

# NIFTY COPPER OPERATIONS UPDATE

Metals X Limited (ASX: MLX) ('**Metals X'** or 'the **Company**') is pleased to provide an update on the Nifty Copper Operations ('**Nifty**') and progress against key work streams and activities of the Nifty Reset Plan.

# **HIGHLIGHTS**

- Operational Performance Improving:
  - Mine planning has been overhauled and now provides well-considered, meaningful and deliverable plans;
  - New mining area development is 10% ahead of schedule with 2,390m completed since May 2019 (including a record 720m in July 2019);
  - Current developed stocks comprise 1.4Mt at 1.46% Cu for 20Kt of copper with 78% located within the new mining areas to the east and west of the Central Zone;
  - Re-introduction of campaign milling has increased processing plant throughput, recovery and concentrate grade to the long term expected rates, while substantially reducing unit costs;
  - > Fleet efficiency has significantly improved lowering the operational cost profile; and
  - Cost reduction opportunities continue to be identified and implemented.

#### Geological Upside Being Realised:

- Mine plan supported by new Ore Reserve, with significant extension potential;
- Resource extension and definition drilling is progressing well with a further 16,000 meters completed year-to-date. Results continue to confirm the significant geological upside at Nifty; and
- Grade control drilling continues to identify new stoping opportunities that are being progressively incorporated into the mining schedule.
- Infrastructure Issues Being Resolved:
  - Surface and underground infrastructure improvements (electrical, tailings processing, paste reticulation and ventilation) are well progressed and supporting the increased mining activity.

#### Workforce Culture Improving:

Focus on culture and safety has been a key driver of improved performance, alignment, ownership and engagement. As a result, Nifty is currently over 150 days free of Lost Time Injury.

#### Nifty Outlook Remains Positive:

The Company maintains the stated goal of building to 2Mtpa mining rates during the March 2020 quarter.

#### Metals X Managing Director Mr Damien Marantelli commented:

"Several months into our rebuild of the Nifty operation, we are starting to see real momentum growing. Each of the work streams identified in the Reset Plan are on track as we move to complete the activities required to provide a stable and cash flow positive base from which to re-launch Nifty.

"In particular, there has been a marked change in culture and safety over the past eight months and the result of that is a workforce that is fully engaged and committed to delivering the Reset Plan. Significant benefits are flowing through in terms of improved planning, ownership of outcomes, operational efficiency and the pace and rigour with which operational changes are being implemented. This, along with the increased development rates being achieved, the ongoing success of our geological drilling programs, and the potential to further increase our resource and reserve base, is building confidence in the Nifty turnaround.

"The Citibank Loan Facility, announced last week, provides meaningful support to Nifty".



# INTRODUCTION

On 1 May 2019, the Company announced the overview of the Nifty Reset Plan ('Reset Plan') which provided a detailed roadmap to turn around the operational performance of Nifty. The Reset Plan followed a comprehensive evaluation of the operation by the revamped Executive Team, with the objective of delivering a long-term, profitable mining operation through:

- Developing the mine to the east and west of the Central Zone, providing access to new mining areas;
- Expanding and upgrading existing underground services and infrastructure into the new mining areas;
- Delivering a sustainable reduction in costs and increased productivity; and
- Expanding the resource and reserve base through exploration drilling activity.

The Company is pleased to provide the following update of progress against key work streams and activities of the Nifty Reset Plan.

#### 1. Operational Performance Improving

#### Development

Since announcement of the Nifty Reset Plan in May 2019, a significant focus has been placed on accelerating development outside of the Central Zone. This work has seen an immediate lift in development rates as operational focus moved away from the difficult conditions that were present within that historical area.

Currently, development into new mining areas to the east and west is 10% ahead of schedule with 2,390m completed since May 2019, including a record of 720m during July 2019. The priority focus has been developing into the western and eastern ends of Region 4 to provide stoping access and within Region 5 to provide drilling access into the Northeast Limb.

Critically, the focus on development has led to a substantial increase in developed stocks for future production as shown on Figure 1 and detailed in Table 1.

	Developed Stocks				
Location	Estimated Tonnes	Estimated Grade – Cu%	Estimated Cu Tonnes		
Central Zone	318,534	1.44	4,599		
JL 255 - 260 Block	78,732	1.28	1,010		
Region 6	49,606	1.35	668		
South East	226,345	1.43	3,247		
UVW 203 - 213 Block	66,778	1.83	1,224		
West End – Region 4	530,649	1.45	7,708		
20 - 14 Block - NEL	140,358	1.55	2,182		
Total	1,411,002	1.46	20,639		

#### TABLE 1 - NIFTY DEVELOPED STOPE TONNES AS AT 31 AUGUST 2019



FIGURE 1 - DEPORTMENT OF DEVELOPED STOPES AS AT 31 AUGUST 2019

#### Mine Planning

A major focus has been on the mine planning process. A complete overhaul of systems and processes has been undertaken resulting in new, well-considered, meaningful and deliverable plans which are being more effectively communicated to the operating teams. A largely new team of experienced mining engineers has been recruited and significant investment in new computing and software capability has been made.

Importantly, Nifty now has a focused process which converts medium term plans into daily operational plans with the ability to track progress against the plans in real time.

With the emerging upside being delivered from the geological drilling program, the Life of Mine schedule is in the process of being updated to incorporate all identified areas of opportunity. Given the ongoing drilling program, this process will be iterative.

