Merlin Diamonds Limited

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Year 17
MINERAL LEASE MLN1154
“MERLIN DIAMOND PROJECT”

Annual Report For The Period
1st January 2014 to 31st December 2014

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Operator: Merlin Diamonds Limited
Sheet Reference: Bauhinia Downs 1:250,000 (SE53-03)

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1 ABSTRACT

This report details exploration and evaluation activities carried out by Merlin Diamonds Limited (MDL) over Mineral Lease MLN1154 for the period 1st January 2014 to 31st December 2014.

In 2013, an extensive loam and stream gravel sampling program was commenced over MLN1154 and surrounding exploration licence EL26944 that targeted the unconformity between the Bukalara Sandstone and the overlying Cretaceous Sandstone. Processing and assessment of the results continued during 2014. To date, 101 samples have been processed and returned 59 positive results, with a total of 2 microdiamonds and 268 kimberlitic chromite grains being recovered. These results are considered encouraging and highlight the potential for additional kimberlite discoveries within the mining lease.

During 2014, three targets were identified for investigation using a Geonics EM34-3 ground electromagnetic instrument. A total of 12.6 line kilometres were completed. The targets were a mixture of historic ground gravity, ground electromagnetic and geochemical anomalies.

A detailed desktop review of all available data (geophysical, geochemical and indicator mineral results) undertaken by a Consultant Research Manager in Perth was completed. Some 58 geophysical targets with potential kimberlite signatures were identified within the mining lease. The targets have been prioritised based on their properties, with a higher priority given to those with coincident geophysical and/or geochemical signatures.

During the year, the Company completed a review of results from the hydraulic borehole mining trial completed in September 2013. Following this review, other alternative mining methods were investigated. The methods analysed were chosen on the basis that they could potentially provide a quicker path to restarting mining operations with lower upfront capital costs. A detailed feasibility study was completed on the chosen alternative of mechanical clamshell grab mining situated upon a barge floating on the flooded open pits. Preliminary work commenced on barge design and contractual term sheet negotiations with the mining contractor.

Expenditure for the reporting period was $2,059,651.53.
2 INTRODUCTION

This report details exploration and evaluation activities carried out by Merlin Diamonds Limited (MDL) over Mineral Lease MLN1154 for the period 1st January 2014 to 31st December 2014.

The target for exploration within this lease is diamond-bearing kimberlite intrusives. In addition, the company is undertaking evaluation to re-establish commercial scale mining operations within the lease.

Table 1 summarises the exploration work undertaken on the mining lease during the reporting period and Map 1 (Exploration Index Map) shows the locations of sample points and geophysical surveys.

<table>
<thead>
<tr>
<th>TABLE 1: Summary of work undertaken during 2014 reporting period</th>
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<tr>
<td><strong>Work</strong></td>
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<td>Indicator Mineral sampling program targeting the Cretaceous boundary</td>
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<td>Ground Electromagnetic Surveys – EM34-3</td>
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<td>Compilation of Geophysical Targets</td>
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3 LICENCE DETAILS

Mineral Lease 1154 was granted to Ashton Mining Limited on the 15th June 1998 and replaced Exploration Retention Licenses (ERL’s) 141 and 142. The area covered by the ERL’s was previously held under Substitution Exploration License 8630, which replaced the original licenses 6424, 7267, 7581, 7859, 7860 and 7861 in July 1995. ERL 141 comprised 736 hectares and ERL 142, located to the south of ERL 141, comprised 888 hectares. On the 17th December 1996, application for a mineral lease was made over the ERL’s, covering an area of 2,350 hectares. On granting of the mineral lease, the ERLs were automatically surrendered.

The Licence was acquired from Ashton Mining in November 2004 and is currently held by Merlin Operations Pty ltd (formerly Merlin Diamonds Pty Ltd). The Licence is managed or operated by Merlin Diamonds Limited (formerly North Australian Diamonds Limited).

<table>
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<tr>
<th>TABLE 2: Licence Details for MLN1154</th>
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<td>Project Name</td>
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<tr>
<td>Merlin</td>
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4 LOCATION AND ACCESS

The Licence lies within the Bauhinia Downs (SE53-03) 1:250,000 map sheet and the Glyde (6164) 1:100,000 sheets. Access to the lease is via a 64 kilometre formed gravel access road, heading south from the Carpentaria Highway. The turn-off to Merlin is approximately 6 kilometres south-west of the McArthur River Mine turn-off, and 43 kilometres north-east from Cape Crawford.

The mineral lease is located on a plateau referred to as the Merlin Plateau that is part of the Bukalara Ranges. The Merlin Plateau occurs at an elevation of approximately 200m above mean sea level and is approximately 10km north-south by 5km east-west. The plateau itself is host to twelve kimberlite pipes, a small breccia pipe and a further two kimberlite pipes dissected by Matheson Creek that bounds the plateau to the north.

