



*Draft report on the assessment of
the Smartcool Energy Saving Module™ System*

**Conducted for
Nedbank**

**Conducted at
Nedbank 135 Rivonia Rd Phase I, Sandton**



ESM performance contract



- Nedbank objective:
 - Reduction of energy consumption, costs and carbon emissions
 - Lessen impact of electricity price increases substantially over the last year, recent and future
 - Evaluate Smartcool technology for the Nedbank Group
- Contracted annual savings from ESM at 135 Rivonia site:
 - Energy: 215,000 kWh
 - Financial: R70,950 (@R0.33/kWh)
 - Return on investment: 36%
 - Payback period: 33.3 months

HVAC plant description



- HVAC plant under ESM management
 - 5x Trane chillers
 - Trane Tracer Summit BMS
- ESM equipment installed
 - Energy Saving Module ESM System 4000
 - 1 x LNC (Local Network Controller)
 - 2x IIM (Integrated Interface Module) 4 channels
 - 1 x PT100 temperature sensor



Assessment methodology



- Evaluation over 4week period
 - From Friday 26 February 2010
 - To Friday 26 March 2010
- Operating status of ESM changed according to following schedule:
 - Week 1: 26/02 – 04/03 ESM OFF (Bypass Mode)
 - Week 2: 05/03 – 11/03 ESM ON (Savings Mode)
 - Week 3: 12/03 – 18/03 ESM OFF (Bypass Mode)
 - Week 4: 19/03 – 25/03 ESM ON (Savings Mode)