#### Production / Outlook

The Nifty operation is in the process of transformation with the leading performance indicators such as culture, safety performance, development rates, grade control definition, operational efficiency and developed stocks all on a positive upward trend.

Mine output, which ultimately provides the financial rewards from this effort, is largely a lag indicator and is expected to remain flat for the September 2019 quarter and gradually start to increase in the December 2019 quarter, as the benefits of completing development activities into the new mining areas brings substantial additional reserves into the mining schedule.

Metals X is confident that the work that has been completed to date over the last six months rebuilding Nifty is essential to the long-term success of the operation. We are also confident that the momentum that is clearly building at Nifty in the various leading indicators will drive consistent and sustainable operational performance well into the future. On that basis, the Company maintains the stated goal of building to 2Mtpa mining rates during the March 2020 quarter.



#### 2. Geological Upside Being Recognised

The 2016 acquisition of the Nifty Copper Operation was largely based on the recognition of the geological upside potential. To assess this potential, the Company has been undertaking substantial underground drilling programs with some 83,000m of drilling completed to date. This work has contributed to considerable improvements to the Nifty geological model and the identification of extensive new copper resources both east and west of the historical Central Zone, the deportment of which is shown in Figure 2.

The Nifty Mineral Resource estimate (as at 31 March 2019) comprises some 36.28 Mt at 1.50% Cu for 545,600 tonnes of contained copper (refer ASX release of 28 August 2019 for details). Importantly, 30.55Mt at 1.58% Cu for 482,500 tonnes of contained copper is included in the Measured and Indicated categories.

Resource definition and grade control drilling programs are budgeted to continue at Nifty, at an average rate of 2,800m per month, for the remainder of the 2020 financial year. These programs include drilling from the new 14 Level West and 20 Level East dedicated drill drives which are currently in development.



FIGURE 2 – MARCH 2019 RESOURCE DEPORTMENT RELATIVE TO HISTORICAL CENTRAL ZONE

#### New Ore Reserve Estimation

The updated Mineral Resource Estimation was used to define the March 2019 Ore Reserve Estimation of 11.10 Mt at 1.45% Cu for 161,200 tonnes of contained copper (refer ASX release of 28 August 2019 for details). Importantly, 90% of the Ore Reserve is now outside of the historical Central Zone reflecting the Company's focus on prioritising operational activities into new mining areas (Figure 3).





FIGURE 3 - 2019 RESOURCE & RESERVE DEPORTMENT RELATIVE TO THE HISTORICAL CENTRAL ZONE AND HIGHLIGHTING NEW RESERVE DEVELOPMENT TARGETS

#### Further Resource and Reserve Definition Opportunities

Since the 31 March 2019 Mineral Resource and Ore Reserve estimations were completed, a further 16,000m has been drilled underground at Nifty as part of grade control and resource definition programs. The results for the holes drilled prior to 30 June 2019 have been reported in the respective quarterly reports, while the results received between 1 July and 31 August 2019 are provided in Appendix 1. Importantly, drilling continues to return encouraging results with example recent significant intersections presented in Table 2.

# TABLE 2 - EXAMPLE SIGNIFICANT DRILLING INTERSECTIONS (TRUE WIDTH) RECIEVD BETWEEN 1 JULY 2019 AND 31AUGUST 2019 (REFER TO APPENDIX 1 FOR FULL DETAILS)

Area	Hole ID	Intersection
Region 4 - LCU	NUG0705	16.65m @ 2.90% Cu
Region 4 – MCU/LCU	NUG0710	36.5m @ 2.71% Cu
Region 9 - MCU	NUG0721	18.3m @ 3.8% Cu
Region 9 - MCU (Southwest)	NUG0730	13.4m @ 4.07% Cu
Region 9 - MCU (Southwest)	NUG0731	13.2m @ 2.85% Cu
Region 6 - MCU	NUG0753	7.9m @ 3.99% Cu
Region 6 - MCU	NUG0757	8.8m @ 2.72% Cu

The drilling completed since 31 March 2019 has contributed to the identification of a number of potential resource and reserve definition opportunities. These are located adjoining existing or planned development within the northeast, southeast, southwest and northwest parts of the defined Mineral Resources as shown on Figure 3.

Examples of these opportunities are shown on Figures 4A & 4B pertaining to the Northeast and Southeast Target areas, on Figure 5 for the Northwest Target and on Figure 6 for the Southwest Target.







#### Northeast Target

Recent drilling in the Northeastern Limb of the Nifty Syncline within Region 5 has further defined significant copper mineralsiation up to 100m east of the currently defined Ore Reserve block (Figure 4A). Mineralisation remains open to the east with further drilling planned from extension of the 17 and 19 Levels.

#### Southeast Target

Within the Southeast Target area, a portion of defined Measured Resources were not converted to Ore Reserves within the March 2019 estimation (refer Figure 3). Since that time, additional drilling and development within the 24 Level has allowed for further refinement of the geological model, including the replacement of the interpreted South Sub Fault with a fold within the mine sequence against the South Fault. The revised geological model has added significant tonnages to the resource model and allowed for a series of additional stopes to be added to the mining schedule which were not included in the current Ore Reserve estimate (Figure 4B).

#### Northwest Target



FIGURE 5 – NORTHWEST DEFINITION TARGET



Within the Northwest Target area, a significant portion of defined Indicated Resources within Region 7 were not converted to Ore Reserves within the March 2019 estimation (refer Figure 3). Additional drilling from planned production and ventiliation development to investigate this area further is currently in design (Figure 5).

