snowyhydro

ENVIRONMENT REPORT

for

2014 – 2015

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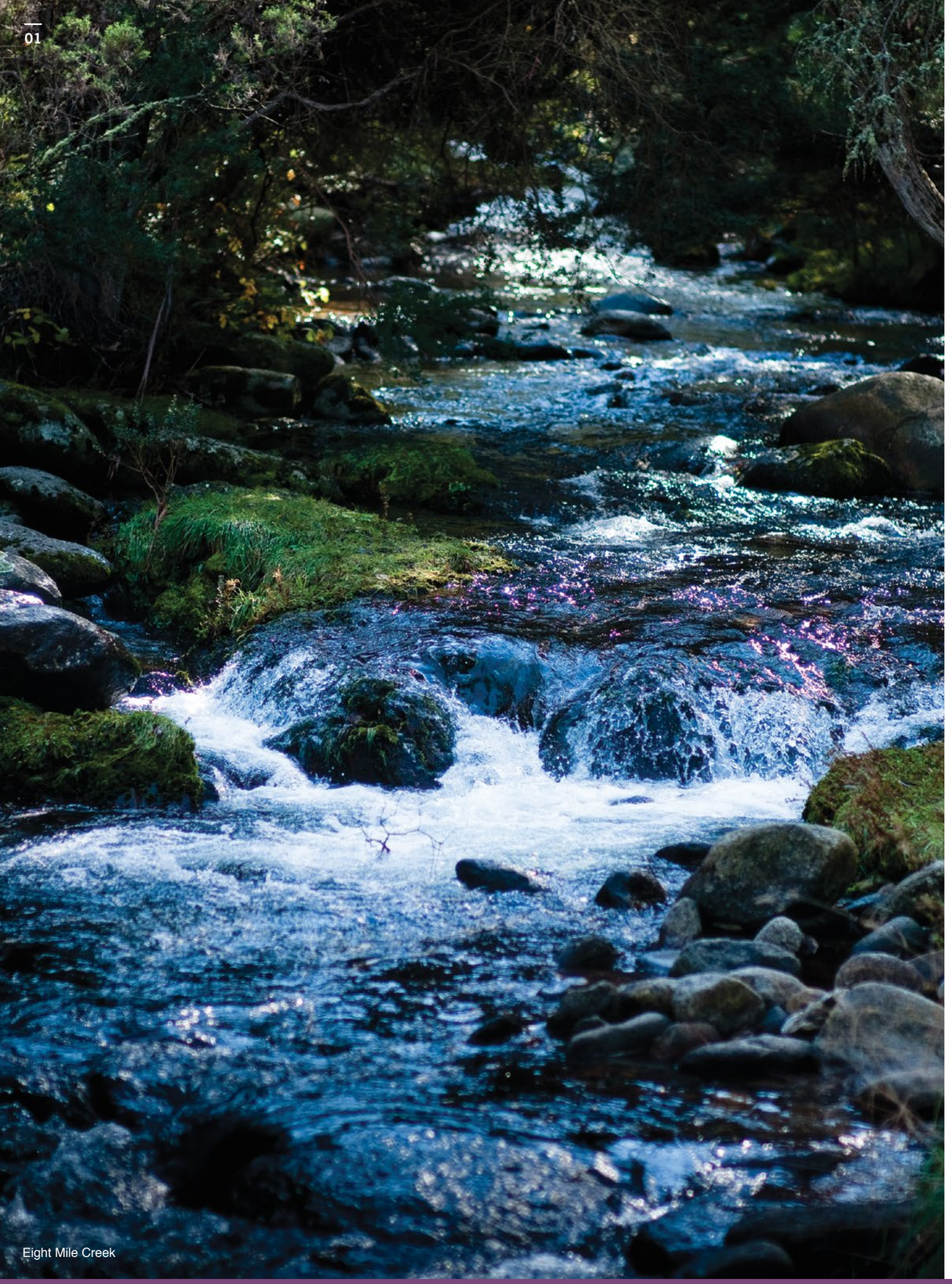
Lake Jindabyne



Eight Mile Creek

OUR COMMITMENT

Snowy Hydro is proud of the positive contribution it makes to the environment through its role as the single biggest producer of renewable energy available to the grid in south-eastern Australia. Snowy Hydro plays a role in greenhouse abatement and better understanding long term climate variability in south eastern Australia, and this is featured in this Environment Report.

