

**Summary Report of an Independent  
Technical Report of Coal Resources for  
Dukwe, Mmamabula West, Mmamabula  
East, Lechana and Tshimoyapula  
Prospecting Assets of African Energy  
Botswana**

Summary Report Prepared for:  
**African Energy Botswana (Pty) Ltd**

Project No.:417673

October 2010



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**Summary of an Independent Technical Report on Coal Resources for Dukwe, Mmamabula West and Mamabula East Prospecting Assets of African Energy Botswana**  
for  
**African Energy Botswana (Pty) Ltd**

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# 1 INTRODUCTION

This document summarizes the Coal Resources and their associated Coal Qualities and Washabilities as contained in the following complete reports, presented to African Energy Botswana (Pty) Ltd in October 2010:

- An Independent Technical Report (NI43-101) on African Energy Botswana's Dukwe Exploration Property;
- An Independent Technical Report (NI43-101) on African Energy Botswana's Mmamabula East and West Exploration Property; and
- An Independent Technical Report (NI43-101) on African Energy Botswana's Lechana and Tshimoyapula Exploration Property.

## 2 DUKWE COAL RESOURCES

**Table 1 In Situ Coal Resources and RAW Qualities for Dukwe Basal Seam**

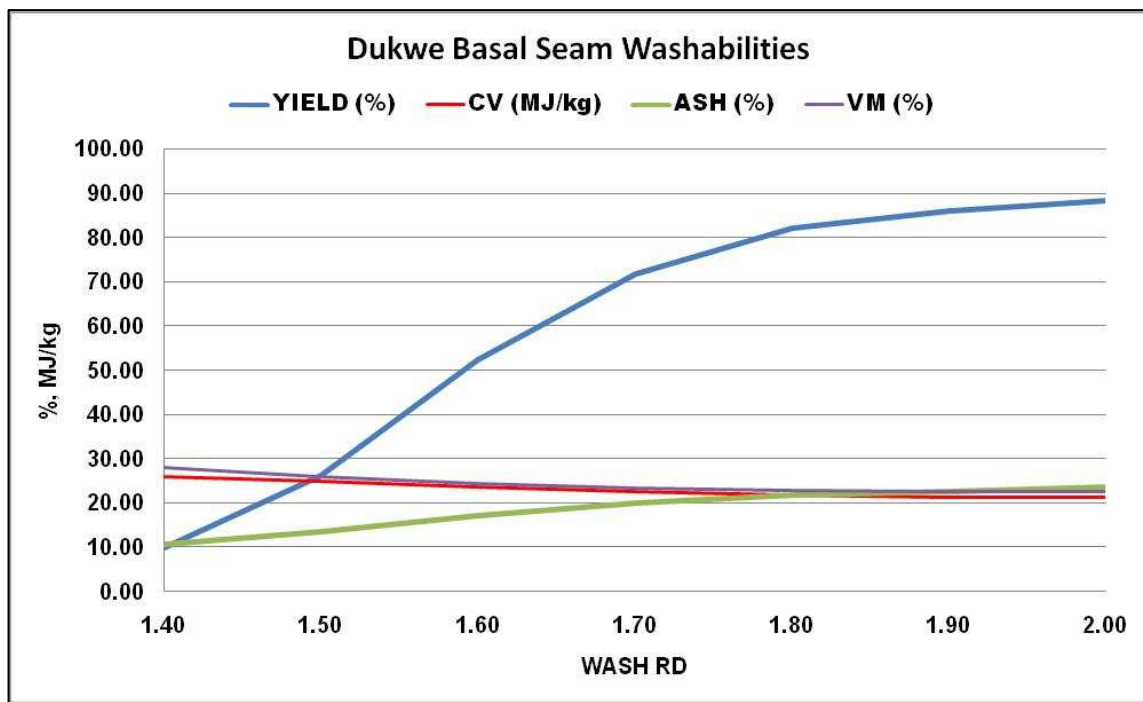
| RESOURCE CATEGORY           | AREA (Mm <sup>2</sup> ) | SEAM THICK (m) | GTIS (Mt)    | GEOL LOSS % | TTIS (Mt)  | COAL QUALITIES - (ADUC) |              |              |             |             |              |
|-----------------------------|-------------------------|----------------|--------------|-------------|------------|-------------------------|--------------|--------------|-------------|-------------|--------------|
|                             |                         |                |              |             |            | ASH (%)                 | CV (MJ/kg)   | FC (%)       | IM (%)      | TS (%)      | VM (%)       |
| <b>Basal Seam Indicated</b> | 91                      | 4.68           | 678          | 25          | 508        | 27.41                   | 19.95        | 43.83        | 6.44        | 0.35        | 22.33        |
| <b>Basal Seam Inferred</b>  | 87                      | 4.24           | 591          | 30          | 414        | 29.20                   | 19.83        | 43.05        | 5.69        | 0.31        | 22.07        |
| <b>TOTAL DUKWE</b>          |                         | <b>4.47</b>    | <b>1,269</b> |             | <b>922</b> | <b>28.24</b>            | <b>19.89</b> | <b>43.47</b> | <b>6.09</b> | <b>0.33</b> | <b>22.21</b> |

Geological Loss = Geological Structural Elements, 5% Indicated, 10% Inferred + 5% Modelling Loss

ADUC = Air Dried and Uncontaminated

**Table 2 In Situ (Wash) Coal Qualities for Dukwe Basal Seam (air dry)**

| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | IM (%) | VM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 9.94      | 26.02      | 10.64   | 7.81   | 28.09  | 53.46  | 0.37   |
| 1.50    | 26.12     | 25.07      | 13.50   | 7.54   | 26.10  | 52.86  | 0.33   |
| 1.60    | 52.36     | 23.73      | 17.07   | 7.18   | 24.42  | 51.33  | 0.29   |
| 1.70    | 71.80     | 22.72      | 19.95   | 6.87   | 23.49  | 49.70  | 0.28   |
| 1.80    | 81.92     | 21.96      | 21.87   | 6.68   | 23.02  | 48.25  | 0.28   |
| 2.00    | 88.23     | 21.39      | 23.69   | 6.55   | 22.75  | 47.01  | 0.29   |