#### Southwest Target

Recent drilling in the southwestern part of the Nifty system within Regions 3 & 9 has started to define significant copper minersaliation over 150m of strike, south of the South Fault (Figure 6). Mineralisation remains open and a further 15 holes are currently being drilled to investigate this area further.



FIGURE 6 - SOUTHWEST DEFINITION TARGET

#### 3. Infrastructure Issues Being Resolved

A critical aspect of the Reset Plan was to work through a series of infrastructure inadequacies and legacy issues that had long been impediments to production.

These issues were specifically related to paste filling capability, ventilation distribution in the mine and poorly maintained electrical generation, switching and distribution systems. Although some additional work is required to further improve ventilation circuits, following the significant work completed over the past four months, these infrastructure issues are no longer impediments to production.

Importantly, the work completed on these critical infrastructure issues was completed for lower capital expenditure than originally planned.

#### Paste Infrastructure

To address the paste filling bottleneck, the dry tailings reclaim system was re-commissioned during July 2019. The surface paste plant is now capable of running on either wet tailings from the processing plant, or dry tailings reclaimed from the tailing storage facility. This provides 24-hour filling capability into the mine. Key piping infrastructure within the mine has been replaced and trunk lines to the new eastern and western mining areas have been installed. Filling rates of up to 2,600m<sup>3</sup>/day have been regularly achieved which is well above the Reset mining schedule forecast of 1,600m<sup>3</sup> per day. This has significantly reduced the impact of paste filling on the overall stope cycle time. Photo 1 shows dry tailings being fed into the surface paste plant while Photo 2 shows recent rehabilitation work in the Level 12 paste delivery infrastructure.





PHOTO 1 - RECLAIMED DRY TAILINGS BEING FED INTO THE PASTE PLANT



PHOTO 2 - 12 LEVEL PASTE DRIVE – BEFORE (A) AND AFTER (B) REHABILITATION WORKS WITH NEW PASTE DELIVERY PIPING BEING INSTALLED

#### Ventilation Infrastructure

Ventilation is being progressed through increased development to allow primary, as opposed to secondary circuits, into the new mining areas. This work is in progress and increased air will be available for use in the mine within the next few months. The management, control and planning associated with mining operations and ventilation has also substantially improved which has been a major contributor to the recent development rate improvements.

#### Electrical Infrastructure

The surface electrical infrastructure has been reviewed in detail and actions to address switching, protection systems and reticulation issues have been resolved.

### 4. Driving Down Operating Costs

Driving operating costs down has been a priority for the management team. All departments within the operation have been asked to contribute to the identification of cost reduction opportunities through the "Nifty Improvement Program" (NIP) and employee engagement with this process has been impressive.

A key cost saving has been the notable reduction in employee turnover. At the end of 2018, employee turnover at Nifty was reaching levels of >40%. Current voluntary turnover rates have now reduced to an average of ~15%, reflecting the improved workforce culture and engagement. The lower turnover rate represents a large operational cost saving and has a meaningful impact on retention of operational knowledge.



Further examples of substantial cost savings made include fleet efficiency, campaign milling and supplier engagement as detailed below:

#### Fleet Efficiency

The Nifty operation currently includes a fleet of seven 50-tonne underground haul trucks with associated staffing and maintenance costs. On-going analysis through the Reset process indicated that at current production rates the operation only needed three trucks. As the production profile grows, modelling suggests that a maximum of five trucks will be adequate to meet all production requirements. As a result of this study three trucks have been removed from operational activities with significant reduction in operating and maintenance costs as shown in Figure 7. Importantly there has been similar reductions in loader fleet costs.



FIGURE 7: NIFTY MONTHLY TRUCK FLEET COSTS

#### Campaign Milling

A move to campaign milling on a 14-day on, 14-day off cycle has reduced the fixed cost base at Nifty and also allowed an increased focus on the operation of the mill. This work has delivered a number of pleasing improvements including;

- Increased daily milling rates Over the past three campaigns milling rates have increased from 7,400 tonnes per day to 9,000 tonnes per day;
- Improved mill output Historically the Nifty Mill has produced a 22% copper concentrate which over the last two milling campaigns has increased to 26% copper. Each one percent increase in concentrate grade equates to an approximately \$1.0 million annual saving in costs to the business; and
- Increased staff efficiency Campaign milling has allowed a 13% overall drop in headcount at Nifty, including a 65% reduction in labour hire.

#### Supplier Engagement

As part of the focus on reducing the fixed cost base at Nifty, the Company has undertaken over 30 reviews with the highest value suppliers which has resulted in renegotiated contracts, a reduction in the cost of parts and reductions in inventory levels for many stock items.



#### 5. Workforce Culture Improving

A clear enabler of delivering the Reset Plan is changing the culture at the Nifty and in particular focusing on safety performance. Through continual communication, establishment of fit-for-purpose systems and processes and driving a culture of risk management and ownership, there has been a significant improvement in performance, culminating in a period of more than 150 days free of Lost Time Injury. The performance change is highlighted in Figure 8 below.



As a result of the proactive approach to safety and culture change at Nifty, there has been a great improvement in the relationship with various regulating bodies in Western Australia. Improved responsiveness to usual regulator requests, faster turnaround of identified actions and greater transparency in communications have all had a positive impact on Nifty's reputation and licence to operate.

An additional priority was to create a better employee lifestyle environment at Nifty. As a result, a number of older accommodation units have been replaced and a number of low-cost landscaping improvements have been made around the mine village as shown in Photo 3. In addition, the dining room and menus have been refreshed and full-strength alcohol removed from the wet mess.

