

Drayton Management System Standard

Greenhouse and Energy Efficiency Plan

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|----------------|------------------|--------------------------------|-------------|--|
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Revisions

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| 1 | May 2008 | P Simpson | P Forbes | M Heaton |
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Document Information

1 PURPOSE AND PROJECT DESCRIPTION

Anglo Coal Drayton Mine was granted project approval by the NSW Department of Planning on 1st February 2008 to further extend current mining operations until 2017, incorporating increased production and additional infrastructure.

The purpose of this management plan is to provide a framework for the management of greenhouse and energy efficiency measures to be conducted at Drayton.

2 SCOPE

This management plan describes the following:

- Greenhouse gas monitoring
- Energy use monitoring
- Performance monitoring
- Greenhouse and energy improvement measures
- Reporting of Greenhouse and Energy Efficiency

This monitoring program also assists Drayton to prepare for the National Emissions Trading Scheme to be introduced in 2010 and in maintaining compliance with ISO14000 requirements, the Anglo Coal SHECMS and the Anglo American (AA plc) Environment Way protocols.

3 DEFINITIONS

| | |
|---------------------------|--|
| AEMR | Annual Environment Management Report |
| Baseline metering | is a snapshot of energy used previous to energy efficiency measures being implemented upon which post measurements can be compared to. |
| Greenhouse Gases | are gases that contribute to the warming of the Earth's atmosphere by reflecting radiation from the Earth's surface. ¹ |
| Energy Consumption | is the total energy used to produce saleable coal. ² |
| Energy Efficiency | provides a measure of how effectively energy is used. It is expressed as gigajoules (GJ) per saleable tonne of coal produced. |
| S&SD Manager | Drayton's Safety and Sustainable Development Manager |

4 STATUTORY REQUIREMENTS

This plan has been developed in accordance with the requirements of the NSW Department of Planning for the Drayton Mine Extension (MP 06_0202) issued in 2008.

Conditions regarding greenhouse and energy efficiency are as follows:

¹ Drayton's sources of greenhouse gas include: diesel consumption, electricity and explosives. Greenhouse gas emissions are measured in tonnes CO₂-e.

² Energy is broken into kilowatt hours (kWh) for electricity, litres of diesel, and kilograms of explosives used.

| Condition | Condition Details | Reference |
|-----------|---|-----------|
| S3.46 | <p><i>The Proponent shall prepare and implement a Greenhouse and Energy Efficiency Plan for the project to the satisfaction of the Director-General. This program must:</i></p> <ul style="list-style-type: none"> <i>a) Be prepared generally in accordance with the Guidelines for Energy Savings Action Plans (DEUS 2005, or it's latest version);</i> <i>b) Be submitted to the Director General for approval within 6 months of the date of this approval;</i> <i>c) Include a program to monitor greenhouse gas emissions and energy use generated by the project;</i> <i>d) Include a framework for investigating and implementing measures to reduce greenhouse gas emissions and energy use associated with the project; and</i> <i>e) Describe how the performance of these measures would be monitored over time.</i> | 5.6 |

5 MANAGEMENT PLAN REQUIREMENT

5.1 Responsibilities

S&SD Manager

The S&SD Manager is responsible for:

- Considering energy efficiency and greenhouse emissions during the procurement of new equipment
- Considering energy efficiency and greenhouse gas emissions during business planning processes at management level
- Seeking opportunities to improve energy efficiency and minimise greenhouse gas emissions
- Considering energy efficiency in all business improvement projects
- Recommending energy improvement projects for approval and over viewing project performance.

Environment Coordinator

The Environment Coordinator is responsible for:

- Monitoring, collecting and analysing data and making recommendations regarding energy consumption and efficiency performance
- Monitoring, collecting and analysing data and making recommendations regarding greenhouse gas emissions performance
- Reporting on energy and greenhouse performance as required

5.2 Audit/Review Schedule

This management plan is to be reviewed at least every three years or as otherwise directed by the Director-General of the NSW Department of Planning. The review process is to reflect independent environmental audit findings, changes in environmental legislation, standards and guidelines, and changes in technology or operational procedures.

