓ Cut-off grade – 5 g/t Equivalent Au
- ✓ Dilution - following an regression line but averaging 25%
- ✓ Stope dilution grade – 0.85g/t Au and 4.66 g/t Ag
- ✓ Development ore - > 4.6 g/t Eq Au
- ✓ Low grade development ore - > 2.5 g/t Eq Au
- ✓ Ore losses – 10%

The modifying factors discussed above were applied to the resource and a mine design was developed. The mine design was drafted and scheduled using DeswikCad mining software. The entire mining inventory is based on the extraction of measured and indicated mineral resources. No inferred mineral resources are included in the plan. Ore reserves generated from measured resources, which are located in close proximity to the 400 m Level, where sampling data is available, are classified as proven ore reserves. Mineral reserves generated from indicated resources are classified as probable ore reserves.

The ore reserve statement is shown in the table below. This is an estimate of the ore to be delivered to the plant.

<b>ORE RESERVE STATEMENT</b>					
<b>Classification</b>	<b>Tonnes '000</b>	<b>Grade Au g/t</b>	<b>Metal Au '000 oz</b>	<b>Grade Ag g/t</b>	<b>Metal Ag '000 oz</b>
Proven	65	11.5	24	51.5	108
Probable	490	11.1	174	47.2	743
<b>Total</b>	<b>555</b>	<b>11.1</b>	<b>198</b>	<b>47.7</b>	<b>851</b>

The modifying factors discussed above were applied to the resource and a mine design was developed. The mine design was drafted and scheduled using DeswikCad mining software.

### **Ventilation**

The ventilation design is carried out based on United Kingdom Mining Regulations and international best practices and conventional norms with respect to air volumes and ventilation layout.

The design is based upon the mining layout and schedule; the number of active working places, the active diesel powered mining fleet, the size of the vehicles to be accommodated in any particular excavation and the air volume required to achieve the desired underground environmental conditions.

Considering the air supply to individual working places:

- ✓ Each producing stope will require 12 m<sup>3</sup>/s for the LHD and to provide sufficient air velocity in the stope.
- ✓ The truck will draw rock from the ore pass on the adit level and the truck air allowance (6 m<sup>3</sup>/s) is included in the air volume supplied to the stopes.
- ✓ Each stope in preparation will have an LHD only and require 6 m<sup>3</sup>/s at point of use.
- ✓ Each development end will have an LHD only and require 6 m<sup>3</sup>/s at point of use.



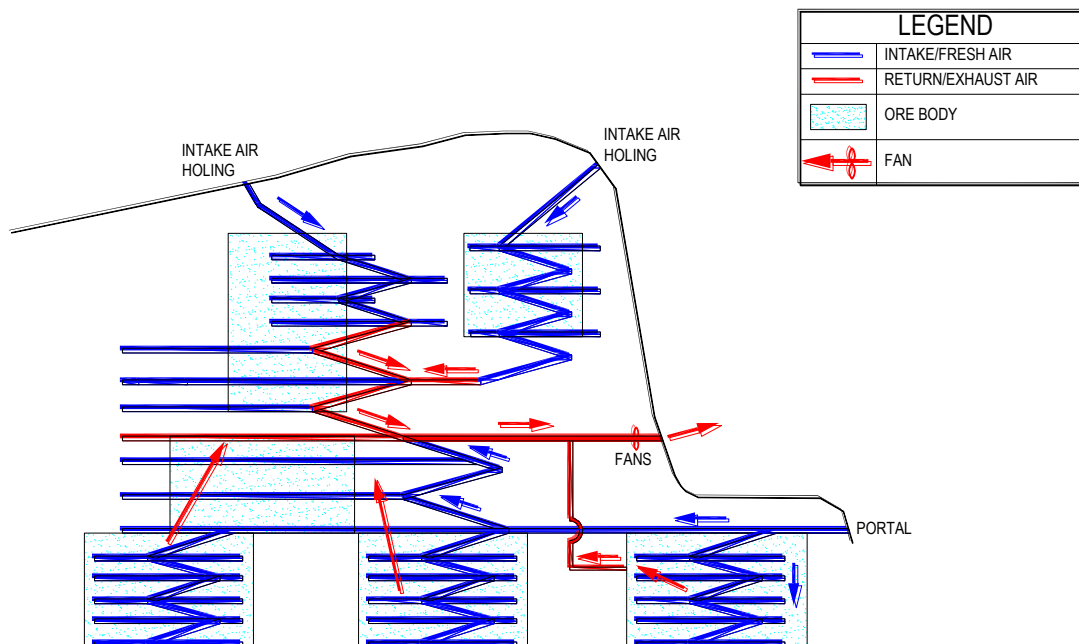
- ✓ It is also necessary to add a reasonable and practical leakage allowance in any mine.

Drill rigs will be electro-hydraulic powered and there will be a minor component of service vehicles (Utility carrier, explosives carrier etc.) These will have a low diesel power utilisation and operate mainly in the main drives. Their air requirements will be taken up in the leakage component of the total air calculation.

The mine will have:

Working place	Number	m <sup>3</sup> /s each	Total m <sup>3</sup> /s
Producing stopes	2	12	24
Stopes in preparation	2	6	12
Development ends	4	6	24
Leakage allowance (25%)			15
<b>Total air required</b>	<b>8</b>		<b>75</b>

As the mine is compact and the diesel fleet small, it is anticipated that each working place can be considered “active” throughout the working shift and it would be prudent and realistic to provide airflow to all these places continuously. The figure below shows the ventilation circuit at full production towards the end of the mines life.



A Ventsim simulation of the “worst case” scenario (mining operations at the extremities of the mine, where the system resistance would be highest) and it was determined that the air volume of 75 m<sup>3</sup>/s would provide sufficient air to ventilate all the operational parts of the mine without problems.

### **Surface Infrastructure**

The mine will be accessed from the A82 road at the junction to Dalrigh, a small hamlet located 1 mile to the south east of Tyndrum. The road to the mine is unpaved and will not be surfaced for the project. The first portion of 2.9 miles is on the section of road access to Cononish farm. The second section of 0.7 miles leads to the mine and was constructed for the original development and exploration works at the mine. The route crosses a small stream, the Crom Allt, and passes under the Glasgow/Oban railway line.

Upgrades to the access road will be required prior to operations commencing at the site, these are:

- ✓ Road junction improvement.
- ✓ New car parking area.
- ✓ Replacement bridge over Crom Allt.

Access to the mine site via the site road will be restricted during part of the construction phase due to the construction of the replacement bridge over the Crom Alt. In addition to this, construction, equipment and material deliveries may exceed the size restriction through the railway underpass. An alternative route must be used during the construction phase, bypassing a portion of the access road. This alternative route uses an existing forestry road which connects to the mine road 1.9 miles from the Dalrigh road junction. The road is of similar construction to the mine road. Access to the road is from a level crossing on the Glasgow Oban line, located at the Lower Railway Station in Tyndrum. The railway crossing is principally for forestry access and is unmanned. Negotiations have been held with Network Rail for use of the crossing during the construction phase. Some construction work will be required to upgrade the crossing which will include replacing sleepers and upgrading the crossing surface. A crossing attendant will be required for supervision and control of vehicle traffic.

Surface infrastructure will be minimized as much as possible to reduce the visual impact. The process plant building will be the major structure on the site other than the Tailing Management Facility (TMF). The building will incorporate most of the process and support operations and will include:

- ✓ Process equipment.
- ✓ Process consumable storage.
- ✓ Concentrate storage.
- ✓ Workshop.
- ✓ General storage.
- ✓ Offices.
- ✓ Change room and toilet facilities.

- ✓ Lunch room.
- ✓ Assay.

