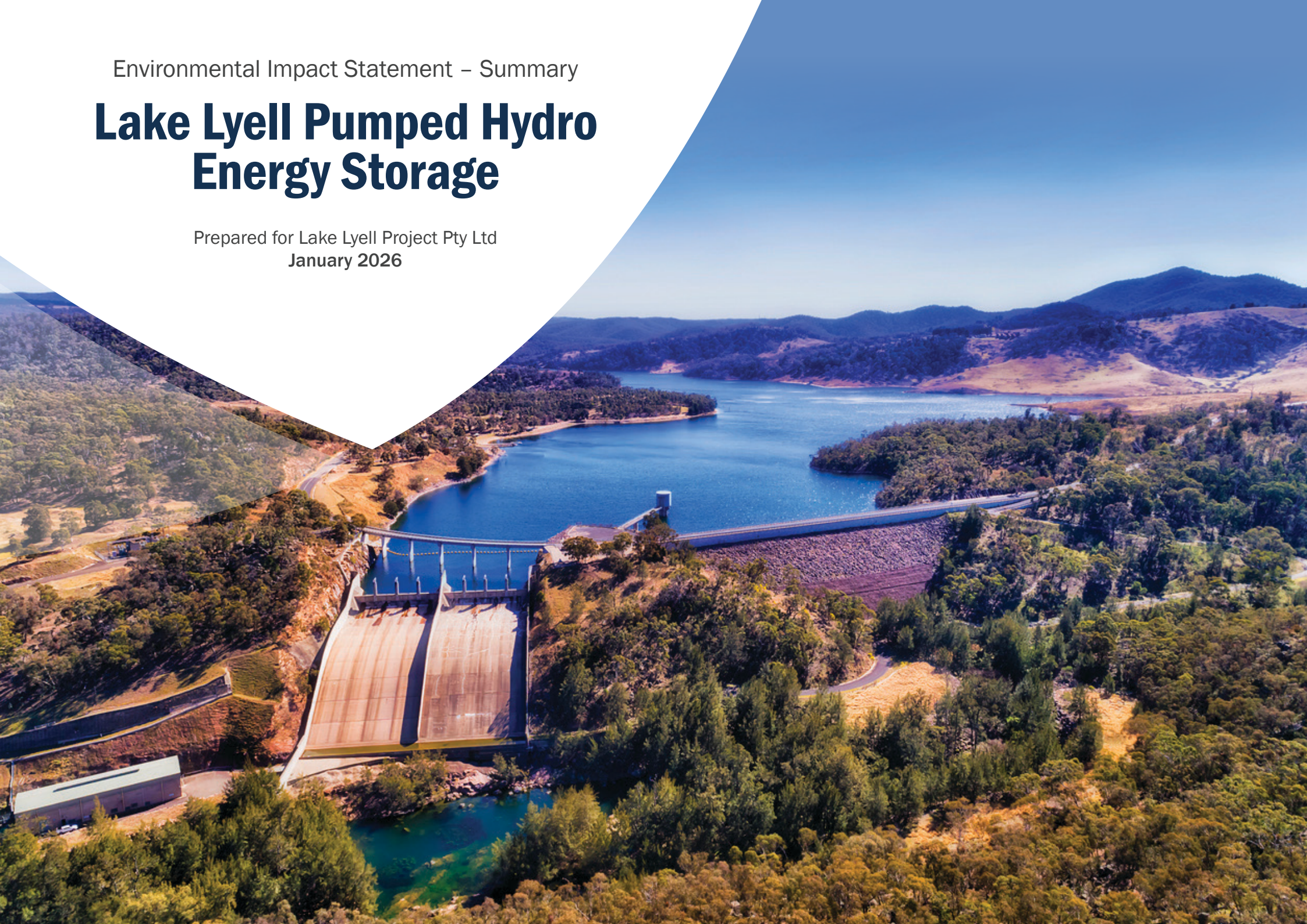
Environmental Impact Statement – Summary

Lake Lyell Pumped Hydro Energy Storage

Prepared for Lake Lyell Project Pty Ltd
January 2026



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Introduction

EnergyAustralia Portfolio Holdings Pty Ltd (EnergyAustralia) in partnership with EDF power solutions Australia (EDFA), referred to as Lake Lyell Project Pty Ltd (LLP), as trustee, is seeking approval to build and operate the Lake Lyell Pumped Hydro Energy Storage (PHES) Project (the project).

