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Aditya Birla Minerals Limited

ASX RELEASE

Nifty Underground Ore Reserve Estimate as at 31 March 2016

23 May 2016

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ADITYA BIRLA MINERALS LIMITED

Ore Reserve Update
as at 31 March 2016

Birla Nifty Underground Ore Reserve Estimate

Aditya Birla Minerals Limited (ABY) is pleased to advise that the Nifty Sulphide Ore Reserve Estimate has been re-assessed and updated by AMC Consultants Pty Ltd (AMC). The Ore Reserve estimate as at 31 March 2016 (2016 Ore Reserve), reported in accordance with JORC Code 2012 guidelines is tabulated in Table 1.

Table 1 Nifty Sulphide Ore Reserves as at 31 March 2016

Classification	Cut-off Grade %	Tonnes (Mt)	Grade (% Cu)	Metal (kt Cu)
Proved	1.5	3.63	1.88	68
Probable		1.61	1.78	29
Total Ore Reserve		5.24	1.85	97

Significant work was undertaken by AMC to update the Life of Mine Plan (LOMP) for the Nifty Sulphide operation taking into account the updated resource model as at 31 March 2016, revised copper price and AU$/US$ exchange rate forecasts, ore depletion due to mining between 1 April 2015 and 31 March 2016, and experience gained in various areas of the mine post the sink-hole event. This has resulted in a material change to the Ore Reserve.

The following information is provided pursuant to Listing Rule 5.9.1 and 5.9.2.

Mineral Resource

The Mineral Resource block model for Nifty Sulphide operation was updated as at 31 March 2016 and results were announced on 16 May 2016. This March 2016 resource block model was used to update the Life of Mine Plan (LOMP) and compile the 31 March 2016 ore reserve estimate.

The Measured and Indicated Resource categories were converted to Proved and Probable Reserves in the Checkerboard (CB) area. The Measured Resource in the North Limb area (NL) below 12Level has also been assigned the Proved Reserve as some stoping has been carried out in these areas successfully.

However, Measured and Indicated resources located in the North Limb (above 12Level) and West Limb mining areas (WL) was converted to Probable Reserves to reflect that stoping in these areas has not been trialled or mined to-date.

Note: Listing Rule 5.9.1 requires listing the criteria used for classification of the Mineral Resources and for this purpose the resource report published by ABY on 16 May 2016 should be referred to. To comply with the listing Rules, Section 1, 2 & 3 of the report relevant to Nifty is included in Appendix 1.

Geotechnical

The main geotechnical issues presented by the remaining mine life at Nifty are the preferred extraction sequence and maintaining access to late stage mining areas. As preventing subsidence is no longer a requirement, some of the planned mining areas will not be backfilled. Instead, they will be mined on retreat, with pillar yielding expected to occur sometime after the main production phase has occurred in a given stoping panel or area.

The current expression of subsidence on surface post the March 2014 sink-hole event is expected to increase, with a broadening and deepening of the general subsidence trough centered over the CB area.

The March 2016 life-of-mine-plan (2016 LOMP) draws heavily on the experience gained at Nifty to date in Checkerboard and North Limbs. There is currently only limited geotechnical data available in the West Limb mining area, but the general indication is that the ground is of poorer quality than in the CB area. Jointing is understood to be more prominent and some of the joints have low strength infilling.

Cut-off Grade (COG)

For the calculation of COG, copper price forecasts and foreign exchange estimates were provided by ABY, after considering a number of third party forecasts up until 2020.

The copper price and exchange rate forecasts used are provided in Table 1.1.

Table1.1 Copper prices and exchange rates

Item	Unit	FY2017	FY2018	FY2019	FY2020
Copper price	US$/t	4,935	5,425	5,762	5,333
Exchange rate	A$:US$	0.7150	0.7400	0.7500	0.7700
Copper price	A$/t	6,902	7,331	7,683	6,926

AMC used the LOM average operating costs, copper price forecasts and exchange rates to calculate the stoping COG. The stoping COG was calculated to be 1.65% Cu. However, stope designs for 2016 LOMP are based upon a 1.5% Cu COG, which was provided by ABY. This is significantly higher than the 1.1 % COG used in the 31 March 2015 Ore Reserve estimate (2015 Ore Reserve).

A marginal COG (excluding mining costs) of 0.6% was calculated for reporting development ore for Ore Reserve purposes. The marginal COG is estimated using the same parameters as the stope design COG – with the exception of the mining costs, which is set to zero.

2016 LOMP average inputs used to calculate the COG are detailed in Table 1.1.

Table 1.1 Cut-off grade parameters

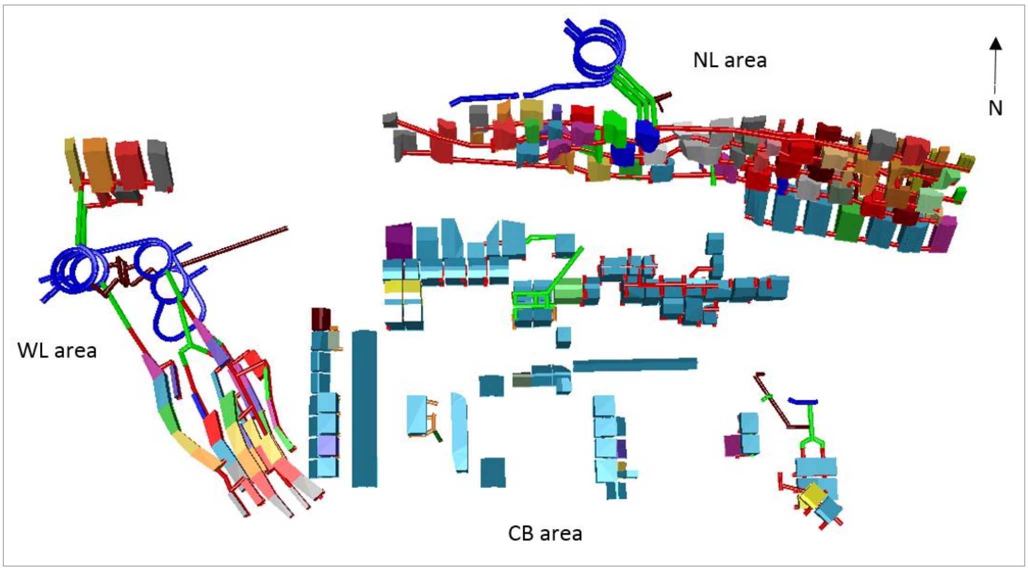
Data	Unit	2016 LOMP (average)
Parameters		
Copper price (LOM weighted average) per tonne	US$/t	5,364
Exchange rate (LOM weighted average)	A$/US$	0.7438
Copper Price per tonne	A$/t	7,211
Costs		
Mining	$/t	50.10
Processing	$/t	23.18
Admin	$/t	8.46
Total	**$/t**	**81.74**
Breakeven Cut-Off Grade	%Cu	1.65
Nominated Cut-Off Grade for stope design	% Cu	1.50

Mine Layout

Historical mining at Nifty has focused on the Checker Board (CB) mining area using the longhole open stoping (LHOS) mining method with pastefill. Deteriorating ground conditions resulting from a combination of past mining and the March 2014 sink-hole event has limited upper and mid-level access to the majority of secondary, tertiary and regional pillar stopes remaining within the CB area.

