MANTLE
MINING CORPORATION LTD

ASX Release **13 July 2016**

MANTLE PROGRESSES TOWARD FIRST GOLD CONCENTRATE PRODUCTION AT NORTON

Mantle Mining Corporation Limited (ASX: MNM) ('Mantle' or 'the Company') provides the following update on the progress made at the Norton Gold Mine.

Highlights:

- Sorter trials completed and gravity plant trials underway using bulk sample material.

- High gold grades confirmed from bulk sampling of stockpiles and primary Shear:
  - Frampton High Grade Stockpile grades of 4.57 to 11.45 grams per tonne,
  - Frampton Shear primary ore grades of 4.63 to 9.52 grams per tonne,
  - Low Grade Stockpile grades of 1.74 to 3.41 grams per tonne.

- Summary of key activities leading to gold concentrate production:
  - Complete bulk sample trials and optimize new process flowchart,
  - Develop sufficient engineering data to place critical equipment orders,
  - Expedite environmental and operational approvals with regulators,
  - Fast-track site earthworks, civils and construction of Tails Storage Facility,
  - Production timeline dependent on confirmation of critical equipment availability.

- Initial gold concentrate production is targeted from the Frampton stockpiles to be followed by a smooth transition into fresh material mined from the Frampton Shear.

Mantle notes the recent announcement by Metal Bank Limited (ASX: MBK) on high grade, thick drilling results at the Triumph Project (see MBK ASX Release 20th June 2016: "High Grade Gold-Silver-Copper Mineralisation at Bald Hill"). The Triumph Project abuts the Norton Gold Mine.

Mantle's Managing Director Ian Kraemer noted; "Intrusion related gold systems are associated with significant gold production in Queensland. The Cracow, Mt Rawdon, Mt Morgan and Gympie gold mines fall within 250km of Norton. Mantle is excited by the potential at Norton and notes that the mine remains on track to produce a high grade concentrate in a timely and efficient manner."

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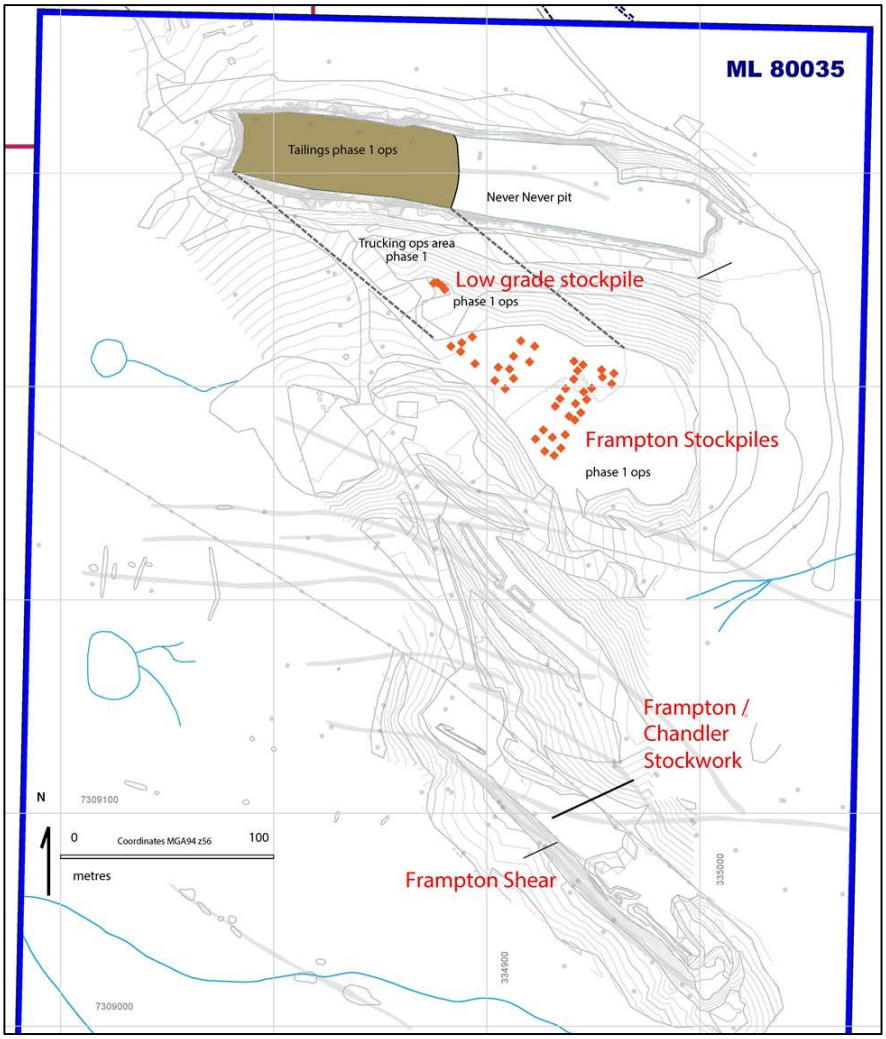
Bulk samples were taken from representative piles within the High Grade Frampton Stockpiles, the Frampton Shear using the planned mining method, the large Low Grade Stockpile and a stock work fracture zone between Frampton and Chandler Shears (representative of mining dilution material).

