Environment management approach

We care about our impact on the environment and seek to operate responsibly and protect the environment in which we work.

Origin engages with stakeholders, including communities and landholders, on the environmental impacts of our activities and environmental issues.

One of our core values is caring about our impact – on each other, on the environment and on the communities in which we operate. We are aim to keep our people, the environment and communities safe. This aspiration is set out in our Health, safety and environment policy, which describes how we think about, plan and manage health, safety and environmental (HSE) risks and initiatives across our business.

HSE management and governance

Our HSE Policy is supported by our HSE management system and includes directives that outline minimum requirements for how we manage HSE risks and impacts.

The HSE management system mandates the minimum performance-based outcomes for the management of HSE risks and/or impacts and conforms to the requirements of ISO 14001.

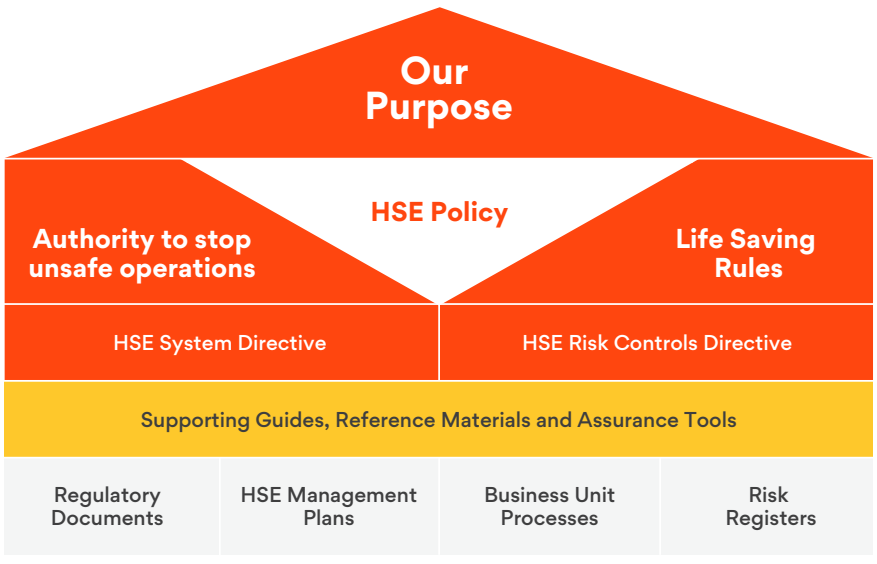
Eraring Power Station's environmental management system is certified to ISO 14001:2015.

The Origin Board oversees HSE matters, supported by the Board Safety and Sustainability Committee. The Executive HSE Committee meets quarterly and supports the Executive Leadership Team in monitoring and managing operational risks relating to emissions, water scarcity, waste, restoration and rehabilitation, and biodiversity.

We monitor and report on our environmental performance and material environmental issues, including through our annual Sustainability Report and Sustainability Performance data, in accordance with regulatory requirements.

See our Health and safety management approach for more information on our HSE risk management, including Board and management oversight and employee HSE committees.

Our HSE management system



Greenhouse gas emissions

We are working to reducing our greenhouse gas (GHG) emissions and helping lead the transition through cleaner energy and customer solutions.

Our long-term ambition is to achieve net zero Scope 1, 2 and 3 emissions by 2050 and we have set targets to support this ambition and contribute to the goals of the Paris agreement. For more information on our targets and how we plan to achieve them, see our Climate Transition Action Plan.

The majority of the operational GHG emissions we report are categorised as Scope 1, which are direct emissions created through our business activities. The remainder of our operational emissions are indirect Scope 2 emissions resulting from purchased electricity we consume to power our offices and operating sites. Our Scope 3 emissions are indirect GHG emissions, other than Scope 2, relating to our value chain that we do not own or control. They include emissions from wholesale purchases of electricity from Australia's National Electricity Market and the use of our sold products such as liquified natural gas (LNG) and domestic gas sales.

Our generation portfolio

Our generation portfolio consists of the Eraring Power Station (Eraring) – our only coal-fired power station; a fleet of gas-fired peaking power stations; pumped hydro; and a portfolio of contracted wind and solar offtake agreements. The majority of our Scope 1 emissions relate to Eraring, which uses black coal. Gas-fired power stations are typically less emissions-intensive than coal-fired power stations.