In accordance with Project Approval (06_ 0202), at the end of year two of the development, and every three years from there on, Drayton will commission an independent environmental audit to the satisfaction of Director-General of the NSW Department of Planning. The audit will include an assessment of the adequacy of all management plans. Following the audit, this management plan may be updated if appropriate.

This management plan has been prepared in consultation with the NSW Department of Planning.

5.3 Records Management

All monitoring records for energy and greenhouse gas emissions performance must be kept on file in the S&SD department for the duration of the life of mine plus any additional period required by statute or regulation.

5.4 Revision Status

Not applicable – Version 1.

5.5 References And Relationship With Other Environmental Documentation

Environmental monitoring at Drayton is conducted in accordance with the following approvals/Acts or regulatory conditions:

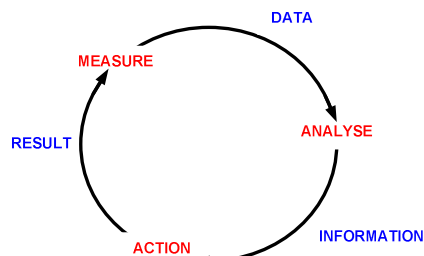
- Environmental Planning and Assessment Act, 1979 (EP&A Act) administered by the Department of Planning (DoP) and associated project approval conditions (Ref MP 06_0202).
- Anglo Coal Drayton Mine Environmental Assessment 2007.
- Guidelines for Energy Savings Action Plans (DEUS 2005)
- National Greenhouse and Energy Reporting Act 2007
- National Greenhouse and Energy Reporting Regulations 2008
- National Greenhouse and Energy Determination 2008
- Energy Efficiency Opportunities Act 2006
- Department of Energy and Utilities and Sustainability

5.6 Documents

5.6.1 Background Theory to Managing Greenhouse and Energy

There are two components to this management strategy: understanding the current use of energy and greenhouse emissions and finding opportunities for savings and reductions. Figure 1 details Anglo Coal's Action Learning Model as a management tool.

Figure 1: Action Learning Model

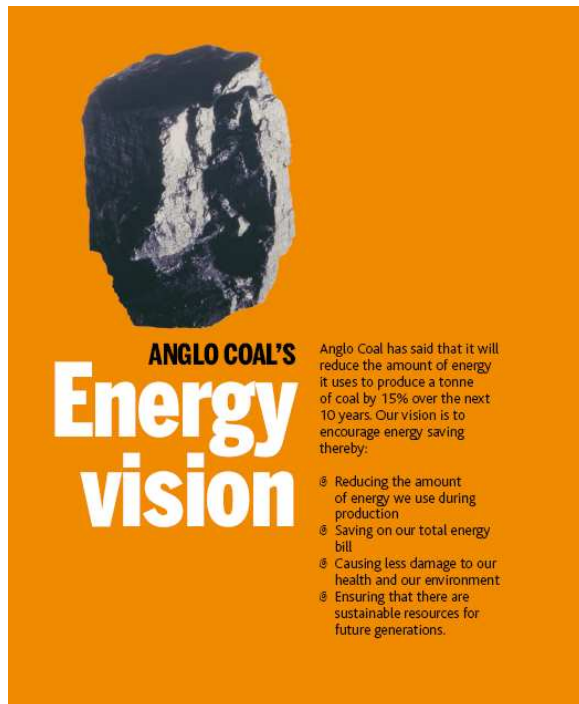


(Source: Anglo Coal Energy – A technical guide to saving energy)

To assist in managing energy and greenhouse effectively, several areas have been identified by Anglo Coal Australia's parent company, Anglo American plc, for consideration, eg the establishment of an energy policy, developing the skills, knowledge, training and awareness with regard to energy management, developing information systems to assist in energy monitoring, targeting and reporting and investment management.

Anglo Coal Global has adopted the following energy vision, which addresses energy usage, management of energy, and opportunities for energy efficiency improvement (with respect to compressed air, pumps and pumping, motors, drive selection, conveyors, lighting, insulation, solar heating, liquid fuels, draglines, explosives, ventilation fans process and plant control, quality of supply, peak demand control and load shedding, etc) and is supplemented by case studies for both underground and open cut operations from within the Anglo Coal's international operations.

Figure 2: Anglo Coal's Energy Vision



This vision defines the basic framework for energy monitoring and management within Anglo American's mines worldwide. Drayton is committed to operating in alignment with the expectations of Anglo Coal Global and Anglo American plc.