Figure 1: Bulk sample locations (in red).



Grab samples were taken from the crushed and screened bulk samples as they were bagged. The analysis results summary is shown in Table 1 (full table appended to JORC Table 1 attached):

Table 1 – Summary of Bulk Sample Size Distribution and Grab Sample Laboratory Analysis Results.

	-75 mm + 25 mm			-25 mm + 8 mm			-8 mm		
	Weight (kg)	Grade Au (g/t)	Distribution (%)	Weight (kg)	Grade Au (g/t)	Distribution (%)	Weight (kg)	Grade Au (g/t)	Distribution (%)
HG S/P	3295	7.5	29.0	2915	8.8	30.3	4875	7.1	40.6
LG S/P	3075	2.3	30.3	1775	2.9	22.4	4400	2.5	47.5
Fr Shear	2975	5.2	23.7	2660	6.4	26.2	4500	7.3	50.2
S'Work	2425	0.2	39.4	1125	0.2	17.6	1975	0.3	42.8

These results show an excellent correlation with previous sampling programs and also indicate a good correlation between the Frampton High Grade Stockpile gold grades and the bulk samples taken from the Frampton Shear itself (including dilution in the Frampton Shear samples).

Photo 1: Bulk Sampling Frampton Shear.

Competent Persons Statement

The information in this report and attached JORC Table 1 that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Stuart Moore who is an employee of Mantle Mining Corporation Ltd. Mr Moore is a Member of the Australasian Institute of Mining and Metallurgy and has sufficient experience which is relevant to the style of mineralisation 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 Edition of the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves". Mr Moore consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

JORC Code, 2012 Edition – Table 1 report template

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *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 (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.*	• The public report provides information about a program of bulk sampling undertaken at the Norton Gold Mine during the period 16 to 20 May, 2016. Samples were collected from locations and in volumes so as to provide a reasonable approximation of run-of-mine material during early mine production. The report also describes ore sorter testing of these samples. • **Bulk Sampling** Samples were collect from four discreet locations that are expected provide early mining production. These are from: High Grade and Low Grade stockpiles remaining after completion of mining by the previous owner, Frampton shear primary ore, and stockwork material from a fractured zone between the Frampton and Chandler structures equivalent to low grade wallrock. • The high-grade stockpile sample (HG) was taken from run-of-mine ore from the Frampton pit and was last stockpiled in 2006. Prior to sampling, several of the stockpiles known to contain representative high grade sulphide-bearing ore were consolidated onto the ROM pad by excavator and bulldozer. The piles were scraped to within several centimetres of the pad surface without touching it to avoid contamination. At the same time, several of the lower grade stockpiles were also consolidated to make room for sampling operations. Individual stockpile grade had been determined by Mantle previously by a program of stockpile sampling in March-April 2014. • The low-grade sample (LG) was taken from a mixture of stockpiled rocks from the Frampton, Never Never and Little Wonder areas, mined between 1996 and 2006. Although not considered ore grade, these rocks have been recently recognised to contain a proportion of sulphide veins containing gold and potentially are likely to be of economic value if the mineralized material may be easily sorted from the gangue prior to processing. This material