We continue to look for ways to improve Eraring's environmental performance, including reducing emissions. We established an artificial intelligence program called Real Time Optimisation (RTO), to improve Eraring's overall heat rate – the fuel consumed per megawatt of electricity produced – which can reduce the plant's emissions.

The RTO continuously performs technical calculations, learns from the power station's performance and adjusts actions in relation to the operation of 32 different pieces of equipment on each generating unit every five minutes. These actions help Eraring operate more efficiently and reliably.

Australia Pacific LNG

Our joint venture, Australia Pacific LNG, is a significant contributor to the Australian east coast domestic market. It has provided over 1,400 petajoules of gas to east coast customers since LNG operations commenced in 2016.

As the upstream operator for the Australia Pacific LNG project, we concentrate on reducing Scope 1 and 2 operational emissions associated with upstream production and operating assets, noting that some decarbonisation initiatives will require support from the incorporated Australia Pacific LNG joint venture.

Fugitive greenhouse gas emissions

Fugitive greenhouse gas (GHG) emissions are the gases that leak or are vented or flared when extracting, producing, processing, storing, transmitting or distributing certain fossil fuels. For these purposes fugitive emissions excludes landscape emissions.

We have a risk-based inspection and infrastructure integrity program that is designed to minimise leaks. It includes an annual maintenance program for wellheads and surface facilities, and regular testing of pipework and vessels to ensure integrity. Emissions estimation methods used to estimate leaks are in line with the Australian Government's regulatory requirements. We have developed and implemented digital technology tools to improve leak detection, reduce the duration of leaks, and we continue to look for opportunities to enhance these solutions.

To facilitate safe gas production, processing facilities require pressure-relief mechanisms, such as venting or flaring of gas. Venting emits methane into the atmosphere, whereas flaring is a process of releasing gas by burning the methane through specially designed equipment. This converts methane into carbon dioxide, a less potent GHG.

We continually seek opportunities to reduce our fugitive emissions. This includes optimising processes and retrofitting or replacing equipment and devices with more efficient and advanced technologies to reduce venting of methane and fuel gas consumption. We aim to minimise controlled cold venting of hydrocarbon gases, except in emergencies.

Flaring is used to safely manage excess gas during periods of planned and unplanned maintenance when processing equipment is offline and gas cannot be processed for sale. We focus on minimising flaring at our gas processing facilities through operational excellence and by focusing on managing well turndowns.

We have also developed an industry-leading artificial intelligence production optimisation tool. It uses machine learning and economic modelling to simultaneously take data from thousands of wells to determine which wells we can turn down and turn back on again with the lowest probability of disruption to production. The tool enables us to reduce the number of workovers and extends the life of each well. Importantly, it also reduces emissions from flaring because we can shut off production and be confident that the well will return to production when required.

Monitoring and studies

We continue to focus on our gas monitoring program, to reduce our reliance on regulatory emission factors and detect any leaks as early as possible. A specialised Picarro Surveyor system, or 'sniffer truck', periodically operates in the gas fields to survey for methane emissions. The sniffer truck includes a state-of-the-art methane detection instrument, Picarro's cavity ring-down spectrometer. This monitoring data also helps inform decisions on whether to retrofit or change the design of new infrastructure.

We collaborate with the CSIRO to establish independent, evidence-based data on fugitive emissions levels during unconventional development activities. Origin also collaborates with the CSIRO to increase our knowledge on methane sources.

In June 2019, the CSIRO finished measuring emissions from nearly 300 CSG wells across Origin's operations in the Surat Basin. This research, part of its fugitive emissions research program, confirmed that the emissions rates estimated in a 2014 report by the CSIRO were accurate.[1]

Landscape emissions

Methane gas emissions can occur naturally from areas of shallow coal formations in the gas fields area through naturally occurring geological pathways, also called seeps.

Australia Pacific LNG has installed targeted intercept wells around the Condamine River to capture methane before it reaches its pathway to the surface and direct it to Australia Pacific LNG's production facilities.

[1] www.csiro.au

Reporting on our greenhouse gas emissions

We report our GHG emissions on an equity and operational control basis. Emissions reported on an equity basis capture the emissions relating to the assets we own, including our generation fleet[2] and our 27.5 per cent share of Australia Pacific LNG, which includes the downstream operations and non-operated areas. Our operational control emissions are those from our operated assets (our generation fleet and 100 per cent of the upstream operations at Australia Pacific LNG).