The underground operation has been divided into three mining areas; CB, West Limb area (WL) and North Limb area (NL). An overview of the mine layout is shown in Figure 1.

Figure 1 Overview of mine Layout



Mine Design

The 2016 LOMP is an update to the 2015 LOMP. The major modifications are:

- The use of updated Mineral Resource model (March 2016) used for stope designs.
- Increase in the design COG to 1.5% from 1.1% Cu mainly due to lower copper price forecasts.
- The WL area has been re-designed and now the WL is accessed from an incline developed from 18 Level in the CB area.

Stopes in the CB area with top sill access for backfilling were designed to be mined using the longhole open stoping (LHOS) mining method with paste fill. Stopes in the CB area that can only be accessed on the extraction horizon, that is, the A-pillar stopes in the CB area and all stopes in the North and West Limb areas were designed to be mined using up-hole retreat stoping without backfill.

NL stopes from the 12L and up are designed using up-hole retreat stoping without backfill, with stopes restricted to one level in height. In the 2016 LOMP, NL stopes between 14L and 12L are to be mined using up-hole retreat and then backfilled.

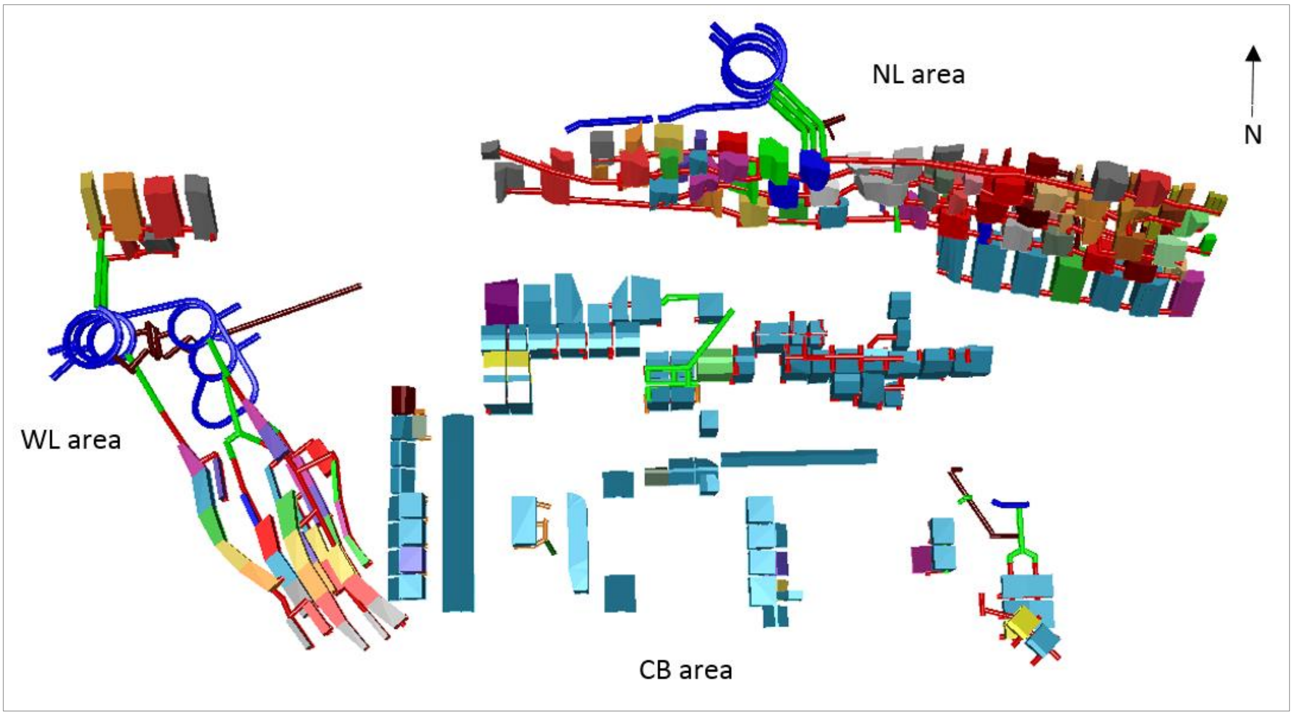
The South Limb was removed in the 31 March 2015 Ore Reserves due to poor geotechnical conditions in this part of the mine, and was not re-assessed as part of the 2016 LOMP.

The WL was redesigned for the 2016 LOMP, however the updated Mineral Resource model and increased COG required a re-design and modified access strategy.

No changes were made to the regional pillar layout within the CB area. Mining of accessible portions of the regional pillars was scheduled to coincide with the completion of mining in the CB area.

Figure shows a plan of all mining areas included in the 2016 LOMP.

Figure 2 Plan view of mining areas included in the 2016 LOMP



1.1 Checkerboard mining area

All CB stopes that are limited to extraction horizon access and hence cannot be backfilled are scheduled generally on retreat from south to north in the 2016 LOMP schedule. These stopes are followed in the mining sequence by the A-pillars and regional pillars, although in practice they may be mined concurrently.
Stope height has been set at a maximum of 30 m for CB stopes/pillars that are limited to extraction horizon access only. This height reflects what is considered to be the practical limit of mining blind up-hole retreat stopes. These stopes/pillars are not planned to be backfilled.

In the CB area, a combination of depletion due to mining since April 2015, refinement of previous stope designs, mining parameters and revised COG due to change in macro-economic forecast assumptions has resulted in a net reduction of approximately 1.62 mt containing 49 kt Cu when compared to the March 2015 Ore Reserves.

1.2 North Limb mining area

Stope design in the NL area comprises uphole retreat, mined in either from east to west, or west to east direction along strike. In the 2106 LOMP, the remaining NL stoping, above 12 L, is sequenced top down, and is assumed to be mined without backfill. While it is assumed that stoping between 12 L and 16 L will be backfilled – as these stopes undercut the stopes above.

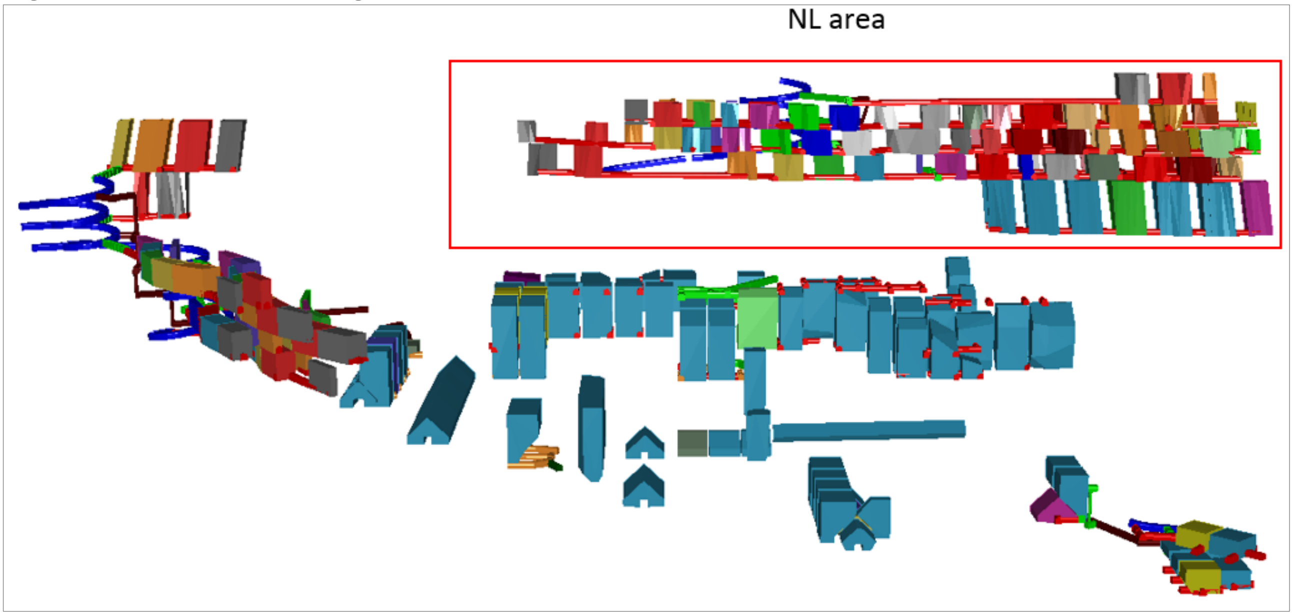
Stopes are designed to a maximum strike length of 25 m and sub-level spacing of 20 m or 40 m. Rib pillars between stopes are 10 m along strike.