While we are proud of this contribution, we know that the initial construction of the Snowy Scheme, and some aspects of how we operate now, have the potential to impact negatively on the environment. So, we have made a commitment to mitigating these impacts and operating in a way that avoids harm to the environment whenever we can.

Colongra Power Station

AN EXTRAORDINARY YEAR FOR SNOWY HYDRO

The Snowy Scheme has operated for over 60 years across an area of 5,124 square kilometres located mostly within Kosciuszko National Park (KNP) – a UNESCO declared Biosphere Reserve. The area straddles both sides of the Great Dividing Range, capturing, storing and then releasing water into the Murrumbidgee, Murray, and Snowy River systems.

Last year was an extraordinary year for Snowy Hydro which saw it diversify its operations further through investment in additional thermal generation and delivering energy products to around one million retail accounts.

Snowy Hydro has expanded out of its traditional home of the Snowy Mountains and we now manage assets in a wide range of environments. Our gas assets, previously located only in Victoria, now include Colongra on the NSW Central Coast, and diesel assets in South Australia.

MAINTAINING HIGH EXPECTATIONS FOR PERFORMANCE

As Snowy Hydro evolves we will continue to meet our high expectations for environmental performance wherever we operate. We know that community and regulatory expectations for environmental performance also change over time. Practically speaking this means that the impacts of our operations on land, air and water must meet increasingly high standards.

Snowy Hydro relies on three ‘pillars’ to meet these standards:

Our plant – which is designed, built, operated and maintained to minimise impacts on the environment.

Our operations - a business model that fundamentally minimises our environmental impacts

Our people and processes - who have the skills and tools to control impacts wherever and whenever we operate and we have integrated good environmental practice into all our business processes through an Environmental Management System (EMS).

We also have a strong record of care for the land where we have operated for over 60 years, along with respectful stakeholder relationships. Together these all provide the foundation for delivering on our commitment, and avoiding harm to the environment when carrying out our work

OUR PLANT IS DESIGNED, BUILT, OPERATED AND MAINTAINED TO MINIMISE IMPACTS

Snowy Hydro’s ability to protect the environment from harm starts with the way our plant is designed and built. Both the hydro and thermal assets are designed with effective barriers to prevent direct impacts to the environment.

The hydro power stations utlilise oil containment and separation systems with three layers of protection including drainage pits, oil skimmers and oil water separators prior to discharging station water to the environment.

In contrast to the inherently clean energy generated from our hydro plant, our thermal power stations utilise combustion processes to generate energy, and are consequently not able to operate without causing some emissions to the atmosphere.

Our job at Snowy Hydro is to minimise those emissions to the greatest extent possible. This presents the opportunity to utilise plant and technology to minimise environmental impact while maintaining operational flexibility as environmental standards are raised and regulation becomes increasingly stringent. For instance, our thermal power stations have advanced systems in place to reduce emissions.

Inside Tumut 3 Power Station

Colongra Power Station

Improved environmental performance and operational flexibility through emissions control at Snowy Hydro's thermal power stations

The Colongra Power Station, acquired in early 2015, is comprised of four Alstom designed 13E2 industrial frame gas turbine generating units, each fitted with the best available control technology for control of emissions to air.

The Colongra units are the third generation of the model, originally launched in 1993, and now fitted with a high performing 'Environmental Burner', developed specifically to reduce oxides of nitrogen emissions while improving thermal efficiency and increasing the maximum MW output achievable with each generating unit.

This emissions control system, a variation of which is also utilised at our Laverton North Gas-fired Power Station, operates before the combustion process occurs and is commonly referred to as Dry Low NOx, or 'DLN', as no water is required for its operation. Both the Colongra and Laverton combustion configurations deliver fast start peaking capability, while achieving oxides of nitrogen at low levels. The Valley Power generating units in the Latrobe Valley are an aero-derivative design and use water injection to effectively control emissions. These controls minimise our environmental footprint and provide operational flexibility while not limiting Snowy Hydro's peaking capability and price risk management strategy.