Map 2 shows the tenement location.
5 GEOLOGY

The Merlin kimberlite field is located in the Batten region of the Northern Territory, Australia, 80km south of the township of Borroloola. The field comprises fourteen kimberlite intrusions distributed in five discrete clusters. The two largest kimberlite pipes within the field, Emu 1 and Emu 2, were discovered in 1985 by CRA Exploration. The remaining kimberlite pipes were discovered by the Australian Diamond Exploration Joint Venture, seven years later.

5.1 REGIONAL GEOLOGY

The Batten region is situated on the eastern side of the North Australian Craton. This area lies to the south of the western edge of the Gulf of Carpentaria and is dominated by the relatively undeformed Middle Proterozoic McArthur Basin that extends over an area of 180,000 km² (Pietsch et al., 1991). The basin forms part of the North Australian Platform overlying the Early Proterozoic Pine Creek Inlier, Arnhem Block and Murphy Inlier (Plumb et al., 1990). Early Proterozoic basement rocks in the McArthur Basin include the Scrutton Volcanics which have been dated by U-Pb in zircon at 1857±30 Ma (Pietsch et al., 1991).

A major structural feature of the southern McArthur Basin is the Batten Trough, also known as the Batten Fault Zone, which is a 70km wide zone of extensive faulting that trends north-northwest. The Batten Trough is bounded on the east by the Emu Fault and obscured to the west by the Roper Group of sedimentary rocks. The Trough is one of several asymmetric syn-sedimentary grabens that developed in the McArthur Basin after deposition of the Tawallah Group, possibly as a failed intra-continental rift similar and parallel to the Mt Isa Orogen (Plumb and Wellman, 1987). Up to twelve kilometres of sediments was deposited within the Batten Trough in a westwards thinning wedge, compared to four kilometres of sediments on the adjacent Bauhinia and Wearyan shelves.

Smaller structures with a similar north-northwest trend are associated with the Emu pipes to the north, suggesting that the Merlin Field probably lies on a similar, regional structure. A northwest-trending fault, known as the Merlin Fault, parallels the Emu Fault and extends from the Sacramore-Palomides pipe in the southern part of the Merlin Field, through to the Ector-Kay cluster in the north.

Neoproterozoic/lower Cambrian-aged Bukalara sandstone, 30m to 100m thick, overlies the McArthur Basin sedimentary rocks in much of the Batten region and frequently forms topographic plateaux. Flood basalts of Cambrian age become prevalent in the southern portion of the region, although they are generally obscured by younger sediments. The Merlin kimberlite field represents the youngest known volcanic event in the region.

Map 3 shows the regional geological setting of the Merlin Kimberlite Field.
5.2 **MERLIN PLATEAU GEOLOGY**

The Merlin Plateau is a preserved, Tertiary-aged (Pietsch et al., 1991) planation surface, with a slight declination to the north of less than 1 degree. The plateau surface comprises a scrubby sand-drifted plain underlain by laterite and, in some instances, ferricrete, which in turn is underlain by a flat-lying section of Neoproterozoic/lower Cambrian Bukalara sandstone. A characteristically intensive jointing pattern dissects the sandstone sheet surface and controls a dendritic to trellis pattern of tributary drainage. The eastern margin of the plateau sharply abuts an uplifted block of Proterozoic aged sediments of the McArthur Group, while more regionally, the plateau lies between NNW trending faults which parallel the Emu fault to the west.

Cretaceous sedimentation has been widespread in the area but the rocks have now been largely removed by erosion for a distance extending some 200km south from the Gulf of Carpentaria coastline. This stripped area is characterised by well-dissected drainage interspersed with isolated, remnant, poorly drained, pisolite-covered planation surfaces. On the Merlin Plateau, the southern limit of the stripped Cretaceous is marked by a well-defined escarpment, which also represents a major drainage divide. Streams to the south flow southwards to the Georgina Basin, while those on the north side of the escarpment flow north to the Gulf of Carpentaria. Isolated outcrops of Cretaceous-age, plant fossil-bearing silicified sandstone occurs on plateau within the mining lease.

The youngest sediments on the Merlin Plateau are surficial deposits of gravel, silt, sand, and ferricrete, which occur within numerous drainages and blanketing sandstone.

**Map 4** shows the surface geology of the Merlin Plateau and the mining lease. This geological map was derived from air photograph interpretation. Ground-based mapping has shown that the extent of the Cretaceous cover is greater than determined from the air photo interpretation.

5.3 **KIMBERLITE PIPES**

Fourteen kimberlite pipes and two sandstone breccia pipes comprise the Merlin field that is regionally located on the eastern shoulder of the Batten trough, some 6km east of the Emu Fault and on the projected trace of the northwest trending Calvert Fault. The twelve kimberlites discovered by the ADEJV, named Excalibur, Palomides, Sacramore, Launfal, Launfal North, Kay, Ywain, Gawain, Tristram, Gareth, Ector, Bedevere, and the two breccia pipes are preserved on a poorly-drained remnant Tertiary-aged land surface comprising sand and iron pisolites.