5.6.2 Greenhouse Gas Monitoring

Drayton, as one of Anglo Coal Australia's mines, has been associated with the Greenhouse Challenge Program and reporting requirements since 1990. As such greenhouse gas emissions have been monitored at Drayton for many years, resulting in an extensive baseline history of carbon dioxide and other greenhouse gas emissions.

Greenhouse gas emissions are calculated based on the Department of Climate Change National Greenhouse Accounts (NGA) measurement framework, including conversion factors for each energy and greenhouse gas emissions source

Greenhouse gas emissions are currently reviewed on a monthly basis, with emissions targets for tonnes CO₂ equivalents being reviewed during the annual internal business planning process. Monitoring then occurs on a monthly basis, with results compared to the predicted targets for both month and year to date status.

5.6.3 Energy Use Monitoring

Energy monitoring has been utilised at Drayton for many years, resulting in an extensive baseline history of energy consumption and efficiency across the various components of the mining operation. This baseline allows for new and improved technology and practices to be compared to more traditional energy use.

Energy use (primarily electricity and diesel consumption) is currently reviewed on a monthly basis, with targets for energy consumption being reviewed during the annual internal business planning process. Monitoring then occurs on a monthly basis, with results compared to the predicted targets for both month and year to date status.

5.6.4 Performance Monitoring

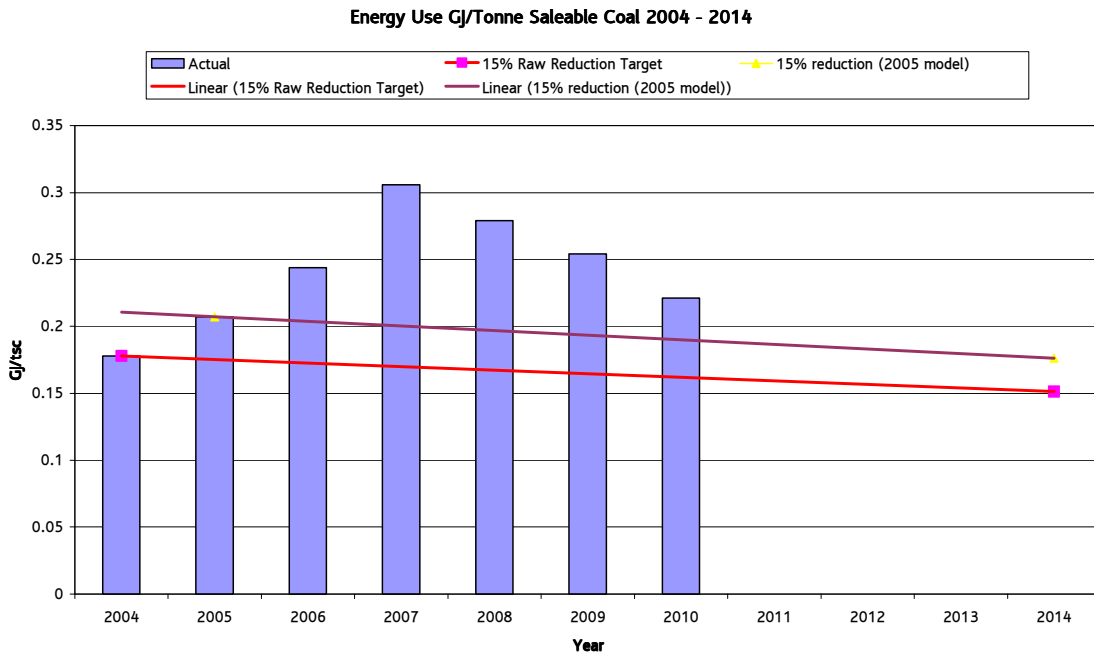
Drayton have an established process for monitoring energy efficiency and greenhouse gas emissions at site level whereas Anglo Coal has adopted a process from corporate level.

