



**Office of the Chief Executive**  
**Assurance and Forensic Department**  
Contracted University of Fort Hare to execute this project

---



**Measurement and Verification**

**Project Name: Union Mine**

**Project Number: 2010093**

**Report Type: Performance Assessment Report 1**

**Reporting Period: 01 March 2013 – 31 March 2013**

<b>Compiled by:</b>	 ..... M Simon M&V Team member University of Fort Hare	<b>Date:</b> 10 Apr 2013
<b>Authorised by:</b>	 ..... EL Meyer M&V Team leader University of Fort Hare	<b>Date:</b> 10 Apr 2013
<b>Accepted by:</b>	..... David Bekink National Power Contractors ESCO	<b>Date:</b> .....
<b>Submitted to:</b>	..... Office of the Chief Executive Assurance and Forensic Department Eskom	<b>Date:</b> .....

**Report Issue Date: 11 APRIL 2013**  
**Report Number: PM/M&V/UFH- 12/13 -100**  
**Revision Number: v1r0**

COPYRIGHT IN THIS REPORT IS RESERVED. NO PUBLICATION OR DISSEMINATION OF ITS WORK IS ALLOWED WITHOUT WRITTEN PERMISSION

## 1 Monthly savings report: March 2013

### 1.1 Project information

**Project name:** Union Mine Composite Fibre

**Project number:** 2010093

**Project Type:** Industrial Energy Efficiency

**Report Compiled by:** M Simon

**Email:** [msimon@ufh.ac.za](mailto:msimon@ufh.ac.za)

**Tel:** 040 602 2354

**Report period:** March 2013

**Date of completion:** March 2013

**Intended Impact:** N/A

### 1. Executive Summary

The first performance assessment of the Union Mine Composite for the period of March 2013 resulted in an average demand impact of **0.683 MW** and the energy consumption was **508.994 MWh**.

The performance tracking of Union Mine Composite Project (EE) for the period of 14 February 2013 – 31 March 2013 resulted in an average weekday demand impact of **0.683 MW** during the weekday evening peak period of Eskom. The contracted demand impact for the same period is **0.486 MW**. The impact on the energy consumption for 14 February 2013 – 31 March 2013 was **751.771 MWh**.

A summary of the energy and demand impacts for March 2013 (current month) is section 1.2 below. The summary for the energy and demand impacts for March 2010 – 31 March 2013 (ITD) is given in section 2.1 below. The summary of the energy and demand impacts for the YTD (01 April 2012 – 31 March 2013) period is given in section 3.1 below.

### M&V Opinion:

Although the project might seem to performing well, the 2<sup>nd</sup> PA will confirm this after considering all the inputs for adjustments.

# 1 PERFORMANCE ASSESSMENT

## 1.1 Monthly DSM impact: 1 - 31 July 2011

Table 1							
01 March 2013 - 31 March 2013							
Average Demand (MW) TOU periods							
Weekday (MW)							
	Morning Off peak	Morning Standard	Morning Peak	Mdday Standard	Evening Peak	Evening Standard	Evening Off-peak
Av. Baseline (MW)	1.648	1.649	1.646	1.648	1.648	1.645	1.647
Av. Actual (MW)	0.966	0.966	0.966	0.965	0.965	0.965	0.965
Av. Impact (MW)	<b>0.682</b>	<b>0.683</b>	<b>0.679</b>	<b>0.683</b>	<b>0.683</b>	<b>0.680</b>	<b>0.683</b>
Saturday (MW)							
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	Sunday Off-peak	
Av. Baseline (MW)	1.646	1.645	1.646	1.644	1.645	1.651	
Av. Actual (MW)	0.965	0.963	0.962	0.960	0.959	0.957	
Av. Impact (MW)	<b>0.680</b>	<b>0.681</b>	<b>0.684</b>	<b>0.684</b>	<b>0.686</b>	<b>0.695</b>	
Table 2							
Energy Consumption (MWh) TOU periods							
Monthly Weekday (MWh)							
	Morning Off peak	Morning Standard	Morning Peak	Mdday Standard	Evening Peak	Evening Standard	Evening Off-peak
Baseline (MWh)	207.620	34.635	103.687	276.811	69.230	69.092	69.192
Actual (MWh)	121.678	20.292	60.886	162.126	40.532	40.528	40.523
Combined Impact (MWh)	<b>85.942</b>	<b>14.343</b>	<b>42.801</b>	<b>114.686</b>	<b>28.698</b>	<b>28.564</b>	<b>28.668</b>
Monthly Saturday (MWh)							
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	Sunday Off-peak	Total Monthly Av. MWh
Baseline (MWh)	57.608	41.117	49.382	16.443	32.899	198.174	1,225.890
Actual (MWh)	33.790	24.085	28.848	9.603	19.186	114.819	716.896
Combined Impact (MWh)	<b>23.817</b>	<b>17.032</b>	<b>20.534</b>	<b>6.841</b>	<b>13.714</b>	<b>83.355</b>	<b>508.994</b>
Table 3							
		Weekday (Rand)		Saturday & Sunday (Rand)		Total	
	Max Demand	Electricity Consumed	Max Demand	Electricity Consumed	Rand		
Baseline	79,336.61	336,455.74	79,242.88	116,889.83	611,925.07		
Actual	46,494.00	34,191.51	46,358.76	68,383.02	195,427.29		
Combined Impact	<b>32,842.61</b>	<b>302,264.23</b>	<b>32,884.12</b>	<b>48,506.81</b>	<b>416,497.77</b>		
Table 4							
Emission values		CO <sub>2</sub>	SO <sub>2</sub>	NO <sub>x</sub>	Particles	Water use	
Energy		kg	kg	kg	kg	l	
MWh		980	4.39	8.10	0.39	1.38	
Baseline	1225.890	1,201,372.271	5,381.657	9,929.710	478.097	1,691.728	
Actual	716.896	702,558.103	3,147.174	5,806.858	279.589	989.317	
Combined Impact	<b>508.994</b>	<b>498,814.169</b>	<b>2,234.484</b>	<b>4,122.852</b>	<b>198.508</b>	<b>702.412</b>	