**Figure 2.1 Dukwe Basal Seam Washabilities**

### 3 MMAMABULA WEST COAL RESOURCES

**Table 3 In Situ Coal Resources and RAW Qualities for Mmamabula West**

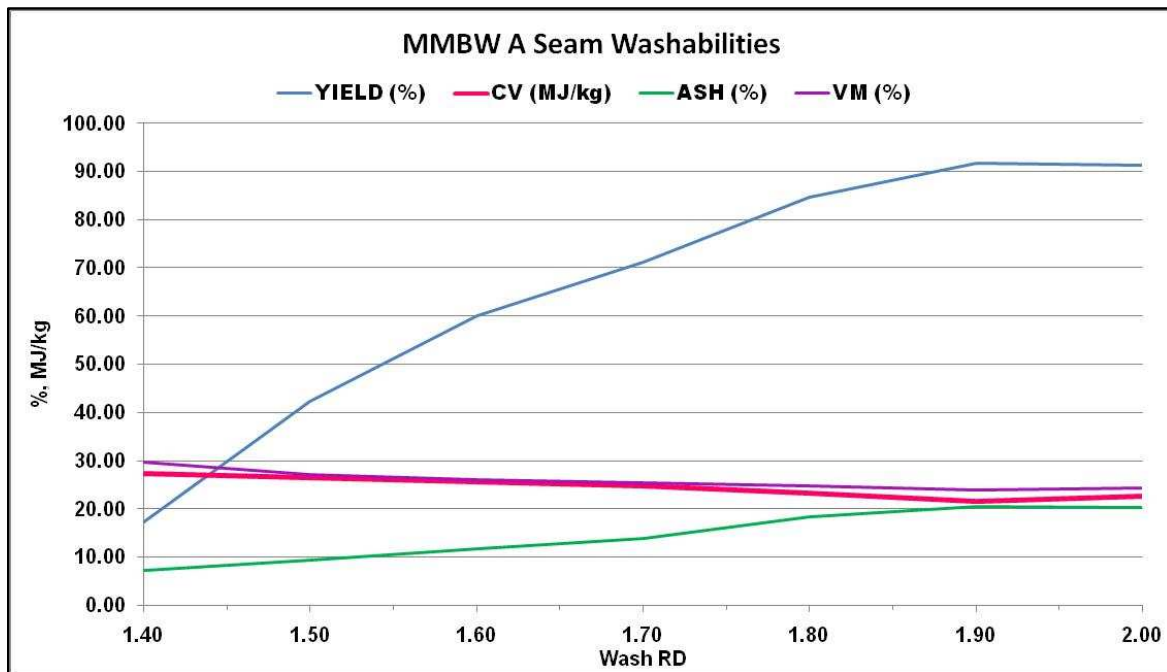
| SEAM NAME                         | AREA (Mm <sup>2</sup> ) | SEAM THICK (m) | GTIS (Mt)    | GEOL LOSS % | TTIS (Mt)    | ASH (%) | COAL QUALITIES - (ADUC) |        |        |        |        |
|-----------------------------------|-------------------------|----------------|--------------|-------------|--------------|---------|-------------------------|--------|--------|--------|--------|
|                                   |                         |                |              |             |              |         | CV (MJ/kg)              | FC (%) | IM (%) | TS (%) | VM (%) |
| <b><u>Indicated Resources</u></b> |                         |                |              |             |              |         |                         |        |        |        |        |
| A Seam                            | 29                      | 4.64           | 213          | 10          | 192          | 22.49   | 22.39                   | 46.33  | 6.90   | 1.23   | 24.28  |
| K Seam                            | 18                      | 5.47           | 154          | 10          | 138          | 27.06   | 20.57                   | 39.56  | 5.86   | 1.45   | 27.53  |
| <b>TOTAL INDICATED</b>            |                         |                | <b>367</b>   |             | <b>330</b>   |         |                         |        |        |        |        |
| <b><u>Inferred Resources</u></b>  |                         |                |              |             |              |         |                         |        |        |        |        |
| A Seam                            | 209                     | 4.32           | 1,426        | 15          | 1,212        | 24.51   | 20.14                   | 46.82  | 6.15   | 1.29   | 22.52  |
| K Seam                            | 61                      | 6.35           | 1,611        | 15          | 1,369        | 27.59   | 19.97                   | 39.29  | 5.52   | 1.68   | 27.60  |
| E Seam                            | 65                      | 1.08           | 107          | 15          | 91           | 17.02   | 23.27                   | 49.47  | 5.92   | 1.59   | 27.59  |
| <b>TOTAL INFERRED</b>             |                         |                | <b>3,144</b> |             | <b>2,672</b> |         |                         |        |        |        |        |

NB: Geological Loss = Geological Structural Elements, 5% Indicated, 10% Inferred + 5% Modelling Loss

