Partial Relinquishment Report

Exploration Licence 10189

23rd July 2002 to 22nd July 2015
Northern Territory, Australia

Holder: Merlin Operations Pty Ltd
Operator: Merlin Diamonds Limited
Reporting Period: 23 July 2002 to 22 July 2015
Sheet Reference: Bauhinia Downs 1:250,000 (SE53-03), Walhallow 1:250,000 (SE53-07)
Due Date: 26 August 2015

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Date: 25 August 2015
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TABLE OF CONTENTS

LIST OF FIGURES .................................................................................................................. ii

SUMMARY ................................................................................................................................. 1

1.0 INTRODUCTION .................................................................................................................. 2

2.0 LOCATION AND ACCESS .................................................................................................. 2

3.0 LICENCE DETAILS ............................................................................................................. 2

4.0 GEOLOGY ............................................................................................................................ 3

5.0 EXPLORATION UNDERTAKEN OVER THE RELINQUISHED AREA .................................. 5

6.0 CONCLUSION .................................................................................................................... 13

LIST OF FIGURES

Figure 1: EL10189 Location Plan .............................................................................................. 2
Figure 2: EL10189 Area Reduction Plan .................................................................................. 3
Figure 3: Location of drill holes and HMA samples collected 2004-2005 .................................... 7
Figure 4: Location of HMA samples and samples subjected to microprobe analysis. ............ 8
Figure 5: Location of HMA standard and mini bulk samples and (U-Th)/He dating samples .... 11
Figure 6: Location of HMA samples collected during 2011-2012 ........................................ 13

LIST OF TABLES

Table 1: Licence details for EL10189 ....................................................................................... 3
Table 2: Detail of drill holes drilled during 2004-2005 ............................................................. 6
Table 3: Details of geochemical samples ................................................................................... 6
Table 4: HMA samples details and results collected during 2004-2005 ............................... 7
Table 5: HMA samples details and results collected during 2005-2006 ............................... 8
Table 6: Samples details analysed by (U-Th)/He dating during 2009-2010 .......................... 10
Table 7: HMA samples details and results collected during 2009-2010 ............................... 10
Table 8: Details of mini bulk samples collected during 2009-2010 and 2010-2011 .............. 11
Table 9: HMA samples details and results collected during 2011-2012 ............................... 12

Appendixes

Appendix A: Drill Logs_2004-2005
Appendix B: Geochemical Data_2004-2005
Appendix C: Microprobe Data_2006-2007
SUMMARY

This annual report outlines exploration activities undertaken by Merlin Operations Pty Ltd (100% subsidiary of Merlin Diamonds Limited) on the relinquished part of the Exploration Licence 10189 between the 23rd July 2002 and the 22nd July 2015.

Exploration Licence 10189 is situated on the Bauhinia Downs (SE53-03 and Wallhallow (SE53-07) 1:250,000 mapsheets, and the Glyde, Lancewood and Surprise 1:100,000 topographic mapsheets in the Batten Region of the Northern Territory. It is located around 100 kilometres south of Borroloola and is accessed via existing unsealed tracks leading east from the Merlin Mine or north from Kiana Station.

Relinquished area of the EL10189 was extensively explored by Merlin and its predecessor companies. Main Exploration target was diamond bearing kimberlite pipe. However, base metal and uranium prospectivity of the tenement was also assessed but no related on-ground work was conducted on the relinquished area. During the tenure Merlin conducted RC and diamond drilling, collection and processing of the HMA loam and stream samples for recovery of diamond and diamond indicator minerals, microprobe analysis of the recovered chromites and other indicator minerals and (U-Th)/He dating of zircons.
1.0 INTRODUCTION
This partial relinquishment report outlines exploration activities undertaken by Merlin Operations Pty Ltd (100% subsidiary of Merlin Diamonds Ltd) on the relinquished portion of the Exploration Licence 10189 between the 23rd July 2002 and the 22nd July 2015.