It is also pleasing to note that the female workforce at Nifty has increased by more than 40% in 2019, with the majority of new female employees being recruited into the underground workforce.





PHOTO 3 - NIFTY VILLAGE - UPGRADE OF FACILITIES

#### 6. Nifty Outlook

Phase 1 of the Reset Plan continues on schedule, and has been focussed on mine planning, geological drilling, development into new production areas and improvements to underground infrastructure. As detailed in this update, real momentum is building and execution of these work streams is progressing well.

While mine output is expected to remain flat for the September 2019 quarter, gradual improvement is expected in the December 2019 quarter when the benefits of completing development activities into the new mining areas brings substantial additional reserves into the mining schedule. The Company maintains the stated Reset Phase 1 goal of building to 2Mtpa mining rates during the March 2020 quarter.

The Company looks forward to providing a further update on Nifty's progress during the September 2019 quarterly report.

#### **ENQUIRIES**

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# **COMPETENT PERSON'S STATEMENT**

The information in this report that relates to Exploration Results has been compiled by Mr. Simon Rigby B.Sc. (Hons), who is a member of the Australian Institute of Geoscientists. Mr Rigby is a full time employee of the Company and has sufficient experience which is relevant to the styles of mineralisation and types of deposit under consideration and to the activities which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Rigby consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.



# FORWARD LOOKING STATEMENTS

This announcement contains certain "forward–looking statements". Forward looking statements can generally be identified by the use of forward looking words such as "anticipate", "expect", "likely", "intend", "should", "could", "may", "propose", "will", "believe", "forecast", "estimate", "target", "outlook", "guidance" and other similar expressions within the meaning of securities laws of applicable jurisdictions and include, but are not limited to, the future performance of the Company. Forward-looking statements, opinions and estimates provided in this announcement are inherently uncertain and are based on assumptions and estimates which are subject to certain risks, uncertainties and change without notice, as are statements about market and industry trends, which are based on interpretation of market conditions. Actual results and performance may vary materially because events and actual circumstances frequently do not occur as forecast and future results are subject to known and unknown risk such as changes in market conditions and in regulations. Investors should form their own views as to these matters and any assumptions on which any of the forwardlooking statements are based and not place reliance on such statements. To the maximum extent permitted by law, the Company and its directors, officers, employees, advisers, agents and intermediaries disclaim any obligation or undertaking to release any updates or revisions to the information to reflect any change in expectations or assumptions. An investment in the Company's shares is subject to investment and other known and unknown risks, some of which are beyond the control of the Company, including possible loss of income and capital invested.



# APPENDIX 1 – Drill Intersections Returned 1 July 2019 to 30 August 2019

Lode	Hole	North	East	RL	Intercept (True Width)	From (m)	Dip	Azi
Region 5 - MCU	NUG0612	352889	7603793	-62	4.1m at 3.01% Cu	33.0	29	205
Region 4 - LCU	NUG0625	352539	7603780	-154	11.1m at 2.9% Cu	21.7	33	183
Region 4		252224	7604000	20	13.5m at 2.04% Cu*	0.0	0	206
Region 4	NUGU629	352231	7004223	20	53.2m at 2.52% Cu*	45.0	-9	206
Region 4	NUG0630	352231	7604223	29	3.4m at 2.45% Cu	20.4	15	206
Region 4					6.1m at 1.61% Cu	29.0		
Region 4 - MCU	NUG0639	352188	7604259	29	12.9m at 2.5% Cu	57.0	14	205
Region 4	NUG0642	352176	7604269	28	2.9m at 1.3% Cu	4.0	-70	205
Region 4					7.7m at 5.67% Cu*	100.7		
Region 4		252175	7604266	20	4.9m at 3.63% Cu*	29.0	Б	205
Region 4	N0G0043	352175	7004200	29	4m at 2.59% Cu*	52.0	5	205
Region 4					10.1m at 1.18% Cu*	70.9		
Region 4		252175	7604266	20	6.5m at 1.24% Cu	29.0	15	205
Region 4	1000044	352175	7004200		17.6m at 2.34% Cu	61.6	15	205
Region 4	NUG0645	352175	7604266	31	12.1m at 3.22% Cu	44.0	30	205
Region 4	NUG0648	352176	7604269	28	No Significant Intercept		-89	25
Region 4 - MCU	NUG0650	352210	7604153	28	17.8m at 2.03% Cu	0.0	-61	294
Region 4 - MCU					2.2m at 4.91% Cu	0.0		
Region 4 - MCU	NUG0651	352210	7604153	28	10.8m at 1.85% Cu	13.0	-41	333
Region 4 - MCU					7.5m at 2.41% Cu	37.3		
Region 5	NUG0653	352914	7603777	-63	No Significant Intercept		-14	209
Region 5	NUG0654	352914	7603777	-63	No Significant Intercept		0	209
Region 5	NUG0655	352914	7603777	-63	No Significant Intercept		15	209
Region 5	NUG0656	352914	7603777	-61	4.1m at 2.41% Cu	33.2	35	209
Region 5	NUG0657	352927	7603770	-62	No Significant Intercept		-18	209
Region 5	NUG0658	352927	7603770	-62	No Significant Intercept		-8	209
Region 5	NUG0659	352927	7603770	-62	No Significant Intercept		7	209
Region 5	NUG0660	352927	7603770	-61	No Significant Intercept		21	209
Region 5	NUG0661	352940	7603762	-62	2m at 2.69% Cu	52.0	-29	209
Region 5	NUG0662	352940	7603762	-62	No Significant Intercept		-18	209
Region 5	NUG0663	352940	7603762	-61	No Significant Intercept		0	209
Region 5	NUG0664	352940	7603762	-61	No Significant Intercept		15	209
Region 5	NUG0665	352940	7603762	-60	No Significant Intercept		35	209
Region 5	NUG0666	352940	7603762	-61	No Significant Intercept		-13	177
Region 5	NUG0667	352940	7603762	-60	No Significant Intercept		5	177
Region 5	NUG0668	352940	7603762	-60	No Significant Intercept		28	177
Region 5	NUG0669	352940	7603762	-60	No Significant Intercept		44	177
Region 5	NUG0670	352944	7603763	-61	No Significant Intercept		0	147
Region 6	NUG0671	352914	7603777	-64	16.6m at 1.18% Cu*	61.6	-35	207
Region 6	NUG0672	352914	7603777	-64	14.9m at 2.07% Cu*	86.2	-42	208
Region 6	11000072		1000111	-0-	12.9m at 1.72% Cu*	106.2	74	200
Region 6	NUG0673	352914	7603777	-64	No Significant Intercept		-49	209
Region 6	NUG0674	352928	7603770	-62	No Significant Intercept		-27	209



