

PUBLIC REPORT TEMPLATE 2011

Please note that this template has been updated based on feedback from a number of Corporations during the recent review of regulations. It is not compulsory for you to use this Public Report template. You may wish to continue to use the previous template, or you may report in another format of your choice. Either is acceptable provided you report all the information required by the EEO Act and Regulations.

There is an explanatory document at pages 5-14 of this template that fully explains how to complete it. There is also some targeted guidance on the template itself.

Part 1 - Corporation Details

Controlling Corporation

Period to which this report relates

Insert the name of the Controlling Corporation exactly as it is registered with the EEO Program. The period to which the report relates is the total period of participation up to 30 June prior to when the report is due.

From To

Table 1.1 - Major Changes to Corporate Group Structure or Operations

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Record rainfall in the Bowen Basin in the 2010/11 summer combined with operational changes that have increased haulage distances has resulted in a significant change in Macarthur Coal's energy profile for AFY 2011.

Coal production was down 25% although overburden removal (the major consumer of energy) was down only 5% due to significant increases at Coppabella outside the wet months with the addition of a new fleet of haul trucks. Despite the decrease in production, total energy consumption was up 4% due to a general increase in energy intensity (diesel consumption per bank cubic meter of overburden increased by 12% and electricity consumption per feed tonne of raw coal into the coal handling and preparation plants increased by 6%).

An increase in both diesel and electricity costs resulted in total energy cost increasing by 13% and, combined with the decreased production levels, energy cost per product tonne of coal increased by 49% on 2010.

Table 1.2 – Aggregate energy assessed covered in this report

Total energy use covered by all assessments in this report	2,428,695	GJ
Total energy assessed as percentage of total energy use of the corporate group ^{*#}	91	%



* If this report covers only part of the corporate group, than the percentage should be computed on the total energy use for that part of the group covered in this report

Please note that corporations are required to assess 80% or more of their energy use in the first five-year assessment cycle and 90% or more in subsequent five-year assessment cycles. Accordingly, for those corporations with a 2005-06 trigger year (i.e. those corporations at the end of their first-five year assessment cycle), the value in "Percentage of corporation's energy use assessed" above, must be more than 80%.

Declaration

Declaration of accuracy and compliance

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*.

JULIAN DEREK THORNTON *Director*

Insert Name and Title of Signatory here
(Chair of the Board, CEO, or Managing Director)

Date *6/12/11*

Part 2 - Assessment Outcomes

Table 2.1 – Assessment Details

It is compulsory to complete a separate table for each group member, business unit, or key activity that has been assessed

Name of group member or business unit or key activity

Coppabella Mine

Total energy use in the last financial year

1,507,467

GJ

Energy use assessed in this entity as a percentage of total entity energy use*

98

%

Energy use assessed in this entity as a percentage of total corporate energy use

56

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

%

Energy use not assessed consists of oils, greases and small amounts of acetylene and LPG.

Corporate energy use consists of energy use in all mines, corporate offices, exploration activities and accommodation as per NGRS reporting.

Period over which assessment was undertaken

01/01/2010

31/08/2010

Description of the way in which the entity carried out its assessment

Macarthur Coal has been actively reviewing energy use and greenhouse gas emissions outside of EEO requirements for a number of years. Before the development of our EEO Assessment and Reporting Schedule and consequent formalisation of the assessment process, the company had conducted a detailed greenhouse gas emissions inventory (which necessarily included a detailed energy use inventory) and a marginal abatement cost curve (MACC) study. The MACC identified a range of emissions abatement projects at all Macarthur Coal sites and through an NPV and abatement analysis, determined the cost of each project in terms of dollars per tonne of CO₂-e abated. The MACC study led to the development of an abatement strategy that included a range of energy reduction projects. The emissions inventory was updated numerous times and then formalised for Macarthur Coal's 2009 National Greenhouse and Energy Reporting System return.

The company has two fully operational open cut coal mines (Coppabella and Moorvale) and a third (Middlemount) is in the early stages of production. For the purposes of EEO compliance, the company elected to treat each individual mine as a separate assessment. Following the development and submission of an Assessment and Reporting Schedule, Macarthur Coal commenced the first formal assessment under EEO in January 2010 at the Coppabella Mine site.

The first step in the assessment process was to develop and communicate a companywide Energy Management Policy (EMP). The EMP would set out assumptions, methodologies and process to be used in energy use analysis and opportunity identification, analysis and implementation. Importantly, the EMP would also identify an Energy Management Team to formalise the roles and responsibilities of personnel required to be involved in the assessment process and energy management in general. The site energy teams consist of an energy champion, a data officer, and efficiency officers in a range of specific energy areas. Importantly, the EMP was sponsored by the Chief Operating Officer, noted by the Board, and communicated widely.