2.0 LOCATION AND ACCESS
Exploration Licence 10189 is situated on the Bauhinia Downs (SE53-03) and Walhallow (SE53-07) 1:250,000 mapsheets, and the Glyde, Lancewood and Surprise 1:100,000 topographic mapsheets in the Batten Region of the Northern Territory. It is located ~100 km south of Borroloola and is accessed via existing unsealed tracks leading east from the Merlin Mine or north from Kiana Station. A tenement location map is provided as Figure 1.

![Figure 1: EL10189 Location Plan](image)

3.0 LICENCE DETAILS
EL10189 consisted of 231 blocks, and was granted to Ashton Mining Limited (a wholly owned subsidiary of Rio Tinto Limited) on 23rd July 2002 for six years. Striker Resources NL (Striker) acquired a 100% interest in EL 10189 during 2003 and transferred the tenure
to wholly owned subsidiary ‘Bulgurri Diamonds’. In 2005 Striker changed its name to North Australian Diamonds Limited (NAD). NAD applied for renewal of the Licence for 2 years in June 2012 and reduced the Licence from 231 blocks to 64 blocks. In late 2012, NAD was renamed as Merlin Diamonds Limited (MDL). MDL lodged second renewal application accompanied with a request for further reduction in Licence area to 45 blocks in June 2014. Recently, MDL has requested another extension in term for 2 years and submitted 17 blocks for relinquishment, reducing the area held to 28 blocks (Figure 2). Details for EL10189 are outlined in Table 1 below.

Table 1: Licence details for EL10189

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Effective Date</th>
<th>Grant Date</th>
<th>Expire Date</th>
<th>Blocks</th>
<th>Holder</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL10189</td>
<td>Grant</td>
<td>23/07/02</td>
<td>23/07/02</td>
<td>22/07/2017</td>
<td>28</td>
<td>Merlin Operations Pty Ltd</td>
<td>100</td>
</tr>
</tbody>
</table>

![Figure 2: EL10189 Area Reduction Plan](image)

**4.0 GEOLOGY**

EL10189 is located over the northeast margin of the Neoproterozoic Georgina Basin overlying the south east of the Mesoproterozoic McArthur Basin. It lies not far to the north east of the Cretaceous Dunmarra Basin. Neoproterozoic Bukalara Sandstone of the Georgina Basin outcrops over most of the EL. A narrow horst block of Mesoproterozoic...
Tawallah Group and Roper Group traverses the northeast margin of the EL. Cenozoic sands overlie Neoproterozoic sediments in the south. The Merlin kimberlite field is located immediately to the north of the EL.

The NNW-SSE trending Emu Fault Zone is a broad, major fault zone that passes though the EL 10189. Georgina Basin sediments preserved from erosion extends northwards as a broad belt around the fault zone. Numerous faults that parallel to sub parallel the Emu Fault Zone traverse the central and eastern portions of the EL. These faults define the margins of the horst block along the northeast margin of the EL. The NW-SE trending Calvert Fault, which intersects the Emu Fault Zone proximal to the Merlin kimberlite field, passes just to the north of the EL 10189. A number of major and minor faults paralleling to the Calvert Fault pass through EL. One can be interpreted to extend out towards the Abner Range kimberlitic sandstone breccia pipes.

At the regional scale, the geology of EL 10189 is essentially the same as the area to the north that hosts the Merlin kimberlite field. Structures that traverse the Merlin kimberlite field traverse the EL. Within EL 10189, there is excellent potential for repetitions of the regional and local structural configurations that control the location of the Merlin kimberlites.