Lode	Hole	North	East	RL	Intercept (True Width)	From (m)	Dip	Azi
Region 6	NUG0677	352940	7603762	-63	No Significant Intercept	()	-49	209
Region 6	NUG0678	352940	7603762	-62	No Significant Intercept		-26	177
Region 6	NUG0681	352943	7603768	-63	No Significant Intercept		-50	25
Region 5	NUG0682	352901	7603785	-63	No Significant Intercept		-11	205
Region 6	NULC 2000 (	050004	7000705	-64	2.6m at 2.87% Cu	72.2		0.05
Region 6	NUG0684	352901	7603785		2m at 1.88% Cu	93.3	-35	205
Region 5	NUG0685	352889	7603793	-63	No Significant Intercept		-11	205
Region 5	NUG0686	352889	7603793	-64	No Significant Intercept		-30	205
Region 6	NUG0687	352889	7603793	-65	2m at 2.13% Cu	98.1	-35	205
Region 5	NUG0689	352876	7603801	-64	No Significant Intercept		-23	205
Region 6	NUG0690	352876	7603801	-65	2.5m at 2.09% Cu	68.0	-34	205
Region 5	NUG0691	352863	7603809	-65	No Significant Intercept		-17	205
Region 6	NUG0692	352863	7603809	-66	2.5m at 2.21% Cu	73.1	-30	205
Region 6	NUG0693	352863	7603809	-66	22.6m at 2.57% Cu	84.0	-41	205
Region 4 - ISHL	NUG0701	352089	7604028	24	No Significant Intercept		56	106
Region 4 - MCU				20	7.1m at 1.36% Cu	2.1		
Region 4 - MCU	NUG0703	352086	7604029		14.9m at 2.54% Cu	15.2	-60	286
Region 4 - LCU					13.2m at 2.06% Cu	45.0		
Region 4 - MCU	NUG0704	352083	7604015	19	13.1m at 2.16% Cu	21.0	-70	115
Region 4 - MCU			700 40 40	19	13.15m at 2.05% Cu	16.4		
Region 4 - LCU	NUG0705	352080	7604016		16.65m at 2.9% Cu	40.0	-65	286
Region 4	NUG0706	352080	7604003	20	34.2m at 3.34% Cu	18.0	-87	108
Region 4	NUG0707	352075	7604004	24	No Significant Intercept		54	289
Region 4 - MCU	NULCO700	050075	7004004	20	1.5m at 2.16% Cu	14.3		0.07
Region 4 - LCU	NUG0708	352075	7604004		21.1m at 3.14% Cu	33.0	-62	287
Region 4	NUG0709	352076	7603990	20	36.7m at 2.52% Cu	16.0	-89	115
Region 4	NUG0710	352071	7603992	20	36.5m at 2.71% Cu	13.1	-47	287
Region 4 - MCU	NU100745	050000	700000	20	21.95m at 1.93% Cu	11.0		000
Region 4 - LCU	NUG0715	352068	7603980		7.4m at 3.15% Cu	43.0	-55	288
Region 4					7.2m at 1.51% Cu	8.7		
Region 4	NUG0718	352064	7603971	20	7.8m at 1.3% Cu	23.0	-48	288
Region 4					6.1m at 3.27% Cu	43.0		
Region 9	NUG0719	352064	7603969	21	15.1m at 2.52% Cu	13.2	-15	282
Region 9	NUG0720	352064	7603969	22	14.9m at 2.37% Cu	17.4	-5	282
Region 9		252004	700000	20	18.3m at 3.08% Cu	27.0	0	
Region 9	NUG0721	352064	7603969	22	4.5m at 2.5% Cu	67.3	9	28
Region 9					11.9m at 1.17% Cu*	12.1		
Region 9	NUG0722	352064	7603969	22	59m at 2.77% Cu*	50.0	15	282
Region 9					8.1m at 1.64% Cu*	189.9		
Region 9	NULCO700	050004	700000		15.9m at 2.07% Cu	10.0	00	000
Region 3 - LCU	NUG0723	352064	7603969	20	4.2m at 1.93% Cu	53.0	-30	262
Region 9	NUG0724	352064	7603969	21	15.5m at 2.78% Cu	14.0	-15	262
Region 3 - MCU	NUG0727	352064	7603969	23	31m at 2.14% Cu*	69.0	20	262
Region 9	NUG0729	352064	7603969	21	14.8m at 3.06% Cu	14.0	-15	246
Region 3 - MCU	NUG0733	352064	7603969	23	4.5m at 1.99% Cu*	52.5	25	246

