



## PUBLIC REPORT TEMPLATE

### Controlling Corporation

Hydro Aluminium Kurri Kurri Pty Limited

### Period to which this report relates

Start 01/07/08

End 30/06/09

### Part 1 – Information on assessments completed to date

**Table 1.1 – Description of the way in which the Corporate Group (or part of it) has carried out its assessments**

**Public Report:** <http://www.hydro.com/en/About-Hydro/Hydro-worldwide/Asia-and-Oceania/Australia/Kurri-Kurri/>

Hydro Aluminium Kurri Kurri Pty Ltd senior management established an EEO Steering Committee to assist the organisation meet its obligations under the EEO legislation. The primary role of the Steering Committee is to ensure that the organisation meets the 6 key elements of the EEO Assessments. The commitment by senior management in forming this committee forms the basis of meeting the "leadership element".

During 2008/2009 Hydro progressed a number of the projects identified in the initial Assessment and identified an additional 4 opportunities.

As noted last year Hydro Aluminium Kurri Kurri Pty Ltd used the Energy Savings Action Plan (ESAP) methodology developed by the NSW Government, as the basis of the assessment.

The ESAP methodology included the following process steps:

- Identifying and energy and production baseline;
- Conducting a site management review to identify current energy management policies and procedures;
- Conducting a site technical review to calculate an energy mass balance, energy use by sub-activity specific energy indexes by main energy use and efficiency and savings opportunities.

The audit and management reviews were undertaken in August 2006 and an annual management review occurred in 2008/2009.

These reviews provided feedback and efficiency opportunities from both a management and technical perspective. Hydro Aluminium Kurri Kurri Pty Ltd set up a Cross Functional Team (CFT) to address energy efficiency matters. This team incorporates managerial staff, operational managers and technical managers with appropriate skills and expertise to analyse energy and process data. This team meets the "people element" required under EEO regulations. The team interacts with Hydro Aluminium Kurri Kurri Pty Ltd's alliance partners and onsite contractors.



The CFT followed up on the recommendations made in the ESAP audit and engaged in additional energy efficiency reviews, totalling some 47 opportunities. The CFT relied on the hurdle rates established for efficiency projects and took into account the EEO Legislative requirements. Projects were ranked according to payback period and projects with an internal rate of return were analysed in detail to ensure that management have sufficient information at hand to make informed decisions as to whether or not a project has or will be implemented. The CFT also monitored the progress of the energy savings initiatives and also undertook a formal review process to evaluate projects post implementation. The team continually seeks energy efficiency ideas from the site to ensure the process is on going. The outcomes of its findings are reported to the EEO Steering Committee and the Hydro Aluminium Kurri Kurri Pty Limited Board.

The EEO Steering Committee disseminates EEO and Energy information to senior management and to the site, with the aim of increasing energy efficiency awareness, across the organisation. (Key element 6 of the program).

The outcomes of this assessment and review process can be found below in Table 2.3

**Table 1.2 – Energy use assessed**

<b>Group member and/or business unit and/or key activity and/or site that has had an assessment completed by the end of this reporting period.</b>	<b>Period over which assessment was undertaken<sup>1</sup></b>	<b>Energy use per annum in GJ<sup>2</sup> in the current reporting year</b>
Hydro Aluminium Kurri Kurri		13,673,532
<b>Total energy assessed</b>		13,673,532
<b>Total energy use of the group in the current reporting year</b>		13,673,532
<b>Total energy assessed expressed as a percentage of total current energy use</b>		100%



## Part 1 – Information on assessments completed to date (continued)

**Table 1.3 – Accuracy of energy use data**

Entity	% achieved	Reasons for not achieving data accuracy to within $\pm 5\%$
Hydro Aluminium Kurri Kurri	+/- 1%	Not applicable



## **Part 2 - Energy Efficiency Opportunities that have been identified and evaluated**

### **Part 2A - New Assessments completed during the reporting period**

Hydro Aluminium Kurri Kurri, completed its assessment of the site last year. As a result no new assessments have been conducted. An update on the site appears below.