The building will be of steel framed construction encased in profiled sheet metal cladding, insulated to provide thermal protection and reduce external noise. The external colour of the building will be selected to blend in, as far as is practicable, with the surrounding environment. Preliminary designs have been prepared by consulting civil and structural engineers Allen Gordon. A building floor plan arrangement is included in Appendix H of the AMC Report. It should be noted that the building layout is arranged to suit process equipment supplied by one supplier. The final internal layout will be dependent on the requirements of the chosen plant equipment. However, the overall dimensions of the final building layout will not exceed those shown on the arrangement plan.

Offices, assay, change rooms and lunchrooms will be supplied as modular units pre-fitted with lighting, power points, shower and toilet units, etc. Storage units will primarily make use of standard shipping containers.

An existing steel framed building currently used for core storage will be used for the storage of mining equipment and consumables. Refuelling and oil storage facilities, for use by mine vehicles, will be located on the upper terrace adjacent to the mine entrance. These areas will be bunded to contain any spillage and will be provided with a fire hose and extinguishers.

No electrical power is currently available at the mine site, requiring a new supply line to be installed to the site. The nearest grid supply available is a 33 kV overhead line running parallel to the A82 road. The supply to the mine will branch from this line being transmitted to the mine through an overhead power line. The majority of the route will follow the mine road providing good access for construction and maintenance.

Power will be supplied from the power grid managed by Scottish and Southern Energy (SSE). A total load requirement of 1,500 kW has been estimated. The line supplying the mine will be an 11,000 volt overhead line terminating at the mine substation where the voltage will be reduced to suit equipment requirements. The substation will be constructed within the process plant site area from where the power will be distributed to the process plant, the mine and TMF.

During mine development and surface construction temporary power will be provided using diesel generators. The majority of this power will be used for underground operations, primarily ventilation fans and drilling jumbos. Construction contractors will be required to supply their own power units. Permanent power will be required to be available prior to plant commissioning.

The processing plant will consume the largest volume of water at Cononish, estimated at 710 m<sup>3</sup> per day. Underground mining operation will require approximately 80 m<sup>3</sup> per day. Water pumped from the mine will be delivered to the process plant where it will be used as process water. Water discharged from the process plant will be contained within the slurry and pumped to the TMF. Water from the tailings slurry, less evaporation and seepage losses, will drain into the reclamation pond. Water returned to the process plant will be pumped from the tailings pond. If necessary, additional water will be pumped from the

reclamation pond. The water settled within the TMF will provide water at an acceptable quality for process plant make-up and mine service water. A water balance analysis, prepared by AMEC and discussed in the AMC Report, indicates that, as result of rainfall entering the TMF, it will be possible to recover sufficient water from the TMF without the need to add water into the system. Water will be discharged from the TMF during periods of high rainfall but will retain sufficient water to provide process and mine water during dryer periods. Should it be necessary to add water to the reticulation system this will be pumped from one of several nearby water sources. Any water extracted will be in accordance with permitting conditions.

Water used for drinking water and sanitary uses will be sourced from the Allt Eas Anie or other suitable streams located on the site. The water will be pumped or delivered under gravity, depending on the source location, to a purification plant from where it will be piped within the plant building to the change room and lunchroom.

Waste water and sewage will be treated on site using a biodigester sewage treatment plant. Water discharge from the plant will be of an acceptable quality for discharge from the property.

### **Mine Infrastructure**

Workshop facilities for the repair and maintenance of mining equipment will be located within the main plant building on surface. Servicing and maintenance of the equipment will be carried out to comply with the requirements of the equipment manufacturers and operational safety requirements. A maintenance schedule and will be prepared for each type of equipment but will generally cover the following:

- ✓ Pre-use inspections.
- ✓ Daily maintenance checks including refuelling and lubrication.
- ✓ Weekly service inspections.
- ✓ Major services based on operating hours.

The electrical design includes the design and specification of the electrical reticulation including; transformers, switchgear, lighting and cabling required to supply the mining operation. All electrical reticulation from the Scottish and Southern Energy supply point has been included in the design, with the exception of the process plant, which will be provided by the plant supplier. A single 400V feed to the plant motor control centre (MCC) has been allowed for. Two underground communication systems have been included in the design. A leaky feeder radio system has been included for the production communication and a telephone system for non-production/ emergency situations. The telephone handsets will be provided at the self-rescuer caches.

The calculated power consumption for the operation is provided in the table below. The mine will be in operation for 250 days per year (304 days times 82% overall availability) with varying daily equipment operating hours, the typical daily operating figures are as follows:

- ✓ Process plant – 24 hours per day.
- ✓ Ventilation – 24 hours per day.
- ✓ Underground lighting – 24 hours per day.

- ✓ Surface offices and lighting – 10 to 16 hours per day.
- ✓ Pumping – Between 1 and 24 hours per day depending on service.
- ✓ Mining equipment – 9 hours per day.

<b>POWER CONSUMPTION</b>		
<b>Description</b>	<b>Load (kW)</b>	<b>Annual Consumption (kWh)</b>
<b>Surface Consumption</b>		
Main Ventilation Fans	96	576 000
Surface General (Water reticulation & processing)	59	139 600
Process Plant Offices & Lighting	50	133 400
Process Plant	550	2 973 000
<b>Underground Consumption</b>		
Mining	124	279 450
Pumping	116	163 000
Lighting & services	44	130 300
Ventilation	158	950 400
<b>Total</b>		<b>5 345 150</b>

Water will enter the mine as ground water through fissures in the rock. For the likely water volumes naturally entering the mine, measurements have been made on water draining from the existing mine excavations and have been calculated to be 223 m<sup>3</sup>/day. This volume was used for the overall mine water volume measurements although allowances have been made in the system design to handle increased inflow volumes. Water used for mining operations will contribute to the overall water handling requirements. For the purpose of the design it has been assumed that all of the service water will be pumped from the mine, although in practice a portion of this will be incorporated in the rock trucked to the plant stockpile. Peak water volumes have been estimated at:

- ✓ Ground water: 9.3 m<sup>3</sup>/h
- ✓ Development drill flushing: 4.0 m<sup>3</sup>/h
- ✓ Stopping drill flushing: 4.0 m<sup>3</sup>/h
- ✓ Dust suppression: 3.6 m<sup>3</sup>/h

✓ Peak flow: 20.9 m<sup>3</sup>/h

The layout of the mine requires two dewatering configurations. The main access level is 400 level. A large portion of the mining takes place above 400 level up to 565 level, 165m above 400 level. It is unlikely that there would be any significant flooding in this area as water will generally gravitate down to 400 level and from here out of the mine. Gravity can be used to assist with dewatering. The mining sections below 400 level will require a ramp pumping system to remove the water and would be at risk of flooding if the pumping system failed.

The primary use of water will be to supply flushing water for drilling operations. Other uses will include dust suppression, firefighting and vehicle cleaning. The supply must be capable of meeting the peak demand that is expected to occur during drilling operations. Service water volumes are low but will be sufficient to require a piped supply. The mine entrance is located on 400 level from where water must be delivered to the lowest point at 316 level and the highest point at 565 level. The system must be capable of delivering water at an acceptable pressure to the highest and furthest point of the mine, 165 m above the mine entrance and 2,000 m along roadways and ramps. In order to supply service water across the mine it will be necessary to pump the water. This can be achieved using a pressurised piping main, a cascade type gravity feed or a combination of these.

The mine plan required that tailings, which would usually be pumped to the TMF, will be disposed of in mined out stopes once the TMF has reached full capacity. Depending on the operating pressure, slurry will be pumped to stopes in a steel or HDPE pipeline. The tailings slurry will leave the plant at a specific gravity (SG) of typically 1.26. There is a potential that the slurry may be thickened prior at the plant to recover water prior to placement on the tailings dam. Tailings wastefill will not be required in the early phase of the mining programme and its placement will be dependent upon having suitable empty stoping volumes available. The detailed design of the wastefill system distribution system will be finalised once the slurry characteristics have been evaluated later in the mines life. However, the calculations conducted for this report show that the expected system requirements will not present any significant problems.