The project is critical State significant infrastructure (CSSI) and requires assessment and approval under Part 5, Division 5.2 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) before it can proceed. The NSW Minister for Planning and Public Spaces (the Minister) will be the determining authority for the project. The project is also a "controlled action" under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), requiring approval by the Commonwealth Minister for the Environment. The project will be assessed by the accredited assessment process with the NSW government.

An Environmental Impact Statement (EIS) has been prepared by EMM Consulting Pty Limited (EMM) on behalf of LLP to address the NSW Secretary's environmental assessment requirements (SEARs) and Commonwealth supplementary SEARs for the project. The EIS has been prepared to the form and content requirements set out in clauses Section 190 and 192 of the NSW *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), prepared to align with the State significant infrastructure guidelines – preparing an environmental impact statement (DPIE 2022), and reviewed by a Registered Environmental Assessment Practitioner (REAP).

This summary document will be publicly exhibited with the full EIS document and technical appendices. This public exhibition period is for a minimum of 28 days and provides the community with the opportunity to review the EIS and make a submission.

After reviewing submissions, LLP will prepare a report that responds to the issues raised and makes any required changes to the project. The Commonwealth and NSW Governments will then carry out assessment and determine whether the project should be approved and any conditions to be applied to the consent, should it be granted.

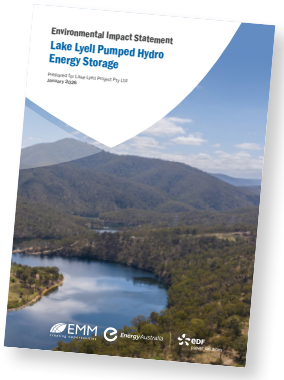
This document provides a summary of the EIS, including:

- a description of the project's design and how it will be built and operated
- the strategic need for the project and alternatives considered
- the approval pathway and statutory context of the project
- engagement activities carried out for the project and how feedback has been incorporated
- a description of the key impacts of the projects and how they will be mitigated and managed during construction and operation
- the environmental risk management approach should the project proceed
- justification and evaluation of the project.

The EIS is available in full on the Department of Planning, Housing and Infrastructure (DPHI) major projects website:

https://www.planningportal.nsw.gov.au/major-projects/projects/lake-lyell-pumped-hydro-energy-storage

The EIS contains a complete and detailed description of the project and provides all detailed technical assessments completed, also available to download.



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Lake Lyell PHES

Lake Lyell PHES

Overview

The project will have the capacity to store up to 3,080 megawatt hours (MWh) of energy and generate at 385 megawatts (MW) for 8 hours or generate up to around 440 MW for a shorter period. At a basic level, it will consist of upper and lower water reservoirs, a pipeline connecting them, and a hydro-electric power station connected to the national energy grid that is capable of generating or consuming electricity.

During periods of low electricity demand, water will be pumped into the upper reservoir ready for re-use when more energy is needed. When electricity demand increases, water will be released downhill through the underground powerhouse, generating electricity.

The project will be built over a period of 4-5 years, and will be operational for 80 to 100 years.

A preferred concept design has been prepared for the project and the design drawings are supplied with the EIS.