Lode	Hole	North	East	RL	Intercept (True Width)	From (m)	Dip	Azi
Region 9 - MCU (South West)	NUG0725	7603969	35064	21	15.3m at 3.24% Cu	22	0	262
	NULCO700	700000	05004		8m at 2.04% Cu*	10	40	
(South West)	NUG0726	7603969	35064	21	31.9m at 2.23% Cu*	37	10	262
Region 9 - MCU (South West)	NUG0730	7603969	35064	21	13.4m at 4.07% Cu	20.8	-5	245
Region 9 - MCU (South West)		7603060	25064	21	3.9m at 2.71% Cu	8	5	245
Region 3 - MCU (South West)	1000731	7003909	35064	21	13.2m at 2.85% Cu	29	5	240
Region 3 - MCU (South West)	NUG0732	7603969	35064	21	13.7m at 1.82% Cu	48	15	245
Region 9 - MCU (South West)	NUG0741	7604067	352038	29	3.95m at 1.31% Cu	4.2	27	205
Region 6 - MCU	NUG0749	7603738	352749	-90	No Significant Intercept		-14	25
Region 6 - MCU	NUG0750	7603738	352749	-91	4.2m at 3.15% Cu	44.4	-33	25
Region 6 - MCU	NUG0751	7603730	352759	-90	5.55m at 1.95% Cu	54.6	-20	25
Region 6 - MCU	NUG0753	7603722	352768	-91	7.9m at 3.99% Cu	49	-56	25
Region 6 - MCU	NUG0754	7603717	352767	-91	8.2m at 1.57% Cu	66	-78	205
Region 6 - MCU	NUG0757	7603708	352784	-91	8.8m at 2.72% Cu	54	-65	25
Region 6 - MCU	NUG0757A	7603708	352784	-91	8.8m at 2.6% Cu	55	-65	25
Region 6 - MCU	NUG0758	7603704	352782	-90	10.4m at 1.87% Cu	70	-70	205
Region 6 - MCU	NUG0764	7603682	352816	-90	7.2m at 1.36% Cu	66	-32	25
Region 6 - MCU	NUG0765	7603682	352816	-90	8.5m at 1.68% Cu	63	-21	24
Region 6 - MCU	NUG0766	7603681	352816	-90	8.5m at 2.36% Cu	68.3	-68	25

Notes to table:

- Widths are true unless marked with \* .
- Grid is MGA51

NSI = No Significant Assays Significant = >5%m Cu. •

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# **APPENDIX A**

# INFORMATION MATERIAL TO UNDERSTANDING THE MINERAL RESOURCES AND ORE RESERVES

## JORC CODE, 2012 EDITION

# JORC TABLE 1: THE INFORMATION IN THIS TABLE REFERS TO THE FOLLOWING PROJECTS AT THE NIFTY COPPER OPERATIONS: NIFTY SULPHIDE, NIFTY OXIDE AND NIFTY HEAP LEACH

# SECTION 1: SAMPLING TECHNIQUES AND DATA

(Criteria in this section apply to all succeeding sections)

Criteria	JORC Code Explanation	Commentary
Sampling techniques	<ul> <li>Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.</li> </ul>	<ul> <li>The deposit has been drilled and sampled using various techniques with diamond and reverse circulation drilling utilised for mineral estimation. This information comes from surface and underground and is on variable spacing along and across strike. The total metres within the immediate vicinity of the Deposit are 289,431m. The holes are drilled on most occasions to intersect as near as possible perpendicularly the synclinal east plunge mineralisation.</li> </ul>
	<ul> <li>Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> </ul>	<ul> <li>The drining programs have been ongoing since initial discovery to both expand the mineralisation and provide control for mining. The hole collars were surveyed by Company employees/contractors with the orientation recorded. Down hole survey is</li> </ul>
	<ul> <li>Aspects of the determination of mineralisation that are Material to the Public Report.</li> </ul>	recorded using appropriate equipment. The diamond core was logged for lithology and other geological features.
	<ul> <li>In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information</li> </ul>	<ul> <li>The diamond core varied from HQ to NQ in diameter and mineralised intervals and adjacent locations were sampled by cutting the core in 1/2 based on contacts of lithology and other geological features.</li> <li>The RC samples were collected from the cyclone of the rig and spilt at site to approximate 2 to 3Kg weight. The preparation and analysis was undertaken at accredited commercial laboratories, ALS or Intertek Genalysis. Both laboratories have attained ISO/IEC 17025 accreditation. ALS uses the ME-ICP61 four acid digest methods using a sample of 0.2g with an ICPAES finish. Over limit results (&gt;1% Cu)</li> </ul>
Drilling techniques	<ul> <li>Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face- sampling bit or other type, whether core is oriented and if so, by what method, etc.).</li> </ul>	are re-analysed using the ME-OG62 method, which involves subjecting a 0.4g sample to a four acid digest with an ICPAES finish. Intertek Genalysis use a four acid digest using a 0.2g sample with an ICP-OES finish. Over limit results (>1% Cu) are re- assayed using an ore grade four acid digestion of 0.2g sample, and an AAS finish. The analysis and preparation of recent diamond drilling by Metals X has been undertaken at the onsite Nifty laboratory which has been contracted to accredited analytical testing service ALS. On-site, ALS uses a Fusion XRF15C method for analysis.

