



TSCHUDI COPPER MINE TECHNICAL REPORT



November 2016

Contents

1	EXECUTIVE SUMMARY	3
2	MINERAL RESOURCE – 30 th June 2016.....	3
3	ORE RESERVE – 30 th June 2016.....	3
4	PROJECT OVERVIEW	4
4.1	Summary	4
4.2	Ownership / Tenure	5
4.3	Site Infrastructure	5
4.4	Mining Methods	5
4.5	Processing.....	5
4.6	Product Sales	5
4.7	Environmental and Social	6
5	PRODUCTION	6
6	GEOLOGY AND MINERAL RESOURCES.....	9
6.1	History	9
6.1.1	Ancient History.....	9
6.1.2	Modern History.....	9
6.2	Geological Setting.....	10
6.2.1	Regional Setting.....	10
6.2.2	Local Structure.....	13
6.2.3	Local Geology	13
6.3	Mineralisation	16
6.3.1	Introduction	16
6.3.2	Oxide Mineralization.....	16
6.3.3	Transitional Mineralization.....	16
6.3.4	Sulphide Mineralization	16
6.3.5	Dolomite Mineralization	17
6.4	Exploration	17
6.5	Mineral Resources.....	17
7	OPTIMISATION	19
7.1	Pit Optimisation Results.....	19
8	PIT GEOTECHNICAL AND DESIGN	19
8.1	Design Parameters.....	19

8.2	Pit Designs	21
9	WASTE ROCK STORAGE FACILITY	27
10	PROCESSING.....	29
10.1	Crushing, Agglomeration and Stacking	29
10.2	Solvent Extraction and Electro-Winning	29
11	ABBREVIATIONS AND DEFINITIONS	31

1 EXECUTIVE SUMMARY

Construction commenced at the Tschudi Copper Mine in January 2014, open pit mining started in August 2014, first ore was agglomerated and stacked in January 2015 and first copper cathode was produced in February 2015. Total capital expenditure to date is in excess of NAD1 billion.

The ramp-up to full production continued in 2015 and the full nameplate production rate of 1,400t per month (17,000tpa) of copper cathode was reached in December 2015.

To the end of June 2016 18,913t of copper cathode has been produced from 3.8Mt of ore stacked on the heap leach pads with 12.7M bcm of waste having been mined.

Approximately 730 people are directly employed on site (including permanent contractors) – over 98% of the workforce are Namibian nationals.

The current Life of Mine (LOM) plan forecasts that mining of ore will continue until July 2024 (based on current copper cathode production rate) and copper production will continue from the heap leach until at least December 2025. Over the whole mine life it is expected that approximately 175,000t of cathode copper will be produced.

2 MINERAL RESOURCE – 30TH JUNE 2016

The mineral resource has been updated to 30th June 2016. It has been estimated by depletion of the 2015 JORC mineral resource using the end of June 2016 survey data.

Classification	Tonnes (Mt)	Grade (Cu%)	Contained Metal (kt)
Measured	5.7	0.99	56.8
Indicated	21.8	0.84	183.1
Measured & Indicated	27.5	0.87	239.9
Inferred	22.2	0.72	160.0
Total Mineral Resource	49.7	0.80	399.9

Table 1 – Tschudi Mineral Resource as at 30th June 2016

Source: Resource as at 30th June 2016 is the depleted JORC resource as per “Technical and Mineral Resource Estimate Report: Tschudi Copper Deposit” by Riaan Herman Consulting dated September 2015. Based on a 0.3% copper cut-off.

3 ORE RESERVE – 30TH JUNE 2016

Classification	Tonnes (Mt)	Grade (Cu%)	Contained Metal (kt)
Proved	6.1	0.94	57.4
Probable	16.6	0.81	134.3
Total Ore Reserve	22.7	0.85	191.8

Table 2 – Tschudi Ore Reserve as at 30th June 2016

Source: Cameron Mining Consulting Ltd report of 30th June “2016 Ore Reserve Depletion”. Based on a 0.3% copper cut-off and a copper price of USD 2.70/lb. Estimated in compliance with the JORC Code (2012).

4 PROJECT OVERVIEW

4.1 Summary

The Tschudi deposit is centred on co-ordinates 19°15'55"S and 17°31'14"E, at a mean elevation of 1,298m above mean sea level (amsl). The project is located approximately 20km west (26km by road) of Tsumeb in northern Namibia (Figure 1).



Figure 1 – Location of Tschudi Mine

4.2 Ownership / Tenure

Mining licence 125 (ref no.14/2/3/2/125), under which the Tschudi mine operates, was issued to Ongopolo Mining Ltd on the 29th October 2002, by the Ministry of Mines and Energy, and is valid for 15 years until 28th October 2017.

4.3 Site Infrastructure

Mining commenced in August 2014 and the process plant was commissioned in February 2015. All infrastructure required for the project is in place. This includes:

- Power line, substations, and power supply;
- Borefield and pipelines for water supply;
- Access roads from Highway;
- Security Fencing and Gates;
- Workshops and Offices for the mine and plant;
- Heap Leach Pads and Waste Storage Facilities;
- SX/EW plant.

Ongoing monitoring and remediation programs are in place to ensure continued operation.

Labour is sourced from Tsumeb and other parts of Namibia. Over 98% of the personnel on site are Namibian nationals. Weatherly provides on-site accommodation for shift workers, with the remainder of personnel living at Tsumeb.

4.4 Mining Methods

Mining is currently underway in smaller starter pits which will ultimately merge into a single larger open pit via a series of pushbacks. The mining activities follow a conventional drill/blast and load/haul operation. All mining activities, including supply of explosives, blasting and hauling operations, is undertaken by a specialised mining contractor (Basil Read Mining Namibia). Ore is delivered to the ROM pad, located to the north of the open pit, and waste is delivered to the waste rock facility to the south of the open pit.

4.5 Processing

Ore from the ROM pad is crushed by a three-stage crushing plant consisting of a jaw crusher and secondary and tertiary cone crushers. Agglomerated ore is then trucked to the heap leach pad and stacked in 4m to 6m lifts. The ore is then leached, using dripper lines, and the solution is collected on the impermeable liner, drains into the W-drain, and stored in copper inventory ponds. The Pregnant Leach Solution (PLS) is then pumped to the SX/EW plant for processing into cathode copper of at least 99.99% purity.

4.6 Product Sales

The pure copper cathode sheets are trucked to Walvis Bay for export. The company has an offtake agreement for 100% of the copper cathode expected to be produced throughout the life of the mine.

4.7 Environmental and Social

The Tschudi mine operates within the current environmental guidelines determined by the relevant government authorities. The current Environmental Clearance Certificate (ECC) was issued by the Ministry of Environment and Tourism in August 2016 and is valid for 3 years (until August 2019).

The company owns the Tschudi farm, on which most of the mining lease is situated, and now has a good working relationship with neighbouring farms including the owners of Uris farm which contains approximately 30% of the mining lease. Tschudi Copper Mine, and Weatherly Mining Namibia, has developed good relationships local and regional authorities including those based in Tsumeb, including donations of land for resettlement in Tsumeb and services and support for local and national educational establishments.

5 PRODUCTION

To the end of June 2016 a total of 14.4M bcm of ore and waste has been mined (Figure 2) and 3.8Mt of ore has been stacked on the heap leach pads.

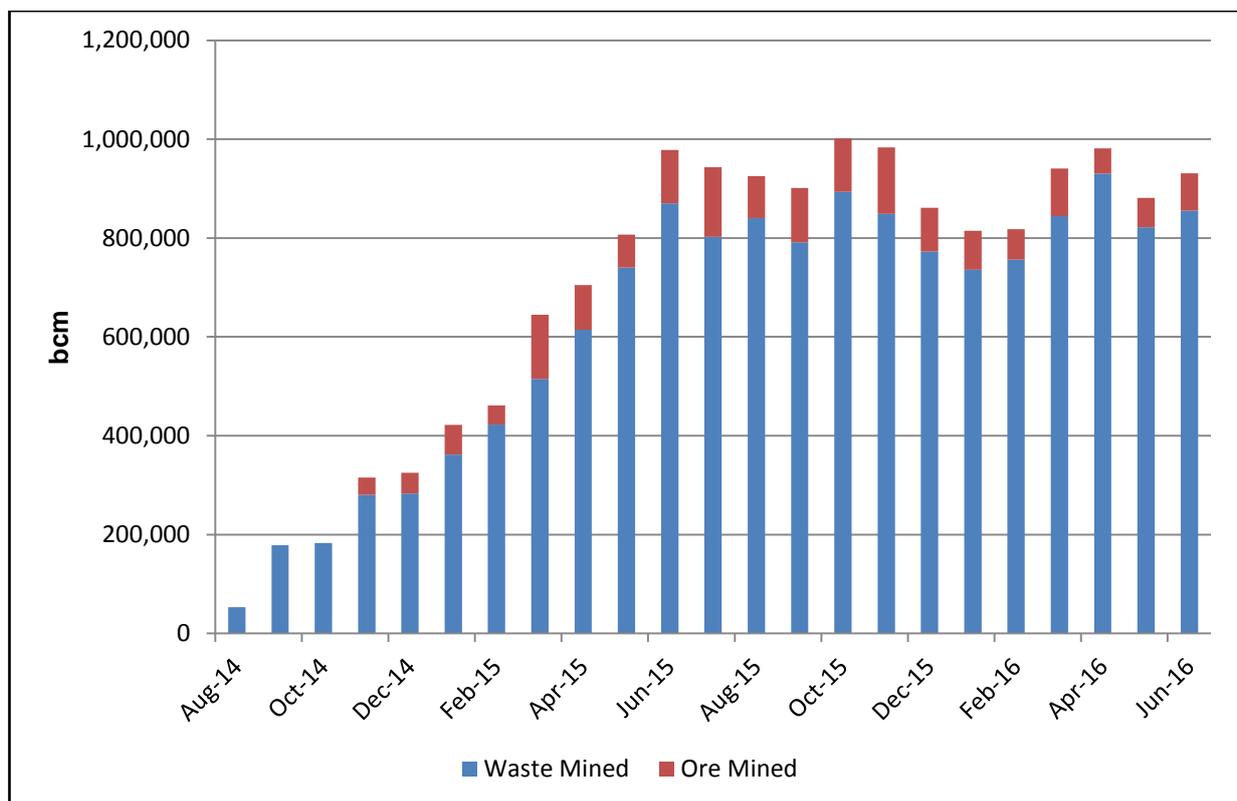


Figure 2 – Ore and Waste Production

August to December 2015 was essentially pre-stripping of waste to expose first ore before stacking of ore commenced in January 2016. First copper cathode was produced in February 2015 and total copper cathode production to the end of June 2016 was 18,913t.

Mining initially concentrated in the Pit1 and Pit2, two small starter pits which quickly merged, to the west of the deposit. Then Pit3a was developed further to the east, followed by Pit4a (Figure 3). Once the ore was exhausted in Pit3a the hangingwall was pushed back to Pit3b. Similarly once the ore was finished in Pit4a the pushback to Pit4b commenced. Currently the majority of the ore is being sourced from the lower benches of Pit3, with Pit4 mostly stripping waste. Limited mining of Pit5a pushback has stated east of Pit4.