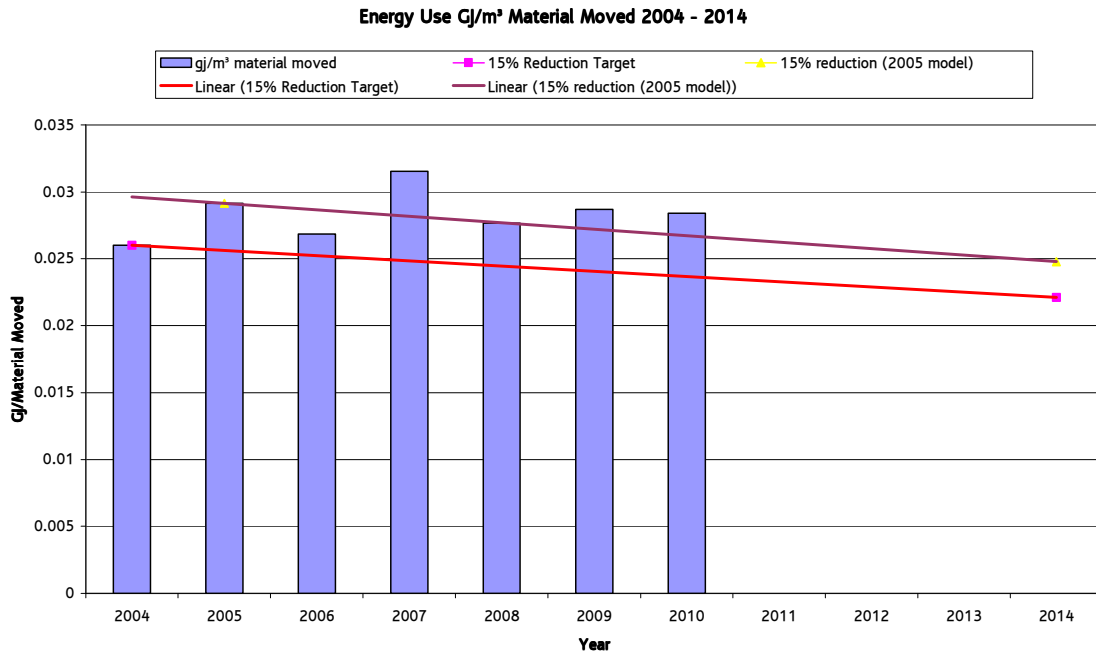
Anglo Coal Australia (ACA) has appointed a Principal Advisor – Energy Management to assist each site to seek and implement energy efficiency opportunities. Each site (including Drayton) then appoints an Energy Manager, who is also a member of the site Senior Leadership Team, to enhance and champion energy efficiency improvement across each of the operations.

In addition, Anglo Coal Australia has implemented reduction targets in energy efficiency (Gj/tonne Saleable Coal) for all ACA operations to be achieved by 2014. Similarly, a reduction target has also been established for greenhouse gas emissions (tonnes CO₂_{eq} / tonnes saleable coal) to be achieved by 2014.

At a site level, greenhouse and energy use is monitored and tracked. Reduction targets are shown below. These figures are based on annual business planning information with three year predictive forecasts being calculated. These targets then become internal targets with Anglo Coal Australia monitoring performance on a corporate level, upon which Drayton is measured.