We comply with relevant emissions reporting frameworks and report our GHG emissions to the Australian Government's Clean Energy Regulator according to the National Greenhouse and Energy Reporting Act 2007 (Cth) (NGER Act) and in our annual sustainability reporting.

In accordance with the NGER Act, two NGER reporting facilities operated by us on behalf of Australia Pacific LNG participate in the regulatory Safeguard Mechanism under the NGER Act. We have employees who are responsible for managing our compliance with all reporting requirements.

We are not required to report our Scope 3 emissions under the NGER Act. However, we believe it is important that entities take responsibility for influencing emissions reduction throughout the value chain. As such, we measure and report our equity Scope 3 emissions data. We calculate Scope 3 emissions based on the Greenhouse Gas Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard and Scope 3 guidance documents.[3]

Our reported Scope 1, Scope 2 and Scope 3 emissions undergo external, limited assurance audits annually.

Water

We recognise that water is a scarce and valuable resource, and that managing water is essential to our long-term success. We seek to protect water resources in the natural environment and responsibly manage our water consumption, including mitigating any impacts on local water supplies.

Our management of water is monitored in accordance with regulatory approvals and is guided by our HSE Risk Controls Directive.

Eraring Power Station

Water forms an integral part of Eraring Power Station's generating system and we undertake a comprehensive water and groundwater monitoring and assessment program across the site and in Lake Macquarie.

Eraring takes salt water from Lake Macquarie to cool its generating units. It is all returned to the lake after use, in accordance with water quality and temperature limits governed by our Environment Protection Licence. This represents the majority of water we use in our Energy Markets business.

The cooling water system design at Eraring does not rely on municipal and fresh water supplies for cooling. Rather, typically, around 7,000 megalitres (ML) of salt water a day is drawn from Lake Macquarie along a 4-kilometre inlet canal, and then released back into the lake via a 2-kilometre underground tunnel, to cool the generated steam.

Eraring's cooling water system is controlled by an RTO program that regulates the number of cooling water pumps in service and the use of an 800 ML attemperation dam, depending on production and cooling water temperatures. This enables us to better manage outlet canal temperatures, reducing thermal impacts on the Lake Macquarie ecosystem, while also minimising energy usage.

In addition, we use demineralised water for raising steam to drive the turbines on the generating units. Approximately 5 ML of water is used each day to create steam to drive the generation turbines. Of this, around 3 ML of this comes from a microfiltration and reverse osmosis system that treats sewerage produced on site. It also further purifies secondary treated effluent from the nearby Dora Creek sewerage plant.

Other generation sites

Our gas-fired power stations require much less water to operate than Eraring, and draw water from bores or town supplies. Our combined-cycle Darling Downs Power Station uses air-cooled condensers for the steam turbine, which significantly reduces its water usage compared to a typical combined-cycle plant.

The Shoalhaven Hydro Pump Storage Scheme in the Southern Highlands of NSW consists of two pumped storage hydropower stations: Kangaroo Valley Power Station and Bendeela Power Station.

The power stations use the pumped storage hydroelectric principle to generate electricity, which circulates water in a closed loop. Water released from the Fitzroy Falls Reservoir is passed through the power stations to generate electricity during periods of peak demand. During periods of low demand, water is pumped back to storage ponds above each station in the Fitzroy Falls Reservoir for use when generation is next required. The water usage from this scheme is not considered a water withdrawal as it operates in a loop.

Australia Pacific LNG

As the upstream operator for Australia Pacific LNG, one of Australia's largest producers of CSG, we also produce water as part of the gas production process.

The Australia Pacific LNG project produces gas from coal seams that have formed beneath the earth over millions of years. Natural gas is stored in the fractures and pore spaces of the coal seams, along with water. In order to produce gas, the coal seams are depressurised by extracting the water, allowing the gas to flow to the surface. This extracted water is called 'produced water'. We also extract smaller volumes of water from other sources for project use, such as dams and groundwater bores.

We manage produced water in accordance with legislative requirements, conditions specified in our approvals and agreements we have with stakeholders. This includes measures that seek to prevent unplanned releases of produced water through asset integrity management, routine inspections and operational controls. Any incidents are reported as required to the relevant regulatory authority with learnings applied to our operations.