## Part 2 - Energy Efficiency Opportunities that have been identified and evaluated

### Part 2B - Update of assessments originally reported in previous reporting periods

Name of Group member or business unit or key activity or site: Hydro Aluminium (Kurri Kurri) Pty Limited Smelter

Energy use of the entity during the current reporting period

13,673,532	GJ
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**Table 2.3 - Opportunities assessed to an accuracy of  $\pm 30\%$  or better**

Status of opportunities identified		Number of opportunities	Estimated energy savings per annum by payback period (GJ)			Total estimated energy savings per annum (GJ)
			0 – < 2 years	2 – $\leq$ 4 years	> 4 years	
Outcomes of assessment*	Total Identified	51	86,404	570,299	178,686	835,389
Business Response*	Under Investigation	8	0	457,646	3,989	461,635
	To be Implemented	6	6,730	0	7,100	13,830
	Implementation Commenced	8	20	20	13,022	13,062
	Implemented	23	79,654	112,633	121,435	313,722
	Not to be Implemented	6	0	0	33,140	33,140

## Part 2 - Energy Efficiency Opportunities that have been identified and evaluated

### Part 2C - Details of at least three significant opportunities found through EEO assessments

**Table 2.5 – Description of 3 significant opportunities**

#### Opportunity 1

##### AMPS Management Process

Hydro Aluminium has developed its own production system called AMPS (**A**luminium **M**etal **P**roduction **S**ystem) into the Kurri Kurri smelter management process.

AMPS has 5 foundation principles:

- Standardized Work Processes
- Defined Customer Supplier Relationships
- Optimized Flow
- Dedicated Teams
- Visible Leadership

AMPS will continue to impact on all aspects of our business (HSE, environment, cost & efficiency). It visualizes performance, promotes improvement from all levels and relies heavily on benchmarking with best practices of all Aluminium smelters across the globe.

AMPS is about having people knowing what our business objectives are and engaging them in improving procedures, equipment or technology to either meet or surpass those objectives. For example, power and carbon consumption per kilogram of metal produced can be improved by implementing standard operating procedures, standardize the processes across the teams and achieve compliance to these standard operating procedures.

#### Opportunity 2

##### Current Efficiency Improvement

As part of our ongoing strategy to improve overall performance & reduce waste, the Electrolysis Department implemented several continuous improvement & capital projects during 2008/2009.

Continuous improvement projects include anode effect duration reduction through changes to quenching pattern, introduction of AMPS & critical process teams, change to Potline 1 burn-off rules to improve anode setting, current efficiency workshop & brainstorming sessions, lower power start up curve, improved power addition on anode change & individual cell voltage optimisation.

Capital projects included the introduction of Butt Referencing to Potlines 2 & 3 and the implementation of 200mm longitudinal slots to all anodes.

The net result of these improvements saw an energy saving of 0.8% of energy consumption through improving the current efficiency of the plant.



### **Opportunity 3**

#### **Compressed Air Monitoring System**

During 2008/2009, Hydro installed a compressed air monitoring system, which enables the main consumers of compressed air to monitor their consumption. The compressed air monitoring system also enables the smelter to monitor power consumption and other key compressors operating parameters.

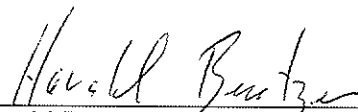
Information from this system is reviewed on a continuous basis by means of a SCADA system. Compressed air consumption is a KPI on the smelter weekly report and it is reviewed and actioned if consumption increases above the set target.



## Part 4 - Declaration

**Table 4.1 - Declaration of accuracy and compliance (mandatory information)**

The information included in this report has been reviewed and noted by the board of directors and is to the best of my knowledge, correct and in accordance with the *Energy Efficiency Opportunities Act 2006* and *Energy Efficiency Opportunities Regulations 2006*.

  
**Harald Bentzen** Managing Director Hydro Aluminium (Kurri Kurri) Pty Ltd