

Illawarra Coal

# Environmental Management System



## Greenhouse Gas & Energy Management Plan

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## Review History

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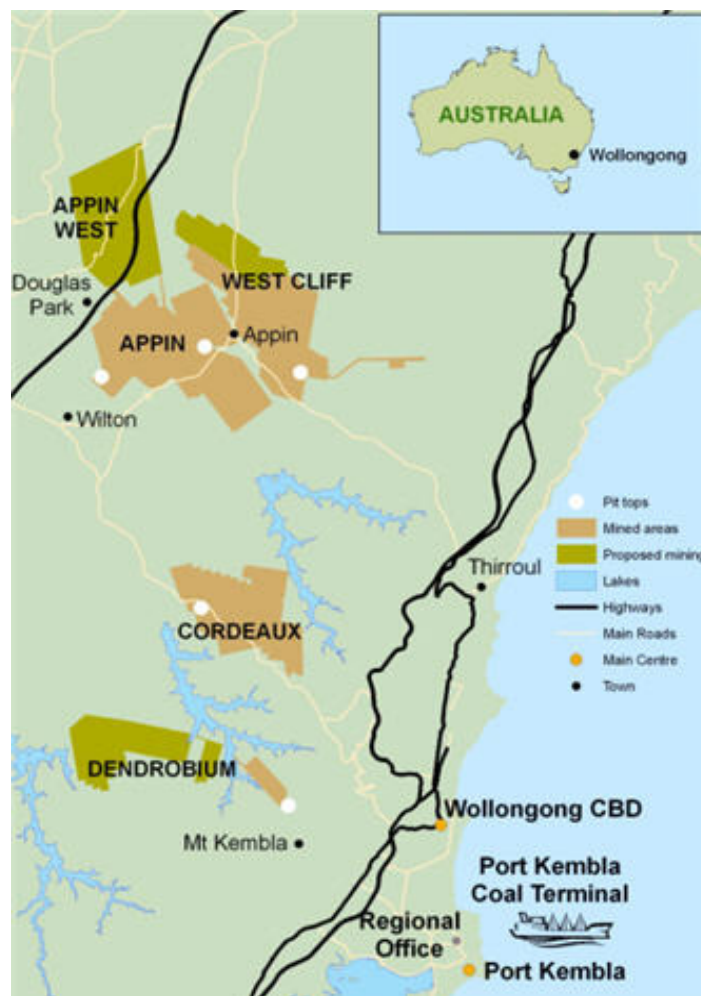
## 1 INTRODUCTION

### 1.1 Background

Illawarra Coal produces premium quality, hard coking coal (used in the production of steel) and a small amount of energy coal. Our vision is to be recognised as a world class underground coal business. We are committed to sustainable mining practices and to a Zero Harm policy.

Our mining operations are based in the Illawarra and Wollondilly regions south of Sydney, Illawarra Coal is a leading contributor to the local, regional, state and national economies through the operation of three high-volume underground coal mines – Appin, West Cliff and Dendrobium Mines. The location of the operations is shown in the Figure below.

- Location of Illawarra Coal Mining Operations

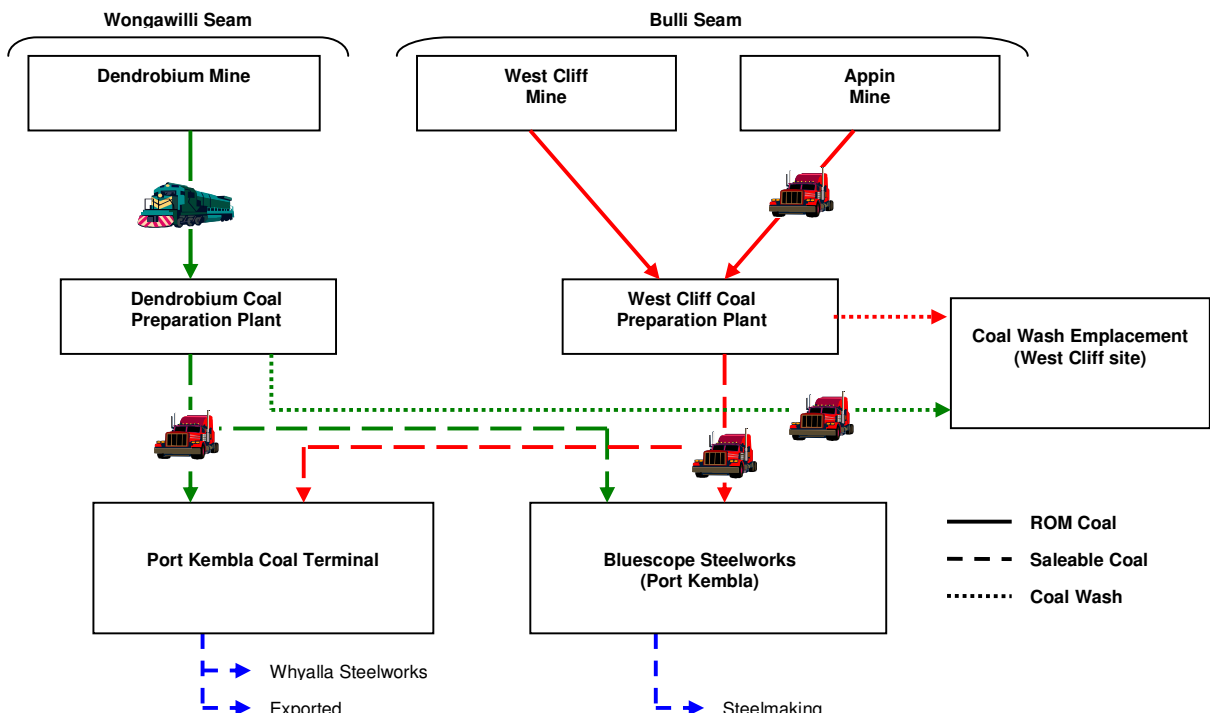


The Company operates the award-winning WestVAMP, a world-first power plant utilising mine ventilation gas and supplies drained coal bed methane for utilisation in the Appin and Tower power plants operated by Energy Developments Limited.

Two coal preparation plants support the mining operations, one at West Cliff and the other, the Dendrobium preparation plant, at Port Kembla. The regional office for Illawarra Coal is also situated at Port Kembla. Illawarra Coal manages the Port Kembla Coal Terminal on behalf of a consortium of partners (Illawarra Coal, Xstrata Coal, Peabody, Tahmoor Coal and Centennial Coal) and lease the terminal from the New South Wales Government.