## **Process and Metallurgy**

Over the years a great deal of information has been generated on the Cononish project and it is well understood in terms of the process requirements and the likely performance of the process plant. The essential information within the previous work and the various reports produced is presented in this document and supported by the detailed information contained in Appendix E of the AMC Report.

Test work on a variety of processing routes (gravity, flotation, gravity flotation and cyanidation) was carried out by Lakefield (1988,1989,1995), Gekko systems (2009, 2010) and AMMTEC (2010). Initial metallurgical test work in 1987 was conducted on selected drill core, subsequent test work on samples and bulk samples (up to 1.5t) from the exploration adit. These samples were taken from a number of positions in the adit deemed representative of the mineralization as exposed in the adit and observed in drill core

The choice of sample processing route taken by the various testing bodies is appropriate, to the mineralogy of the deposit, the metallurgical test work has been correctly selected and, and according to the various reports, has been performed in accordance with best practice principles. The outcome has been the selection of a conventional gravity and flotation process plant. However, similar projects would undertake intensive cyanidation and electro-winning of the flotation concentrates on-site which is not possible in this case due to permitting restrictions. The basic process approach adopted by Consulmet for their final design is considered conventional. The overall recovery of gold is estimated to be approximately 93%. The doré bars produced on-site represent 25% of the recoverable gold with 5% of the recoverable silver and should contain approximately 50-60% gold, 35-40% silver with the balance being Copper, Lead, Zinc, Tellurium and Iron in varying proportions. The remaining recoverable gold is contained in the flotation concentrates.

No metallurgical domaining has been applied as results from test work indicate largely uniform recoveries from the representative zones tested. Test work has not indicated any deleterious elements that impact recovery or concentrate treatment.

Gekko was retained to complete the process flow diagrams and other engineering documentation. The test work and the engineering undertaken by Gekko formed the basis of a quotation from Consulmet, which is on a Lump Sum Turnkey (LSTK) basis. During May and June of 2015 updates to quotes were requested from potential suppliers as a result of changes to tonnage rates since the first proposals had been assembled. Three quotes were obtained from APT, Consulmet and Gekko. The Consulmet proposal has been used as the basis of the process plant used in this FS report.

Scotgold have indicated the following indicative recoveries from various smelters through previous work by MRI Trading AG.

The terms included:

- ✓ 95% of recovery of agreed Au content, Au subject to a minimum deduction of 2g/dmt.
- ✓ 95% of recovery of agreed Ag content, Ag subject to a minimum deduction of 100g/dmt.
- ✓ 95% of recovery of agreed Pb content, less deduction of 3 units/dmt (3%).
- ✓ 95% of recovery of agreed Cu content, less deduction of 3 units/dmt (3%).<sup>1</sup>
- ✓ Concentrate treatment charge of US\$450/dmt.
- ✓ No recovery of Tellurium.

<sup>1</sup> Pb and Cu levels may occasionally exceed these levels though, as mentioned above, no revenue is predicted to be received in the financial model.

Based on the concentrate specifications of potentially deleterious elements provided, no penalty charges were anticipated. Refining charges were quoted as US\$13/oz for paid Au and US\$0.80/oz of paid silver.

A 2% gross value charge is made for marketing during the first 4 years of production and 1.2% thereafter.

Although 85% is paid on the date of concentrate production, interest is paid on this amount for 3 months at LIBOR plus 3.5% (approximately 4%). Payment of the balance of 15% of concentrate production is received 3 months after production. This interest and payment schedule is taken account of in the financial model.

The recovery of Tellurium could offer reasonable revenues in the future and may need to be considered if Tellurium prices continue to rise in the future. One of the major uses for Tellurium, in the form of the alloy CdTe, is in the production of solar panels used to generate electricity and the price is expected to rise above current levels.

For the purposes of this study and in line with the conclusions reached by Weston study of historical and contemporary test work, the following parameters have been used in the financial model.

<b>METALLURGICAL PARAMETERS FOR FINANCIAL MODELING</b>	
Au Recovery overall	93%
Ag Recovery overall	90%
Au Gravity recovery	25%
Ag Gravity recovery	5%
Mass pull to sulphide concentrate	4.75%

Scotgold could investigate the installation of a suitable process within Scotland to handle the flotation concentrates to save costs. Although these concentrates can't be handled on the Cononish site for permitting reason, there is access to nearby chemical complex sites where such a process can be safely undertaken. Scotland has a wide variety of chemical expertise and Grangemouth, for example, has a history of treating cyano-based chemicals. The residues from the intensive cyanidation process are easily neutralised for safe and acceptable disposal. There is the potential to increase the return from precious metal sales by labelling downstream jewellery as being made from "gold and silver mined in Scotland".

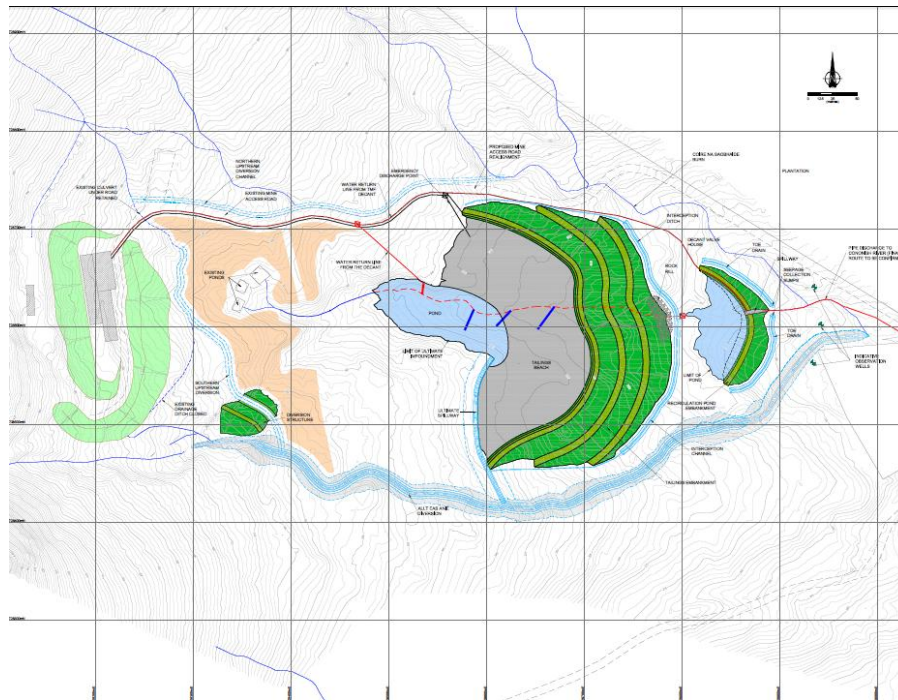
### **Tailings Management Facility (TMF)**

Considerable work has been done on the design of the TMF over the years beginning in 1989. A full history of this work is given in the AMC Report. What is relevant here is that AMEC Earth & Environmental (UK) Limited (AMEC) produced the "Tailings Management Review Report" In 2009. The TMF design and management plan was subsequently updated in 2011 and this design and plan was accepted by the planning authority.



The facility has a capacity of 400 kt with the balance of the material to be backfilled underground. The design of this backfill system was discussed earlier. The increased reserve does not require any further increase in the TMF capacity as the balance of the tailings, 155 kt, can be backfilled.

The figure (after AMC) below shows a general arrangement of the TMF and the reticulation pond.



AMEC have provided recent (July 2015) estimated cost estimates for the construction of the TMF facility.