The assessment process then consisted of reviewing previous work on emissions inventories and abatement, updating and expanding the emissions inventory into a detailed energy baseline, and modifying and updating the MACC to produce a list of potential efficiency initiatives that satisfied specific EEO requirements. Whilst this work was predominantly run from the corporate head office, the site energy teams were crucial in providing input and reviewing outcomes and conclusions.

All potential projects were rated and ranked using a methodology that considered cost effectiveness, energy savings, suitability to the site, and feasibility of successful implementation. A number of projects identified during the initial MACC process were proved sufficiently beneficial to the business early in the process that they were progressed directly to business case and implementation.

Recommendations regarding an appropriate business response were made based on the rating process and a management report was prepared. The management report was reviewed by senior management including the Chief Operating Officer and Coppabella SSE for final acceptance before being communicated to site.

* Please note that, for individual sites that use more than 0.5PJ of energy, all energy use must be assessed (less a small proportion for non integral energy use).



Name of group member or business unit or key activity

Moorvale Mine

Total energy use in the last financial year

962,390

GJ

Energy use assessed in this entity as a percentage of total entity energy use*

99

%

Energy use assessed in this entity as a percentage of total corporate energy use

36

%

Accuracy of above estimates related to energy use assessed - only required if not ±5% or better

%

Energy use not assessed consists of oils, greases and small amounts of acetylene and LPG.

Corporate energy use consists of energy use in all mines, corporate offices, exploration activities and accommodation as per NGERS reporting.

Period over which assessment was undertaken

01/10/2010

30/06/2011

Description of the way in which the entity carried out its assessment

Following a framework established earlier, the assessment process consisted of reviewing previous work on emissions inventories and abatement, updating and expanding the emissions inventory into a detailed energy baseline, and modifying and updating a Marginal Abatement Cost Curve (MACC) to produce a list of potential efficiency initiatives that satisfied specific EEO requirements. Whilst this work was predominantly run from the corporate head office, the site energy teams were crucial in providing input and reviewing outcomes and conclusions.

A detailed energy review of the Moorvale mine site was conducted and a report prepared (the Macarthur Coal Energy Efficiency Opportunities Moorvale Baseline Energy Report January 2011). The review comprises the collection and analysis of data relating to energy use, production and financial results for the mine with a view to developing an energy baseline for the site. The energy baseline provides an understanding as to how energy is used, identifying potential problems, identifying potential areas for improvement, and providing a reference point for measuring future success.

As part of a broad emissions reduction program, including the development last year of a Marginal Abatement Cost Curve and Abatement Strategy, and in fulfilment of the EEO Assessment for Moorvale, a range of potential energy efficiency projects have been identified. The opportunities have been analysed, rated in 4 key areas (financial payback, energy savings, feasibility and suitability) and ranked.

On the basis of this analysis, recommendations on the business response for each opportunity were made.

Table 2.2 - Energy efficiency opportunities identified in the assessment

It is compulsory to complete a separate table for each group member, business unit, or key activity that has been assessed

Coppabella Mine

Table 2.2 – Energy efficiency opportunities identified in the assessment									
Status of opportunities identified to an accuracy of better than or equal to $\pm 30\%$		Total 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		
			No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Implemented	5	4	25,000	1	1,000	0	0	26,000
	Implementation Commenced	0	0	0	0	0	0	0	0
	To be Implemented	1	1	8,200	0	0	0	0	8,200
	Under Investigation	3	2	5,200	1	4,200	0	0	9,400
	Not to be Implemented	1	1	1,400	0	0	0	0	1,400
Outcomes of assessment	Total Identified	10	8	39,800	2	5,200	0	0	45,000
Status of opportunities identified to an accuracy of worse than $\pm 30\%$									
Business Response	Implemented	1	1	Unknown	0	0	0	0	Unknown
	Implementation Commenced	0	0	0	0	0	0	0	0
	To be Implemented	0	0	0	0	0	0	0	0
	Under Investigation	17	0	0	17	10,000	0	0	10,000
	Not to be Implemented	3	1	2,300	0	0	2	80	2,380
Outcomes of assessment	Total Identified	21	2	2,300	17	10,000	2	80	12,380

Please note that Corporate Groups **are not required** to report opportunities with a payback greater than 4 years. Reporting this data is voluntary.