In the NL area, a combination of depletion due to mining since April 2015, refinement of previous stope designs, mining parameters and revised COG due to change in macro-economic forecast assumptions has resulted in a net reduction of approximately 0.77 mt containing 8 kt Cu when compared to the March 2015 Ore Reserves.

A view of the NL area stopes is shown in

Figure

Figure 3 View looking north



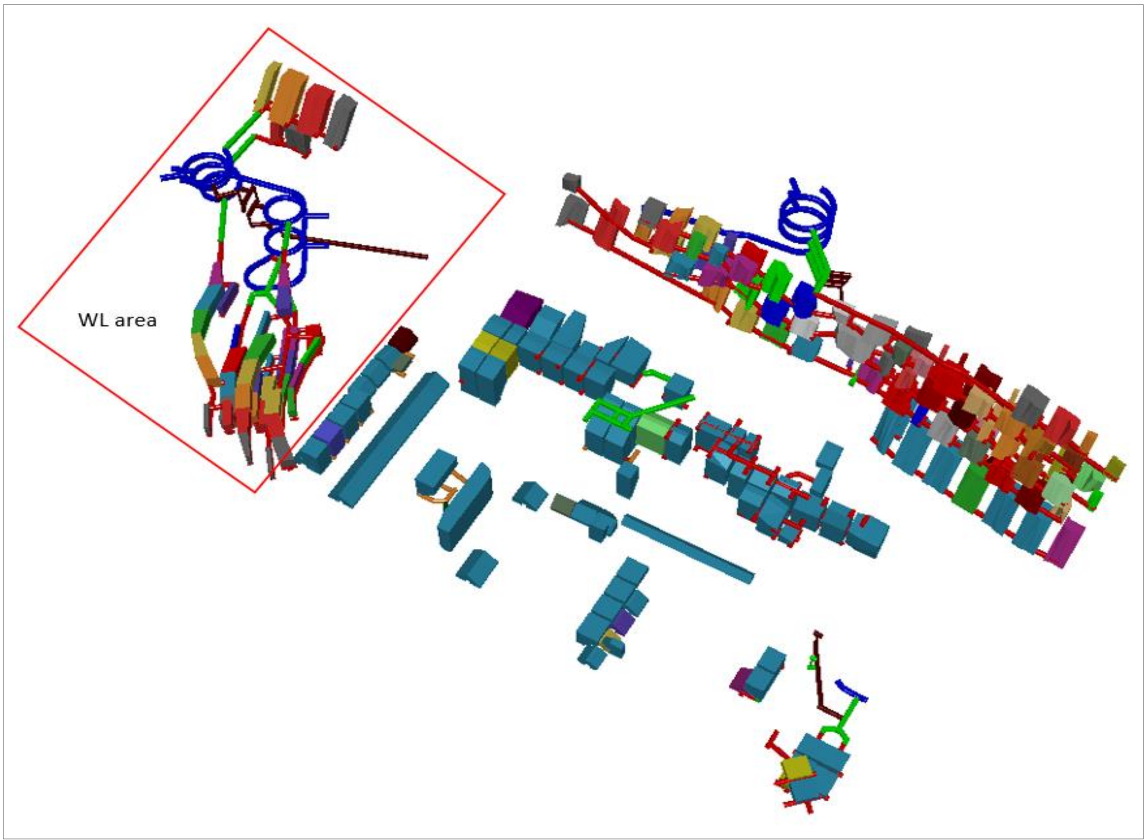
1.3 West Limb stoping area

Stope design in the WL area consists of longitudinal up-hole retreat stoping, without backfill. Stoping is scheduled to retreat from the southern extremity of the orebody development.

There is limited geotechnical data for the WL area however the expectation is that ground will be poorer in quality than in the CB area.

In the WL area, refinement of previous stope designs, mining parameters and revised COG due to change in macro-economic forecast assumptions has resulted in a net reduction of approximately 1.05 mt containing 15 kt Cu when compared to the March 2015 Ore Reserves. A view of the WL area stopes is shown in Figure .

Figure 4 Isometric looking north-west



1.4 Mining Factors and Assumptions

The modifying parameters as shown in Table have been applied in the 2016 LOMP.

Table 1.3 Modifying factors

Mining Area	Recovery (%)	Waste Dilution (%)
Checkerboard		
Primary	98	0
Secondary 01	98	3
Secondary 02	95	6
Secondary 03	90	9
Tertiary	90	12
North Limb	90	20
West Limb	85	0*
Development	100	10
Regional Pillar	90	20
A Pillar and Retreat Pillar	50	30

* Dilution with grade allowed for in recovery factor determination

Dilution applied to CB stopes mined as blind up-holes is higher reflecting the poor ground conditions adjacent to these stopes and expected increased dilution from both walls and backs. Dilution for A-pillars and regional (retreat) pillars reflects the likely poor ground conditions in the final stage of mining in the CB area along with the varying quality of backfill material adjacent to these stoping blocks.

Mining dilution is higher in the NL compared to the CB stopes to reflect the HW and FW contacts being exposed along a single line of stopes. Mining recovery is also lower in the NL as the design does not incorporate extraction troughs.

Waste dilution of 10% has been applied to all development tonnes.

1.5 Scheduling parameters

Underground mining productivity parameters were based on rates currently used by Nifty in previous schedules and confirmed by historical mining at Nifty. A summary of these estimates is detailed in Table .

Table 1.4 Estimated mine rates used

Scheduling Assumptions	Unit	2016 LOMP
Development		
Monthly Lateral Development Advance Maximum (FY2017)	m	450
Monthly Lateral Development Advance Maximum (FY2018 and FY2019)	m	650
Stoping		
Setup Time (incl dev, cablebolting, raiseboring slot, approx.)	days	28
Production Drilling	m/d	750
Production Bogging Capacity	t/d	5,000
Stope Production Bogging (up to 50kt in stope)	t/d	1,000
Backfill		
Allowance for Construction of Fill Walls	days	3
Filling Rate	m^3/d	2,500
Fill Curing Time	days	28

1.6 Schedule output

Based on a 1.6 Mtpa production rate, the production schedule mines approximately 5.2 Mt of ore at 1.85% Cu, for 97 kt of contained copper over approximately three years. Production is focused on the CB area for the first two years, before the production tails off to completion in the beginning in FY2020.