Around 90 per cent of the produced water is treated using a number of processes, including microfiltration and reverse osmosis. These processes purify the water by forcing it through a partially permeable membrane to separate ions, unwanted molecules and larger particles.

Treated water is applied to a range of beneficial uses, including:

- Aquifer injection – Origin has pioneered large-scale injection of treated produced water into aquifers in the Surat Basin to increase aquifer pressure and available groundwater. Our initial Spring Gully scheme, commissioned in 2015, was the first to be approved by the Queensland Government. A second injection scheme was implemented at Reedy Creek the same year. Both

[2] Origin has a 50% equity interest in the 180 MW Osborne Power Station.
[3] Greenhouse Gas Protocol, Corporate Value Chain (Scope 3) Standard.

schemes inject into the Precipice Sandstone aquifer. See our case study on the project.

- Irrigation and livestock drinking water – Origin has supplied treated produced water to landholders since 2014 via the Fairymeadow Road Irrigation Pipeline. The scheme is a practical application of the Queensland Government's Coal Seam Gas Water Management Policy (2012), which requires CSG companies to preferentially direct treated produced water to beneficial uses. We also supply treated produced water from the Spring Gully Water Treatment Facility to a local landholder for irrigation.

Australia Pacific LNG also uses treated and untreated produced water for drilling and construction activities, dust suppression and as potable water at a number of facilities and accommodation camps. The use of treated and untreated produced water for these purposes reduces pressure on municipal and groundwater supplies.

Treated produced water is intermittently released to selected watercourses when beneficial use demand is reduced (for example, during extended periods of rainfall affecting irrigation water demand). These releases occur in compliance with applicable laws and approvals, which require that we monitor the watercourse to confirm the protection of local aquatic environments and species, and can help re-establish environmental flows.

Protecting water resources

Aquifers used by others, such as local landholders, are located above and below the coal seams. As part of the installation process for CSG production wells, and in accordance with regulations, steel casing is cemented into place to prevent aquifer interconnection.

We continuously monitor for interconnection, which can be detected by observing changes in the groundwater levels and water quality of aquifers surrounding the gas production well. We install monitoring bores to monitor groundwater levels and water quality around our Australia Pacific LNG operations.

Monitoring bores installed by Australia Pacific LNG support ongoing and extensive regulatory monitoring of groundwater levels and groundwater quality within and between our areas of operation. Results from these bores are submitted to the Queensland Government's Office of Groundwater Impact Assessment (OGIA) for aggregation with other operations for regional monitoring and management.

The OGIA uses this data and its regional groundwater model to simulate groundwater drawdown. This information is released in the Surat Cumulative Management Area Underground Water Impact Report.

This information is available online at ogia.water.qld.gov.au/publications-reports.

Where the OGIA regional groundwater model predicts drawdown above prescribed thresholds at landowner bores, or if a reduction in groundwater availability is identified independently of the predicted modelling, and we are identified as the Responsible Tenure Holder, we are required to undertake a detailed bore investigation to establish whether our activities have affected, or are likely to affect, the water bore's capacity to supply water. Based on these investigations, we may enter into 'make good' arrangements through negotiation with the water bore owner, such as ongoing monitoring, modification of existing water bore infrastructure, or access to an alternate water supply. We also contribute monitoring data to the Queensland Government's Groundwater Net, a monitoring network for groundwater levels and impact on water bores in areas surrounding the resource industry.

Origin works with partners to monitor and protect waterways, such as the Fitzroy Partnership for River Health, a collective of government, agriculture, resources, industry, research and community interests across the Fitzroy Basin in central Queensland. Partners help provide a complete picture of river health and support this by providing funding and resources, contributing data on water quality and ecosystem health, and monitoring data through data-sharing arrangements.

Hydraulic fracture stimulation

Hydraulic fracture stimulation, or 'fracking', is a process that releases gas trapped in coal seams or dense shale rocks deep underground. We use hydraulic fracturing in a number of our Australia Pacific LNG wells. Hydraulic fracturing has been carried out safely in Queensland for more than 40 years.

Hydraulic fracturing involves pumping pressurised water mixed with sand (and chemical additives in low concentrations) to create additional pathways (fractures) in bedrock. This allows gas to flow into the well and be brought to the surface.

