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
How we do business			
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
Our Operations			
Coal Rate	★★★★	Improving Performance Trend	Internal
Coal Supply Reliability	★★★★	Target met	Internal
Electricity Sent Out	★★★★	Improving Performance Trend	Internal
Our Employees			
Training – Safety, Health and Environment	★★★	Target achieved	Internal
Employee Availability	★★	Target not achieved	Internal
Our Safety and Health			
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
Our Environment			
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.

Oxygen and carbon monoxide lasers installed at Yallourn Power Station

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.

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 tCO2e/GWh sent out last year to 1402 tCO2e/GWh sent out, a 3.8% reduction.

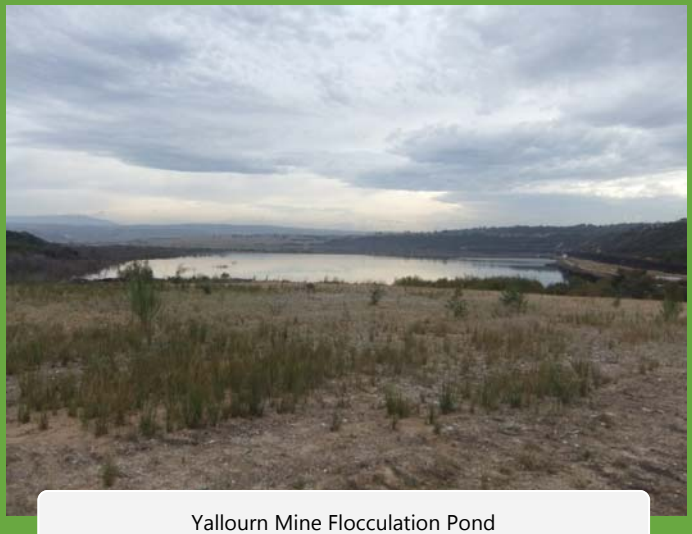
EnergyAustralia Yallourn continued to report its annual total greenhouse gas emissions, energy consumption and energy production to the Government in accordance with the National Greenhouse and Energy Reporting Act 2007. This data provides the information to the Government required for the implementation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