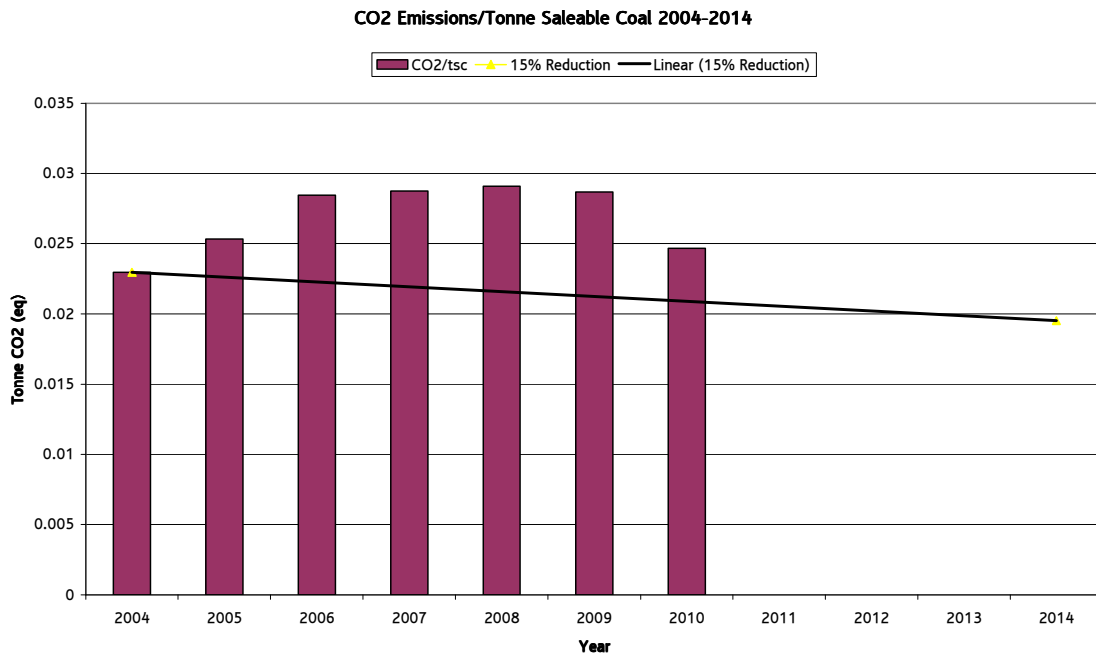
Figure 3: Internal Targets – Anglo Coal Australia for Drayton Mine for Energy

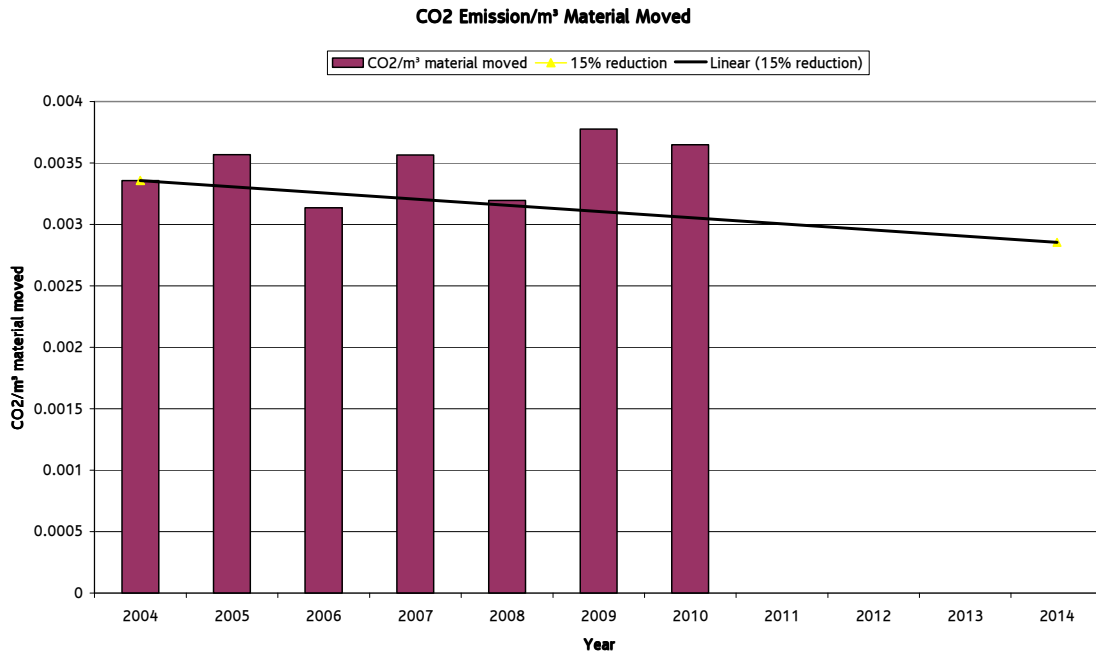




You will note that there are two reduction target projection lines on the above graphs. During 2005, additional plant was installed which offset the initial target and as such a step change was instigated. This then altered the longer term reduction target. This was an internal process within Anglo Coal.

Figure 4: Internal Targets – Anglo Coal Australia for Drayton Mine for Greenhouse Emissions





To assist in achieving these targets, site energy maps have been developed to monitor monthly performances against the target. Site greenhouse gas emission maps are currently being developed.

An annual performance dashboard is also used for monthly reporting on energy and greenhouse gas emissions reporting.