Illawarra Coal operates in two coal seams, the Wongawilli Seam and the Bulli Seam. Mined coal is transported to the surface by conveyor and winder and then by road and rail to be washed and blended at the West Cliff and Dendrobium preparation plants before being taken to the Port Kembla Coal Terminal or directly to BlueScope Steel, Port Kembla for steel production as shown in the Figure below.

▪ Figure Illawarra Coal Operations and Logistics chain



## 1.2 Scope

This Greenhouse Gas and Energy Management Plan (GHGEMP) addresses the management of energy consumption and greenhouse gas (GHG) emissions associated with the Illawarra Coal operations.

## 1.3 Purpose

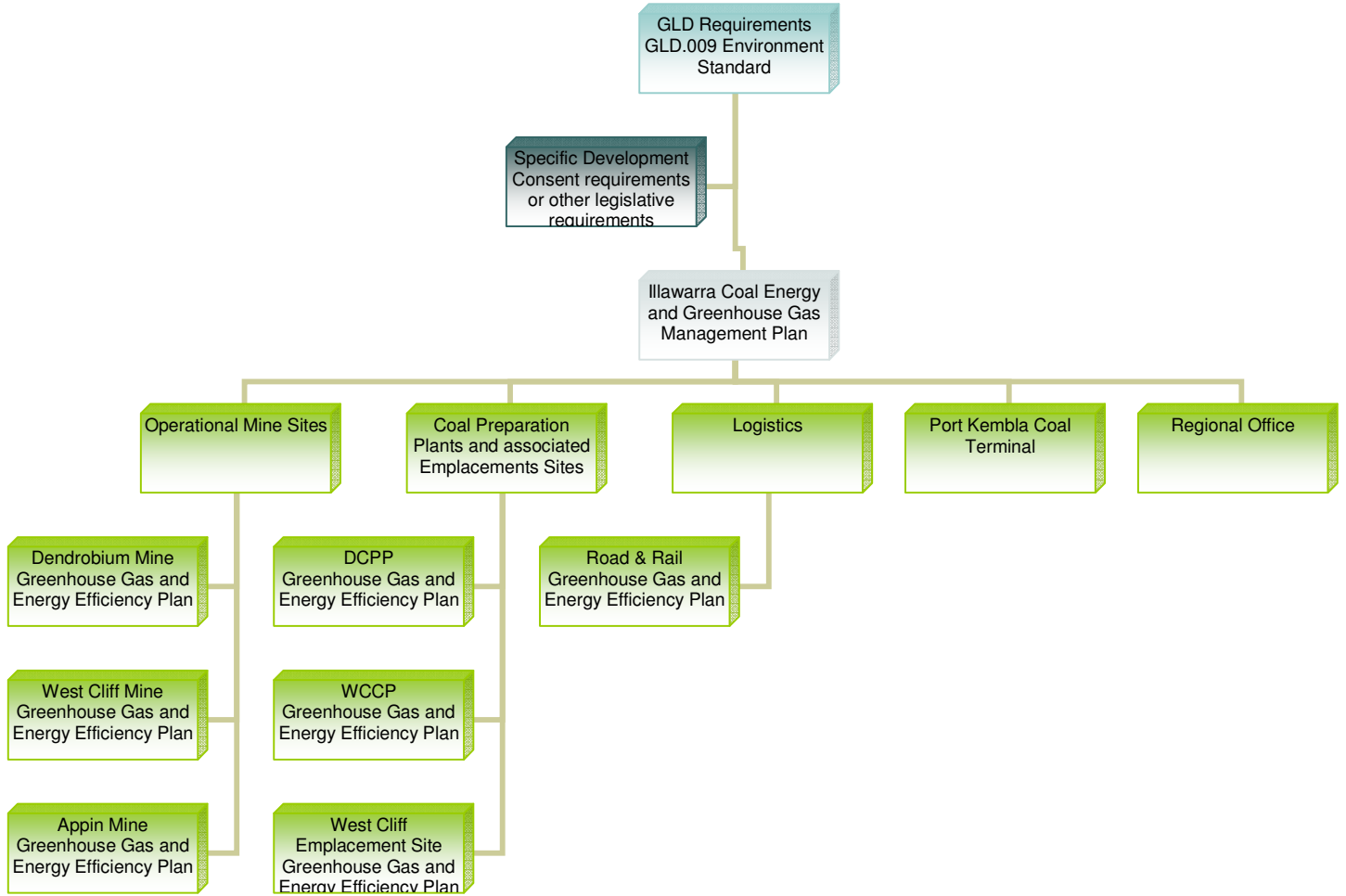
The purpose of GHGEMP is to fulfil the requirements of Corporate, Group Level Document (GLD) requirements, Development Consent conditions, NGRS and other legislative requirements for each of the operating sites.

It provides an overview of the Illawarra Coal operations and provides high level mitigation and management strategies currently utilised across the Illawarra Coal operations.

As outlined in the figure below, this management plan is supported by site specific Greenhouse Gas and Energy Efficiency Plans which detail site inventories and specific energy and greenhouse gas minimisation projects and initiatives.

The combination of this management plan and the site specific plans fulfil the specific requirements in the Environment GLD.009 (Section 5) for Energy and Greenhouse Management.

- Illawarra Coal GHG and Energy Management Documentation Structure



### 1.4 Energy and GHG Targets

Illawarra Coal is committed to operating in an environmentally responsible manner. To support this commitment, targets are established at both corporate and asset level with respect to GHG emissions, the current BHP Billiton targets are outlined in the following table.

- GHG Emissions Targets (BHP Billiton and Illawarra Coal)

Aspect	Target	Date
BHP Billiton	6% reduction in emissions per unit production (aggregate)	30 June 2012
	13% reduction in carbon based energy use per unit production (aggregate)	30 June 2012
Illawarra Coal	Not exceed 3.6 Mt CO <sub>2</sub> e pa throughout FY08-12  (FY06 being the baseline)	Five year period FY08-12
	Reduce GHG emissions to 1 Mt CO <sub>2</sub> e by FY15	FY15  (Australian Government Policy dependent)
	Increase gas capture efficiency to 80%	FY15

Targets and/or projects relating to GHG emissions and Energy consumption for the Illawarra Coal operations are reviewed annually as part of Business Planning (i.e. 1 year outlook) and Business Strategy (i.e. 5 year outlook).