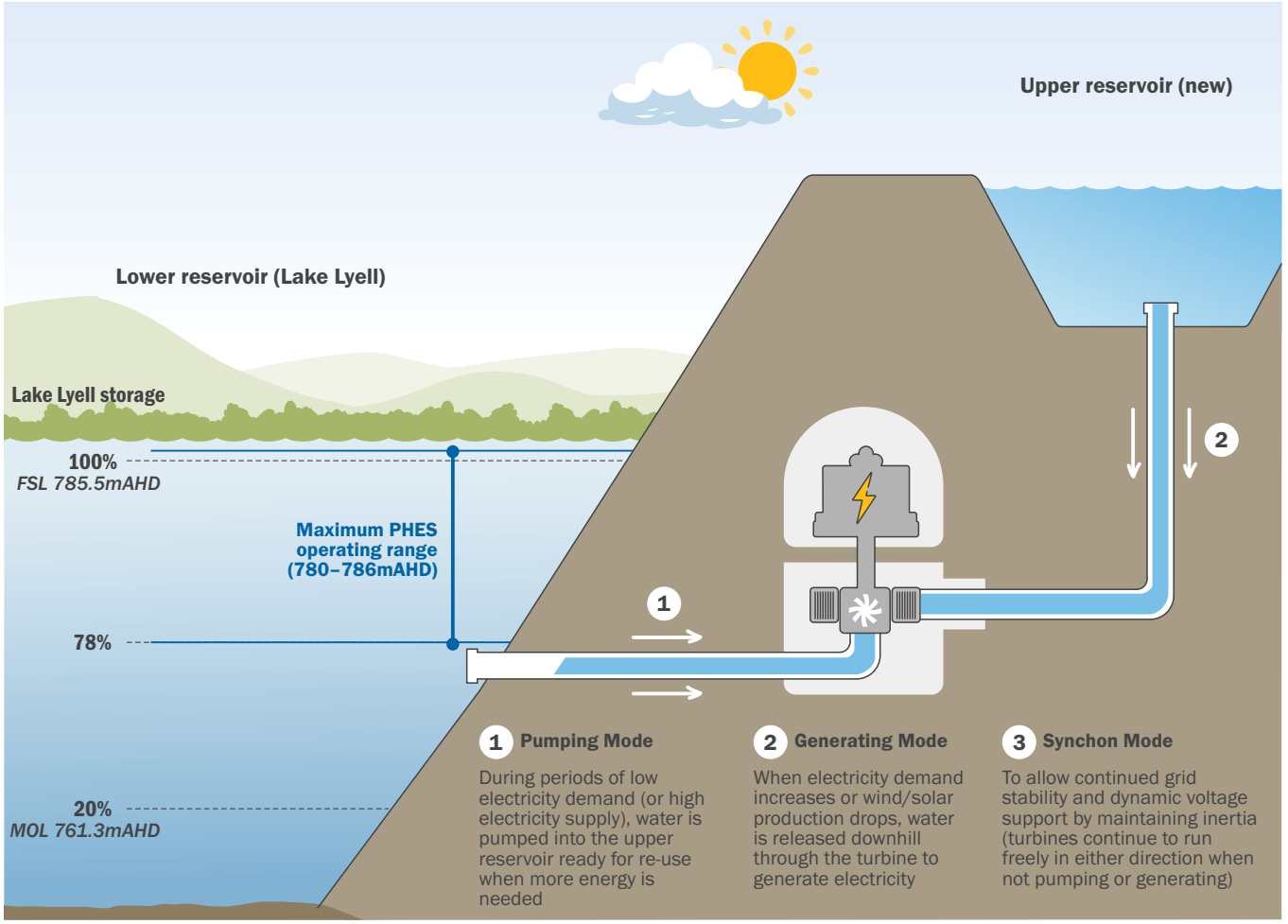


Figure 1 | Conceptualised operation of the project

Project areas and design refinement

A design integration and assessment (DIAA) process was undertaken to develop the design and construction methods presented in the EIS, with the guiding principles of avoiding and minimising environmental impacts where possible and engaging with key stakeholders throughout the process.

The project, while complex in design, has had the advantage of an early contractor involvement (ECI) process. The ECI process provides a means to incorporate and "test" various design iterations, constructability and environmental recommendations, to ensure they are feasible, as part of the EIS preparation. This has provided a level of confidence in both the concept design and the projects ability to incorporate avoidance and mitigation measures. This process was also applied to the development of the disturbance footprint and construction envelope of the project. Definitions of the relevant project areas defined in the EIS are:

- The project area is a broader buffer around the project and represents the area that was investigated during the environmental assessments. The project area includes both the land that will be physically disturbed for the project (directly and indirectly) as well as land where no disturbance or impact will occur.
- The construction envelope has been defined in the EIS as the boundary limits of where direct disturbance can occur. It represents the maximum extent of where disturbance may occur during the construction of the project. To derive the construction envelope, buffers have been applied around project infrastructure and work areas to provide a level of flexibility where required. The construction envelope covers an area of about 197 hectares (ha).
- The disturbance footprint sets the total clearing limit for the project with reference to the types of vegetation and habitat that can be impacted. It represents the physical disturbance that can be expected as part of the construction works. As the design is refined, the final siting of the disturbance footprint can move within the construction envelope. The disturbance footprint for the project is up to 137 ha.
- The operational footprint represents the permanent disturbance of the land following progressive rehabilitation of any areas disturbed during construction that is no longer needed for operation. The operational footprint for the project is about 47 ha.