The fluid used in our operations for hydraulic fracturing comprises around 99 per cent water and sand. Of the remaining additives, approximately 0.33 per cent to 1.2 per cent are used in clay management, gel management and water conditioning.

Hydraulic fracturing fluids are subject to strict regulatory control in Australia. Most additives used are found in a typical household; in items such as food and cleaning products. The hydraulic fracture fluid is recovered from the well during the initial production phase. However, the proppant (i.e. sand) is designed to remain within the gas reservoir to ensure the newly formed fractures remain open and allow the gas to flow to the well.

At a minimum, we comply with the stringent regulatory requirements that guide hydraulic fracturing. We have robust processes and procedures in place to effectively mitigate risk to water sources and manage environmental impacts. We regularly engage with our community stakeholders to inform them of our processes and respond to any concerns.

Our Coal seam gas hydraulic fracture stimulation fact sheet provides further information on the process we use at our Australia Pacific LNG operations, including a list of the additives in our hydraulic fracturing fluid.

Well design

We apply regulatory standards for well design and construction. All wells have multiple steel casings with cement sheaths that isolate surrounding formations from each other and the well bore. We support these rigid standards, which mean that fracturing fluids and gas cannot enter surrounding aquifers and prevent the potential for groundwater migration vertically from one aquifer to another. We always confirm the integrity of the well before fracture stimulation.

CSIRO research program

In April 2020, the CSIRO released the results of a landmark, three-year scientific research program into the impacts of hydraulic fracturing in Australia.[4] CSIRO took more than 1,000 air, water and soil samples, from across 13 sites before, during and after fracking operations at six of our wells at Reedy Creek Combabula. The results found hydraulic fracturing has minimal to no impact on air quality and no detectable impact on local waterways, groundwater or soils.

[4] gisera.csiro.au/project/air-water-and-soil-impacts-of-hydraulic-fracturing-phase-2/

Waste

We take actions to effectively managing waste. We look for ways to reduce, recycle or eliminate waste, including hazardous waste, across our business. Our approach to waste management is governed by our operating licences and conditions at an asset level. We apply a hierarchy of waste management, with the aim of minimising the amount of waste requiring disposal:

- **Avoid** waste by selecting items with the least packaging or that require the least resources to produce. Avoid using disposable items or single-use materials wherever possible.
- **Reduce** waste by making processes more efficient.
- **Reuse** materials by procuring products that are produced from recycled or recyclable materials, that can be repaired, reused or repurposed.
- **Recycle** materials such as plastics, glass and paper, and waste materials by processing them to make alternative products.
- **Recover** non-recyclable waste materials by converting them into usable heat, electricity or fuel.
- **Dispose** of remaining waste correctly by removing any contaminants, appointing licensed contractors if required, and following all required procedures for hazardous waste.

Most waste material that we manage is not considered to be hazardous. Where hazardous materials are present, these are managed – including proper disposal – in accordance with applicable laws or with reference to relevant international standards where there are no applicable laws. We focus on minimising risks to our people, the environment and the community. We maintain a register of hazardous materials we have procured or produced. We also provide appropriate training and personal protective equipment to all personnel who may be exposed to hazardous materials as part of their work.

Eraring Power Station

The main by-product from burning coal at Eraring is ash. This comes in the forms of finer fly-ash and a coarser bottom ash, representing 90 per cent and 10 per cent of Eraring's coal combustion products (CCPs), respectively. CCPs are subject to regulatory controls, including those under our environmental protection licence.[5]

Ash produced that is not immediately re-used, is stored on site in the Eraring ash dam.

The dam occupies approximately 250 hectares north of the main power station and is a critical part of the operations of Eraring.

Ash recycling

Our Long-Term Ash Management Strategy outlines our commitment to improving the efficiency of, and reducing environmental impacts associated with, the operation of Eraring and the ash dam. We report annually against the strategy and publish the information on our website.

We aim to minimise the quantity of coal ash sent to the ash dam. This is consistent with the NSW Department of Planning and Environment's ash re-use goal of 80 per cent, outlined within its approval of the Eraring ash dam expansion and in our Long-Term Ash Management Strategy.

We are actively participating in and advocating for collaboration between generators, government agencies, regulators and potential customers to achieve optimum recovery of ash as a resource. Achievement of this goal would be facilitated by the removal of regulatory barriers governing the use of coal ash in roads and the establishment of new markets.