**Illawarra Coal's goals in relation to GHG management as reflected in Illawarra Coal's current Balanced Strategy FY15 are to reduce Illawarra Coal's GHG emissions to <1 Mt CO<sub>2</sub>e pa and to improve gas capture efficiency to 80%.**

Currently Illawarra Coal's net GHG emissions are in the order of 3.2 to 3.5 Mt CO<sub>2</sub>e pa and gas drainage efficiency in the order of 40 to 50%.

## 2 OBJECTIVES

The objectives of the GHGEMP are to:

- Comply with all regulatory and corporate requirements relating to GHG and Energy Management;
- Define the roles and responsibilities with respect to GHG and Energy Management from Corporate to site level;
- Provide an overview of the energy usage and associated GHG emissions for the Illawarra Coal operations;
- Outline the key mitigation measures undertaken by Illawarra Coal with respect to GHG emissions and energy consumption;
- Describe the high level management strategies for GHG emissions and energy consumption; and
- Outline the reporting requirements for greenhouse gas emissions and energy usage and associated minimisation measures.

### 3 RESPONSIBILITIES

#### 3.1 Roles and Responsibilities

The following table outlines the roles and responsibilities related to energy and GHG management.

- Roles and Responsibilities – GHG and Energy Management

Area	Action	Responsibility
Corporate Targets	Setting of BHP Billiton aggregate targets	BHP Billiton senior management
IC Balanced Plan	Setting of Asset Energy and GHG emission targets	IC President
IC Energy and GHG Management Plan	Maintenance and communication of the Plan	IC's Manager Environment and IC's Environment Coordinator
Site Business Plans	Setting of site Business Plan goals	Site management
Site Energy and GHG Management Plans	Establishing, evaluating and implementing approved initiatives	Site management
Energy and GHG monitoring and reporting	Reporting to Corporate – review of performance	IC's Environment Manager and IC's Environment Coordinator
Energy and GHG monitoring and reporting	Reporting to IC management – review of performance	IC Environment Coordinator
Energy and GHG monitoring and reporting	Reporting to site management – review of performance	Site representatives
Training and Awareness	Communication of energy and GHG policy, awareness and management requirements	Site
Site Management Plans	Periodic review and update of initiatives and actions proposed within plans	Site
Major Projects	Review and authorisation of major capital projects – assignment of project responsibilities	IC's Project Review Committee
Site projects / initiatives	Review and authorisation of site projects and initiatives – assignment of site responsibilities	Site Management
Site Energy and GHG data and reporting	Submit data via SAPEC system	Site data owners

Illawarra Coal's 'Environment Coordinator' reports on a monthly basis the performance against GHG targets within the monthly Sustainable Development and External Affairs report which is distributed to IC and CSG management.

GHG emissions and energy use are provided to the site EMS representatives on a six monthly basis

Specific site responsibilities are nominated within the site specific plans.

With respect to monitoring and reporting performance against this plan, the responsibility is assigned to Illawarra Coal's 'Environment Coordinator' who reports to Illawarra Coal's 'Environment Manager'.

## 4 LEGISLATIVE AND OTHER REQUIREMENTS

### 4.1 Legislative Requirements

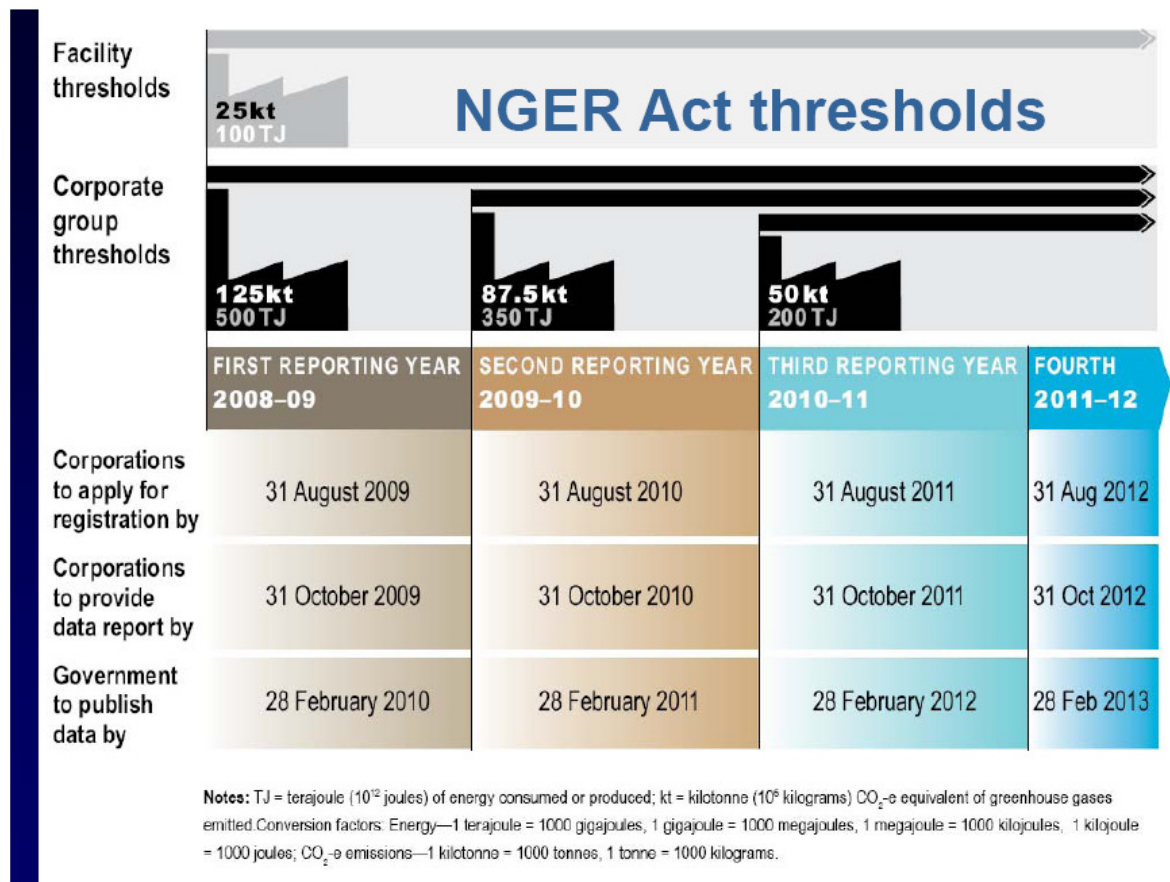
#### ***National Greenhouse and Energy Reporting System (NGERS)***

The National Greenhouse and Energy Reporting Act 2007 requires that:

- i. Corporations that may meet or exceed thresholds should be collecting greenhouse gas emissions and energy data
- ii. Corporations likely to meet thresholds next financial year should be considering setting up GHG and energy accounting and reporting system.