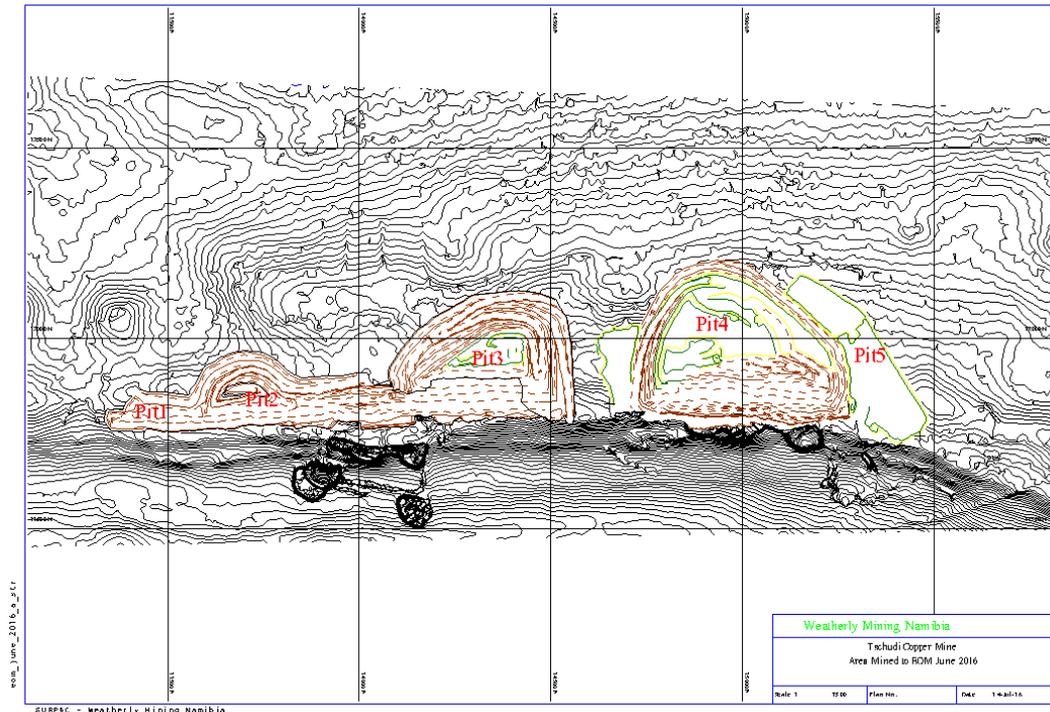


Figure 3 – Pit and Pushback Development

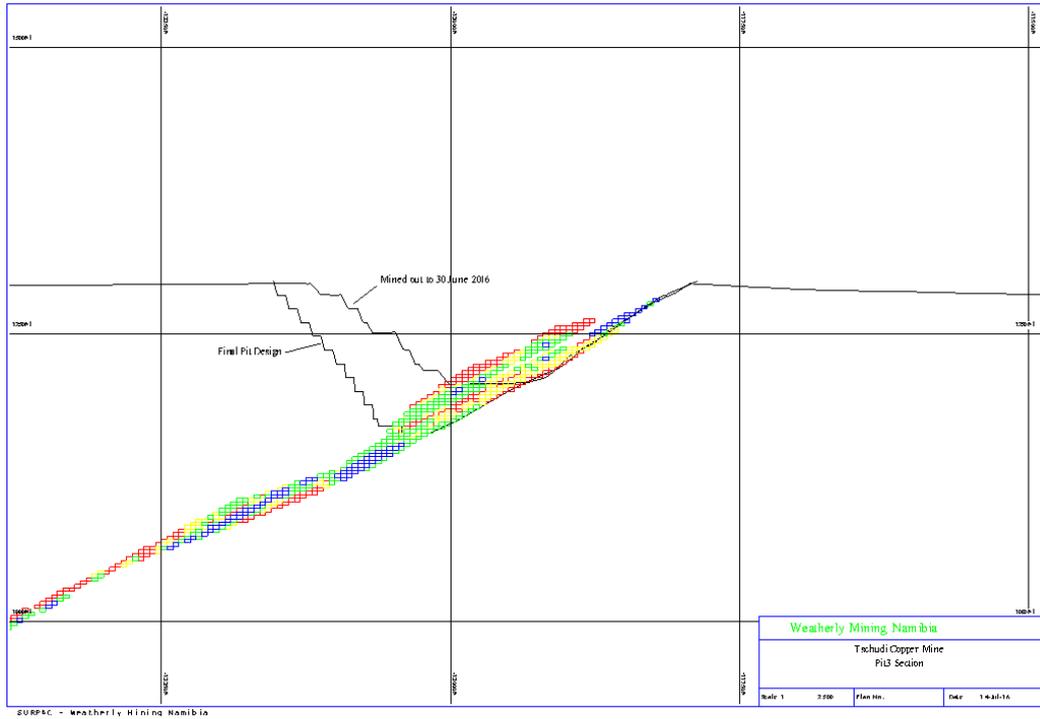


Figure 4 – Pit3 Cross Section Showing End June 2016 Pit Profile and Final Pit Design

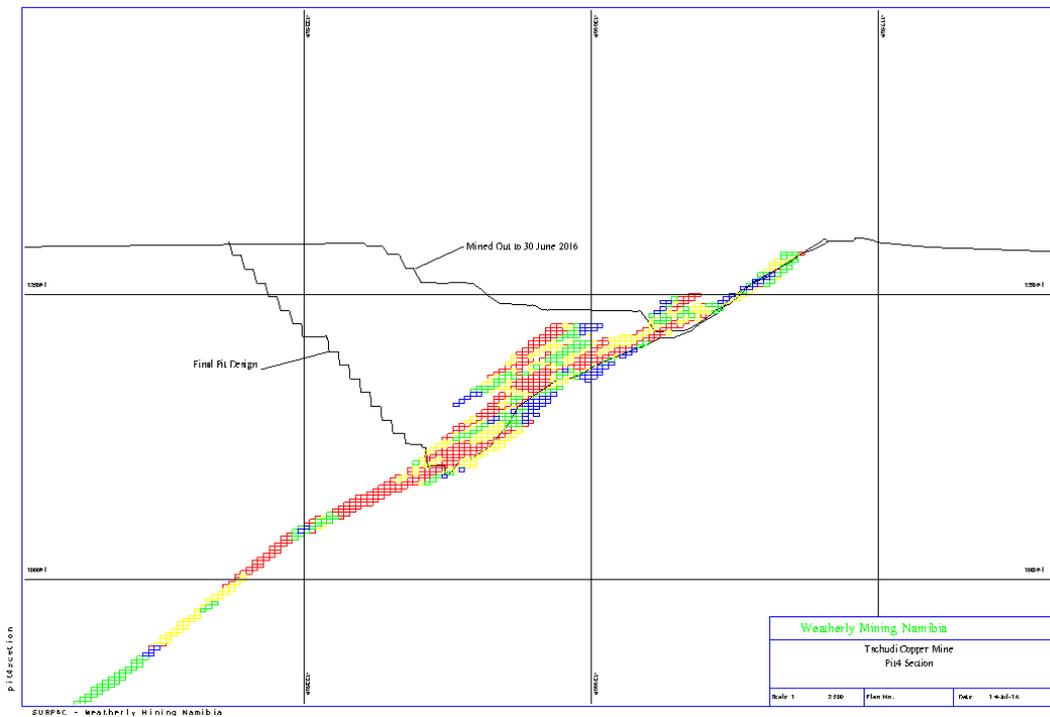


Figure 5 – Pit4 Cross Section Showing End June 2016 Pit Profile and Final Pit Design

6 GEOLOGY AND MINERAL RESOURCES

6.1 History

6.1.1 Ancient History

There is evidence of ancient peoples locally smelting copper in the Tsumeb area. It appears that the Bergdama tribe were smelting copper long before the Herero or Ovambo peoples. Primitive smelting works are common throughout the Otavi Mountainland, and evidence from localities such as Gross Otavi and Otjikoto suggests that the style and techniques used were similar to those used in Central Africa prior to 500 AD (Cairncross, 1997). The local Bushmen are said to have sold the copper ore to the Ovambos from the north, who were skilled metal workers (Emslie, 1979).

6.1.2 Modern History

Since the discovery of the Tsumeb deposit by Europeans in 1842, there has been a large amount of exploration throughout the entire Otavi Mountainland Province. Sir Francis Galton and a scientist named Charles Andersson reported the presence of copper smelting by the local population at Tsumeb – ‘The hill of the Frog’. Germany originally had possession of the territory, and granted a mining concession to the South West Africa Company (SWACO) in 1892. This concession included sole mineral rights for almost the entire northern half of what is now Namibia. In 1892 several of the known copper occurrences in the Otavi Valley, namely Tsumeb, Gross Otavi and Asis, were investigated. In 1900 SWACO granted the mineral rights for a 1,200km² concession to the Otavi Minen Und Eisenbahn Gesellschaft (OMEG). SWACO and OMEG’s properties were lost at the end of the First World War, and subsequently sold to the newly formed Tsumeb Corporation Limited (TCL) (Misiewicz, 1988). Significant exploitation at Tsumeb began in 1906, and has continued intermittently since then (Lombaard *et al*, 1986). Since the early 1900’s there have been numerous exploration campaigns throughout the Otavi Mountainland by TCL, which have led to the discovery of many economic deposits of copper, silver, zinc, vanadium and lead, amongst others. Many of these deposits have been turned into operating mines, such as Kombat, Asis, Abenab, Berg Aukas, etc.

The first record of prospecting in the Tschudi area was in 1913, when a Mr. Hoepker pegged the land on farm Uris. An OMEG report dated 25 October 1920 reported copper mineralization in limestone and dolomite beds near the Otavi dolomite – Mulden sandstone contact some 200m east of the Post II water hole on Uris. This was noted as two ‘aplite’ (feldspathic sandstone) lenses, both well mineralized with malachite. From 1916 to 1920 three other small scale mines were operating in the vicinity, namely Alt Bobos (Cu-V), Karavatu (Cu-Pb-V), and Uris (Cu-Pb-V) (Murphy, 1980). The main outcrop area was trenched and sampled by TCL geologist A. T. Griffis at the beginning of 1948.

Griffis recommended diamond drilling, but none was carried out; instead regional mapping of the area was carried out in 1950. Nothing then happened until 1968 when TCL carried out a regional soil geochemistry sampling program, which extended over the entire Tschudi area (Murphy, 1980). This geochemical survey showed Cu-soil anomaly situated on the contact of Otavi dolomites and Mulden Sandstone. In 1978 85 wagon and 31 diamond drill holes showed disseminated stratiform Cu mineralisation at the base of the Mulden Sandstone. Further phases of exploration included:

- 1978-1982: 75 diamond drillholes were drilled, and a “geological resource” of 20 Mt was declared. Metallurgical testwork was carried out on drill core to investigate mineralogical characteristics and recoverability of the sulphide ore.
- 1979 - A 26m deep exploration shaft was sunk to obtain bulk samples of oxide ore.

- 1980 - Decline shaft from surface with crosscuts into oxide ore at 40 and 50m levels.
- 1984 - RC drilling over selected oxide areas.
- 1990 - 12 diamond drillholes in oxide zone.
- 1991-1992 - Detailed diamond drill program on a 25m grid in the area where underground mining was planned, to develop a proven resource.

In 1991 a decline shaft was continued and limited development put in including five cross-cuts through the oxide ore at the 1,184m elevation. The material mined was used as a bulk sample in a trial run through the Tsumeb plant. In addition two small open pits on the oxide material were excavated.

Diamond drilling continued from 1992 to 1994 to prove up oxide mineralisation for a planned open pit, and 1996-1997 12 infill holes were drilled for a resource estimate.

In 2007 Weatherly re-opened and extended the underground trial mining development and mined approximately 209,000 tonnes of oxide and supergene material. This was treated at the Tsumeb plant.

Between 2007 and 2008 Weatherly drilled 200 holes (mixed RC and diamond) for a total of 26,000m to define the current resource.