Sources of energy material to Drayton’s Energy Map are the one energy source that is brought onto the site (electricity) and energy that is consumed (diesel). Sources of greenhouse gas emissions material to Drayton’s greenhouse performance include electricity, diesel, explosives and spontaneous combustion.

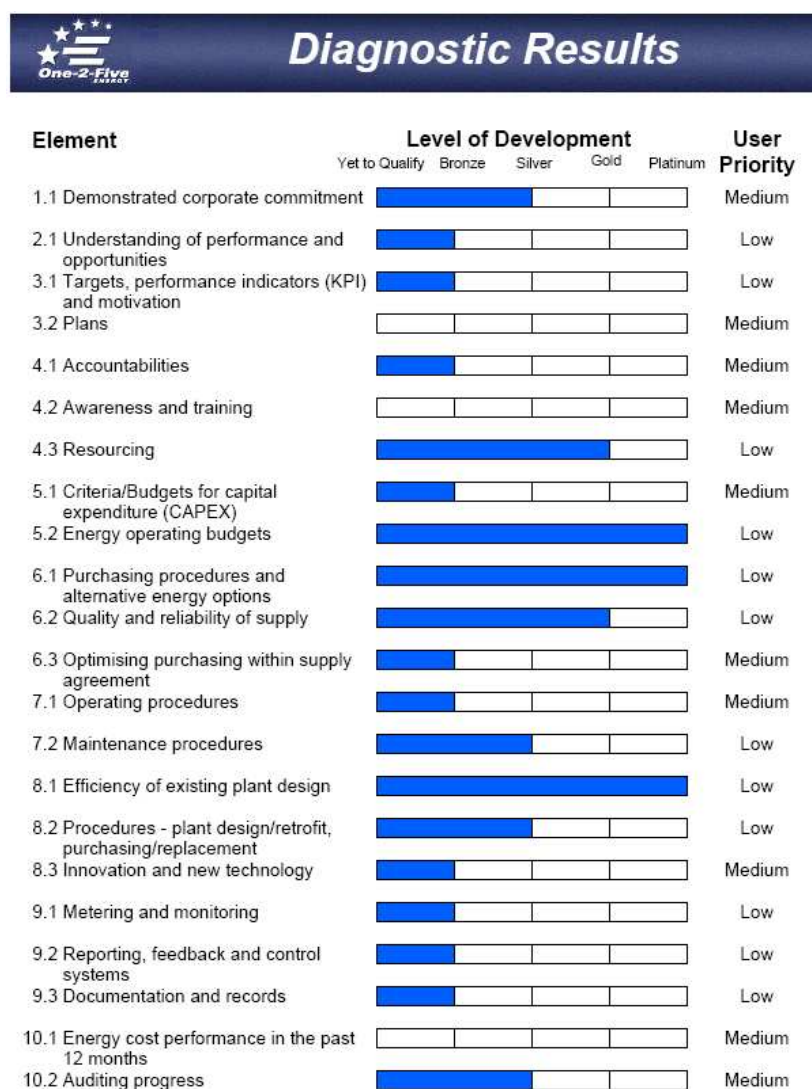
To supplement the energy and greenhouse mapping process, energy management reviews will be undertaken on a 5-year cycle in accordance with the provisions of the Energy Efficiency Opportunities Act 2006 and shall include the following aspects: review of energy saving potentials; energy targets and key performance indicators; metering and monitoring; reporting; supply management; operating and maintenance procedures; accountabilities; training and awareness and compliance with regulatory requirements.

A technical review may also be undertaken in accordance with the provisions of ACA’s OMS.

5.6.5 DEUS Management Review (2007)

Drayton has previously undergone two energy audits in 2002 and 2007. These were both conducted by Energetics. As a result of the most recent review was conducted in May 2007, the site diagnostic for the energy management review resulted in an overall ranking of 2 stars in the Energetics One-2-Five@Energy review process. National and international “best practice” systems rank 4-5 stars, indicating that Drayton, whilst being a mature facility is focussed on energy efficiency.

Figure 5 below shows the diagnostic results for Drayton's assessment.



