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## **MMG LIMITED**

## 五礦資源有限公司

### (Incorporated in Hong Kong with limited liability)

### (HKEX STOCK CODE: 1208) (ASX STOCK CODE: MMG)

## MINERAL RESOURCES AND ORE RESERVES STATEMENT AS AT 30 JUNE 2017

This announcement is made by MMG Limited (Company or MMG and, together with its subsidiaries, the Group) pursuant to rule 13.09(2) of the Rules Governing the Listing of Securities on The Stock Exchange of Hong Kong Limited (Listing Rules) and the Inside Information Provisions (as defined in the Listing Rules) under Part XIVA of the Securities and Futures Ordinance (Chapter 571 of the Laws of Hong Kong).

The board of directors of the Company (Board) is pleased to report the Group's updated Mineral Resources and Ore Reserves Statement as at 30 June 2017 (Mineral Resources and Ore Reserves Statement).

The highlights of the Mineral Resources and Ore Reserves Statement as at 30 June 2017 include:

- The Group's Mineral Resources (contained metal) have increased for lead (3%) and have decreased for copper (10%), zinc (10%), silver (10%), gold (14%) and molybdenum (3%).
- The Group's Ore Reserves (contained metal) have increased for zinc (28%), lead (41%), silver (2%) and molybdenum (1%) and decreased for copper (6%) and gold (11%).
- Mineral Resources tonnes at Kinsevere and Dugald River have increased by 4.5Mt and 3.9Mt respectively.
- Ore Reserves tonnes at Dugald River and Rosebery increased by 10.3Mt and 0.2Mt respectively.
- Las Bambas Mineral Resources tonnes have decreased by 250Mt.
- Las Bambas Ore Reserves tonnes have decreased by 0.5Mt.
- Mineral Resources and Ore Reserves for Golden Grove and Avebury have been removed from the Mineral Resources and Ore Reserves Statement due to divestment of these assets.

All data reported here is on a 100% asset basis, with MMG's attributable interest shown against each asset within the Mineral Resources and Ore Reserves tables (pages 4 to 8).



#### MINERAL RESOURCES AND ORE RESERVES STATEMENT

A copy of the executive summary of the Mineral Resources and Ore Reserves Statement is annexed to this announcement.

The information referred to in this announcement has been extracted from the report titled Mineral Resources and Ore Reserves Statement as at 30 June 2017 published on 18 October 2017 and is available to view on <u>www.mmg.com</u>. The Company confirms that it is not aware of any new information or data that materially affects the information included in the Mineral Resources and Ore Reserves Statement and, in the case of estimates of Mineral Resources or Ore Reserves, that all material assumptions and technical parameters underpinning the estimates in the Mineral Resources and Ore Reserves Statement continue to apply and have not materially changed. The Company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the Mineral Resources and Ore Reserves Statement.

> By order of the Board MMG Limited Jiao Jian CEO and Executive Director

Hong Kong, 18 October 2017

As at the date of this announcement, the Board comprises nine directors, of which two are executive directors, namely Mr Jiao Jian and Mr Xu Jiqing; three are non-executive directors, namely Mr Guo Wenqing (Chairman), Mr Gao Xiaoyu and Mr Zhang Shuqiang; and four are independent non-executive directors, namely Dr Peter William Cassidy, Mr Leung Cheuk Yan, Ms Jennifer Anne Seabrook and Professor Pei Ker Wei.



### **EXECUTIVE SUMMARY**

Mineral Resources and Ore Reserves for MMG have been estimated as at 30 June 2017, and are reported in accordance with the guidelines in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 JORC Code) and Chapter 18 of the Listing Rules. Mineral Resources and Ore Reserves tables are provided on pages 4 to 8, which include the 30 June 2017 and 30 June 2016 estimates for comparison. The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources that convert to Ore Reserves. All supporting data is provided within the Technical Appendix, available on the MMG website.

Mineral Resources and Ore Reserves information in this statement has been compiled by Competent Persons (as defined by the 2012 JORC Code). Each Competent Person consents to the inclusion of the information in this report that they have provided in the form and context in which it appears. Competent Persons are listed on page 9.

MMG has established processes and structures for the governance of Mineral Resources and Ore Reserves estimation and reporting. MMG has a Mineral Resources and Ore Reserves Committee that regularly convenes to assist the MMG Governance and Nomination Committee and the Board of Directors with respect to the reporting practices of the Company in relation to Mineral Resources and Ore Reserves, and the quality and integrity of these reports of the Group.

