



**EnergyAustralia**

EnergyAustralia Yallourn Pty Ltd  
ABN 47 065 325 224

Level 33  
385 Bourke Street  
Melbourne Victoria 3000

Phone +61 3 8628 1000  
Facsimile +61 3 8628 1050

enq@energyaustralia.com.au  
energyaustralia.com.au

24 August 2015

Hazelwood Mine Fire Inquiry  
PO Box 24  
Flinders Lane VIC 8009

Dear Board of Inquiry

### **EnergyAustralia submission to the Hazelwood Mine Fire Inquiry – Stage 2**

EnergyAustralia Yallourn Pty Ltd (**EnergyAustralia**) provides the enclosed submission to Stage 2 of the Hazelwood Mine Fire Inquiry.

Our comments are restricted to items 8-10 of the Board of Inquiry's Terms of Reference relating to mine rehabilitation.

### **Energy Australia and the Yallourn Mine and Power Station**

EnergyAustralia owns and operates the Yallourn Mine and Power Station in the Latrobe Valley. The mine, which covers 5595 hectares, provides brown coal to fuel the 1480MW power station which produces approximately 22% of Victoria's electricity.

EnergyAustralia is part of the Energy Australia Holdings Group, which is one of Australia's largest energy groups, providing gas and electricity to 2.6 million household and business customers in NSW, Victoria, Queensland, South Australia and the Australian Capital Territory. The EnergyAustralia Holdings Group owns and operates a multi-billion dollar portfolio of energy generation and storage facilities across Australia, including coal, gas and wind assets with control of over 4,500MW of generation in the National Electricity Market.

The Yallourn Mine is unique in light of its proximity to the Morwell and Latrobe Rivers. The Morwell River was diverted in the early 1980s to allow access to coal fields on the east side of the site. The current diversion was completed in 2005 to improve access to further coal resources.

The second unique feature of the Yallourn mine is its relative shallowness compared to other mines in the region. Having a maximum depth of approximately 95 meters below ground level results in it having less coal exposed, which makes progressive rehabilitation relatively easier.

### **Rehabilitation**

The Yallourn Mine is operated under the *Mineral Resources (Sustainable Development) Act 1990* (Vic) (**MRSDA**) and has a Mine Rehabilitation Master Plan that has been prepared pursuant to the MRSDA.

The approved Rehabilitation Master Plan is designed to deliver a final landform that:

- protects the safety and health of the public by ensuring mining hazards and residential environmental impacts are minimised;
- is compatible with the surrounding natural and altered landscape;
- is sustainable and requires minimal ongoing maintenance and monitoring;
- expresses, where practicable, the land uses and ecological values that existed on the site prior to mining;
- supports future beneficial uses; and
- provides diversity of landform, vegetation and wildlife values that are sustainable.

The Rehabilitation Master Plan is supported by other operational plans for the Yallourn Mine, including the Fire Control Management Plan (which aims to effectively manage the risk of fire) and the Ground Control Management Plan (which aims to effectively maintain safety and ground stability in the mine).

#### *Final rehabilitated state*

The Rehabilitation Master Plan provides for a flooded lake as the rehabilitation solution at the end of the mine's useful life. This has been independently assessed to be the most stable and effective final form to rehabilitate the mine given the proximity of the Morwell and Latrobe Rivers, and geotechnical conditions.

A flooded approach to rehabilitation presents the lowest fire, stability and environmental risk into the future, and also provides the Latrobe Valley with potential economic value through recreation, tourism, industrial and commercial use. This approach is consistent with achieving the state that would occur in the mine were nature allowed to take its course without human intervention. The timeline to reach a final flooded state will vary depending on the approach taken to flooding, but is achievable within a range of short, medium and longer term options following mine closure.

Other approaches to rehabilitation, such as a partially filled lake or solid landmass, create greater ongoing fire, stability and environmental risks which would require ongoing management.

#### *Progressive rehabilitation*

Substantial progressive rehabilitation work has been carried out in the Yallourn Mine with a view towards managing environmental risks associated with the mine while it continues to be active, but also with a view towards the final lake landform. The submission includes details of efforts made in relation to progressive rehabilitation to date, and particularly towards covering exposed coal in the mine. Large scale coverage of exposed coal is regularly undertaken for operational and fire management purposes, and is largely achieved by fixed and mobile plant overburden dumping and vegetation coverage. A number of access tracks and fire breaks have been created within rehabilitated areas to reduce fire risk.

Areas above the final lake are prioritised with shaping, topsoil placement and grass or woodland establishment the common practice. In addition, interim stabilisation is carried out on internal overburden dumps with woodlands and grasslands being established where practical. This activity is combined with batter stability, fire risk reduction and dust mitigation works to maintain the mine in a safe and stable state.

## **Managing fire risk**

EnergyAustralia has a comprehensive reticulated fire service system and Fire Control Management Plan in place to reduce fire risk and respond in circumstances where fire is located in or around the mine. Combined with EnergyAustralia's existing efforts towards progressive rehabilitation (in particular the covering of exposed coal areas), these controls were highly effective during the Latrobe Valley fires of February 2014 and previous fires.

EnergyAustralia also invests significant resources into staff training to equip workers to respond quickly to fire risks, and works closely with local and State fire authorities to ensure a coordinated approach to fire management is in place.

## **Rehabilitation Bonds**

EnergyAustralia notes that the Board of Inquiry is required by its Terms of Reference to consider whether the current rehabilitation bond system is effective.

The current approach by Government to hold a portion of the total rehabilitation cost as a bond is appropriate, and reflects the level of risk associated with each mine operator. Any increase in the required bond may have perverse impact as it will reduce the funds available to undertake progressive rehabilitation.

## **Conclusion**


EnergyAustralia supports the current regulatory framework and has invested significant resources developing and implementing a detailed Master Rehabilitation Plan consistent with the objectives of the MRSDA.

We encourage the Board of Inquiry to recognise that each of the mines in the Latrobe Valley has unique landforms to consider and that a 'one-size-fits-all' approach to rehabilitation is not appropriate. In the case of the Yallourn Mine, rehabilitation is best achieved by working with the natural water flows surrounding the mine in a managed way to deliver a flooded lake scenario.

EnergyAustralia supports the current mine rehabilitation bond system, and considers that it adequately reflects the level of risk associated with mine operators and provides appropriate incentives for progressive mine rehabilitation in accordance with approved plans.

For further information on any issues raised in this submission please contact Ron Mether, Manager Mining.

Yours sincerely



**Mark Pearson**  
**Head of Yallourn**



***EnergyAustralia***

# **Hazelwood Mine Fire Board of Inquiry**

**Submission of EnergyAustralia Yallourn Pty Ltd**

**24 August 2015**

**Terms of Reference 8, 9 and 10**

EnergyAustralia Yallourn Pty Ltd  
ABN 47 065 325 224  
Level 33  
385 Bourke Street  
Melbourne Victoria 3000

## Table of Contents

|           |  |           |
|-----------|--|-----------|
| <b>1.</b> | <b>Introduction and Background.....</b>                          | <b>1</b>  |
| 1.1       | About the EnergyAustralia Group.....                             | 1         |
| 1.2       | The Yallourn Mine and Power Station.....                         | 1         |
| <b>2.</b> | <b>The Mine Rehabilitation Regulatory Framework .....</b>        | <b>3</b>  |
| 2.1       | Overview.....  | 3         |
| 2.2       | Source .....   | 3         |
| 2.3       | Summary of Requirements.....                                     | 3         |
| 2.4       | Guidelines.....  | 3         |
| <b>3.</b> | <b>Rehabilitation Strategy at the Yallourn Mine .....</b>        | <b>3</b>  |
| 3.1       | Broad Rehabilitation Options.....                                | 3         |
| 3.2       | Rehabilitation Option 1: Non-Flooded Solution .....              | 4         |
| 3.3       | Rehabilitation Option 2: Partial Flooding Solution .....         | 5         |
| 3.4       | Rehabilitation Option 3: Full-Flooded Solution .....             | 5         |
| 3.5       | Key Rehabilitation Strategy Documents .....                      | 6         |
| 3.6       | Current Approved Strategy.....                                   | 7         |
| <b>4.</b> | <b>Assessment of Rehabilitation Options .....</b>                | <b>7</b>  |
| 4.1       | Specific Considerations Relevant to Rehabilitation Options ..... | 7         |
| 4.2       | Flooding Options and Timing.....                                 | 11        |
| 4.3       | Impacts on Other Mines .....                                     | 13        |
| <b>5.</b> | <b>Progressive Rehabilitation.....</b>                           | <b>13</b> |
| 5.1       | Short-Term Rehabilitation Measures.....                          | 13        |
| 5.2       | Medium and Long-Term Rehabilitation Measures .....               | 14        |
| 5.3       | Progressive Rehabilitation and Fire Mitigation .....             | 15        |
| 5.4       | Progressive Rehabilitation and Stability .....                   | 15        |
| 5.5       | Progressive Rehabilitation Reporting .....                       | 15        |
| <b>6.</b> | <b>Rehabilitation Bond Arrangements.....</b>                     | <b>16</b> |
| 6.1       | Regulatory Requirements .....                                    | 16        |
| 6.2       | EnergyAustralia's Rehabilitation Bond .....                      | 16        |

---

## 1. Introduction and Background

This Submission is lodged by EnergyAustralia Yallourn Pty Ltd (**EnergyAustralia**) to the Board of the Hazelwood Mine Fire Inquiry (**Board**) in response to the invitation by the Board for general submissions in relation to Terms of Reference 8 - 10.

### 1.1 About the EnergyAustralia Group

EnergyAustralia Holdings Limited (**EnergyAustralia Holdings**) is the Australian holding company of the EnergyAustralia group (EnergyAustralia Holdings and its wholly subsidiaries being the **EnergyAustralia Group**), which is a leading vertically integrated energy company group in the Australian National Electricity Market (**NEM**).

The EnergyAustralia Group has a A\$7.9bn<sup>1</sup> portfolio of customer and generation assets. It is Australia's third largest energy (electricity and gas) retailer, with approximately 2.6 million accounts. It is an energy retailer in every contestable energy market that is part of the NEM (being Victoria, South Australia, New South Wales (**NSW**), Queensland, the Australian Capital Territory and Tasmania).

The EnergyAustralia Group is also one of the largest privately held suppliers of generation output to the NEM with generation capacity across three states (Victoria, NSW and South Australia). It has a well-balanced, multi-fuel and multi region portfolio of approximately 4.5GW generation assets with average carbon emission intensity close to the NEM system average. The key operational assets of the EnergyAustralia Group include four wholly owned power stations (including the Yallourn Power Station and Yallourn Mine), an equity stake in the Cathedral Rocks Wind Farm and also a 23.5PJ underground gas storage facility and 500TJ/day gas processing plant at Iona in Victoria.

As at June 2015 the EnergyAustralia Group employed around 2,300 people in Victoria, South Australia and NSW.

The EnergyAustralia Group is indirectly wholly-owned by a company listed on the Hong Kong Stock Exchange, but operates in Australia under the direction of a board constituted of a majority of independent directors.

The obligations of EnergyAustralia are guaranteed under a Deed of Cross Guarantee (in the form prescribed by the Australian Securities & Investments Commission) to which EnergyAustralia Holdings (which holds an investment grade credit rating from Standard & Poor's) and substantially all members of the Energy Australia Group are party.

### 1.2 The Yallourn Mine and Power Station

EnergyAustralia owns and operates the Yallourn Mine and adjacent Power Station in the Latrobe Valley in Victoria. The Yallourn Power Station has a nameplate generation capacity of 1,480MW, and supplies approximately 22% of Victoria's electricity.

#### (a) Power Generation History in the Latrobe Valley

Power generation in Yallourn has a long history dating back to the early 1920s. The current Yallourn Power Station was built in the 1970s, and the site on which both the Yallourn Power Station and Mine are located covers 5,595 hectares. The Yallourn Power station is located approximately 10.5km in a direct line north-west from the Hazelwood Power Station.

EnergyAustralia has a licence to operate the Yallourn Mine to 2026. The Yallourn Power Station relies upon the adjacent Yallourn Mine to supply coal to fuel the 1,480MW units.

---

<sup>1</sup> As of 31 December 2014.

(b) **The Yallourn Mine**

Mining at Yallourn commenced in the 19<sup>th</sup> century in the Yallourn North Open Cut area. In 1924 the State Electricity Commission of Victoria (**SECV**) began mining coal from the Yallourn Open Cut, following the removal of overburden<sup>2</sup> during the previous three years. Since then, over 293 million cubic metres of overburden and over one billion tonnes of coal has been mined.

In the 1980s the Morwell River was diverted to allow access to coal fields on the east side of the Yallourn Mine site. In 1992, mining progressed into the area known as East Field before transitioning in 2011 to the current operating area known as the Maryvale Field. To facilitate the efficient extraction of coal from East Field, and the transition of mining to the Maryvale Field, it was again necessary to divert the Morwell River, this time through the Yallourn Mine. The Morwell River Diversion (**MRD**) was completed in 2005 to improve access to further coal resources, thereby extending the life of the Yallourn Power Station. The current MRD consists of 13 million cubic metres of clays and sand from overburden material forming an above ground aqueduct. The MRD flows on top of a structure and joins the Latrobe River in close proximity to the north of the Yallourn Power Station. The MRD includes around 50,000 plants and woody debris for fish, bugs and other wildlife to inhabit.

The completion of mining in the East Field, the development of the MRD, and the subsequent transition to the Maryvale Field, was the subject of a detailed environmental impact assessment completed between 1999 and 2001. This culminated in the completion of an Environmental Effects Statement (**EES**), Supplementary EES and associated assessments by the Minister for Planning, which are discussed in further detail at section 3 below.

The following aerial photograph shows the layout of the Yallourn Mine, including the various mine fields and their location in relation to the Yallourn Power Station.



<sup>2</sup> Overburden is the material that lies above the coal resource, which needs to be removed in order to access the coal.

The Yallourn Mine has a depth of approximately 95 metres below ground level at its lowest point. This is relatively shallow compared with the Hazelwood and Loy Yang mines. The relative shallowness of the Yallourn Mine facilitates progressive rehabilitation, reduces the fire risk and enables other impacts (such as dust, erosion and visual amenity issues) to be effectively managed.

---

## **2. The Mine Rehabilitation Regulatory Framework**

### **2.1 Overview**

This section 2 provides a summary of the existing mine rehabilitation regulatory framework to provide context for the discussion below in relation to the Yallourn Mine.

### **2.2 Source**

Mine rehabilitation in Victoria is governed under the *Mineral Resources (Sustainable Development) Act 1990 (Vic) (MRSDA)* and *Mineral Resources (Sustainable Development) (Mineral Industries) Regulations 2013 (Vic) (Mineral Industries Regulations)*.

The MRSDA establishes a legal framework aimed at ensuring, among other things, that mineral resources are developed in ways that minimise adverse impacts on the environment and community, and that land which has been mined is rehabilitated.

### **2.3 Summary of Requirements**

Under the MRSDA, a licensee who proposes to do work under a licence must lodge a work plan with the Department Head which must contain, amongst other things, a rehabilitation plan for the area of land covered by the licence. Licensees are required to rehabilitate land in accordance with the approved rehabilitation plan.

The current regime requires all remediation plans to take into account any special characteristics of the land, surrounding environment, the need to stabilise the land, the desirability or otherwise of returning agricultural land to a state that is as close as is reasonably possible to its state before the mining licence or extractive industry work authority was granted; and any potential long term degradation of the environment.

The Mineral Industries Regulations set out additional requirements for rehabilitation plans, including that they:

- (i) address concepts for the end utilisation of the site;
- (ii) include a proposal for the progressive rehabilitation and stabilisation of extraction areas, road cuttings and waste dumps, including re-vegetation; and
- (iii) include proposals for the end rehabilitation of the site, including the final security of the site and the removal of plant and equipment.

### **2.4 Guidelines**

In addition, guidelines published by the Department of Economic Development, Jobs, Transport and Resources (**DEDJTR**) provide guidance in relation to work plans, rehabilitation plans and rehabilitation bonds.

---

## **3. Rehabilitation Strategy at the Yallourn Mine**

### **3.1 Broad Rehabilitation Options**

Under SECV management, there was no strict statutory requirement to rehabilitate disturbed areas, although some shaping and stabilisation work was completed prior to the mine being



sold. It was determined that the SECV had rehabilitated approximately 300ha of a total 1900ha disturbed land prior to privatisation, although much of this formed part of the former Morwell River diversion, which has since been mined out.

The following aerial photograph shows the extent of rehabilitation at the Yallourn Mine performed by the SECV (shaded in green).



Since privatisation, and as discussed further in this submission, there has been an increased focus on rehabilitation. In that regard, three long term options for rehabilitation at the Yallourn Mine have been considered by EnergyAustralia. They are:

- a non flooded option (discussed at section 3.2 below);
- a partially flooded option (discussed at section 3.3 below); and
- a fully flooded solution (discussed at section 3.4 below).

Rehabilitation timeframes are divided into three broad periods, namely:

- (a) **Short term**, being the period during the mine's operational life;
- (b) **Medium term**, being the period from mine closure to 10 years post closure; and
- (c) **Long term**, being the period of time from ten years post mine closure to beyond.

EnergyAustralia's rehabilitation strategy distinguishes between these periods, with immediate measures being implemented in the short term, particularly as part of its progressive rehabilitation initiatives (discussed at section 5 below).

Below is a summary of the broad rehabilitation options that have been considered in determining the approved Rehabilitation Master Plan (as defined in section 3.5 below) which reflects the flooded mine option. These are the options that would ultimately be implemented over the medium to long-term.

### 3.2 Rehabilitation Option 1: Non-Flooded Solution

Options for a non-flooded mine are most likely to include agriculture, forestry, conservation, public and industrial use.

The non-flooded option would present increased stability issues compared with other options, and would require on-going management measures, including through monitoring, surcharging and dewatering.