Criteria	JORC Code explanation	Commentary
		was excavated and hauled a short distance to the ROM pad for bulk sample processing. • The Frampton sample (FR) was excavated from the base level of the previously mined lode at the cessation of mining in 2006, and several metres southeast of the historic main shaft. Ten tons of fresh ore was extracted by first breaking it with a rock splitter, then excavating it and hauling it by tip truck to the ROM pad. • The Chandler low grade sample (CH) was collected from fractured wallrock located in a wedge between the Frampton and Chandler primary mineralized structures. This material was broken by rock-breaker, excavated, and hauled to the ROM pad for sample processing. • **Grab Sampling** A small amount of material, about 1 to 2 kg, was also sampled from each of the thirty-nine Bulka bags for gold assay as they were filled. To reduce sampling bias, a marker pen was thrown into each bag to determine the sample location, from which material was shoveled into a calico bag and labelled. After breaking and taking to the ROM pad, crushing and screening, and bagging the samples may be considered to be moderately mixed. However, the sample collected remains an uncontrolled relatively small grab sample that may be an indicative approximate grade only and help to support the grade estimations of the mining crew. The samples were sent to ALS in Townsville for gold, base metals, and trace elements assay
	• *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).*	• No drilling done during the bulk sampling.

Criteria	JORC Code explanation	Commentary
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *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.*	• No drilling done during the bulk sampling. • The collected bulk samples were weighed. There was no need to relate the volume recovered to the primary sources, other than to document that each source location was reduced by the sample volume taken. • Excavating, handling, and transport of the sampled materials will generate some fine material. The stockpile samples also have some fine material that has been produced by in-situ weathering and oxidation processes. A guide to the volumes of fine material in the samples collected is the volume of -8mm material in the final screened products.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• No drilling was done during the bulk sampling.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *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.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• No drilling done during the bulk sampling. • **Crushing, screening, bagging** Each bulk sample was fed into a jaw crusher with closed side setting (CSS) of about 50 to 65 mm for a nominal particle top size of 75 mm. The crushed rock was then transported along a conveyor and caught in a kibble bucket held by a forklift until approximately 1000 kg of material was collected. The gross weight was read directly off an analogue dial forklift scale, from which 300 kg was subtracted to account for the weight of the kibble bucket itself (e.g., for a gross weight of 1400 kg, the net weight of rock was taken as 1100 kg). The crushed material (-75 mm) was then dumped from the kibble into a loader and fed into a screen plant and screened at 25 mm. The -75 mm to +25 mm oversize fraction was caught by a loader and funnelled into a one-ton polypropylene bulky bag for collection. Meanwhile, the undersize fraction (-25 mm) was funnelled through a rubber chute into the kibble bucket, whereupon it was weighed and then stored in a tip truck. By repeating this screening process, the oversize -75 mm to +25 mm fraction was sequentially

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		collected in one ton bags, while the undersize -25 mm material was consolidated in the tip truck. Once run to completion, the -25 mm material from the tip truck was rescreened at -8 mm. The oversize fraction from -25 mm to +8 mm, was caught by a loader and funnelled into a one tonne bulka bag for collection. The undersize fraction of -8 mm was caught in the kibble and likewise bagged. All bags were weighed using the forklift scales, with 20 kg subtracted to account for the weight of the wooden pellets on which they were held. Each bag was labelled on all sides using black marker using the format 16BS-xx yy zz; where 16BS denotes "Bulk sampling 2016"; xx is the bag number 1 to 39, yy is the two letter sample name HG, LG, FR or CH, and; zz is one of the three sizes -8, -25 +8 or -75 + 25. Finally, all of the bags were sling loaded into a cargo truck for transport to Victoria. The bags containing the collected -8 mm fraction (16 bulka bags totalling 15.75 tonnes) were sent to Gekko Systems in Ballarat for metallurgical classification work. The +8 -25mm and +25 -75mm fractions (23 bulka bags totalling 20.25 tonnes) were sent to Steinert in Melbourne for ore sorting testwork.
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.* • *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.* • *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.*	• The analytical work was completed by ALS, Townsville, a NATA accredited laboratory, using standard minerals industry sample preparation and analytical methods. • **Bulka Bag Grab Samples** • Samples were crushed and then pulverized to 85% passing -75 micron prior to weighing out an assay split. Assay methods were 50 g Fire Assay for gold (Method Au_AA26) and ME- ICP61 (0.25g sample near-total digested using a 4 acid digest and the solution analysed by inductively coupled plasma-atomic emission spectrometry [ICP-AES] for 33 major and trace elements.. • The laboratory has used standard calibrations and included their own internal reference standards throughout the analytical processes, and these data, as laboratory reports, are available to Mantle. • No major inconsistencies have been observed in the data when reviewed by Mantle geoscientists and technical consultants. .Grab sample gold and silver values are appended to this Table 1 Report as Table A.