Key changes to the Mineral Resources (contained metal) since the 30 June 2016 estimate have been mostly related to depletion<sup>1</sup> together with lower price assumptions which have impacted Las Bambas and resulted in a net decrease in contained copper metal. The divestment of Golden Grove has also contributed to the global copper metal decrease in Mineral Resources. The contained zinc metal in the Mineral Resources has decreased almost entirely due to the divestment of Golden Grove. The sale of the Avebury asset in Tasmania has resulted in the removal of nickel from the Mineral Resources statement.

The MMG Ore Reserves (contained metal) have increased since the 30 June 2016 statement for zinc and lead principally due to increases at Dugald River and Rosebery. Decreases in Ore Reserves (contained metal) for copper are the result of depletion<sup>1</sup> at Las Bambas, Sepon and Kinsevere combined with the divestment of Golden Grove. Decreases of Indicated Mineral Resources at Sepon have resulted in a reduction of available material for Ore Reserves conversion.

Total tonnes of Mineral Resources and Ore Reserves have decreased with depletion and divestment. In addition, Mineral Resources have also decreased due to copper price assumptions. Las Bambas Mineral Resources and Ore Reserves have decreased by 250Mt and 0.5Mt respectively. Dugald River Mineral Resources and Ore Reserves tonnes have increased by 4Mt and 10Mt respectively. Sepon Mineral Resources and Ore Reserves have decreased by 2.3Mt and 5.5Mt respectively, while Kinsevere Mineral Resources have increased by 4.4Mt.

Pages 10 and 11 provide further discussion of the Mineral Resources and Ore Reserves changes.

<sup>&</sup>lt;sup>1</sup> Depletion in this report refers to material treated by the mill and depleted from the Mineral Resources and Ore Reserves through mining.

MMG | 2017 Mineral Resources & Ore Reserves Statement



# MINERAL RESOURCES<sup>1</sup>

All data reported here is on a 100% asset basis, with MMG's attributable interest shown against each asset within brackets.

				2017							2016			
Deposit	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)
Las Bambas														
(62.5%)														
Ferrobamba														
Oxide Copper														
Indicated	9.3	2.0						16.8	2.0					
Inferred	0.6	2.5						0.7	1.9					
Total	9.9	2.0						17.4	2.0					
Ferrobamba														
Primary Copper														
Measured	542	0.64			3.0	0.06	204	529	0.68			3.3	0.06	198
Indicated	546	0.60			2.8	0.05	211	527	0.59			2.7	0.05	191
Inferred	263	0.60			2.4	0.04	158	397	0.57			2.1	0.03	146
Total	1,351	0.62			2.8	0.05	198	1,453	0.62			2.7	0.05	181
Ferrobamba Total	1,361							1,471						
Chalcobamba														
Oxide Copper														
Indicated	6.1	1.5						6.5	1.5					
Inferred	0.7	1.5						0.9	1.5					
Total	6.8	1.5						7.3	1.5					
Chalcobamba														
Primary Copper														
Measured	85	0.37			1.1	0.01	148	94	0.40			1.2	0.01	148
Indicated	195	0.67			2.5	0.03	141	196	0.63			2.4	0.03	145
Inferred	36	0.52			1.8	0.02	141	48	0.47			1.6	0.02	131
Total	315	0.57			2.0	0.03	143	338	0.55			1.9	0.02	144
Chalcobamba	322							345						
Total														
Sulfobamba														
Primary Copper					. –									
Indicated	85	0.67			4.7	0.02	170	103	0.60			4.1	0.02	162
Interred	100	0.58			6.5	0.02	119	201	0.44			4.0	0.02	119
Total	184	0.62			5.7	0.02	142	304	0.50			4.0	0.02	133
Sulfobamba Total	184							304						
Oxide Copper														
Stockpile		1.0						2.4						
Indicated	5.5	1.0						3.4	0.9					
	5.5	1.0						3.4	0.9					
Primary Copper														
<b>Stockpile</b>	0.0	0.05			4 5		140	0.37	0.7			2.1		214
	0.2	0.85			4.5 4 F		140 140	0.37	0.7			3.1		214
	0.2	0.85			4.5		148	0.37	0.7			3.1		214
Las Bambas Total	1,873							2,124						

<sup>&</sup>lt;sup>1</sup> S.I. units used for metals of value; Cu=copper, Zn=zinc, Pb=lead, Ag=silver, Au=gold, Mo=molybdenum, Ni=nickel.