## 2 Accumulated savings report: 14 February 2013 – 31 March 2013

### 2.1 Accumulated DSM impact: ITD

Table 1 ITD 14 February 2013 - 31 March 2013										
Weekday (MW)										
	Morning Off peak	Morning Standard	Morning Peak	Mdday Standard	Evening Peak	Evening Standard	Evening Off-peak			
Av. Baseline (MW)	1.648	1.649	1.646	1.648	1.648	1.645	1.647			
Av. Actual (MW)	0.966	0.966	0.966	0.965	0.965	0.965	0.965			
Av. Impact (MW)	<b>0.682</b>	<b>0.684</b>	<b>0.679</b>	<b>0.683</b>	<b>0.683</b>	<b>0.680</b>	<b>0.683</b>			
Saturday (MW)						Sunday (MW)				
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	Sunday Off-peak				
Baseline (MW)	1.646	1.645	1.646	1.644	1.645	1.651				
Actual (MW)	0.965	0.963	0.962	0.960	0.959	0.957				
Combined Impact (MW)	<b>0.680</b>	<b>0.681</b>	<b>0.684</b>	<b>0.684</b>	<b>0.686</b>	<b>0.695</b>				
Table 2 Energy Consumption (MWh) TOU periods										
ITD Weekday (MWh)										
	Morning Off peak	Morning Standard	Morning Peak	Midday Standard	Evening Peak	Evening Standard	Evening Off-peak			
Baseline (MWh)	316.373	52.776	158.000	421.808	105.494	105.283	105.435			
Actual (MWh)	185.414	30.921	92.779	247.048	61.763	61.756	61.750			
Combined Impact (MWh)	<b>130.959</b>	<b>21.855</b>	<b>65.220</b>	<b>174.760</b>	<b>43.731</b>	<b>43.526</b>	<b>43.685</b>			
Monthly Saturday (MWh)						Monthly Sunday (MWh)	Total ITD Av. MWh			
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	Sunday Off-peak				
Baseline (MWh)	80.651	57.564	69.135	23.021	46.059	277.444	1,819.041			
Actual (MWh)	50.681	33.719	40.387	13.444	26.860	160.747	1,067.270			
Combined Impact (MWh)	<b>29.970</b>	<b>23.845</b>	<b>28.747</b>	<b>9.577</b>	<b>19.199</b>	<b>116.697</b>	<b>751.771</b>			
Table 3										
Weekday (Rand)		Saturday & Sunday (Rand)		Total						
	Max Demand	Electricity Consumed	Max Demand	Electricity Consumed	Rand					
Baseline	79,336.61	468,112.34	79,242.88	204,932.85	831,624.68					
Actual	46,494.00	274,330.04	46,358.76	120,559.95	487,742.75					
Combined Impact	<b>32,842.61</b>	<b>193,782.30</b>	<b>32,884.12</b>	<b>84,372.90</b>	<b>343,881.93</b>					
Table 4										
Emmission values	CO <sub>2</sub>		SO <sub>2</sub>		NO <sub>x</sub>		Particles		Water use	
	Energy	kg	kg	kg	kg	kg	kg	kg	l	
	MWh	980	4.39	8.10	0.39	1.38				
Baseline	1,819.041	1,782,660.220	7,985.590	14,734.232	709.426	2,510.277				
Actual	1,067.270	1,045,924.832	4,685.316	8,644.889	416.235	1,472.833				
Combined Impact	<b>751.771</b>	<b>736,735.388</b>	<b>3,300.274</b>	<b>6,089.344</b>	<b>293.191</b>	<b>1,037.444</b>				