December 2008 - Mining operations ceased in due to the fall in the copper price

January 2014 - Construction of heap leach pads and SX-EW plant commenced

July 2014 - Mining pre-strip started

January 2015 - First ore was agglomerated and stacked on pad

February 2015 – First Cu cathode produced

December 2015 – Full production attained

6.2 Geological Setting

6.2.1 Regional Setting

The Tschudi Project area is located within the Otavi Mountainland of northern Namibia, which forms part of the Northern Carbonate Platform of the Pan African Damara orogen. The Damara Supergroup is an orogenic belt that was deposited on a pre-1.0 Ga granitoid basement, the Grootfontein Basement Complex. It is composed of a 400km wide north-east trending arm, as well as two coastal arms, that all join in the region of Swakopmund, on the western coast of Namibia. This entire sequence was formed by the deposition of a geosynclinal sequence approximately 900 to 650Ma, caused by the separation of the Kalahari, Congo and proto-South American cratons. This rifting allowed the deposition that formed the Damara, which was then followed by a period of compression. The northern arm is labelled as the Kaoko Belt, and the southern arm is the Gariep Belt, which overlies the Namaqua Metamorphic Complex in southern Namibia. The Otavi Mountainland is located within the central intra-continental arm (Misiewicz, 1988).

The sediments of the Damara Supergroup were unconformably deposited on the folded and peneplaned Grootfontein Basement, composed of granite, gneiss and poorly exposed mafic complex, characterised by common rift grabens. The oldest Damara sediments comprise mafic lavas, mica schists, conglomerates and arenites that form the Nosib Group. This is a discontinuous succession up

to 750m thick, that was deposited in five NE trending, fault bounded, grabens, and is unconformably overlain by the Otavi Group. The Otavi sediments are divided into two groups by a regional disconformity:-

- The lower Abenab Sub-group (dolomite and limestone, with minor shale and arenaceous units).
- The upper Tsumeb Sub-group (dolomite with subordinate chert and limestone bands).

The Otavi Group reaches a maximum thickness of approximately 7,000m and is interpreted as being deposited on a stable marine shelf (Murphy, 1980). Sedimentation of the 3,000m thick Tsumeb Group started with the deposition of fluvoglacial diamictites (Chuos Formation), followed by shallow shelf marine sedimentation of laminated limestones and marls with abundant slump breccias and argillite bands (Maieberg Formation). Conformably overlying these are the dolomites and cherts of the Elandshoek Formation that have been exposed to secondary silicification, forming the rugged terrain around Tsumeb and the exposed hills of the Otavi Valley Syncline. The uppermost portion of the Tsumeb Subgroup, the Huttenberg Formation, is a light grey dolomite sequence characterised by algal chert lenses and oolitic and pisolitic concentrations towards the top of the sequence (Misiewicz, 1988). There are eight distinguishable informal lithozones within the Tsumeb Subgroup. Sedimentological and carbon-isotope studies have shown the older zones to have been deposited in relatively deeper cold water during the collision with the Kaoko Belt to the west, during and after a glacial event, observed in the lowermost zone. The deposition of the later zones are characteristic of extensional tectonics, and a progressively warmer climate, as evidenced by the presence of chert, oolites, pisolites, stromatolites and algal mats within the Huttenberg Formation (Melcher, 2003).

GROUP	SUBGROUP	FORMATION		LITHOLOGY
MULDEN		Owambo		Pelite, marl, carbonate
		Kombat		Shale
		Tschudi		Arenite
OTAVI	Tsumeb	Huttenberg	T8	Dolomite
			T7	Pelite
			T6	Dolomite
		Elandshoek	T5	Chert
			T4	Dolomite
		Maieberg	T3	Limestone
		Ghaub	T1	Diamictite
		Abenab	Auros	
	Gauss		Dolomite	
	Berg Aukas			
	Chuos		Diamictite	
NOSIB	Askevold		Volcanics	
	Nabis		Clastics	
Grootfontein Basement Complex				

(adapted from Melcher, 2003)

Figure 6 – Stratigraphy of the Otavi Mountainlands

Above the Otavi dolomites are the Mulden Group sandstones which attain a maximum thickness of about 700m. The Mulden Group is a clastic molasse sequence which was deposited during the early stages of the Damara Orogeny. It marks a drastic change in the depositional environment, from the stable marine shelf environment of the Otavi Group sediments, to one of fluvial and deltaic deposition in an intermontane setting (Misiewicz, 1988). The Mulden Group can be divided into three formations by

variations in sedimentary facies and geographical accumulation; the Tschudi, Kombat and Owambo Formations. These lithologies are located within the synclines formed by the Otavi dolomites.

The basal Mulden facies has no official status, but consists of a sporadic dirty subgreywacke with common localised chert pebble conglomerates, unconformably lying on the Huttenberg dolomites. These conglomerates were deposited as playa mud flats or shallow lacustrine sediments on the karstic dolomite basement, and become progressively thicker towards the west. Argillite and shale lenses are commonly intermixed within this basal unit. Above this basal unit is the Tschudi Formation, dominated by clean, feldspathic and quartz-arenites, greywackes and silty mudstone lenses, with very poorly developed bedding.

This clastic sequence was probably developed as a delta fan above the basal conglomerate unit, with the clastic sediments being locally derived from the denudation of up-domed basement complex. Above these clean arenites the Mulden Group becomes more strongly bedded, with an increase in pyrite and secondary silicification, as well as occasional hydrothermal quartz-veinlets. Above this facies change is the start of the Kombat Formation, composed of a shale unit that has been metamorphosed to phyllites and slates, deposited by deltaic processes in a deep water environment. These shales gradually grade into the carbonate pelites of the Owambo Formation. The regional Otavi-Mulden contact is mostly unconformable, with sedimentation having occurred on an erosional karst surface (Misiewicz, 1988). These sediments were subjected to a period of orogenic folding during the Palaeozoic, which was followed by a prolonged period of erosion and denudation. It is thought probable that the Otavi Mountainland was at one stage covered by Karoo sediments, although nothing remains of post-Mulden deposition today (Murphy, 1980).

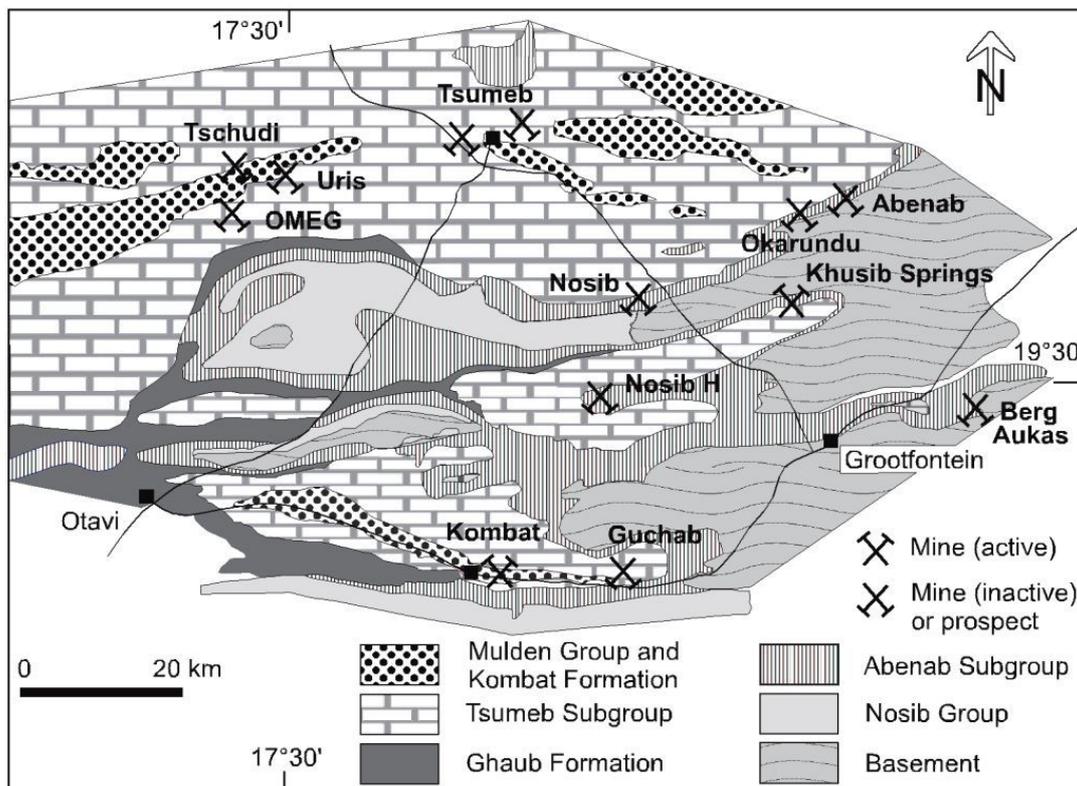


Figure 7 – Regional Geology the Otavi Mountainlands

The regional structure of the Otavi Mountainland is characterised by east-west trending, open to isoclinal folds, and north-vergent thrust faults, which were a result of continent-continent collision between the Congo and Kalahari Cratons, approximately 545Ma. These regional structures have been overprinted by a second, northwards compressive, folding phase creating NE-trending open, upright folds. During this folding, the sediments of the Otavi Mountainland were subjected to lower greenschist to prehnite-pumpellyite facies metamorphism (Cairncross, 1997, Melcher, 2003).

6.2.2 Local Structure

The deposit is located on the southern limb of the Tschudi-Uris Syncline and dips between 25° and 35° to the NNW. The northern limb has a steeper dip of about 50° and the syncline plunges at between 5° to 9° to the west. The axis of the syncline trends between 070° to 085°. No major faults have been identified, but a set of NW trending open fractures intersect the area, observed in underground exposure and drill core.

Three major fracture trends are present in the chert and dolomite horizons. The major set as observed from underground trends at 045° to 070° and is sub-parallel to bedding and dips steeply towards the south. This set has been observed to be associated with some calcite filling and in places has been striated. Other sets trend at 100° to 120° and 140° to 160° and are both steeply dipping. Regionally a major set of fractures trending at 050°, as well as the Heidelberg and Tsumeb Dyke Fault Zones, occur in Otavi Group sediments immediately southwest of the Tschudi/Uris Syncline. Prominent bedding plane shear zones occur on or near the Otavi/Mulden contact and this has been observed in most of the drilled core. Drillhole sections and some underground observations indicate that this contact undulates gently. Some micro-folding has been observed in the dolomite.

6.2.3 Local Geology

The Tschudi orebody is hosted within the basal arenite of the Mulden Group, the Tschudi Formation, unconformably overlying the Otavi dolomites. The orebody transgresses from the Huttenberg dolomites, through the basal conglomerate, and up into the clean arenites for approximately 15 - 20m.

The Huttenberg dolomites of the Otavi Group form the basement rocks within the Tschudi area. These folded dolomites form the hills exposed to the north and south of the orebody, in what is known as the Tschudi-Uris Syncline. The Tschudi deposit is located on the southern limb of this syncline, as a planar stratiform deposit, dipping at approximately 25°- 30° to the NNW. In the Tsumeb District the top of the formation is represented by a 20 - 40m thick succession of grey calcitized dolomite, but this is largely absent at Tschudi.

In the few present exposures of this dolomite, it is highly recrystallised and calcitized, and commonly has a high Mn concentration. Either it was largely eroded before Mulden sedimentation, or was not deposited to any great degree. Thus the Mulden sediments dominantly rest on the oolitic-pisolitic chert horizon. Cross bedding is occasionally visible in the cherts, as well as elongation of the oolites, probably due to regional deformation.

Below the chert horizon the dolomite is commonly brecciated, probably due to small isolated solution collapse zones. In some cases the more extensive breccias appear to be caused by slumping in partly consolidated sediments. Throughout the area the dolomite and chert horizons commonly display extensive karst features. In the drill core and underground exposures, these features can be seen as cracks, fissures and caves that have been filled with later Mulden arenitic material, calc-arenites and the basal conglomerate.