Project elements

The project design, as shown in **Figure 2**, can be broadly categorised into:

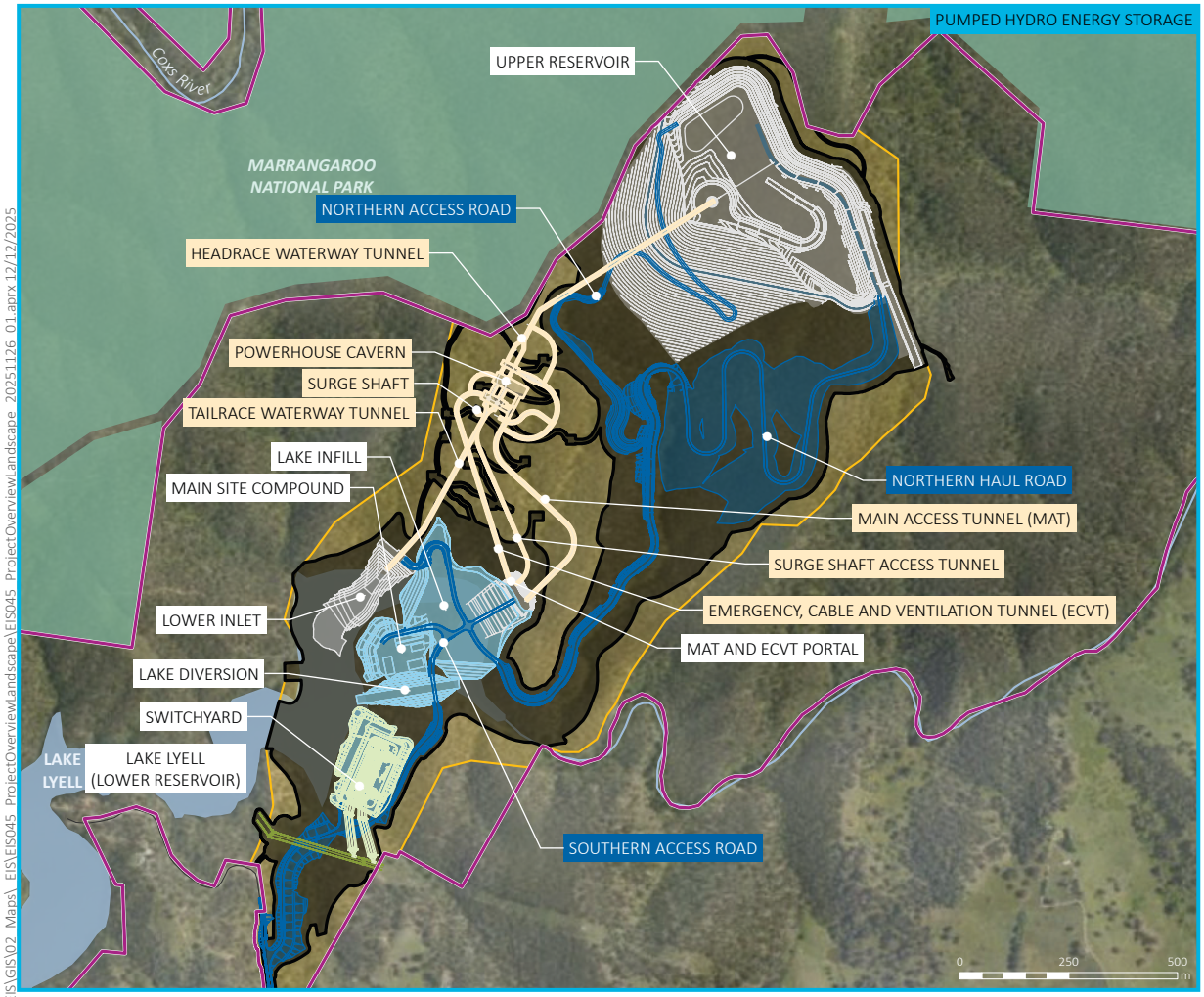
- pumped hydro generation components – including a 5.3 gigalitres GL upper reservoir to be constructed behind the southern ridge of Mount Walker, a 33.5 GL lower reservoir (existing Lake Lyell), inlet/outlet structures, and an underground powerhouse, surge shaft and waterway tunnels
- transmission connection components – including a new high voltage switchyard and connection to the existing 330 kilovolt (kV) transmission line that runs through the site
- site access and ancillary facilities – including upgrade of existing and construction of new access roads and bridges, a diversion and infill of a section of Lake Lyell, administration and utilities
- other construction components or works – including geotechnical investigations, temporary workforce accommodation, site work pads, laydown areas and facilities, and spoil management.