## Social, Environment and Permitting

The Development Plan for the project was completed by AMC Consulting UK, in April 2013, (The AMC Report) and includes the Environmental Impact Statement Report. Skapa Mining Services was contracted by Bara to undertake a review of this report and further planning discussions documentation, comment on the content, quality and status of the EIS and project licencing, identify any potential environmental and social risks to the project, and determine if there are any gaps that are required prior to the BFS and project start-up.

Although the Cononish Project was granted planning permission previously by Stirling Council, the designation of the LLTNP and new planning authority, together with new ownership of the deposit and changes to the proposed mine development plan, required completion of a new Environmental Impact Assessment and permit application.

The ESIA was managed and coordinated by Dalgleish Associates Limited, from Stirling, who contracted out individual studies and worked closely with the LLTNP, Scotgold, AMC and other project contributors.

Initial LLTNP authority concerns around the size and visual/landscape impact of the original proposed TMF prompted discussion and negotiations in 2010, which resulted in adaptation of the mine plan, including use of some tailings in backfilling of underground excavations, to accommodate a smaller and reconfigured TMF that was acceptable to the planning authority.

A completed EIS was subsequently submitted for planning application in July 2011, and Planning permission was granted early in 2012, subject to a number of conditions. The Decision Notice was issued in February 2012, with various 'suspensive' conditions to be satisfied prior to the start of development, and the requirement that work should start within 3 years. The project has since successfully applied for an extension of this planning notice (February 2015), which gives time to finalise the few remaining commitments and to obtain funding.

One of the prerequisite conditions for the permitting of the project was submission and approval of the project Construction Environmental Management Plan (CEMP), and a Decommissioning and Restoration Plan (DRP). The CEMP was completed in March 2013, and there were continued discussions with LLTNP about various additional requirements. According to Scotgold, all submissions to the LLTNP authority have now been made (except for those that need to be made immediately prior to the start of development) and 64% of the Permit conditions have been met. Planning conditions restricted hours of operation of the processing plant from 07h00 to 23h00 Mondays to Saturdays with no processing on Sunday or recognised Scottish public holidays. A change to 24 hour operations (still with no processing on Sunday or recognised Scottish public holidays) was requested and recently granted and the planning notice or Decision Note re-issued (February 2015).

In addition to the Planning Permission, Scotgold has also submitted an application for a water licence for the work required for the proposed stream diversion under the Water Environment (Controlled Activities) Regulations 2011 (CAR regulations), and all the necessary permits for these works have been granted by the Scottish Environmental Protection Agency (SEPA).

In summary, all of the necessary permitting has either been granted or can be completed within a short time frame. This review has not identified any environmental fatal flaws or data/study/licencing gaps that are not already being addressed. Although there are sensitive environmental issues, they do not present any significant project risks, with the planned mitigations and management measures. The stringent conditions and limitations required by the LLTNP give little margin or flexibility.

It is to the credit of both Scotgold and their planning consultant Dalgleish Associates Limited that continued negotiation and discussion with the authorities has resulted in an agreement as to how to proceed with the project, with a positive outcome.

## Labour

The planned shift system is a conventional three 8 hour shift working on average five and two third days (two weeks at 48 hours and one week at 40 hours) giving an individual an average 45.33 hour working week over at three week period. During the year there are 52 Sundays and 9 Scottish public holidays so we have assumed an average of 304 working days per year or 25.33 days per month.

During construction or the pre-production period, we have assumed that all labour costs will be capitalised. The table below shows the pre-production labour requirements. Most posts are required for production but there are some early appointments to assist with construction. The only additional post is the Project Manager. The Project Manager would be a contract appointment for the duration of the construction period. The Plant Manager or Metallurgist and the Mine Manager would be expected to be appointed for production as will most other posts. First production occurs in Month 13 and full production in Month 16. The pre-production period is therefore taken as the first 12 months. Rehabilitation development starts in month 4.

Posts have been scheduled as required with a 2 month lead; one month to cover recruitment costs and a month for training.

PRE-PRODUCTION POSTS PER MONTH														
Post/Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Mining Direct labour		11	11	11	11	11	11	11	11	11	11	11	11	11
Mining Indirect labour		6	6	6	6	6	6	6	6	6	6	6	6	6
Staff	3	9	9	9	9	9	9	9	9	9	9	9	8	8
Plant Labour	1	1	1	1	1	1	1	1	1	3	24	24	24	24
<b>Overall total</b>	<b>4</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>27</b>	<b>29</b>	<b>50</b>	<b>50</b>	<b>49</b>	<b>49</b>

The table below shows the total labour at maximum production. An important philosophy is multi-tasking. As an example, the LHD driver would be expected to assist the development jumbo operator to advance ventilation ducting. The multi-task post would also fill in for absenteeism (leave/sick etc) and drive the second back up truck if required. Labour costs have been based either on costs paid on existing mines in the area or on similar job types and a premium included to help attract the appropriate skills.

<b>MAXIMUM PRODUCTION LABOUR</b>				
<b>Job Description</b>	<b>Shift 1</b>	<b>Shift 2</b>	<b>Shift 3</b>	<b>Total/</b>
	<b>Day</b>	<b>PM</b>	<b>Night</b>	<b>Day</b>
Mining Direct labour	6	6	6	18
Mining Indirect labour	7	2	2	11
Staff	7	1	1	9
Plant Labour	14	6	4	24
<b>Overall Total</b>	<b>34</b>	<b>15</b>	<b>13</b>	<b>62</b>

In the cost schedule these costs have been scheduled appropriately to reflect actual activity. For example, stoping labour is introduced gradually to reflect the build-up in production, allowing for a 1 month recruitment period and 1 month training period. All development activity ceases in year 8 and labour is reduced then to a more appropriate level.

The following posts would be filled by contractors and the cost has been included as an operating cost:

- ✓ Bi-annual tailings inspection
- ✓ Accounting and payroll
- ✓ Statutory Mine Survey (quarterly)
- ✓ Ecological clerk of works
- ✓ Landscape clerk of works
- ✓ Planning Compliance Officer

Where ever possible, recruitment will be done locally. There are some operating mines within a 50 mile radius (Foss and Lochaline as examples) so there will be a pool of experienced labour available. Some more specialised posts, such as geologist and senior management such as the Plant Manager, may require a more national or international recruitment strategy. There are a number of very attractive small towns within commuting distance so finding accommodation by recruits from outside the area will not pose a problem.

In the construction phase there are many B&B's and small hotels in the area that can provide temporary accommodation.

The initial construction and commissioning of the plant will provide a training opportunity for plant operators. Initial contact has already been made with Foss and it is possible to share their Mining Induction Programme. Selected mine employees will also join their mine rescue team and share facilities. Jumbo operators will also attend a Master Drilling Course. An important strategy would be to build a well trained and experienced core team who pass their knowledge onto new recruits. An allowance for training costs and shared facilities with Foss has been made.

## Cost Estimates

A capital cost summary is shown in the table below. All mine development costs have been capitalised and all costs prior to production have been capitalised.

<b>CAPITAL COST SUMMARY</b>			
<b>Capital Cost</b>	<b>Prod-Buildup [GBP]</b>	<b>Steady State [GBP]</b>	<b>LOM Total [GBP]</b>
Mine Development	2 148 409	4 819 533	6 967 942
Mining Equipment	2 458 192	194 468	2 652 659
Processing Plant	7 186 125	-	7 186 125
Tailings Facility	3 474 648	714 234	4 188 883
Infrastructure	1 305 971	-	1 305 971
Environmental and Social	1 055 791	160 283	1 216 074
Pre-production Labour	506 421	-	506 421
<b>Total</b>	<b>18 135 556</b>	<b>5 888 518</b>	<b>24 024 074</b>

Operating costs will cover the expenditure required to operate and maintain mining and processing operations covering the full life of the mine up to closure. The costs are generally related to mining and process production rates. Operating costs were estimated and total cost for the items shown in the table below. The life of mine average cost per RoM Tonne and per equivalent Au ounces are also shown.