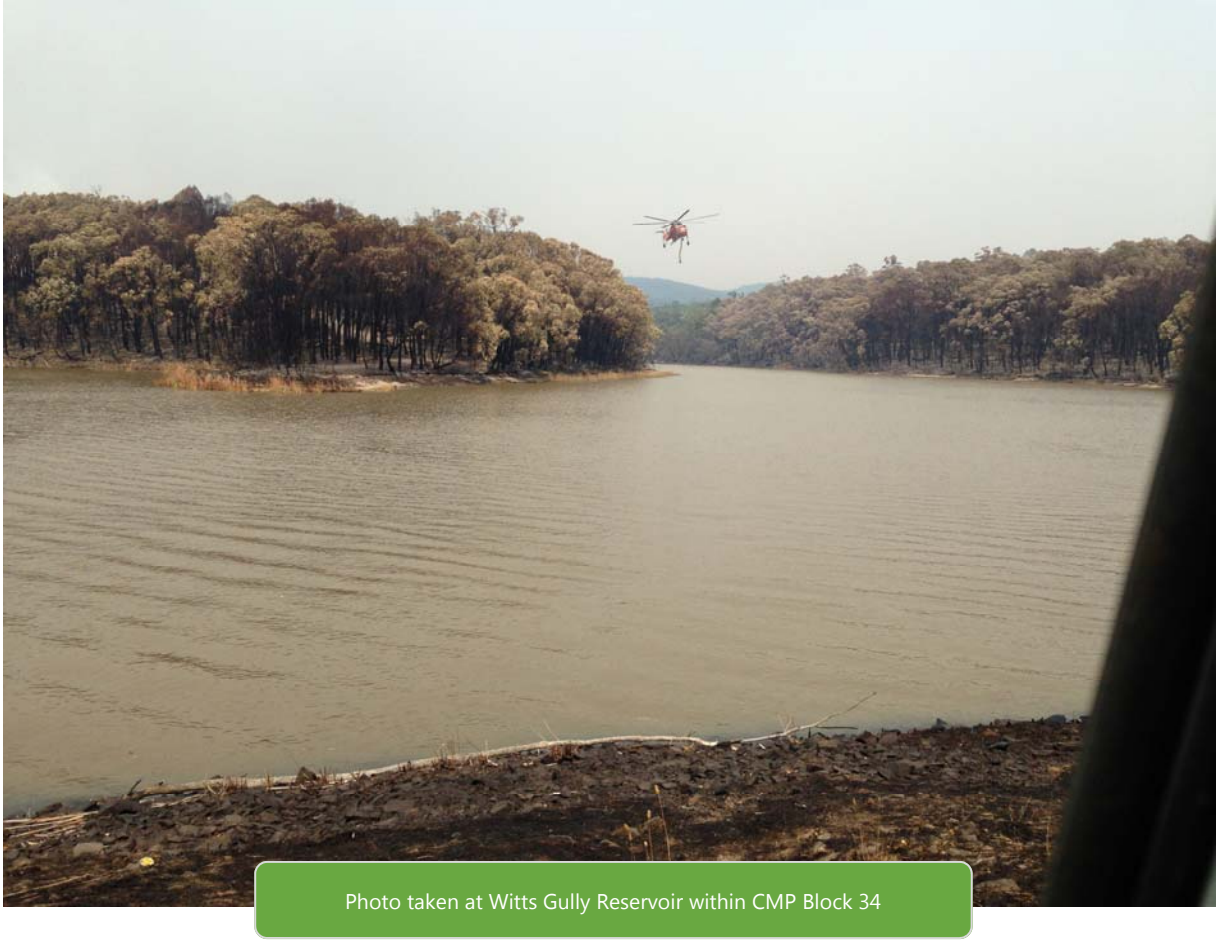


Photo taken at Witts Gully Reservoir within CMP Block 34

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.

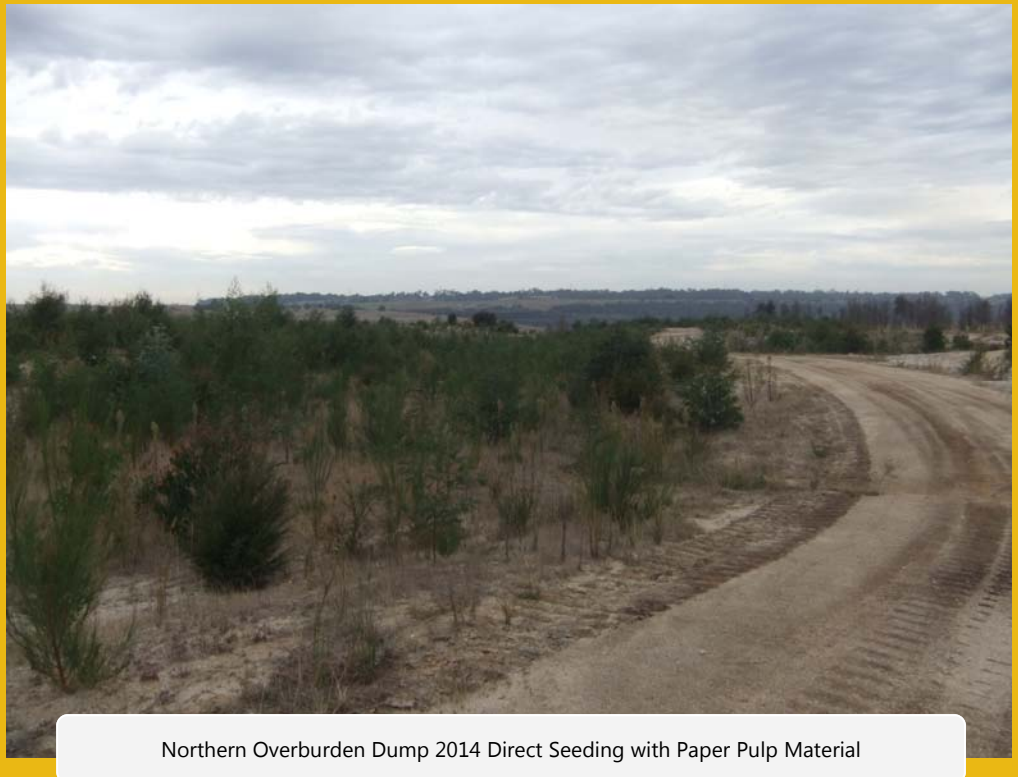
Ongoing weed control and native planting effort in areas of the Yallourn North Open Cut resulted in the rehabilitation of 14.3 hectares of previously disturbed areas. Within these areas there was a concerted effort to improve the Yallourn North township screen with plantings including a variety of Acacias, 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 m3 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, phragmities 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.