The emissions associated with the NGER Act are Scope 1 (i.e. emissions that occur as a direct result of an activity or series of activities that constitute the facility) and Scope 2 (i.e. emissions associated with the generation of electricity which is consumed by the facility). The NGER Act Reporting Thresholds (i.e. Scope 1 and 2) are outlined in the figure below.

- NGER Act Reporting Thresholds



BHP Billiton triggers the Corporate threshold. Therefore all Australian facilities under BHP Billiton’s operational control are required to report in accordance with NGER requirements.

Note: the Port Kembla Coal Terminal is not a facility under BHP Billiton’s operational control and is considered as a ‘monitored activity’ by definition.

The facility data that is required to be reported includes:

- GHG emissions;
- Energy Consumption; and
- Energy Production.

Associated Legislation includes the *National Greenhouse and Energy Reporting Regulations 2008* and the *National Greenhouse and Energy Reporting (Measurement) Determination 2008*.

## 4.2 BHP Billiton and Other Policies and Standards

BHP Billiton and Illawarra Coal operate in accordance with the Health, Safety, Environment and Community (HSEC) Management Standard (STA.009) which covers all operational aspects and activities of its business, the Environment GLD.009 and the HSEC Reporting GLD.012.

The HSEC Management System framework is consistent with internationally recognised standards. It aims to set benchmarks for the Company's diverse range of businesses to develop and implement their own HSEC Management Systems, to provide auditable criteria for these systems and to provide a basis from which to drive continuous improvement.

The Illawarra Coal Greenhouse Gas and Energy Management Plan has been developed consistent with the requirements and expectations of the Environment GLD.009, Section 5 for energy and GHG management.

Illawarra Coal, its mines and coal processing and logistics functions maintain Environmental Management Systems certified to ISO14001:2004.

## 5 MANAGEMENT STRATEGIES

This section of the management plan provides an overview of the energy usage and GHG emissions for the Illawarra Coal operations as well as the high level management strategy utilised across the Illawarra Coal operations to ensure that the operations are managed effectively with respect to energy usage and hence minimise GHG emissions to ensure Corporate and Illawarra Coal targets are met. This high level strategy is supplemented by the site specific strategies as detailed in the Greenhouse Gas and Energy Efficiency Plans that have been developed for each Illawarra Coal operation.

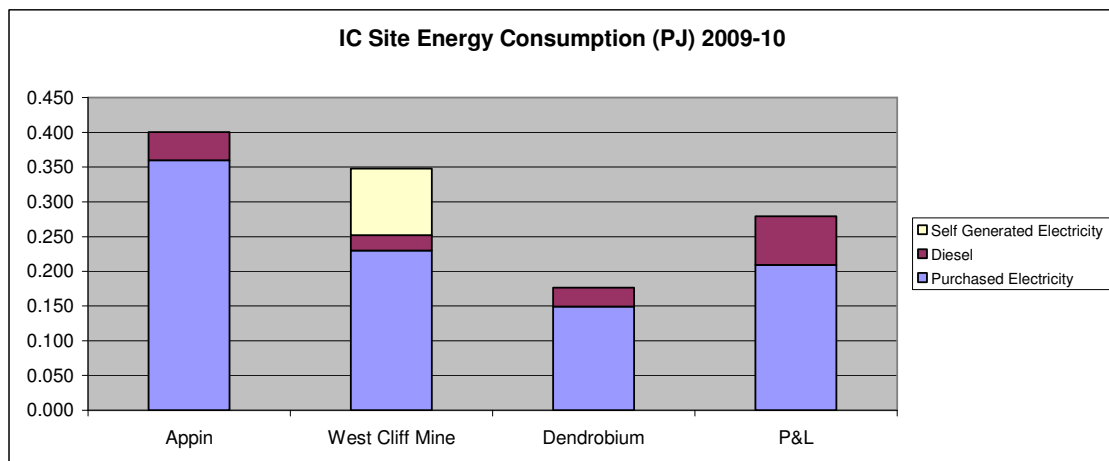
### 5.1 Energy Use & Greenhouse Gas Emissions

#### 5.1.1 Overview of Energy Usage

Illawarra Coal’s total net energy use is routinely in the order of 1.1 to 1.2 PJ pa (excluding PKCT). For FY10, the total net energy use was 1.134 PJ.

The following chart reflects the energy use by each of Illawarra Coal’s key operations.

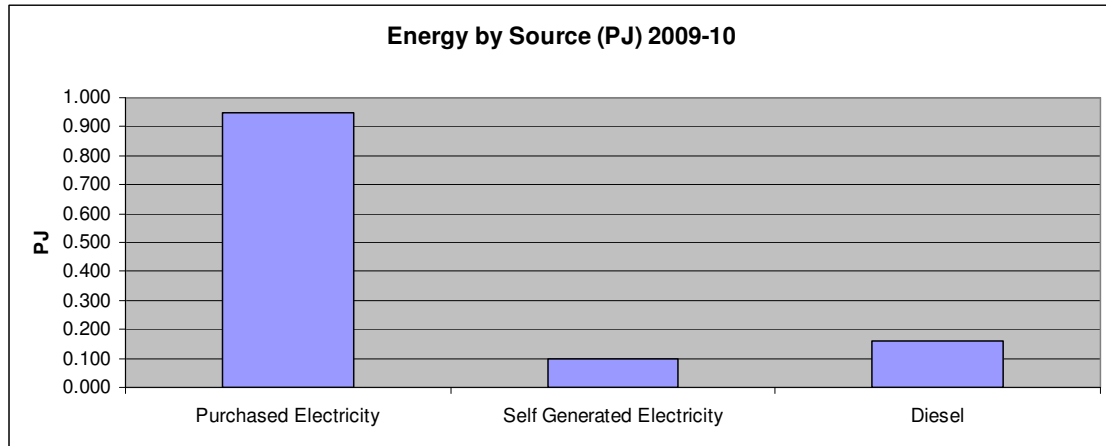
- Site Energy Consumption



The majority of energy used by Illawarra Coal is related to purchased electricity consumption which accounts for approximately 80%, with self generated electricity (WestVAMP) accounting for 8% and diesel fuel consumption accounting for 12% of total net energy used.

The following chart reflects Illawarra Coal’s energy use by source.