ADUC = Air Dried Un-Contaminated

**Table 4 In Situ (Wash) Coal Qualities for the Mmamabula West A-Seam (air dry)**

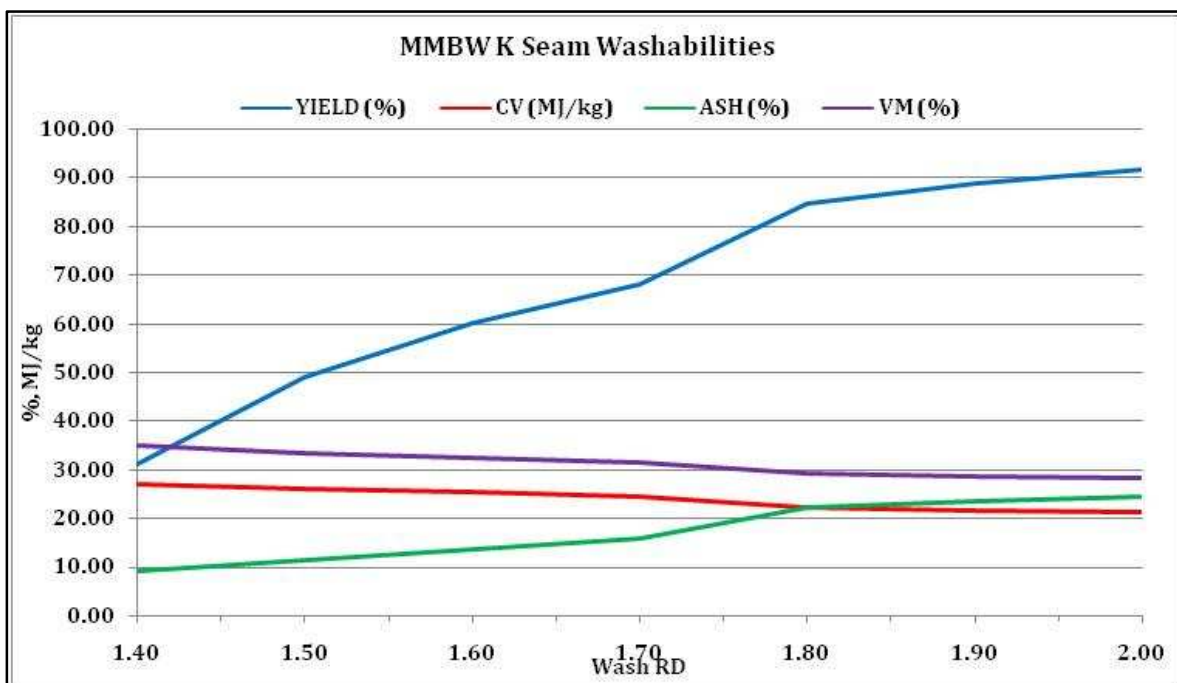
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.4     | 17.24     | 27.32      | 7.20    | 29.62  | 7.73   | 55.45  | 0.75   |
| 1.5     | 42.27     | 26.44      | 9.43    | 27.03  | 7.71   | 55.83  | 0.65   |
| 1.6     | 60.00     | 25.54      | 11.75   | 26.00  | 7.57   | 54.68  | 0.65   |
| 1.7     | 71.14     | 24.70      | 13.92   | 25.47  | 7.38   | 53.23  | 0.66   |
| 1.8     | 84.64     | 23.17      | 18.36   | 24.68  | 7.00   | 49.96  | 1.06   |
| 1.9     | 91.75     | 21.44      | 20.53   | 23.89  | 6.94   | 48.64  | 1.83   |
| 2.0     | 91.41     | 22.43      | 20.26   | 24.31  | 6.82   | 48.60  | 1.12   |



**Figure 3.1 Mmamabula West A-Seam Washabilities**

**Table 5 In Situ (Wash) Coal Qualities for the Mmamabula West K-Seam (air dry)**

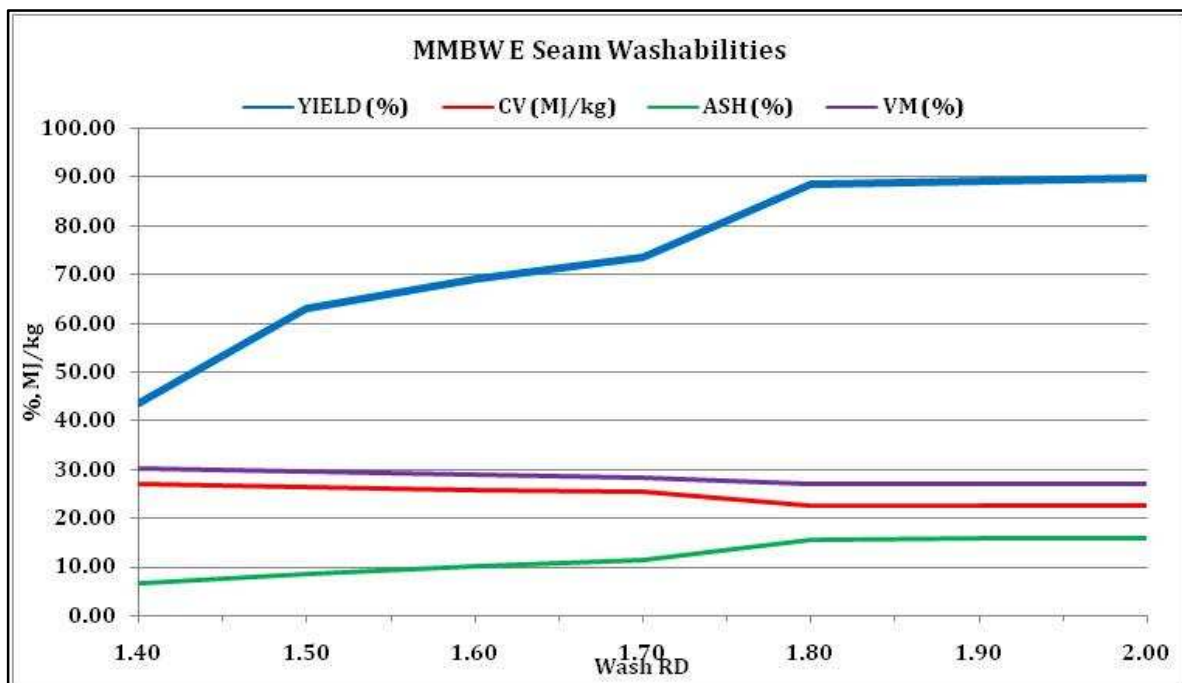
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 31.11     | 27.03      | 9.08    | 34.83  | 6.91   | 49.18  | 0.72   |
| 1.50    | 49.03     | 26.14      | 11.48   | 33.41  | 6.76   | 48.35  | 0.71   |
| 1.60    | 60.04     | 25.33      | 13.69   | 32.34  | 6.62   | 47.35  | 0.70   |
| 1.70    | 68.04     | 24.52      | 15.84   | 31.41  | 6.47   | 46.28  | 0.73   |
| 1.80    | 84.69     | 22.25      | 22.20   | 29.17  | 6.04   | 42.59  | 1.22   |
| 1.90    | 88.95     | 21.63      | 23.71   | 28.59  | 5.92   | 41.77  | 1.29   |
| 2.00    | 91.70     | 21.33      | 24.54   | 28.33  | 5.87   | 41.27  | 1.32   |



**Figure 3.2 Mmamabula West K-Seam Washabilities**

**Table 6 In Situ (Wash) Coal Qualities for the Mmamabula West E-Seam (air dry)**

| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 43.44     | 26.96      | 6.63    | 30.07  | 6.53   | 56.77  | 0.61   |
| 1.50    | 63.07     | 26.30      | 8.59    | 29.42  | 6.37   | 55.61  | 0.62   |
| 1.60    | 68.93     | 25.83      | 9.93    | 28.72  | 6.28   | 55.07  | 0.63   |
| 1.70    | 73.43     | 25.39      | 11.25   | 28.29  | 6.19   | 54.27  | 0.65   |
| 1.80    | 88.65     | 22.64      | 15.38   | 26.94  | 4.81   | 52.86  | 1.16   |
| 1.90    | 89.15     | 22.62      | 15.62   | 26.91  | 4.81   | 52.66  | 1.12   |
| 2.00    | 89.79     | 22.58      | 15.73   | 26.88  | 4.80   | 52.59  | 1.12   |