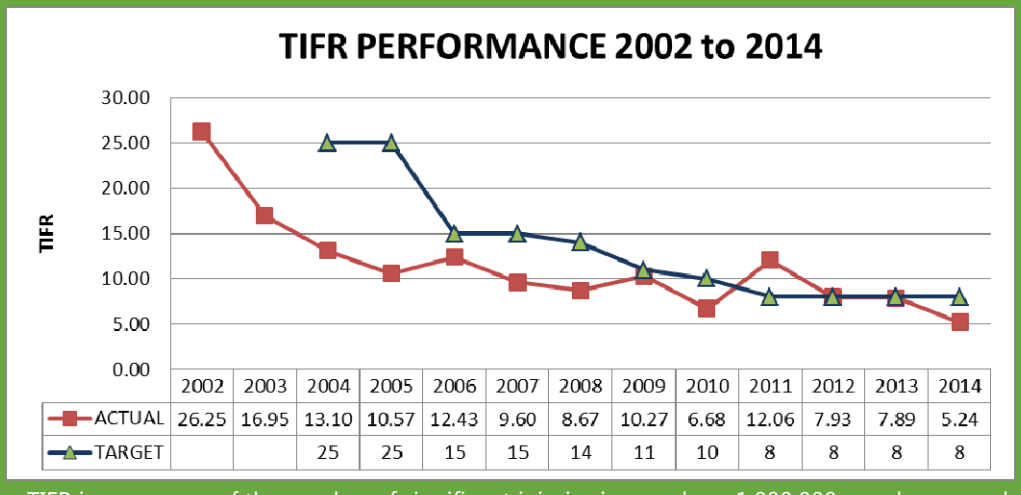
Striated Pardalote spotted in Traragon Railway Reservoir Reserve on the EnergyAustralia sponsored Birdwatchers Breakfast Tour

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.