Criteria	JORC Code explanation	Commentary
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• No drilling was done as part of the bulk sampling program.
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.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• No drilling was done for and during the bulk sampling program • Bulk sampling locations have been documented on existing mine plans and located by GPS coordinates. • Local topographic control has been provided by licenced surveyor as part of a mine-site infrastructure, workings and establishment permanent survey stations for Mantle in 2014.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *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.* • *Whether sample compositing has been applied.*	• Bulk sample locations are specifically tailored to the sites of early mine production.
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.* • *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 drilling was done as part of the bulk sampling program
Sample security	• *The measures taken to ensure sample security.*	• Grab samples were delivered to Townsville by Mantle geoscientists. • Once at the laboratories, the samples were subject to NATA accredited laboratory sample security requirements and procedures. • The bulk samples were taken to Melbourne in a high sided covered box double B trailer on an non-stop basis to secure sites.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• The bulk sampling work has been overseen by experienced and well qualified technical and metallurgical consultants.

Section 2 Reporting of Exploration Results

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *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.*	• The Mining Lease ML 80035 was purchased by Mantle from Norton Gold Mines Limited in early 2014. • ML 80035 was granted on 4 April 1996 for 21 years to 30 April 2017 and consists of 22.23 Ha, Figure 2. The property is 90% owned by Mantle with no contractual liabilities or royalties applicable other than those due to the State Government. The remaining 10% of the project is held by Avanti Mining. • Mining has occurred on the property in three previous stages, with the latest by Norton Gold Fields in 2005 to 2006 and has an existing Plan of Operations (POO).
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Reported drilling results are from programs undertaken in 1969 by a Noranda – Delhi Petroleum Australia joint venture, 1985-1986 by an AMOCO/Cyprus Minerals – Climax Mining joint venture, in 1987 by a joint venture between Pacific Goldmines Limited and Cyprus Mining, and in 2005-2006 by AT Prowse (Norton Gold Mine Limited). • In 1969, two percussion drill holes were completed in the Norton Mine area. These followed up earlier programs of rock chip sampling, costeaning, and IP Geophysics. • In 1985, 26 reverse circulation and 23 diamond drill core holes were completed. In 1986, 47 reverse circulation and 14 diamond core holes were completed. • In 2005, 12 reverse circulation drill holes were completed. • Programs of costeaning, soil sampling and IP geophysical survey have also been undertaken by these parties and have contributed to the delineation of the surface expression of the mineralized structures and assisted drill hole locations. • Cumulatively, this work led to the identification of economic gold resources on the Never Never and Frampton structures and the determination of a resource calculation in 2004 by AT Prowse (Norton Gold Mine Limited) • Norton Gold Mine Limited undertook mining operations on the Never Never and Frampton structures during the period 2005 to 2007, after which no mining or exploration activity has been done.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• Gold and silver mineralisation occurs with pyrite and arsenopyrite and minor sphalerite, galena, and chalcopyrite, within a series of linear structures in the Norton Tonalite.

Criteria	JORC Code explanation	Commentary
		• The mineralized structures localize quartz-sericite-sulphide mineralisation and appear to roughly be aligned parallel to and inside the contact of the Norton Tonalite with adjacent lithologies. • The host Norton Tonalite is recessive in outcrop and is extensively sheared, jointed, and faulted.