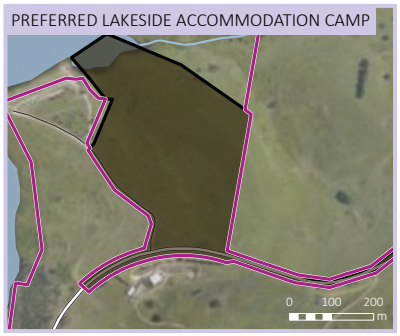
Construction will be completed in stages, including:

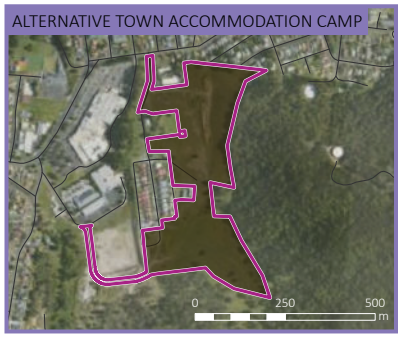
- pre-construction/enabling works (referred to as 'early works') – consisting of initial access works (internal and external roads), geotechnical investigations, site establishment and preparation of the worker's accommodation camp
- main works – consisting of all other construction activities needed to enable operation of the project.

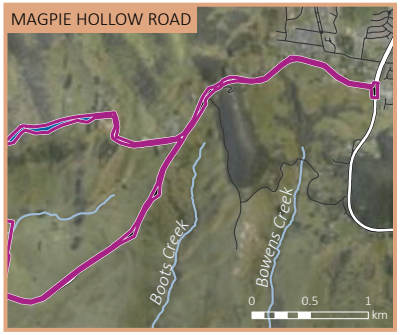
During operation, the project will act as an electrical energy storage system through the conversion of electrical to kinetic energy to gravitational energy and back via water as it is transferred from the elevated upper reservoir to a lower reservoir.

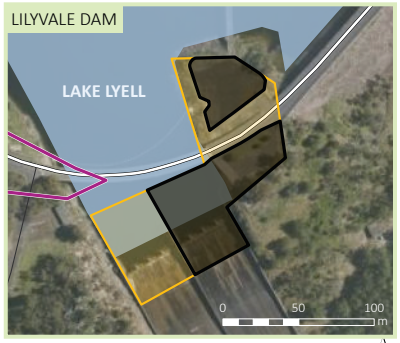
After the 80 to 100-year design life of the project, the asset may remain viable for a plant refurbishment and extension of life as has been seen for other older assets globally. Following the plants final refurbishment or once it has reached the end of its serviceable life then the project would look to return the site to a more natural state and encourage community beneficial use.

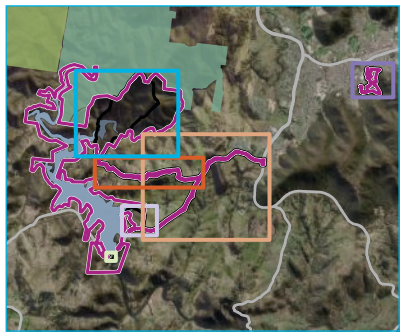












KEY

- Project area
- Construction envelope
- Disturbance footprint

Power generation component:

- Above ground design
- Underground design

Transmission component:

- Existing 330 kV transmission line
- Transmission design

Other ancillary infrastructure:

- Permanent road design
- Permanent infrastructure

Existing environment

- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

GDA2020 MGA Zone 56

N

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

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Overview of key project elements

Lake Lyell PHES
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Figure 2

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PHES infrastructure

The design of the PHES components of the project is summarised in **Table 1** and shown in **Figure 3**.

Table 1 | Project components

Project element	Description
Above ground elements	• Upper reservoir and dam – a rockfill "gully dam" with a working storage volume of ~5.3 GL. • Lower reservoir (Lake Lyell) – Lake Lyell will act as the lower reservoir, with a storage volume of 33.5 GL. • Upper reservoir inlet/outlet structure to draw water up to the upper reservoir during pumping mode and release water during generation mode. • Lower inlet/outlet structure to draw water up to the upper reservoir during pumping mode and release water during generation mode.
Below ground elements	• Power waterways (headrace and tailrace) – underground tunnels lined with steel and concrete to connect the upper and lower reservoir. • Underground powerhouse containing turbines, generators and a variety of electrical equipment. • One surge shaft will be located downstream of the powerhouse and connected to one of the power waterways and the surface.
Access tunnels and portals	• Access to the power waterways and the powerhouse will be via underground access tunnels and portals, which will include a main access tunnel and an emergency, cable and ventilation tunnel. Both tunnels will have an entrance at the surface.