The ash we produce has numerous applications across industrial and construction sectors, including as a component in concrete, and as a stabilisation material in land remediation. A large proportion of the CCPs generated by Eraring are supplied on-site to multiple customers for a range of end uses. We are actively pursuing new supply chain opportunities and non-traditional markets to increase our re-use levels. CCPs produced by Eraring that are not re-used are stored on site in an ash dam.

Fly ash can contribute to reducing carbon emissions when making concrete. For every tonne of Portland cement that is substituted with fly ash in concrete products, it is estimated that up to one tonne of carbon dioxide is avoided.

Dust management

We have introduced several measures to limit the risk of 'dusting', which can occur when strong winds carry ash from the dam. We proactively prepare for periods of strong winds, helping to ensure our control measures are strategically deployed. We use daily weather and site-specific dust forecasts and maps for the ash dam to flag potential weather-related risks. This information, combined with our real time dust monitoring and alarm network, as well as routine inspections allow us to develop daily dust suppression plans.

We have capped and revegetated with grass approximately 40 hectares and deployed a network of irrigation sprinklers to further reduce the risk of dust emissions during extreme weather events. More information is available in Eraring's Air Quality Management Plan.

Australia Pacific LNG brine management

One of the waste products from Australia Pacific LNG's upstream operations is brine. Produced CSG water contains naturally occurring salt. We use reverse osmosis to remove this so that most of the water can be re-used. The salt removed during the reverse osmosis process is captured within a brine waste stream, which is stored in engineered brine ponds to undergo further concentration through evaporation.

The brine ponds are classified as regulated dams, requiring dam design and construction supervision by a specialist Registered Professional Engineer of Queensland (RPEQ). In addition to annual certification by an RPEQ, regular inspections and water sampling occur in line with asset integrity, groundwater and surface monitoring protocols, and operational procedures.

The Queensland Government's Department of Environment and Science has published a Coal seam gas brine management action plan 2023-2033 following consultation with a working group comprised of community stakeholder groups and CSG companies, including Origin. The action plan acknowledges that salt encapsulation is currently the most feasible option for long-term brine management. It includes a list of seven actions for government and industry, including public reporting of research and development into salt reuse and efforts to reduce brine volumes.

Air emissions

Air emissions such as nitrogen oxides (NOx), sulphur dioxides (SO_2), volatile organic compounds (VOCs), particulate matter (PM) and mercury (Hg) primarily arise from the combustion of fuels such as natural gas, diesel and coal.

Our main air emissions are from generating electricity at our power stations and producing natural gas. We seek to minimise emissions and consider opportunities to do so throughout an asset's lifecycle. When assessing and selecting new plant and equipment, our procurement processes must include an evaluation of low-emissions technology.

[5] NSW EPA, List of licences

We manage SO_2, NOx and PM emissions from Eraring by using low NOx burners, boiler tuning and fabric filter maintenance and by monitoring and managing coal and fuel oil quality.

As the upstream operator of Australia Pacific LNG, we continue to monitor ambient air quality in the Surat Basin. Initially established under GISERA, a network of ambient air quality stations collects air quality data, which is streamed live to the Queensland Government's website to ensure transparent data collection.[6]

Our larger operating sites track and report air emissions under the Australian National Pollutant Inventory framework, a publicly available database of emissions from Australian industrial facilities. Eraring's emission calculations are independently verified and its Environmental Protection Licence monitoring data is available on our website.

Biodiversity

We carefully plan operations and developments with a view to minimise direct impacts on biodiversity in the areas in which we operate. Where biodiversity is directly impacted by our activities, these impacts are offset consistent with regulatory requirements.

Our development activities and operations span marine and terrestrial environments. Our operations are located across a wide geographical area and include a variety of environmental settings with different biodiversity values. We seek to understand and protect these values in accordance with their significance, applicable laws and stakeholder expectations.

The design and site selection for new assets and work activities consider approaches that avoid development in areas of high conservation value. We will not conduct our activities at any location that is on the World Heritage List.

Our approach to managing biodiversity is governed by the requirements of federal and relevant state and territory laws and regulations. We are also required to comply with the legal and regulatory conditions of the specific operating licences for our activities regarding biodiversity management.

We conduct biodiversity assessments during the design phase of each project. The assessment identifies whether biodiversity may be affected or placed at risk by a specific project, site or activity, taking into account the views of relevant external and internal stakeholders.