In early 2015 Snowy Hydro acquired three diesel fired power stations in South Australia, powered with Cummins designed reciprocating diesel engines. Located at Lonsdale within the Adelaide metro airshed, and at Angaston in the Barossa Valley wine region, siting of the plants was only achievable with the use of an advanced emissions control technology, selective catalytic reduction (SCR). This technology 'scrubs' the exhaust, removing around 95% to 98% of NOx emissions generated by the engines before being released to the atmosphere.

OUR PLANT IS WELL MAINTAINED REDUCING THE LIKELIHOOD OF UNWANTED IMPACTS

Another factor contributing to Snowy Hydro's ability to protect the environment from harm is the business' approach to plant maintenance. Put simply, there is a lower risk of impact on the environment from plant failure because of our maintenance philosophy and practices.

Part of our business is derived from providing electricity 'insurance' contracts to the National Electricity Market, which is underpinned by the plant's high reliability and fast start supply. This drives a strong business imperative to have plant available and ready to run reliably at all times.

This means that our plant is constantly being monitored, maintained and upgraded to avoid the risk of defects and outages. The focus on plant reliability and availability means that the scope for harm to the environment from faulty or failed assets is substantially reduced.

One of the key indicators of how well our plant is designed, built and maintained, is our compliance with the operating environmental licences that regulate power generation activities in NSW, Victoria and South Australia.

Again in 2014/15 there were no breaches of discharge or emissions limits from licenced sample points of the Snowy Scheme.

Similarly, there were no breaches at our thermal plant with the exception of the 30MW diesel power station at the Hunter Economic Zone (HEZ), acquired from Infratil in October 2014, which has been subject to historical licence breaches involving emissions to air. An air quality assessment conducted in response has demonstrated emissions are significantly below the regulatory criteria for ground level concentrations at residences in the region. However, we have since taken the decision to decommission the plant.

A technical non-compliance with the Colongra Power Station Environment Protection Licence occurred relating to the site weather station, which did not record a brief period of data during the East Coast Low that brought damaging winds and affected the broader Hunter region during late April 2015.

THE WAY WE OPERATE INHERENTLY LIMITS OUR IMPACTS

Despite significant investment in renewable energy by other companies nationwide, the Snowy Scheme remains the single largest supplier of greenhouse gas (GHG) emission free energy in the national grid, offsetting the release of 4.5 million to 5 million tonnes of carbon dioxide that would otherwise be emitted from coal fired power stations, (depending on the amount of hydro power generated).

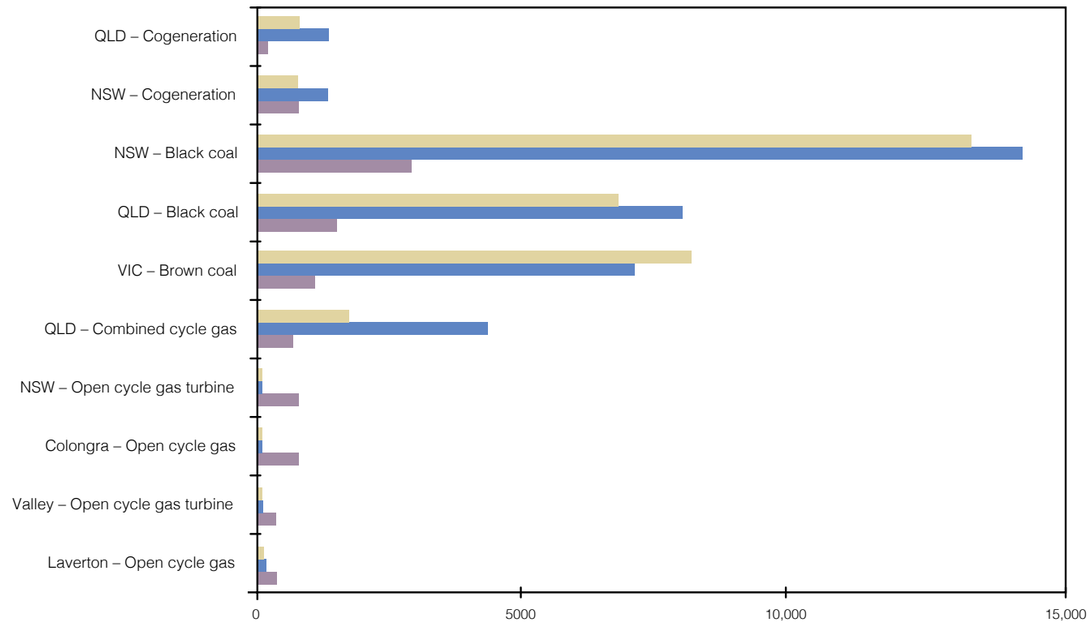
The release of greenhouse gases from our thermal power stations is significantly reduced by the peaking nature of their operations. Snowy Hydro's business model requires generating plant to be available for the maximum amount of time, however, only generate for very short periods. For example, during FY2014/2015 each of our diesel and gas fired power stations generated electricity into the grid for less than half of 1% of the available hours in the year.