### **MINERAL RESOURCES**

				2017							2016			
Deposit	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)
Kinsevere (100%)														
Oxide Copper														
Measured	3.0	4.4						3.1	4.6					
Indicated	13.6	3.0						13.7	3.1					
Inferred	2.8	2.3						3.5	2.4					
Total	19.4	3.1						20.3	3.2					
Transition Mixed														
Copper Ore														
Measured	0.27	2.7						0.7	3.4					
Indicated	1.4	2.3						2.0	3.0					
Inferred	0.12	2.1						0.2	2.2					
Total	1.8	2.4						2.9	3.0					
Primary Copper														
Measured	0.40	2.5						0.4	3.1					
Indicated	23.8	2.2						18.5	2.6					
Inferred	2.2	1.7						2.2	2.0					
Total	26.4	2.2						21.2	2.5					
Copper Stockpiles														
Measured														
Indicated	7.9	2.5						6.8	2.4					
Total	7.9	2.5						6.8	2.4					
Kinsevere Total	55.5							51.2						
Sepon (90%)														
Oxide Gold														
Measured														
Indicated	15					21		16					3.0	
Indicated	1.5					2.1		1.0					2.0	
	17					2.5		0.4					2.1	
	1./					3.0		2.0					2.8	
Partial Oxide Gold														
Measured														
Indicated	1.1					4.3		1.3					4.2	
Inferred	0.05					3.2		0.1					2.9	
Total	1.1					4.3		1.3					4.1	
Primary Gold														
Indicated	7.1					3.9		7.8					4.0	
Inferred	0.11					3.0		0.1					3.5	
Total	7.2					3.9		7.9					4.0	
Supergene Copper														
Indicated	5.5	4.7						12.9	3.5					
Inferred	1.5	3.3						0.3	3.5					
Total	7.0	4.4						13.3	3.5					
Primary Copper														
Indicated	7.1	1.0						5.0	1.2					
Inferred	5.2	12						33	11					
Total	122	11						8.4	12					
	12.2	1.1						0.4	1.2					
ivieasured	C 1	1 4						F 7	1.0					
	0.1 C 1	1.4 14						5./	1.0					
	0.1	1.4						5.7	1.0					
Sepon Total	25.4							38.6						



### MINERAL RESOURCES

				2017						:	2016			
Deposit	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)
Dugald River														
(100%)														
Primary Zinc														
Measured	8.1		13.1	2.4	70			5.5		14.2	2.0	64		
Indicated	28.9		12.3	2.3	40			27.1		12.9	2.2	50		
Inferred	27.8		11.4	1.9	10			28.5		12.0	1.7	13		
Total	64.8		12.0	2.2	31			61.1		12.6	1.9	34		
Primary Copper														
Inferred	4.4	1.8				0.2		4.4	1.8				0.2	
Total	4.4	1.8				0.2		4.4	1.8				0.2	
Zinc Stockpiles														
Measured	0.23		10.8	1.7	49									
Dugald River Total	69.4							66.0						
Rosebery (100%)														
Rosebery														
Measured	6.0	0.26	9.3	3.3	118	1.4		5.4	0.25	8.1	2.9	107	1.3	
Indicated	6.2	0.26	7.9	2.6	112	1.3		5.7	0.25	7.6	2.6	102	1.2	
Inferred	6.5	0.30	7.4	2.7	90	1.4		11.2	0.26	8.0	2.7	95	1.4	
Total	18.6	0.27	8.2	2.9	106	1.4		22.4	0.26	7.9	2.7	100	1.3	
Rosebery Total	18.6							22.4						
High Lake (100%)														
Measured														
Indicated	7.9	3.0	3.5	0.3	83	1.3		7.9	3.0	3.5	0.3	83	1.3	
Inferred	6.0	1.8	4.3	0.4	84	1.3		6.0	1.8	4.3	0.4	84	1.3	
Total	14.0	2.5	3.8	0.4	84	1.3		14.0	2.5	3.8	0.4	84	1.3	
Izok Lake (100%) Measured														
Indicated	135	24	133	14	73	02		13 5	24	133	14	73	0.2	
Inferred	12	15	10.5	13	73	0.2		12	15	10.5	13	73	0.2	
Total	14.6	2.3	13.1	1.4	73	0.2		14.6	2.3	13.1	1.4	73	0.2	



## **ORE RESERVES<sup>1</sup>**

All data reported here is on a 100% asset basis, with MMG's attributable interest shown against each asset within brackets.