Regional gravity data shows that the Merlin kimberlite field and the Abner Range kimberlitic breccia pipes are located along either margin (gradient) of a regional north-south trending gravity ridge. The Merlin field is also located over a major NE-SW trending gravity lineament (gradient) that intersects the north-south trending gravity ridge. The regional gravity patterns associated with the Merlin kimberlite field are applicable to EL 10189 as well given the scale of the data. The gravity data is mainly mapping deep-seated Proterozoic basement domains and structure, however, the geological processes that influenced the gravity patterns also influenced the surface geology and geomorphology. It is noticeable that prominent NW-SE trending gravity lineaments broadly parallel the major fault-controlled drainage patterns in the region.

Regional magnetics data shows the Merlin kimberlite field to be located along the eastern margin of the vast deep-seated magnetic high. The eastern margin of the magnetic high is terminated along the NNW-SSE trending Emu Fault Zone. A magnetic lineament associated with the Calvert Fault that intersects the Emu Fault Zone near the Merlin kimberlite field is also evident in the regional data. Traversing the EL 10189 is a number
of NNW-SSE trending magnetic lineaments that parallel the Emu Fault Zone. The patterns suggest potential for repetitions of the regional structural configuration evident for the Merlin kimberlite field.

Kimberlitic intrusions and diatremes in the McArthur Basin region are commonly located proximal to major geophysical domain contacts probably mapping major, deep-seated structures. EL10189 contains much the same regional gravity and magnetic patterns and lineament trends that potentially represent favourable tectono-structural settings that control the locations of kimberlitic intrusions and diatreme breccia pipes in the McArthur Basin.

5.0 EXPLORATION UNDERTAKEN OVER THE RELINQUISHED AREA

Year One – 2002 to 2003

- Licence granted to Ashton Mining on 23rd July 2002.
- Rio Tinto decide to close Merlin Diamond Mine and commencement negotiations to divest surrounding exploration Licences.
- No field work completed by RTE due to divestment of Licence.

Year Two – 2003 to 2004

- Licence transferred to Merlin Diamonds Limited subsidiary Bulgurri Diamonds.
- Heritage clearance undertaken and Mine Management Plan approved.

Year Three – 2004 to 2005

- Four RC drill holes (TND-001 to TND-004) and two diamond drill holes (TND-005 and TND-006) were completed for a total of 628 meters to test geophysical anomaly HUM07. No kimberlite was intersected and based on the intersected geology the anomaly was interpreted to be a sinkhole infilled with Cretaceous sediments. Drill logs are given in Appendix A. Drill holes locations are given in Table 2 and depicted in Figure 3. Unfortunately where about of drill core from this drilling program is unknown as the people who carried out this work are no more with the Company and the only information available about the drilling has already been provided in ‘Striker Resources NL, EL10189-Annual Exploration Report for year 2004-2005’.
Table 2: Detail of drill holes drilled during 2004-2005

- Seven drill spoil samples (04-038-001 to 04-038-007) were collected for recovery of microdiamonds and indicator minerals but were not processed as analytical data from other seven samples (04-038-008 to 04-038-014) collected for geochemical analysis (probed for major and trace elements) was negative for kimberlite geochemistry. Geochemical data is attached as Appendix B. Details of geochemical samples are given below (Table 3).

Table 3: Details of geochemical samples

- A morphological assessment of the alluvial diamonds recovered by Ashton Mining from bulk sampling in 2000 was undertaken to determine whether the diamonds may be shedding from a primary or secondary source. The report concluded that 62% of the alluvial diamonds are considered to be from a primary source of which 43% have not undergone significant travel.