All of the pipes, including the two Emu pipes, have intruded the Neoproterozoic/lower Cambrian Bukalara sandstone, which is flat lying and unconformably overlies Proterozoic sediments in this
area. Structurally the pipes are located on interpreted tension fractures spatially associated with the regional northwest trending Calvert Fault. Four discrete clusters of pipes are present in the field, which extends over an area of 10km by 5km. Within each cluster, the distances between the pipes varies from 100 to 400m, but in one instance, is 1500m. The distance between the clusters is around three kilometres.

The Merlin Pipes, which are geochemically similar to the Aries kimberlite in the Kimberley region of Western Australia, represent the upper diatreme facies of the kimberlite system. The intrusions are dated at 360 Ma (Devonian), which coincides with the peak of the Alice Springs Orogeny, which affected most of central Australia.

Kimberlite is a class of volatile-rich (dominantly CO$_2$), potassic ultrabasic igneous rocks, commonly exhibiting a distinctive inequigranular texture resulting from the presence of macrocrysts set in a fine-grained matrix. The macrocryst assemblage is dominated by rounded anhedral crystals of olivine (or its alteration products). Other common crystals are magnesium ilmenite, Cr-poor titanium pyrope, Cr-poor clinopyroxene, phlogopite, enstatite, and Ti-poor chromite. The matrix minerals include: second generation euhedral primary olivine and phlogopite, together with perovskite, Cr-spinel, diopside, monticellite, apatite, calcite, and primary to late stage serpentine.

The kimberlites encountered in the Merlin pipes comprise olivine-rich kimberlite and kimberlite breccia, and are a hybrid mixture of the parental magma, mantle xenoliths and xenocrysts (such as olivine and also diamond). They also incorporate country rock xenoliths, such Bukalara sandstone and Proterozoic sediments. The kimberlite is highly-weathered to approximately 100m below surface.

A characteristic feature of the Merlin kimberlites, with the exception of the two Emu pipes, is that the pipe structures are corked by fossiliferous, Cretaceous-aged, mudstone/sandstone sedimentary in-fill sequences that can be up to 42 metres thick. Due to the planar nature of the Merlin plateau and the widespread distribution of iron pisoliths and sand, the sedimentary rocks infilling the pipes are not distinguishable at the surface. Where they have been exposed in sample pits, commonly they are not easily distinguished from the surrounding sandstone country rocks.
6 PREVIOUS EXPLORATION

Merlin Diamonds Ltd acquired MLN1154 mining licence from Ashton Mining via Rio Tinto in 2004. At that time, the company was called Striker Resources, which was then renamed North Australian Diamonds. The following is brief summary of the exploration work undertaken by Merlin Diamonds Ltd since 2004.

6.1 2004-2005 ACTIVITY

MLN1154 was acquired by Striker Resources NL in November 2004. The company name was changed to North Australian Diamonds Limited on 23rd August 2005. The tenement was held under Bulgurri Diamonds, which is a 100% wholly owned subsidiary company of NADL.

Following acquisition of the Merlin mineral lease a review of available data was undertaken and a work program implemented. Field exploration activities were significantly restricted due to the timing of the acquisition and minimal opportunity for exploration until following the wet season.

Field work during the period included reconnaissance of previously identified anomalous targets, loam sample collection and drill testing of selected targets.

6.2 2005-2006 ACTIVITY

Exploration completed during 2006 reporting period included the collection of 273 loam samples as follow-up to existing indicator mineral anomalies. A total of 192 soil geochemical samples were collected across the lease to further define indicator mineral anomalies. A total of 7.58 line kilometres of ground magnetic data was collected across several areas of the lease as follow-up to identified indicator mineral anomalies. A line spacing of 50m was used with a station spacing of 5m or 10m.

Resource delineation drilling at the Tristram kimberlite pipe increased the inferred resource from 410,000t to 740,000t. Wide-diameter drill samples were collected and processed to recover 36 tonnes of kimberlite for a grade of 6 carats per hundred tonnes. Wide-diameter drill samples were also collected at a previously untested breccia pipe located 400m to the south of Excalibur pipe. This pipe, named Perceval, reported a grade of 56 carats per hundred tonnes and is comprised of hypabyssal kimberlite and is considered similar to Ywain pipe in both size and nature.

6.3 2006-2007 ACTIVITY

During this period, the company changed the name from Bulgurri Diamonds Pty Ltd to Merlin Diamonds Pty Ltd, which is a 100% wholly owned subsidiary company of NADL.
Exploration completed during the reporting period included the processing of 169 loam samples collected during the previous reporting period.

Trial mining operations included mining of kimberlite from existing open pits and processing approximately 25,000 tonnes of material that recovered 11,810 carats of diamonds. A Prefeasibility Study of Gawain and Ywain pipes was completed to evaluate the economics of underground operations that identified a potentially economic project. The study identified the need for further resource definition and geotechnical drilling to move the project to Feasibility stage.

6.4 2007-2008 ACTIVITY
Activities completed during the reporting period included completion of thirteen diamond drill holes for a total of 3,674 metres. In addition, fourteen samples of drill core were processed to recover diamonds for grade determination.