To illustrate the effect of this on environmental footprint, the graph opposite shows generation and GHG emissions from a sample of peaking, intermediate and baseload generators across the electricity generation sector. The amount of GHG emissions are predominantly determined by the length of time a power station operates each year. The type of technology also has a significant effect, as can been seen by the different level of GHG emissions between the black and brown coal power stations, and relatively low greenhouse gas intensity of generation with natural gas.

While Snowy Hydro is expanding its generation portfolio with thermal plant, the amount of GHG produced is considerably less than other market participants utilising thermal generation. Our gas-fired power stations, in aggregate, produce a minimal amount of emissions when compared to the industry sector. This is due to Snowy's business model, as a peaking generator, which fundamentally limits emissions from thermal plant and the consequent environmental footprint.

Laverton North Gas-Fired Power Station

SAMPLE OF GHG EMISSIONS ACROSS ELECTRICITY GENERATION SECTORS



The data shown is from the Australian Electricity Market Operator (AEMO) for FY2013/2014, to enable benchmarking between market participants.

Snowy Hydro tracks the GHG emissions associated with electricity generated at our generating stations and across all our facilities. These emissions are reported annually in the National Greenhouse and Energy Report (NGER) which can be seen below over the last three years. Our gas Laverton and Valley Power gas power stations contribute almost all of our GHG emissions.

Year	Direct emissions - tonnes of carbon dioxide equivalent
13/14FY	19,671
12/13 FY	23,485
11/12 FY	18,622

Emissions from direct sources (gas, diesel, petrol consumption)

While Snowy Hydro reported 19,671 tonnes of direct greenhouse emissions (predominantly from our two gas fired power stations in Victoria) - by comparison with the graph above, a single black coal power station in NSW generated between 10,000,000-15,000,000 tonnes of carbon dioxide equivalent emissions in FY13/14.

Guthega Dam

IMPROVING OUR UNDERSTANDING OF THE IMPACTS OF CLIMATE VARIABILITY ON THE SCHEME

The expected impacts of climate change include an increase in mean global annual temperature, changes in precipitation patterns, and a greater frequency of extreme events such as floods, droughts, and severe storms.

All of these have implications for Snowy Hydro's business operations. Changes in temperature and precipitation patterns could alter the timing and volume of spring run-off and customer demand, with implications for hydro-electricity generation.

Climate change

Snowy Hydro is working to understand the potential impacts of climate change on our operations and activities so that we can take steps to manage associated risks. A partnership with University of Queensland has been established to construct a high resolution drought history for the Snowy Scheme which predates the relatively short historical record. This will also help develop a capacity to predict future severe drought in the Snowy Scheme's catchments.

Results so far confirm significant, long term natural variability in the climate of southeast Australia exists. The study confirmed that the dry inflow sequence used for the design of the Scheme was soundly based (as the drought of the late 1930s was unlikely to have been exceeded during the previous 465 years). The recent millennium drought is the most severe of the past 500 years.

This work will continue, as we seek to evaluate how the long term weather patterns and any hydrological changes may impact hydroelectric power generation.

Transmission lines of Talbingo Valley

MITIGATING THE IMPACTS OF THE SCHEMES ORIGINAL CONSTRUCTION

Snowy Hydro acknowledges the impacts of construction of the Scheme between 1949 and 1974 on the environment which include regulation of water as well as having impacts on the vegetation and soil. Some areas have done a good job repairing themselves over time, however, substantial contributions have been made and are made each year towards mitigating these historic impacts. This is done primarily through the Kosciuszko National Parks former scheme sites rehabilitation program and annual releases of environmental water to the Snowy, Murrumbidgee and Murray River systems.