▪ Energy by Source



The following table shows the energy use source and types for Illawarra Coal for FY10.

▪ Energy Use

ICH FY10	GJ
Electricity - Net Purchased	951,988
Electricity - Net Purchased (grid)	841,496
Electricity - Net Purchased (off-grid)	110,492
Electricity - Self Generated Thermal Used	95,545
Energy Use - Total	1,601,939
Energy Use - Electricity	951,988
Energy Use - Natural gas	4,240
Energy Use - Distillate/Gasoline	178,227
Energy Use - Other	467,484
<b>Total Net Energy Use</b>	<b>1,134,455</b>

Note: Total net energy use does not include the energy content of the mine gas utilized by WestVAMP.

*Electricity*

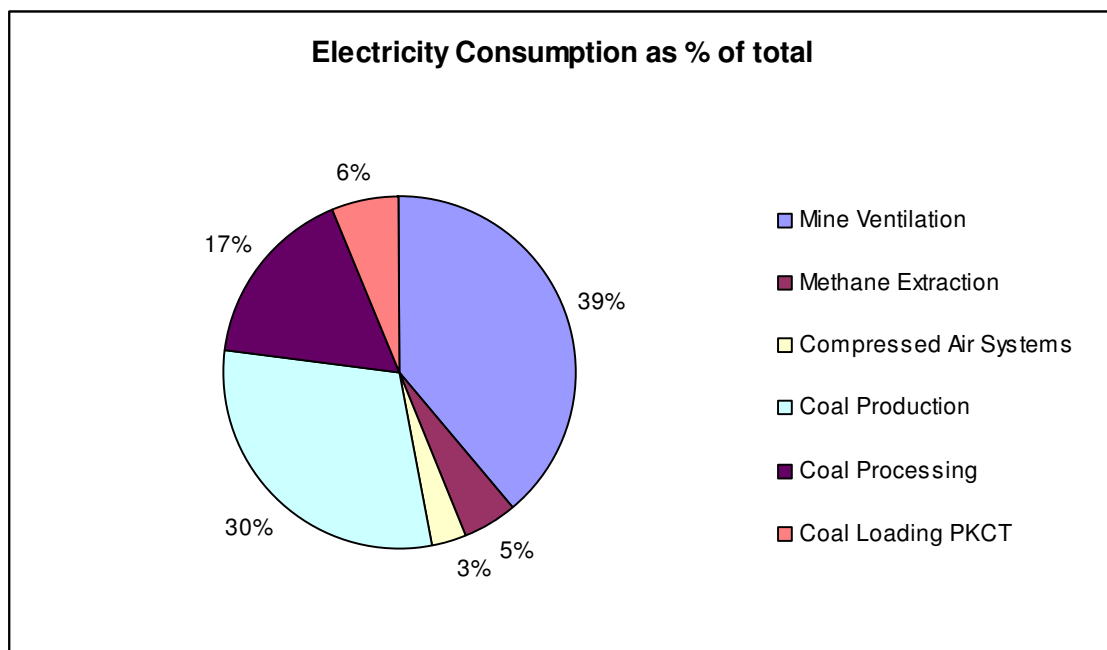
The majority of Electricity is purchased from the State Grid with an electricity emission factor of approximately 0.9 tCO<sub>2</sub>e/MWh. Electricity is also purchased from Bluescope Steel for use at the Dendrobium Pit Top site and also at the Dendrobium CPP located within the Bluescope Steelworks premises.

The process that uses the majority of the electricity across the Illawarra Coal operations are the mine ventilation systems which incorporate large fans with typical electrical capacities in excess of 2MW. The mine ventilation typically operates on 24 hours per day and except for reasons of

periodic maintenance or shutdown, operate essentially every day of the year. The mine ventilation system accounts for approximately 30-40% of the total energy usage for the Illawarra Coal operations.

The general breakdown of electricity consumption for Illawarra Coal is indicated in the following chart.

- Electricity Consumption as % of Total



### *Diesel*

Illawarra Coal consumes approximately 2,800 to 3,400 kL of diesel fuel annually which accounts for approximately 8% of the energy consumption for the Illawarra Coal operations. The distillate consumption reflects the fuel used by underground mining equipment such as people transporters (i.e. drift runners) and material transporters. It does not include diesel fuel consumed for contract transportation of coal from site by road and rail to Port Kembla as this is undertaken by a third party contract operation.

The consumption of underground mining fuel (UMF) is generally dependant on a number of factors including:

- The number of mine personnel working underground at the mine requiring transportation;
- Methods of transportation;
- The traveling road distances;

- Gradient and roadway conditions;
- The size and rate of operations of the mine which determines material consumption and supply rates;
- Mine layout; and
- Production plans.

### **5.1.2 Overview of GHG Emissions**

Illawarra Coal underground operations currently extract coal from two of the nine coal seams in the Southern Coalfield, the Bulli Seam and the Wongawilli Seam. These two seams present significantly different characteristics with respect to gas composition as detailed below.

#### *Bulli Seam Operations*

Appin and West Cliff mines operate in the Bulli Seam some 500 metres below the surface.

The Bulli coal seam, the underlying coal seams (principally Wongawilli and Bellambi seams) and intermediate strata and overlying strata, such as the Bulgo Sandstone group, contain relatively high levels of constrained methane.

Within the Bulli Seam gas content ranges from 6m<sup>3</sup>/t to 17m<sup>3</sup>/t with a average of about 12m<sup>3</sup>/t. Gas composition is predominantly Methane (CH<sub>4</sub>), averaging approximately 90% with the remainder consisting of Carbon Dioxide (CO<sub>2</sub>). The area between West Cliff (Area 5) and Appin (Area 7) is predominantly CO<sub>2</sub>. This zone of high CO<sub>2</sub> impacts on the western sector of West Cliff and the eastern central sector of Appin. Portions of North Cliff also contain higher quantities of CO<sub>2</sub> with CH<sub>4</sub>:CO<sub>2</sub> ratios ranging from 3:1 to 1:1. The gas composition in Appin Area 3 ranges from 65% to 95% CH<sub>4</sub>.

For safety and operational reasons, there is a need to pre-drain methane and carbon dioxide to acceptable levels prior to mining at the Appin and West Cliff operations.

At the Appin and West Cliff mines, fugitive emissions of methane to atmosphere result from main mine ventilation fan discharges and from surplus drainage gas discharges. Surplus drainage gas is that gas surplus to methane gas utilisation infrastructure capacity.