Sixteen samples of kimberlite, each about one cubic metre in size, were excavated from within the open mining pits and processed for diamonds for grade determinations and comparison with deeper core samples. This work was undertaken to confirm the continuation of grade with depth.

6.5 2008-2009 ACTIVITY
Activities completed during the reporting period included processing of diamond drill-core and pit samples for total diamond content. This work is being done to determine resource grades and to confirm the continuation of grade at depth within the tested pipes.

As a prelude to undertaking prefeasibility production trials, the Merlin pilot processing plant is being upgraded in a series of stages aimed at increasing throughput to in excess of 50tph and also to test a number of process components that enable the finalization of the processing flow-sheet.

6.6 2009-2010 ACTIVITY
Activities completed during the reporting period included a geotechnical drilling program at Palsac, Bedevere and Launfal as well as an exploration drilling program at Tailing’s Dam and Bedevere. Down-hole spoil geochemical samples were collected from Bedevere and indicator minerals from Tailing’s Dam.

Plant Spillage samples were collected at Merlin. A ground EM survey was conducted over Excalibur South and Perceval. COMEX test work was also conducted over the Merlin Mine and samples were sent to COMEX in Norway for pyrite/diamond test-work.

6.7 2010 ACTIVITY
This report details exploration and evaluation activities carried out for the period June to December 2010. The reporting periods changed to 1st January to 31st December in 2011.
During the reporting period, a total of 21,207 tonnes of kimberlite from Kaye pipe was processed through the Merlin Processing Plant as part of Pre-Feasibility Production Trials. A total of 2,177.25 carats of diamonds was recovered.

6.8 2011 ACTIVITY

During 2011, a detailed desktop review of all available data was commenced and undertaken by a Consultant Research Manager in Perth. A comprehensive database exists that includes historic and current heavy mineral samples, drilling data and drill spoil samples, various phases and types of surface geochemistry, airborne geophysics, ground geophysics, and geological mapping. A detailed review of all these datasets had not been undertaken since MDL acquired the Mining Licence from Ashton Mining in 2004. The aim of this review was to identify new kimberlites within the Mining Licence and immediate surrounds.

A total of 491 drill spoil samples from the 2010 reverse circulation drilling program were sent to the Company's Perth laboratory for processing for kimberlite indicator minerals and diamonds. A major review of the mineral resource estimate was completed resulting in the compilation of a JORC compliant Mineral Resource Estimate.

6.9 2012 ACTIVITY

Activities during 2012 included completion of drill spoil samples from the 2010 reverse circulation drilling program that were sent to the Company's Perth laboratory for processing for kimberlite indicator minerals and diamonds.

A detailed desktop study of available geoscientific data was completed that identified numerous targets. An external consultant geophysicist produced a report that identified additional targets.

Over 400 soil geochemical samples were collected to determine appropriate locations for the subsequent drilling program, which comprised 128 holes for a total of 3,568 metres. No kimberlite was identified.

Feasibility studies continued throughout 2012 with a proposed borehole mining program scheduled to commence in early to mid 2013.

6.10 2013 ACTIVITY

An extensive loam and stream gravel sampling program commenced over the mining lease and surrounding exploration licence EL26944 targeting the unconformity between the Bukalarra Sandstone and the overlying Cretaceous Sandstone. A total of 110 samples were collected with 61 samples processed during the reporting period. A total of 32 reported positive results and highlight the potential for additional discovery within the mining lease.
Twenty targets geophysical targets were identified for further investigation using an EM34-3 ground electromagnetic instrument. A total of 43 line kilometres were completed. Pending further investigation, a number of these targets may be recommended for drill testing during the next reporting period.

A borehole mining trial operated for a one month period and achieved success in a number of key areas. Further engineering works are required to increase the rate of production to sustain an economic operation.
7 EXPLORATION COMPLETED DURING 2014

Exploration activities during the current reporting period were less extensive than those undertaken in the previous period. However, the work undertaken continued to build on the programs commenced in 2013.

7.1 HEAVY MINERAL SAMPLING

An extensive loam and stream gravel sampling program was commenced over the mining lease and surrounding exploration licence EL26944 during 2013. This program targeted the unconformity between the Bukalara Sandstone and the overlying Cretaceous Sandstone. Map 5 shows all the results from 2013 sampling program. Only 9 samples remain unprocessed – these are currently stored at Merlin. The map shows a cluster of positive results occur along the western boundary of the mining lease. There are no known kimberlites in this part of the mining lease. It is unknown at this stage whether the chromites are associated with undiscovered kimberlites, or represent a dispersion trail along the unconformity from known pipes further to the east. Modelling of the pre-Cretaceous surface may help to understand the distribution of chromites and this is currently in progress.

A total of 110 loam and stream gravel samples were collected for processing at the company’s laboratory in Wangara, Perth. To date, 101 samples have been processed and returned 59 positive results with a total of 2 microdiamonds and 268 kimberlitic chromite grains being recovered. Three samples are classed as positive*, indicating that chromite was recovered, but the grains are considered not to be kimberlitic due to morphological features. A further nine loam samples are yet to be processed – these are stored at Merlin and will be sent to Perth for processing in 2015. Appendix I shows sample results as a table. Digital sample locations and results are submitted as MLN1154_2015_A_HMASample.txt.