Deposit         Tonnes (Mt)         Cu (%)         Zn (%)         Pb (%)         Ag (g/t)         Au (g/t)         Mo (ppm)           Las Bambas (62.5%) Ferrobamba Primary Copper         -
Las Bambas (62.5%)         Ferrobamba       Ferrobamba         Primary Copper       497       0.68       3.2       0.06       206       492       0.71       3.4       0.07       201         Probable       326       0.71       3.6       0.06       207       340       0.71       3.5       0.06       202         Total       826       0.69       3.4       0.06       207       832       0.71       3.5       0.06       202         Total       826       0.69       3.4       0.06       207       832       0.71       3.5       0.06       202         Total       826       0.69       3.5       0.02       141       53       0.51       1.7       0.02       135         Probable       143       0.72       2.7       0.03       132       136       0.75       2.8       0.03       135         Total       202       0.66       2.5       0.03       161       66       0.78       5.5       0.03       176         Suffobamba       Fremary Copper       Frimary Copper       Frimary Copper       5.5       0.03       176         Probable       60
Ferrobamba Primary Copper
Primary Copper $= - + + + + + + + + + + + + + + + + + + $
Proved       497       0.68       3.2       0.06       206       492       0.71       3.4       0.07       201         Probable       326       0.71       3.6       0.06       207       340       0.71       3.5       0.06       202         Total       823       0.69       3.4       0.06       207       832       0.71       3.5       0.06       201         Chalcobamba       Primary Copper       V
Probable         326         0.71         3.6         0.06         207         340         0.71         3.5         0.06         202           Total         823         0.69         3.4         0.06         207         832         0.71         3.5         0.06         201           Chalcobamba         Primary Copper         Primary Copper         S         0.53         1.8         0.02         141         53         0.51         1.7         0.02         151           Proved         59         0.53         1.8         0.02         141         53         0.51         1.7         0.02         151           Probable         143         0.72         2.7         0.03         132         136         0.75         2.8         0.03         135           Sulfobamba         Primary Copper         V </td
Total         823         0.69         3.4         0.06         207         832         0.71         3.5         0.06         201           Chalcobamba Primary Copper         F
Chalcobamba       Frimary Copper       Note       Note <t< td=""></t<>
Primary Copper       Proved       59       0.53       1.8       0.02       141       53       0.51       1.7       0.02       151         Probable       143       0.72       2.7       0.03       132       136       0.75       2.8       0.03       135         Total       202       0.66       2.8       0.03       134       188       0.68       2.5       0.03       140         Sulfobamba       Primary Copper       Vision
Proved       59       0.53       1.8       0.02       141       53       0.51       1.7       0.02       151         Probable       143       0.72       2.7       0.03       132       136       0.75       2.8       0.03       135         Total       202       0.66       2.5       0.03       134       188       0.68       2.5       0.03       140         Sulfobamba       Primary Copper       Image: Coper Coper       Image: Coper       Image: Coper       Image: Co
Probable       143       0.72       2.7       0.03       132       136       0.75       2.8       0.03       135         Total       202       0.66       2.5       0.03       134       188       0.68       2.5       0.03       140         Sulfobamba       Primary Copper       Image: Constraint of the const
Total         202         0.66         2.5         0.03         134         188         0.68         2.5         0.03         140           Sulfobamba         Primary Copper         Frimary Coper
Sulfobamba       Frimary Copper       Frimary C
Primary Copper       Proved       Probable       6.0       0.80       5.9       0.03       161       6.6       0.78       5.5       0.03       176         Total       60       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Probable       60       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Protal       60       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Primary Copper       5.5       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Proved       0.17       0.85       4.5       148       0.37       0.72       3.1       214         Las Bambas Total       1.085       4.5       148       0.37       0.72       3.1       214         Oxide Copper       5       5       3.5       5       5       5       5       5       5       5         Probable       8.1       3.5       5       9.8       3.5       5       5       5       5     <
Proved       Probable       60       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Total       60       0.80       5.9       0.03       161       66       0.78       5.5       0.03       176         Primary Copper       50       0.03       161       66       0.78       5.5       0.03       176         Primary Copper       50       0.03       161       66       0.78       5.5       0.03       176         Primary Copper       50       0.03       161       66       0.78       5.5       0.03       176         Primary Copper       50       0.03       148       0.37       0.72       3.1       214         Total       0.17       0.85       4.5       148       0.37       0.72       3.1       214         Las Bambas Total       1.085       5       148       0.37       0.72       3.1       214         Oxide Copper       5       5       4.5       9.8       3.5       5       5       5       5       5         Probable       8.1       3.5       3.7       12.7       3.7       5
Probable         60         0.80         5.9         0.03         161         66         0.78         5.5         0.03         176           Total         60         0.80         5.9         0.03         161         66         0.78         5.5         0.03         176           Primary Copper Stockpile         Finite         Finit         Finit         Finit
Total         60         0.80         5.9         0.03         161         66         0.78         5.5         0.03         176           Primary Copper Stockpile
Primary Copper Stockpile         Viscons and the second secon
Stockpile         Stockpile <t< td=""></t<>
Proved         0.17         0.85         4.5         148         0.37         0.72         3.1         214           Total         0.17         0.85         4.5         148         0.37         0.72         3.1         214           Las Bambas Total         1.085         4.5         148         0.37         0.72         3.1         214           Las Bambas Total         1.085         4.5         148         0.37         0.72         3.1         214           Las Bambas Total         1.085         4.5         148         0.37         0.72         3.1         214           Kinsevere (100%)         1.085         4.5         148         0.37         0.72         3.1         214           Oxide Copper         1.085         4.5         148         0.37         0.72         3.7           Proved         2.6         4.5         2.9         4.5         3.5         4.5
Total         0.17         0.85         4.5         148         0.37         0.72         3.1         214           Las Bambas Total         1,085          1         0.72         3.1         214           Kinsevere (100%)         1,085          1,086          1         0.72         3.1         214           Kinsevere (100%)          1,085          1         0.72         3.1         214           Oxide Copper          1         0.85          1         0.72         3.1         214           Proved         2.6         4.5         2.9         4.5         2.9         4.5         2.9         4.5         2.9         4.5         2.0 <th< td=""></th<>
Las Bambas Total         1,085         1,086           Kinsevere (100%)              Oxide Copper              Proved         2.6         4.5          2.9         4.5           Probable         8.1         3.5          9.8         3.5           Total         10.7         3.7          12.7         3.7           Copper Stockpiles            4.9         2.2           Probable         2.5         3.6          4.9         2.2
Kinsevere (100%)       Kinsevere (100%)         Oxide Copper       4.5         Proved       2.6       4.5         Probable       8.1       3.5       9.8       3.5         Total       10.7       3.7       12.7       3.7         Copper Stockpiles       2.5       3.6       4.9       2.2         Probable       2.5       3.6       4.9       2.2
Oxide Copper         Vertical Copp
Proved         2.6         4.5           Probable         8.1         3.5         9.8         3.5           Total         10.7         3.7         12.7         3.7           Copper Stockpiles Proved         Frowed         Frowed         2.2           Probable         2.5         3.6         4.9         2.2
Probable         8.1         3.5         9.8         3.5           Total         10.7         3.7         12.7         3.7           Copper Stockpiles Proved                Probable         2.5         3.6         4.9         2.2
Total         10.7         3.7         12.7         3.7           Copper Stockpiles
Copper Stockpiles     4.9     2.2       Probable     2.5     3.6     4.9     2.2
Proved Probable 2.5 3.6 4.9 2.2
Probable 2.5 3.6 4.9 2.2
lotal 2.5 3.6 4.9 2.2
Kinsevere Total 13.2 17.6
Sepon (90%)
Supergene Copper
Probable 3.5 4.7 8.0 3.5
Total         3.5         4.7         8.0         3.5
Primary Copper
Probable 0.35 1.1 2.3 0.84
Total 0.35 1.1 2.3 0.84
Copper Stockpiles
Probable 5.6 1.4 4.6 1.7
Total 5.6 1.4 4.6 1.7
Sepon Total 9.4 14.9