The proportion of production from the NL and WL gradually increases as the schedule progresses and constitutes the majority of production in FY2019.

2 Economic evaluation

ABY carried out financial modeling and provided AMC with a copy of the ABY Financial Model (ABY Model) which details costs based on the 1.6 Mtpa production rate derived from the 2016 LOMP developed by AMC. The inputs and methodology used in the ABY Model have been reviewed by AMC. The economic viability of the 2016 LOMP was assessed for Ore Reserve reporting by carrying out sensitivity analysis of discount rate, copper price, capital costs and operating costs.

2.1 Financial assumptions

Table lists the revenue assumptions used in the ABY Model and the economic evaluation which varies on an annual basis.

Table 2.1 Financial and realization assumptions

Item	Unit	Rate
Copper price	US$/t	4,935 – 5,762
Exchange rate	A$/US$	0.715 – 0.77
Royalties	%	5
Treatment charge	US$/dmt Con	97.5 – 95
Refining charge	USc/lb Cu metal	9.75 – 9.5
Road freight	A$/wmt Con	35
Ship loading	A$/wmt Con	10
Ocean freight	US$/wmt Con	21

2.2 Costs

Table2.1 lists the average LOM unit operating costs in the ABY Model for the period FY2017 to FY2020.

Table2.1 Mining costs

Item	Amount ($/t ore)
Mining cost	50.10
Processing cost	23.18
Admin cost	8.46
Total	**81.75**

AMC reviewed the LOM costs against actual costs for FY2016 and considers that the budget costs align with actual costs, after removal of abnormal items.

2.3 Capital costs

Capital costs included in the ABY Model allow for rebuild of mobile equipment, relocation of underground infrastructure, capital development required to access new mining areas and sustaining capital for the process plant and site infrastructure.

2.4 Mineral Processing

Other than a reduction in the annual throughput rate, there are no changes to the mineral processing operations conducted at Nifty as a result of the 2016 Ore Reserve estimate. The current process plant uses conventional grinding and flotation equipment and is a well-established process which has been in operation since commencement of underground mining at Nifty.

2.5 Other Modifying Factors

Nifty is an established operating mine, and as such, has:

- Existing environmental approvals in place
- Established residue and waste dumps
- Established mining tenements and approvals in place

Surface and underground infrastructure in place to support the activities undertaken at site

2.6 Financial Results

The ABY Model was used to confirm the economic viability of the 2016 LOMP inventory.. The economic viability of the 2016 LOMP was assessed for Ore Reserves reporting by carrying out sensitivity analysis on discount rate, Cu Price and operating costs. The sensitivity analysis indicated that:

- the NPV is positive and consequently the project is economic.
-
- achieving a positive NPV is not sensitive to discount rate. The NPV of the project is estimated using a post-tax discount rate of 9.5% pa.
- the project is most sensitive to copper price, exchange rate and operating costs.

3 Ore Reserve estimate

For this study, ABY has generated a financial model based on the 2016 LOMP inventory scheduled at an annual production rate of 1.6 Mtpa. This financial model was used to confirm the economic viability of the 2016 LOMP inventory based on the nominated 1.5% Cu COG.

Per JORC Code guidelines, AMC believes it is reasonable to convert the mining inventory to Ore Reserves.

Per JORC Code guidelines, two senior AMC personnel (David Lee, Principal Mining Engineer and Mike Sandy, Principal Geotechnical Engineer) who are familiar with Nifty, conducted a site visit on 20 October 2015 for inspection of mining conditions and discussions with operations management.

For the CB and 14L North Limb area, Measured and Indicated Resource categories are converted to Proved and Probable Reserves respectively.

For the West Limb area and the North Limb area above 12 L (12 L and up) Measured Resources are converted to Probable Reserves to reflect that stoping in these areas has not been undertaken to-date, the geotechnical risk of these areas, and the marginal economics of these areas. The Ore Reserve estimate as of 31 March 2016 is shown in Table .

Table 3.0 Ore Reserve estimate as at 31 March 2016

Reserve Classification	Tonnes (Mt)	Grade (%Cu)	Cu Metal (kt)
Proved	3.63	1.88	68
Probable	1.61	1.78	29
Total	**5.24**	**1.85**	**97**

There has been a net decrease of 3.45 Mt in Ore Reserves compared to the March 2015 Ore Reserve estimate, as shown in Table3.1. This reflects mining depletion due to production, poor stope recovery, the increased COG and the updated Mineral Resource model.

Reconciled production for the period between April 2015 to March 2016 was 1.58 Mt at 2.1% Cu containing 33 kt Cu.

Table 3.1 summarises the Ore Reserves as at 31 Mar 2015, depletion of the ore reserve due to mining between 1 April 2015 and 31 March 2016, reduction in ore reserves due to refinement of stope design due to changes in the resource model, change in COG due to macroeconomic parameters, poor stope recovery, and various mining parameters.

Table3.1 Summary of Ore Reserves depletion/reduction

Item	Total Ore Reserves		
	Tonnes (Mt)	Grade (Cu%)	Metal (kt Cu)
A. Total Ore Reserves estimate as at 31 March 2015	8.69	1.94	169
B. Ore Mined between 1 April 2015 to 31 March 2016	1.58	2.10	33
C. Balance as at 31 March 2016 (A-B) after depletion	7.11	1.91	136
D. Total Reserves estimate as at 31 March 2016	5.24	1.85	97
E. Net change (+/-) after taking into account the refinement of stope design due to changes to the resource model, revised COG of 1.5% due to macro economic conditions, poor stope recovery and revised mining parameters (D-C).	-1.88	2.09	-39

Sections 1, 2, 3 & 4 of Table 1 from the 2012 JORC Code

Pursuant to Listing Rule 5.9.2, Appendix 1 contains the following sections of Table 1 which provide information that is material to understanding the Ore Reserve estimate in relation to each of the criteria listed:

- Section 1 (sampling techniques and data)
- Section 2 (Reporting of Exploration Results)
- Section 3 (estimation and reporting of Mineral Resources)
- Section 4 (estimation and reporting of Ore Reserves)

Competent Person’s Statement

The information in the “Nifty Underground Reserve Estimate” and Section-4 of Appendix-1 is based on, and fairly represents, information and supporting documentation prepared by Mr. David Lee, Principal Mining Engineer and an employee of AMC Consultants Pty Ltd. Mr. Lee is a Fellow of Australasian Institute of Mining and Metallurgy. Mr. Lee has sufficient experience, which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 JORC edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr. Lee consents to the release of this information in the form and context in which it appears.

The information in the “Nifty Underground Reserve Estimate” and Section-1,2 & 3 of Appendix-1 is based on, and fairly represents, information and supporting documentation prepared by Mr. Sean Sivasamy, a full time employee of Aditya Birla Minerals Limited. Mr. Sivasamy is a Member of Australasian Institute of Mining and Metallurgy. Mr. Sivasamy has sufficient experience, which is relevant to the style of mineralization and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 JORC edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Mr. Sivasamy consents to the release of this information in the form and context in which it appears.