Once the biodiversity assessment is complete, we develop site construction plans that minimise and mitigate our impacts. These plans also consider cultural heritage, landowner needs, erosion risk, and constructability.

Specifically, in areas where biodiversity can be impacted, activities are planned, conducted and documented to:

- abide by applicable law for protected areas;
- preferentially avoid / minimise habitat disturbance;
- offset significant residual biodiversity impacts in accordance with state/territory biodiversity offset programs; and
- rehabilitate disturbed areas and re-establish habitat.

We engage with local communities and biodiversity experts on the impacts of our activities and ways to reduce our disturbance footprint. We also work with communities to restore and protect the local biodiversity through programs such as tree planting and fish restocking in local waterways.

We record incidents and observations according to our biodiversity incident management procedures. These procedures include emergency response scenarios and plans for instances where our actions could negatively impact biodiversity.

Offset initiatives

We implement offset initiatives where our projects may have a significant impact on a site's biodiversity. These initiatives are designed to align with stakeholder interests and counterbalance defined impacts.

Our greatest land footprint is our role as the upstream operator of Australia Pacific LNG, developing and operating the CSG fields in the Surat and Bowen basins in Queensland.

Australia Pacific LNG has multiple properties that provide direct offsets for threatened ecological communities, endangered and of concern regional ecosystems, and threatened fauna habitat, and for relocating and transplanting threatened flora species. Similarly, Eraring Power Station uses a biodiversity offset area to the north of the ash dam, established to offset impacts from a previous expansion of the ash dam.

To date, Australia Pacific LNG have secured almost 8,500 hectares of land for offsets purpose, either through a direct purchase or long-term lease agreements with landholders. We identified a further 7,000 hectares of potential habitat for Matters of National Environmental Significance on Australia Pacific LNG-owned land using a mix of desktop and field assessments. These areas have been set up as exclusion zones and will be used to provide additional offsets for future Australia Pacific LNG activities.

Our largest offset property is the 4,500-hectare Dukes Plain in central Queensland, which provides valuable habitat for flora and fauna across 14 regional ecosystems and nine broad vegetation groups, including several near-threatened or vulnerable species. The offset area also contains active grazing paddocks. To better understand the impact of cattle grazing, 171 hectares of cattle exclusion zones were established, across various types of vegetation communities and habitat. These will enable us to identify the impacts and effects of excluding cattle compared to control areas where grazing can occur.

Rehabilitation and restoration

Our development activities and operations take place across a wide geographical area and include both high and low levels of land disturbance. We seek to understand and protect any area we disturb, ensuring that it can be returned to its original condition, or put to better use, balancing the expectations of our landholder and community stakeholders and Traditional Owners, as well as our commitments to regulators.

Our approach to managing rehabilitation and restoration is governed by the requirements of federal and relevant state and territory laws and regulations. We are also required to comply with the legal and regulatory conditions of the specific operating licences for our activities regarding rehabilitation and restoration.

During project design, development and operational phases, we create plans for a site's closure, decommissioning and rehabilitation, taking the biodiversity assessment into account. Such plans consider:

- land and soil management;
- the suitability of selected seed species, including factors affecting seed management;
- seedling growth, transfer and planting;
- fauna habitat re-establishment; and
- maintenance and monitoring of rehabilitated areas.

We rehabilitate disturbed areas no longer in use as required by our regulatory approvals and/or as agreed upon in consultation with landowners, Traditional Owners or local communities.

[6] ehp.qld.gov.au/air/data/search.php

To minimise the impacts on disturbed areas, we seek to progressively rehabilitate land after completing construction activities, including returning land to pasture where this was the prior land use.

Where clearing of native vegetation could not be avoided, and it is intended that the land be reinstated to allow natural regeneration of the native species, this is undertaken and monitored to ensure it meets the rehabilitation criteria for the area.

Where assets have an ongoing beneficial use to communities and landholders, such as dams, tracks and fences, Origin will seek to provide these assets for ongoing use, as agreed with key stakeholders.

We plan for rehabilitation and restoration activities based on our legal obligations. We record financial provisions under the requirements of the Australian Accounting Standards Board. We review our rehabilitation and restoration plans and associated provisions annually, and take into consideration the potential or agreed future use of the land.

Released August 2023

Further information about Origin's performance can be found on our website originenergy.com.au