It is important to consider the continued existence of the MRD in a non-flooded option. The MRD is an engineered structure which will require ongoing monitoring and management for the duration of its operational life.

The non-flooded option poses the greatest fire risk of the three options to the Yallourn Mine. While remaining coal will most likely be covered by overburden (which reduces the fire risk associated with exposed coal) this option still presents a significant increase in vegetation load which could potentially fuel a fire in the vicinity. It would be critical that the fire risk resulting from an increase in vegetation load be continually monitored and managed.

Further, water would inevitably find its way into the bottom of the Yallourn Mine, and would need to be pumped out into the river system. This, together with the required ongoing monitoring of the stability of the batters compares unfavourably from an efficiency perspective with the flooded lake option.

A non-flooded mine may offer some limited conservation and minor agricultural benefits. However, the long term agricultural benefits of the mine area under the non-flooded solution would be detrimentally affected by a lack of sufficient appropriate topsoil for an agricultural use. Overburden coverage of coal is not suitable for any type of commercial farming use.

### **3.3 Rehabilitation Option 2: Partial Flooding Solution**

Another rehabilitation option is partial flooding (i.e. flooding to a level lower than the top of the Yallourn Mine). This option would result in more water being contained in the bottom of the Yallourn Mine, but in all other respects is substantially the same as the non-flooded option.

The partial flooding solution would provide some lake areas along with vegetated areas. It has been identified as a problematic option in terms of managing stability issues around the mine and ensuring water levels and water quality are maintained. This option would also likely benefit from the placement of additional topsoil in exposed areas similar to the non-flood option, albeit to a lesser degree, but in this solution there would still be insufficient topsoil available to provide agricultural level coverage.

The partially flooded option would also require extensive pumping of water to ensure that the desired water level is maintained. Such pumping would not be required with a fully flooded option.

### **3.4 Rehabilitation Option 3: Full-Flooded Solution**

The fully flooded solution includes a system of lakes interconnected to the local river network, with only a small percentage of the existing mine covered by overburden, topsoil and vegetation. It is the ultimate risk mitigation against fire as:

- (a) the majority of the coal would be submerged in water (and accordingly unable to be ignited or burn); and
- (b) if a fire were to occur in the perimeter grassland or woodland areas outside the mine perimeter, the lake system would be an invaluable source of water for fighting the fire.

The fully flooded solution has been independently assessed to provide the greatest stability of all the options because water provides the necessary weight to act as a force to minimise the risk of batter instability.

Furthermore, the lake body in the approved fully flooded solution will have a capacity of over 700 gigalitres. Such a large lake has the potential to be a highly useful asset for industrial,

commercial and recreational users, provide habitat opportunity to a number of aquatic species and significantly assist in mitigating fire risk.

The fully flooded solution also provides the best environmental outcome in terms of the conditions it provides for vegetation growth surrounding the lake. The quality of soil in the Yallourn Mine varies depending on location, which directly affects the viability of vegetation options. Topsoil is saved as a condition of the Mining Licence and is currently deployed as part of the progressive rehabilitation works on areas above the level of the proposed lake. This will result in better quality soil being left above the level of the proposed lake. Accordingly, although the areas of land capable of fostering vegetation are reduced under the fully flooded model (as most of the mine is submerged in the lake), the quality of conditions for vegetation will be improved above the level of the proposed lake with greater access to better quality topsoil.

As there is insufficient topsoil to cover the full extent of the Yallourn Mine without extensive flooding, the fully flooded solution derives the most benefit from the limited available topsoil resource.

### 3.5 Key Rehabilitation Strategy Documents

At around the time that the EES and Supplementary EES were prepared in relation to the Maryvale Field mine expansion and MRD in 1999 and 2001 (discussed above at section 1.2(b)), EnergyAustralia prepared a Mine Rehabilitation Master Plan (**Rehabilitation Master Plan**), dated December 2001. The Rehabilitation Master Plan was registered with the Mining Registrar on 24 January 2002 as part of the broader Work Plan variation reflecting the transition of mining into the Maryvale Field and the MRD. It outlines the guiding vision for the progressive rehabilitation of the mining area and, consistent with the principles underlying the MRSDA, aims to achieve a final landform that:

- protects the safety and health of the public by ensuring mining hazards and residual environmental impacts are minimised;
- is compatible with the surrounding altered and natural landscape;
- is sustainable and requires minimal ongoing maintenance;
- expresses where practical, the land uses and ecological vegetation classes that existed prior to mining;
- supports future beneficial uses; and
- provides a diversity of landform, vegetation and wildlife values.

EnergyAustralia subsequently commissioned a report from GHD which further reviewed and developed the environmental considerations associated with the fully flooded rehabilitation option. GHD produced a report in January 2005 titled "Yallourn Mine Rehabilitation Concept Review". The report considered various issues including potential sources of water for the fully flooded option, coal batter stability and water quality issues, having regard to the information available at the time.

In June 2012 EnergyAustralia undertook a comprehensive review of the Rehabilitation Master Plan.<sup>3</sup> The review considered in detail the three main options for the rehabilitation of the Yallourn Mine, and included the following reports which considered the feasibility of the fully flooded solution:

---

<sup>3</sup> The review was in response to a condition imposed on EnergyAustralia by the Department as part of its approval of a Work Plan variation in 2011 (MIN5003 Work Plan Variation).

- Yallourn Mine - Final Land Rehabilitation Lake Filling Model - Revision 0, (internal EnergyAustralia assessment), dated 26 April 2012;
- Yallourn Mine, Lake Filling Model Review, Findings of the Model Review, prepared by GHD, dated 30 March 2012;
- TRUenergy Yallourn, (now EnergyAustralia) Report for Yallourn Mine Rehabilitation, Geotechnical Assessment of Flooding Options, prepared by GHD, dated May 2012 (**GHD May 2012 Report**); and
- Yallourn Mine Final Rehabilitation, Review of the Morwell River Diversion, prepared by SMEC dated 31 May 2012.

EnergyAustralia has commissioned further reports in addition to the above to consider the feasibility of the fully flooded solution. One of the most recent, prepared by GHD and titled "Yallourn Mine Batter Stability and Rehabilitation Criteria Report Stage 1 to Stage 3", dated March 2013 (**GHD March 2013 Report**), considered the Rehabilitation Master Plan and the 2012 Review, and sought to identify batters which may require additional engineering considerations.

The reports demonstrate EnergyAustralia's commitment to fully investigate the rehabilitation strategy, and continue to review the appropriateness of the Rehabilitation Master Plan.

### 3.6 Current Approved Strategy

The fully flooded solution is the rehabilitation strategy for the Yallourn Mine currently approved under the MRSDA. It has been the preferred rehabilitation approach for some time, as is evident from the Rehabilitation Master Plan (and the other documents referred to in section 3.5), which notes (on page 8) that:

Since 1990, the rehabilitation program has been progressing towards a concept of final mine flooding to form a large lake system with interconnection with the local rivers.

A diagram from the Rehabilitation Master Plan showing what the Yallourn Mine will look like following the implementation of the fully flooded solution is included in **Exhibit 1**.

A final refined engineered solution for the flooded rehabilitation of the Yallourn Mine will continue to evolve until final rehabilitation and the flooding of the mine is completed.

In the meantime, EnergyAustralia continues to perform extensive progressive rehabilitation works on an ongoing basis consistent with the current approved strategy. These are discussed in section 5 below.

---

## 4. Assessment of Rehabilitation Options

### 4.1 Specific Considerations Relevant to Rehabilitation Options

The following section contains a summary of the specific considerations relevant to each rehabilitation option that have been considered by EnergyAustralia.

#### (a) Stability

EnergyAustralia maintains a Ground Control Management Plan (**GCMP**) in relation to the Yallourn Mine focussed on providing safe and stable conditions for workers, the public and the environment during the mining operation, whilst also considering long term use. A series of vertical bores, horizontal bores, drains, levy banks, survey pins, piezometers, inspections and models are utilised by on site personnel and expert geotechnical consultants. Areas of increased consequence due to instability, including potential impacts to major public infrastructure and the environment are given greater attention to maintain safety.

To maintain safe and stable conditions in a non-flooded option, a GCMP would need to continue to be implemented, somewhat close to its current form.

A fully flooded solution has minimal stability risk in its final form, with batters considered more stable when fully flooded. The weight that has been removed by the mining of coal is essentially replaced by water.

Technical assessments that have examined the fully flooded solution support the proposition that it presents the lowest risk to mine stability. It is noted in the March 2013 GHD Report at page 23 that:

Previous work undertaken by GHD... indicates that [the fully flooded solution] is likely to be the most effective method in providing long term stability across the mine site, including the batters and the mine floor.

It is estimated that the void left by mining will take a number of years to fill with water. There is a small risk of temporary mine instability whilst the Yallourn Mine is being filled with water. This is particularly the case at the beginning of the flooding process where the base (or toe) of a coal batter is submerged in water whilst the remaining batter remains exposed. This "toe saturation" has the potential to decrease the resisting forces which otherwise provide stability around the coal batters. Once the water level rises past the initial toe of the batter, the risk of instability is dramatically reduced as water provides a stabilising force against the coal batters.

During the initial phase of the filling the lake, some surcharging around the toe of the batters may be required to maintain stability.

Preliminary geotechnical investigations have been carried out in relation to the fully flooded option which have identified the batters which are most at risk of toe saturation. Stability has also been considered under different rates of filling the lake in the fully flooded solution. Consistent with the overall Rehabilitation Master Plan, further engineering work is progressing to meet the requirements of the current rehabilitation program and will be finalised closer to the time when works associated with active flooding are required to be performed.

(b) **Erosion Impact on Surrounding Land**

(i) *Non-flooded*

Erosion adversely impacts water quality by increasing suspended solids, colour and turbidity of a waterway. Further, eroding landforms are often perceived negatively. The sandy nature of the overburden allows erosion to begin more easily than other soil mediums.

One of the most effective ways to control erosion is through the establishment of vegetation, particularly topsoil and grasses. However, it can be difficult to achieve this in areas that are comprised predominately of overburden, as grasses more readily establish themselves in areas with a reasonable topsoil profile.

While some trees are being established on internal overburden dumps within the Yallourn Mine void (which will assist in reducing the risk of erosion), this is not as effective as topsoil and grasses, and would not be an appropriate strategy for reducing the erosion risk associated with batters. There is insufficient topsoil available to cover all disturbed areas within the Yallourn Mine should the non-flooded or partial-flooded solution be pursued.

(ii) *Flooded*

Since changes to mining practices were implemented in the 1990s enough topsoil to cover all areas above the final lake level has been preserved. Accordingly, utilising the available topsoil in the fully flooded option gives far improved erosion control over the non-flooded option.

Included at **Exhibit 2** are photographs which show topsoil and grass used on only the overburden and upper coal slope which is above the proposed water line in the approved Rehabilitation Master Plan.

The flooded solution introduces the risk of wave action on batters which may lead to erosion. On areas where control from topsoil and vegetation is unacceptable, rock beaching (or another similar approach) will be installed at the shoreline transition to address this issue.

(c) **Dust**

Dust is recognized as a significant environmental risk, with improvements continually being made to prevent dust impacting on the community.

Improvements have been seen in recent times at the Yallourn Mine in dust mitigation due to the relocation into Maryvale Field, progressive coal coverage and rehabilitation works in the mined out East Field and East Field Extension. Dust lift-off can still occur from the overburden, however increased vegetation cover and coal coverage see dust as a diminishing environmental risk post-mining.

(i) *Non-flooded*

Dust in a non-flooded option would need to be controlled through extensive vegetation development. This has the potential to increase the foliage, which could be used as fuel in any fire in the vicinity and would consequently need further monitoring.

(ii) *Flooded*

While dust is likely to be manageable in a non-flooded state, a flooded solution provides a greater coverage with lower risk than a vegetated landform. The level of risk will vary depending on whether a partially filled or full flooded solution is ultimately adopted. The more the mine void is filled with water, the less the opportunity for dust generation.

(d) **Native Flora and Fauna**

(i) *Non-flooded*

The non-flooded and partially flooded options would provide greater areas over which to develop vegetation than the flooded option.

Areas of native vegetation have been established within the Township Field rehabilitated areas, however there is a lack of overstory development and very few graminoids present. Whilst these species can be planted and maintained, the poor soil quality in these areas is a major impediment to the development of a robust native vegetation area.

(ii) *Flooded*

The footprint for establishing native vegetation in a fully flooded landform is significantly less than the non-flooded option. However, there are still large areas of land above the final lake level which can be developed

into open woodland, closed woodland and wetland areas, and the flooded option allows for greater concentration of the limited topsoil resource. These landforms could be styled on the dominant Ecological Vegetation Classes of the Yallourn area which include Plains Grassy Woodland, Plains Grassy Forest, Riparian Forest and Swampy Riparian Complex amongst others.

The fully flooded option is also likely to provide a significant habitat where aquatic species will be able to thrive. Further work will need to be undertaken in relation to this close to the point in time when EnergyAustralia will perform final rehabilitation works.

(e) **Acid Mine Drainage**

As overburden material is removed from the surface, it exposes pyritic material which was originally kept in an anoxic environment. Exposing the overburden to oxygen and water allows pyritic materials to oxidise, which is an acid generating process known as acid mine drainage (**AMD**). AMD is an issue for many metal producing mines worldwide, but is also evident in many coal producing mines. While the Yallourn Mine has AMD issues, it is well placed to deal with them as the overburden and run off are completely contained within the Yallourn Mine.

Acid generated within the overburden dumps in the Yallourn Township Field<sup>4</sup> settles within the soil until a rainfall event or groundwater movements carry the acidic material into the drainage system, thereby becomes part of the site's dischargeable waste water. The AMD effect also increases total dissolved solids, sulphate, aluminium, magnesium and zinc concentrations in the wastewater stream.

EnergyAustralia's Environment Protection Authority Accredited Licence requires its waste water discharge to be within a pH of 6.0 and 8.5. In order to achieve these required levels, EnergyAustralia currently undertakes various treatments to overburden runoff before discharge, such as hydrated lime dosing.<sup>5</sup>

(i) *Non-flooded*

Modelling performed by EnergyAustralia suggests that there is the potential for AMD to continue to be present in the Township Field for between 150 - 250 years if not submerged under water. This field currently produces approximately 700 tonnes of sulphuric acid each year on a diminishing rate from an estimated acid loading of over 125,000 tonnes of pyrite. If this was to be treated through hydrated lime dosing, the modelling suggests that over 650 tonnes of dry hydrated lime would be required to treat the acid load.

A partially flooded option would present an opportunity to cover the pyritic material with water which stops the oxidation reaction and production of sulphuric acid. Minimal treatment for AMD would be required in a partially flooded landform.

(ii) *Flooded*

A fully flooded solution provides full coverage of AMD areas, with water, stopping the oxidization of pyrite. This achieves the best environmental outcome in managing AMD issues.

---

<sup>4</sup> At the Yallourn Mine, overburden susceptible to AMD is contained within the dumped Township Field. No other areas have AMD material in them.

<sup>5</sup> A photograph showing hydrated lime dosing is included at **Exhibit 3**.

(f) **Water Quality**

(i) *Non Flooded*

The Yallourn Mine area is reasonably large, and provides a catchment for rain and runoff water from nearby land. In the non-flooded option, this water will require ongoing management from a stability and environmental standpoint.

Water would only be capable of being returned to the river system after first ensuring that the water quality is satisfactory. However, it is not currently possible to determine what the nature and extent of required treatment would be. This is because the chemical and physical composition of runoff water within the Yallourn Mine following the cessation of generation would be different to today, given the major source of water currently within the mine is the Yallourn Power Station.

As discussed above, a non-flooded solution would also require some form of pumping system to extract water from the base of the Yallourn Mine.

(ii) *Flooded*

It is expected that the fully flooded strategy will have less erosion issues than a partially flooded or non-flooded option, therefore limiting a major adverse water quality root cause.

The fully flooded solution may provide an opportunity for Morwell River water to settle within a lake of large retention time, potentially lessening the suspended solids load. This in turn is expected to create lower turbidity before returning to the river system.

In addition, riparian habitat and wetlands will be formed around areas of the lake boundary, allowing greater protection of banks than steep river cuttings bare of vegetation.

## 4.2 Flooding Options and Timing

(a) **Water Sources and Entitlements**

There are a range of water sources and entitlements that could ultimately be used, in whole or in part, and either collectively or individually, to assist with a flooding option.

A number of lake filling options have been identified, which are a combination of natural inflows, EnergyAustralia's current entitlements and other sources. These include:

- (i) natural filling;
- (ii) natural filling with power station entitlement;
- (iii) natural filling with net power station entitlement;
- (iv) natural filling and 90<sup>th</sup> percentile Morwell River overflow; and
- (v) natural filling and 90<sup>th</sup> percentile Latrobe River overflow.

Aside from natural filling these various options are described below.



(i) Power Station Bulk Water Entitlement

EnergyAustralia holds a Bulk Water Entitlement authorising the extraction of 36,500 ML of water per year from the Latrobe River to support power station operations. Subject to approval, this water could be retained within the final flooded lake.

(ii) Net Station Water Consumption

At present EnergyAustralia is entitled to draw the full amount of the Power Station Bulk Water entitlement referred to above. However a large portion of the amount of water drawn is ultimately returned to the river system, with the remainder being consumed by Yallourn Power Station operations (**Consumed Portion**).

As a variation to the use of the entire Power Station Bulk Water Entitlement, flooding could be achieved by diverting only the Consumed Portion to the Yallourn Mine.

Drawing only the Consumed Portion would result in no net reduction to the amount of water in the river system over the current situation.

(iii) Morwell River Overflow

In addition to natural filling of the final rehabilitation lake system, inflows during extreme flood events from the Morwell River could potentially be utilised in achieving a faster lake fill. This scenario would involve allowing 90th percentile overflow from the Morwell River to flow into the lake. Using approximately 55 years of instantaneous flow data for the Morwell River until 2011, the 90<sup>th</sup> percentile flow was found to be 888ML/day. This model has taken the overflow from any event above 888ML/day and included it within the model. On average the overflow was found to equate to an average annual inflow of 10,971ML.