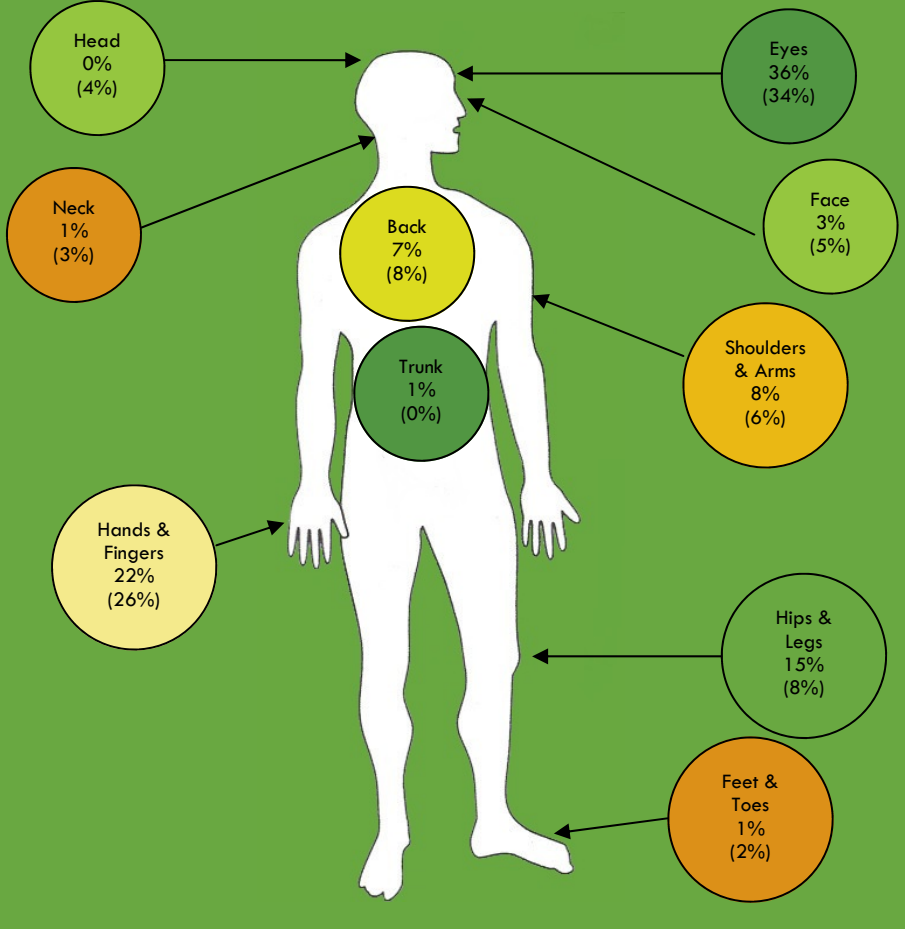


	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
ACTUAL	26.25	16.95	13.10	10.57	12.43	9.60	8.67	10.27	6.68	12.06	7.93	7.89	5.24
TARGET			25	25	15	15	14	11	10	8	8	8	8

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 strakes 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 156m2 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 Yokahama 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).

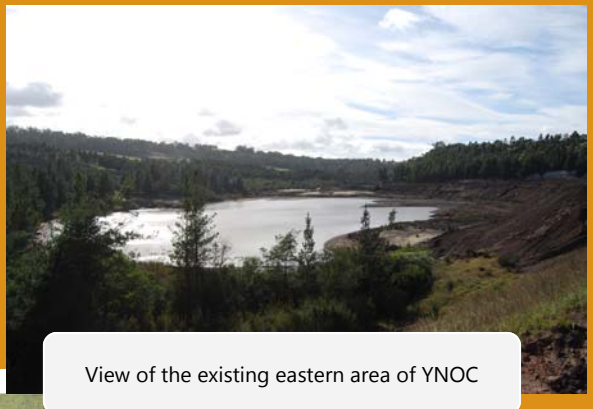
However, the Western and Central Ash Landfill has only limited remaining ash storage capacity and additional ash storage is required to meet the long term business requirements.

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.