<sup>&</sup>lt;sup>1</sup> S.I. units used for metals of value; Cu=copper, Zn=zinc, Pb=lead, Ag=silver, Au=gold, Mo=molybdenum.



### **ORE RESERVES**

				2017						:	2016			
Deposit	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)	Tonnes (Mt)	Cu (%)	Zn (%)	Pb (%)	Ag (g/t)	Au (g/t)	Mo (ppm)
Dugald River (100%)														
Primary Zinc Proved	7.9		11.8	2.1	62			4.6		12.3	1.7	55		
Probable <b>Total</b>	24.9 <b>32.8</b>		11.9 <b>11.9</b>	2.2 <b>2.2</b>	39 <b>44</b>			17.8 <b>22.5</b>		12.1 <b>12.2</b>	2.0 <b>2.0</b>	48 <b>50</b>		
Dugald River Total	32.8							22.5						
Rosebery (100%)														
Proved	3.8	0.25	9.0	3.4	119	1.4		3.2	0.25	8.8	3.1	110	1.3	
Probable	1.8	0.21	7.6	3.0	131	1.3		2.2	0.22	7.5	3.0	118	1.3	
Total	5.6	0.24	8.6	3.3	123	1.4		5.4	0.24	8.3	3.0	113	1.3	
Rosebery Total	5.6							5.4						