7.2 GROUND ELECTROMAGNETIC SURVEYS – EM34-3

During 2014, three targets were identified for investigation using a Geonics EM34-3 ground electromagnetic instrument. A total of 12.6 line kilometres were completed. The targets were a mixture of historic ground gravity, ground electromagnetic and geochemical anomalies. The EM34-3 was used in the horizontal dipole mode (i.e. coils held vertically), typically with 20m separation.

A summary table is included in Appendix II that details the targets and results from the EM34-3 surveys.
7.2.1 **MerAn010**

Refer to Appendix III for maps of the survey results. This survey returned no significant EM anomalies over the two gravity targets. The highest EM response was 4.4, located in the NW portion of the survey and associated with a number of responses of similar magnitude. This suggests an increase in the conductivity of the underlying sandstone rather than Cretaceous infill over a pipe. MerAn010 does not warrant any further work.

7.2.2 **MerAn013**

Refer to Appendix IV for maps of the survey results. Only the portions of the grid overlying the two gravity anomalies were undertaken. The highest reading recorded came from the south-west corner of the northern portion, coinciding with the location of high readings from Ashton 100m EM data which lies between two gravity lows.

The results from the two sub-section of the MerAn013 grid warrant further work. The north-east portion of the full survey area should be completed to resolve the high readings local to 643,025E 8,137,743N.

A Cretaceous unit was logged in drill-hole BH0467 located 50m to south, indicating that there are Cretaceous units in the area.

7.2.3 **MerAn021**

Refer to Appendix V for maps of the survey results. The EM conductivity recorded by the survey over this area is very low, with the highest response being 2.7, which is substantially lower than the values recorded over the Tristram pipe. Although still quite subdued, the EM response recorded by Ashton Mining over Tristram reached 7.

The MerAn021 survey has not explained the source of the 34 chromite result. FALCON elevation contours show that Tristram pipe is down-slope from chromite anomaly hence this kimberlite cannot be the source.

Recommendation is that the EM grid should be extended to east, and infill south of the MerAn006 survey.

All data resulting from these surveys is submitted in digital format as MLN1154_2015_A_GeologyLog.txt and MLN1154_2015_A_GeophysicalLog.txt.
7.3 **COMPILATION OF GEOPHYSICAL TARGETS**

During the 2014 reporting period, the detailed desktop review of all available data (geophysical, geochemical and indicator mineral results) undertaken by a Consultant Research Manager in Perth was completed. A comprehensive database exists including historic and current heavy mineral samples, drilling data and drill spoil samples, various phases and types of surface geochemistry, airborne geophysics, ground geophysics, and geological mapping. This detailed review was the first to be undertaken since MDL acquired the Mining Lease from Ashton Mining in 2004 - it will be an invaluable tool to facilitate discovery of potential new kimberlites within the Mining Licence and immediate surrounds.

Some 58 targets were identified within the mining lease. **Map 6** shows the distribution across MLN1154 and **Appendix VI** comprises a table describing these anomalies and summarising the geophysical and geochemical properties used to define them. The targets have been prioritised (priority 1 to priority 5) based on these properties, with a higher priority (1) given to those with coincident geophysical and/or geochemical signatures.
8 MINE DEVELOPMENT - 2014

During the year, the Company completed a review of the results of the hydraulic borehole mining (“HBM”) trial completed in September 2013. Following this review, other alternative mining methods were investigated. The methods analysed were chosen on the basis that they could potentially provide a quicker path to restarting mining operations with lower upfront capital costs. Subsequently a full feasibility study (“FS”) was completed on the chosen alternative of mechanical clamshell grab mining situated upon a barge floating on the flooded open pits. Upon completion of the FS preliminary work was conducted in regard to barge design and contractual term sheet negotiations with the mining contractor.

The 2104 development work can be broadly summarised as follows:

- Diagnostic overview of the HBM trial
- Review of alternative mining methods
- Technical assessment of feasibility including geotechnical evaluation
- Development of discounted cash-flow model and financial appraisal of operation
- Preparation of Feasibility Report and associated estimates of Ore Reserves and Mineral Resources
- Contractual term sheet development with mining contractor
- Liaison with design engineers
- Site visit with mining contractor
- Preliminary stability analysis of mining barge by naval architect

8.1 ANALYSIS OF THE 2013 HBM TRIAL

The HBM drilling rig operated for over one month during the December 2013 quarter and, although it achieved success in a number of key areas, production rates required were not achieved. The hydraulic jetting tool that cuts the kimberlite material at depth was proven to effectively cut the weathered kimberlite and was able to produce diamond bearing ore suitable for lifting via the mining rods. The hydraulic lifting system was proven to lift material to the surface of the pit and was able to deliver ore to the shaker screen located on the ground surface adjacent to the pit, albeit not at sufficient production rates.