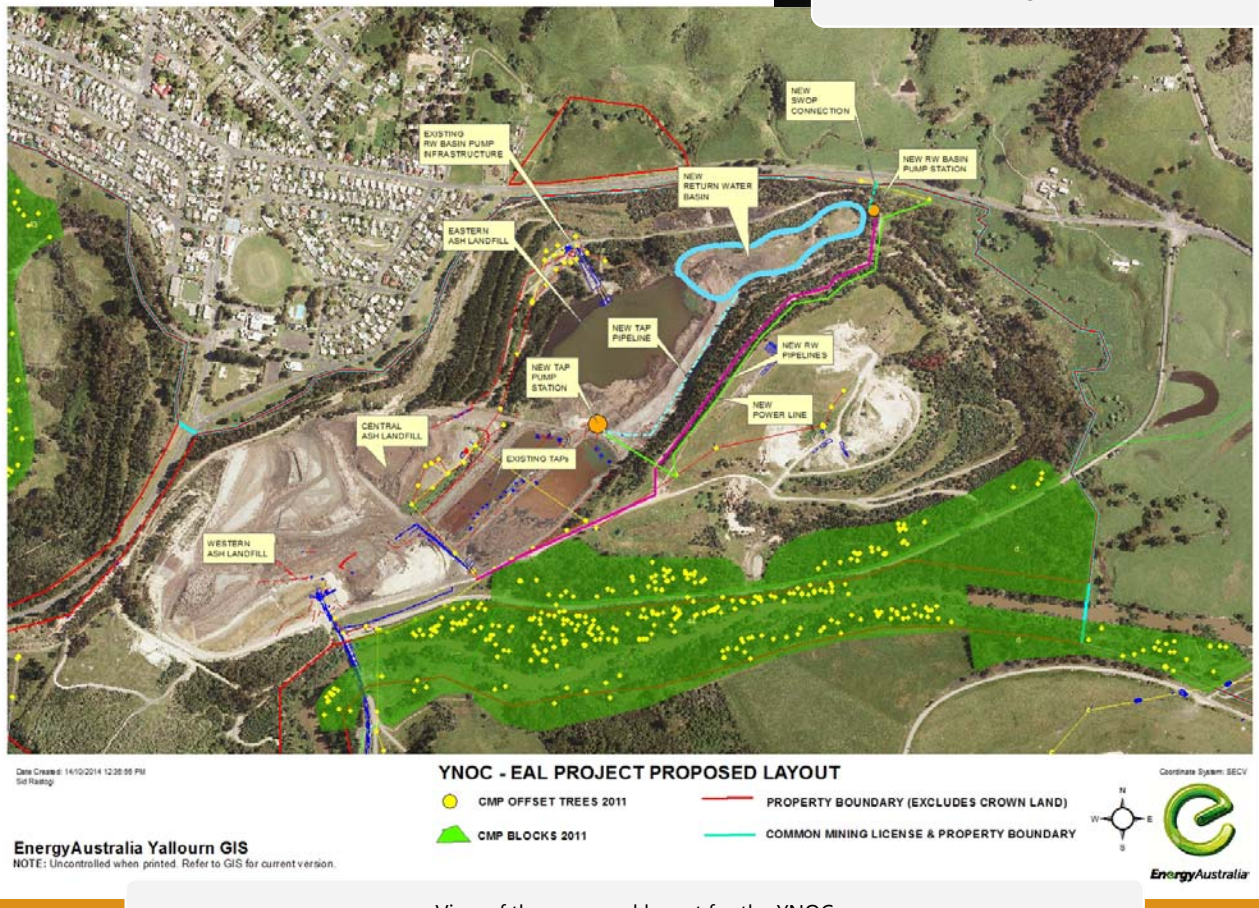
Since that time deposition of ash within the Eastern Ash Landfill area has progressed, however to gain access to the entire EPA approved Eastern Ash Landfill area, existing infrastructure within the YNOC area needs to be relocated in accordance with the EPA approved plan. The EPA approval for the development 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 provided additional ash storage.