#### *Wongawilli Seam Operations*

The Dendrobium Mine operates within the Wongawilli seam at between 150 to 400 metres below the surface. The variation in depth of cover is dependent on the proximity to the Illawarra Escarpment and nature of overlying topography.

The Wongawilli Seam and associated strata at Dendrobium is much less “gassy” than the presently worked Bulli Seam mines. The Wongawilli Seam is presently exhibiting inherent gas levels of approximately four to five cubic metres per tonne (4 to 5 m<sup>3</sup>/t) of insitu coal. The principal gases being methane and carbon dioxide with traces of nitrogen and oxygen.

Due to the relatively low inherent gas levels of the Wongawilli Seam within the present mining area, there is no practical need to attempt to pre-drain the gas prior to mining at this time. The main mine ventilation systems reduce gas levels within the mine to safe working levels without the need for other complex gas drainage infrastructure.

At the Dendrobium Mine, the majority of fugitive methane emissions to atmosphere result from mine ventilation fan systems.

### 5.1.3 GHG Emissions

As discussed in the previous section, the mining operations currently operating in the Bulli Seam (i.e. Appin and West Cliff) account for the majority of the GHG emissions for the Illawarra Coal Operations as outlined in the following table. The total GHG Emissions for FY10 was 3.33 MtCO<sub>2</sub>e.

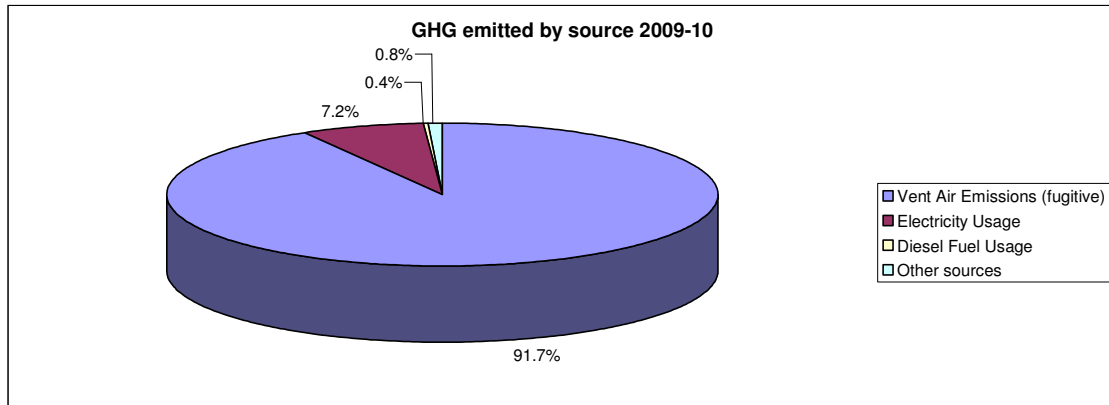
The following table shows the GHG emissions by source and type for FY10.

- Greenhouse Gas Emissions – Illawarra Coal

ICH FY10	t CO <sub>2</sub> e
GHG - Total Scope 1 & 2	3,331,050
GHG - Total Other as CO <sub>2</sub> -e	52
GHG - Source: Distillate & Fuel Oil	12,387
GHG - Source: Electricity	235,353
GHG - Source: Fugitive Emissions	3,056,620
GHG - Source: Natural Gas	218
GHG - Source: Other Sources	26,474

Illawarra Coal’s GHG emissions are largely attributable to mine vent air emissions which accounts for greater than 90% of Illawarra Coal’s total GHG emissions. The following figure shows typical contribution (as %) by source to Illawarra Coal’s annual GHG emissions.

- Greenhouse Gas Emissions by source – Illawarra Coal



## 5.2 Key Illawarra Coal Initiatives

Ventilation air emissions account for greater than 90% of the total GHG emissions for the operations. Illawarra Coal has supported and promotes the utilisation of mine methane in preference to venting it directly to atmosphere. Current projects supported by Illawarra Coal include the Methane Gas Engine Power Plants at Appin, the West Cliff to Appin Power Plant overland mines gas pipeline, the WestVAMP Project at West Cliff and surface gas well flaring trials.

Illawarra Coal's key initiatives are reflected in the following table.

- GHG and Energy Key Initiatives – Illawarra Coal

Site	Initiative	Status	Energy or GHG implications
Appin and Tower Power Plants	Mine methane consumption to produce electricity	Complete and ongoing	Reduces GHG emissions by 2 to 2.5 Mt CO <sub>2</sub> e annually – produces approx 450 GWh of electricity annually on mines gas alone.
West Cliff - WestVAMP	Consumption of mine vent air	Complete and ongoing	Reduces GHG emissions by up to 0.25 Mt CO <sub>2</sub> e annually – with potential to produce up to 40 GWh of electricity annually on mines gas alone.
West Cliff – Surface Gas Wells	Flaring of SGW's	Trials and ongoing	Potential reduction of up to 15 Kt CO <sub>2</sub> e annually per flare.
Appin, West Cliff and Dendrobium Mines	Mine vent air emissions reduction	Feasibility study	Reduce IC GHG emissions - TBD
No.1 Seam operations	Increase gas capture %	FY11 Balanced Plan project	Increase gas capture efficiency to 80%
No2 Area coal stockpile operations at Bluescope	Use of bio-fuel diesel	Trial	Reduce GHG emissions - TBD
Appin West	Utilisation of gas drained by surface means (SGW's <sub>0</sub> )	FY11 Project	Reduce emissions directly to atmosphere
All mine sites	Install NGERS compliant and improved ventilation and mine gas monitoring systems	FY11 Project	Compliance and improved data

The Appin and Tower Power Plants reduce GHG emissions annually by approximately 2 to 2.5 Mt CO<sub>2</sub>e through the consumption of drained mine methane.