**Figure 3.3 Mmamabula West E-Seam Washabilities**

## 4 MMAMABULA EAST COAL RESOURCES

**Table 7 In Situ Coal Resources and RAW Qualities for Mmamabula East**

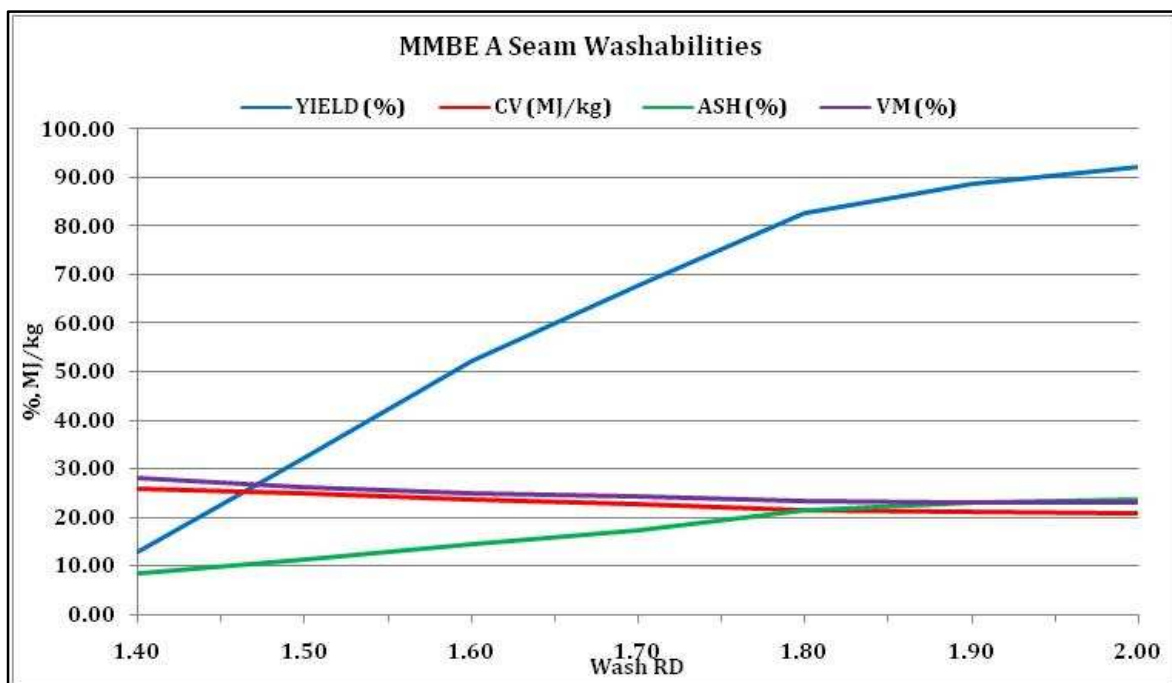
| SEAM NAME                         | AREA (Mm <sup>2</sup> ) | SEAM THICK (m) | GTIS (Mt)    | GEOL LOSS % | TTIS (Mt)    | ASH (%) | COAL QUALITIES - (ADUC) |        |        |        |        |
|-----------------------------------|-------------------------|----------------|--------------|-------------|--------------|---------|-------------------------|--------|--------|--------|--------|
|                                   |                         |                |              |             |              |         | CV (MJ/kg)              | FC (%) | IM (%) | TS (%) | VM (%) |
| <b><u>Indicated Resources</u></b> |                         |                |              |             |              |         |                         |        |        |        |        |
| A Seam                            | 23                      | 3.84           | 149          | 10          | 134          | 25.40   | 20.48                   | 44.91  | 6.92   | 1.07   | 22.77  |
| K Seam                            | 11                      | 4.26           | 82           | 10          | 74           | 29.15   | 19.36                   | 39.01  | 6.22   | 1.95   | 25.62  |
| E Seam                            | 9                       | 2.47           | 39           | 10          | 35           | 30.99   | 18.94                   | 40.03  | 5.36   | 1.54   | 23.62  |
| <b>TOTAL INDICATED</b>            |                         |                | <b>270</b>   |             | <b>243</b>   |         |                         |        |        |        |        |
| <b><u>Inferred Resources</u></b>  |                         |                |              |             |              |         |                         |        |        |        |        |
| A Seam                            | 186                     | 3.29           | 1,008        | 15          | 857          | 28.17   | 19.33                   | 43.67  | 5.98   | 1.27   | 22.18  |
| K Seam                            | 118                     | 3.46           | 667          | 15          | 567          | 28.10   | 19.58                   | 39.67  | 5.66   | 1.96   | 26.58  |
| E Seam                            | 204                     | 2.43           | 817          | 15          | 695          | 26.31   | 19.17                   | 40.86  | 6.55   | 1.50   | 26.28  |
| <b>TOTAL INFERRED</b>             |                         |                | <b>2,493</b> |             | <b>2,119</b> |         |                         |        |        |        |        |

NB: Geological Loss = Geological Structural Elements, 5% Indicated, 10% Inferred + 5% Modelling Loss