### **COMPETENT PERSONS**

Deposit	Accountability	Competent Person	Professional Membership	Employer
MMG Mineral Resources and Ore Reserves Committee	Mineral Resources	Rex Berthelsen <sup>1</sup>	FAusIMM(CP)	MMG
MMG Mineral Resources and Ore Reserves Committee	Ore Reserves	Nan $Wang^1$	MAusIMM(CP)	MMG
MMG Mineral Resources and Ore Reserves Committee	Metallurgy: Mineral Resources / Ore Reserves	Reinhardt Viljoen <sup>1</sup>	MAusIMM	MMG
Las Bambas	Mineral Resources	Rex Berthelsen <sup>1</sup>	FAusIMM(CP)	MMG
Las Bambas	Ore Reserves	Yao Wu <sup>1</sup>	MAusIMM	MMG
Las Bambas	Metallurgy: Mineral Resources / Ore Reserves	Amy Lamb <sup>1</sup>	MAusIMM	MMG
Sepon	Mineral Resources	Chevaun Gellie <sup>1</sup>	MAusIMM	MMG
Sepon	Ore Reserves	Jodi Wright <sup>1</sup>	MAusIMM(CP)	MMG
Sepon	Metallurgy: Mineral Resources / Ore Reserves	Kevin Rees	MAusIMM	MMG
Kinsevere	Mineral Resources	Douglas Corley <sup>1</sup>	MAIG R.P.Geo.	MMG
Kinsevere	Ore Reserves	Jodi Wright <sup>1</sup>	MAusIMM(CP)	MMG
Kinsevere	Metallurgy: Mineral Resources / Ore Reserves	Nigel Thiel <sup>1</sup>	MAusIMM(CP)	MMG
Rosebery	Mineral Resources	Anna Lewin	MAusIMM(CP)	MMG
Rosebery	Ore Reserves	Karel Steyn <sup>1</sup>	MAusIMM	MMG
Rosebery	Metallurgy: Mineral Resources / Ore Reserves	Kevin Rees	MAusIMM(CP)	MMG
Dugald River	Mineral Resources	Douglas Corley <sup>1</sup>	MAIG R.P.Geo.	MMG
Dugald River	Ore Reserves	Karel Steyn <sup>1</sup>	MAusIMM	MMG
Dugald River	Metallurgy: Mineral Resources / Ore Reserves	Nigel Thiel <sup>1</sup>	MAusIMM(CP)	MMG
High Lake, Izok Lake	Mineral Resources	Allan Armitage	MAPEG <sup>2</sup> (P.Geo)	Formerly MMG

The information in this report that relates to Mineral Resources and Ore Reserves is based on information compiled by the listed Competent Persons, who are Members or Fellows of the Australasian Institute of Mining and Metallurgy (AusIMM), the Australian Institute of Geoscientists (AIG) or a Recognised Professional Organisation (RPO) and have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (2012 JORC Code). Each of the Competent Persons has given consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.

<sup>&</sup>lt;sup>1</sup> Participants in the MMG Long-Term Incentive Plans which may include Mineral Resources and Ore Reserves growth as a performance condition

<sup>&</sup>lt;sup>2</sup> Member of the Association of Professional Engineers and Geoscientists of British Columbia



### SUMMARY OF SIGNIFICANT CHANGES

#### **MINERAL RESOURCES**

Mineral Resources as at 30 June 2017 have changed since the 30 June 2016 estimate for a number of reasons with the most significant changes outlined in this section.

Mineral Resources (contained metal) have increased for lead (3%) while a decrease has occurred for zinc (10%), copper (10%), gold (14%), silver (10%) and molybdenum (3%).

Variations to Mineral Resources (contained metal) on an individual site basis are discussed below:

#### Increases:

Increases to the Mineral Resources (contained metal) for lead (19%) and zinc (2%) at Dugald River are due to a significant update of the Mineral Resource model from a major drilling campaign completed since the last model. No depletion has occurred at Dugald River during the reporting period.

#### Decreases:

The decreases in Mineral Resources (contained metal) are due to:

- divestment<sup>1</sup> of Golden Grove (copper, zinc, lead, silver, gold);
- divestment<sup>2</sup> of Avebury (nickel);
- depletion, drilling and modelling at Sepon (copper 18%);
- depletion, lower metal price and higher cost assumptions at Las Bambas (copper 9%); and
- three factors at Rosebery (copper 11%, zinc 14%, lead 12%, silver 11% and gold 13%) 80% of tonnes as a result of a determination that the Inferred material around remnant stopes in the upper mine area has no foreseeable prospects for eventual economic extraction and the remaining 20% as a result of depletion and cut-off grade increases.

<sup>&</sup>lt;sup>1</sup> Golden Grove divested Mineral Resources (metal) = 380kt copper, 1156 kt zinc, 89kt lead, 28Moz silver and 650koz gold.