• Method of recording and assessing core and chip sample • The drilling was completed using a combination of surface and underground drilling.



Criteria	JORC Code Explanation	Commentary
Drill sample recovery	<ul> <li>recoveries and results assessed.</li> <li>Measures taken to maximise sample recovery and ensure representative nature of the samples.</li> <li>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</li> </ul>	<ul> <li>In general the orientation of the drilling is appropriate given the given the strike and dip of the mineralisation.</li> <li>The core recovery is recorded in the database and in most instances was in excess of 95% within the fresh/sulphide zones. This was assessed by measuring core length against core run. There is no record of the quantity (weight) of RC chips collected per sample length.</li> <li>The ground conditions in the mineralised zone are competent. In areas of less competent material core return is maximised by controlling drill speed. In the case of RC samples areas of less competent material are identified in the log.</li> <li>Whilst no assessment has been reported, the competency of the material sampled would tend to preclude any potential issue of sampling bias.</li> </ul>
Logging	<ul> <li>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</li> <li>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.</li> <li>The total length and percentage of the relevant intersections logged.</li> </ul>	<ul> <li>The routine logging of core and chips describes the general geology features including stratigraphy, lithology, mineralisation, alteration etc. For the majority of holes this information is sufficient and appropriate to apply mineralisation constraints. Some core drilling is orientated and structural measurements of bedding, joints, veins etc. has occurred as well as fracture densities.</li> <li>Geological logging has recorded summary and detailed stratigraphy, lithology, mineralisation content, and alteration, some angle to core axis information, vein type, incidence and frequency, magnetic content.</li> <li>The entire length of all holes, apart from surface casing, was logged.</li> </ul>
Sub-sampling techniques and sample preparation	<ul> <li>If core, whether cut or sawn and whether quarter, half or all core taken.</li> <li>If non-core, whether riffled, tube sampled, rotary split, etc. and whether sampled wet or dry.</li> <li>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</li> <li>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</li> <li>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</li> <li>Whether sample sizes are appropriate to the grain size of the material being sampled.</li> </ul>	<ul> <li>All core to be sampled was ½ cored using a mechanical saw. It is not known if the core was consistently taken from the same side of the stick.</li> <li>RC chip samples are collected via a cyclone which is cleaned with air blast between samples. The samples riffled to collect between 2 and 3kg. Most samples are dry with any moisture noted on the logs.</li> <li>Field sub-sampling for chip samples appears appropriate as is the use of core cutting equipment for the submitted core. Procedures adopted in the laboratories are industry standard practises including that in the mine site facility.</li> <li>In field riffles are cleaned between sampling using compressed air. The diamond cutting equipment is cleaned during the process using water. All laboratories adopt appropriate industry best practises to reduce sample size homogeneously to the required particle size.</li> <li>No field duplicate information was observed.</li> <li>The style of mineralisation and high sulphide content does not rely on grain size as being influential on grade. Thus there is confidence in the overall grade of the deposit being fairly represented by the sampling.</li> </ul>



Criteria	JORC Code Explanation	Commentary
Quality of assay data and laboratory tests	<ul> <li>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</li> <li>For geophysical tools, spectrometers, handheld XRF instruments, etc., the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</li> <li>Nature of quality control procedures adopted (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</li> </ul>	<ul> <li>The assay techniques are appropriate for the determination of the level of mineralisation in the sample.</li> <li>No geophysical tools were utilised to ascertain grade.</li> <li>Standard and Blanks are included with all samples sent for analysis in the rate of between 1 in 20 and 1 in 50. The most recent reporting covering the majority of holes used in the estimate provide support for the quality of the Cu assays.</li> </ul>
Verification of sampling and assaying	<ul> <li>The verification of significant intersections by either independent or alternative company personnel.</li> <li>The use of twinned holes.</li> <li>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</li> <li>Discuss any adjustment to assay data.</li> </ul>	<ul> <li>The extensive data set has been reviewed by various parties including Maxwell Geoscience and DataGeo and the intersections within the mineralisation have been confirmed.</li> <li>No twinned holes observed but there is a significant amount of closely spaced supportive drilling results.</li> <li>Field data is captured electronically, validated by the responsible geologist and stored on corporate computer facilities. Protocols for drilling, sampling and QAQC are contained with the company operating manuals. The information generated by the site geologists is loaded into a database by the company database administrator and undergoes further validation at this point against standard acceptable codes for all variables.</li> </ul>
Location of data points	<ul> <li>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</li> <li>Specification of the grid system used.</li> <li>Quality and adequacy of topographic control.</li> </ul>	<ul> <li>The collar positions were resurveyed by the Company surveyor or their contractors from a known datum. The survey is on a known local grid with demonstrated control. The orientation and dip at the collars is checked (aligned) by the geologist and down hole recording of azimuth and dip are taken at 30m intervals on most occasions using appropriate equipment. Accuracy tests in downhole surveys have been conducted on recent drilling, and show negligible variation against 'Gyro' survey by independent third party.</li> <li>The regional grid is GDA94 Zone 50 and the drilling is laid out on a local grid.</li> <li>Topographic control is from surface survey - note the deposit modelled is totally underground and is not influenced by surface topography.</li> </ul>
Data spacing and distribution	<ul> <li>Data spacing for reporting of Exploration Results.</li> <li>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.</li> <li>Whether sample compositing has been applied.</li> </ul>	<ul> <li>The majority of drilling utilised is on 40m x 20m grid specifically targeting lithological and hence mineralisation sequence definition.</li> <li>The geological sequence is well understood from the mining which supports the current drill spacing as adequate for both grade continuity assessment and lithological modelling</li> <li>The sampling reflects the geological conditions. For mineral resource estimation a 1m composite length was chosen given that this is the dominant sample length in dataset.</li> </ul>