In the Tschudi project area the basal conglomerate is very sporadically developed, thought to be confined to karstic and erosional depressions in the dolomite. From the drillhole core and exposures underground the conglomerate can be described as a 5 - 20cm thick, rarely reaching 2m, dark brown polymictic unit, with varying amounts of angular to sub-rounded quartz, chert, dolomite, argillite, and sandstone pebbles, very poorly sorted. The origin of the clasts is thought to be localised, most likely eroded chert clasts from the Huttenberg Formation, as well as quartz pebbles from the exposed Grootfontein Basement complex. Pebble size ranges from granules up to cobbles but small pebbles, 1 - 2 cm wide, predominate. The basal conglomerate and first few metres of arenite are usually oxidised, even when below the average weathering profile. The thickness of this oxidised layer varies, but decreases with depth. In the deeper drillholes this oxidation is usually restricted to the immediate contact zone. Conformably above the conglomerate, and often directly (unconformably) on the dolomite, are the clean arenites of the Tschudi Formation. These arenites continue to the current surface erosion profile, and the upper portions of the Mulden Group are not represented in the project area.

There are some distinct lithological variations between the northern and southern flanks of the Tschudi syncline at the Mulden/Huttenberg contact. In the north there is a dark grey chert poor dolomite developed above the oolitic chert marker – the unit which in the south forms the top of the Huttenberg dolomite. In the south this dark grey dolomite was either eroded before deposition of the Mulden, or was originally absent. In addition in the north the basal Mulden unit is a dark grey to black shale developed at the contact – which is absent to the south where the sporadically developed basal conglomerate or feldspathic sandstones/arenites are found at the contact.

The lower Mulden sediments are composed of quartz-arenite, sub-greywacke, arkose, siltstone and mudstone. The lowermost arenite is a grey, fine to medium grained feldspathic quartzite to sub-greywacke, with very poorly developed bedding. The unoxidised arenites are moderately pyritic, with minor amounts of graphite, creating a black coloured arenite. In the mineralized zones the pyrite content decreases. These arenites are dominantly composed of detrital, sub-rounded quartz grains, with clay minerals (kaolin and montmorillonite), calcite and feldspars (orthoclase and microcline) as the main inter-granular components. There is common sericitic alteration, especially in the oxidised zone, above 70 - 80m below surface. Minor amounts of muscovite, biotite and chlorite are also present, along with reported trace amounts of rutile, zircon and sphene (Murphy, 1980). Interspersed amongst the arenites are occasional siltstone and mudstone lenses, varying from a few centimetres to a few metres thick. These units are confined to the lower 40m of the Mulden arenites. Additionally, there are a few minor thin, coarse and gritty conglomerate beds within the arenites, similar in composition to the basal conglomerate. The clean, poorly bedded, arenites extend for 20-60m above the Otavi-Mulden contact, after which the arenites become more strongly bedded, with a slight foliation, and increase in pyrite content. These upper arenites are commonly very hard and glassy (below the oxidised zone) with minor hydrothermal quartz veining, indicating secondary silicification (Murphy, 1980).

Above the arenites, near surface, there is layer of very hard, silicified white calcrete that ranges from one to 15m thick. Above this is a thin sandy soil covering that ranges from 0 - 2m thick.

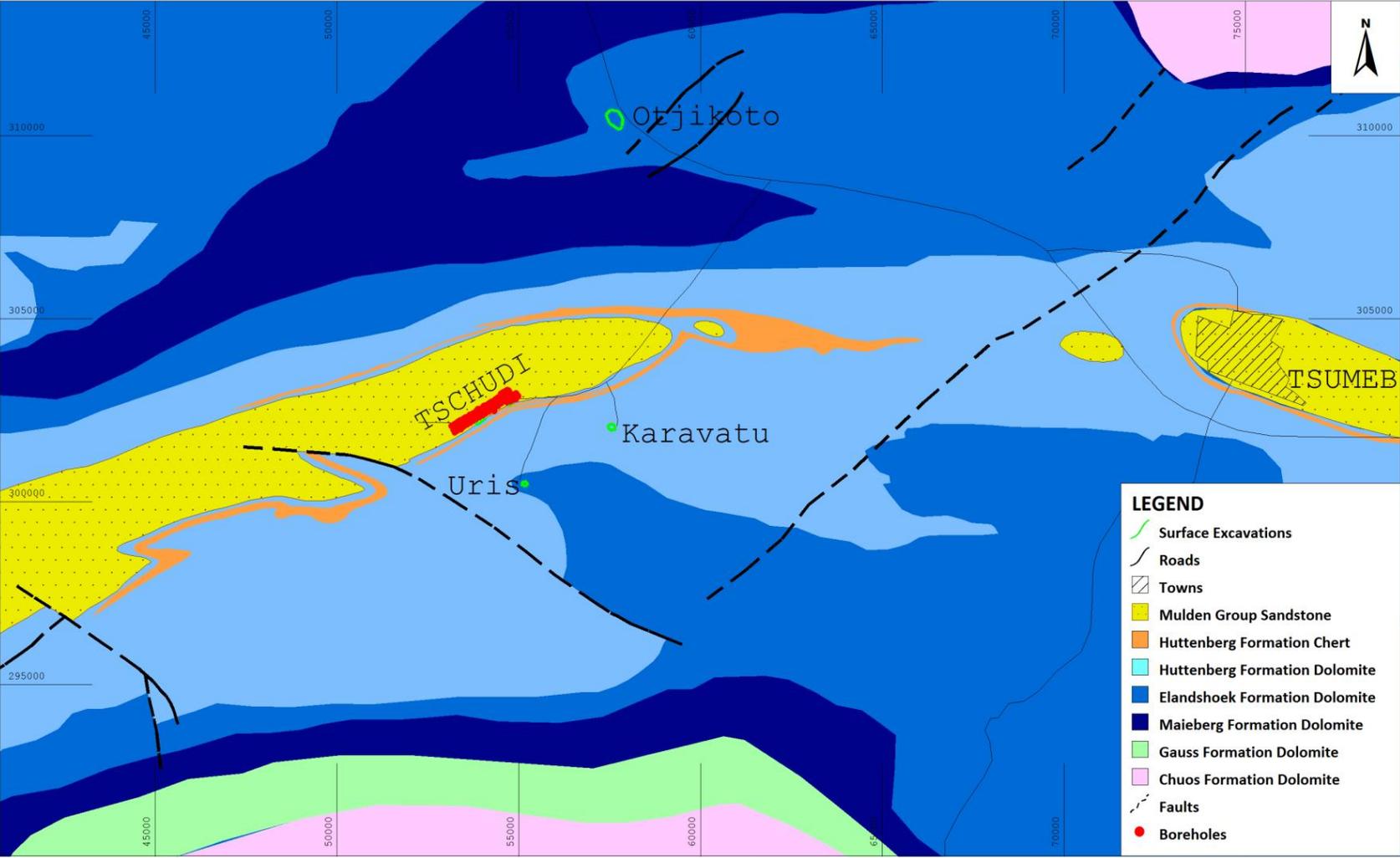


Figure 8 – Tschudi Local Geology

6.3 Mineralisation

6.3.1 Introduction

The Tschudi Deposit hosts various different mineralization facies, separated out into oxide, transitional and sulphide zones. The copper mineralization is preferentially developed in the base of the arenite sequence on the southern limb of the syncline, as a disseminated, continuously distributed roughly planar sheet, varying from two metres to at least 40m thick. There is a continuous basal mineralized zone termed the Lower Zone lying on the dolomite surface, with occasional lenses/pods of mineralization occurring several metres above constituting the Upper Zone. These lenses plunge down-dip, towards the base of the syncline. The mineralization is best developed within the medium to fine grained feldspathic arenites and sub-greywackes. Pyrite often occurs in the fine grained argillites near the base of the arenites, but these seldom contain copper mineralization. At surface outcrop the oxide mineralization occurs over a strike length of approximately 2.5km, and continues down to approximately 55m vertical depth. There is then a transitional zone of mixed sulphide-oxide mineralization to a vertical depth of approximately 75m, followed by a dominantly sulphide zone. The mineralization does locally transgress into the dolomites, as void fillings, in joints, fractures and shear zones. The mineralization is open ended to depth, but is not present to any great degree in the opposite limb of the syncline. There are sporadic soil anomaly indications of copper further along the dolomite-sandstone contact, as well as in the nose of the fold.

Two preliminary petrological studies have been carried out, with thin and polished sections being taken from drillhole core (Murphy, 1980). Copper is the main economic metal targeted, with secondary silver. Lead and zinc have been recorded, with values rarely exceeding 0.1%. No significant concentrations of gold, uranium, molybdenum, arsenic, barium, bismuth, cobalt or vanadium have been detected (Viviers, 1992).

6.3.2 Oxide Mineralization

In the oxide zone the dominant copper mineral is malachite, accompanied by cuprite, azurite and minor amounts of chalcocite, digenite and covellite. Chalcocite is often seen as rimming pyrite grains, and this appears to be a primary phase of chalcocite.

In the basal conglomerate and lower oxidised arenites the mineralization is dominantly malachite and chalcocite, with lesser amounts of covellite and cuprite. The cuprite is disseminated in clays and gossany limonitic material. Although very poorly represented in the drill core, chrysocolla is commonly present in the surface pits, as infill in veins and fractures.

6.3.3 Transitional Mineralization

The highest copper grades in the deposit occur in the supergene zone. The transitional zone occupies a poorly defined zone from approximately 55 – 75m vertical depth.

6.3.4 Sulphide Mineralization

In the unoxidised arenites, hypogene sulphide mineralization occurs as very fine intergranular disseminated grains, often difficult to determine with the naked eye. Pyrite is abundant throughout the Mulden clastics, although it does decrease in the copper mineralized zones.

Bornite and chalcopyrite are the dominant copper sulphide minerals, with some minor chalcocite and digenite. No discrete silver mineral phases have been identified, and the silver is thought to be contained within the lattices of bornite, chalcocite and digenite. One observation of native silver has

been recorded (Viviers, 1992). Isolated occurrences of disseminated galena and sphalerite have been noted, marginal to and overlying the copper mineralization.

A vertical zoning of the sulphides is apparent in several of the intersections; the general association varying from iron-rich sulphides at the top, through iron-copper-rich then copper-iron-rich sulphides, to dominantly copper-rich sulphides at the base. A typical sequence of sulphides from top to bottom is:-

- Pyrite only.
- Pyrite-chalcopyrite.
- Pyrite-bornite-chalcopyrite.
- Bornite-pyrite-chalcopyrite-chalcocite.
- Chalcocite-bornite-pyrite.
- Chalcocite-covellite.

In several cases there is a general trend of the copper sulphides to become increasingly iron deficient with depth (Murphy, 1980). Textural evidence indicates that the bulk of the pyrite formed as an early diagenetic phase, and the chalcopyrite, bornite and chalcocite selectively replaced the pyrite.

The copper sulphides occur as discrete interclastic grains which range in size from 1 to 330µm, with the majority being 25 to 50µm in diameter. Minor quantities of bornite are found as inclusions in pyrite (Viviers, 1992).

6.3.5 Dolomite Mineralization

No primary mineralization has been identified from the dolomite, but chalcocite, covellite, malachite and azurite are sporadically present in the upper 10m of the dolomite/chert sequence. In some cases the mineralization continues down to 34.5m below the contact. Some early drill intersections showed significant mineralized lengths in the dolomite in isolated instances. It was postulated that these may be feeder zones of the Tsumeb style to the diffuse mineralization in the porous overlying sandstone. Where these have been re-drilled with inclined holes they have proved to constitute narrow (<2m wide) zones of spaced sub-vertical <5cm thick chalcocite and malachite mineralized fractures. Apparent widths were due to vertical drillholes superimposed on sub-vertical stringers.

6.4 Exploration

No significant exploration has been undertaken since the commencement of the mining operation in July 2015. All drilling undertaken since that date has been infill drilling of production areas. A full database of all drilling results is included in electronic copy.

To date 696 holes have been drilled in the Tschudi deposit (both RC and diamond drilling) for a total of 77,313m.

6.5 Mineral Resources

The initial JORC Mineral Resource was estimated in 2009 and 2011 by Coffey Mining. In 2015 the JORC Mineral Resource estimate was updated to include additional infill drilling undertaken in 2014/2015, and depleted for mining to end of June 2015. The 2015 estimate was carried out by Riaan Herman Consulting.