ADUC = Air Dried Un-Contaminated

**Table 8 In Situ (Wash) Coal Qualities for the Mmamabula East A-Seam (air dry)**

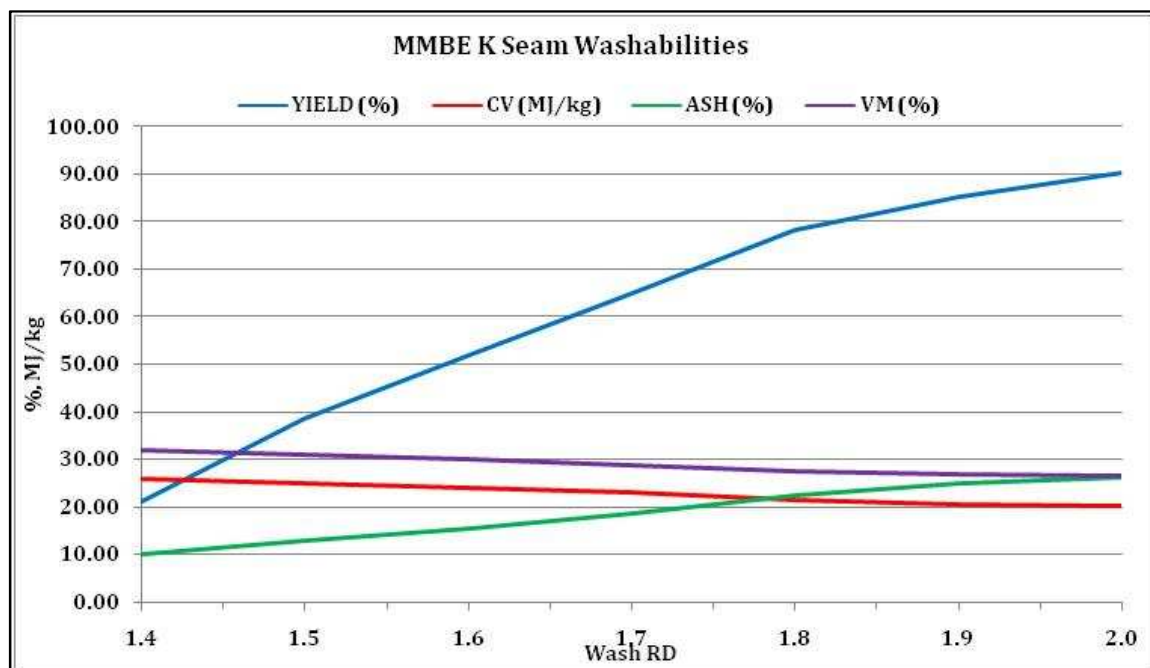
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 12.82     | 26.03      | 8.58    | 28.12  | 8.36   | 54.94  | 0.61   |
| 1.50    | 32.09     | 24.96      | 11.35   | 26.31  | 8.30   | 54.03  | 0.46   |
| 1.60    | 52.22     | 23.83      | 14.46   | 25.03  | 8.16   | 52.35  | 0.46   |
| 1.70    | 67.93     | 22.78      | 17.44   | 24.30  | 7.92   | 50.34  | 0.43   |
| 1.80    | 82.84     | 21.52      | 21.33   | 23.53  | 7.57   | 47.56  | 0.73   |
| 1.90    | 88.93     | 21.02      | 22.89   | 23.22  | 7.40   | 46.49  | 0.84   |
| 2.00    | 92.36     | 20.77      | 23.66   | 23.07  | 7.31   | 45.96  | 0.89   |



**Figure 4.1 Mmamabula East A-Seam Washabilities**

**Table 9 In Situ (Wash) Coal Qualities for the Mmamabula East K-Seam (air dry)**

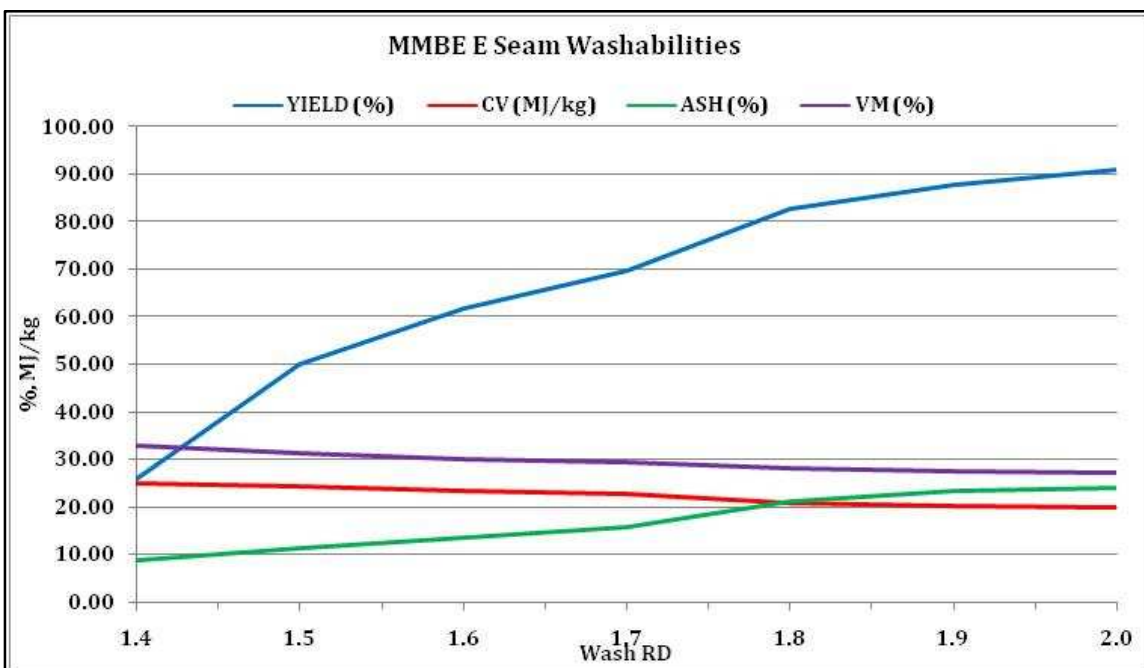
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.4     | 21.06     | 25.95      | 10.16   | 32.14  | 7.51   | 50.20  | 0.94   |
| 1.5     | 38.53     | 24.93      | 12.87   | 31.21  | 7.37   | 48.55  | 0.91   |
| 1.6     | 51.75     | 24.04      | 15.42   | 30.18  | 7.18   | 47.22  | 0.86   |
| 1.7     | 64.88     | 22.95      | 18.54   | 29.01  | 6.97   | 45.47  | 0.89   |
| 1.8     | 78.21     | 21.57      | 22.38   | 27.68  | 6.63   | 43.31  | 1.23   |
| 1.9     | 85.27     | 20.72      | 24.87   | 26.93  | 6.41   | 41.80  | 1.32   |
| 2       | 90.25     | 20.26      | 26.20   | 26.58  | 6.29   | 40.94  | 1.34   |