The processing plant achieved nameplate capacity of 60t per hour through processing ore sourced mainly from historic stockpiles. Production rates experienced from the borehole mining technique require further optimising to guarantee maximum recovery and profitability through mining, and full utilisation of the processing plant capabilities. Given the engineering required to optimise the HBM methodology, it was decided to investigate alternative methods that could potentially provide a quicker path to restarting mining operations with lower upfront capital costs.
8.2 REVIEW OF ALTERNATIVE MINING METHODS

The alternative mining methods investigated were:

- Hydrofraise – a machine with rotating cutters and suction slurry line to recover excavated material. This machinery would be suspended from a crane erected on a barge afloat on the pit lakes.
- Weighted hydraulic clamshell grab or a mechanical clamshell grab (dredging grab) – this machinery would also be suspended from a crane erected on a barge afloat on the pit lakes.
- Large diameter auger drilling and large diameter reverse circulation drilling.

Preliminary costings and submissions from three ground engineering contractors presented the following challenges:

- Heavy hydraulic grabs requiring large cranes and large drill rigs needed for large diameter augers presented very costly mobilisation and demobilisation costs with the potential for access road upgrades (i.e. high capital)
- Large cranes and drill rigs with vehicle masses of 110 to 170 tonnes and tall masts/booms require large barges to provide a stable working platform (i.e. high capital)
- The hydraulic grabs and large diameter augers are designed for diaphragm walls and piles respectively and hence the payloads are small for each cycle, resulting in relatively low production rates per shift (i.e. high $ per tonne)

Mechanical clamshell grabs or dredging grabs however, typically used in marine environments for clearing channels and preparing foundations for marine structures, presented an attractive option. The dredging grabs are similar to the weighted hydraulic grabs adopted for ground improvement however the weight to volume ratio is less requiring less cranage and typically the grab has a mechanical closing mechanism rather than hydraulic.

8.3 FEASIBILITY STUDY

The Company has been working with a dredging contractor to develop a clamshell grab mining technique for mining at Merlin. This mining method has been assessed with the completion of a full feasibility study ("FS"). The FS has estimated a new Probable Ore Reserve based on the mechanical clamshell grab mining methodology.

A summary of the results of the FS, the updated Probable Ore Reserve and Mineral Resource estimate is provided below. For full results of the FS and a detailed description of the Probable Ore Reserve and Mineral Resource estimates please see Merlin Diamond’s announcement to the Australian Stock Exchange ("ASX") dated 30 September 2014 ("FS Report") and titled "Mechanical Clamshell Grab Mining Feasibility Study, Probable Ore Reserve Estimate and Mineral Resource Estimate Update" (also available at www.merlindiamonds.com.au). The FS Report has been
prepared in accordance with the 2012 JORC Code and is based upon documentation prepared by a Competent Person as defined by the JORC Code. The information provided below is a summary of information provided in the FS Report.

8.3.1  FEASIBILITY STUDY HIGHLIGHTS

The Company has completed a Feasibility Study and Ore Reserve Update for extending mining at 8 of the nine existing open pits at the Merlin diamond mine via mechanical clamshell grab mining. It has also updated its Mineral Resource estimate. A summary of these results is provided in the table below:

<table>
<thead>
<tr>
<th>METRIC</th>
<th>RESULT1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Present Value at 8% discount rate</td>
<td>$102.2 million</td>
</tr>
<tr>
<td>Internal Rate of Return</td>
<td>52.7%</td>
</tr>
<tr>
<td>Life of Mine Total Net Cash (undiscounted)</td>
<td>$132.9 million</td>
</tr>
<tr>
<td>Payback Period</td>
<td>4 months</td>
</tr>
<tr>
<td>Maximum Negative Cash Position</td>
<td>$4.23 million</td>
</tr>
<tr>
<td>Probable Ore Reserve</td>
<td>4Mt @ 15cpht for 0.6Mcts</td>
</tr>
<tr>
<td>Life of Mine</td>
<td>11 years</td>
</tr>
<tr>
<td>Indicated Mineral Resource</td>
<td>13.4Mt @ 17cpht for 2.3Mcts</td>
</tr>
<tr>
<td>Inferred Mineral Resource</td>
<td>14.4Mt @ 14cpht for 2.0Mcts</td>
</tr>
</tbody>
</table>

1. Mt = million tonnes, cpht = carats of diamonds per hundred tonnes, Mcts = millions of carats of diamonds.
2. The Indicated Mineral Resource estimate is inclusive of the Probable Ore Reserve estimate. The Probable Ore Reserve is not additional material to the Mineral Resources.

The above Mineral Resource and Ore Reserves estimates are effective from 30 September 2014 and have been reported in accordance with the 2012 JORC Code and are based on documentation prepared by a Competent Person as defined by the JORC Code. The Competent Person compliance statements can be found in the relevant sections below.