Classification	Tonnes (Mt)	Grade (Cu%)	Contained Metal (kt)
Measured	6.8	0.98	67.1
Indicated	23.1	0.84	194.9
Measured & Indicated	29.9	0.87	262.0
Inferred	22.2	0.72	160.0
Total Mineral Resource	52.1	0.81	422.0

Table 3 – 30th June 2015 Mineral Resource Estimate (0.3% Cu cut-off)

As at the 30th June 2016 the Mineral Resource estimate has been updated based on depletion (Table 1).

7 OPTIMISATION

In 2015 Cameron Mining Associates undertook a re-optimisation of the Tschudi Orebody using Whittle Four-X software and the block model produced by Riaan Herman Consulting for the Mineral Resource. The objectives of the 2015 optimisation process were to:

- Update the original optimisation undertaken by Coffey Mining Pty in 2012 with operating experience and revised costs and copper recoveries;
- Test the effect of changing the resource model by repeating the 2011 optimisation using the original parameters and 2015 resource model;
- Use the new resource model and current parameters to define the economic limits and generate a new ultimate pit outline;
- Test and modify if necessary, the starter pit and push-back sequence currently in place;
- Test the robustness of the selected shell by running a suite of sensitivity analyses were carried out for $\pm 20\%$ variation in metal prices as well as variable mining and process operating costs.

7.1 Pit Optimisation Results

Analysis of the pit optimisation with the base case parameters determined that practical push-backs could be achieved using a series of pit shells, with the optimum final pit shell being Pit Shell 36 (Figure 9).

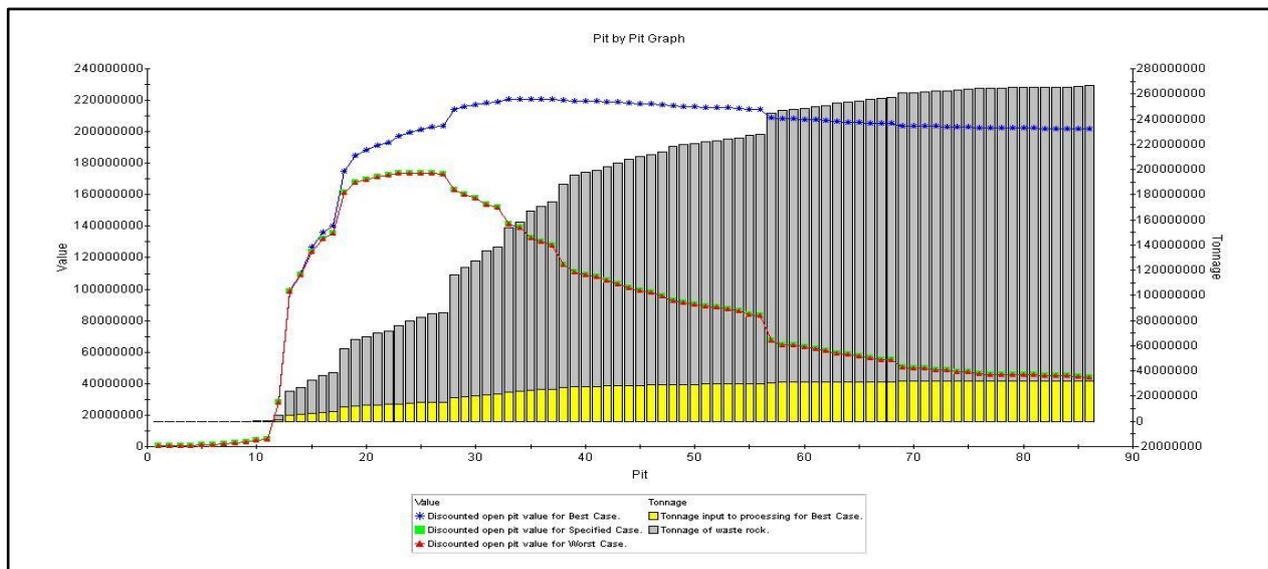


Figure 9 – Base Case Pit Optimisation Results

8 PIT GEOTECHNICAL AND DESIGN

8.1 Design Parameters

The pit slope parameters used for 2015 optimisation and pit designs are the same as used in the pit designs by Coffey Mining 2012 and Cameron Mining Consultants 2012, and based on the geotechnical drilling carried out in 2011.

RL	Description	Inter-Ramp Slope Angle	Batter Angle	Batter Height	Berm Width
Surface	Overburden	Remove Overburden			
Surface to -15m	Weathered	39°	70°	12m	10.5m
-15m to -80m	Oxide/Transition	50°	75°	18m	10.5m
Below 80m	Fresh	56°	85°	18m	10.5m

Table 4 – Final Pit Slope Parameters

The slope parameters only refer to the hangingwall (north), eastern and western ends of the pit. The footwall is mined to the ore contact with the dolomite and will be approximately 30° (+/-10°).

Two way ramps were designed at a gradient of 1 in 10 and width of 20m.

Single lane ramps near the bottom of each pit were designed at a gradient of 1 in 10 and a width of 10m.

The starter pits and initial pushbacks are designed with slightly flatter slopes in order to test the ground conditions prior to mining of the final walls.

8.2 Pit Designs

Various pit shells from the Whittle Four-X optimisation were selected for a sequence of pushbacks. As at the end of June 2016 Pit1 and Pit2 had been completed (Figure 10). Currently operations are concentrated on mining the final three benches of Pit3 and in Pit4.

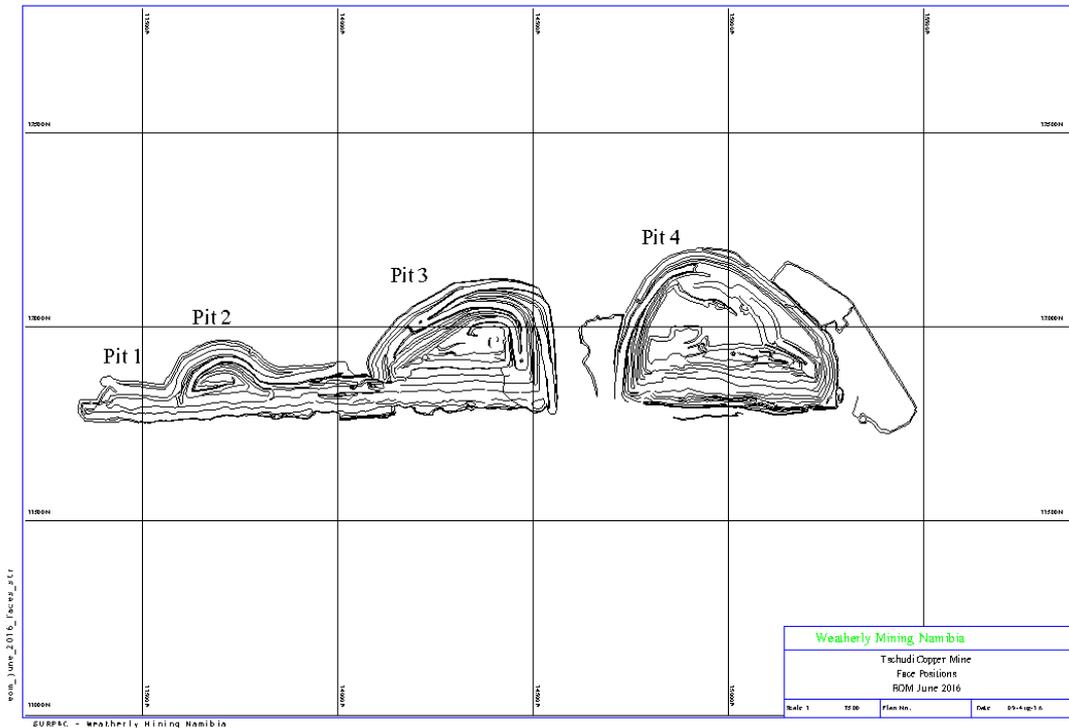


Figure 10 – Face Positions at 30th June 2016

The next pushback to be developed will be Pit5a, which joins Pit3 and Pit4, deepening the mining and delivers significant volumes of transition ore. Most of the eastern end of Pit5a is on final wall (Figure 11).

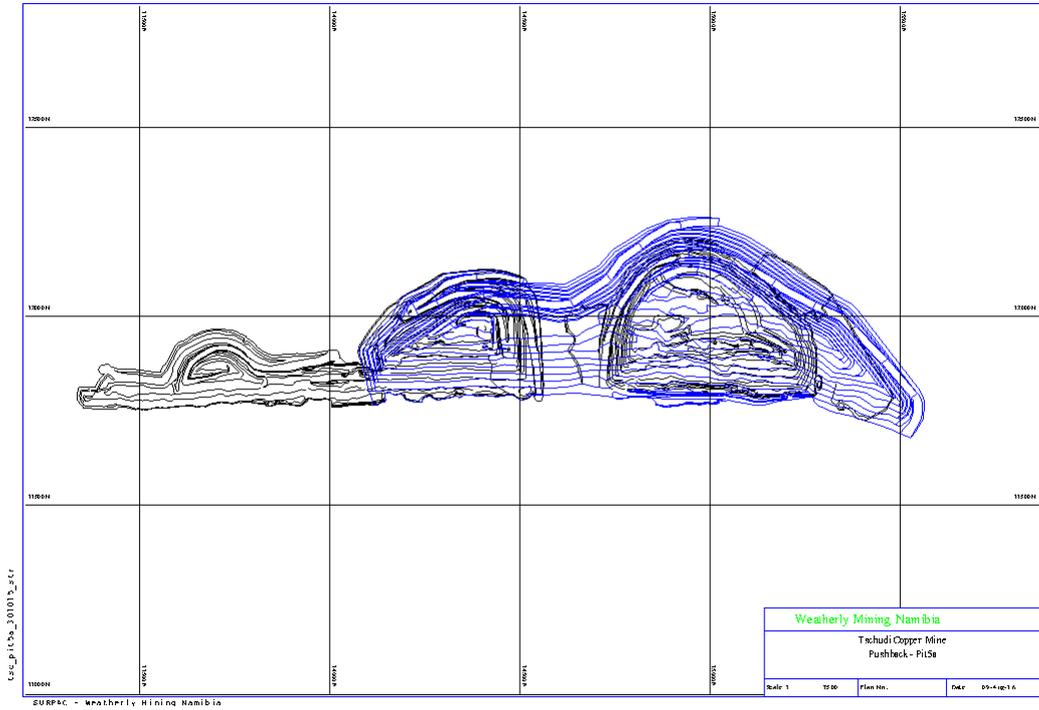


Figure 11 – Pushback Pit5a

Pit5b extends Pit5a to the west mining the transition and fresh ore under Pit3 (Figure 12).