Criteria	JORC Code Explanation	Commentary
Orientation of data in relation to geological structure	<ul> <li>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</li> <li>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</li> </ul>	<ul> <li>Given the shape of the sequence, the drilling as best as practically possible, is orientated to intersect the sequence perpendicularly.</li> <li>No sampling bias is considered to have been introduced.</li> </ul>
Sample security	The measures taken to ensure sample security.	• The samples once collected and numbered are stored in the site core yard. Each sample bag is securely tied with the pre-printed sample number on the bag and transported to either the onsite laboratory or by commercial contractors to Perth. Upon receipt at the laboratory the samples are checked against the dispatch sheets to ensure all samples are present.
Audits or reviews	<ul> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul> <li>Resources and reserves are routinely reviewed by the Metals X Corporate technical team.</li> <li>Database management companies have over the past 2 years audited the drill hole database and found it representative of the information contained.</li> </ul>



# SECTION 2: REPORTING OF EXPLORATION RESULTS

(Criteria listed in the preceding section also apply to this section.)

Criteria	JORC Code Explanation	Commentary
Mineral tenement and land tenure status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.	<ul> <li>The Nifty deposit is situated on Mining Lease M271/SA, which is 100% held by Ni Copper Pty Ltd, a wholly owned subsidiary of Metals X.</li> </ul>
	• The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	
Exploration done by other parties	Acknowledgment and appraisal of exploration by other parties.	<ul> <li>WMC Resources Ltd discovered Nifty in 1980 by using regional ironstone sampling and reconnaissance geology. Malachite staining of an outcrop and Cu-anomalo ironstones from dune swale reconnaissance sampling were the initial indicators. The was followed up by lag sampling on a 500 x 50m grid that detected a 2.5 x 1.5km CP b anomaly. Secondary Cu mineralisation was intersected in percussion drilling in m 1981, with high grade primary ore (20.8m at 3.8% Cu) discovered in 1983. WM commenced open pit mining of the secondary oxide ore in 1992 and continued mini until September 1998 when Nifty was sold to Straits Resources.</li> <li>The project was subsequently purchased from Straits Resources by Aditya Bi Minerals Ltd in 2003.</li> </ul>
		Open pit mining ceased in June 2006.
		Copper extraction using heap leaching ceased in January 2009.
		• Underground mining of the primary (chalcopyrite) mineralisation started in 2009.
		The project was purchased from Aditya Birla in 2016 by Metals X Ltd.
Geology	Deposit type, geological setting and style of mineralisation.	The Nifty deposit is hosted within the folded late-Proterozoic Broadhurst Formati which is part of the Yeneena Group. The Broadhurst Formation is between 1000 m 2000 m thick and consists of a stacked series of carbonaceous shales, turbidi sandstones, dolomite and limestone. Structurally, the dominant feature is the Ni Syncline which strikes approximately southeast-northwest and plunges at about 6-degrees to the southeast. The stratabound copper mineralisation occurs as structurally controlled, chalcopyrite-quartz- dolomite replacement of carbonaceo and dolomitic shale within the folded sequence. The bulk of the primary mineralisati which is currently being mined is largely hosted within the keel and northern limb the Syncline.



Criteria	JORC Code Explanation	Commentary
Drill hole Information	<ul> <li>A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul> <li>easting and northing of the drill hole collar</li> <li>elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>dip and azimuth of the hole</li> <li>down hole length and interception depth</li> <li>hole length.</li> </ul> </li> <li>If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.</li> </ul>	All required information in tabulated within Appendix 1 of the announcement.
Data aggregation methods	<ul> <li>In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.</li> <li>Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>	<ul> <li>Results are reported on a length weighted average basis.</li> <li>Results are reported above a minimum 2m @ 0.7% Cu with no top cut applied.</li> </ul>
Relationship between mineralisation widths and intercept lengths	<ul> <li>These relationships are particularly important in the reporting of Exploration Results.</li> <li>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').</li> </ul>	<ul> <li>All quoted intersections are true width unless marked with an * in which case the reported intersection is down hole width.</li> </ul>
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	Diagrams are included in the body of the report.
Balanced reporting	<ul> <li>Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>	All drill holes have been reported.



Criteria	JORC Code Explanation	Commentary
Other substantive exploration data	<ul> <li>Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</li> </ul>	<ul> <li>All drill holes are within or adjoining an existing mine.</li> </ul>
Further work	<ul> <li>The nature and scale of planned further work (e.g. tests for lateral extensions or depth extensions or large-scale step-out drilling).</li> <li>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</li> </ul>	<ul> <li>The Nifty resource currently remains open to the east.</li> <li>Open pit and underground feasibility works;</li> <li>Validation drilling in areas of potential economic mineralisation;</li> <li>Infill drill areas of data paucity proximal to the underground development. This will increase resource confidence and resultant classifications.</li> <li>Validation of the underground void model.</li> </ul>