View of the existing eastern area of YNOC



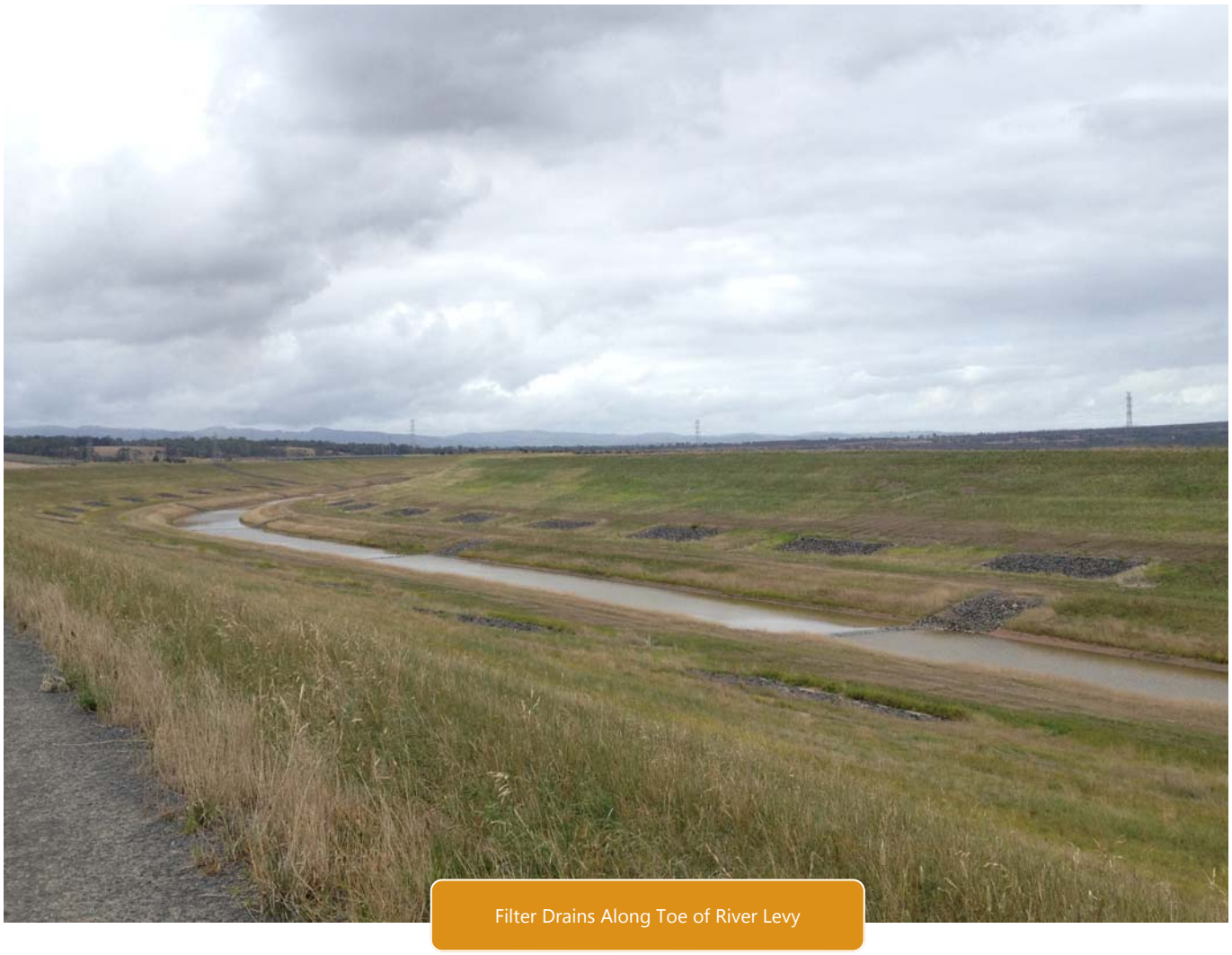
View of the proposed layout for the YNOC

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 reparable 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 provided 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
1. Operation				
Electricity sent out [1]	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) [2]	%	83.31	74.85	90.23
2. Air Emissions				
CO_2e (Scopes 1 & 2)	kT	14,008	11,478	11,945
SO_2 [3]	kT	20.4	18.0	19.0
NO_x [3]	kT	15.3	14.1	14.1
Particulate (Total) [5]	kT	5.5	3.3	3.1
3. Water				
Water Withdrawal	Mm^3	26.9	22.6	22.44
from marine water resources	Mm^3	0	0	0
from freshwater resources	Mm^3	25.8	21.4	21.3
from municipal sources	Mm^3	1.1	1.1	1.1
Water Discharged	Mm^3	16.3	11.6	7.2
treated wastewater discharged to sea	Mm^3	0	0	0
treated wastewater discharged to freshwater bodies	Mm^3	14.5	10.1[13]	5.5[12]
wastewater discharged to sewerage	Mm^3	1.8	1.5	1.7
Water Reused / Recycled	Mm^3	0.1	0	0
4. Environmental Compliance				
Regulatory non-compliance resulting in fines or prosecutions	No.	0	0	0
Licence limit exceedance & other non-compliance	No.	1	1[11]	1[11]
5. By-products & Waste Management				
Ash produced	kT	283	239	279
Ash recycled / sold	kT	0	0	0
Hazardous waste [6]				
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
Non-hazardous waste [6]				
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
6. Safety [7]				
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[8]	Days	105	770	405
Reported traffic accidents	No.	0	0	0
7. Employee Development				
Employees [9]	No.	203	204	207
Safety, health and environment training[10]	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_2 and NO_x data estimated using emission factors derived from plant emissions monitoring conducted every six months.
(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^3 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^3 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.

More Information

For more information on EnergyAustralia's Social and Environmental principles and practices please visit www.energyaustralia.com.au or call Ray French or Nicki Kumar on 5128 2000