<b>OPERATING COST SUMMARY</b>				
<b>Operating Cost</b>	<b>LOM Total [GBP]</b>	<b>Cost/Tonne [GBP/tonne]</b>	<b>Cost/oz Au [GBP/oz Au]</b>	<b>Cost/oz Eq Au [GBP/oz Eq Au]</b>
Mining	20 518 564	36.97	115.49	109.76
Processing	17 963 888	32.37	101.11	96.09
Admin	5 761 614	10.38	32.43	30.82
Product Transportation	1 060 746	1.91	5.97	5.67
Smelting Charges	7 414 489	13.36	41.73	39.66
Refining Charges	1 445 082	2.60	8.13	7.73
Marketing & interest charges	2 281 792	4.11	12.84	12.21
Royalty	4 652 987	8.38	26.19	24.89
<b>Total</b>	<b>61 099 161</b>	<b>110.09</b>	<b>343.90</b>	<b>326.82</b>

The operating cost matrix is shown in the table below.

<b>OPERATING COST MATRIX GBP/tonne</b>						
<b>Operating Cost category</b>	<b>Labour</b>	<b>Power</b>	<b>Consumables</b>	<b>Services</b>	<b>Contingency</b>	<b>Cost/Tonne [GBP/tonne]</b>
Mining	16.00	3.55	17.42			<b>36.97</b>
Processing	11.41	9.02	7.71		4.22	<b>32.37</b>
Admin				10.38		<b>10.38</b>
Product Transportation				1.91		<b>1.91</b>
Smelting Charges				13.36		<b>13.36</b>
Refining Charges				2.60		<b>2.60</b>
Marketing & interest charges				4.11		<b>4.11</b>
Royalty				8.38		<b>8.38</b>
<b>Total</b>	<b>27.41</b>	<b>12.58</b>	<b>25.13</b>	<b>40.75</b>	<b>4.22</b>	<b>110.09</b>

## Cash Flow and Financial Analysis

The figure below is a summary of the overall schedule and cash flow.

		Scotgold Resources - Canonish Financial Model											
		Discounted Cash Flow Model											
		July 2015											
Year			1	2	3	4	5	6	7	8	9	10	
Description	Total /	Unit	2016/12/31	2017/12/31	2018/12/31	2019/12/31	2020/12/31	2021/12/31	2022/12/31	2023/12/31	2024/12/31	2025/12/31	
<b>ROM Production</b>													
<b>ROM</b>													
Total ROM Tonnes	548 003	tonnes	3 821	62 234	78 995	77 752	78 725	79 036	71 684	72 497	23 258	-	
Gold (Au) Content	196 621	oz	952	29 154	31 370	28 817	23 908	28 052	21 989	25 385	6 995	-	
Gold (Au) Grade	11.16	g / tonne	7.75	14.57	12.35	11.53	9.45	11.04	9.54	10.89	9.35	-	
Silver (Ag) Content	842 514	oz	4 810	124 036	149 629	105 040	117 725	136 615	85 404	107 491	11 764	-	
Silver (Ag) Grade	47.82	g / tonne	39.15	61.99	58.91	42.02	46.51	53.76	37.06	46.12	15.73	-	
<b>Processing</b>													
<b>Plant Feed</b>													
Tonnage	555 003	tonnes	-	66 000	72 000	72 000	72 000	72 000	72 000	72 000	57 003	-	
Gold (Au) Content	198 399	oz	-	27 961	30 114	26 623	23 364	22 837	24 515	24 326	18 659	-	
Gold (Au) Grade	11.12	g / tonne	-	13.18	13.01	11.50	10.09	9.87	10.59	10.51	10.18	-	
Silver (Ag) Content	851 291	oz	-	119 570	144 330	105 283	102 485	106 291	111 564	100 601	61 167	-	
Silver (Ag) Grade	47.71	g / tonne	-	56.35	62.35	45.48	44.27	45.92	48.19	43.46	33.38	-	
<b>Total Metal Recovery</b>													
Recovered Gold (Au)	184 511	oz	-	26 004	28 006	24 759	21 729	21 238	22 799	22 623	17 353	-	
Recovered Silver (Ag)	766 162	oz	-	107 613	129 897	94 755	92 236	95 662	100 407	90 541	55 050	-	
Recovered Gold equivalent	196 004	oz	-	27 618	29 954	26 181	23 112	22 673	24 305	23 981	18 179	-	
<b>Smelting and Recovery</b>													
<b>Doré Refinery Losses</b>													
Gold (Au) Doré Recovery	99.8%	%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	99.8%	
Silver (Ag) Doré Recovery	98.0%	%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	98.0%	
Recovered Gold (Au) (adjusted for payment)	49 501	oz	-	6 976	7 513	6 642	5 829	5 698	6 116	6 069	4 656	-	
Recovered Silver (Ag)	41 713	oz	-	5 483	7 204	5 232	4 981	5 120	5 579	4 902	3 212	-	
<b>Smelter Losses (Smelter Terms)</b>													
Gold (Au) Smelter Recovery	95%	%	95%	95%	95%	95%	95%	95%	95%	95%	95%	95%	
Silver (Ag) Smelter Recovery	88.3%	%	88.3%	88.3%	88.3%	88.3%	88.3%	88.3%	88.3%	88.3%	88.3%	88.3%	
Recovered Gold (Au)	128 166	oz	-	18 063	19 454	17 198	15 093	14 753	15 836	15 715	12 054	-	
Recovered Silver (Ag)	638 936	oz	-	89 743	108 327	79 020	76 920	79 777	83 734	75 506	45 909	-	
<b>Revenue</b>													
<b>Sold Product</b>													
Gold (Au) Ounces Sold	177 666	oz	-	25 039	26 967	23 841	20 923	20 450	21 953	21 784	16 710	-	
Silver (Ag) Ounces Sold	680 650	oz	-	95 226	115 531	84 252	81 901	84 897	89 314	80 408	49 121	-	
<b>Revenue</b>													
Gold (Au) Revenue	122 145 698	GBP	-	17 214 572.76	18 539 778.48	16 390 578.78	14 384 286.78	14 059 660.76	15 092 567.28	14 976 458.00	11 487 794.80	-	
Silver (Ag) Revenue	6 381 089	GBP	-	892 745.34	1 083 100.70	789 859.69	767 820.87	795 907.57	837 315.38	753 828.60	460 511.32	-	
Total Revenue allowing for delayed payment	128 526 787	GBP	-	16 843 264	19 890 649	17 267 870	15 295 323	14 654 826	16 072 284	15 643 573	12 750 259	108 738	
<b>Return from Sales</b>													
Net Value	116 324 678	GBP	-	15 090 557	17 978 156	15 593 309	13 818 281	13 271 933	14 613 327	14 203 668	11 646 709	108 738	
<b>Operating Cost</b>													
<b>Total Operating Cost</b>	<b>56 446 174</b>	<b>GBP</b>	<b>509 322</b>	<b>6 849 662</b>	<b>8 092 497</b>	<b>7 342 582</b>	<b>7 422 618</b>	<b>7 436 922</b>	<b>7 120 454</b>	<b>6 811 959</b>	<b>4 800 490</b>	<b>59 669</b>	
<b>Capital Cost</b>													
<b>Total Capital Cost</b>	<b>24 024 074</b>	<b>GBP</b>	<b>16 588 434</b>	<b>1 899 240</b>	<b>626 600</b>	<b>1 374 692</b>	<b>1 357 466</b>	<b>884 972</b>	<b>1 150 836</b>	<b>141 834</b>	-	-	
<b>Royalty</b>													
Royalty Paid	4 652 987	GBP	150 000	150 000	303 622	719 126	623 732	552 731	530 877	584 533	568 147	470 218	
<b>Tax</b>													
Tax Paid	7 678 001	GBP	-	-	361 142	1 362 720	1 149 518	690 500	1 202 617	1 087 086	1 431 437	392 981	
<b>Financial Metrics</b>													
EBITDA	67 427 626	GBP	-	659 322	9 843 602	11 494 530	9 206 162	7 248 973	6 665 174	8 420 953	8 247 081	7 381 622	-
Gross Cashflow	43 403 552	GBP	-	17 247 756	7 944 362	10 867 930	7 831 469	5 891 507	5 780 201	7 270 117	8 105 248	7 381 622	-
Cummulative Gross Cashflow		GBP	-	17 247 756	9 303 394	1 564 536	9 396 005	15 287 513	21 067 714	28 337 831	36 443 079	43 824 700	43 403 552
Net Cashflow	35 725 551	GBP	-	17 247 756	7 944 362	10 506 788	6 468 749	4 741 990	5 089 701	6 067 501	7 018 162	5 950 184	-
Cummulative Net Cashflow		GBP	-	17 247 756	9 303 394	1 203 394	7 672 143	12 414 133	17 503 834	23 571 335	30 589 496	36 539 681	35 725 551
Pre-Tax NPV (10%)	22 945 889	GBP											
Pre-Tax IRR	45.0	%											
Post-Tax NPV (10%)	18 515 172	GBP											
Post-Tax IRR	40.6	%											
Operating Margin	52.5	%											
Payback Period	19	months											
Peak Funding Requirement	- 18 452 183	GBP											