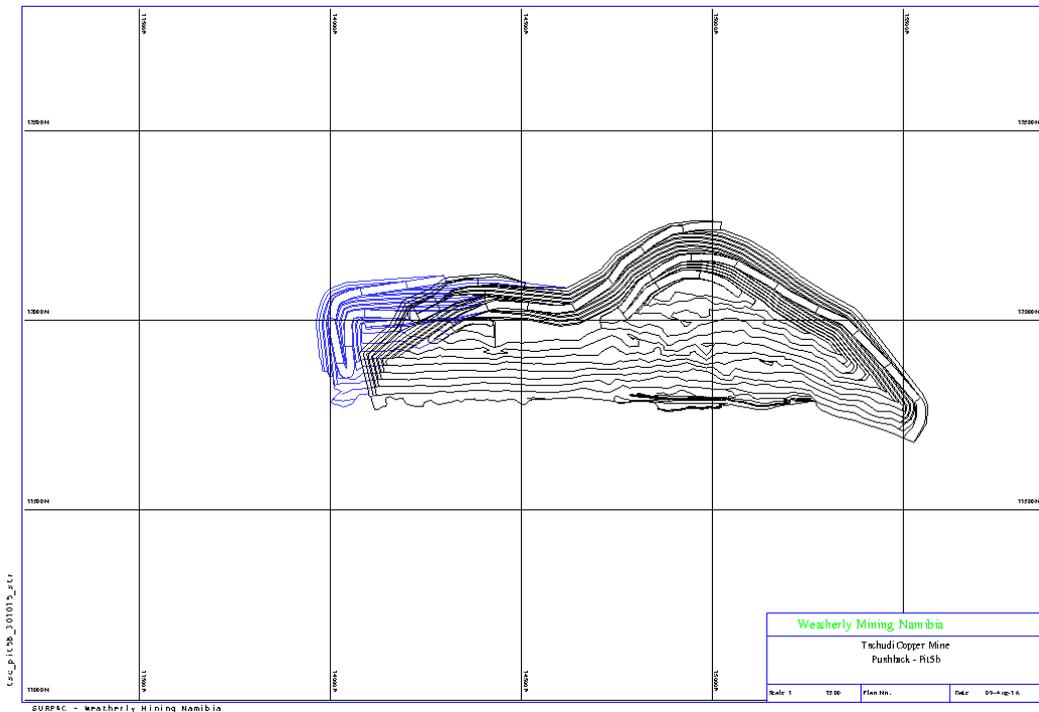


Figure 12 – Pushback Pit5b

Pit6 extends Pit5 to the west again. In order to maintain ore supply whilst avoiding excessive waste stripping. Pit6 was split into 4 sub-phases (Pits6a to 6d).

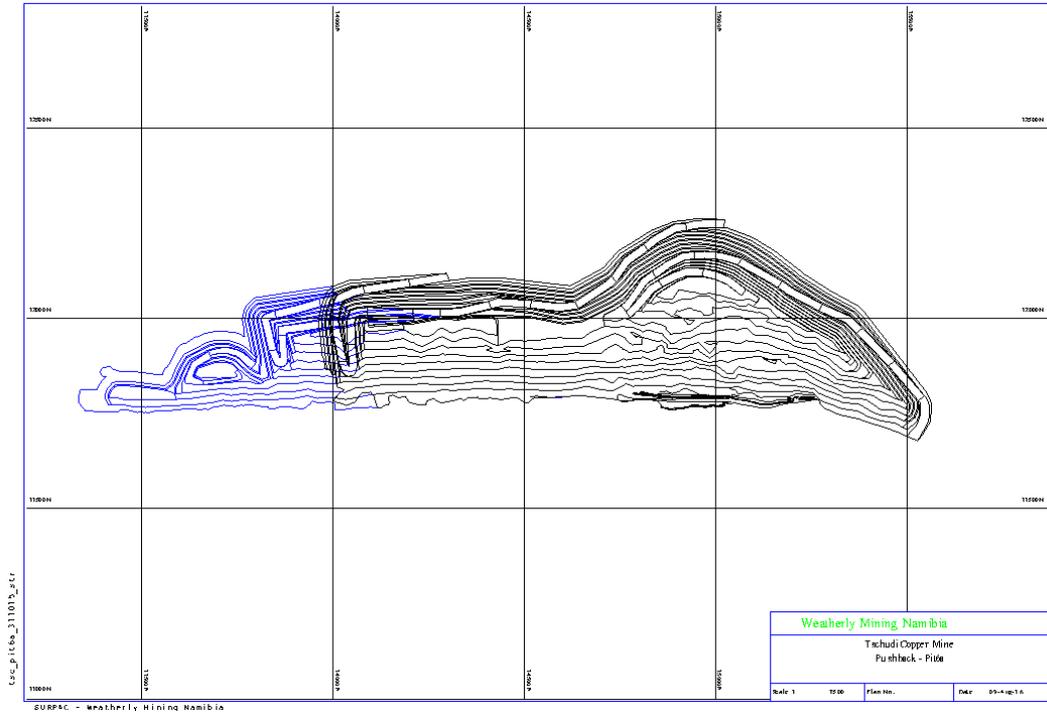


Figure 13 – Pushback Pit6a

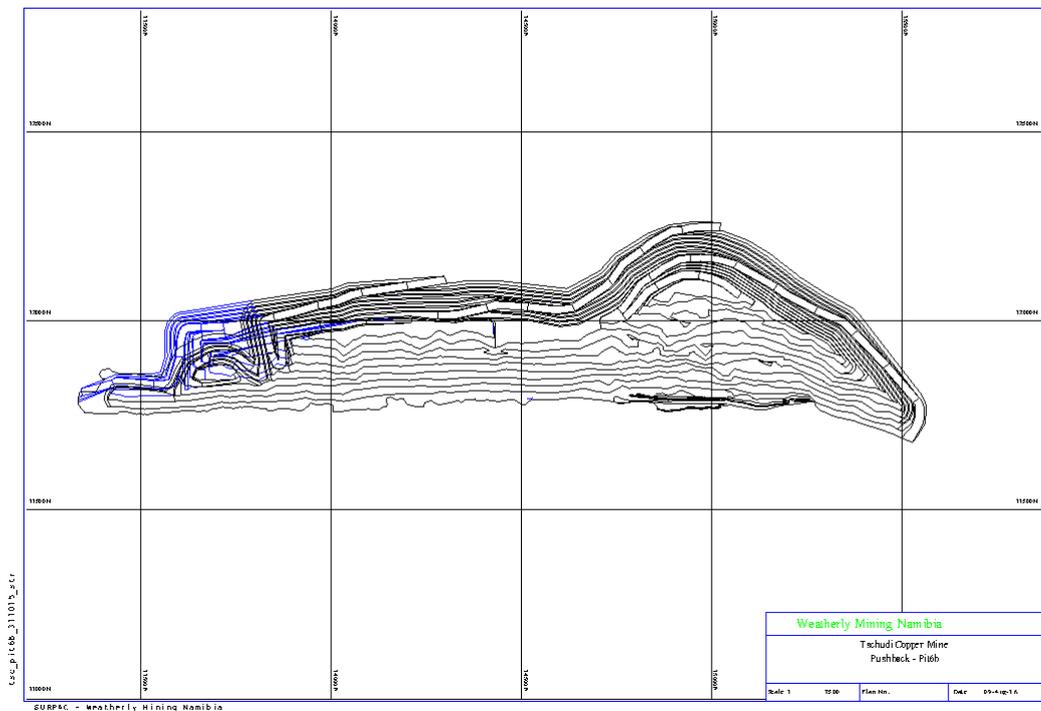


Figure 14 – Pushback Pit6b

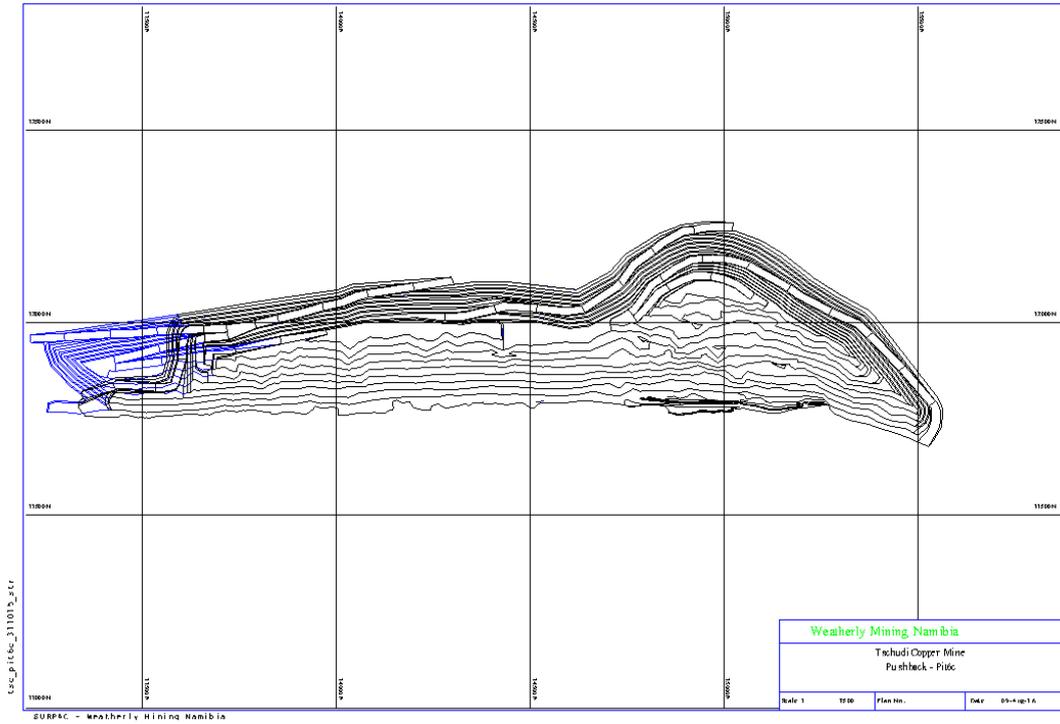


Figure 15 – Pushback Pit6c

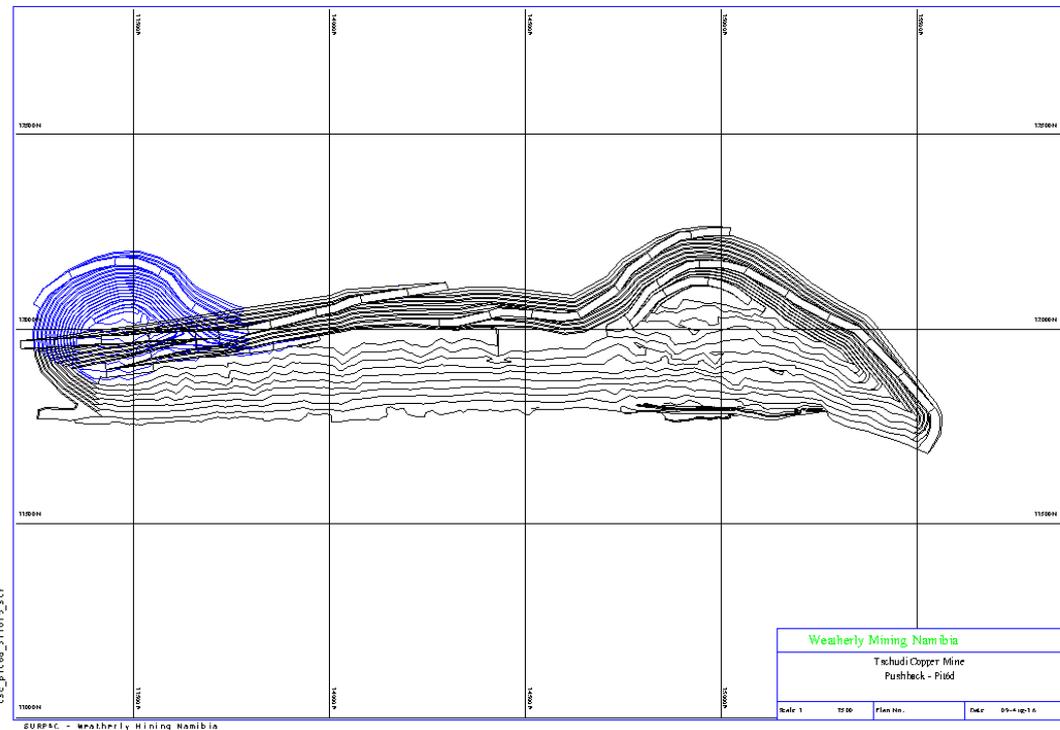


Figure 16 – Pushback Pit6d

The final pushbacks (Pit7a and Pit7b) take the pit to the final limits as indicated in the optimisation.