(iv) Latrobe River Overflow

Inflows during extreme flood events from the Latrobe River could also potentially be utilised in achieving a faster lake fill. This scenario subtracts the Morwell River at Yallourn flow from the corresponding Latrobe River at Thoms Bridge flow to create a Latrobe River at Yallourn site. This site then allows 90<sup>th</sup> percentile overflow from the Latrobe River to flow into the lake. Latrobe River overflow was calculated by the same method as the Morwell River overflow with data available from 1962 to 1986, and from 2001 to 2012. The 90<sup>th</sup> percentile event from the Latrobe River was found to be 2,296 ML/day, which allowed an overflow of 78,885 ML/year.

(b) **Timeframes**

As demonstrated in the previous section, there are a range of options and sources that could be used separately or in a number of combinations to flood the Yallourn Mine.<sup>6</sup> The time required to fill the Yallourn Mine varies widely depending on the approach adopted, and ranges from a number of years to several decades.

A further aggressive fill option beyond those identified above that could be considered involves the full diversion of the Morwell River, the diversion of 10% of the flood flow from the Latrobe River, the diversion of an amount equivalent to

---

<sup>6</sup> The fully flooded solution is assuming a water level for the lake at RL 37, which is the level that has nominally been identified at which it would meet with the Latrobe River.

EnergyAustralia's current water entitlement from the Latrobe River and natural inflows from around the Yallourn Mine and Power Station site. This option would significantly reduce the time required to fill the Yallourn Mine.

### 4.3 Impacts on Other Mines

Due to the groundwater connectivity between Yallourn and Hazelwood, the implementation of final rehabilitation activities at the Yallourn Mine or the Hazelwood Mine could impact on the other.

In particular, flooding the Yallourn Mine may impact upon Hazelwood's dewatering requirements, and vice versa. It is expected that additional analysis will need to be undertaken to determine regional dewatering impacts once rehabilitation strategies at Yallourn, Hazelwood and Loy Yang, and the timing of their implementation, has been confirmed.

---

## 5. Progressive Rehabilitation

### 5.1 Short-Term Rehabilitation Measures

As noted at section 3.6 above, since 1990 the rehabilitation program for the Yallourn Mine has been progressing towards a fully flooded lake concept, interconnected with the local river network. The emphasis has been on rehabilitating areas above the anticipated final lake level (RL 37) and the interim stabilisation of future lake areas primarily to provide erosion control, dust mitigation and improved visual amenity whilst maintaining compliance with EnergyAustralia's Fire Control Management Plan.

While EnergyAustralia is committed to the rehabilitation of the Yallourn Mine over the long term, it implements progressive rehabilitation measures in the short term (see section 3.1) in accordance with the approved Rehabilitation Master Plan. Progressive rehabilitation works (both above and below the anticipated level of the proposed lake) are focused on addressing dust impacts, erosion issues and fire management by reducing the amount of exposed coal and improving fire tracks.

The majority of progressive rehabilitation is targeted, and to date has focussed on stabilising landforms through earthworks shaping. Further works are undertaken below the anticipated level of the proposed fully flooded lake as required to meet the Rehabilitation Master Plan requirements.

After an area is stabilised, topsoil and grass cover are then implemented (above the anticipated lake level) to assist landform stability with some woodland development occurring in practical screening or vegetation corridor areas. These tasks are consistent with both the progressive rehabilitation requirements of the Rehabilitation Master Plan and the long-term fully flooded solution.

Within the mine void, the initial goal is to cover coal in accordance with fire management and environmental risk management protocols. This coverage is generally provided by the overburden system where a series of conveyors and stackers place excavated overburden into mined out areas. There is also has a large mobile plant fleet at the Yallourn Mine which gives flexibility to selectively dump overburden in areas of exposed coal which present a higher risk of fire, dust, erosion and adverse amenity impacts.

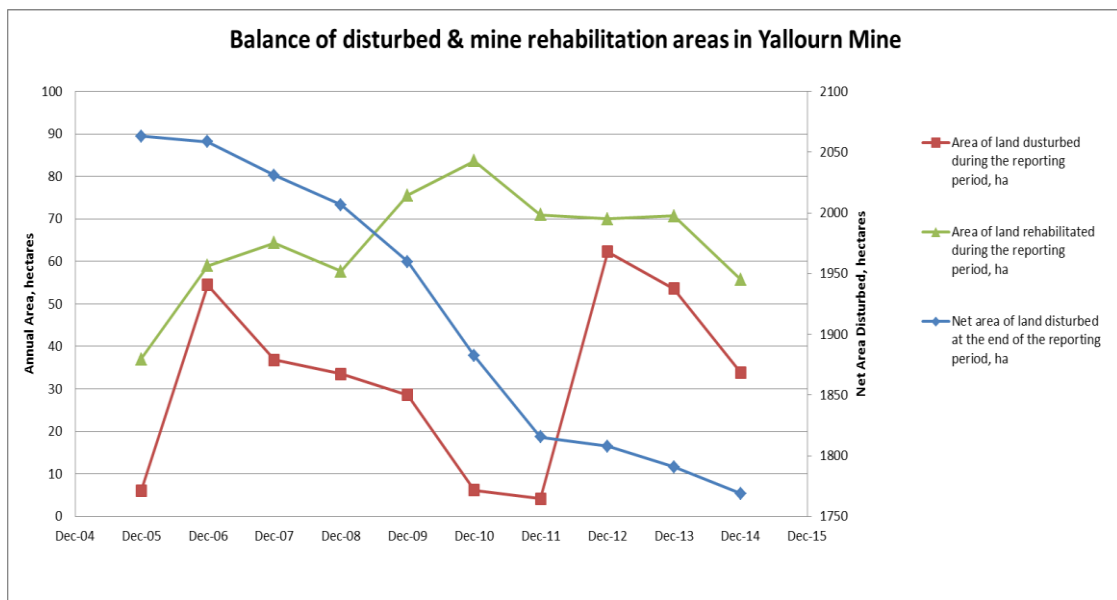
Internal overburden areas are shaped to manageable landscapes, and are rehabilitated to grassland, open woodland and wetland landforms with a number of internal lakes created for further coal coverage and to assist in water and fire management. These progressive rehabilitation measures are implemented in accordance with other plans and procedures, such as the GCMP.

Rehabilitation work covering the exposed coal at the Yallourn Mine has been extensive. As can be seen from the aerial photograph of the Yallourn Mine included at **Exhibit 4** (which has been annotated to reflect current exposed coal areas in orange), the majority of mined areas

within the Yallourn Mine have now been covered with overburden. The result of the progressive rehabilitation program is that only a relatively small area of exposed coal is left at the Yallourn Mine. The remaining area, approximately 86%, of the total area disturbed by mining, has now been covered.

Some further pictures showing the result of progressive rehabilitation works are included at **Exhibit 5**.

At present, the current rates of rehabilitation are exceeding the rate at which land is disturbed during the mining process. These rates are shown in the below graphic. The red line shows the rates of disturbance while the green line demonstrates the amount of rehabilitation works during a particular reporting period. The blue line shows a trend of reduction in the amount land disturbed during the period (as measured on the right hand axis). The graph demonstrates the overriding significant downward trend in net disturbed land over the last 10 years.



## 5.2 Medium and Long-Term Rehabilitation Measures

Rehabilitation measures to be implemented over the medium-long term (see section 3.1 above) are similar to those identified for the short term, with the key objectives being to increase the coverage of coal with overburden material and topsoil, and stabilise landforms above what is currently anticipated to be the final lake level. Additionally, a series of vegetation corridors will be created between former disturbed mining landforms and the remnant conservation areas that surround the Yallourn Mine perimeter within the mining licence area. Vegetation corridors allow greater habitat opportunities for native fauna and providing greater vegetation patch size which leads to higher biodiversity value and an enhanced visual experience.

Opportunities to pursue further medium-term rehabilitation measures will become available when infrastructure such as power lines and communications networks are removed from the rehabilitation works footprint.

Land shaping is progressively being developed in prioritised areas with final works likely to be completed approximately three years after mining ceases. Earthworks and vegetation establishment is currently anticipated to be completed during the medium term, within approximately three years of mining completion.

### 5.3 Progressive Rehabilitation and Fire Mitigation

Large scale coverage of exposed coal is undertaken for progressive rehabilitation, operational requirements and fire management purposes. It is largely achieved by fixed and mobile plant overburden dumping. Introducing vegetation fits with broader rehabilitation goals and presents far less fire risk than exposed loose coal. The progressive rehabilitation technique of covering the exposed coal significantly reduces the risk of fire.

A number of access tracks and fire breaks are located within the rehabilitated overburden dump areas to reduce fire risk.<sup>7</sup> A reticulated fire service system and Fire Control Management Plan are currently active, placing EnergyAustralia in a strong position to reduce the risk of fire ignition and suppress fires.

An example of the effectiveness of EnergyAustralia's approach to managing fire risk is the outcome of fire in the south-west corner of the Yallourn Mine in February 2014. EnergyAustralia activated its Fire Management Control Plan, and was able to bring the fire under control within one week. The relatively small amount of exposed coal batters in this area, combined with fire services infrastructure and the associated response, resulted in the efficient and effective suppression of this fire.

### 5.4 Progressive Rehabilitation and Stability

EnergyAustralia's progressive rehabilitation strategy is heavily influenced by considerations relevant to mine stability. Set out below is a summary of short term and long term progressive rehabilitation activities and mine stability considerations relevant to them.

#### (a) Short term

Safe and stable conditions are currently achieved at Yallourn Mine with mine stability considered with all progressive works. With active management and comprehensive GCMP in place, short term rehabilitation measures do not have a significant impact on mine stability.

During the summer months a large mobile plant fleet is present at the Yallourn Mine. This gives flexibility for the strategic placement of overburden, which can assist areas of stability concern.

#### (b) Medium term

Medium term rehabilitation options support the currently approved strategy involving a fully flooded lake. This is achieved by continuing with coal coverage and stabilisation of batters, along with works to minimise future maintenance and environmental risks. This will lead to increased stability by strengthening batters through surcharging, which involves the placement of overburden material at the base (toe) of batters to increase toe weight, thereby increasing the factor of safety in surcharged areas.

Many batter slopes at Yallourn will be modified after mine closure and during the medium term to deliver the most stable landform. Modified batter shapes will be assessed in accordance with the GCMP.

### 5.5 Progressive Rehabilitation Reporting

EnergyAustralia produces the following reports which regularly update stakeholders in relation to the progress of rehabilitation at the Yallourn Mine:

---

<sup>7</sup> An aerial photograph showing the Yallourn Mine fire service pipes and fire breaks is included at **Exhibit 6**.

- (a) **Environment Review Committee (ERC) Mine Environment Presentation** - the ERC meets quarterly, and is attended by a range of interested community and government stakeholders. EnergyAustralia produces a report which is distributed to attendees at the meeting. A copy of the latest report is included at **Exhibit 7**.
- (b) **Report to Department of Economic Development Jobs Transport and Resources** - this report is a condition of EnergyAustralia's mining licence. It is prepared every six months.
- (c) **Social and Environment Performance Summary Report** - this is a voluntary report provided to the community, and describes various aspects of the Yallourn Mine and Yallourn Power Station. A section gives an overview of the progressive rehabilitation works conducted in the previous year. A copy of the 2014 Social and Environment Performance Summary Report is included at **Exhibit 8**.

A review of the reports demonstrates EnergyAustralia's commitment to ongoing progressive rehabilitation not only in accordance with the Rehabilitation Master Plan but more broadly.

---

## 6. Rehabilitation Bond Arrangements

### 6.1 Regulatory Requirements

#### (a) Obligations on Licensees

Under the MRSDA, a licensee must enter into a rehabilitation bond for an amount determined by the Minister, with such amounts being subject to subsequent review. Where private land is concerned, the Minister is required to consult with Council and landowners before determining the bond amount.

The condition of a rehabilitation bond is that the licensee rehabilitates the land to the satisfaction of the Minister, and this forms one of the conditions to the return of the rehabilitation bond.

#### (b) Bond Calculation Methodology - Rehabilitation Bond Guideline

Matters taken into account in calculating rehabilitation bonds under the MRSDA are outlined in the *Establishment and Management of Rehabilitation Bonds for the Mining and Extractive Industries*, Earth Resources Regulation Branch, produced by DEDJTR.

For an initial bond, the amount is determined by reference to the point of maximum disturbance for the first stage of the development, as specified in the approved work plan.

For subsequent reviews, the bond is calculated by reference to the existing rehabilitation liability at the time of the review. For both the initial bond and periodic bond reviews, the rehabilitation liability is calculated on achieving the final rehabilitated landform as specified in the rehabilitation plan. Rehabilitation bond reviews are able to be undertaken periodically during the period of mining activity, and towards the end of the rehabilitation bond period.

### 6.2 EnergyAustralia's Rehabilitation Bond

Rehabilitation bonds are intended to secure the performance of rehabilitation obligations. However, the provision of a rehabilitation bond has not been the reason why EnergyAustralia has pursued a program of active progressive rehabilitation (as described above). Instead, key motivating factors have been EnergyAustralia's desire to:

- (a) ensure that risks are effectively managed;

- (b) continue progressing towards its approved rehabilitation strategy;
- (c) comply with its statutory obligations, including under the MRSDA and the Rehabilitation Master Plan; and
- (d) discharge its responsibilities as a good corporate citizen.

The financing costs associated with large bonds can be significant, particularly when bonding is required over a significant period of time. Money expended on such bonds ultimately produces no material positive effect for the community in terms of rehabilitation outcomes, with such costs being foregone to the institution that provide the bond.

Consequently, requiring large rehabilitation bonds can have the negative effect of actually consuming potentially substantial financial resources that could otherwise be used for direct active progressive rehabilitation.

EnergyAustralia's view is that the completion of the rehabilitation activities for the Yallourn Mine is effectively managed through a continued system of appropriate progressive rehabilitation (which, as described above, in some cases will involve interim measures, and in other cases will involve actions which will be part of the final rehabilitation), rather than through an inefficient diversion of resources to support an increased bonding system.

This is particularly the case in the context of a company such as EnergyAustralia, which is supported by the financial resources of the EnergyAustralia Group (as described in section 1.1 above) which has significant integration into the broader Australian energy sector. The financial capacity of major operators such as EnergyAustralia provides comfort that they will be capable of performing, and are appropriately incentivised to perform, their rehabilitation obligations.

# Exhibit 1 - Yallourn Mine Rehabilitation Master Plan Vision



**Exhibit 2 - Photographs showing erosion control through topsoil and grassing**

(a) Yallourn East Field



(b) Yallourn East Field Extension





(c) Yallourn Flocculation Pond Batters



**Exhibit 3 - Photograph showing hydrated lime dosing at Yallourn Mine**



**Exhibit 4 - Location of current exposed coal**

LEGEND

CURRENT EXPOSED  
COAL



**Exhibit 5 - Further photographs showing progressive rehabilitation works**

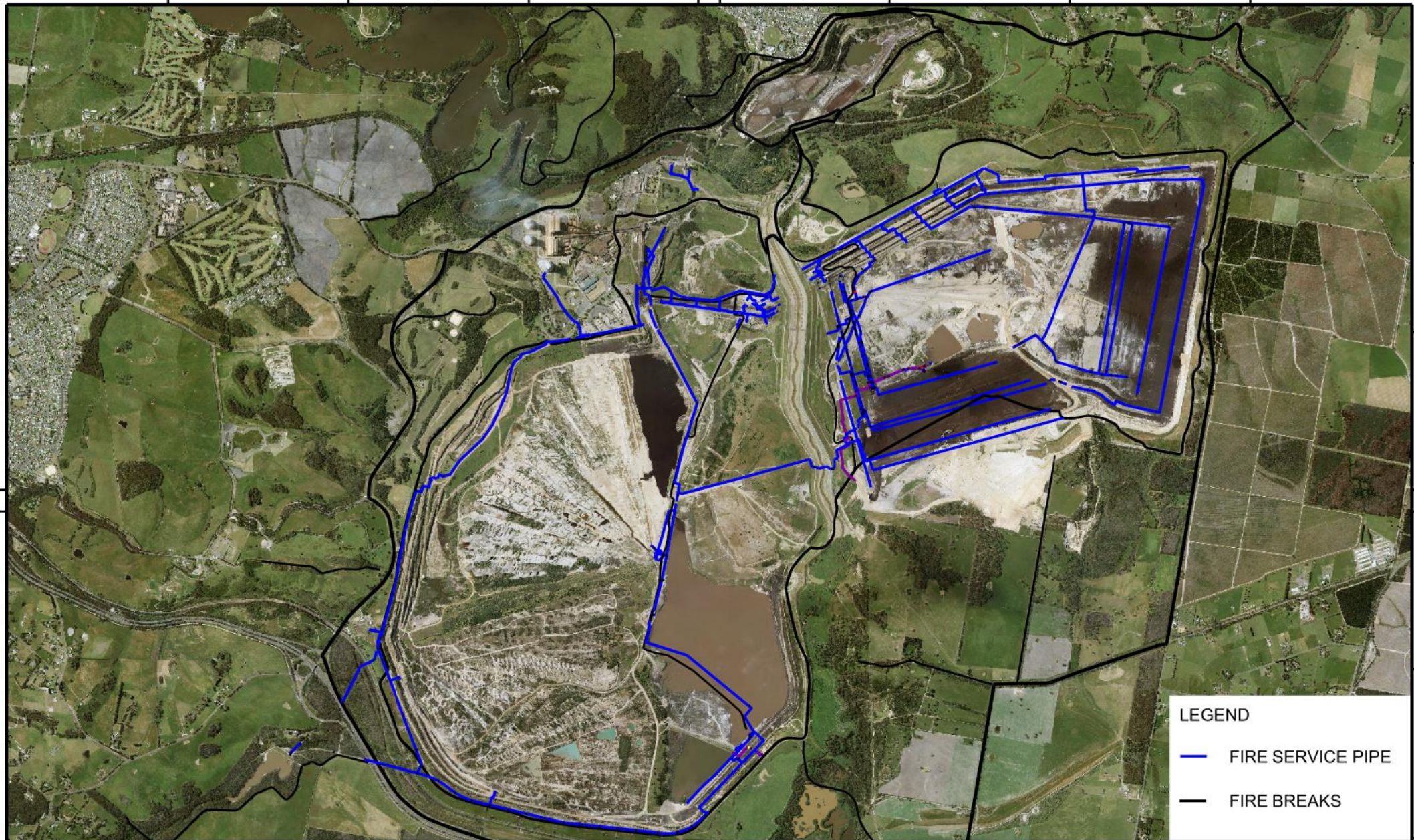
(a) Interim Stabilisation of Overburden Dump