<sup>&</sup>lt;sup>2</sup> Avebury divested Mineral Resource (metal) = 260kt nickel



#### ORE RESERVES

Ore Reserves as at 30 June 2017 (contained metal) have increased for zinc (28%), lead (41%), silver (2%) and molybdenum (1%) and decreased for copper (6%) and gold (11%).

Variations to Ore Reserves (contained metal) on an individual site basis are discussed below:

Increases:

- Dugald River Ore Reserves have increased (10.3Mt) resulting from conversion of Mineral Resources by infill drilling, modelling, and increased planned mill throughput. These changes have resulted in an increase in zinc (42%), lead (62%) and silver (30%) metal in Ore Reserves. No depletion has occurred at Dugald River in 2017.
- Rosebery Ore Reserves have increased (0.2Mt), more than replacing depletion due to drilling and Mineral Resources conversion. There is an increase of copper (5%), zinc (8%), lead (11%), silver (13%) and gold (14%) metal compared to 2016 Ore Reserves.

#### Decreases:

A net reduction in Ore Reserves (metal) for copper and gold due to:

- depletion at all producing operation;
- a further reduction at Sepon due to a decrease in Indicated Mineral Resources available for conversion, combined with depletion has resulted in a reduction of copper metal of 34%;
- a further reduction at Kinsevere due to removal of uneconomic stockpiles. This change combined with depletion has resulted in a 15% reduction of copper metal for the site;
- a further reduction at Las Bambas due to a small reduction (0.02% Cu) in copper grade; and
- divestment<sup>1</sup> of Golden Grove accounts for almost all the reduction in gold metal (300koz).

<sup>&</sup>lt;sup>1</sup> Golden Grove divested Ore Reserves (metal) = 82kt copper, 247 kt zinc, 32kt lead, 7.7Moz silver and 300koz gold.

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### **KEY ASSUMPTIONS**

### PRICES AND EXCHANGE RATES

The following price and foreign exchange assumptions, set according to the relevant MMG Standard as at January 2017, have been applied to all Mineral Resources and Ore Reserves estimates. Price assumptions for all metals have changed from the 2016 Mineral Resources and Ore Reserves statement.

	Ore Reserves	Mineral Resources
Cu (US\$/lb)	2.96	3.40
Cu (US\$/lb) (Sepon only)	2.73	3.28
Zn (US\$/lb)	1.19	1.43
Pb (US\$/lb)	0.95	1.14
Au US\$/oz	1200	1400
Ag US\$/oz	17.5	20.4
Mo (US\$/lb)	8.3	9.5
USD:CAD	1.18	
AUD:USD	0.80	As per Ore Reserves
USD:PEN	3.10	

Table 1. Frice (real) and foreign exchange assumptions	Table 1 :	Price (real)	and fo	reign excl	hange as	sumptions
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#### **CUT-OFF GRADES**

Mineral Resources and Ore Reserves cut-off values are shown in Table 2 and Table 3 respectively.

Site	Mineralisation	Likely Mining Method <sup>1</sup>	Cut-Off Value	Comments
	Oxide Copper	OP	1% Cu	Cut-off is applied as a range that varies for each
Las Bambas	Primary Copper	OP	0.16 – 0.5% Cu	deposit and mineralised rock type at Las Bambas. <i>In-</i> <i>situ</i> copper Mineral Resources constrained within US\$3.40/lb Cu pit shell.
	Oxide Gold	OP 0.9 – 1.7		Approximate cut-off grades shown in this table.
	Partial Oxide	OP	1.7 – 4.2 g/t Au	Variable cut-off grade based on a net value calculation which accounts for costs, recoveries and metal prices
Sapan	Primary Gold	OP	1.3 – 2.6 g/t Au	within US\$1,400/oz pit shells.
зероп	Supergene Copper – Carbonate	OP	1.4 – 1.6% Cu	Approximate cut-off grades shown in this table.
	Supergene Copper - Chalcocite	OP	1.5 – 1.6 % Cu	Variable cut-off grade based on a net value calculation which accounts for costs, recoveries and metal prices
	Primary Copper	OP	0.5 – 0.6% Cu	within US\$3.28/lb pit shells.
	Oxide Copper & Stockpiles	r & Stockpiles OP 0.6		
Kinsevere	Transition Mixed Copper	OP	1.1% TCu <sup>3</sup>	In-situ copper Mineral Resources constrained within a
	Primary Copper	OP	0.8% TCu <sup>3</sup>	
Rosebery	Rosebery (Zn, Cu, Pb, Au, Ag)	UG	A\$166/t NSR <sup>4</sup>	Remnant upper mine areas A\$179/t NSR <sup>4</sup>
Durald Diver	Primary Zinc (Zn, Pb, Ag)	UG	A\$134/t NSR <sup>4</sup>	
Dugaid River	Primary Copper	UG	1%Cu	
High Lake	Cu, Zn, Pb, Ag, Au	OP	2.0% CuEq⁵	$CuEq^5 = Cu + (Zn \times 0.30) + (Pb \times 0.33) + (Au \times 0.56) + (Ag \times 0.01)$ : based on Long-Term prices and metal recoveries at Au:75%, Ag:83%, Cu:89%, Pb:81% and Zn:93%.
High Lake	Cu, Zn, Pb, Ag, Au	UG	4.0% CuEq⁵	$CuEq^5 = Cu + (Zn \times 0.30) + (Pb \times 0.33) + (Au \times 0.56) + (Ag \times 0.01)$ : based on Long-Term prices and metal recoveries at Au:75%, Ag:83%, Cu:89%, Pb:81% and Zn:93%.
Izok Lake	Cu, Zn, Pb, Ag, Au	OP	4.0% ZnEq <sup>6</sup>	$ZnEq^6$ = Zn + (Cu×3.31) + (Pb×1.09) + (Au×1.87) + (Ag×0.033); prices and metal recoveries as per High Lake.