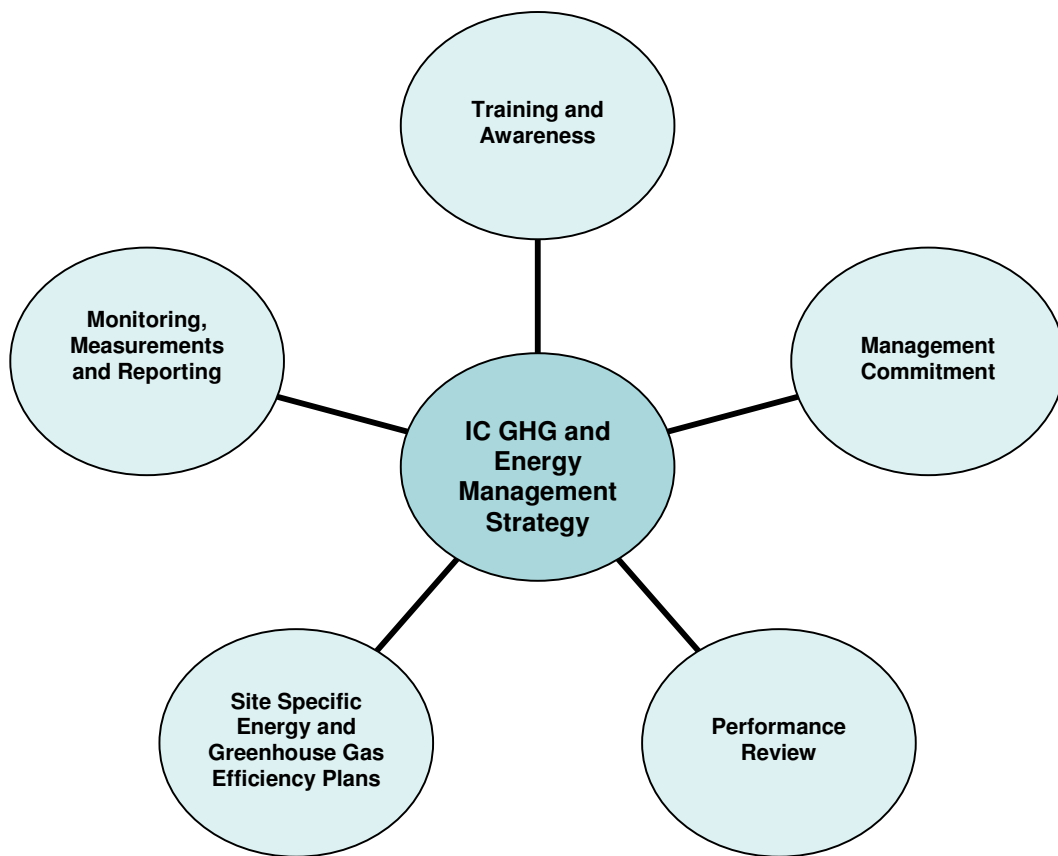
The WestVAMP project at West Cliff is designed to routinely reduce annual GHG emissions by up to 0.25 Mt CO<sub>2</sub>e annually through the consumption of low purity methane within the mine vent air stream and to reduce electricity purchases by 30 to 40 GWh pa.

Initiatives that are currently being undertaken or planned are detailed in the site specific Greenhouse Gas and Energy Efficiency Plans.

### 5.3 Energy and GHG Management and Mitigation

The Illawarra Coal Energy and Greenhouse Gas Management Strategy includes a number of key components as shown in the figure below. These key components allows the Illawarra Coal operations to operate in such a manner that minimises energy consumption and hence reduces the environmental impact of the operations. Each of these components are discussed below.

- GHG and Energy Management Strategy – Illawarra Coal



#### 5.3.1 Training and Awareness

Energy Efficiency and Greenhouse Awareness is primarily communicated to site personnel (employees and contractors) during site inductions and awareness sessions conducted at each of the sites. Energy and GHG issues currently affecting the industry are communicated to environmental representatives for each of the sites via regular EMS team meetings.

### **5.3.2 Management Commitment**

The senior management team for Illawarra Coal are committed to ensuring energy use efficiency and greenhouse gas emission management is priority for the business. As detailed in Section 1 of this management plan, Illawarra Coal also includes targets associated with GHG emissions in the business planning (i.e. 1 year outlook) and business strategy (5 year outlook).

Energy usage and greenhouse gas emissions are included in the monthly Business Performance Review (BPR) process.

### **5.3.3 Site Specific Energy and Greenhouse Gas Efficiency Plans**

- i. The Site Specific Greenhouse Gas and Energy Efficiency Plans supplement the 'Illawarra Coal Energy and Greenhouse Management Plan' and fulfil the specific requirements in the Environment GLD 009 Section 5.

### **5.3.4 Monitoring, Measurement and Reporting**

Energy use figures (electricity consumption and diesel usage) are available for each site on a monthly basis through either direct measurement and/or invoicing and reporting data.

Methane and carbon dioxide content of mine return air (vent air) and volumetric flows of mine main vent air systems are undertaken on a routine basis as required by legal requirements. Each mine has real time air quality monitoring systems and manual monitoring systems (eg. monthly ventilation surveys) in place to measure the concentration of methane and carbon dioxide in the mine vent air streams.

The amount of methane utilised for power generation or vented as surplus to atmosphere is continuously metered as per contracted arrangements. Gas flow rates are flow metered by in-line instrumentation and gas content is analysed by gas chromatograph.

Energy and GHG data is reported by facilities through the SAPEC system.

The reporting requirements for GHG and Energy data is specified in Section 6 of this management plan.

### **5.3.5 Management Review**

Based on the monitoring data provided by the sites, evaluation of performance against the targets for energy usage, energy efficiency and greenhouse gas intensity is undertaken tracked,

recorded and reported to Illawarra Coal's Senior Leadership Team (SLT) and other management/team meetings and part of normal business process.

The energy and GHG data reported through the SAPEC system is reviewed and signed off by site Operations Managers (or General Manager equivalent) on a monthly basis. Half yearly and yearly data reported to corporate and consequently to government in the form of NGERS facility reports is reviewed and signed off by site Operations Managers (or General Manager equivalent) and financial year data by Illawarra Coal's President.

#### **5.4 GHG Forecasting**

The following table shows the GHG emissions forecast for Illawarra Coal for the next five years.

Forecasting is based on forecast production and emissions factors derived from past performance which best reflect the future mining domain and operations profiles.