- Of the 13 loam and 6 stream sediments samples collected for heavy mineral analysis (HMA) during 2004-2005, only 2 steam samples (05-018-010 and 05-018-011) were from the relinquished area. Samples details and analytical results are given in Table 4 and samples locations are shown in Figure 3. HMA samples were found to be negative for diagnostic kimberlitic minerals.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Drill Hole</th>
<th>Anomaly</th>
<th>Easting AGD66/53</th>
<th>Northing AGD66/53</th>
<th>Depth From</th>
<th>Depth To</th>
</tr>
</thead>
<tbody>
<tr>
<td>04-038-008</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>04-038-009</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>47</td>
<td>47</td>
</tr>
<tr>
<td>04-038-010</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>71</td>
<td>71</td>
</tr>
<tr>
<td>04-037-011</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>89</td>
<td>89</td>
</tr>
<tr>
<td>04-038-012</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>121</td>
<td>121</td>
</tr>
<tr>
<td>04-037-013</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>143</td>
<td>143</td>
</tr>
<tr>
<td>04-037-014</td>
<td>TND-005</td>
<td>HUM07</td>
<td>647015</td>
<td>8130369</td>
<td>153</td>
<td>153</td>
</tr>
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</table>
Table 4: HMA samples details and results collected during 2004-2005.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Easting AGD66/53</th>
<th>Northing AGD66/53</th>
<th>Sample Result</th>
<th>Diamond</th>
<th>Chromite</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-018-010</td>
<td>Stream gravel</td>
<td>637593</td>
<td>8126366</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
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<tr>
<td>05-018-011</td>
<td>Stream gravel</td>
<td>637070</td>
<td>8125610</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 3: Location of drill holes and HMA samples collected during 2004-2005

Year Four – 2005 to 2006

During 2005-2006 reporting period five stream samples were collected from the relinquished area.

- Four stream samples (05-040-001 to 05-040-004) were collected targeting an area upstream from the Ashton’s 75 macro-diamond site for routine HMA analysis. A sample 05-040-001 collected immediately upstream of the 75 diamonds site reported a nb-rutile and another sample (05-040-003) collected over previously identified geophysical anomaly (TIN10) returned one chromite.
- An additional stream sample 05-050-001 collected from another secondary
tributary upstream but close to the Ashton’s 75 diamond site also returned one chromites. Samples details and analytical results are given in Table 5 and samples locations are shown in Figure 4.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Easting AGD66/53</th>
<th>Northing AGD66/53</th>
<th>Sample Result</th>
<th>Diamond</th>
<th>Chromite</th>
<th>Other Indicator Minerals</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-040-001</td>
<td>Stream gravel</td>
<td>638975</td>
<td>8125090</td>
<td>Positive</td>
<td>0</td>
<td>0</td>
<td>nb-rutile</td>
</tr>
<tr>
<td>05-040-002</td>
<td>Stream gravel</td>
<td>639050</td>
<td>8125520</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>05-040-003</td>
<td>Stream gravel</td>
<td>640645</td>
<td>8126000</td>
<td>Positive</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>05-040-004</td>
<td>Stream gravel</td>
<td>638300</td>
<td>8122950</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>05-050-001</td>
<td>Stream gravel</td>
<td>636759</td>
<td>8123876</td>
<td>Positive</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 5: HMA samples details and results collected during 2005-2006.

![Figure 4](image)

Figure 4: Location of HMA samples and samples subjected to microprobe analysis.

**Year Five – 2006 to 2007**

A large number of recovered diamond indicator mineral grains from current and historical
samples were analysed by scanning electron microprobe to obtain mineral chemistry. A total of fifty-eight mineral grains were probed which included six recovered indicator mineral grains from samples collected from the relinquished area. The aim was to determine whether these indicator minerals are sourced from a primary kimberlite. The location of probed samples from the relinquished area is shown on Figure 4 and mineral chemistry data is included in Appendix C.

**Year Six – 2007 to 2008**
- No exploration work was conducted on the relinquished area during 2007-2008.

**Year Seven – 2008 to 2009**
- No exploration work was conducted on the relinquished area during 2008-2009.

**Year Eight – 2009 to 2010**

Exploration work completed on the relinquished area during year eight included the collection of various stream zircons, loam, stream and a mini bulk samples. Results from the each program are described below.