(b) Coal coverage and some woodland development taken from the Yallourn Township Field Northern Batters



**Exhibit 6 - Location of fire services pipes and fire breaks**



**LEGEND**

- FIRE SERVICE PIPE
- FIRE BREAKS

|            |      |     |         |                 |       |         |                       |         |  |
|------------|------|-----|---------|-----------------|-------|---------|-----------------------|---------|--|
| FILENAME : |      |     |         | SCALE 1 : 30000 |       |         |                       | DRAWN   |  |
|            |      |     |         |                 |       |         |                       | CHECKED |  |
|            |      |     |         |                 |       |         |                       | DATE    |  |
| REVISION   |      |     |         |                 |       |         |                       |         |  |
|            |      |     |         |                 |       |         |                       |         |  |
|            |      |     |         |                 |       |         |                       |         |  |
|            | DATE | REV | W/O No. | DESCRIPTION     | DRAWN | CHECKED | MINE PLANNING MGR.(Y) |         |  |

**EnergyAustralia - Yallourn**

|  |     |
|--|-----|
| DRG N°   | REV |
| YALLOURN MINE<br>FIRE CONTROL MANAGEMENT PLAN<br>LOCATION OF FIRE SERVICE PIPES<br>AND SITE WIDE FIRE BREAKS |     |



STD A3 PRINTER

271 x 385

A3

**Exhibit 7 - Environmental Review Committee - Mine Environmental Presentation (August 2015)**



# Environmental Review Committee

## Mine Environmental Presentation

August 2015

Paul Metlikovec  
Mining Engineer





|            |  |                 |  |         |  |             |  |              |  |                       |  |
|------------|--|-----------------|--|---------|--|-------------|--|--------------|--|-----------------------|--|
| FILENAME : |  | 2015 REHAB PLAN |  | SCALE   |  | 1 : 30000   |  | DRAWN        |  | P. METLIKOVEC         |  |
| CHECKED    |  | L.M. WALLACE    |  | DATE    |  | APRIL 2014  |  | L.M. WALLACE |  | MINE PLANNING MGR.(Y) |  |
| REVISION   |  |                 |  | DRAWN   |  | CHECKED     |  |              |  |                       |  |
| DATE       |  | REV             |  | W/O No. |  | DESCRIPTION |  |              |  |                       |  |

**EnergyAustralia - Yallourn**

DRG N° \_\_\_\_\_ REV \_\_\_\_\_

YALLOURN MINE  
ENVIRONMENTAL WORKS  
MINE REHABILITATION  
ANNUAL REHABILITATION PLAN 2015



STD A3 PRINTER

## Mine Rehabilitation – East Field Extension



Figure 2: Topsoil Placement (Feb 2015)



Figure 3: Grass Establishment (August 2015)

# Mine Rehabilitation – East Field Extension



Figure 4: View from EF Northern Batter (Feb 2015)



Figure 5: Grass Establishment (August 2015)



# Mine Rehabilitation – Flocculation Pond Batter



Figure 6: Topsoil Coverage (Feb 2015)



Figure 7: Rehabilitated Landscape (August 2015)

## Mine Rehabilitation – Flocculation Pond Batter



Figure 8: Mid Field Dump – Previously grassed, further weed control required (August 2015)



Figure 9: Old OB Dump North of E215 Conveyor – weed control required in the background, topsoil stockpile in foreground (August 2015)



## Mine Rehabilitation – Flocculation Pond Batter



Figure 8: Disturbed Acid Sulphate Soil on Township Northern Overburden Dump (August 2015)



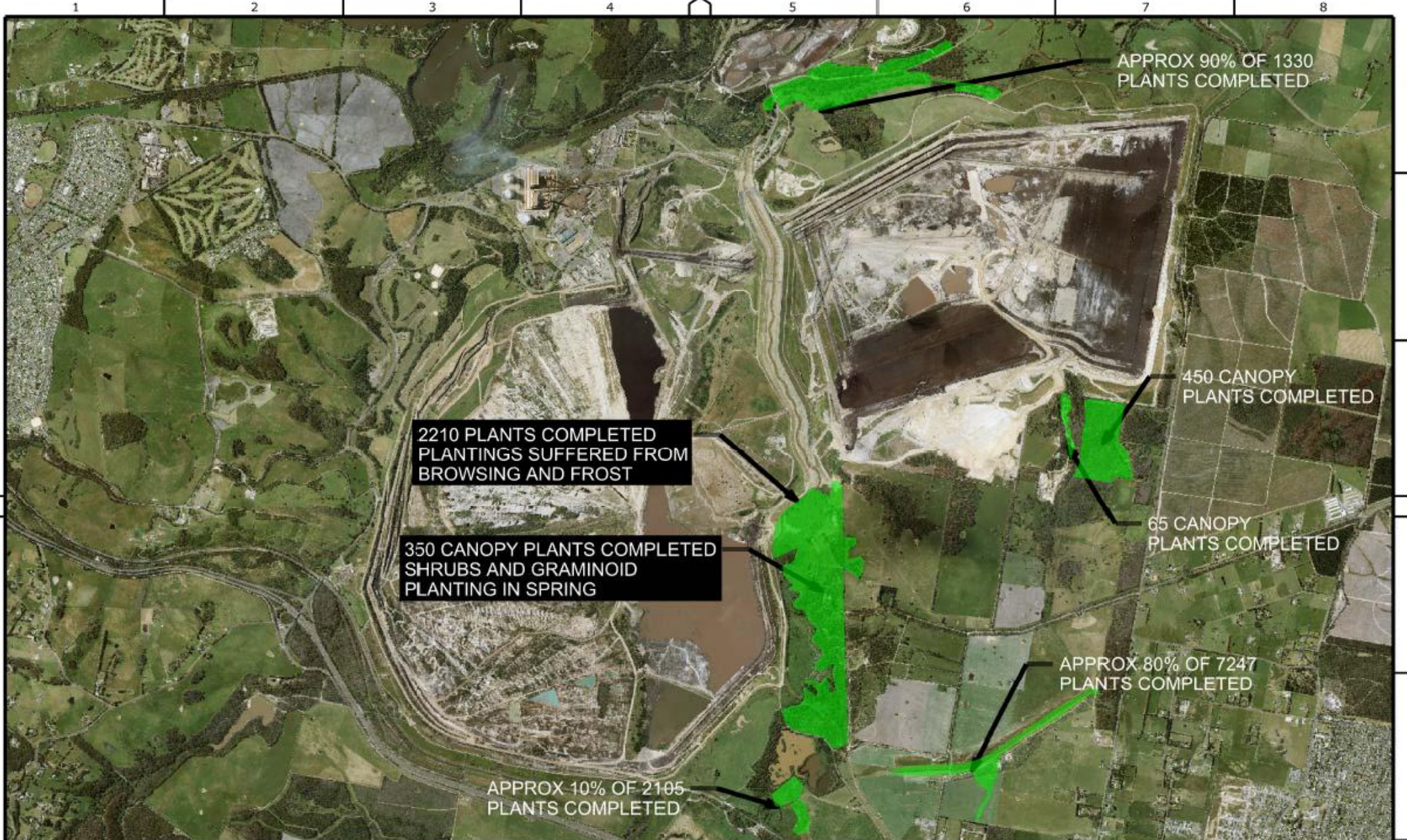
Figure 9: Rehabilitation on Acid Sulphate Soils with Paper Pulp and Direct Seeding (August 2015)



# Conservation Management Plan

- Major works included:
  - Weed control
  - Plant maintenance and preparation
  - Planting works
- Plantings were conducted in six CMP blocks with 12062 plants planted to date and a further 13565 plants are still to be planted. Majority of the plantings required are within the MRD and Morwell River Remnant which is scheduled for September – October.
- 2015 August Progress Report is available as a handout. This includes the 2015 planting list and a summary of the completed works during the past three months.





|             |  |  |  |                 |  |                       |  |
|-------------|--|--|--|-----------------|--|-----------------------|--|
| FILENAME :  |  |  |  | SCALE 1 : 30000 |  | DRAWN P. METLIKOVEC   |  |
| REVISION    |  |  |  | CHECKED         |  | DATE AUGUST 2015      |  |
| DATE        |  |  |  | REV             |  | W/O No.               |  |
| DESCRIPTION |  |  |  | DRAWN           |  | CHECKED               |  |
|             |  |  |  | P. METLIKOVEC   |  | MINE PLANNING MGR.(Y) |  |

**EnergyAustralia - Yallourn**

DRG N<sup>o</sup> | REV

YALLOURN MINE  
CONSERVATION MANAGEMENT PLAN  
PLANTING AREAS 2015  
COMPLETION SUMMARY



STD A3 PRINTER

271 x 385

A3

## Other Mine Environmental

- 13,270 m<sup>3</sup> of topsoil stockpiled during January and February. 17,982 m<sup>3</sup> has been moved from stockpile to rehab and 1,620 m<sup>3</sup> was stripped and placed directly to rehab. No topsoil movements since the summer.
- No lime dosing has been required since January/February. 32 tonnes has been dosed this year. Fire Service Pond alkalinity is trending downward with lime dosing projected for October/November.
- No licence breaches or complaints regarding environmental works in the mine.



EnergyAustralia

A black wallaby is seen in a rehabilitation zone at the Township Field Northern Overburden Dump. The area is a mix of green grass and grey, rocky soil. In the background, there is a line of trees and a large, white, mushroom-shaped cloud against a clear blue sky.

Black Wallaby in new rehabilitation zone:  
Township Field Northern Overburden Dump

Title of presentation

**Exhibit 8 - Social and Environment Performance Summary Report (2014)**

EnergyAustralia Yallourn  
Social and Environmental  
Performance Summary 2014



**EnergyAustralia**

# A Message from the Executive Manager

This report provides insight into EnergyAustralia Yallourn's commitment to the people of Yallourn, the local environment and the local communities. Each of the key aspects noted below are covered in more detail within the report.

2014 was a year of consolidation. In particular the rebuilt Morwell River Diversion had its first full year of operation after completing construction in 2013.

The most significant disruption through 2014 were the bush fires which entered the Yallourn mine on 7th February. While the fires at Yallourn were under control relatively quickly the fires also entered the Morwell Mine causing massive disruption to the operator and local community with fires being tackled into March.

Some excellent work by both Yallourn Mine, Estate Services and CFA personnel prevented the fires at Yallourn from taking hold. The ramifications of the fires at the Morwell Mine however, will have a long reaching impact in relation to rehabilitation on all of the Mines in the Latrobe Valley.

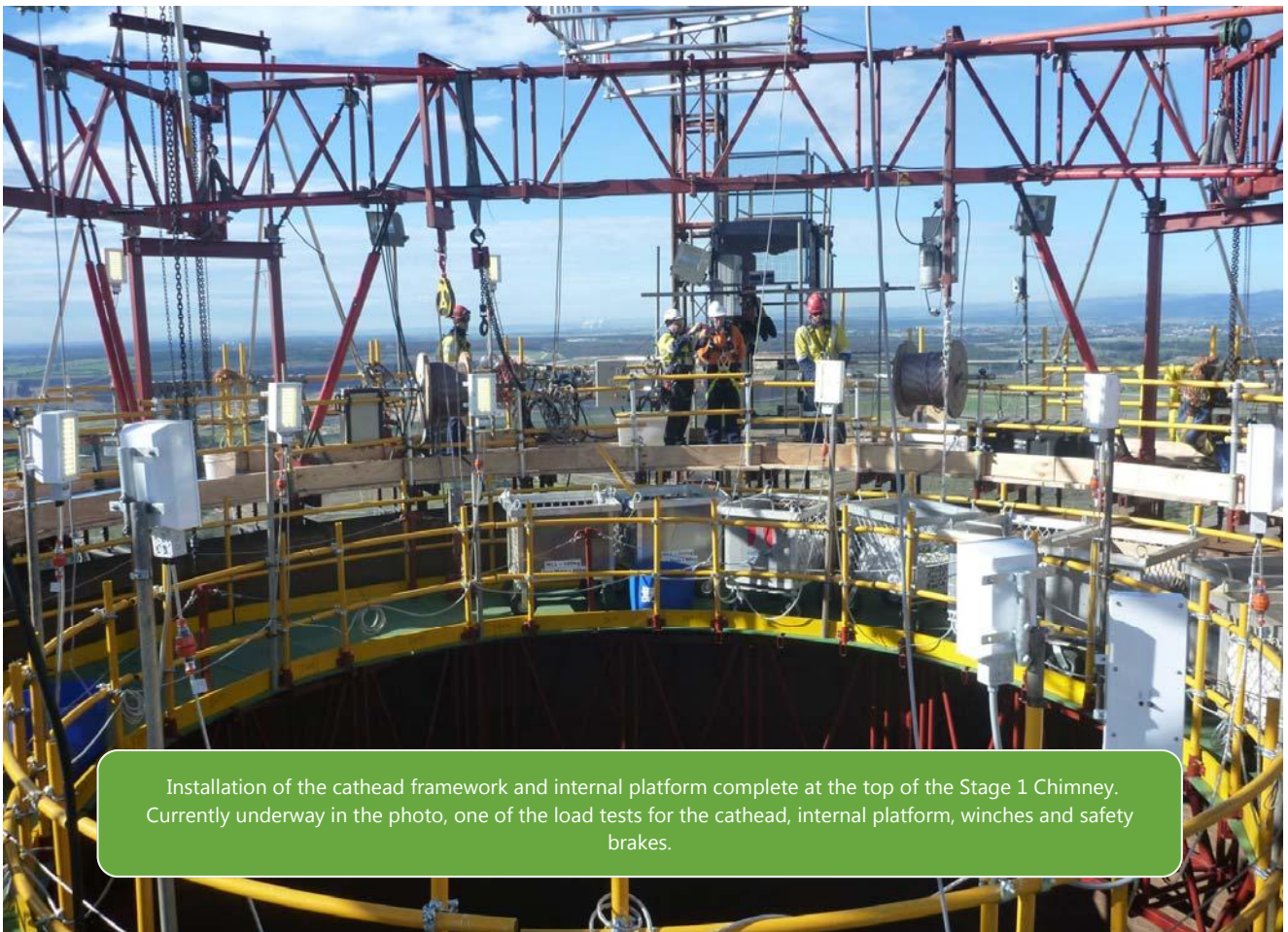
2014 also saw the recertification of the Environmental Management System to ISO 14001 by our independent certifiers BSI, reinforcing the solid commitment to effectively managing the Yallourn impacts on the environment and the drive for continuous improvement.

The Morwell West Drain project has been very positive and has resulted in an area which is a benefit to the community as well as providing habitat for local bird and aquatic life.

On the subject of Health and Safety, while performance improved when compared with the previous year (TIFR of 5.4 vs 8 in 2013), the fact that we did incur five lost time injuries continues to reinforce that we need to be forever looking for ways to improve and make our workplace safer. The report outlines some initiatives put into place aimed at reducing injuries on site.

As you will also read there were some significant maintenance works carried out during 2014. The Stage 1 Chimney Refurbishment represented a particular significant challenge in terms of managing health and safety while working 170 m above the ground. Our in-house personnel in conjunction with a safety conscious contractor allowed this work to be well planned and well executed.

I trust you will find the report interesting and enlightening.



Installation of the cathead framework and internal platform complete at the top of the Stage 1 Chimney. Currently underway in the photo, one of the load tests for the cathead, internal platform, winches and safety brakes.