**3 Accumulated DSM impact: YTD (1 April 2012 – 31 March 2013)**

Table 1	YTD	01 April 2012 - 31 March 2013						
<b>Weekday (MW)</b>								
	Morning Off peak	Morning Standard	Morning Peak	Mdday Standard	Evening Peak	Evening Standard	Evening Off-peak	
<b>Baseline (MW)</b>	0.275	0.275	0.274	0.275	0.275	0.274	0.275	
<b>Actual (MW)</b>	0.161	0.161	0.161	0.161	0.161	0.161	0.161	
<b>Combined Impact (MW)</b>	<b>0.114</b>	<b>0.114</b>	<b>0.113</b>	<b>0.114</b>	<b>0.114</b>	<b>0.113</b>	<b>0.114</b>	
<b>Saturday (MW)</b>								
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	<b>Sunday (MW)</b>		
<b>Baseline (MW)</b>	0.274	0.274	0.274	0.274	0.274	0.275		
<b>Actual (MW)</b>	0.161	0.161	0.160	0.160	0.160	0.159		
<b>Combined Impact (MW)</b>	<b>0.113</b>	<b>0.114</b>	<b>0.114</b>	<b>0.114</b>	<b>0.114</b>	<b>0.116</b>		
<b>Table 2 Energy Consumption (MWh) TOU periods</b>								
<b>YTD Weekday (MWh)</b>								
	Morning Off peak	Morning Standard	Morning Peak	Mdday Standard	Evening Peak	Evening Standard	Evening Off-peak	
<b>Baseline (MWh)</b>	316.373	52.776	158.000	421.808	105.494	105.283	105.435	
<b>Actual (MWh)</b>	185.414	30.921	92.779	247.048	61.763	61.756	61.750	
<b>Combined Impact (MWh)</b>	<b>130.959</b>	<b>21.855</b>	<b>65.220</b>	<b>174.760</b>	<b>43.731</b>	<b>43.526</b>	<b>43.685</b>	
<b>Monthly Saturday (MWh)</b>							<b>Monthly Sunday (MWh)</b>	<b>Total YTD Av. MWh</b>
	Morning Off peak	Morning Standard	Midday off peak	Evening Standard	Evening Off-peak	Sunday Off-peak		
<b>Baseline (MWh)</b>	80.651	57.564	69.135	23.021	46.059	277.444	1,819.041	
<b>Actual (MWh)</b>	50.681	33.719	40.387	13.444	26.860	160.747	1,067.270	
<b>Combined Impact (MWh)</b>	<b>29.970</b>	<b>23.845</b>	<b>28.747</b>	<b>9.577</b>	<b>19.199</b>	<b>116.697</b>	<b>751.771</b>	
<b>Table 3</b>								
<b>Weekday (Rand)</b>		<b>Saturday &amp; Sunday (Rand)</b>			<b>Total</b>			
	Max Demand	Electricity Consu	Max Demand	Electricity Consum	Rand			
<b>Baseline</b>	79,336.61	468,112.34	79,242.88	204,932.85	831,624.68			
<b>Actual</b>	46,494.00	274,330.04	46,358.76	120,559.95	487,742.75			
<b>Combined Impact</b>	<b>32,842.61</b>	<b>193,782.30</b>	<b>32,884.12</b>	<b>84,372.90</b>	<b>343,881.93</b>			
<b>Table 4</b>								
Emission values		CO <sub>2</sub>	SO <sub>2</sub>	NO <sub>x</sub>	Particles	Water use		
	Energy	kg	kg	kg	kg	l		
	MWh	980	4.39	8.10	0.39	1.38		
<b>Baseline</b>	1,819.041	1,782,660.220	7,985.590	14,734.232	709.426	2,510.277		
<b>Actual</b>	1,067.270	1,045,924.832	4,685.316	8,644.889	416.235	1,472.833		
<b>Combined Impact</b>	<b>751.771</b>	<b>736,735.388</b>	<b>3,300.274</b>	<b>6,089.344</b>	<b>293.191</b>	<b>1,037.444</b>		

## 7 Comments

The performance of this project will tracked again in the following month considering that some of the parameters that are needed for baseline adjustment were not accurate due to the meters used. The M&V teams visited the site and can confirm that the project was indeed implemented and all the fans are functioning properly.