WATER RELEASES FOR ENVIRONMENTAL PURPOSES (GL)

River catchment	2014-15
Snowy below Jindabyne Dam	147.6
Snowy River below Island Bend Dam at Diggers, Bar Ridge Creeks	17.2
Murrumbidgee River below Tantangara Dam	18.7
Murrumbidgee River at Goodradigbee River	8.4
Geehi River at Middle Creek	14.0

Decommisioning a redundant sub-station

In 2012, Snowy Hydro in conjunction with Essential Energy decided that a redundant substation above Lake Jindabyne was to be decommissioned. Snowy Hydro undertook an environmental assessment of the proposed decommissioning works and worked with the Kosciuszko National Parks officers to ensure the removal would be carried out to the highest standards.

Snowy Hydro was required to undertake a contamination assessment of the site and prepare a validation report at completion of the works to verify the site posed no ongoing environmental risk. Another requirement was that the site be rehabilitated and re-vegetated after the decommissioning so that in time it blends in with the surrounding National Park and provides similar habitat. This work was finalised in June 2015 and all requirements were met.

Looking forward, the removal of the substation and associated infrastructure including oil filled transformers has reduced the environmental risks that were posed by the site. The re-vegetation of the site has already provided a much improved natural outlook and this will continue to improve over time.

Before

After

Employees maintaining our assets

OUR PEOPLE & PROCESSES

Successfully delivering on our commitment to the environment relies on Snowy Hydro's plant and business systems having competent people to operate and maintain them.

WE START BY RECRUITING GOOD PEOPLE

Our care for the environment starts at the recruitment phase where potential employees are put through a process of determining their skills. Even more importantly, their fit with the organisation's values is essential. This of course includes our commitment to care for the environment.

WE SET CLEAR STANDARDS FOR ENVIRONMENTAL PERFORMANCE

Clear-cut expectations for environmental accountabilities are established at all levels through the Environmental Management System operational controls and procedures and the Environmental Standards Handbook and internal smartphone app.

The Handbook and app are designed to help our people understand the standard of work expected at Snowy Hydro by describing and showing employees what they need to do in the situations they will find themselves in while carrying out any activity.

The Handbook outlines what standards apply to each activity when our people are planning work or before commencing work at a site, allowing easy reference to 'what good looks like' and easy understanding of the necessary precautions needed before starting work.

Over 300 people in the business were introduced to the Environmental Standards Handbook through 2014/15.

OUR ENVIRONMENTAL MANAGEMENT SYSTEM

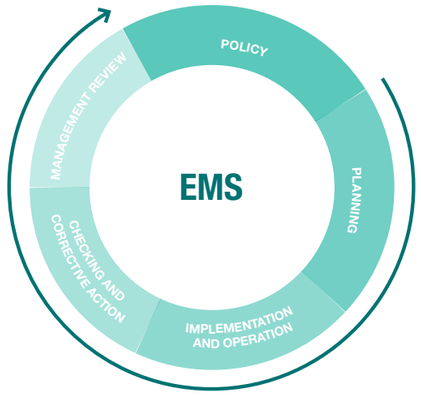
To deliver on our commitment Snowy Hydro has developed and implemented a rigorous system to manage all our day-to-day activities.
This Environmental Management System (EMS) has been in place since June 2000, integrating environmental risk assessment and legal compliance management into everything we do. It also provides the framework for learning and improving through an incident management system.

It ensures we stand by our Environmental commitments by:

- Setting clear direction through the Environment Policy and Objectives.
- Identifying environmental risks and legal obligations.
- Putting in place effective operational controls.
- Checking and correcting as we go.
- Reviewing and updating our policies and procedures.

The EMS ensures that we are constantly improving and every individual in the business is working towards the same environmental goals.

The EMS has been independently certified to the ISO14001 International Standard for environmental management systems each year since 2000.



Tumut 3 intake structure

LEGAL COMPLIANCE

While our commitment to avoid harm is based on a belief that this is worthwhile for environmental, social and commercial reasons, Snowy Hydro is also driven to perform by its legal obligations. We treat these legal obligations as minimum standards.

Every employee has a personal accountability to make sure they understand and comply with legal obligations and minimize our impact on the environment when we are at work.