# Our Performance at a Glance

In 2014, our safety and environment systems performance at a glance shows:

| DESCRIPTION                                      | RATING | COMMENTS   | MEASURED AGAINST |
|--|--------|--|------------------|
| <b>How we do business</b>                        |        |  |                  |
| All Planned Audits Completed (Includes Internal) | ★★★    | Target achieved  | Internal         |
| External Environmental Management System Audit   | ★★★★★  | Certification maintained to ISO 14001  | External         |
| External Safety Management System Audit          | ★★★★★  | Certification maintained for OHSAS 18001   | External         |
| Safety Health Environment Plans                  | ★★★★★  | % completion rate achieved   | Internal         |
| <b>Our Operations</b>                            |        |  |                  |
| Coal Rate  | ★★★★★  | Improving Performance Trend  | Internal         |
| Coal Supply Reliability                          | ★★★★★  | Target met   | Internal         |
| Electricity Sent Out                             | ★★★★★  | Improving Performance Trend  | Internal         |
| <b>Our Employees</b>                             |        |  |                  |
| Training – Safety, Health and Environment        | ★★★    | Target achieved  | Internal         |
| Employee Availability                            | ★★     | Target not achieved  | Internal         |
| <b>Our Safety and Health</b>                     |        |  |                  |
| Prosecutions                                     | ★★★★★  | No Prosecutions received   | External         |
| Emergency Response Exercises                     | ★★★★★  | 100% completion to plan  | Internal         |
| Safety Site and Workshop Inspections             | ★★★★★  | Target exceeded  | Internal         |
| Hazardous Material and Storage Assessments       | ★★★★★  | Target achieved  | Internal         |
| Lost Time Injuries                               | ★★     | Target not achieved  | Internal         |
| Total Injury Frequency Rate                      | ★★★★★  | Target achieved  | Internal         |
| Penalty Notices                                  | ★★★★★  | No WorkSafe penalty notices  | External         |
| <b>Our Environment</b>                           |        |  |                  |
| Wastewater Volume and Quality Discharge          | ★★★★★  | Met EPA licence  | External         |
| Net Water Consumed                               | ★★★★★  | Exceeded target  | Internal         |
| Land Rehabilitated                               | ★★★★★  | Exceeded target  | Internal         |
| Topsoil Stockpiled                               | ★★★    | Met target for volume recovered but used directly in works rather than placed on Stockpile | Internal         |
| Greenhouse Gas Emissions Intensity               | ★★★★★  | Met target with improving performance trend  | Internal         |
| Sulphur Dioxide Emissions To Air                 | ★★★    | Met EPA licence  | External         |
| Oxides of Nitrogen Emissions To Air              | ★★★    | Met EPA licence  | External         |
| Carbon Monoxide Emissions To Air                 | ★★★    | Met target with worsening performance trend  | External         |
| PM<10um Dust Emissions To Air                    | ★★★    | Met target   | Internal         |
| EPA Infringement Notice                          | ★★★★★  | There were no infringement notices   | External         |
| EPA Licence Breach                               | ★★     | One licence non compliance for high concentration of particulate emissions                 | External         |
| Public Complaints                                | ★★     | Two unverified nuisance particle fallout events  | Internal         |

- ★★★★★ Exceed Internal Performance Indicator or Improved Performance
- ★★★★ Achieved Internal Performance Indicator or Improving Performance Trend
- ★★★ Met External Requirements or Worsening Performance Trend
- ★★ Not Met External Requirements or Internal Performance Indicator
- ★ Infringement Notice, Prosecution, Penalty or Contractual Breach



Egernia saxatilis (Black Rock Skink)  
photographed in Block 34 by Craig Boase

## Brown Coal Developments

EnergyAustralia is involved with a range of projects and partners to utilize brown coal in an environmentally sustainable manner.

EnergyAustralia supports fundamental research and development projects with research institutions including Monash University and CSIRO. Projects include combustion with oxygen (rather than air) to reduce the cost of future carbon capture technologies; chemical looping (where metallic oxides provide the oxygen for combustion) to reduce the cost of producing oxygen, as well as innovative approaches to carbon capture that are suited to brown coal power stations.

EnergyAustralia is involved with partners to develop demonstration and 'first of a kind' commercial plants that aim to produce value adding products from brown coal. These projects require land, coal supply and access to utilities such as water and electricity, which would be provided by EnergyAustralia. Projects in this category include coal upgrading (eg for use in 'pulverised coal injection', a type of coal that is used in the production of steel), and for coal to liquids, gases and chemicals.

The assessment of the suitability of new advanced instrumentation is being assessed at EnergyAustralia Yallourn where lasers are being trialled to measure on-line carbon monoxide and oxygen levels which are important parameters for optimised combustion to reduce carbon dioxide emissions.

EnergyAustralia also supports off-site technologies including the Direct Injection Carbon Engine being developed by CSIRO and partners, where micronised fine coal is converted into a liquid fuel for use in advanced engines to produce electricity at higher efficiencies than current power plant designs.

EnergyAustralia is a member of the Brown Coal Innovation Australia (BCIA) organisation which supports research and development into brown coal utilisation.



Oxygen and carbon monoxide lasers installed at Yallourn Power Station

## Energy Efficiency Opportunities (EEO)

EnergyAustralia registered for the Australian Government's Energy Efficiency Opportunities Program in March 2012. The Energy Efficiency Opportunities Act and Regulations (2006) require corporations using more than 0.5 PJ per annum to register, assess their energy use, identify cost effective energy saving opportunities and report results publicly and to Government.

In 2013, EnergyAustralia Yallourn identified ten efficiency improvement projects including the Unit 1 and Unit 2 HIP turbine replacements for 2014 and 2015. The replacement of Unit 1 HIP was successfully completed in 2014. EnergyAustralia submitted its first EEO Government and Public Report in December, 2013.

The EEO Act 2006 was repealed by the Government in 2014, effective from 29 June 2014. Despite this Yallourn will proceed with the replacement of the Unit 2 HIP turbine in 2015.

## Water Conservation

Bulk water extraction from the Latrobe River remained within the Bulk Water entitlement in 2014. This resulted in the internal business target for water use being well met with increased generation output.

A record low Latrobe River cooling water intake of 2.38 ML/GWh was achieved in 2014, equal lowest for over 20 years.

Around 139 ML of cooling water makeup was recycled from the Mine fire services system conserving the intake of fresh Latrobe River water for operations.

Rainfall across the region declined slightly in 2014, but still remained above the extremely dry conditions experienced during the drought.



# Sustainable Business Operation

An amended EnergyAustralia Yallourn EPA Licence (No 10961) was issued on 16 December 2013. The licence operates on a financial year and applies a 'bubble' limit approach to power station discharges to air. Three new amenity conditions have been included covering unacceptable noise, offensive odours and nuisance dust particles emitted beyond the boundary. The wastewater discharge limit has been increased to an annual daily mean of 80.5 ML/day with a maximum daily rate of 150 ML/d to cater for an increasing mine catchment.

Annual performance statements on licence compliance together with the licence are publicly available on the EPA website. The EPA Annual Performance Statement for 2014FY was submitted to EPA on 26 September, 2014.

Key achievements for 2014 included:

- An Eastern Ash Landfill Concept Design was completed to provide for the onsite storage of ash in landfill for the remaining life of the facility.
- Significant progress was made on improving management controls and procedures to reduce environmental risks of ash, asbestos and hard waste landfills and to comply with EPA 53V audit recommendations.
- A significant reduction in carbon emission intensity of 3.8%
- The second year of carbon emissions liability data was collated, audited and reported to Government in October. The remaining liability payment for 2013FY was made by EnergyAustralia on behalf of Yallourn in February 2014 and the Interim Emissions number was successfully forecast for the 2014FY liability payment in June 2014. Acquittal of the remaining carbon emissions liability was due in February 2015.
- A successful BSI-NCSI Surveillance audit of the SHE Management System to ISO14001 was completed by BSI in October, 2014.
- There was continued support and engagement of the EnergyAustralia Environmental Forum, the CLP-JV Environmental Synergy Forum and esaa Environment Committee.
- The Environmental Review Committee (Statutory and Community stakeholder groups) met four times during 2014 to review environmental performance.
- A staff tree planting day was held at the Morwell West Drain to open the walking track from Latrobe Road to Toners lane. Sponsorship was provided for a number of Latrobe Landcare Network community based conservation projects.
- Completion of the emergency mine dewatering arising from the Morwell River Diversion failure in 2012 and 2013.

- A 2.7% thermal efficiency improvement from the replacement of the Unit 1 High and Intermediate Pressure turbine reducing carbon emission intensity.
- The design requirements for the development of a new eastern ash landfill location was also progressed with a 'Eastern Ash Landfill Concept Design' finalised in December. Major works to relocate the current Eastern saline water basin will be required over the next few years to provide ash storage for the remaining life of the Station.

From an overall view the performance for the year saw:

- All business KPIs were met for average dust concentration, high quality water used, wastewater discharge volume, salinity of wastewater discharges and mine rehabilitation area works. Topsoil stockpiling target was not met as all recovered topsoil was reused immediately in mine rehabilitation works;
- One EPA Licence exceedance of the high particulates concentration from Unit 3 on 12 August;
- Public notifications received by Operations relating to unverified nuisance dust fallout in Yallourn North on 8 November and from EPA regarding a complaint of nuisance particulates fallout in Newborough on 11 November.

As a condition of our EPA accredited licence, in 2011 EnergyAustralia Yallourn commenced implementation of a five year Environment Improvement Plan. This plan looks at new projects and activities EnergyAustralia Yallourn will undertake to improve environment and social aspects related to air, water, noise, waste, land improvements and greenhouse gas reductions.

The development of this plan incorporated input from all parts of the business and the finalised plan was endorsed by the Environment Review Committee and the EnergyAustralia Yallourn Management team prior to being signed off by the Managing Director EnergyAustralia and Chief Executive Officer, Environment Protection Authority.

Progress against this plan is reviewed regularly at the quarterly Environmental Review Committee meetings.



Eulamprus tympanum (Southern Water Skink) found in Block 33a

## Climate Change

In early 2014, the Government introduced Carbon tax repeal bills into Parliament which were passed into law in August, to retrospectively withdraw the carbon tax from 1 July 2014. This removed the financial liability imposed on carbon emissions in 2013FY and 2014FY.

In its place, the Government has announced it will implement its Direct Action Plan and has provided a \$2.5B Emissions Reduction Fund to support abatement actions in the economy from 1 July 2014.

The increased Generation output and Unit 1 HIP turbine replacement has lead to an improved overall greenhouse gas intensity for the year down from 1457 tCO<sub>2</sub>e/GWh sent out last year to 1402 tCO<sub>2</sub>e/GWh sent out, a 3.8% reduction.

EnergyAustralia Yallourn continued to report its annual total greenhouse gas emissions, energy consumption and energy production to the Government in accordance with the National Greenhouse and Energy Reporting Act 2007. This data provides the information to the Government required for the implementation of the Direct Action legislation.

EnergyAustralia Yallourn continued to explore a range of carbon abatement and efficiency improvement options for potential application at Yallourn. In 2015, Unit 2 will have a new High and Intermediate Turbine fitted that is expected to provide a 3% improvement in Unit efficiency and a further reduction in Station carbon intensity.

## Waste Water

Following the mine flooding events of 2012 and 2013, in February 2014 the final EPA emergency discharge approval was completed and therefore a permanent return to the EPA licence discharge for all water pumped offsite. Full compliance with the EPA licence was maintained by the newly constructed waste water treatment plant with minor improvements and adjustments made to the plant throughout the year. With the treatment plant in good working order and the EPA licence for volume of water to the Morwell River increased, many water management risks are being mitigated.

The Lake Yallourn catchment within Township Field is exposed to pyritic soils which cause acidic mine drainage within the Township Field. The acidic runoff acts as a constraint on the pH conditions of the EPA licence therefore lime is added to the water system to lift low pH levels. In 2014, 116 tonnes of dry hydrated lime was dosed into Lake Yallourn to treat acid i.e. water runoff. This is much lower than normal as pH levels were buffered in the first half of the year from Morwell River flood alkalinity.



Yallourn Mine Flocculation Pond



Yallourn Mine Waste Water Discharging to the Morwell River

## Mine Development

There was another significant milestone in the Mine's development with the completion of coal winning operations from Feeder Breaker FB02 in East Field on the 3 August 2014. FB02 was subsequently transferred to Maryvale Field and following some maintenance, commenced winning coal from the lower slope loading via the M400 – M405, E410 and E415 conveyor line. Feeder Breaker FB01 continued to win the final East Field Coal via E400 – E405 – E410 and E415 conveyors. Feeder Breaker FB01 is expected to complete coal winning from East Field in early 2015 after which all operations will be transferred to Maryvale Field.

In addition, 2014 also saw the successful commissioning of the Transfer, Dewatering and Fire Service pumping systems, all of which were either lost or damaged as a result of the 2012 Morwell River Diversion embankment failure.

## February Mine Fire

On Friday 7 February 2014, a fire began in the Hernes Oak area on EnergyAustralia lease land south-west of the mine, which caused a section of the Princes Freeway to be closed. On Sunday 9 February 2014, with high temperature and wind, the fire flared and crossed the Princes Freeway whilst burning a number of Conservation Management and rehabilitated areas within the Yallourn Mine. Operational areas in East Field and Maryvale Field were also affected with prioritized firefighting mitigating operational risk.

The use of aerial bombing proved very successful as repeated flaring of the conservation bushland adjacent to

Maryvale threatened operational areas after the major fire event on the 9 February 2014. The photo below shows the firefighting helicopter using Witts Gully as a water source, whilst fire damage is evident in the surrounding bushland and the dam wall embankment in the foreground.

In total, the fire burnt over 900 hectares of EnergyAustralia owned land and resulted in over eight kilometres of replacement Conservation area fencing and many more kilometres of lease land and boundary fencing. Thousands of rehabilitation and conservation plantings were damaged with many areas planned to be replanted in 2015 and 2016.

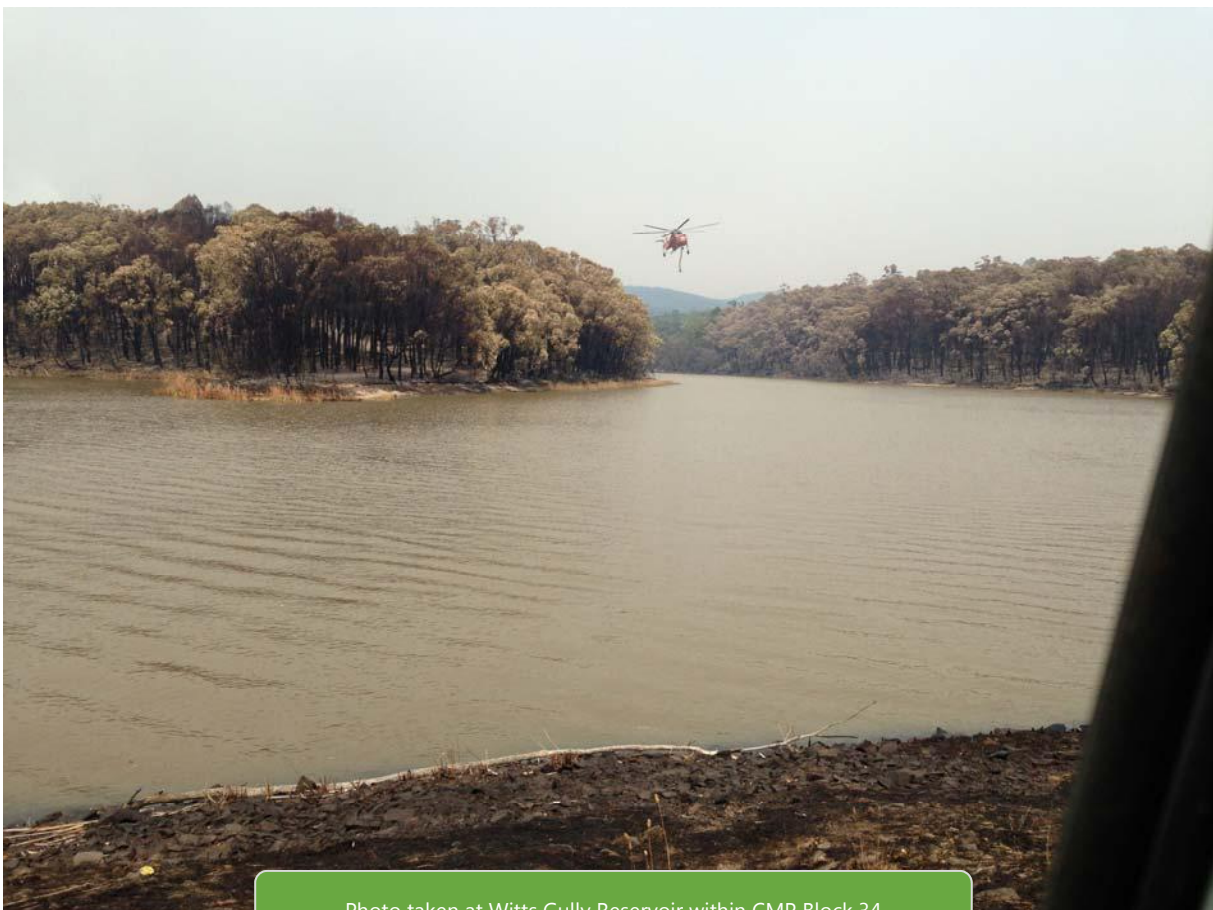


Photo taken at Witts Gully Reservoir within CMP Block 34

# Mine Rehabilitation and Land Management

The Mine land rehabilitation program continued in compliance with the Rehabilitation Master Plan, completing 55.8 hectares against a plan of 55 hectares.

Several sections totalling 28 hectares of the Township Field Northern Overburden Dump were shaped and sown to a rye corn grass nurse crop, with direct seeding of indigenous native plant species. 9.5 hectares of rehabilitation repair works were completed on the stacker level of the Township Northern Overburden Dump following the mine flooding in 2013. A 4.5 hectare area on the Township Western Batters has grass sown directly to a clay profile with the results pleasing. Significant cost savings may be achievable on flat areas if topsoil does not need to be imported for successful rehabilitation. A 3.3 hectare section of batter adjacent the Morwell River siphon site was also topsoiled and grassed successfully. A paper pulp additive was applied into acidic soil areas at a ratio of one part pulp to six parts soil at a depth of 400mm. Early results have shown a good striking of the rye corn nurse crop which is substantially better than the normal amount of growth seen on the acidic soil areas. Past rehabilitation attempts on acidic soil areas without treatment have been largely unsuccessful so the 2014 results are very encouraging.

Ongoing weed control and native planting effort in areas of the Yallourn North Open Cut resulted in the rehabilitation of 14.3 hectares of previously disturbed areas. Within these areas there was a concerted effort to improve the Yallourn North township screen with plantings including a variety of Acacias, Cassinia and Viminaria.

During the year 3.0 hectares of the Township Field Southern Overburden Dump, which has re-colonised well

with lower to mid storey native plants, was improved with selective weed control, drainage improvements and planting to indigenous over storey and mid storey species that were missing from this zone - namely Acacias, Eucalypts, Cassinia, Hakea, Melaleuca, Daviesia, Leptospermum, Gahnia, Lomandria, Viminaria and a range of lily. Native seed was collected for direct seeding work on the overburden dumps next year.

Continuing application of a geographical information system (GIS) has improved planning and reporting of rehabilitation implementation programs.