**Figure 4.2 Mmamabula East K-Seam Washabilities**

**Table 10 In Situ (Wash) Coal Qualities for the Mmamabula East E-Seam (air dry)**

| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 26.01     | 25.12      | 8.74    | 33.03  | 8.14   | 50.08  | 0.55   |
| 1.50    | 49.93     | 24.37      | 11.27   | 31.33  | 7.84   | 49.56  | 0.57   |
| 1.60    | 61.65     | 23.57      | 13.66   | 30.22  | 7.64   | 48.49  | 0.58   |
| 1.70    | 69.63     | 22.89      | 15.64   | 29.46  | 7.45   | 47.46  | 0.59   |
| 1.80    | 82.59     | 21.01      | 21.14   | 28.08  | 6.96   | 43.82  | 1.15   |
| 1.90    | 87.87     | 20.29      | 23.22   | 27.46  | 6.71   | 42.60  | 1.49   |
| 2.00    | 90.96     | 20.03      | 23.98   | 27.25  | 6.64   | 42.13  | 1.56   |



**Figure 4.3 Mmamabula East E-Seam Washabilities**

## 5 Lechana Coal Resources

Table 11 In Situ Coal Resources and RAW Qualities for Lechana

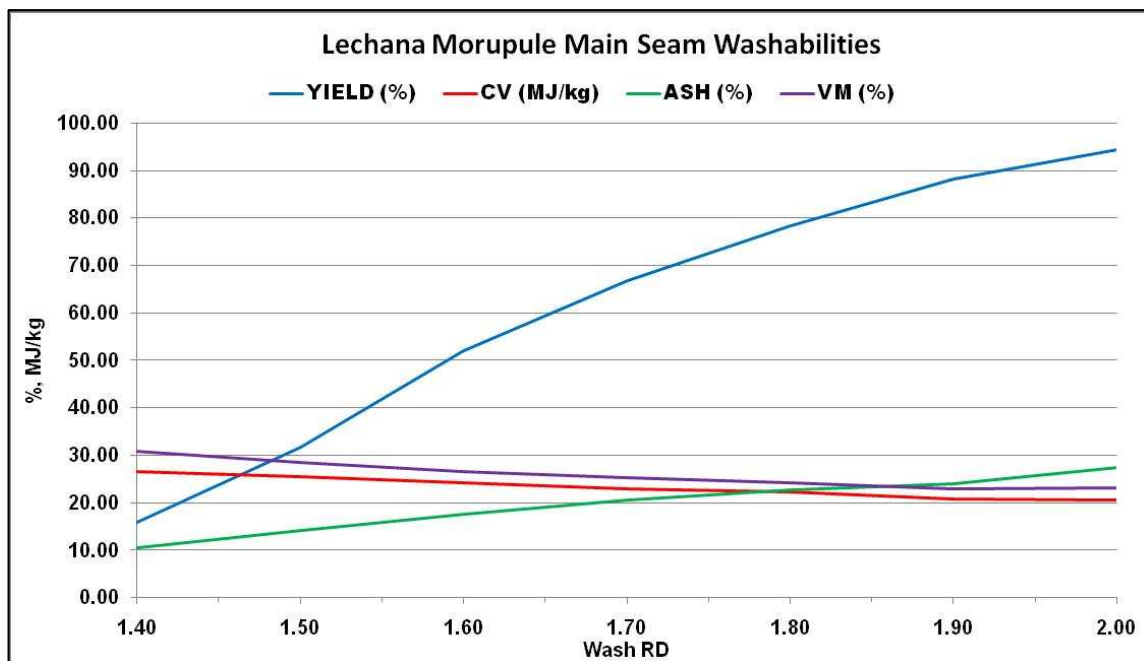
| RESOURCE CATEGORY          | AREA (m <sup>2</sup> ) | SEAM THICK (m) | GTIS (Mt)  | GEOL LOSS % | TTIS (Mt)  | ASH (%) | CV (MJ/kg) | COAL QUALITIES - (ADUC) |        |        |        |
|----------------------------|------------------------|----------------|------------|-------------|------------|---------|------------|-------------------------|--------|--------|--------|
|                            |                        |                |            |             |            |         |            | FC (%)                  | IM (%) | TS (%) | VM (%) |
| <b>Indicated Resources</b> |                        |                |            |             |            |         |            |                         |        |        |        |
| Morupule Main Seam         | 11                     | 2.43           | 44         | 10          | 40         | 27.85   | 18.59      | 39.47                   | 4.73   | 1.84   | 21.66  |
| Taukome Bright             | 18                     | 2.12           | 69         | 10          | 63         | 30.64   | 19.73      | 36.94                   | 4.65   | 2.65   | 27.77  |
| <b>TOTAL INDICATED</b>     | <b>29</b>              |                | <b>113</b> |             | <b>103</b> |         |            |                         |        |        |        |
| <b>Inferred Resources</b>  |                        |                |            |             |            |         |            |                         |        |        |        |
| Morupule Main Seam         | 62                     | 2.96           | 302        | 15          | 257        | 31.33   | 17.34      | 43.73                   | 4.33   | 1.72   | 20.61  |
| Taukome Bright             | 176                    | 1.97           | 553        | 15          | 470        | 34.95   | 18.16      | 34.41                   | 4.40   | 2.50   | 26.24  |
| <b>TOTAL INFERRED</b>      | <b>238</b>             |                | <b>855</b> |             | <b>727</b> |         |            |                         |        |        |        |

Geological Loss = Geological Structural Elements, 5% Indicated, 10% Inferred + 5% Modelling Loss