Key legal requirements	Examples of what we do to comply
NSW Protection of the Environment and Operations Act	Monitoring of pollutants from hydro plant.
Victorian Environment Protection Act	Monitoring of emissions from gas fired plant.
Occupation of Kosciuszko National Park	Carry out work in accordance with a management plan.
National Greenhouse and Energy / Reporting Act	Produce a report showing greenhouse emissions and energy consumption and production.
NSW Water Management Act	Carry out work on waterfront land with controlled activity approvals.
NSW Noxious Weeds Act	Managing weeds.
NSW Environmental Planning and Assessment Act	Development oversight at NSW power stations.
SA Environmental Protection Act	Monitoring of emissions from diesel plant.

INCIDENT MANAGEMENT FRAMEWORK

Snowy Hydro has put in place an incident management system to manage unplanned events and learn from them.

The critical elements of incident management include early communication, classification of seriousness, thorough investigation and effective implementation of actions to ensure that any harm is corrected and lessons are learnt with a view to preventing future incidents.

Kalkite on Lake Jindabyne

CARING FOR OUR LAND AND RESPECTFUL RELATIONSHIPS WITH STAKEHOLDERS AND NEIGHBOURS

Snowy Hydro manages around 6,400 hectares of land inside Kosciuszko National Park and around 24,000 hectares of freehold land.

This includes 600km of foreshore around water storages like Jindabyne, Eucumbene, Khancoban, Talbingo and Jounama, as well as numerous smaller storages.

Electricity generation and water release requirements mean that the location of the water line and area of foreshore will change from day to day. Depending on the intensity and patterns of public use, this can lead to a range of safety and environmental issues appearing seasonally or for irregular periods of time, including:

- impacts that result from people camping on foreshores such as poor waste disposal,
- erosion from vehicle access via multiple tracks,
- weed spread; and
- bushfire.

The foreshores play a crucial role on the edge of storages holding the water in the Scheme, as well as providing opportunities for a variety of recreational and community activities. Access to lakes and foreshores (where it is safe) has been provided for the benefit of the public for a variety of recreational uses since they were constructed.

The scale of the area, and the fact that visitors are provided with access to most of the foreshore any time, makes it a major challenge to keep the foreshores safe and free from rubbish and human waste. Snowy Hydro works hard to keep foreshores safe and clean, but frankly cannot do it without the active contribution of everyone who enjoys and benefits from the use of these areas, from farmers to fishermen, local tourism businesses and Councils.

Snowy Hydro will continue to provide that access, however to manage the impacts, camping is only permitted on lake foreshores in established caravan park areas and designated NPWS camping areas.

The long term plan for these foreshores is to maintain them as safe and environmentally healthy edges to the hydro storages, which in turn will ensure that their recreational value is not impacted over time. We ask that everyone who enjoys use of these areas support us in working together to make this happen.

Everyone can contribute to this by:

- keeping to the existing tracks,
- taking rubbish with you,
- using toilets provided; and
- camping only in designated areas and caravan parks. You can also report antisocial or dangerous behaviour to the local police when you see it.

Jounama Pondage

WHO MANAGES WHAT?

With a number of these storages adjoining national parks or private lands, many different agencies and organisations are responsible for different aspects of recreational management and access.

The following table sets out the major accountabilities across Scheme storages:

Activity	Who is Responsible
Recreational Boat Access *Note: Snowy Hydro allows boat access on all major storages. Smaller storages such as Island Bend and Guthega are prone to having rapid rising and falling of levels therefore boating is not recommended.*	• Shire Councils • NPWS for locations within the National Park i.e. Waste Point at Jindabyne • Private lakeside operators, i.e. Buckenderra Holiday Park on Lake Eucumbene
Recreational Boating Safety	• NSW Maritime • NSW Water Police • NSW Marine Rescue
Accommodation & Camping	• Private Caravan Parks • NPWS i.e. Denison Camping Area, Lake Eucumbene
General Public and vehicular access	• Snowy Hydro for areas such as Yens Bay, Rushes Bay, Middlingbank, Seven Gates around Lake Eucumbene • Snowy River Shire Council for the southern foreshore of Lake Jindabyne from Curiosity Rocks to Coppertom Point (Note: This includes the foreshore area and footpath in front of Jindabyne township) • NPWS for the foreshore areas that adjoin the KNP
Stocking of Trout in Snowy Scheme Lakes	• NSW Fisheries

Snowy Hydro is committed to addressing these issues directly through a substantial land management program and also seeks partnership arrangements with tourism operators, public users and other agencies to manage issues cooperatively.