The table below shows the financial assumptions that have been used. These were provided by Scotgold and agreed to by us.

<b>FINANCIAL ASSUMPTIONS</b>		
	<b>Value</b>	<b>Unit</b>
1 EURO	1.4	USD
1 USD	0.625	GBP
1 EURO	0.84	GBP
Gold (Au) Sales Price	1,100	US\$/oz
Gold (Au) Sales Price	687.50	GBP/oz
Silver (Ag) Sales Price	15	US\$/oz
Silver (Ag) Sales Price	9.375	GBP/oz

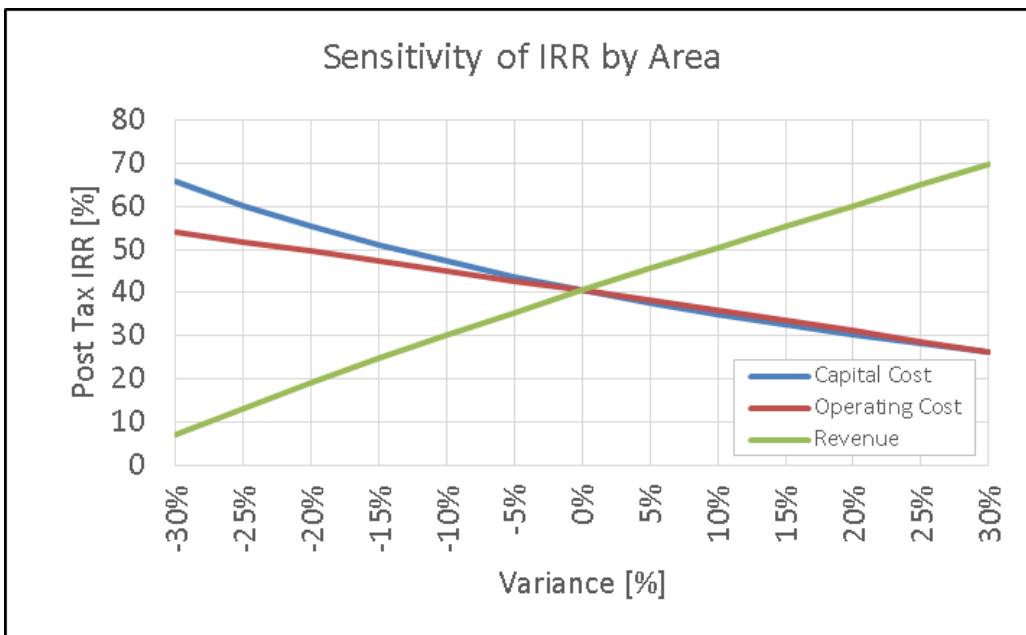
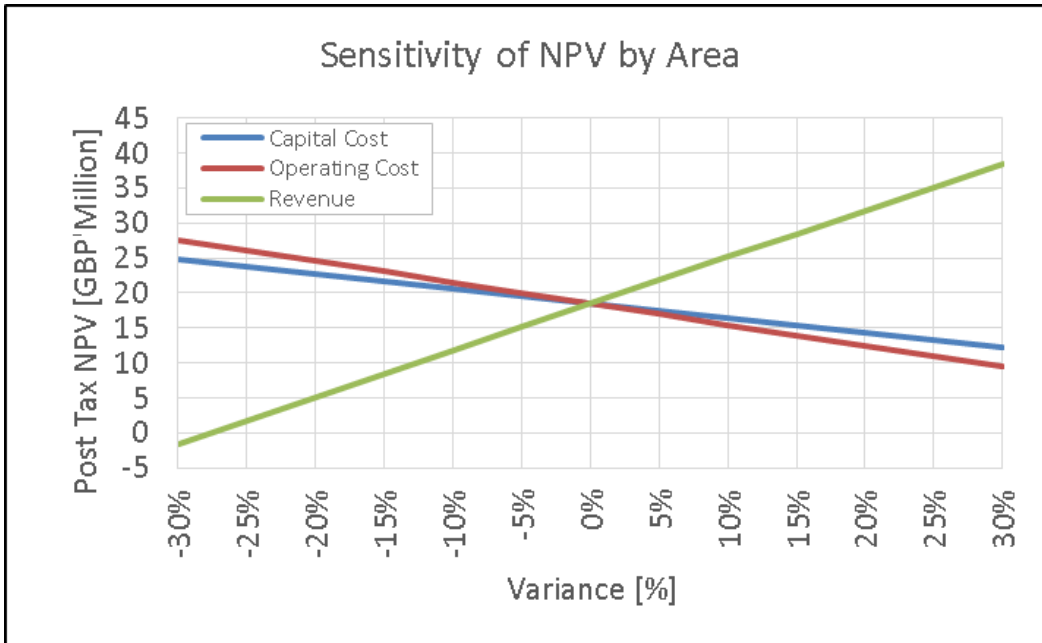
The more important results of the financial analysis are shown in the table below.

<b>FINANCIAL RESULTS</b>		
<b>Measure</b>	<b>Value</b>	<b>Unit</b>
Pre-tax NPV @ 10%	23.95	Millions GBP
Post-tax NPV @ 10%*	18.52	Millions GBP
Pre-tax IRR	45	Percent
Post-tax IRR*	41	Percent
Payback	19	Months
Pre-tax profit margin	52	Percent
All in cost per oz	455	GBP
All in cost per oz	729	US\$
Peak funding requirement	18.45	Millions GBP

\* Post tax returns are calculated on an all equity funding basis

The sensitivity of pre-tax NPV (10%) and IRR to changes in revenue, capital cost and operating costs is shown in the figures below.





## Project Implementation

A detailed project implementation plan will be prepared in order to provide a structure that will be used to monitor and control all aspects of the project, to ensure that the project is completed on time and within budget and complies with all design, legal, safety and environmental requirements.

The work required to complete the construction of the project will consist of a number of individual packages undertaken by a number of suitable contractors and suppliers. The detail of the Contracts will only be confirmed during the design, specification and tender process. The following work contracts are those which have been considered initially to form the basis of the implementation strategy:

### **Mine development**

Mining operations from the initial development through to full operation will be undertaken by Scotgold. Mining personnel will be employed by Scotgold to perform all standard mining operations under direct control of the Mining Manager. Employees will be engaged to suit the mining schedule.