#### Table 2 : Mineral Resources cut-off grades

- <sup>1</sup> OP = Open Pit, UG = Underground
- <sup>2</sup> ASCu = Acid Soluble Copper <sup>3</sup> TCu = Total Copper
- <sup>4</sup> NSR = Net Smelter Return
- <sup>5</sup> CuEq = Copper Equivalent
- $^{6}$  ZnEq = Zinc Equivalent



Site	Mineralisation	Mining Method	Cut-Off Value	Comments				
	Primary Copper Ferrobamba		0.19 – 0.27%Cu	Range based on rock type recovery.				
Las Bambas	Primary Copper Chalcobamba	OP	0.21 – 0.27%Cu					
	Primary Copper Sulfobamba		0.24 – 0.26% Cu					
	Supergene Copper <sup>1</sup>		1.1% Cu	Approximate cut-off grades shown in				
	Supergene Copper <sup>1</sup> - low grade float <sup>2</sup>		0.9% Cu	this table. Variable cut-off grade bas				
Sepon	Primary Copper	OP	0.5% Cu	on net value script. Low grade float refers to stockpile reclaim.				
Kinsevere	/ere Copper Oxide		0.9% ASCu <sup>3</sup>	Approximate cut-off grades shown in this table. Variable cut-off grade based on net value script.				
		OP	0.9% ASCu <sup>3</sup>	Stockpile reclaim.				
Rosebery	(Zn, Cu, Pb, Au, Ag)	UG	A\$166 NSR <sup>4</sup> /t					
Dugald River	Primary Zinc	UG	A\$134 NSR <sup>4</sup> /t					

Table 3 : Ore Reserves cut-off grades

 <sup>&</sup>lt;sup>1</sup> Supergene copper refers to carbonate and chalcocite ore types.
 <sup>2</sup> Low grade float refers to stockpile reclaim
 <sup>3</sup> ASCu = Acid Soluble Copper

<sup>&</sup>lt;sup>4</sup> NSR = Net Smelter Return

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### **PROCESSING RECOVERIES**

Average processing recoveries are shown in Table 4. More detailed processing recovery relationships are provided in the Technical Appendix.

Site	Product		Concentrate Moisture Assumptions					
		Copper	Zinc	Lead	Silver	Gold	Мо	
Lac Pambac	Copper Concentrate	86%	-	-	69%	64%		10%
	Molybdenum Concentrate						55%	5%
	Zinc Concentrate		87%		9%	6%		8%
Rosebery	Lead Concentrate		7%	80%	39%	13%		7%
	Copper Concentrate	67%			43%	36%		8%
	Doré <sup>1</sup> (gold and silver)				0.2%	28%		
Dunald Diver	Zinc Concentrate	_	86%		30%	-		10%
Dugald River	Lead Concentrate	-		75%	27%	-		12%
Sepon	Copper Cathode	83%	-	-	-	_		-
17.		85%						
Kinsevere	Copper Cathode	(95% ASCu <sup>2</sup> )	-	-	-	_		-

 Table 4: Processing Recoveries

The Technical Appendix published on the MMG website contains additional Mineral Resources and Ore Reserves information (including the Table 1 disclosure).

<sup>&</sup>lt;sup>1</sup> Silver in Rosebery doré is calculated as a constant ratio to gold in the doré. Silver is set to 0.17 against gold being 20.7

<sup>&</sup>lt;sup>2</sup> ASCu = Acid Soluble Copper