8.3.2  PROBABLE ORE RESERVES

The Probable Ore Reserve for all diamond pipes at Merlin is 4.04 million tonnes for an average grade of 15 carats per hundred tonnes representing a total contained 0.61 million carats. These Ore Reserves have been estimated with mechanical clamshell grab mining assumptions and supersede previous Ore Reserve estimates based upon open pit and underground mining assumptions which were conducted in 2011. There are material changes in the 2014 Ore Reserve estimates compared to the 2011 Ore Reserve estimates. For a detailed discussion on the 2014 Ore Reserve estimates and the material changes since 2011 please refer to the FS Report announced to the ASX on 30 September 2014 and also available on the Company's website.

The 2014 Ore Reserve estimate for all 8 kimberlite pipes considered in the FS is tabled below:
TABLE 4: Probable Ore Reserve Summary with +5 DTC Lower Cut-off

<table>
<thead>
<tr>
<th>PIPE</th>
<th>VOLUME (Mbcm)</th>
<th>DENSITY (t/m³)</th>
<th>PROBABLE ORE RESERVE (Mt)</th>
<th>GRADE (cpht)</th>
<th>RESERVE (Mcts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ywain</td>
<td>0.03</td>
<td>2.1</td>
<td>0.06</td>
<td>58</td>
<td>0.03</td>
</tr>
<tr>
<td>Gawain</td>
<td>0.13</td>
<td>2.1</td>
<td>0.27</td>
<td>32</td>
<td>0.08</td>
</tr>
<tr>
<td>Excalibur</td>
<td>0.12</td>
<td>2.0</td>
<td>0.25</td>
<td>31</td>
<td>0.08</td>
</tr>
<tr>
<td>Palomides</td>
<td>0.17</td>
<td>2.3</td>
<td>0.39</td>
<td>17</td>
<td>0.07</td>
</tr>
<tr>
<td>Launfal</td>
<td>0.05</td>
<td>2.4</td>
<td>0.13</td>
<td>14</td>
<td>0.02</td>
</tr>
<tr>
<td>Gareth</td>
<td>0.04</td>
<td>2.1</td>
<td>0.08</td>
<td>19</td>
<td>0.02</td>
</tr>
<tr>
<td>Kaye</td>
<td>0.58</td>
<td>1.8</td>
<td>1.04</td>
<td>12</td>
<td>0.13</td>
</tr>
<tr>
<td>Ector</td>
<td>0.90</td>
<td>2.0</td>
<td>1.83</td>
<td>10</td>
<td>0.19</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2.02</td>
<td>2.0</td>
<td>4.04</td>
<td>15</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Mbcm = million bank cubic metres, t/m³ = tonnes per cubic metre, Mt = million tonnes, cpht = carats of diamonds per hundred tonnes, Mcts = millions of carats of diamonds.

These Ore Reserves are stated as at 30 September 2014 and are defined as ore delivered to the processing plant. This Probable Ore Reserve is not additional material to the Mineral Resource estimates reported below but is included within the Indicated category of the Mineral Resource estimate. Note: rounding of tonnage and carats may result in computational discrepancies.

The information in this report that relates to Ore Reserves is based on information compiled by Dr David Tyrwhitt, a Competent Person who is a Fellow of The Australasian Institute of Mining and Metallurgy. Dr Tyrwhitt is employed by DS Tyrwhitt & Associates and is a Director of Merlin Diamonds Ltd. Dr Tyrwhitt has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken 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’. Dr Tyrwhitt consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.

8.3.3 Indicated and Inferred Mineral Resources

The combined Indicated and Inferred Mineral Resource for all diamond pipes at Merlin is 27.8 million tonnes for an average grade of 16 carats per hundred tonnes representing a total contained 4.35 million carats. This Mineral Resource estimate supersedes previous estimates last updated in 2010. There are material changes in the 2014 Mineral Resource estimate compared to the 2010 Mineral Resource estimates. For a detailed discussion on the 2014 Mineral Resource estimates and the material changes since 2010 please refer to the FS Report announced to the ASX on 30 September 2014 and also available on the Company's website.

The 2014 Mineral Resource estimate is summarised in Table 5 below:
TABLE 5: Mineral Resource Summary 2014 with +5 DTC Lower Cut-off