(Source: Energetics Audit May 2007)

As a result of this review, management actions were identified through an EEO gap analysis which identified areas of continuous improvement benefits could be gained. These actions have been summarised and key areas of improvements identified as detailed in section 5.6.6.

5.6.6 Greenhouse and Energy Performance Improvement Measures

Several improvement opportunities have been identified for investigation. The following Table lists opportunities that have been identified by Drayton's and Anglo Coal's internal processes.

| Area | Opportunity | Responsible Person | Completion Period |
|--------------------------------------|--|----------------------------------|-----------------------------|
| Improved efficiency on prime removal | Achieve 10% improvement in energy by accelerating prime removal thus utilising less energy in longer term | Business Improvement Facilitator | Completed (Plus 10 project) |
| Improved productivity savings | Improved performance of excavators, GPS on drills and utilise throw blasting to reduce reliance on short term productivity schedules | Technical Services Manager | Ongoing |

| | | | |
|---------------------------------------|--|---|---------|
| Improving CHP throughput | Identify improvement opportunities within the CHP and washery facilities to reduce energy usage | Coal Handling and Processing Superintendent | Q409 |
| Reducing idle time on field equipment | Will reduce diesel consumption, improve longevity of engines and impacts on greenhouse emissions through fuel consumption savings | Mine Manager | Ongoing |
| Procurement of new equipment | Identify technology available in new trucks to improve fuel consumption. Potentially include energy management on procurement of new equipment | Maintenance and Engineering Manager / Supply Superintendent | Ongoing |
| Mine design | Identify mine planning constraints and develop plans to reduce energy requirements for hauling material and coal | Technical Services Manager | Ongoing |
| Conveyors | Identify opportunities to reduce running time on unladen conveyors | Coal Handling and Processing Superintendent | Q409 |
| ROM Coal | Identify opportunities to reduce rehandling of ROM coal or identify opportunities to increase ROM handling but reduce reliance on multiple equipment during process eg redesign of ROM stockpile configuration | Mine Manager / Technical Services Manager | Q209 |
| Air Conditioning / office lighting | Identify opportunities to reduce air conditioning and office lighting requirements in offices after hours and weekends. | Maintenance and Engineering Manager | Q109 |
| Water Management | Quantify benefits of replacing diesel powered water pumps with electric pumping stations | Maintenance and Engineering Manager | Ongoing |
| Awareness training | Include energy awareness training in inductions and develop energy training awareness for workforce | Safety & Sustainable Development Manager | Q409 |
| Transportation | Investigate options of providing buses to transport workers to work each shift rather than rely on own vehicles | Commercial Manager | Q409 |
| Leica Management system | Introduction of Leica system will enable more detailed analysis of production data and equipment data. Information can then be utilised to assess mining performance | Technical Services Manager / Mine Manager | Ongoing |
| Gas Desorption | Quantify greenhouse gas emissions from coal seams pre mining through testing of cores in exploration phase for in situ CO ₂ and CH ₄ content. | Technical Services Manager | Q309 |

Drayton shall investigate and evaluate opportunities for improving greenhouse and energy performance.

These measures could include:

- Consideration of specific energy or greenhouse emission targets during the procurement of new equipment

- Seeking innovations in technology when procuring new equipment
- Including continuous improvement requirements in supply contracts with regard to energy efficiency
- Increasing involvement in research into emissions and efficiency improvements
- Increasing involvement at industry level to monitor new developments and initiatives regarding greenhouse and energy issues
- Improved productivity and better asset utilisation

Greenhouse and energy reductions will be coordinated from Drayton in consultation with the ACA corporate office. Details of improvement measures implemented or trialled at a site level will be included in the annual AEMR reporting process and on the ACA website in accordance with the provisions of the Energy Efficiency Opportunities Act 2006.

6 APPENDICES

Appendix 1 - Environmental Signoff

Appendix 2 - Regulatory Correspondence

Environmental Signoff

PROCEDURE TITLE: Greenhouse and Energy Efficiency Plan

PERSONS RESPONSIBLE (AS LISTED)

NAME: Peter Forbes

POSITION: S&SD Manager

SIGNATURE FOR SIGN OFF: _____

DATE:

NAME: Pam Simpson

POSITION: Environment Coordinator

SIGNATURE FOR SIGN OFF: _____

DATE:

Regulatory Correspondence

Nil Required