- Six stream samples (09-012-001 – 09-012-006) were collected in July 2009 (Table 6, Figure 5) and were sent to CSIRO for (U-Th)/He dating on zircons. Ten zircon grains from each sample were analysed. In all samples, majority of the measured individual grain ages are between 350 Ma to 1250 Ma however 3 zircon grains from two samples yielded <50 Ma age. Results indicate the presence of two young zircon grains (ages 42 ± 2 Ma and 46 ± 2 Ma) in 09-012-001 and one young zircon (29 ± 1 Ma) in another sample 09-012-006. Zircons with older ages (350- 1250 Ma) are interpreted to be derived from the outcropping rocks of Cretaceous to Mesoproterozoic age. However, the younger component of zircons with (U-Th)/He ages of <50 Ma has no known source rock of similar age occurring in the area. Preliminary interpretation is that the young (U-Th)/He ages of these zircons have been reset by a recent transient heating event such as wildfire.
In June 2010, a small indicator mineral sampling program on the relinquished area was conducted to identify further targets for a diamond exploration program. Targets were based on positive Ashton stream sediment samples on the NAD tenement and plus recent positive results from sampling on the adjoining Legend tenement to the west. Seven loam and four stream samples were collected from the relinquished area of the tenement and all samples were processed at company’s wholly owned lab in Wangara. Samples details and analytical results are given in Table 7 and samples locations are shown in Figure 5.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Type</th>
<th>Size</th>
<th>Sieved</th>
<th>Easting AGD66/53</th>
<th>Northing AGD66/53</th>
<th>Result</th>
<th>Diamond</th>
<th>Chromite</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-019-001</td>
<td>Stream</td>
<td>40kg</td>
<td>-1mm</td>
<td>647016</td>
<td>8131475</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-002</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>646999</td>
<td>8130995</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-003</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>64506</td>
<td>8131001</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-004</td>
<td>Stream</td>
<td>40kg</td>
<td>-1mm</td>
<td>646083</td>
<td>8131474</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-005</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>646517</td>
<td>8130455</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-006</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>646396</td>
<td>8130044</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-007</td>
<td>Stream</td>
<td>40kg</td>
<td>-1mm</td>
<td>646277</td>
<td>8129531</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-008</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>645499</td>
<td>8129504</td>
<td>Positive</td>
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<td>2</td>
</tr>
<tr>
<td>10-019-011</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>645477</td>
<td>8129985</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-012</td>
<td>Loam</td>
<td>80kg</td>
<td>-1mm</td>
<td>645975</td>
<td>8129992</td>
<td>Negative</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10-019-013</td>
<td>Stream</td>
<td>40kg</td>
<td>-1mm</td>
<td>645668</td>
<td>8130515</td>
<td>Positive</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 7: HMA samples details and results collected during 2009-2010.
One mini bulk sample (10-024-001) consisting of 1000kg stream gravels from Wilkinson Creek was collected from the relinquished area. It was located upstream just south of the Ashton’s 75 diamond site and reported 19 chromites. The result from this sample is given in Table 8.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Type</th>
<th>Size</th>
<th>Sieved</th>
<th>Easting AGD66/53</th>
<th>Northing AGD66/53</th>
<th>Result</th>
<th>Diamond</th>
<th>Chromite</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-024-001</td>
<td>Mini bulk stream</td>
<td>1000kg</td>
<td>-2mm</td>
<td>638808</td>
<td>8126592</td>
<td>Positive</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>11-012-001</td>
<td>Mini bulk stream</td>
<td>1000kg</td>
<td>-2mm</td>
<td>638257</td>
<td>8125443</td>
<td>Positive</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 8: Details of mini bulk samples collected during 2009-2010 and 2010-2011.

During year nine another mini bulk sample (11-012-001) collected from the relinquished area. This sample was located further upstream in Wilkinson Creek to the last year mini bulk sample (10-024-001). The aim was to follow up the positive Year Nine – 2010 to 2011

- During year nine another mini bulk sample (11-012-001) collected from the relinquished area. This sample was located further upstream in Wilkinson Creek to the last year mini bulk sample (10-024-001). The aim was to follow up the positive
results from 10-024-001. Bulk sample was processed at the company laboratory in Perth for heavy mineral analysis. The result was positive yielding 10 chromites (Table 8).