Extensive weed control works were completed in the Mine throughout 2014, following a prioritised program to manage areas already rehabilitated, assisting preparation of new areas for rehabilitation and controlling vegetation around key mine infrastructure. Significant weeds controlled included Blackberry, Paterson's Curse, Pampas Grass, Pine trees, various Broom, Thistle, Capeweed and Pittosporum. Areas that have undergone rehabilitation are being maintained with few major weed remnants. Weed spraying also supported vegetation controls around infrastructure and drainage lines with the growth of works and monitoring under the Ground Control Management Plan.

A pest animal control program is continuing in the mine to control rabbit and fox populations using baiting, fumigation and trapping. Soft jaw trapping for foxes was continued this year. Rabbit populations have been maintained at less than 10 rabbits per square kilometre whilst fox populations are at an approximate density of 0.3 per square kilometre.



Northern Overburden Dump 2014 Direct Seeding with Paper Pulp Material

The fire season Fuel Reduction program was commenced in mid-November following good rains and fuel growth and potential fire risk. This program is an integral part of EnergyAustralia Yallourn's Bushfire Mitigation Plan. No fire prevention notices were issued to areas managed.

There was no topsoil stockpiling this year with overburden overheight areas still being developed. A total of 18,083 m<sup>3</sup> was removed from existing stockpiles and placed on several rehabilitation areas including the re-built Morwell River Diversion embankment and the Latrobe Road batter which is the major rehabilitation project for 2015.

The planting program added an additional 3,600 indigenous plants to various mine areas in Township Field Overburden Dumps, Hernes Oak batters and Yallourn North Open Cut.

Landscape function analysis (LFA) surveys were expanded this year to include vegetation monitoring, known as Ecological Function Analysis (EFA). Surveys were conducted on 13 transects across the Township Field Southern and Northern Overburden Dumps, the East Field Extension Overburden Batters and Conservation Management Plan areas. The results show that direct seeding is the most successful stabilisation method on the sandy Northern Overburden Dump, however areas treated with paper pulp are showing excellent early results. The East Field Extension topsoiled batter stabilisation has been highly successful, although the revegetated Township Western Batter shows the best results.



# Conservation Management Plan

The Conservation Management Plan (CMP) program is an approval requirement to offset the native vegetation losses in the approved Mine development. The primary aim is to improve the quality and size of existing vegetation by protection, revegetation and enhanced management.

The original 2014 works plan was significantly altered due to the February fire which burnt through a number of CMP sites and damaged a number of fences protecting CMP areas. Approximately 8 kilometres of CMP fencing was completely replaced or repaired as a result of the February fire. In addition, weed management works were completely restructured with a minimal effort after the fire, followed by an intense targeted campaign once weeds started to regenerate and hinder the ability of native regeneration.

The major revegetation recruitment offset site is the Morwell West Drain Diversion (MWDD), which is a constructed channel aimed at diverting water flow from the new Maryvale mine catchment area into the constructed wetland system adjacent to the Morwell River. This site also includes a walking path from Latrobe Road to Toner's Lane with a constructed wetland part of the way along. As part of the Commonwealth Government's environmental approval, there were 10,278 middle to lower story plants established within the MWDD in 2014. In total there were 20,606 seedlings planted into 14 different CMP sites in 2014, not including the rehabilitation works for the Morwell River Diversion which is also a CMP site. Weed control of threatening weeds was a significant component of the CMP in 2014. Fauna surveys were conducted in five blocks at the end of 2014 with results becoming available in 2015. Bird surveys were also conducted by the Latrobe Valley Field Naturalists periodically throughout the year at the Block G Wetland Site with threatened species Lewin's Rail heard, recorded and confirmed by an expert. This is the first sighting of the bird in the wetlands area.

Pest animals continue to be monitored throughout all CMP areas and the results of monitoring are used to inform control practices. Rabbit and fox baiting was conducted in and around a range of CMP sites with significant results. Remote, infra-red cameras were used in conjunction with a range of tracking techniques to confirm target species.

The 2005 CMP 10 year improvement phase is now complete with the program now entering the maintenance phase. The program will require completion sign off from the Department of Environment, Land, Water and Planning, however internal inspections and audits indicate that the program has been adequately completed.



*Lichenostomus leucotis* White-eared Honey eater

## East Field Rehabilitation

With mining of East Field Extension finishing in early 2015, planning for major rehabilitation work is well advanced. Covering loose coal areas with overburden and overheight material provides protection against dust emissions, however without vegetation these overburden areas largely become weed infested and susceptible to erosion on even gentle slopes.

Considering the wide range of environmental impacts, costs and benefits, rehabilitation of the East Field Extension batters will consist of coal covering with topsoil and grass on the overburden and upper coal slopes where overburden material is available.

Rehabilitation of the East Field Overburden Dump is still a number of years away with dump progression not allowing rehabilitation works until the conveyor begins to pivot in an anti-clockwise direction. When areas become available direct seeding of large areas will be possible.

## Morwell River Diversion Rehabilitation

Following the Morwell River Diversion (MRD) repair works a large focus during 2014 was redeveloping the riparian edge plantings and sowing grass on the floodplain and batter areas. In April, 23 hectares of the MRD floodplain and internal batters were sown to a grass mix including rye corn, rye grass and various clovers. A majority of the areas have successfully regrown although some topsoil was found to be substandard and a small amount of rework will occur in 2015.

Rehabilitation of the low flow channel included over 9,000 riparian plantings with species such as juncus, phragmites and schoenoplectus most common among the plantings. A majority of the species were successfully grown in the nursery whilst schoenoplectus was relocated from upstream areas of the MRD which were undisturbed.



Morwell River Diversion Rehabilitation Grassing

# Environment in the Community

EnergyAustralia continued its support of local community environmental projects in 2014. The bulk of Yallourn's environmental project funding went to the Latrobe Catchment Landcare Network with a contribution to their Conservation Planting projects. Funding was also provided to the West Gippsland Catchment Management Authority's Waterwatch Education and Waterwatch Rivers Leadership Programs which aim to promote awareness of factors affecting river and stream health to primary school children in the region.

## A Community Partnership

EnergyAustralia continued to provide strong support to the local community in 2014 through our sponsorship program. Many local groups received minor sponsorships, with larger support being provided to –

- Job Skills Expo – Run by the Baw Baw Latrobe Local Learning Network, this event attracts approximately 3,000 Year 10 students from schools across the Latrobe, Baw Baw, Bass Coast and South Gippsland areas. The expo is held annually and provides students with information on a wide range of careers and gives them an opportunity to talk with those working in those jobs and their employers.
- Moe Dance Eisteddfod – Growing from strength to strength, this popular event was held over six days and gave young performers the opportunity to leap, pirouette and step-ball-change across a range of dance styles ranging from classical ballet, contemporary, jazz, tap, song and dance, hip hop and improvisation.
- Latrobe Valley Volleyball – For the 2014 junior volleyball tournament which focused on the participation of young players in the Morwell to Yarragon area.
- Friendship Games Soccer Tournament – Hosted by Baringa School, students from special schools across the state were invited to participate in the games which have become a keenly anticipated event on the Special Schools' calendar. This is one of the rare occasions when the Latrobe Valley generators join together to support an event and is a real community effort with students from Lowanna College assisting with refereeing games and Newborough Yallourn United Soccer Club providing their facilities and also volunteers to assist throughout the day.
- Class Act Productions – Is a local youth theatre group for performers aged 8-21. This year's production of 'Seussical the Musical' was aimed at primary schools as well as the general community and received excellent reviews.

We also continued with our sporting commitments as major sponsor of the Moe, Newborough and Yallourn Yallourn North Football Netball Clubs, Monash and Newborough Yallourn United Soccer Clubs, the Central Gippsland Junior Football League and the Central Gippsland Cricket Association.



Morwell West Drain Trail Planting Day



Dragons pro division winners at the inaugural Australian Club Championships inline Hockey Tournament



## EnergyAustralia Environmental Community Projects

EnergyAustralia has continued their partnership with the Latrobe Catchment Landcare Network to financially support on-ground conservation projects and events throughout West Gippsland. This year EnergyAustralia provided \$33,000 towards community land care projects.

It has been recognised that improving ecological health cannot be done through focus on a single species and familiar habitats, but rather it is important to capture all aspects of biological diversity, especially the interactions within and among ecosystems.

Landcare and EnergyAustralia undertake restorative work for the environment that looks at maintaining the native biodiversity of our region in perpetuity.

The Victorian Landcare Grant is a project that has allowed EnergyAustralia to directly support landholders to achieve long term goals of land management improvement, such as fencing off stock from watercourses, tree planting local endemic species back into the environment for stock protection and wildlife corridors.

The Red Gums in Plains Grassy Woodlands once extended across a vast area of central Gippsland and now is represented in fragmented patches and isolated paddock trees, mostly on private property. This ecological vegetation 'community' is listed as critically endangered due to the extent it has been cleared. Many of the flora and fauna associated with this 'community' are threatened due to lack of community awareness and programs to protect, restore and enhance the remnant patches and isolated paddock trees. Vegetation protection and improvement provides more habitat for the fauna species still present, ensuring their longer term survival and improving the functioning of the entire ecosystem.

Landcare projects funded by EnergyAustralia have focused on this ecological vegetation community and includes:

- Two community planting days; 4000 plants planted along Latrobe River and Waterhole Creek involving EnergyAustralia staff and 300 enthusiast community volunteers.
- Two landholders winning incentive funding to restore remnant patches through supplementary planting and fencing off native vegetation from livestock.
- The funding of the installation of a Peregrine Falcon nesting box in a large remnant tree on private property.
- Five community engagement events were held to provide fun, interactive walks and talks with the general public to showcase the Red Gums in Plains Grassy Woodlands and its wildlife. These sessions included slideshows of wildlife found in the local area and followed by a night walk where micro bats were viewed up close. The local enthusiasts from the Latrobe Valley Field Naturalists Club led bird watchers breakfasts walks to train people how to use binoculars and enjoy the beautiful native bird life we have in remnant patches of Red Gum forest. Around 80 people from the local area attended and enjoyed these great wildlife education events.



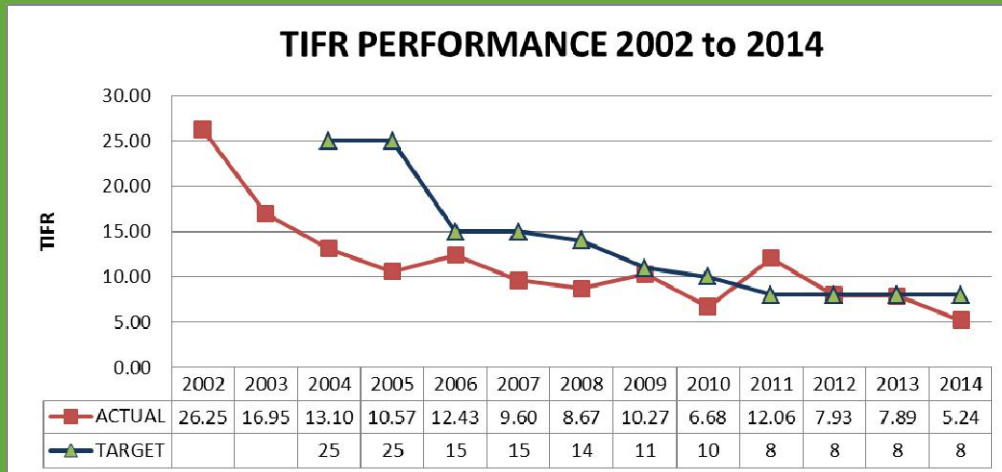
Striated Pardalote spotted in Traragon Railway Reservoir Reserve on the EnergyAustralia sponsored Birdwatchers Breakfast Tour

# Safety

In 2014 the main safety focus was for the safe completion of the Unit One major Outage, the safe refurbishment of the Stage 1 Chimney and reducing eye and hand injuries. The major outage was completed without a significant injury and one Medical Treatment injury (MTI) was recorded for the chimney refurbishment task. Overall a successful result as both projects had significant safety challenges.

From an overall performance perspective the Health and Safety Performance was fair. A record low Total Injury Frequency Rate (TIFR) of 5.24 against a target of less than 8 was achieved, which at first review is a very positive result. However, in 2014, Yallourn had 5 Lost Time Injuries (LTI) which was not a good result and not up to our expectations.

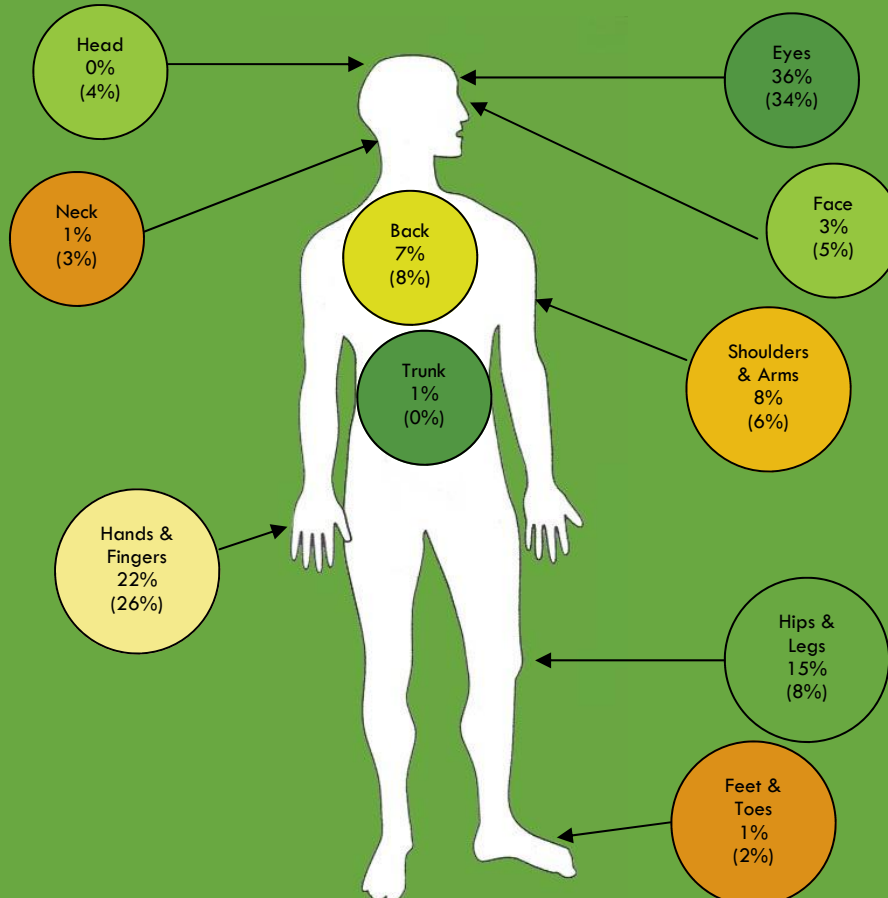
The historical record of Total Injury Frequency Rate (TIFR) is tabled below which demonstrates over time there has been improvement in the reduction of significant injuries.



TIFR is a measure of the number of significant injuries incurred per 1,000,000 man hours worked.

## INJURY ANALYSIS

The below diagram lists the body locations for all injuries as a percentage in 2014 as a comparison to 2013 injuries (percent shown in brackets). From the figure below, it can be seen that foreign body in eye injuries and hand finger injuries comprised 58% of injuries at the Yallourn site and are a focus area for improvement.



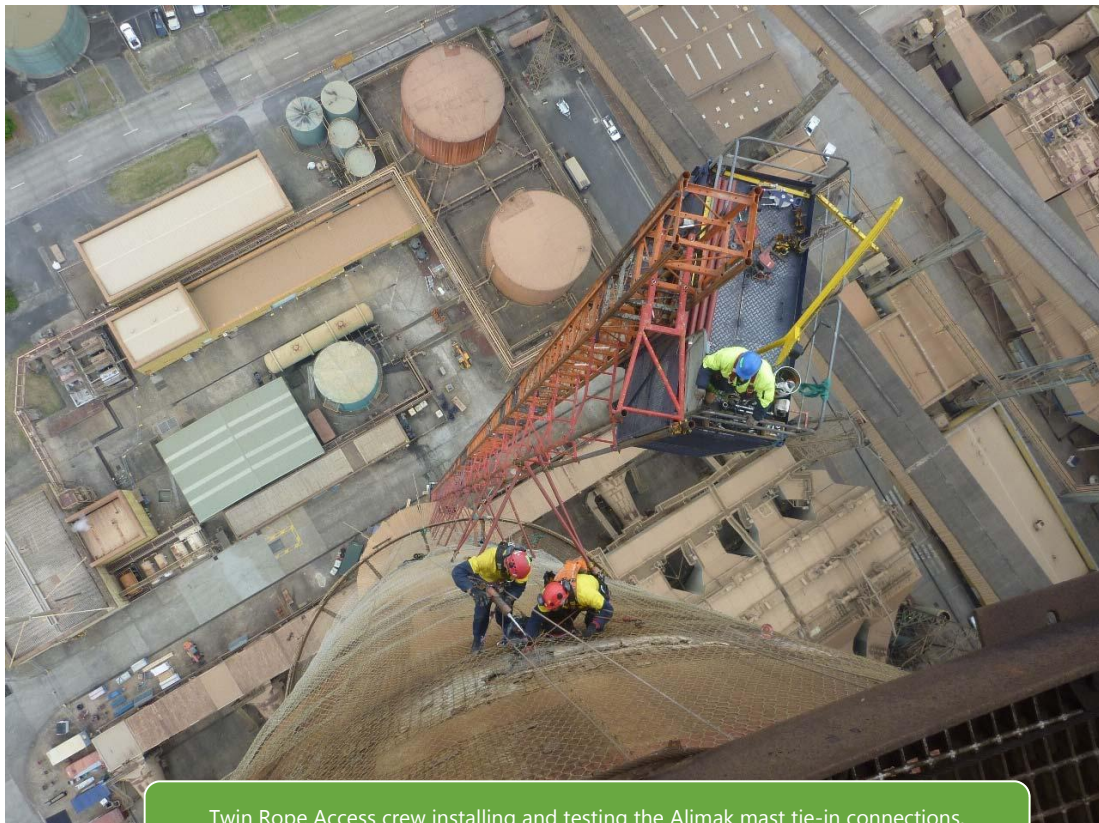
## SIGNIFICANT SAFETY ACHIEVEMENTS IN 2014

Significant safety and health achievements were:

- No serious injuries during Unit One major outage;
- Historic low Total Injury Frequency Rate result;
- Continuous improvement of SHE Processes:
  - ⇒ Safety glasses changed to sealed type;
  - ⇒ Carrying of gloves now mandatory for persons doing work that requires a Job Safety and Environment Analysis (JSEA) in the power station;
  - ⇒ Increased SHE information made available including asbestos monitoring and identification records, internal and external audit reports, monthly contractor safety reports, WorkSafe incident notifications, entry reports and improvement notices;
  - ⇒ Functionality tests for Elevated Work Platforms and scissor lifts delivered to site;
- Major asbestos cladding replacement project completed for the Main Logistics Number 2 Store including roof replacement;
- Safety poster rotation scheme;
- Contractor Safety Forum;
- Winning the Blood Donation Challenge for local Power Generators;
- Site safety communications have improved with the introduction of safety tweets which has helped to reinforce the importance of safety first messages.