Appendix-1

Section 1 Sampling Techniques and Data		
Criteria	**Explanation**	**Comments**
Sampling techniques	• *Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down whole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The drilling and sampling data utilised for mineral resource estimation is as follows: Nifty Deposit has 798 diamond and RC holes containing 143,497m. The holes for all deposits are drilled mostly perpendicular to the orientation of the mineralisation.
	• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*	Drilling and sample collection used industry standard techniques for diamond coring, RC and sludge sampling. Diamond sample representivity is assumed given the drilling is mostly perpendicular to the mineralisation and the very good core recovery achieved. Similarly orientated RC holes generate samples for each 1m drilled which are collected from the cyclone, sample recovery is generally reported as good although not recorded. Sludge samples are collected from the flushed return and copper grades were adjusted based on test results.

	• *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (eg '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 (eg submarine nodules) may warrant disclosure of detailed information.*	For the diamond drilling the mineralised intervals and adjacent locations were sampled by cutting the core in 1/2 based on the logging. The preparation and analysis was undertaken at an accredited commercial laboratory. The entire sample was dried and crushed to 2mm and then split and a portion pulverised to 80% passing 10micron. The analysis was by fire assay with either atomic absorption finish or gravimetric determination. RC samples are split in the field to approximately 2.5Kg and then prepared and assayed in the same manner as for the diamond samples. Sludge samples were collected in 20L plastic buckets from 1.8m sample intervals and then transferred to poly-weave bags. These samples are prepared and assayed in the onsite and commercial laboratories using 3 acid digest and AAS finish.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg 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).*	The diamond core was of variable diameter with surface holes drilled using HQ and NQ whilst underground holes were mostly NQ sized core. Diamond drilling is mostly cored from collar and hole depths range to 1316.5m. The earlier core was not orientated however more recent holes are orientated using a spear. The method of drilling the RC holes at Nifty is the use of a face sampling hammer in a 150mm diameter hole, these holes vary in length to 208m. Sludge sampled holes used a jumbo rig and vary in length to 121m.

Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.*	The core information is recorded in the database for some holes as recovered length and recovery is determined as recovered length/interval length. These measurements are made by the responsible geologist or field technician under supervision. The average core recovery is in excess of 93%.
		Blast holes were drilled using jumbo rigs with 1.8m rods, the sludge sample return is flushed into 20L buckets and then transferred into poly-weave bags. No documentation on the sample recovery for the RC holes.
	• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*	Core recovery is extremely good and no additional measures are required to maximise recovery. The representative of the core in terms of copper grade is appropriate given the QAQC conducted and the mining history. At Nifty some calibration issues were noted with one of the laboratories. Sludge sample return is maximised by placement of the bucket. There is little other control on the sampling. There is no documentation on the sample collection/recovery for the RC holes.
	• *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.*	Whilst no assessment has been conducted / reported the competency of the core as demonstrated by the high average recovery would tend to preclude any potential issue of sampling bias. Sludge sample Cu grades are adjusted by formulae based on test work. The lack of documentation on the sample recovery for the RC holes precludes any assessment.

Logging	• *Whether core and chip samples have been geologically and geotechnical logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	For core geological recording of lithology, mineralisation, veining, alteration, weathering, structure is appropriate to the style of the deposit. Sludge samples have lithological information recorded. Chip lithological logs are maintained for the RC samples.
	• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography*	For core, geological logging is both in summary and detailed as for the information listed above and includes mineralisation type and content, some angle to core axis information, vein type, incidence and frequency, magnetic content. For sludge samples only lithology is recorded. For RC the logging is qualitative.
	• *The total length and percentage of the relevant intersections logged.*	The entire length of all diamond and RC holes, apart from surface casing and Nifty holes, was logged.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.*	Based on information provided and observed in photographs all core to be sampled was 1/2ed using a mechanical saw. It is not known if the core was consistently taken from one side of the stick.
	• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*	The entire sludge sample is dried, pulverised and split prior to analysis. RC samples are collected by either rotary splitter or riffling.
	• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*	Based on information relating to the previous companies and knowledge of the current owners the approach of using commercial laboratory facility for the preparation of samples is industry standard practice for this type of material with the copper mineral content demonstrated.

	• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*	Prior to Aditya Birla the inclusion of QAQC samples (standard and blanks) and the use of duplicates and re-submissions was not well documented and potentially fairly random. Aditya Birla has adopted industry best practice with respect to the numbers of standards and blanks inserted with the core the samples submitted however the use of non-certified blank material is discouraged. Aditya Birla also uses an umpire laboratory and field duplicates on occasions. Sludge sample QAQC is restricted to duplicates and repeats.
	• *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.*	The QAQC results are on most occasions supportive of the copper grades however Aditya Birla does not regularly follow up the occasional apparent laboratory issues. Duplicate sampling when conducted is supportive of the original results. No 1/2nd half core duplicate assay results have been observed.
	• *Whether sample sizes are appropriate to the grain size of the material being sampled.*	The mineralisation style and the relatively low local grade variance combined with the domaining and supported by the QAQC validation provides confidence in the overall grade of the deposits being fairly represented in the estimates.

Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*	The assay techniques applied for the measurement of copper content is appropriate for the determination of the level of copper in the sample. The routine technique was aqua regia digest with ICPES analysis with over range values repeated using four acid digest with atomic absorption spectroscopy finish.
	• *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.*	On occasions down hole EM is adopted to detect sulphide presence with some success.
	• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	Standards and Blanks have been included at rates varying from 1 in 20 to 1 in 40 relative to the number of routine samples for the recent diamond holes. The results were acceptable although occasional potential bias has been observed in Standards and there is evidence of potential sample preparation issues in a small number of blank samples. Neither of the issues is considered significant enough to negate the use of the impacted sample results. Umpire laboratory checking also provided support for the original results.
		Sludge sample duplicates and assay repeats give supportive results for the onsite laboratory.

Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.*	High grade mineralisation in the core was observed and verified by Aditya Birla personnel and external consultants reviewed the intercepts compilation reported.
	• *The use of twinned holes.*	No specific twinning program has been conducted however in many positions within the Deposit drilling is in close proximity and the comparison of assay results is supportive
	• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols*	Primary data was recorded directly onto electronic spread sheets and validated against code tables by the database manager.
	• *Discuss any adjustment to assay data.*	Sludge samples with assay results >2% Cu are adjusted by a graphical transform related to Cu content.
Location of data points	• *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.*	The recent collar positions are surveyed by Aditya Birla or its contractors from known surface and underground datum. Documentation for previous drill holes indicates a similar methodology. The orientation and dip at the start of the hole was recorded and similar information is recorded down hole by single shot camera.

	• *Specification of the grid system used.*	For the Nifty Project the regional Grid is GDA94, Projection MGA Zone 51. All information is located on the Nifty Mine Grid which is a transformation and rotation based on local control point. 10000 is added to the AHD elevation.
	• *Quality and adequacy of topographic control.*	Topographic control is taken from site surveys (aerial) and hole collar surveys and is adequate for the control required. Underground control is from known datums.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.*	Spacing varies by Deposits and position within the deposit. At Nifty the most concentrated drilling is on 40m spaced sections along strike with holes approximately 10 to 50m apart of section. Elsewhere spacing on varies to 80m.
	• *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.*	Successive drilling programs have in filled the previous drilling and on the majority of occasions drilling has returned mineralisation in the expected locations. This provides a high degree of confidence in the geological continuity. Relatively close spaced drilling in many deposits provides good support for positioning of mineralisation. Successful mining at Nifty further enhances confidence in the geology interpretation.
	• *Whether sample compositing has been applied.*	Only occurs in those deposits with RC drilling and then is not regularly adopted.

Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*	The drilling is oriented as best as possible to perpendicular to the structure/geology containing or controlling the mineralisation. Drilling is in some locations down plunge/dip and the influence of this drilling is recognised in the estimation methodology.
	• *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.*	No sampling bias is considered to have been introduced.
Sample security	• *The measures taken to ensure sample security.*	The chain of custody adopted by Aditya Birla is documentation based and the responsibility of the site geologist and the database manager. Each facet of the sample collection, site numbering and preparation and despatch to the laboratory is documented.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	Aditya Birla has standard operating procedures for drilling, sample collection, sample storage, data base management etc. It monitors and audits its own procedures.

Section 2 Reporting of Exploration Results
(No Exploration activities undertaken between 1 April 2015 and 31 March 2016)

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

Criteria	Explanation	Comments
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.* • *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.*	Granted Mining Lease M271SA secures the entire mine site, including the open pits, village, plant site, power station, waste rock dumps, tailings storage facilities and bore fields. The Nifty Mineral Resource lies in M271SA (expiry date 02/09/2034). It is located within the Proterozoic Yeneena Basin, bounded to the west by the Archaen Pilbara Craton, to the north and east by the late Carboniferous to early Permian Canning Basin and to the southeast and south by sedimentary rocks of the Officer Basin. The Nifty Mining Operation includes the following agreements, licenses and commitments: • Western Mining Corporation Limited (Throssell Range) Agreement Act 1985 – WA State Agreement • WA Department of Environment and Conservation (DEC) Prescribed Premises environmental operating license – groundwater monitoring, tip management, waste water treatment, emissions to air, land, and water, and annual reporting • Department of Water abstraction licenses for 3,730,000 kL for dewatering and 75,000 kL for process and potable water

Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	In the early 1970"s the discovery and delineation of the Telfer Au-Cu deposit aroused a strong increase in mineral exploration in the area. Descriptions of the Paterson Province by the Geological Survey of Western Australia (Chin and Hickman, 1977) led WMC Resources Pty Ltd to develop a conceptual model for the exploration of sediment-hosted stratiform copper deposits (Haynes et al., 1993). Subsequent field investigations noted that the coarse-grained lithics of the Coolbro Sandstone could have acted as a favourable source rock and that the laminated dolomitic siltstone and pyritic shale of the Broadhurst Formation could have acted as a possible host for sediment-hosted stratiform copper (Haynes et al., 1993). In 1979, geophysical surveys, further geological mapping and systematic ironstone and outcrop lag sampling commenced near the western margin of the basin and led to the definition of a Pb-Zn-Cu target in the region of Nifty and

Geology	• *Deposit type, geological setting and style of mineralisation.*	The Nifty Cu deposit is located within the Paterson Province of the eastern Pilbara, which also contains the Telfer Au and Maroochydore Cu-Co deposits. It is located within the Yeneena Basin, bounded to the west by the Archaen Pilbara Craton, to the north and east by the late Carboniferous to early Permian Canning Basin and to the southeast and south by sedimentary rocks of the Officer Basin. The initial exploration in the Paterson Orogen applied a conceptual model for stratiform copper deposits developed by WMC Resources Ltd. This model and Nifty's subsequent discovery have influenced its stratigraphic interpretation. Haynes et al. (1993) suggested that the source rocks were likely to be red coarse-grained basal clastic sediments deposited during the rift phase of basin development and in the Paterson Orogen, with the Coolbro Sandstone the likely copper source. The ore body was likely to be sheet-like, stratiform and stratabound with ore boundaries gently transgressing lithological layering (Haynes, 1979). Haynes (1990) defined as a search priority cryptalgal laminated carbonates within 300m of the basin margin and in basal sediment pinchouts and pinch downs (Anderson, 1999). The Nifty Cu deposit consists of a secondary oxide and primary sulphide ore bodies that are hosted by folded and altered carbonaceous shale and dolomitic mudstone of the Broadhurst

Drill hole Informa tion	• *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:* • *easting and northing of the drill hole collar* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this*	No exploration results has been released during the reporting period, therefore there is no drill hole information to report. This section is not applicable. Comments relating to drill hole information relevant to the Mineral Resource estimate can be found in Section 1 – "Sampling techniques", "Drilling techniques" and "Drill sample recovery" ASX Release dated 16 May 2016.
Data aggrega tion method s	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *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.*	No exploration results has been released during the reporting period, therefore there is no drill hole information to report. This section is not applicable. Comments relating to data aggregation methods relevant to the Mineral Resource estimate can be found in Section 1 – "Sampling techniques", "Drilling techniques" and "Drill sample recovery" ASX Release dated 16 May 2016.
Relation ship between minerali sation widths and intercep t lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	No exploration results has been released during the reporting period, therefore there are no relationships between mineralisation widths and intercept lengths to report. This section is not applicable.

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*	No exploration results has been released during the reporting period, therefore no exploration diagrams have been produced. This section is not applicable.
Balanced reporting	• *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.*	No exploration results has been released during the reporting period, therefore there are no results to report. This section is not applicable.
Other substantive exploration data	• *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*	Not applicable.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling*	No drill programs are planned. Not Applicable.

Section 3 Estimation and Reporting of Mineral Resources		
Criteria	**Explanation**	**Comments**
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	The data utilised has been validated by the database manager by comparing laboratory result sheets and sample intervals on the drill logs to the contents of the database. Previous to this numerous external consultants have reviewed, compiled and validated the data also.
	• *Data validation procedures used.*	Utilises a SQL Server database and loads data with the contents checked against validation tables. The previous audit provided sufficient confidence in the database contents to state that it accurately represents the drill information.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	The competent person regularly visits all of the sites. DataGeo has not visited any of the sites.
	• *If no site visits have been undertaken indicate why this is the case.*	Given the relationship between DataGeo and Aditya Birla (a cooperative approach to mineral estimation) no site visit is considered necessary for DataGeo.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The confidence in the geological interpretation is considered good as it is supported by the mining history and reconciliation (on some Deposits) and close spaced drilling providing adequate geological information. Any mineral domaining is generally constrained by well-known structural controls or within lithological conditions.
	• *Nature of the data used and of any assumptions made.*	Only physical data obtained in the field was utilised.

	• *The effect, if any, of alternative interpretations on Mineral Resource estimation.*	The application of hard boundaries to reflect the position of the deposits and domains within the deposits is supported by the field and drilling observations and if appropriate mining. The domaining of the high-grade is considered very important and requires ongoing assessment. No other interpretations are thought appropriate for the deposits.
	• *The use of geology in guiding and controlling Mineral Resource estimation.*	A Cu grade boundary of 0.2% to 0.3% appears to define statistically and geologically the margins of the mineralisation. The presence of structural controls and/or the positioning of appropriate rock types (for hosting mineralisation) provides the geological control and this combined with presence of copper is used to constrain the interpretation.
	• *The factors affecting continuity both of grade and geology.*	At the Nifty Deposit the mineralisation is within 4 styles depending on position, oxide, transition, supergene and sulphide. All styles are defined by copper grade and/or mineral type plus position and lithology. In the sulphide style the higher-grade mineralisation is constrained in two well defined carbonate units within an overall well defined sedimentary sequence (total 8 units) which also carries mineralisation. The oxide, transition and supergene mineralisation is limited to the northern limb position within 300m of surface.

Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	At Nifty the sulphide strike length, measured along the hinge of the fold, is 1200m within the modelled area and extends further down plunge to the east. The Nifty sulphide sequence in both limbs of the fold is up to 1200m in length and extends to 500m below surface. The mineralised sequence is between 50 and 100m thick. The oxide, transition and supergene mineralisation occurs mostly near surface on the northern limb to a depth of up to 300m over a width of up to 100m.
Estimation and modelling techniques	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	At Nifty unfolding is applied and the grade is estimated from un-cut 1m composites using ordinary kriging into blocks representing the sulphide mineralisation subdivided into the 8 units in the mineralised sequence. Search ranges were varied by unit with up to 200m along strike, 100m across strike and up to 10m in the thickness of the unit. The orientation for variogram calculation was changed from the previous variography and aligned with the general mineralisation control in the unfolded space. Calculation and modelling of correlograms in planes that reflect the underlying geological and structural controls on the mineralisation. Varying parameters such as lag distance and angular tolerance to refine the structures.
	• *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account*	The Nifty mineral resource estimates has been the subject of numerous comparative estimates producing similar results. At Nifty the

	of such data.	comparison to production data supports the estimate in a global sense.
	• *The assumptions made regarding recovery of by-products.*	At Nifty there has been no assessment of any potential by-products.
	• *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).*	No assessment of deleterious elements has been made.
	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.*	At Nifty the block model was constructed using blocks which were 20mE (along strike) x 10mN (across strike) by 5m in the vertical plane. Sub-celling to 1/2 the block size in each direction was adopted to ensure accurate volume representation.
	• *Any assumptions behind modelling of selective mining units.*	not applicable
Estimation and modelling techniques (continued)	• *Any assumptions about correlation between variables.*	Whilst correlation between Cu and other elements has been undertaken for some Deposits the results do not influence the Cu estimation process.
	• *Description of how the geological interpretation was used to control the resource estimates.*	Hard boundaries where applied to the Domains within the Deposits. Grade was estimated within these boundaries.

	• *Discussion of basis for using or not using grade cutting or capping.*	Statistical analysis of the Cu composite data indicated that most domains within most Deposits had elevated coefficients of variation. The influence of outlier grades was either minimised using top-cuts with high-grade influence restricted by search for ordinary kriging or inverse distance estimation or the use of an estimation methodology which accommodated grade variability with orientation and range.
	• *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	Volume validation was carried out by comparison of the solids representing the mineralisation to the block model. Grade validation was carried by both global comparison of the average estimated grade to the average input grade and spatially by comparison of the estimated grades to the input grades by position. Also visual comparison was used. If appropriate production information was compared to modelled information (Nifty) with variable results.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	Density was determined by wet and dry measurements or calculated from Cu and Fe content. This information was then used to model/assign density either estimated using inverse distance methods, assigned using empirical methods based on Fe and Cu or using nearest neighbour methods. The tonnages estimated using density determined by copper content thus can be considered dry.

Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	For the Nifty Project a cut-off of 1.2% Cu is used for reporting that sulphide material with sufficient grade for economic underground mining by long hole open stoping methods. The use of 0.4% for oxide and transition is justified by studies and previous mining of this type of material.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	For the Nifty sulphide Deposit long hole open stoping has been successfully utilised for many years. 5.6 million tonnes at 2.58% Cu of Nifty Sulphide Resource has been depleted compared to the previously reported mineral resource estimate 31st March 2015, reflecting the impact of mineral resource losses resulting from sinkhole event. For the near surface oxide open pit studies have indicated its viability at the lower 0.4% cut-off.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	The Nifty mineralisation has been successfully treated for several years to produce copper in concentrate.

Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	At the Nifty Site the mining and processing is ongoing.
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	For the Nifty Deposit a large number of determinations have been made based on copper content.
	• *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.*	The rocks within all Deposits do not display significant porosity thus the technique adopted is appropriate.
	• *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	The material is generally fairly uniform as evidenced by the consistency in the specific gravity information.

Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*	The classification is based on the quality and amount of input data, the grade continuity model, the physical domaining, the results of mining in some Deposits and drilling observation of the mineral system. The lacks of drilling QAQC for some of the data have been offset by the amount of drilling data with supportable assay information. Higher confidence areas have more supporting data (and in some case a mining history), areas of lower geological support reflect a lower classification.
	• *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).*	The input data particularly the more recent data is consistent and closely spaced enough to support the projection of the geological interpretation at depth and along strike/down plunge which in terms of style of mineralisation is consistent with other deposits within the same or similar geological setting. Later drilling programs have successfully in filled earlier programs in mineralised locations predicted by the initial program. The estimated grade correlates reasonably well with the input data given the nature of the mineralisation and to production information (particularly at Nifty)
	• *Whether the result appropriately reflects the Competent Person's view of the deposit.*	The Mineral Resource estimate reflects the Competent Persons understanding of the Deposit.
Audits or reviews.	• *The results of any audits or reviews of Mineral Resource estimates.*	Audits are routinely undertaken by external consultants.

Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	The mineral resource estimates are volume and sample constrained in well-defined geological locations and the confidence in the Mineral Resource is defined by the classification adopted as per the guidelines of the 2012 JORC code.
	• *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.*	The statement relates to global estimates of tonnes and grade.
	• *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	At Nifty the comparison to production is good.

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
Mineral Resource estimate for conversion to Ore Reserves	• Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. • Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of Ore Reserves.	• The Nifty 31 March 2016 Mineral Resource estimate is the basis for the Ore Reserve estimate • The Mineral Resource estimate reported is inclusive of the Ore Reserve estimate
Site visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• The Competent person visited site in October 2015.
Study Status	• The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. • The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plane that is technically achievable and economically viable, and that Modifying Factors have been considered.	• AMC has undertaken life-of-mine planning for Nifty at a PFS level.
Cut-off Parameters	• The basis of the cut-off grade)s) or quality parameters applied.	• AMC estimated the cut-off grade to be 1.65% copper using FY2017 parameters. • However the Nifty Ore Reserve estimate is based on a design cut-off grade of 1.5% copper, which has been used for stope design.
Mining factors	• The method and assumptions	• The Ore Reserve estimate is

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
or assumptions	used as reported in the Pre-Feasibility of Feasibility Study to convert Mineral Resources to an Ore Reserve (i.e. either by application of appropriate factors by optimization or by preliminary or detailed design). • The Choice, nature and appropriateness of the selected mining method(s) and other mining parameters associated design issues such as ore-strip, access, etc. • The assumptions made regarding geotechnical parameters (e.g. pit slopes, slope sizes, etc), grade control and pre-production drilling). • The major assumptions made and Mineral Resource model used for pit and stope optimization (if appropriate) • The mining dilution factors used. • The mining recovery factors used. • Any minimum mining widths used. • The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion. • The infrastructure requirements of the selected mining methods.	based on life of mine planning, utilising a long hole open stoping mining method. • Long hole open stoping has been the applied mining method at Nifty since production started. • Geotechnical assessment is undertaken at Nifty on an ongoing basis as it is an operating mine. The life of mine plan has been prepared considering current geotechnical conditions of access development, stopes and backfill. • The Mineral Resource model used to estimate Ore Reserves was “sulmod0316depv1.1.dm” • Mining dilution is estimated for each stope. Waste dilution varies up to a maximum of 30%, depending on the stopes place in the sequence and the anticipated condition of surrounding areas. • Mining recovery is estimated for each stope and ranges from 50% to 98%, depending on the stopes place in the sequence and the anticipated condition of surrounding areas. • Inferred Mineral Resources were not utilised in the life-of-mine planning. • Nifty is an established and operating mine, and significant additional infrastructure is not required for the extraction of Ore Reserves based on the existing mining method.