<table>
<thead>
<tr>
<th>PIPE</th>
<th>INDICATED RESOURCE (Mt)</th>
<th>INFERRED RESOURCE (Mt)</th>
<th>TOTAL RESOURCE (Mt)</th>
<th>GRADE (cpht)</th>
<th>RESOURCE (Mcts)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ywain</td>
<td>0.07</td>
<td>0.07</td>
<td>0.14</td>
<td>60</td>
<td>0.08</td>
</tr>
<tr>
<td>Gawain</td>
<td>0.99</td>
<td>0.60</td>
<td>1.59</td>
<td>31</td>
<td>0.49</td>
</tr>
<tr>
<td>Excalibur</td>
<td>0.35</td>
<td>0.23</td>
<td>0.58</td>
<td>29</td>
<td>0.17</td>
</tr>
<tr>
<td>Launfal/Launfal North</td>
<td>1.46</td>
<td>1.48</td>
<td>2.94</td>
<td>14</td>
<td>0.40</td>
</tr>
<tr>
<td>Palomides/Sacramore</td>
<td>7.24</td>
<td>6.42</td>
<td>13.66</td>
<td>17</td>
<td>2.30</td>
</tr>
<tr>
<td>Tristram</td>
<td>0.00</td>
<td>0.61</td>
<td>0.61</td>
<td>6</td>
<td>0.04</td>
</tr>
<tr>
<td>Kaye</td>
<td>1.11</td>
<td>1.74</td>
<td>2.85</td>
<td>10</td>
<td>0.29</td>
</tr>
<tr>
<td>Ector</td>
<td>2.04</td>
<td>2.81</td>
<td>4.85</td>
<td>9</td>
<td>0.46</td>
</tr>
<tr>
<td>Gareth</td>
<td>0.12</td>
<td>0.06</td>
<td>0.18</td>
<td>18</td>
<td>0.03</td>
</tr>
<tr>
<td>Bedevere</td>
<td>0.40</td>
<td>0.40</td>
<td>0.40</td>
<td>22</td>
<td>0.09</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>13.4</strong></td>
<td><strong>14.4</strong></td>
<td><strong>27.8</strong></td>
<td><strong>16</strong></td>
<td><strong>4.35</strong></td>
</tr>
</tbody>
</table>

1. Resource grade based on previous mining operation recovery using a +0.95mm slotted bottom screen and reported at +5DTC cut-off
2. Resource grade based on bulk sample test-work using a +0.8mm slotted bottom screen and reported at +5DTC cut-off
3. Insufficient data available to determine cut-off grade for Tristram and Bedevere pipes.

Mt = million tonnes, cpht = carats of diamonds per hundred tonnes, Mcts = millions of carats of diamonds.
Rounding of tonnage and carats may result in computational discrepancies.

8.3.4 PRELIMINARY ENGINEERING AND CONTRACTUAL NEGOTIATIONS

Post completion of the feasibility study, Merlin commenced contractual negotiations with the clamshell grab operator (“mining contractor”) and has developed a term sheet which is to form the basis of a mining contract. As part of this process, a site visit was conducted in October 2014 with the mining contractor to further assess the nature of the ore and confirm potential mining rates.

Preliminary design work regarding the barge configuration and gantry layout was also completed in late 2014 to enable stability analysis of the mining barge by a naval architect.
9 EXPENDITURE STATEMENT

Expenditure for the reporting period amounted to $2,059,651.53 as per the breakdown in the expenditure report for the 2014 reporting period. This includes expenditure attributed to the mine development, including the feasibility study.

10 PROPOSED EXPENDITURE AND WORK PROGRAM

The 2015 exploration program has been planned, but funding is dependent on the success of the company’s capital-raising, which is currently underway.

Exploration activities proposed for the 2015 field season include:

- Further on-ground work to follow up results from sampling program targeting the Cretaceous boundary
- Processing and results for the remaining 9 loam samples
- EM34-3 surveys over priority geophysical anomalies with coincident signatures identified from 2014 assessment of all geophysical data
- Drill program to test targets identified from 2013, 2014, and 2015 EM34-3 surveys

During 2015, the Company will continue its evaluation of potential alternative mining techniques. A 4-week mining trial will be undertaken to test the mechanical clamshell grab methodology as proposed in the 2014 feasibility study.
11 REFERENCES


- Pietsch, BA; Rawlings DJ; Creaser, PM; Kruse, PD; Ahmad, M; Ferenczi, PA ; Findhammer, TLR 1991. *Bauhinia Downs 1:250,000 Geological Series Explanatory Notes*. Northern Territory Geological Survey.


**LEGEND**

- loam samples - 72 sites
  results pending for 9 samples
- stream gravel samples - 38 sites

- EM34-3 grids completed in 2014
- Geophysical targets identified prioritised based on coincident geophysical anomalies
MERLIN DIAMONDS LIMITED
A.B.N. 86 009 153 119

COMPILED
SCALE
DATE
DRAWN
TITLE

UNIVERSAL TRAVERSE MERCATOR PROJECTION
Map Grid Australia Zone 53 (GDA94)

SCALE - 1 : 30,000

Map 6: A3

LEGEND

Merlin Mining Lease MLN1154
known kimberlite pipe
Merlin Mining Lease MLN1154
elevation contours
150m RL
creeks

Detailed EM grids
Completed
2010 EM34-3 grids
2013 EM34-3 grids
grids completed in 2014
MerAn010 + MerAn013 + MerAn021

2014 Geophysical Targets
Identified from ground 
and airborne geophysical datasets
prioritised based on coincident signatures

Priority 1 - 1 target
Priority 2 - 2 targets
Priority 3 - 23 targets
Priority 4 - 19 targets
Priority 5 - 13 targets

8,140,000 mN
8,134,000 mN
8,136,000 mN
8,138,000 mN
8,142,000 mN

MERLIN DIAMOND PROJECT - MLN1154
Summary of EM34-3 Surveys &
2014 Geophysical Targets