Boilermaker fabricating a pressure part



Twin Rope Access crew installing and testing the Alimak mast tie-in connections, during final stages of the Alimak erection on Stage 1 Chimney

# Health and Wellbeing

The Health and Wellbeing department have had a busy year with 603 visits to the Occupational Health Centre. We have completed 195 first aid treatments, checked 136 blood pressures and performed 194 hearing tests.

62 employees were required to seek further medical treatment off site, with 34 taken to hospital.

Foreign bodies in eyes continue to be the most common injury, with 61 employees presenting to the Occupational Health Centre with this condition. 49 patients had foreign bodies successfully removed from their eyes at the Occupational Health Centre, with only 12 patients needing further treatment from the Optometrist.

Here is a brief summary of what the Health & Wellbeing Department has been up to in 2014:

## OUTAGE PRESENTATION

During the outage inductions, onsite nurses have been presenting a regular blood pressure slide show at each induction. The result has been positive with many staff electing to present to the Occupational Health Centre for a preventative check.

## FLU VACCINATION PROGRAM

April focused on education and promotion of our onsite Vaccination Clinic by a Recovre Nurse. There was an extremely positive result with approximately 270 onsite staff taking up the opportunity of a free flu shot. In comparison to previous years it was noted that the uptake of this program has increased.

## ELECTRIC SHOCK PRESENTATION

With three employees receiving electric shocks in one month, a presentation about the effects of electric shock on the body was developed and delivered by the Level 1 OHS Consultative Meeting and the Level 2 OHS Consultative Meeting.

## BLOOD DONATION COMPETITION

A trophy was presented to the Health and Wellbeing Coordinator at the Red Cross Traralgon Donor Centre after Yallourn won first place in the Latrobe Valley Power Challenge.

Yallourn has competed in this challenge for many years and this marks the first win for the EnergyAustralia Yallourn site. A team of 103 Yallourn employees rolled up their sleeves and donated blood in this life saving challenge and helped save over 300 lives in the process. Other Latrobe Valley power generators also competed in the challenge which ran from May until July.



Estate Services Fire and Rescue staff members always prepared to respond to fires and medical treatments at Yallourn

## HEALTH ASSESSMENTS

Health checks were provided for all employees on the EnergyAustralia Yallourn site in October by the Health and Wellbeing Coordinator and nurse at the Occupational Health Centre. The check consisted of an in-depth health questionnaire and a physical assessment where employees had their blood pressure and heart rate measured; height, weight and waist measurement taken and cholesterol and blood sugar levels measured. Overall 47 employees participated in the health check and all gave great feedback about the service and many have returned for follow up blood pressure checks. Participants received a "show bag" for their initiative in taking an active role in their health which had multiple brochures with health information, sunscreen samples, hand sanitiser, and a stress ball to name a few. Participants expressed an interest in making this an annual event and will now be offered to all employees onsite each year.

## NEWSLETTERS

Each month a newsletter has been developed by the Health & Wellbeing Department and distributed to all onsite. Each month covers a different health issue and keeps in tune with current and topical health issues. Some topics covered this year included:

- Sleep disorders

- The immune system
- Substance abuse
- Blood pressure
- Venomous bites and stings
- Sunsmart awareness and skin checks

Great feedback is regularly received and many comment on their enjoyment of reading it.

## KETTLE REPORTS

Along with the monthly newsletter, each week an article is submitted for each publication of the Kettle report, the EnergyAustralia Yallourn weekly news bulletin.

A new topic is focused on each week and is a great way to promote health initiatives that are happening onsite.

Some topics this year included:

- Skin checks
- Prostate cancer awareness
- The importance of sleep
- Foot health
- Headaches/migraines
- Managing types of shiftwork
- Healthy eyes.



An onsite nurse taking an employee's blood pressure

# Yallourn Stage 1 Chimney Refurbishment

During 2014 EnergyAustralia completed planned remedial works on the 42 year old Stage 1 Chimney. From January through to October a joint effort of EnergyAustralia team with main contractor Beroa Australia in conjunction with Berrium UK (Chimney Technical Experts) and RAI&M (Rope Access) completed project works. The inclusion of a boiler shutdown allowed for 33 days of internal works to be completed.

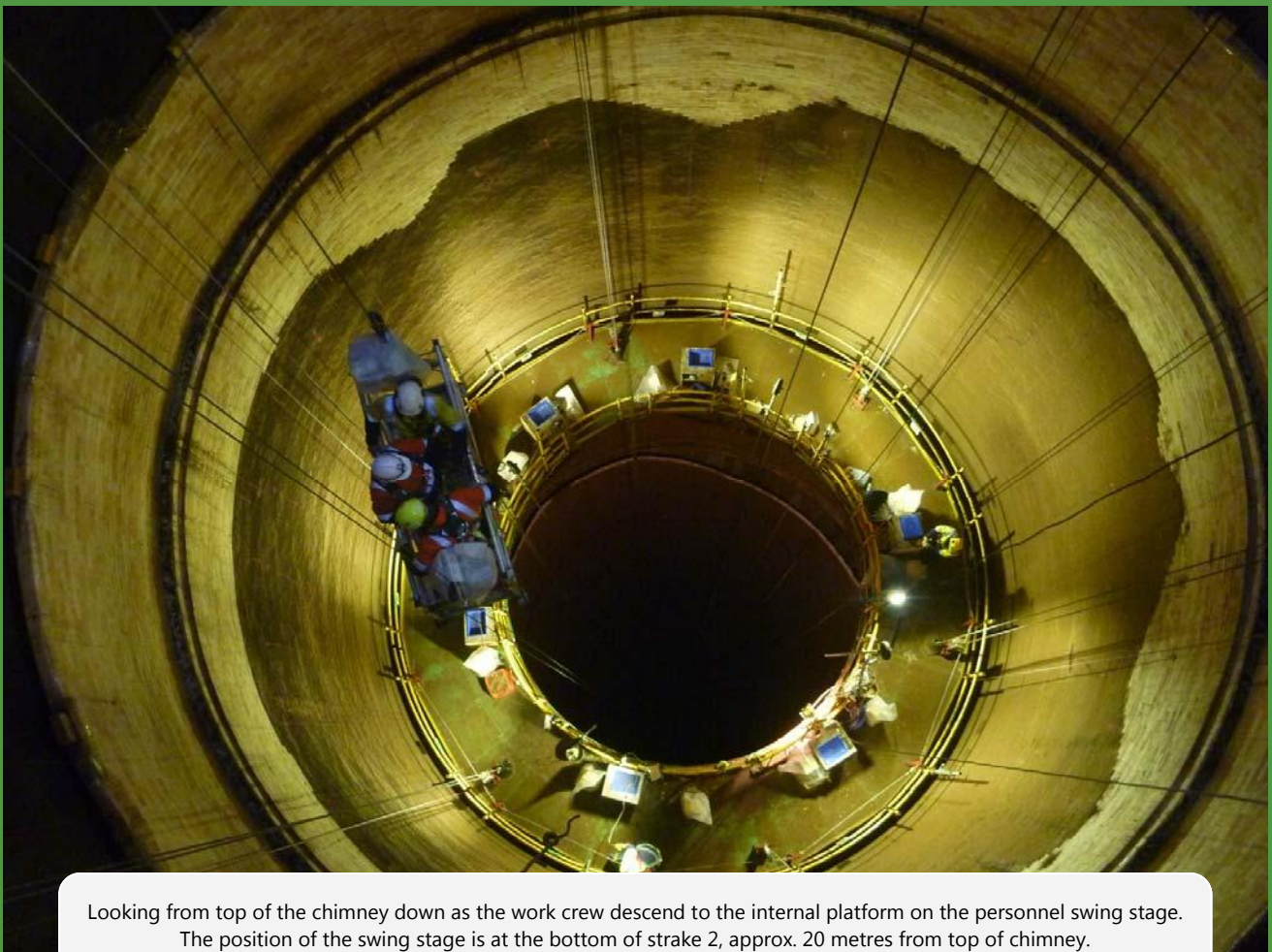
Priority works were completed removing and replacing the top strake (designated Strake 1), which had suffered a major failure in late 2011 where approx 4000 bricks fell internally.

The internal refurbishment works saw the replacement of approx 36,000 bricks. All the labour and materials were required to be lifted to the top of the 170m tall chimney and lowered internally into position. The crew utilised a circular movable working deck to progress from the top down, therefore not placing crews at risk of working under unknown and unstable brickwork.

The remainder of the outage period was used to complete repairs to precarious sections of brickworks in the remaining brick stakes, 2 to 17. In 2012, a camera inspection of the internal brickwork was completed, which was vital in preparation for the maintenance works this year. The 2012 inspection identified the stakes 2, 4 and 6 had severe damage with large sections of loose bricks.

Prior to and following the shutdown period in May, the contractor crew scaled the externals of the chimney to repair loose concrete material. A total of 156m<sup>2</sup> of concrete to approx. 200 mm depth was replaced during these works.

Apart from the remote work location, working at heights and uncontrollable weather conditions the project was achieved without serious health and safety incidents. The selection of works completed during this project aims to retain the integrity of the concrete chimney structure to the planned end of life of the power station.



Looking from top of the chimney down as the work crew descend to the internal platform on the personnel swing stage. The position of the swing stage is at the bottom of strake 2, approx. 20 metres from top of chimney. The clean ring of brickwork shows newly installed brickwork.

## Yallourn's Unit 1 Major Outage improves efficiency to power 25,000 extra homes

A Major Overhaul Outage is one of the busiest times at the power station and we have undergone a rigorous planning process to ensure tasks are completed safely, effectively and on time.

While major outages are a very important part of managing Yallourn's operational efficiency, they also give us an opportunity to ensure the ongoing safety and integrity of the plant as part of the inspection and maintenance schedule. All workers focus on safety whilst following a busy outage schedule.

As part of the Major Outage, Yallourn Power Station completed the third energy efficiency upgrade project as part of a five-year program to improve efficiency across the station, allowing Yallourn to produce power for 25,000 extra homes from the same amount of coal.

The third of four High and Intermediate Pressure (HIP) turbines was installed in Unit 1 in 2014, improving the unit's efficiency by around 3 per cent and saving approximately 100,000 tonnes of carbon emissions for the same electricity output each year. This is on the back of replacing the HIP turbines on Unit 3 and Unit 4 in 2010 and 2011 respectively.

The HIP was designed and manufactured by Toshiba (Original Equipment Manufacturer for our Turbine and Generators) in Japan in their factory located in Yokohama City. The unit is fully manufactured and assembled in Japan and transported by sea to Melbourne, then by road to site. The new turbine weighs approximately 180 tonnes and required three trucks hooked together to transport to site. The original turbine was installed and commissioned in 1973.

The design of the new HIP turbine incorporates the latest technologies from Toshiba. The latest design improvements have given rise to the efficiency improvements we have achieved. The design for the upgrade was based on a power increase of 16MW's, however we have achieved a total increase of 20MW's over the original design.

The old turbine was stripped and removed to allow for the new assembled HIP turbine to be lowered into position and welded back to the existing pipework. As well as providing the efficiency improvements, the integrity issues associated with the original turbine have now been removed.



New HIP turbine being lowered into its new position

# Eastern Ash Landfill Development

Historically, ash landfill operations have primarily concentrated on the deposition of ash within the Western and Central Ash Landfill areas of the Yallourn North Open Cut (YNOC).

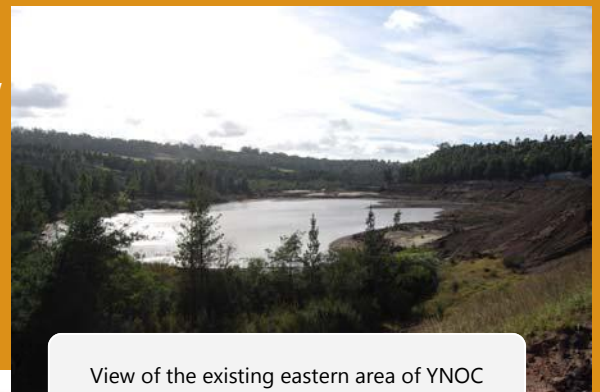
However, the Western and Central Ash Landfill has only limited remaining ash storage capacity and additional ash storage is required to meet the long term business requirements.

To improve access to the required additional ash storage, EPA approval for the development of the Eastern area was obtained in July 1998 via a works approval granted under Yallourn's EPA licence. Department of Economic Development, Jobs, Transport and Resources (DEDJTR) approval for the rehabilitation plan for the YNOC was obtained in January 2002 incorporating the EPA approved Eastern Ash Landfill.

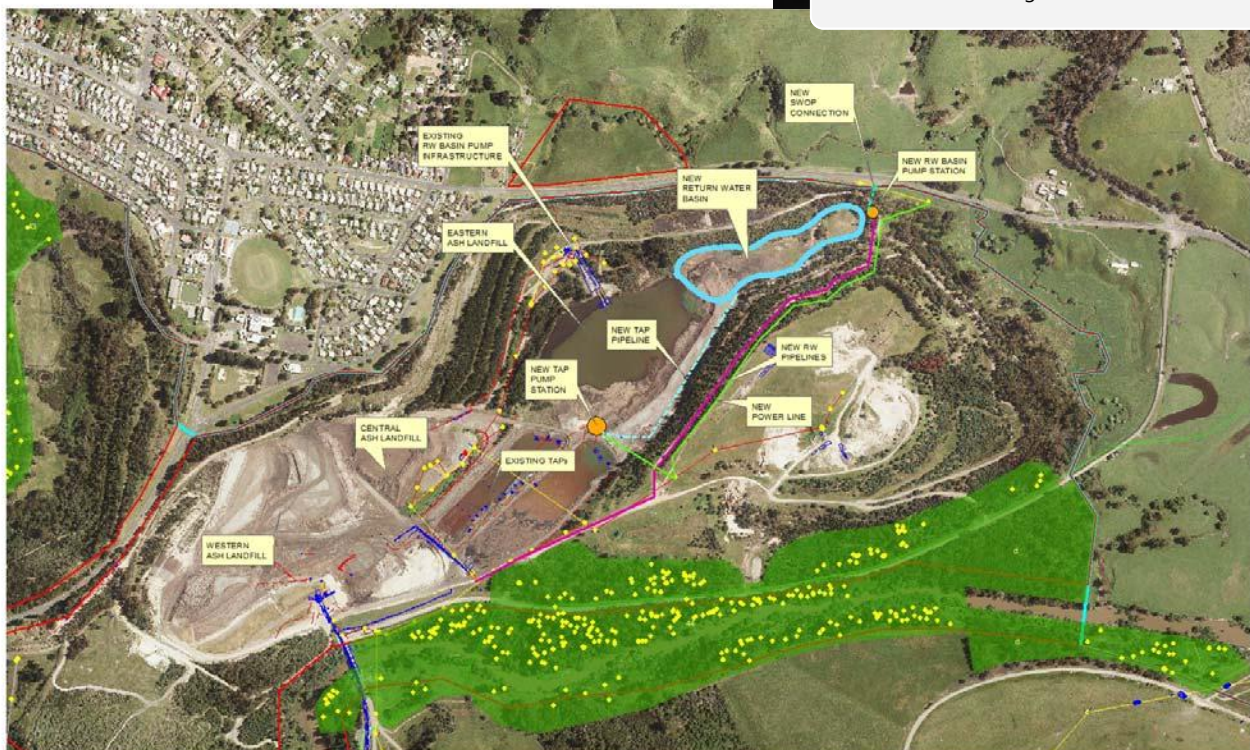
Since that time deposition of ash within the Eastern Ash Landfill area has progressed, however to gain access to the entire EPA approved Eastern Ash Landfill area, existing infrastructure within the YNOC area needs to be relocated in accordance with the EPA approved plan. The EPA approval for the development of the Eastern Ash Landfill anticipated that the existing infrastructure would need to be relocated at some future time, in order to gain full access to the approved Eastern Ash Landfill area.

Initial field investigation works have been completed based on the EPA approved concept design. The concept design work has incorporated the various requirements including, for example ash storage volumes, geotechnical stability, environmental requirements, ash water storage volume and pumping infrastructure requirements, including power supply and control systems.

The primary work program involves the development of a new return water basin in the eastern area of YNOC and establishing new pumping infrastructure to transfer the Twin Ash Ponds ash slurry effluent to this new return water basin. New return water pumping infrastructure will also be established to recycle saline water back to the power station for re-use in the power station's ashing system. Surplus water will be sent off site via the existing Integrated Ashing Effluent System. Once the new return water basin and its associated pumping infrastructure are operational, the existing Eastern Basin will be decommissioned and drained to provide additional ash storage.