**Year Ten – 2011 to 2012**

- During the 2011-2012, 8 stream gravel samples collected from the relinquished area (Table 9, Figure 6). After processing at the company laboratory in Perth all 8 samples returned positive results, with a total of 73 chromite grains recovered. These samples were collected further upstream along the Wilkinson Creek to follow-up Ashton’s 75 macro-diamonds recovered in historic samples. Each sample comprised 25 bags of -2mm material, which equates to approximately 500kg per sample.

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Sample Type</th>
<th>Easting GDA94/53</th>
<th>Northing GDA94/53</th>
<th>Sample Result</th>
<th>Diamond</th>
<th>Chromite</th>
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</thead>
<tbody>
<tr>
<td>11-012-001</td>
<td>Stream gravel</td>
<td>638242</td>
<td>8125463</td>
<td>Positive</td>
<td>0</td>
<td>10</td>
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<tr>
<td>11-012-003</td>
<td>Stream gravel</td>
<td>641828</td>
<td>8127183</td>
<td>Positive</td>
<td>0</td>
<td>10</td>
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<tr>
<td>11-025-001</td>
<td>Stream gravel</td>
<td>638558</td>
<td>8126413</td>
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<td>10</td>
</tr>
<tr>
<td>11-025-002</td>
<td>Stream gravel</td>
<td>638712</td>
<td>8126198</td>
<td>Positive</td>
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<td>22</td>
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<td>11-025-003</td>
<td>Stream gravel</td>
<td>638117</td>
<td>8126398</td>
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<td>11-025-007</td>
<td>Stream gravel</td>
<td>638251</td>
<td>8125742</td>
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<td>11-025-008</td>
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<td>638507</td>
<td>8125753</td>
<td>Positive</td>
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<td>10</td>
</tr>
<tr>
<td>11-025-009</td>
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*Table 9: HMA samples details and results collected during 2011-2012.*
Merlin Diamonds Ltd

Partial Relinquishment Report EL10189

Figure 6: Location of HMA samples collected during 2011-2012.

Year Eleven – 2012 to 2013
- No exploration work was conducted on the relinquished area during 2012-2013.

Year Twelve – 2013 to 2014
- No exploration work was conducted on the relinquished area during 2013-2014.

Year Eleven – 2014 to 2015
- No exploration work was conducted on the relinquished area during 2014-2015.

6.0 CONCLUSION
Numerous HMA samples from the relinquished area have yielded indicator minerals mainly chromite grains suggesting licence is prospective for hosting kimberlite. However, there is a distinct absence of co-existing macro/micro diamonds within the recovered heavy mineral fractions. Therefore, the source of Ashton’s 75 macro-diamonds and associated chromites remained unknown. Merlin Diamonds considers that the likelihood of finding a kimberlitic source on the relinquished area is low.
9.0 REFERENCES


Appendix A

Drill Logs 2004-2005

(See Attachment)
Appendix B

Geochemical Data 2004-2005

(See Attachment)
### APPENDIX C: TINTAGE PROJECT MINERAL CHEMISTRY

(Microporbe data)

<table>
<thead>
<tr>
<th>Sample</th>
<th>Grain No</th>
<th>Analysis No</th>
<th>Mineral</th>
<th>Code</th>
<th>SiO$_2$</th>
<th>TiO$_2$</th>
<th>Al$_2$O$_3$</th>
<th>Cr$_2$O$_3$</th>
<th>V$_2$O$_5$</th>
<th>FeO</th>
<th>MnO</th>
<th>MgO</th>
<th>CaO</th>
<th>NiO</th>
<th>ZnO</th>
<th>Nb$_2$O$_5$</th>
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