Moorvale Mine

Table 2.2 – Energy efficiency opportunities identified in the assessment

Status of opportunities identified to an accuracy of better than or equal to ±30%		Total Number of opportunities	Estimated energy savings per annum by payback period (GJ)						Total estimated energy savings per annum (GJ)
			0 – < 2 years		2 – ≤ 4 years		> 4 years		
			No of Opps	GJ	No of Opps	GJ	No of Opps	GJ	
Business Response	Implemented	4	2	503	2	4,082	0	0	4,585
	Implementation Commenced	0	0	0	0	0	0	0	0
	To be Implemented	0	0	0	0	0	0	0	0
	Under Investigation	2	2	46,320	0	0	0	0	46,320
	Not to be Implemented	1	1	0	0	0	0	0	0
Outcomes of assessment	Total Identified	7	5	46,823	2	4,082	0	0	50,905
Status of opportunities identified to an accuracy of worse than ±30%									
Business Response	Implemented	0							
	Implementation Commenced	0							
	To be Implemented	0							
	Under Investigation	15							Yet to be quantified
	Not to be Implemented	3							Yet to be quantified
Outcomes of assessment	Total Identified	18							Yet to be quantified

Please note that Corporate Groups **are not required** to report opportunities with a payback greater than 4 years. Reporting this data is voluntary.



Table 2.3 - Details of significant opportunities identified in the assessment

Corporate Groups are required to provide at least 3 examples of significant opportunities for improving the energy efficiency of the group that have been identified in assessments.

Description of Opportunity	Voluntary Information	
<p>Excess diesel consumption due to less than optimal operation of mining and ancillary equipment and vehicles was identified as a potential issue that may be easily addressed through behavioural changes and provide benefits beyond simple energy efficiency.</p> <p>A provider of operator efficiency training was approached in regards to educating experienced operators of mobile equipment about best practice techniques for reducing fuel consumption, which in turn can contribute to increased fuel efficiency, an increase in engine working life, savings in service cost, improved safety, and a reduced carbon footprint.</p> <p>The vendor suggested that fuel savings above 6% are realistic, so assuming a 5% fuel saving on heavy equipment would provide an annual saving of 1,000 kL of diesel or 42,000 GJ with an extremely short payback period of just a couple of months.</p> <p>Given the potential issues and logistics around taking operational personnel out of production for training purposes, Macarthur Coal are still investigating the potential of this opportunity and the constraints to implementation.</p>	Business Response	Under Investigation
	Energy saved (GJ)	42,000
	Greenhouse gas abated (CO2-e)	2,500
	\$s saved	\$785,000 pa (estimated)
	Payback period	Less than 1 year

Description of Opportunity	Voluntary Information	
<p>Diesel lighting plant across the Moorvale mine site required manual start and stop resulting in excess operation of the plant and significant diesel burn and time costs due to travel. It was identified that there was significant potential for efficiencies in these plant including lamp type, fuel source, and control gear.</p> <p>As a first measure auto stop start controls have been fitted to all lighting plants. Retrofitting lamp type to provide more useful light in application so that fewer are required is also under investigation.</p> <p>13 lighting plant in total had control gear fitted at a cost of \$4200 per unit. It is estimated that auto start and stop will save an average of approximately 2 hours per day per unit of run time at 2.83l of diesel per hour average consumption.</p>	Business Response	Implemented
	Energy saved (GJ)	1,000
	Greenhouse gas abated (CO2-e)	100
	\$s saved	\$20,000 pa (estimated)
	Payback period	3 years



The initiative is expected to save 27,000 litres of diesel per annum with a payback of just under 3 years.

Description of Opportunity	Voluntary Information	
<p>Power conditioning gear was installed at the Moorvale CHPP in mid August 2010 to address poor power factor on the Moorvale electricity supply.</p> <p>Discussions with the equipment supplier indicated that power conditioning would not only improve power factor, but may also provide reductions in real power consumption due to improved power quality.</p> <p>An analysis of both power factor performance and real energy consumption at Moorvale was conducted. It must be noted that only 3 months of data was available since installation of the PFC gear due to some technical difficulties that were encountered, and so any results, particularly in regards to energy efficiency should be considered indicative only. Further analysis will be conducted as more data comes to hand.</p> <ul style="list-style-type: none"> • There appears to be an energy efficiency benefit related to power factor correction, although, it must be noted that data samples are currently small • Without adjusting for coal type being processed, there is an average reduction of 6.4% in energy intensity relative to the 3 months before PFC and a 4.6% reduction relative to the 13 months before • Based on 3 month data, coking and PCI coal show definite reductions in energy intensity, PCI of up to 9.9% whereas thermal coal does not at this stage with the available data <p>Averaging the 3 month and 13 month benefits provides a potential energy reduction of 5.5% which translates to approximately 850,000 kWhs or 3,000 GJ per annum based on 2010 electricity consumption.</p> <p>It should be noted that the energy efficiency benefit of the power factor correction itself has not been included in this analysis (improved power factor results in reduced losses by transmission and distribution companies and potentially reduced generation requirements).</p>	Business Response	Implemented
	Energy saved (GJ)	3,000
	Greenhouse gas abated (CO2-e)	750
	\$s saved	\$86,000 pa (estimated)
	Payback period	2.5 years

Please note that the "Description of the Opportunity" above should include information on the specific nature and type of opportunity, as well as information on the type of equipment and/or process involved.