ADUC = Air Dried Un-Contaminated

**Table 12 In Situ (Wash) Coal Qualities for Lechana Morupule Main Seam (air dry)**

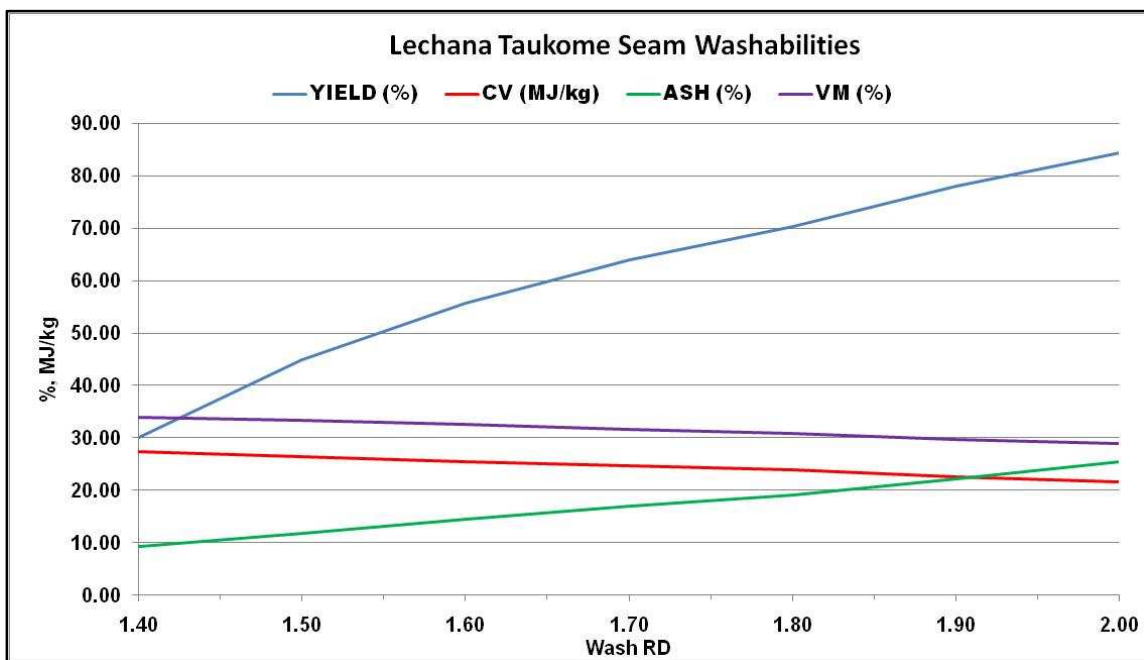
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 15.85     | 26.45      | 10.38   | 30.69  | 6.57   | 52.36  | 1.02   |
| 1.50    | 31.66     | 25.33      | 13.98   | 28.31  | 6.03   | 51.68  | 0.87   |
| 1.60    | 51.92     | 24.04      | 17.46   | 26.40  | 5.64   | 50.51  | 0.76   |
| 1.70    | 66.76     | 22.97      | 20.48   | 25.12  | 5.42   | 48.99  | 0.75   |
| 1.80    | 78.33     | 22.15      | 22.80   | 24.25  | 5.26   | 47.69  | 0.77   |
| 1.90    | 88.08     | 20.66      | 23.97   | 22.88  | 4.94   | 48.22  | 1.00   |
| 2.00    | 94.38     | 20.54      | 27.45   | 23.09  | 4.92   | 44.54  | 1.30   |



**Figure 5.1 Lechana Morupule Main Seam Washabilities**

**Table 13 In Situ (Wash) Coal Qualities for Lechana Taukome Seam (air dry)**

| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 30.16     | 27.47      | 9.36    | 34.05  | 5.96   | 50.62  | 1.03   |
| 1.50    | 45.02     | 26.53      | 11.92   | 33.38  | 5.74   | 48.96  | 1.09   |
| 1.60    | 55.78     | 25.61      | 14.48   | 32.62  | 5.54   | 47.36  | 1.08   |
| 1.70    | 63.93     | 24.73      | 16.97   | 31.78  | 5.35   | 45.89  | 1.11   |
| 1.80    | 70.30     | 23.92      | 19.17   | 31.00  | 5.20   | 44.63  | 1.18   |
| 1.90    | 78.07     | 22.70      | 22.27   | 29.88  | 4.98   | 42.87  | 1.29   |
| 2.00    | 84.36     | 21.70      | 25.49   | 29.05  | 4.80   | 40.66  | 1.44   |



**Figure 5.2 Lechana Taukome Seam Washabilities**

## 6 Tshimoyapula Coal Resources

**Table 14 In Situ Coal Resources and RAW Qualities for Tshimoyapula**

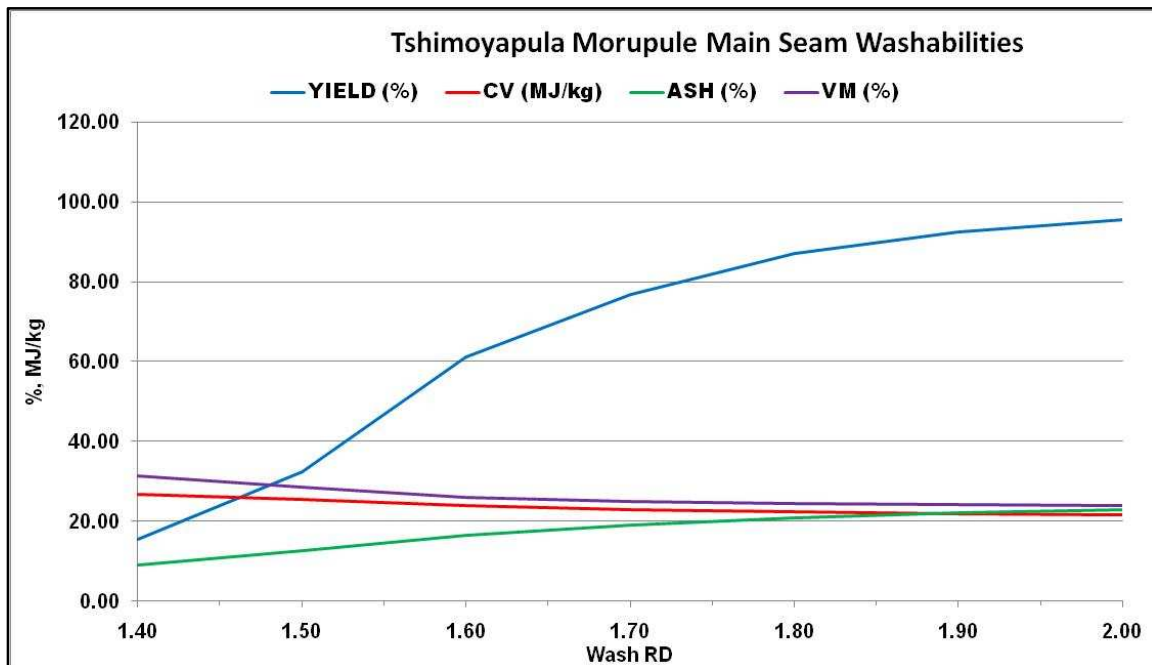
| RESOURCE<br>CATEGORY      | AREA (m <sup>2</sup> ) | SEAM<br>THICK<br>(m) | GTIS<br>(Mt) | GEOL<br>LOSS% | TTIS<br>(Mt) | ASH<br>(%) | CV<br>(MJ/kg) | COAL QUALITIES - (ADUC) |           |           |           |
|---------------------------|------------------------|----------------------|--------------|---------------|--------------|------------|---------------|-------------------------|-----------|-----------|-----------|
|                           |                        |                      |              |               |              |            |               | FC<br>(%)               | IM<br>(%) | TS<br>(%) | VM<br>(%) |
| <b>Inferred Resources</b> |                        |                      |              |               |              |            |               |                         |           |           |           |
| Morupule Main Seam        | 167                    | 2.81                 | 776          | 15            | 660          | 25.09      | 21.00         | 46.74                   | 4.70      | 2.22      | 23.47     |
| Taukome Bright            | 175                    | 2.13                 | 605          | 15            | 514          | 34.31      | 19.29         | 40.05                   | 3.59      | 2.36      | 22.05     |
| <b>TOTAL INFERRED</b>     | <b>341</b>             |                      | <b>1,382</b> |               | <b>1,174</b> |            |               |                         |           |           |           |