GHG Emissions Forecast – Illawarra Coal

GHG Forecast FY11-15

	FY09	FY10	FY11	FY12	FY13	FY14	FY15
			f/cast	f/cast	f/cast	f/cast	f/cast
<u>RoM Production</u>							
Appin	2,195,079	2,890,965	3,297,625	3,524,147	3,644,315	3,789,264	4,410,619
Westcliff	2,933,441	2,216,255	3,244,758	3,177,386	3,298,649	3,180,312	1,473,346
Dendrobium	3,000,160	3,406,632	3,883,861	4,003,761	4,001,884	4,496,895	4,515,490
WDRP		-	128,374	330,526	324,676	331,801	1,353,080
Adjustments	-80,096	(62,063)	-	-			
<b>Total RoM Production</b>	<b>8,048,584</b>	<b>8,451,789</b>	<b>10,554,618</b>	<b>11,035,820</b>	<b>11,269,524</b>	<b>11,798,272</b>	<b>11,752,535</b>

Net GHG Emission Forecast - IC		FY09	FY10	FY11	FY12	FY13	FY14	FY15
Electricity	t CO2e (Scope 2)	234,047	235,712	254,929	257,405	259,470	264,249	252,446
Electricity self generated	t CO2e (Scope 1)	25,673	23,886	22,500	22,500	22,500	22,500	22,500
Diesel	t CO2e (Scope 1)	9,001	11,252	12,840	13,351	13,645	14,119	14,310
Natural Gas combustion	t CO2e (Scope 1)	230	230	230	230	230	230	230
Mine Vent Air CH4	t CO2e (Scope 1)	2,555,300	2,739,029	3,314,112	3,422,431	3,541,180	3,600,213	3,256,522
Mine Vent Air CO2	t CO2e (Scope 1)	102,812	129,864	149,119	150,178	158,934	157,070	77,158
Mine vent air combustion by VOX	t CO2e (Scope 1)	29,889	26,474	31,372	31,051	31,629	31,065	22,935
Surface Gas Wells (seam gas) est	t CO2e (Scope 1)	3,822	4,240	6,756	6,756	6,756	6,756	6,756
Drainage gas venting	t CO2e (Scope 1)	50,000	15,000	15,000	15,000	15,000	15,000	15,000
Closed mines fugitive emissions (Cordeau)	t CO2e (Scope 1)	50,000	40,000	30,000	20,000	10,000	5,000	5,000
Post Mining Emissions	t CO2e (Scope 1)	113,802	119,194	145,967	149,874	153,228	160,531	145,592
<b>Total</b>		<b>3,174,577</b>	<b>3,344,880</b>	<b>3,982,825</b>	<b>4,088,777</b>	<b>4,212,571</b>	<b>4,276,733</b>	<b>3,818,450</b>

## 5.5 GHG Reduction Cost Curve

A GHG cost reduction curve that identifies potential projects to reduce all GHG emissions, addressing cost, lead time and implementation options is attached as Appendix 1.

## 6 REPORTING

### 6.1 Reporting

Each operational site contributes reports energy and GHG data through the SAPEC system specifically designed for the process.

Data extracted from the SAPEC system forms the data reported to the Australian Government in accordance with NGERs requirements.

Illawarra Coal reports its GHG and energy performance to external stakeholders and the general public via publication of its annual Sustainability Report.

Reporting as required by the NGER Act, detailed in Section 4 of this report, is undertaken on an annual basis for the Illawarra Coal operations.

### 6.2 Auditing

Internal and external HSEC audits are undertaken at Illawarra Coal whereby compliance with the requirements of HSEC Reporting GLD.012 and the Environment GLD.009 where compliance with energy of GHG management requirements is evaluated.

Periodic external audits are also commissioned by Corporate to verify compliance with NGERs requirements specifically for key facilities such as Appin and West Cliff.

## 7 REVIEW

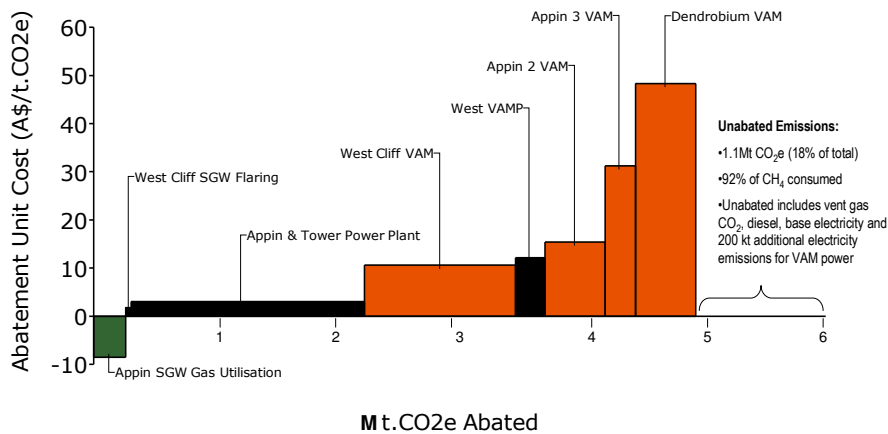
The plan will be reviewed on a nominal two yearly basis or more frequently where there is a material change to the data and detail reflected in it or where there is a material change to either the Environment GLD.009 or the HSEC Reporting GLD.012 requirements in relation to energy and GHG management.

8 Appendix 1 – GHG Reduction Cost Curve

## Abatement Cost Curve – VAM only



- Current Abatement
- Planned Abatement
- Potential Abatement



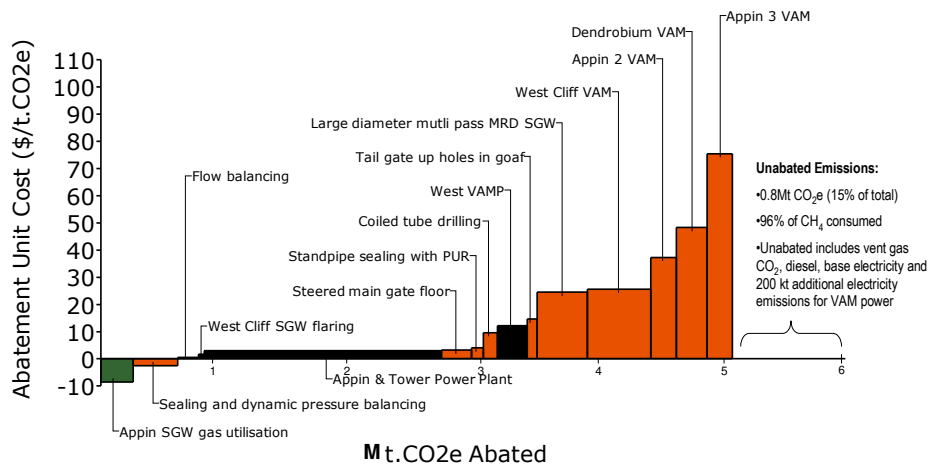
\* Excludes Appin #6 Shaft



## Abatement Cost Curve – Gas Capture & VAM



- Current Abatement
- Planned Abatement
- Potential Abatement



\* Excludes Appin #6 Shaft  
 \*\* Gas capture options are all risked values