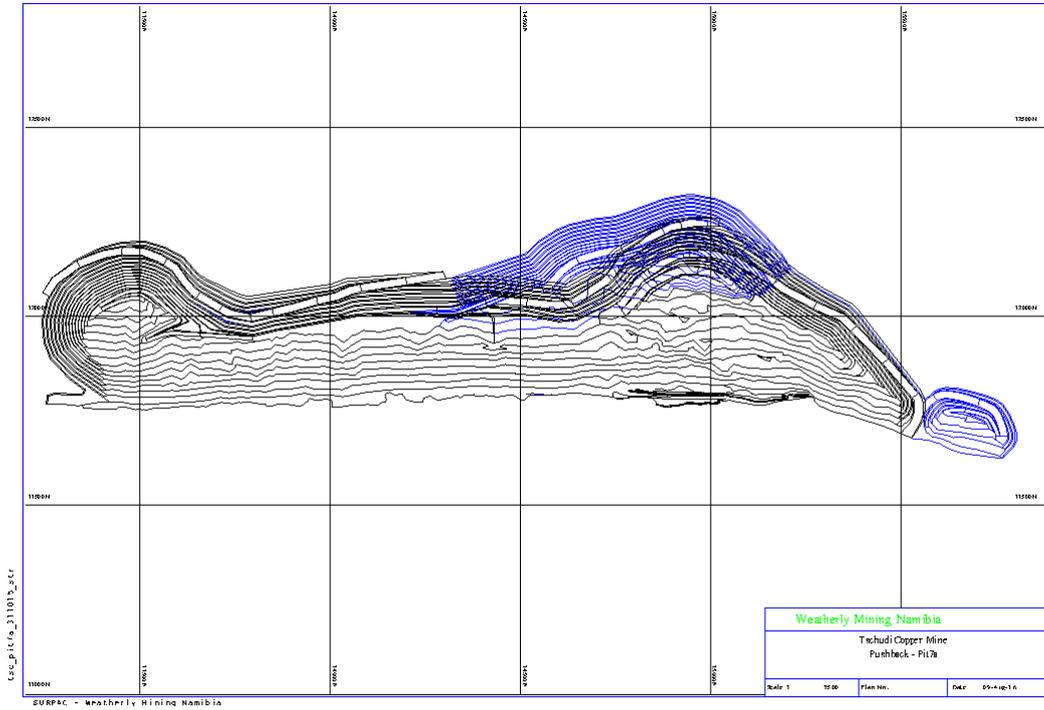


Figure 17 - Pushback Pit7a

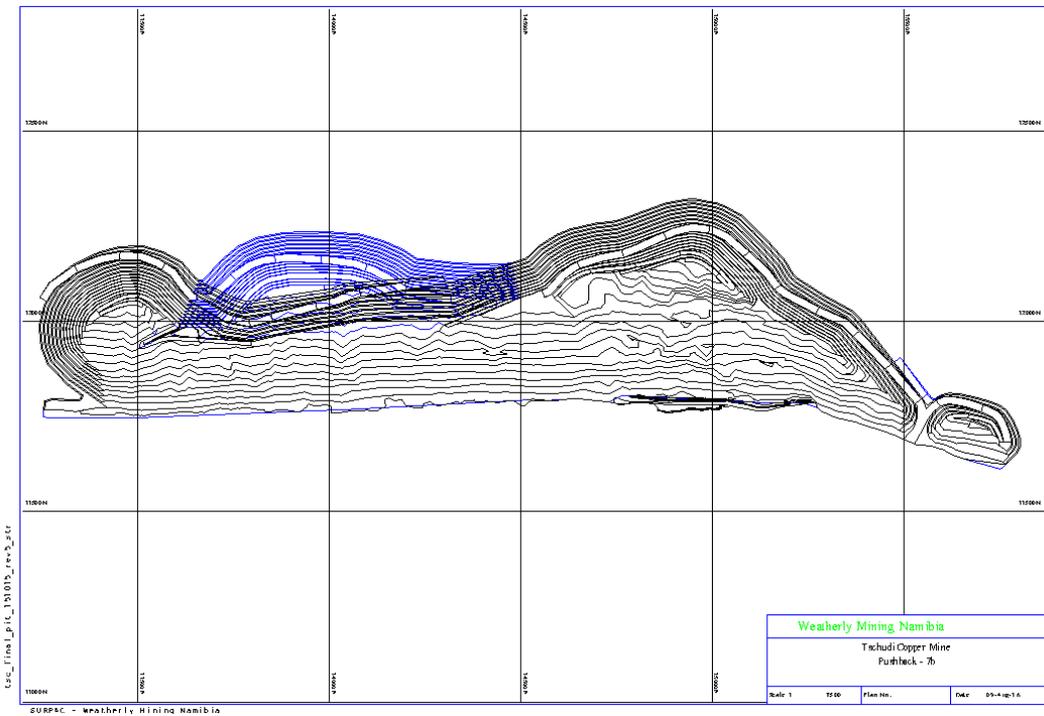


Figure 18 – Pushback Pit7b

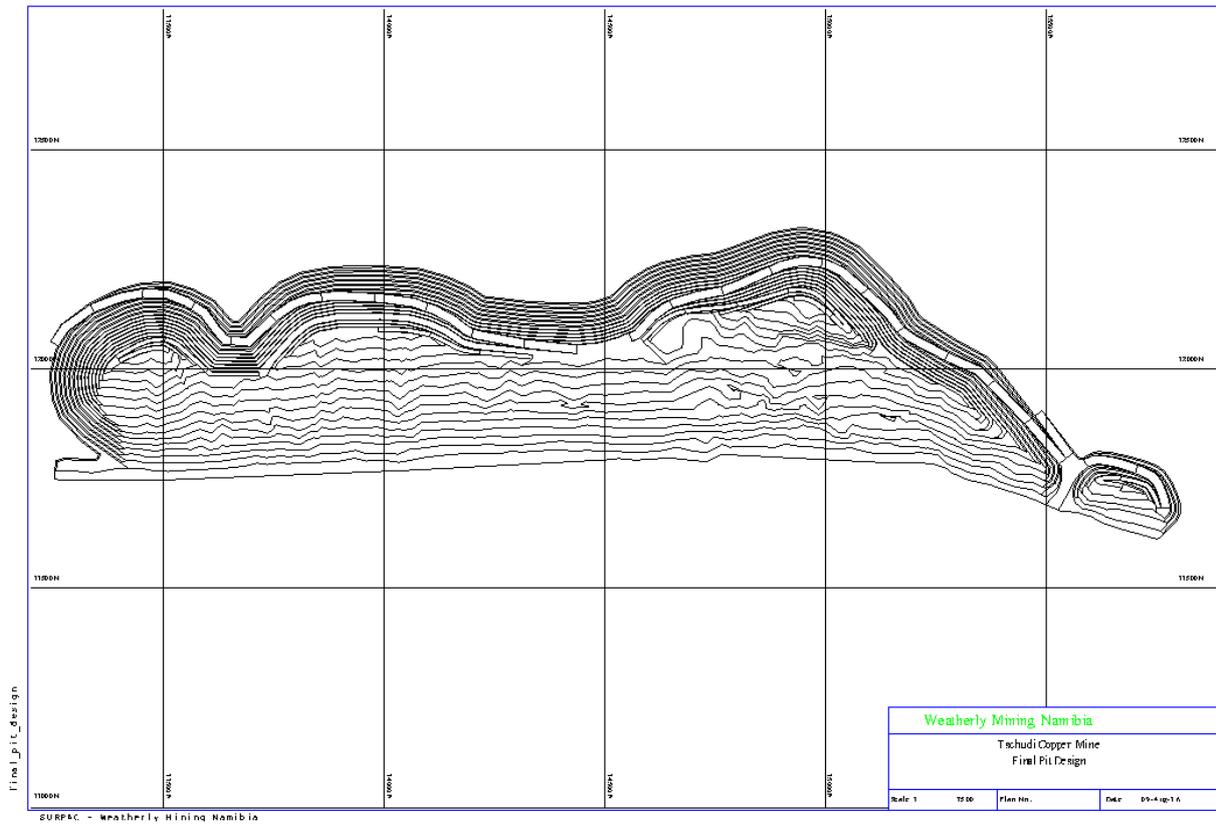


Figure 19 – Final Pit Design

	Ore (kbcm)	Ore (kt)	Waste (kbcm)	Cu (%)	Contained Metal (Cu t)	SR
Pit3b	168	442	34	1.06	4,698	0.2
Pit4b	968	2,544	2,889	0.99	25,299	3.0
Pit5a	1,874	4,914	11,460	0.86	42,031	6.1
Pit5b	534	1,402	3,767	0.93	13,014	7.0
Pit6a	444	1,161	2,738	0.65	7,495	6.2
Pit6b	289	758	1,827	0.57	4,328	6.3
Pit6c	317	829	2,727	0.49	4,037	8.6
Pit6d	1,123	2,950	7,671	0.80	23,616	6.8
Pit7a	1,691	4,440	10,497	0.95	42,236	6.2
Pit7b	1,190	3,129	11,014	0.80	24,978	9.3
Total	8,598	22,669	54,623	0.85	191,750	6.4

Table 5 – Summary Reserves by Pit

The final pit design has as total Ore Reserve of 22.6Mt at 0.85% Cu for contained metal of 191.7kt (as from 30th June 2016) – see Table 5. The remaining LOM strip ratio is 6.4:1.

9 WASTE ROCK STORAGE FACILITY

Initially it was planned that all waste rock would be stored to the south of the open pit where there is sufficient area for future disposal of all planned mine waste rock within the current mining licence (Figure 20). However, in consultation with the owners of the neighbouring farm to the east (Farm Uris), it was agreed to reduce the volume of the waste rock facility to the south east in order to minimise waste rock dumping on Farm Uris close to Uris Lodge. It was decided to split the waste rock facility with the development of a north east waste rock facility (Figure 21). The company applied for, and received, permission from the Ministry of Mines and Energy for Accessory Works outside the mining licence to include the north east waste dump. In August 2016 the the Ministry of Environment and Tourism agreed to amend the Environmental Clearance Certificate to allow storage of waste rock on this area.