View of the existing eastern area of YNOC



Date Created: 14/10/2014 12:28:56 PM  
Sid Rastogi

EnergyAustralia Yallourn GIS

NOTE: Uncontrolled when printed. Refer to GIS for current version.

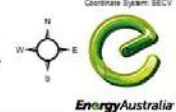
## YNOC - EAL PROJECT PROPOSED LAYOUT

● CMP OFFSET TREES 2011

■ CMP BLOCKS 2011

— PROPERTY BOUNDARY (EXCLUDES CROWN LAND)

— COMMON MINING LICENSE & PROPERTY BOUNDARY



View of the proposed layout for the YNOC



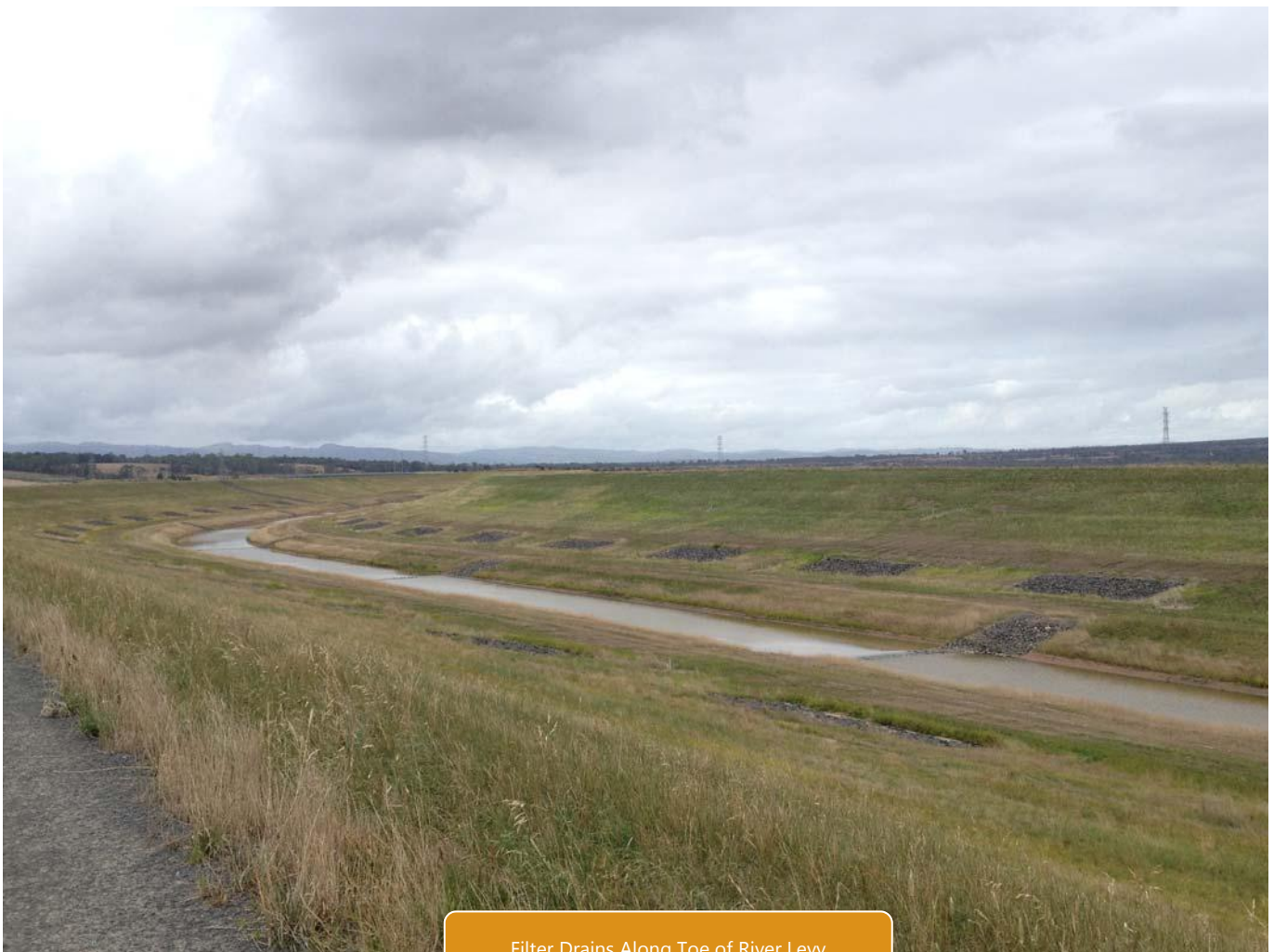
# Morwell River Diversion Completion

The Morwell River Diversion was recommissioned on the 27 October 2013 after a catastrophic embankment failure on the 6 June 2012. Since being recommissioned the performance of the structure has been meeting all design expectations.

A meticulous monitoring network has been re-established in the repaired section of the Morwell River Diversion. This includes movement monitoring pillars that monitor vertical and horizontal movement of the structure, observation bores to monitor pore pressures and river flow monitoring. A more enhanced communication system has been established with some bores connected to an online data logging station and several connected to portable data logging devices, including real-time river flow monitoring. This network of monitoring has been complimentary to the monitoring that has been maintained in the structure south of the repaired section of Morwell River Diversion.



Surface Settlement Pillar



Filter Drains Along Toe of River Levy

# EnergyAustralia Environment Review Committee (ERC) Report of Independent Chairman 2014 Year

Thirteen years ago the State Government licence for **EnergyAustralia Yallourn** was amended to enable it to mine coal over an enlarged area within its boundaries for the continued generation and supply of electricity to the national grid at its Yallourn site in accordance with agreed plans and strict conditions relating to *Mine Rehabilitation; Conservation Management; and Environmental Improvement*. This included a requirement to convene an **ENVIRONMENT REVIEW COMMITTEE (ERC) to oversee, examine, review, discuss and report** on its performance within the agreed conditions, especially in respect of care of the natural and community environment.

As its independent chairperson I can report that during 2014 the community continued to be well served by the **ERC**, whose members, from community groups representatives of responsible government agencies\* and senior officers responsible for the operation and impacts of the power station and mine, met on four scheduled occasions during the year, in addition to a formal on-site view of activities and adhoc site inspections of significant events and issues.

This enabled and ensured informed and detailed monitoring and review of all reportable significant performance measures and responses of **EnergyAustralia Yallourn's (EA)** environmental performance including progress made on the implementation of its current approved **5 year Environmental Improvement Plan**.

These included:

- During the **February Latrobe Valley Fire**, the effective application of the fire containment infrastructure of the mine overall and the local knowledge, skill and persistence of mine staff and resources (teamed with CFA resources) confined the effects of the incursion to a significant but repairable impact with **no break in power supply to the grid nor loss of coal resources**. Whilst burning over 900 hectares necessitating reinstatement of fencing over leased land, **damage to conservation and rehabilitation plantings was largely contained and is being replanted in 2015 and 2016**. That the Morwell Fire Government enquiry did not seek to engage with EA on any aspect of its conduct during the event or impacts on the community further reflects the creditable response by staff and the company.
- The repair, reinstatement and mine dewatering procedures after the **Morwell River Diversion event** were completed with **no adverse net effect on the environment** within or downstream of the mine.
- Completion of the planned **replacement** of the **Unit 1 High and Intermediate Pressure Generator turbine** has enabled a 2% improvement in the efficiency of the High and Intermediate Pressure turbines of the Unit 1 Generator and has **reduced the carbon emissions intensity by 3.1%**.


Others, in a long list of events affecting the keen and proprietorial interest by the Valley community in its industries and their responsible behavior and progress towards its overall social health, economic and environmental, included:

- Completion of remedial work on the 40 year old 170 metre tall Stage 1 Chimney;
- Continuous prompt application of topsoil cover to expended coal faces as part of ongoing rehabilitation of the mine;
- Completion of concept designs for 'Eastern Ash Landfill storage expansion' and major works to relocate the current Eastern saline water basin;
- Investigation of opportunities for additional environmentally sustainable use of brown coal including pulverised coal injection for steel-making and energy conversion of coal to liquids, gases and chemicals.
- Ongoing partnership and financial support with the **Latrobe Catchment Landcare Network** throughout West Gippsland including:
  - the current restorative work that looks at maintaining the native biodiversity of the region in perpetuity.
  - Two community planting days; 4000 plants planted along Latrobe River and Waterhole Creek involving EA staff and 300 enthusiast community volunteers.
  - The opening of a community walking track along the diverted Morwell West Drain from Latrobe Road to Toners Lane including over 10,000 tree plantings and wetlands along the pathway.
  - Two landholders winning funding to restore remnant patches through supplementary planting and fencing off native vegetation from livestock.
  - A project funding the installation of a Peregrine Falcon nesting box in a large remnant tree on private property.
  - Five community engagement events providing fun-interactive walks and talks with the general public to showcase the Red Gums in Plains Grassy Woodlands and its wildlife.

On formal matters of licence compliance and community relations:

- All business KPIs (Key Performance Indicators) were met for dust concentration, river water use, wastewater and salinity discharges, and mine rehabilitation areas.
- One EPA Licence exceedance of the high particulates concentration was detected from Unit 3 on 12 August and the cause remedied forthwith;
- Two public notifications were received relating to dust fallout nuisance in Yallourn North on 8 November and another from EPA regarding a complaint of nuisance particulates fallout in Newborough on 11 November. These could not be verified by detailed investigations and were formally attributed to other sources.

In conclusion, as has been the case over the past 12 years, I venture to compliment the members of the Environment Committee from the community volunteer representatives, appointed members of the State and Local Governments and the representatives of the Company, for their constructive input and dedication to performance of the highest order.



**(Dr) Geoff Sutherland OAM**

(Independent Chairman)

*\*Significantly, the traditional attendance at meetings of government agents was largely replaced by reliance upon their initiative to report relevant matters to the committee or respond to direct requests from the ERC due to claimed exigencies of limited availability due to budget constraints. However, the Regional Manager of DEDJTR (formerly DPI), responsible for supervision of the Mining Licence compliance, continued to provide valuable oversight and advice at all meetings.*



Peregrine Falcons continue to have successful breeding within the Power Station



# EnergyAustralia Community Perceptions Survey

A Community Perceptions Survey was undertaken by EnergyAustralia in Latrobe Valley region to better understand community perceptions of EnergyAustralia in general and of the Yallourn Power Station and Mine.

The survey consisted of 100 phone interviews, two focus groups and five in depth stakeholder interviews. Key findings included:

- Job security and lack of youth employment opportunities were identified as the main social/economic issues facing the local region.
- High levels of support exist for power stations and coal mining, as the community view this as being an integral industry for the region. However, the community understands that the industry is in transition.
- Yallourn is seen as a good operator in the region that has suitable environmental safeguards in place. However, the February mine fire has changed overall community perceptions towards local operators in the community.
- Community support exists for expansion of coal mining at Yallourn.
- There is community awareness that the industry is in transition with a belief this will take 20 to 35 years rather than taking place in the next 5 years. There is a strong preference for announcement of any major closures 5 to 8 years before taking place.

EnergyAustralia will use the survey to focus its communications program around community interests of the future of electricity supply, cleaner coal projects and innovation, apprenticeships and EnergyAustralia's community sponsorship programs.



Toys collected by the Coal Disposal Team donated to the Gippsland Motorcyclists Christmas Toy Run

# EnergyAustralia Yallourn Performance

- Brown coal-fired power station and captive mine
- 1,480MW (2 x 360MW, 2 x 380MW)
- Plant commissioned between 1974 and 1982
- Shareholding of 100% acquired in 2003 with operational control by CLP

| PARAMETER  | UNIT                      | 2014      | 2013                 | 2012                |
|--|---------------------------|-----------|----------------------|---------------------|
| <b>1. Operation</b>  |                           |           |                      |                     |
| Electricity sent out <sup>(1)</sup>                          | GWh                       | 9,806     | 7,744                | 8,184               |
| Coal consumed  | TJ                        | 146,249   | 119,827              | 124,122             |
| Oil consumed   | TJ                        | 341       | 441                  | 293                 |
| Thermal efficiency (HHV)                                     | %                         | 24.2      | 23.3                 | 23.8                |
| Equivalent availability factor (EAF) <sup>(2)</sup>          | %                         | 83.31     | 74.85                | 90.23               |
| <b>2. Air Emissions</b>                                      |                           |           |                      |                     |
| CO <sub>2</sub> e (Scopes 1 & 2)                             | kT                        | 14,008    | 11,478               | 11,945              |
| SO <sub>2</sub> <sup>(3)</sup>                               | kT                        | 20.4      | 18.0                 | 19.0                |
| NO <sub>x</sub> <sup>(3)</sup>                               | kT                        | 15.3      | 14.1                 | 14.1                |
| Particulate (Total) <sup>(5)</sup>                           | kT                        | 5.5       | 3.3                  | 3.1                 |
| <b>3. Water</b>  |                           |           |                      |                     |
| Water Withdrawal   | Mm <sup>3</sup>           | 26.9      | 22.6                 | 22.44               |
| from marine water resources                                  | Mm <sup>3</sup>           | 0         | 0                    | 0                   |
| from freshwater resources                                    | Mm <sup>3</sup>           | 25.8      | 21.4                 | 21.3                |
| from municipal sources                                       | Mm <sup>3</sup>           | 1.1       | 1.1                  | 1.1                 |
| Water Discharged   | Mm <sup>3</sup>           | 16.3      | 11.6                 | 7.2                 |
| treated wastewater discharged to sea                         | Mm <sup>3</sup>           | 0         | 0                    | 0                   |
| treated wastewater discharged to freshwater bodies           | Mm <sup>3</sup>           | 14.5      | 10.1 <sup>(13)</sup> | 5.5 <sup>(12)</sup> |
| wastewater discharged to sewerage                            | Mm <sup>3</sup>           | 1.8       | 1.5                  | 1.7                 |
| Water Reused / Recycled                                      | Mm <sup>3</sup>           | 0.1       | 0                    | 0                   |
| <b>4. Environmental Compliance</b>                           |                           |           |                      |                     |
| Regulatory non-compliance resulting in fines or prosecutions | No.                       | 0         | 0                    | 0                   |
| Licence limit exceedance & other non-compliance              | No.                       | 1         | 1 <sup>(11)</sup>    | 1 <sup>(11)</sup>   |
| <b>5. By-products &amp; Waste Management</b>                 |                           |           |                      |                     |
| Ash produced   | kT                        | 283       | 239                  | 279                 |
| Ash recycled / sold  | kT                        | 0         | 0                    | 0                   |
| <b>Hazardous waste <sup>(6)</sup></b>                        |                           |           |                      |                     |
| produced   | T (solid) / kl (liquid)   | 213 / 245 | 173 / 211            | 71 / 229            |
| recycled   | T (solid) / kl (liquid)   | 0.3 / 232 | 0.3 / 211            | 1 / 229             |
| disposed   | T (solid) / kl (liquid)   | 213 / 13  | 172 / 0              | 70 / 0.2            |
| <b>Non-hazardous waste <sup>(6)</sup></b>                    |                           |           |                      |                     |
| produced   | T (solid) / kl (liquid)   | 2527 / 0  | 1,668 / 0            | 2,010 / 0           |
| recycled   | T (solid) / kl (liquid)   | 867 / 0   | 307 / 0              | 893 / 0             |
| disposed   | T (solid) / kl (liquid)   | 1660 / 0  | 1,360 / 0            | 1,117 / 0           |
| <b>6. Safety <sup>(7)</sup></b>                              |                           |           |                      |                     |
| Fatalities   | No.                       | 0         | 0                    | 0                   |
| Cases of disabling injuries                                  | No.                       | 3         | 0                    | 1                   |
| Disabling injury incidence rate                              | No. per 200,000 Hrs work  | 1.58      | 0.00                 | 0.49                |
| Days lost / charged  | No.                       | 25        | 0                    | 0                   |
| Severity rate  | Days per 200,000 Hrs work | 13.18     | 0                    | 0                   |
| Longest period without a loss time injury <sup>(8)</sup>     | Days                      | 105       | 770                  | 405                 |
| Reported traffic accidents                                   | No.                       | 0         | 0                    | 0                   |
| <b>7. Employee Development</b>                               |                           |           |                      |                     |
| Employees <sup>(9)</sup>                                     | No.                       | 203       | 204                  | 207                 |
| Safety, health and environment training <sup>(10)</sup>      | Hours                     | 11,175    | 7,969                | 10,072              |

## Notes:

- (1) Sent out, with mine.
- (2) Data updated to align with local regulatory reporting requirements.
- (3) SO<sub>2</sub> and NO<sub>x</sub> data estimated using emission factors derived from plant emissions monitoring conducted every six months.
- (4) Particulate emissions from power generation and mine sources from 2014. Prior to this from Power Station only.
- (5) Particulate emissions from power generation and mine sources from 2014. Prior to this from Power Station only.
- (6) Waste categorised in accordance with local regulations. Contractor waste has been included.
- (7) Safety data for employees only.
- (8) Data represents cumulative number of days since last lost time injury.
- (9) Full time equivalent.
- (10) Includes employees and contractors safety, health and environment training.
- (11) Emergency discharge of mine flood waters.
- (12) This data represents treated wastewater discharged from mine. On 6 June 2012, failure of the Morwell River Diversion flooded the Mine. Under EPA emergency approval, an additional 84 Mm<sup>3</sup> of floodwater was discharged to river from 6 June 2012 to 2 Feb 2013.
- (13) This data represents treated wastewater discharged from mine. The Mine flooded again on 14 June 2013. Under EPA emergency approval, a further 30 Mm<sup>3</sup> of flood water was discharged from 18 June 2013 to 14 Feb 2014.

Data have been independently verified by V&C Environment Consultants Pty Limited. Verification statement is available upon written request.



**EnergyAustralia**<sup>®</sup>

### More Information

For more information on EnergyAustralia's Social and Environmental principles and practices please visit [www.energyaustralia.com.au](http://www.energyaustralia.com.au) or call Ray French or Nicki Kumar on 5128 2000