Drill hole Information	• *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 exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*
		• No drilling was done as part of the bulk sampling program

Data aggregation methods	• *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.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No metal equivalents are used or presented.
Relationship between mineralisation widths and intercept 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 drilling was done as part of the bulk sample program. Mining activities to date confirm the available drilling interpretations.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Maps and sections are presented in the announcement.

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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 new drilling has been completed by Mantle.
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 characteristics; potential deleterious or contaminating substances.*	• During April, 2014, Mantle undertook a systematic sampling of 39 stockpiles comprising approximately 900 tonnes mined mineralisation. This was to obtain an approximate grade for each stockpile and therefore a general average grade of the entire volume. This activity was reported to the ASX on 28 April, 2014. • Six samples were collected during the sampling program for petrologic analysis. The results of this work are expected during Q2 2014. • Rock chip samples were collected in October-November 2014 during field reconnaissance and geological and structural mapping. Samples were collected by hand using a hand-held geology hammer. Samples were collected only from locations were competent bedrock was observed through soil and colluvial/alluvial cover. Samples were collected in calico sample bags. These were labelled and taken by the project geologist to Australian Laboratory Service in Townsville. • All samples were assayed for gold by method Au-AA26 (50g Fire Assay) and for 33 elements (including Ag) by method ME-ICP61 (4-acid digest and ICP emission spectrometer assay). Tabulated complete Au and Ag results are presented at the end of this table.

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 areas, provided this information is not commercially sensitive.*
		• Further work is likely to include
		  ◦ Progression of works towards restarting the mining operation
		  ◦ Surface exploration for extension of existing known targets
		  ◦ Mapping and exploration for additional mineralised structures
		• Additional metallurgical test work

Section 3 Estimation and Reporting of Mineral Resources

Criteria	JORC Code explanation	Commentary
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.* • *Data validation procedures used.*	• Geology and assay database was built from the available Excel files. Basic cross validation checks were undertaken to find and correct any errors. • Drill hoe locations and significant intercepts in the current database were overlain on located historic plans to verify both the relative

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		location and the most significant intercepts reflect the results of the previous workers. • A small number of randomly selected original assays sheet were compared to the database for verification of the assays.
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 for the Report visited the site at the commencement of the bulk sampling work. The site layout and operating conditions conformed with expectations from preliminary analysis completed prior to the visit.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology.*	• The mineralised locations sampled are identifiable from drill and surface mapping, sampling and existing workings.
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.*	• The area of known veins and previous mining within the existing ML covers an area of 300 by 400 m. The veins are narrow and modelled to a minimum width of 1.2 m and rarely more than 5 m wide. In long section the overall dimensions for the principal veins are: ○ Frampton 220 m long by up to 160 m depth ○ Chandler 200 m long by up to 90 m depth ○ Never Never 280 m long by up to 100 m depth ○ Nine Grams 240 m long by up to 35 m depth
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.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).*	• A block model was constructed with 5 m by 2 m by 2 m blocks sub-blocked down to 1.25 m by 0.5 m by 1 m. • Blocks and sub-blocks were estimated using 1 m composites using length weighted inverse distance squared estimation method with a 5 to 1 flattening anisotropy for elements Au, Ag and where available Cu, Pb, Zn, As and S. • High grade cuts of 50 g/t Au and 60 g/t Ag are possibly higher than normal practice but take into consideration that previous modern mining at Norton has resulted in ore grades well above those predicted. • The blocks sizes were selected to allowing effective representation of a minimum 1.2 m true width used for modelling. Previous mining has indicated that that good visual grade control of the structure can