Capital equipment and mining consumable will be purchased by Scotgold. The capital equipment will primarily be drilling boomers, LHDs, low profile trucks and support vehicles. This equipment will be specified to suit operational requirements and purchases made based on quotations obtained from selected suppliers. Supporting equipment including mine fans, pumps, piping, electrical cables and equipment, compressors, generators and tools will be purchased in a similar manner. Mining equipment will generally be installed by mine personnel during development.

Mining consumables will be purchased by Scotgold and stored on-site. Stock levels will be set to suit consumption rates.

### **Processing plant**

The processing plant will be ordered under a LSTK contract. The construction of the plant will constitute a major portion of the project capital costs and as such the final installation will be selected to provide the most cost effective option. Initial process designs and costs, based on performance requirements specified by Scotgold, have been obtained from several companies experienced in this type of installation. Discussions with these and other suppliers will be ongoing during the planning stage in order to ensure that the best options for the plant design are identified.

It is not intended that the plant will be supplied as a "black box" installation as it is important that Scotgold are able to evaluate the equipment and process in terms of operation and performance. The contractor will be responsible for the design, supply, installation and commissioning of the plant. The plant will be handed over to Scotgold once performance requirements have been met.

Specifications and contract documents will be prepared by Scotgold and a formal tender issued to selected suppliers.

Plant consumables will be purchased by Scotgold and stored on-site. Stock levels will be set to suit consumption rates.

### **Tailings Management Facility**

Significant work has already been undertaken regarding the layout and design of the TMF. However, additional site investigations and detailed design will be required before construction of the facility can begin. Once the design has been completed a tender for the construction work will be issued. The work will be managed under an EPCM awarded to the TMF designers. This will ensure that the construction will be fully managed and under the control of a specialist company.

The construction of the TMF must be managed to match the mining schedule where waste rock required for the construction of the TMF will be produced.

Two additional lifts of the TMF will be required over its operational life. The construction of these are to be included in the tender document to provide a basis for the future work.

### **Site buildings**

The plant equipment, offices, workshop and storage will be contained within a single structure. The building will primarily comprise of:

- ✓ Building structure foundations.
- ✓ Plant equipment foundations.
- ✓ Building structure and cladding.
- ✓ Office, ablution facilities and storage units.
- ✓ MV/LV electrical distribution.
- ✓ Water and sewage.

The design of the building will be based around the layout of the process equipment layout. Separate contracts could be placed for civils, structural, office units, and utilities. For this installation, where limited space is available on site for contractors and materials, it would be advantageous to use a single contractor. There will be significant interaction between the building contractor and the plant contractor. The work must be scheduled in detail to ensure that both contracts can work in the same area without interfering with the construction activities. It may be advantageous to include the building work as part of the process plant contract to avoid conflict.

### **Electrical power**

The high voltage power supply to mine will be provided by SSE.

Medium and low voltage infrastructure will be required to provide power to the site. A contractor will be appointed to install the MV/LV infrastructure for:

- ✓ Supply to battery limit at plant.
- ✓ Supply to underground mining operations.
- ✓ Building general.
- ✓ Sewage and water treatment.
- ✓ TMF pumping.
- ✓ Water pumping.
- ✓ Communications and security.

### **Project Organisation and Management**

The Scotgold Project management organisation will include the following key participants:

- ✓ Project Management Team (PMT)
- ✓ Project Engineering Team (PET)
- ✓ Operations Team (OT)

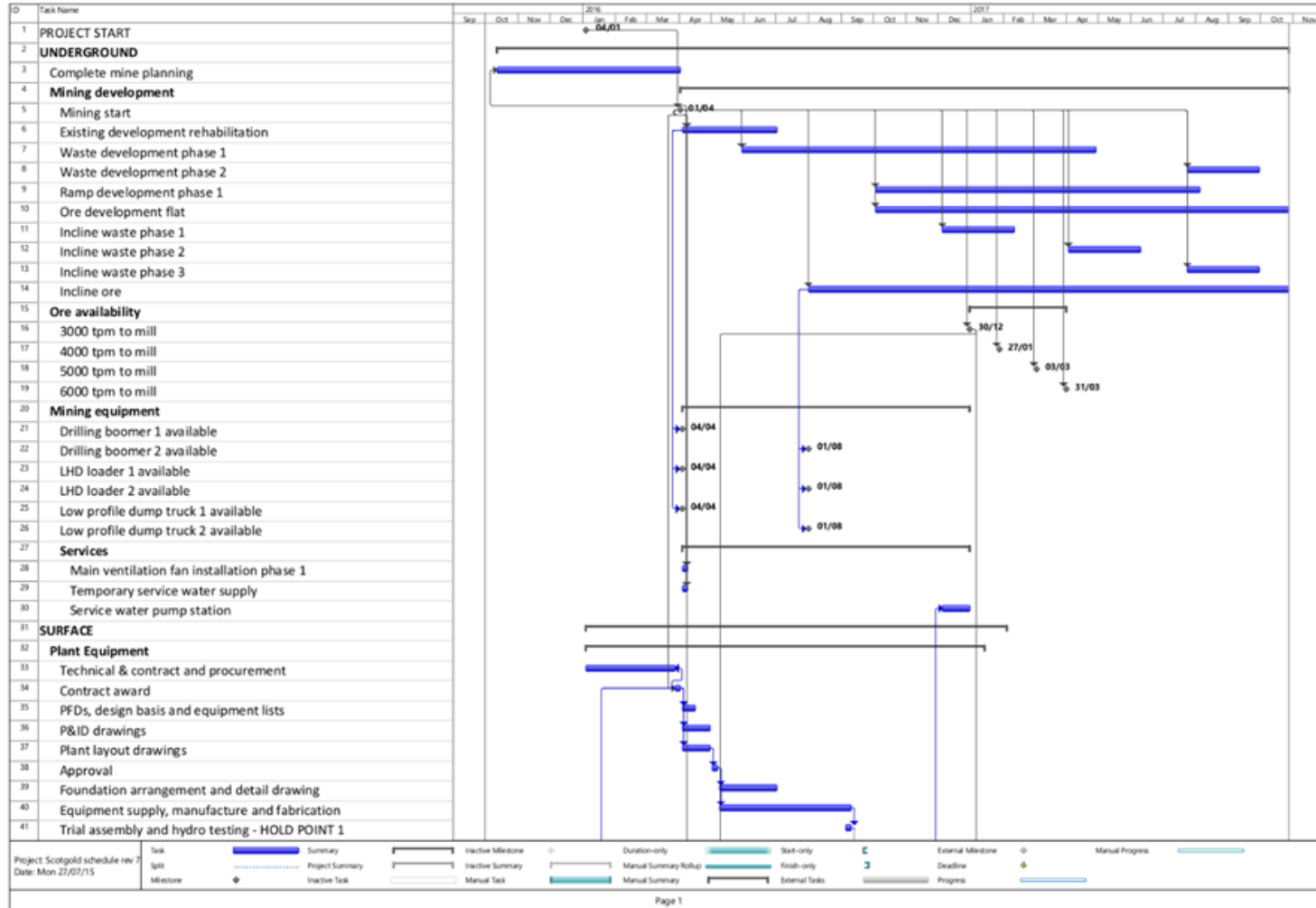
In order to compact management suitable for a project of this size and nature, individual managers may cover more than one function and work within a number of project teams.