WE DELIVER THROUGH OUR WORKING RELATIONSHIPS

Snowy Hydro has hundreds of neighbours. Sometimes to achieve our goals we will need to work and cooperate with neighbours, agencies and other businesses. Some of these cooperative works include:

- Weed and land management programs.
- Bushfire mitigation programs.
- Conservation initiatives.
- Licensing and land use agreements.

We make every effort to be aware and mindful of our neighbours, making it easier to carry out the work we each need to complete. Through these partnerships we are able to minimise our impact on the local community and environment, and maximise business goals.

Stakeholders and Partner	Some things we do together
Local Government	Make resources available to address environmental issues and facilitate community use of Snowy Hydro owned land.
NSW Office of Environment and Heritage	Cooperative conservation initiatives and weed management.
Crown Lands	Cooperative weed and land management programs
Rural Fire Service	Cooperative bushfire mitigation programs
Local Lands Service	Cooperative weed management programs.
Neighbours and tourist operators	Make resources and land available through licences/leases for grazing and tourism uses.
NSW Fisheries and Maritime Services	Cooperative programs to share data, manage lake and river safety and duty of care.

As a lessee/custodian of land within the Kosciuszko National Park, Snowy Hydro has worked with the National Parks and Wildlife Service (NPWS) since the agency was established. The legal framework for access and use are clear and implemented through a detailed management plan. Additionally, Snowy Hydro works cooperatively with NPWS to manage on ground issues when they interact with the business activities.

Jounama Spillway Gates

Co-operative Hazard Reduction Works at Eucumbene Cove

Snowy Hydro owns land near the Eucumbene Dam wall known as Eucumbene Cove. Soon after completion of the dam in the 1960's, 40 long term ground leases were granted to people who constructed their own houses, mostly for holiday use. Today the subdivision is occupied by a mix of holiday users and residents and municipal services are provided to them by Snowy River Shire Council.

Following major fires of 2003 and subsequent smaller burns, Eucumbene Cove was identified by the NSW Rural Fire Service as needing bushfire hazard reduction work to reduce the risk of harm to each property, to Council owned infrastructure and especially to firefighters who would be called upon in the event of a bushfire.

Eucumbene Dam and Eucumbene Cove

Following consultation and environmental assessments, the Rural Fire Service, Snowy River Shire Council and Snowy Hydro identified and prioritised works required and then developed a staged programme of hazard reduction works across the entire area.

Funding was secured and the hazard reduction works programme was completed in May 2015 along with the construction of a passing bay along Lake Road. Through this cooperative work, risks to property and firefighters have been reduced and a benchmark has been set for fuel levels into the future.

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VERIFICATION STATEMENT

Snowy Hydro Limited commissioned BSI to independently verify compliance against its EPA operational licences (Environmental Protection and Waste Discharge) conditions relating to its Water Operations and its Gas-fired Power Station Operations, respectively, for the 2014-2015 Water Year and as reported in the corresponding Environment Report.

Responsibilities of the Verifier:

The audit was conducted using recognised assessment techniques based on ISO19011 with the 2014-2015 Environment Report as the principal reference. The audit reviewed Snowy Hydro Limited's annual Environmental Performance Statements, results of compliance monitoring programs, documented procedures and interviews with operational staff.

Scope:

Numerical values for EPA compliance monitoring programs reported in the 2014-2015 Environment Report were compared against all licence conditions including concentration limits of pollutants stipulated in Snowy Hydro's Environmental Protection and Waste Discharges Licences. These are:

EPL 10397 (Cabramurra Town Sewage Treatment Plant, NSW)
EPL 10515 (Snowy Mountains Hydro-Electric Scheme, Kosciusko NP, NSW)
EA 62044 (Laverton Power Station, VIC)
LA 48018 (Valley Power, LaTrobe Valley, VIC)

Records of EPL sampling results for the year 2014-2015, as well as routine calibration of monitoring equipment, were also reviewed.

Verification Statement:

Based on the review process applied during the audit, there is sufficient evidence to support that the Environment Report for the 2014-2015 Water Year pertaining to Snowy Hydro Limited's compliance to EPA operational licence conditions is materially correct and is a fair representation of a commitment to its environmental responsibilities.

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30 July 2015

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Talbingo Reservoir