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	• *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	achieve the 1.2 m mining width and potentially be even more selective. • Validation was by visual assessment, review of the estimation quality parameters and comparison of the estimate to previous polygonal estimates and drill hole grade averages.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	• All tonnages are summed on a dry basis and moisture content is not considered in the resource estimate. • The material types are granitic and will drain freely during mining and retained moisture is not considered an issue.
Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• Previous in 1989 and 2004-5 mining at Norton used a high cut-off grade of 4 to 5 g/t Au as mined ore was trucked ore long distances to be processed at other operations. • Mantle is studying the option of producing a high grade concentrate on-site prior to shipping to another processing facility. This will allow a lower cut-off grade to be viable. At this stage a 2 g/t Au cut-off is used for reporting resources as a likely economic cut-off. • Mantle will be reassessing the mining and processing options to confirm the assumed cut-off grade. • Silver content is low and is not considered in the cut-off grade.
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.*	• A minimum horizontal width of 1.2 m has been applied for intercept selection and block modelling. This can easily been achieved with the proposed mining scenario that includes small production rate, small mining equipment on 1 m bench lifts and blasting on 6 m lifts but which is constrained to a narrow pit that will limit material movement. • Previous grade control has achieved highly selective mining and as a result the mine has historically produced higher grades at lower tonnage than predicted.
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*	• Gold mining from 1878 to the 1903's concentrated the gold and sulphides using stampers. Onsite processing included reverberatory furnaces to roast the ore followed by chlorination. • Subsequent mining has demonstrated that Norton ore is amenable to

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	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.	both direct cyanide leaching through a conventional carbon-in-pulp circuit or by flotation concentration into a bulk sulphide concentrate for off-site gold recovery. • Early test work was performed by independent consultants Warman International in 1986, on two samples grading 3.8 g/t and 31.2 g/t and achieved gold recoveries of 88% to 94%. • In 1997-8, 4700 tonnes @ 9.5 g/t Au of predominantly oxidised ore mined from the Never Never open cut was processed through the Shamrock CIP plant near Kilkivan. Ore was ground to a nominal 75% passing 80 micron size and leached through a CIP circuit with a resident time of 24 hours with an overall gold recovery of 93%. • In 2005-6, 9200 tonnes @ 7.4 g/t Au of ore mined from the Never Never and Frampton open cuts was toll treated through the Gympie Eldorado CIP plant with the gold recovery rising to 93%. Mining was curtailed due to permitting issues at Gympie with the elevated arsenic content present in the Norton concentrate. • Mantle test work has concentrated on the mechanical separation of the gold into a concentrate suitable off site processing by CIP. This work is ongoing but indicates 90% recovery of the gold into a 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.*	• The proposed onsite processing is to create a gold bearing sulphide rich gravity concentrate by mechanical sorting. High level or arsenic occur at Norton but it is expected to mostly report with the sulphides in the concentrate. The disposal of onsite tailings is not expected to contain significant arsenic or sulphides, as was the case during previous operations at Norton in 1989 and 2004-5. • The occurrence of high arsenic will be an issue for the sale of the concentrate to a processing facility that will need to manage the arsenic disposal.
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.* • *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.*	• Previous estimates relied on a standard density of 3.0 t/m^3 for all material. Reasonable reconciliation after two separate phases of mining support this assumption. • Mantle has completed 124 hand specimens from the existing pits and surface stockpiles. They confirm high density for sulphide rich mineralisation and slightly lower density for oxide material in the shallow weathering profile. These have been used to refine the global density assumptions to

Criteria	JORC Code explanation	Commentary
	• *Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.*	• 3.0 t/m^3 for all fresh mineralisation • 2.6 t/m^3 for all fresh waste • 2.5 t/m^3 for all oxide material • The density of the sulphide samples can range up to 4.7 t/m^3. There is potentially a grade relationship between Au grade and density where higher grades are associated with higher sulphide occurrence. Such a relationship can result in an underestimation of Au grade if an average or standard density for mineralisation is assumed. This could explain why the mine previously outperformed resource grade estimates in the past.

Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.*
	• *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).*
	• *Whether the result appropriately reflects the Competent Person's view of the deposit.*
		• Three principal veins at Chandler, Frampton and Never Never were the focus of the current study. These all display sufficient continuity and drill spacing or 25 m to warrant Indicated Mineral Resource classification.
		• Two of these zones at Frampton and Never Never have been previously mined and demonstrated reasonable reconciliation. Though Mantle has not verified these deposits with additional drilling nor is there adequate QAQC for the historic drilling there is sufficient verification of the drilling to warrant Indicated Mineral Resource by:
		  • Drilling by different companies
		  • Previous mining and reconciliation in 1989 and 2004-5
		• Some other veins are modelled and estimated that have limited drilling support or restricted continuity. These are currently classified as Inferred. They include:
		  • Mineralisation in side splays at Frampton that are demonstrated in the existing pit and previous mining
		  • Depth extensions of lodes at Nine Grams and Little Wonder which were mined historically over 100 years ago.

Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates.*	• Neither the current nor the previous estimates were audited. • A comparison of the previous polygonal and current block model estimates indicates similar results after considering the difference in approach.

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*	• The resource model has been compared to
		  • The previous polygonal estimate with similar result though the block model has some additional smoothing with greater tonnage at lower grade.
		  • The previous mined production for the mined out areas estimate

Criteria	JORC Code explanation	Commentary
	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 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.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	which indicted the model was +20% in tonnage and -20% in Au grade. Note that this was using a 4 g/t Au cut-off which will differ to the current mining scenario and cut-off grade.

Table A : Norton Bulka Bag Grab Sampling During Collection

Method		**WEI-21**	**Au-AA26**	**ME-ICP61**
Analyte		Recvd Wt.	Au	Ag
		kg	ppm	ppm
		0.02	0.01	0.5
16BS-1	Frampton High Grade Stockpile -75+25	1.5	4.57	18.2
16BS-2	Frampton High Grade Stockpile -75+25	1.59	11.45	24.3
16BS-3	Frampton High Grade Stockpile -75+25	1.76	7.08	22.1
16BS-4	Frampton High Grade Stockpile -75+25	1.42	5.13	15.8
16BS-5	Frampton High Grade Stockpile -8	1.55	6.29	15.4
16BS-6	Frampton High Grade Stockpile -8	1.49	5.37	15.8
16BS-7	Frampton High Grade Stockpile -25+8	1.46	7.99	28.5
16BS-8	Frampton High Grade Stockpile -8	1.51	6.62	16.1
16BS-9	Frampton High Grade Stockpile -8	1.28	7.65	15.3
16BS-10	Frampton High Grade Stockpile -25+8	1.67	11.35	21.9
16BS-11	Frampton High Grade Stockpile -8	1.41	9.65	17.2
16BS-12	Frampton High Grade Stockpile -25+8	1.46	6.02	16.1
16BS-13	Frampton Low Grade Stockpile -75+25	1.69	3.01	4.7
16BS-14	Frampton Low Grade Stockpile -75+25	1.72	1.74	10.8
16BS-15	Frampton Low Grade Stockpile -75+25	2.11	2	5.5
16BS-16	Frampton Low Grade Stockpile -8	1.47	2.1	6.4
16BS-17	Frampton Low Grade Stockpile -8	1.84	2.33	5.7
16BS-18	Frampton Low Grade Stockpile -25+8	1.56	3.24	5.9
16BS-19	Frampton Low Grade Stockpile -8	1.63	3.41	7.5
16BS-20	Frampton Low Grade Stockpile -8	1.86	2.16	5.7
16BS-21	Frampton Low Grade Stockpile -25+8	1.75	2.39	9.7
16BS-22	Frampton Primary -75+25	2.54	9.52	10.3
16BS-23	Frampton Primary -75+25	1.44	4.63	8.7
16BS-24	Frampton Primary -75+25	1.8	1.65	7.2

16BS-25	Frampton Primary -8	1.76	7.53	15.6
16BS-26	Frampton Primary -8	2.01	7.11	12.2
16BS-27	Frampton Primary -25+8	1.6	5.02	10.6
16BS-28	Frampton Primary -8	1.7	7.72	12.2
16BS-29	Frampton Primary -25+8	1.5	8.92	12.7
16BS-30	Frampton Primary -8	1.34	6.94	12.9
16BS-31	Frampton Primary -8	1.97	6.94	14.9
16BS-32	Frampton Primary -25+8	1.74	4.82	7.6
16BS-33	Chandler Primary -75+25	1.56	0.07	1.4
16BS-34	Chandler Primary -75+25	1.57	0.42	1.9
16BS-35	Chandler Primary -75+25	1.72	0.22	1.8
16BS-36	Chandler Primary -8	2.03	0.29	2
16BS-37	Chandler Primary -25+8	1.31	0.14	1.5
16BS-38	Chandler Primary -25+8	1.53	0.55	2.6
16BS-39	Chandler Primary -8	1.65	0.33	3.4