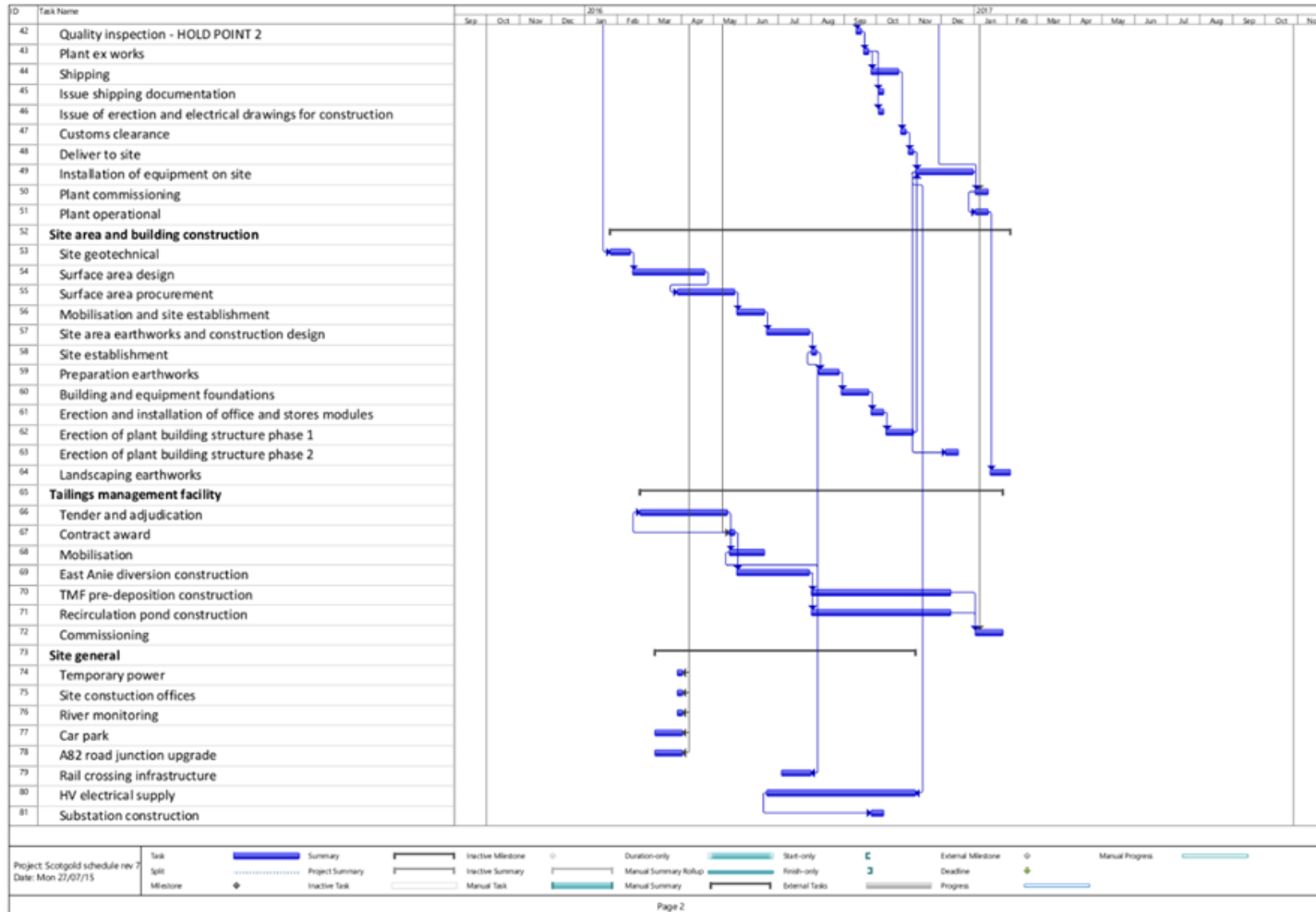
### **Project Schedule**

A preliminary project schedule showing a high level plan for the implementation and construction of the project is shown in the figure below. The project schedule is dominated by three major project areas, these being underground mining, process plant and the TMF.

The operational phase of the projects begins early in April 2016 when underground mining operations begin. Work will begin by enlarging existing excavations to provided suitable dimensions to comply with mining specifications. The work will proceed to waste development, ramp development and onto ore development on the flat and in the ramps. The critical point of the project development is reached when the mine is able to provide 3,000 tonnes of ore for delivery to the plant. This is scheduled for the beginning of January 2017. At this time the process plant and the TMF must be ready for commissioning otherwise ore production will be reduced as stockpile capacity is limited. Site construction of the process plant and TMF and supporting infrastructure, including electrical power availability, will be scheduled to meet this production milestone. These should not be completed too early as additional costs may be incurred due to waiting time.

Production of ore from the mine will ramp up steadily reaching a steady state production rate of 6,000 tonnes per month during April 2017.





## **Risk Assessment**

A project risk assessment workshop was held at Scotgold offices, Tyndrum on Wednesday 27<sup>th</sup> May 2015.

The following process was followed:

- ✓ Identify hazard's/risk's.
- ✓ Determine the severity and probability for each hazard and the resulting inherent risk.
- ✓ Determine mitigation or control measures required to reduce the inherent risk to acceptable levels.
- ✓ Estimate the residual risk as a result of introducing the mitigation measures.

This whole process has been captured in a single table and forms the basis of the risk register going forward.

After the application of the mitigation measures, there are no high or very high residual risk events. However, there are five events which are in the tolerable category. These will require a management focus to ensure the risk is managed appropriately:

- ✓ Lack of mining skills.
- ✓ Traffic underground.
- ✓ Plant performance.
- ✓ Poor project execution/coordination.
- ✓ Funding delays.

## **Conclusions and Recommendations**

Although, in world terms, this project is relatively small it has an extremely high profile. As well as featuring in a number of BBC documentaries it has a number of firsts:

- ✓ First primary gold and silver mine in Scotland.
- ✓ First metal mine to be given approval in a National Park.
- ✓ It has unparalleled support from the local community.

In addition, it has a very attractive return of post-tax 41% IRR. It is relatively low risk with a number of opportunities to reduce costs and increase revenue:

- ✓ Potential to smelt and refine gold within Scotland and hence obtaining a “made in Scotland” premium on precious metal prices and reduce transport, smelting and refining costs.
- ✓ Both the process building and the TMF used single quotes and there is scope for cost reduction in a more competitive tendering process.

- ✓ Labour rates used in this report include a premium to attract skills. There is scope to remove this premium with time.
- ✓ We have assumed that finance will be raised by the end of December 2015. If finance can be raised quicker, the implementation schedule can be brought forward.

We therefore conclude that the project is viable with no material flaws which prohibit the project from being developed. It would be relatively low risk to raise the necessary finance and to proceed to the detailed design phase of the project and commence implementation.

A number of recommendations are made:

- ✓ CSA recommend that Scotgold introduce an appropriate geological database management system, such as DataShed or Acquire, and transfer all existing information currently held in spreadsheets and hardcopy logs into a central secure database.
- ✓ CSA recommend undertaking additional bulk density analysis in order to increase spatial and lithological cover across the full deposit.
- ✓ CSA recommend appropriate production drilling methods during drive and stope development in order to more accurately model the vein 3D position in areas of Indicated and Inferred resource.
- ✓ There are three items on the critical path:
  - Detailed design of the TMF. It is recommended that an order be placed for this as soon as finance is available.
  - The delivery of the first suite of mining equipment. It is recommended that letters of intent be issued immediately and investigations be started on availability of rental equipment.
  - Placement of order for the plant. It is recommended that tender documents be prepared immediately.
- ✓ Consideration should be given to refining and smelting within Scotland to reduce costs and potentially obtain a premium on gold price received.
- ✓ It is recommended that Scotgold start to build a project team as soon as possible which should include as a minimum a project manager, a mine manager and a process engineer all with the appropriate skills in building a project of this nature.