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
Metallurgical factors or assumptions	• The metallurgical process proposed and the appropriateness of the process to the style of the mineralisation. • Whether the metallurgical process is well-tested technology or novel in nature. • The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical demining applied and the corresponding metallurgical recovery factors applied. • Any assumptions or allowances made for deleterious elements. • The existence of any bulk sample of pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. • For minerals that are defined by a specification, has the Ore Reserve estimation been based on the appropriate mineralogy to meet the specification?	• The current process is using conventional grinding and flotation equipment. It is the industry standard for copper sulphide extraction and considered appropriate. • The process is very well established, there is scope for the use of different reagents • Ore sourced from existing parts of the mine has been processed successfully since the commencement of processing, is well understood and needs no further testwork. • Testwork is continuing for ore sourced from new areas, but it is expected to behave similarly to the ore previously encountered.
Environmental	• The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for	• Nifty is an operating mine and has existing environmental approvals in place.

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
	process residue storage and waste dumps should be reported.	
Infrastructure	• The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	• Nifty is an established and operating mine, and significant additional infrastructure is not required for the extraction of Ore Reserves.
Costs	• The derivation of, or assumptions made, regarding projected capital costs in the study. • The methodology used to estimate operating costs. • Allowances made for the content of deleterious elements. • The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co-products. • The source of exchange rates used in the study. • Derivation of transportation charges. • The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc. • The allowances made for royalties payable, both Government and private.	• Initial capital cost expense are not required as Nifty is an existing project. • Capital costs include allowance for replacement of mobile equipment, relocation of underground infrastructure, access development for new mining areas and sustaining capital for the processing plant and site infrastructure. • Mining operating costs are based on budgeted and historical costs from the existing operation. • Processing and site administration operating costs are estimated from historical performance and budgeted costs. • No deleterious elements have been identified and thus no allowances made. • Concentrate transport, shipping and treatment charges are based on actual performance and consensus forecasts of future charges. • A state government royalty of 5% applies.

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
Revenue factors	• The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. • The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	• The head grade is estimated from life-of-mine planning. • Aditya Birla Minerals Limited (ABML) used consensus median copper prices and exchange rates forecasts for the purposes of estimating Ore Reserves. ABML has included that advice in its financial model. • Forecast copper prices increase from US$4,935/t in FY17 to US$5,333/t in FY20, with a peak of US$5,762/t in FY19 • Forecast exchange rates increase from US$0.715:1$A in FY17 to US$0.77:1$A in FY20.
Market assessment	• The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. • A customer and competitor analysis along with the identification of likely market windows for the product. • Price and volume forecasts and the basis for these forecasts. • For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	• For the Ore Reserve estimate, it is assumed that current arrangements in place for the sale of copper concentrates to the Hindalco owned copper smelter in India will continue.
Economic	• The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.	• The financial model prepared for life-of-mine planning indicates a positive NPV, and consequently that the project is economic. • The NPV of the Project is estimated using a post-tax

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
	• NPV ranges and sensitivity to variations in the significant assumptions and inputs.	discount rate of 9.5%.pa. Achieving a positive NPV is not sensitive to discount rate or capital costs, when considering +20% sensitivities. • The Project is sensitive to copper price and operating costs, and requires only a 5% deterioration in either to exhibit a negative NPV.
Social	• The status of agreements with key stakeholders and matters leading to social licence to operate.	• Nifty is an ongoing mining operation in northern Western Australia, and maintains a social license to operate.
Other	• To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves: • Any identified material naturally occurring risks. • The status of material legal agreements and marketing arrangements. • The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the	• No naturally occurring hazards have been identified • Nifty is on ongoing mining operation, and is in possession of necessary approvals, or there is a reasonable expectation that necessary approvals will be gained.

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
	reserve is contingent.	
Classification	• The basis for the classification of the Ore Reserves into varying confidence categories.	• Mining tasks have been classified into Ore Reserves categories based on Mineral Resource classification. In the main Checkerboard mining area tasks that consist of a majority of Measured Mineral Resources are classified as Proved Ore Reserves. Tasks that consist of a majority of Indicated Mineral Resources are classified as Probable Ore Reserves. • In the North Limb and West Limb mining areas, which have not been accessed for mining yet, and are not tested, but would otherwise be classified as Proved Ore Reserves, have been downgraded to Probable Ore Reserves to reflect that risk.
Audits or reviews	• The results of any audits or reviews of Ore Reserve estimates.	• The Ore Reserve estimate has not been audited or reviewed.
Discussion of relative accuracy/ confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative	• Factors that affect the global relative accuracy and confidence of the Ore Reserve estimate include: - The Ore Reserve estimate includes areas that have not been accessed or mined yet however, they are supported by Mineral Resource estimates. The Ore Reserve estimate in these areas has been classified as Probable. - The Ore Reserve estimate is

Section 4: Estimation and Reporting of Ore Reserves (Criteria listed in section 1, and where relevant in section 2 and 3, also apply to this section)		
Criteria	**2012 JORC Code explanation**	**Commentary**
	discussion of the factors which could affect the relative accuracy and confidence of the estimate. • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. • It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	based on the March 2016 Mineral Resource estimate. The Mineral Resource estimate might be updated with the results of future definition drilling, should any occur, which might affect the Ore Reserve estimate - The Ore reserve estimate is sensitive to input parameters, particularly copper price. A 5% reduction in copper price results in a negative NPV.

Disclaimer

This announcement includes certain "Forward-Looking Statements". All statements, other than statements of historical fact, included herein, including without limitation, statements regarding financial, production and cost performances, potential mineralisation, exploration results and future expansion plans and development objectives of Aditya Birla Minerals Limited are forward-looking statements that involve various risks and uncertainties.

Forward-looking statements inherently involve known and unknown risks, uncertainties and other factors that may cause the company's actual results, performance and achievements to differ materially from any future results, performance or achievements stated in these forward looking statements. Relevant factors may include, but are not limited to, changes in commodity prices, foreign exchange fluctuations and general economic conditions, increased costs, speculative nature of exploration and project development, including the risks of obtaining necessary licenses and permits and diminishing quantities or grades of reserves, political and social risks, the actions of competitors, changes to regulatory framework, within which the company operates or may in future operate, environmental conditions including extreme weather conditions, recruitment and retention of personnel, industrial relations issues and litigation.

Forward-looking statements are based on the company management's good faith assumptions relating to the financial, market, regulatory and other relevant environments that will exist and affect the company's business and operations in the future. The company does not give any assurance that the assumptions on which such forward looking statements are based will prove to be correct, or that the company's business or operations will not be affected in any material manner by these or other factors not foreseen or foreseeable by the company or management or beyond the company's control. There can be no assurance that such forward looking statements will prove to be accurate and actual results and future events could differ materially from those anticipated in such statements. Given these risks and uncertainties, the readers are cautioned not to place undue reliance on forward looking statements.

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