Geological Loss = Geological Structural Elements, 5% Indicated, 10% Inferred + 5% Modelling Loss

ADUC = Air Dried Un-Contaminated

**Table 15 In Situ (Wash) Coal Qualities for Tshimoyapula Morupule Main Seam (air dry)**

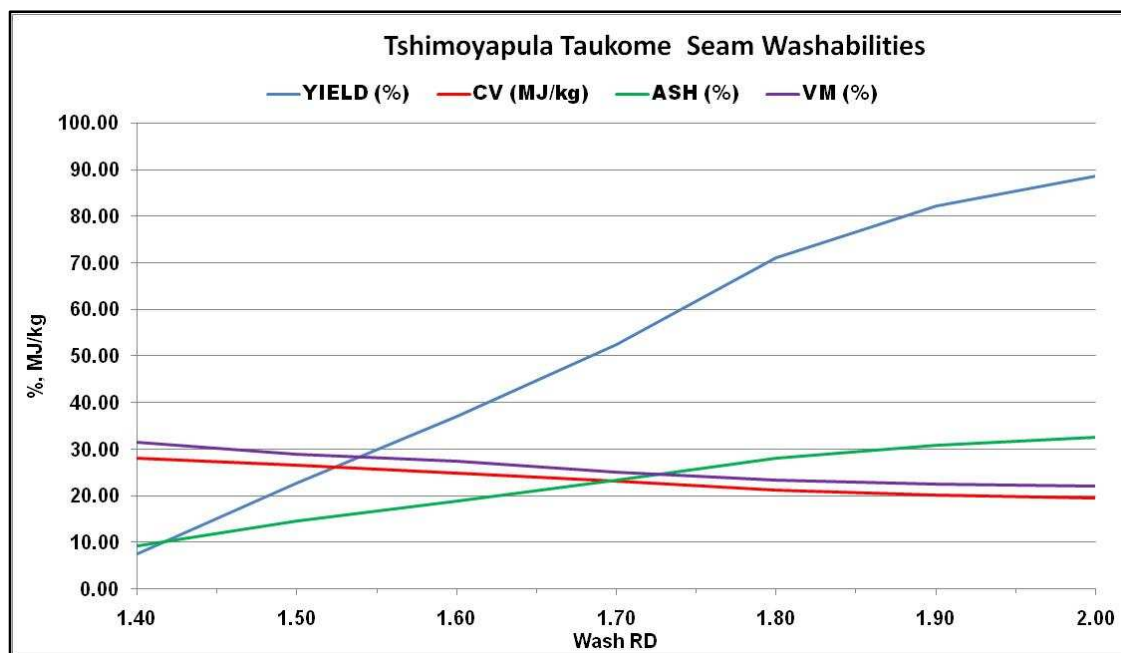
| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 15.38     | 26.89      | 8.98    | 31.33  | 6.51   | 53.18  | 0.70   |
| 1.50    | 32.35     | 25.55      | 12.65   | 28.40  | 5.92   | 52.99  | 0.68   |
| 1.60    | 61.31     | 24.08      | 16.56   | 25.84  | 5.34   | 52.26  | 0.56   |
| 1.70    | 76.97     | 23.17      | 19.04   | 24.84  | 5.23   | 50.89  | 0.56   |
| 1.80    | 87.20     | 22.49      | 20.90   | 24.28  | 5.16   | 49.66  | 0.67   |
| 1.90    | 92.52     | 22.05      | 22.12   | 24.03  | 5.08   | 48.77  | 0.83   |
| 2.00    | 95.66     | 21.75      | 22.97   | 23.88  | 5.02   | 48.13  | 0.97   |



**Figure 6.1 Tshimoyapula Morupule Main Seam Washabilities**

**Table 16 In Situ (Wash) Coal Qualities for Tshimoyapula Taukome Seam (air dry)**

| WASH RD | YIELD (%) | CV (MJ/kg) | ASH (%) | VM (%) | IM (%) | FC (%) | TS (%) |
|---------|-----------|------------|---------|--------|--------|--------|--------|
| 1.40    | 7.58      | 28.13      | 9.23    | 31.47  | 5.02   | 54.29  | 0.68   |
| 1.50    | 22.79     | 26.52      | 14.53   | 28.93  | 4.29   | 35.70  | 0.66   |
| 1.60    | 37.17     | 24.92      | 18.94   | 27.40  | 4.13   | 35.64  | 0.71   |
| 1.70    | 52.44     | 23.28      | 23.45   | 25.18  | 4.04   | 34.66  | 0.70   |
| 1.80    | 71.23     | 21.34      | 28.13   | 23.31  | 4.13   | 34.32  | 0.67   |
| 1.90    | 82.22     | 20.20      | 30.94   | 22.48  | 4.11   | 34.63  | 0.67   |
| 2.00    | 88.68     | 19.51      | 32.71   | 22.09  | 4.06   | 35.06  | 0.69   |



**Figure 6.2 Tshimoyapula Taukome Seam Washabilities**

## 7 Concluding Remarks

SRK wishes to thank African Energy Botswana (Pty) Ltd for appointing us to compile an Independent Technical Report of Coal Resources for Dukwe, Mmamabula East, Mmamabula West, Lechana and Tshimoyapula Prospecting Assets.

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Yours sincerely,



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