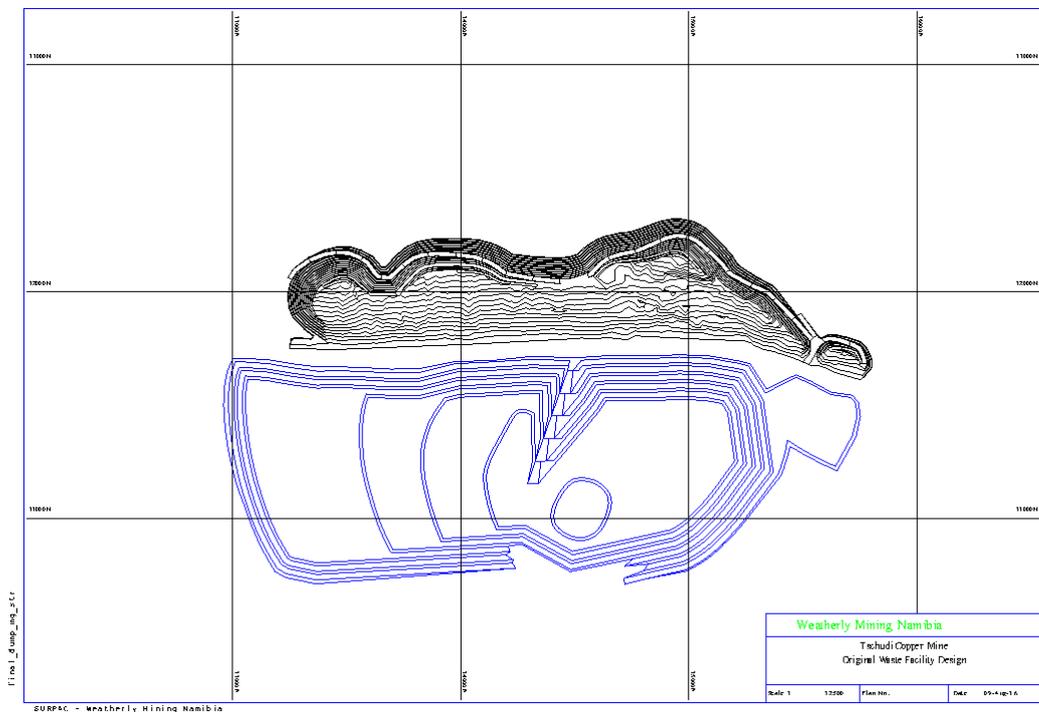


Figure 20 – Original Waste Rock Facility Design

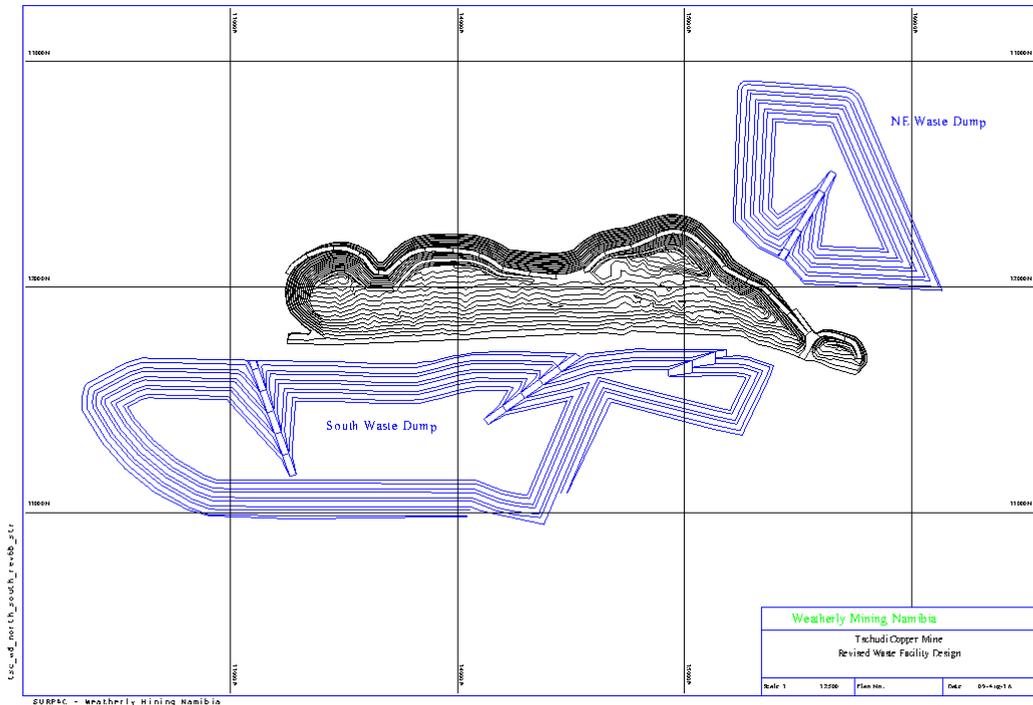


Figure 21 – Revised Waste Rock Facility Design

The waste rock facility is designed to store 175M tonnes. The design criteria for the waste rock facility are:

- 10m Lift height;
- Minimum berm width (as dumped) 25m;
- 30m wide ramps at 1:10;
- Final overall maximum face angle 15 degrees;
- Minimum buffer to pit wall, Mining Licence, and Accessory Works boundaries 100m.

10 PROCESSING

10.1 Crushing, Agglomeration and Stacking

The crushing, agglomeration and stacking of the ore is carried out under contract by B&E International, who own and operate the equipment and infrastructure.

Once the ore is delivered to the ROM pad it is fed into the primary jaw crusher and on to secondary and tertiary crushers. It is then agglomerated with the addition of raffinates and sulphuric acid. The agglomerated ore is trucked to the heap leach pads and stacked in lifts of 4m or 6m, depending on the ore type.

The heap leach pads utilise a double liner system with 1.5mm thick HDPE plastic sheeting laid on top of a compacted clay liner. Irrigation of the acid on to the heaped ore is by a dripper system to minimise ponding of the leach solution, evaporation and formation of acid mist. The copper bearing solution is captured in HDPE lined drains and stored in HDPE lined ponds for processing through the SX/EW plant.

10.2 Solvent Extraction and Electro-Winning

The copper bearing solution is pumped into the Solvent Extraction (SX) plant where the copper is stripped out of the solution into the electrolyte. The electrolyte is fed into the Electro-Winning plant (EW) and the barren solution returned to the heap leach pads where, with the addition of sulphuric acid, it dissolves further copper. The system is designed to be a closed, recirculating, system whereby no fluid is released to the environment. The EW then plates the copper onto steel cathodes producing 99.99% pure copper cathodes.

Copper is dispatched by truck to Walvis Bay.

Storm water is managed via a storm water pond that is designed to cater for two consecutive 1 in 100 year storm events and is capable of holding all such water from the heap leach pads.

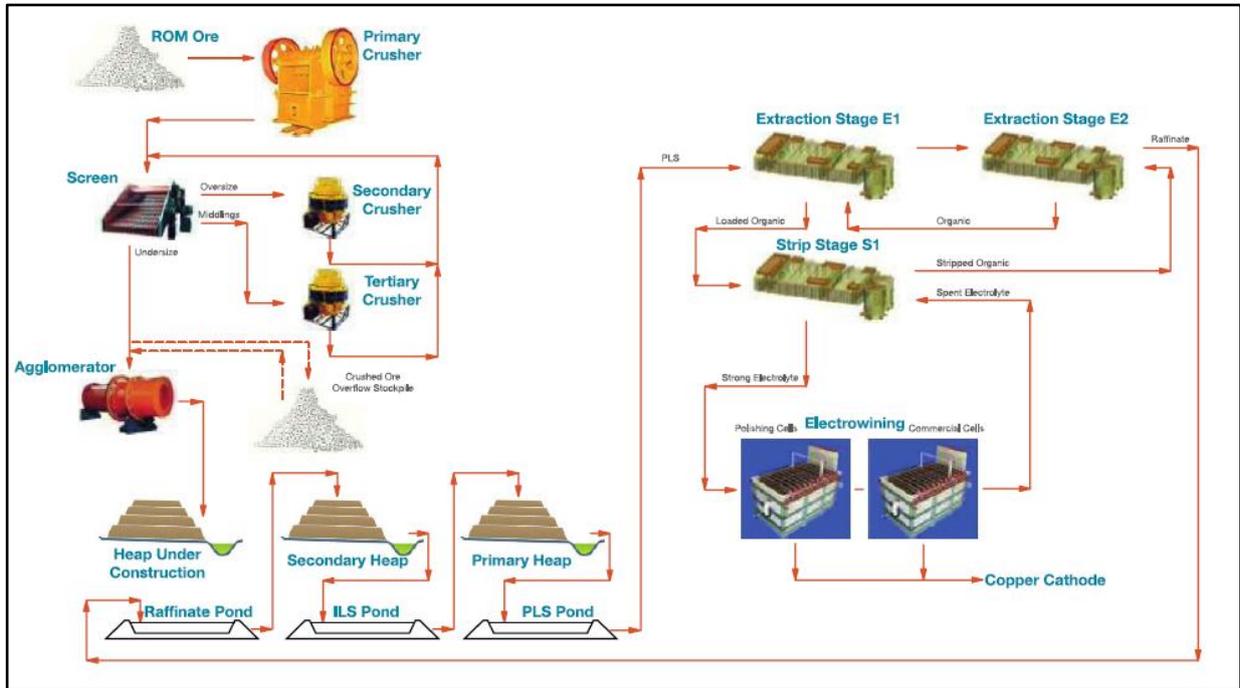


Figure 22 – Tschudi Process Flowsheet

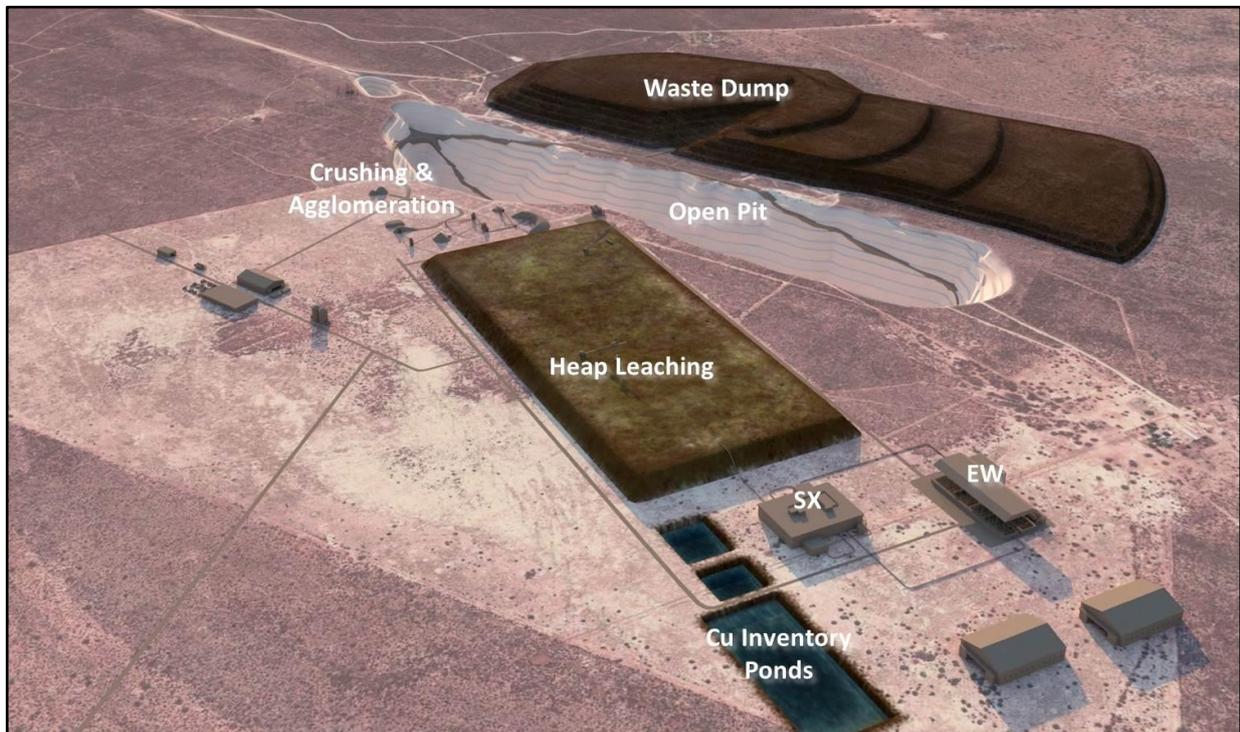


Figure 23 – Schematic Diagram of Final Open Pit, Heaps and Processing Site

11 ABBREVIATIONS AND DEFINITIONS

amsl:	Above Mean Sea Level
bcm:	Bank Cubic Metre (being one cubic metre of rock <i>in situ</i> prior to being blasted & mined)
BRM:	Basil Read Mining
Capex:	Capital Expenditure
Cu:	Copper
ECC:	Environmental Clearance Certificate
G&A:	General and Administration
HDPE:	High-Density Polyethylene
JORC:	Joint Ore Reserve Committee
km:	Kilometre
kt:	1000 tonnes
lb:	Imperial Pound
LOM:	Life Of Mine
M:	Million
MET:	Ministry of Environment and Tourism
MME:	Ministry of Mines and Energy
Mt:	Million Metric Tonnes
NAD:	Namibian Dollar
PLS:	Pregnant Leach Solution (solution loaded with Cu from leach pads)
RL:	Relative Level
ROM	Run of Mine
ROM Pad:	Area immediately in from of crusher for short-term storage of ROM Ore
SX/EW:	Solvent Extraction / Electro-Winning Processing Plant
t:	Metric Tonne
tpa:	Tonnes Per Annum
tpm:	Tonnes Per Month
USD:	United Stated Dollar