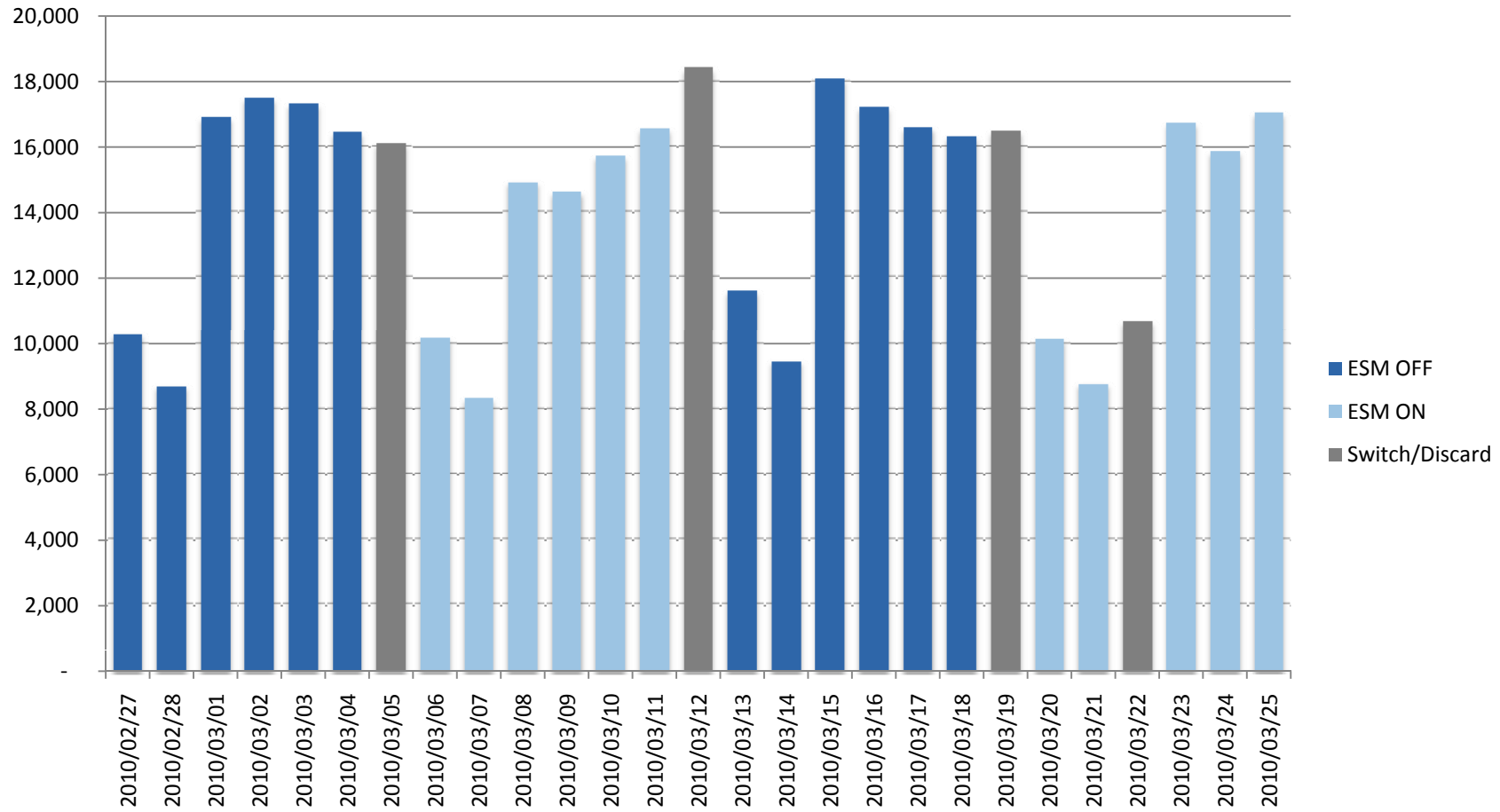


Assessment methodology

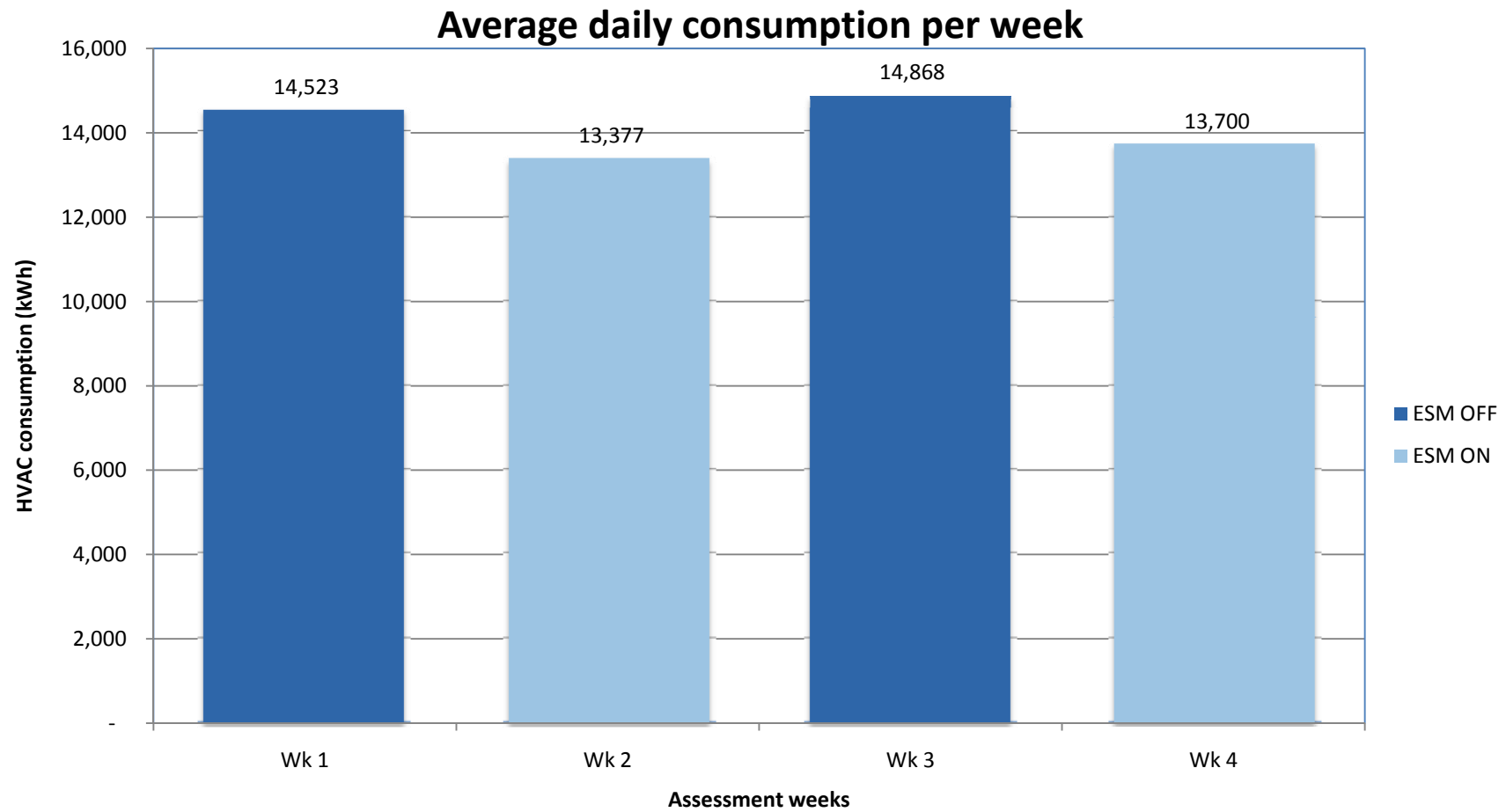


- Electricity supply for the whole HVAC plant room was monitored
 - Not only controlled load i.e. the 5x chillers under ESM management
 - All electrical equipment supplied on the distribution board
- Temperature data
 - Chilled Water Supply
 - D, F, G computer rooms
 - Ambient
- HVAC plant operated normally over the period, no breakdowns
- ESM and assessment equipment operated normally over the period

Energy consumption data - daily



Energy consumption data - weekly



Temperature performance data



Description	Wk1 OFF	Wk2 ON	Wk3 OFF	Wk4 ON
CWS	6.01	6.36	6.00	6.37
D Computer Room	21.6	21.5	21.8	21.7
F Computer Room	20.3	20.9	20.7	20.5
G Computer Room	22.8	21.8	22.0	22.0
Ambient	21.1	21.4	22.8	19.7

ESM assessment results summary



- ESM energy measurement summary:
 - ESM OFF: 14,696 kWh/day (average over 2 week OFF period)
 - ESM ON: 13,524 kWh/day (average over 2 week ON period)
 - Average daily saving: 1,172 kWh/day

ESM savings summary



- Actual measured translated to annual savings
 - Daily average kWh reduction : 1,172 kWh
 - Annual energy reduction: 362,000 kWh
 - Annual financial saving: R119,00 (@R0.33/kWh)
 - Total 5 year financial saving: R 597,000

- Annual Greenhouse Gas (GHG) reduction: 398,000 kg



Results compared to performance contract



<i>Saving Description</i>		<i>Contract</i>	<i>Assessment projected</i>	<i>Difference</i>
Annual consumption	kWh	215,000	362,000	147,000
Annual financial	R	71,000	119,000	48,000
5 years	R	355,000	597,000	242,000
Return on investment	%	36	60	24
Payback	Months	33.3	19.9	13.4



Recommendations to Nedbank



1. Formally approve Smartcool ESM™ as a key cost reduction tool for HVAC equipment
2. Pay final instalment as per for ESM™ equipment installed at the Rivonia site in accordance to performance contract.
3. Implement a project to roll out installation of ESM™ modules at all appropriate Nedbank Group and related group sites.