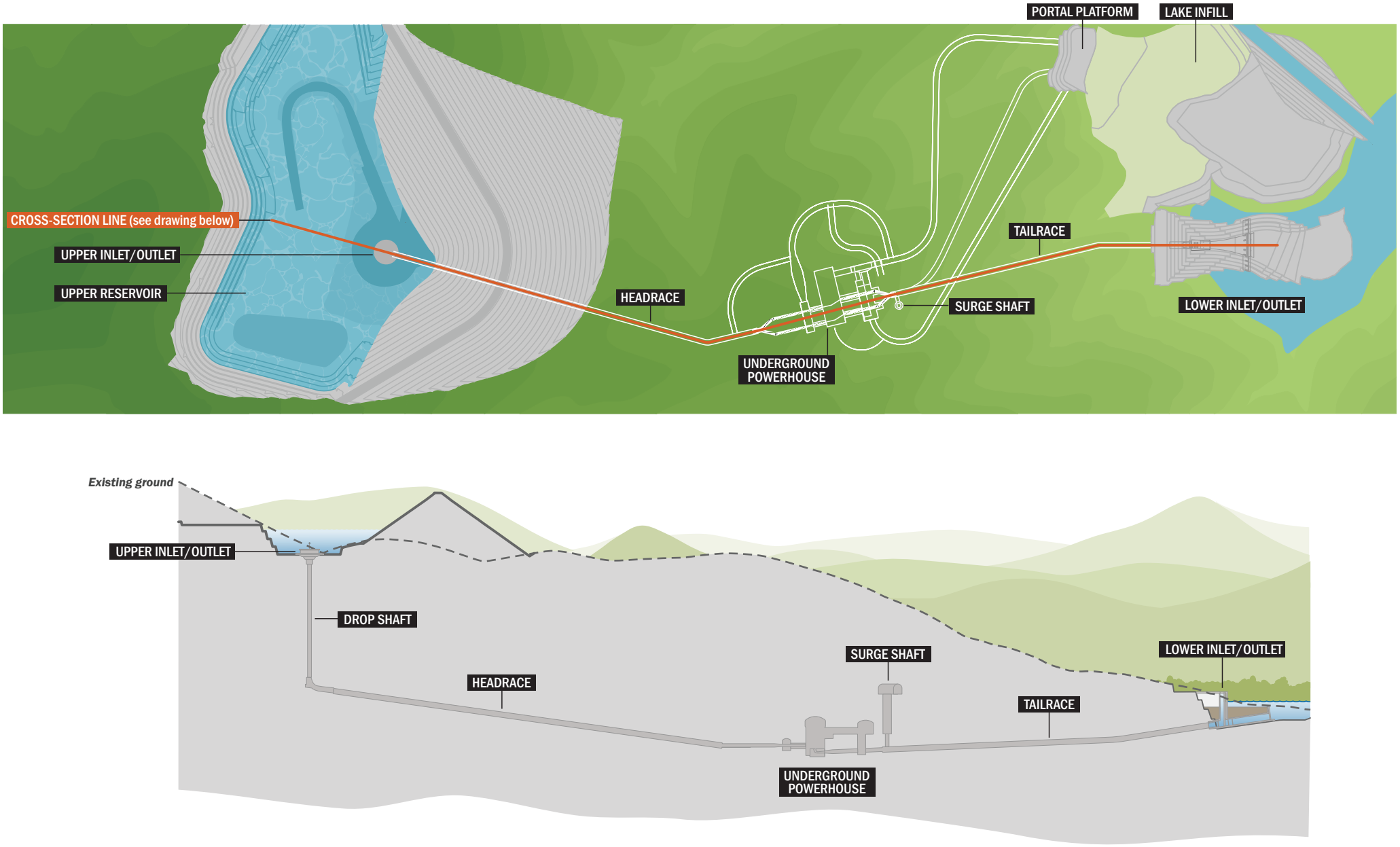


Figure 3 | PHES infrastructure

Transmission connection

The design of the transmission connection of the project is summarised in **Table 2** and shown in **Figure 4.**

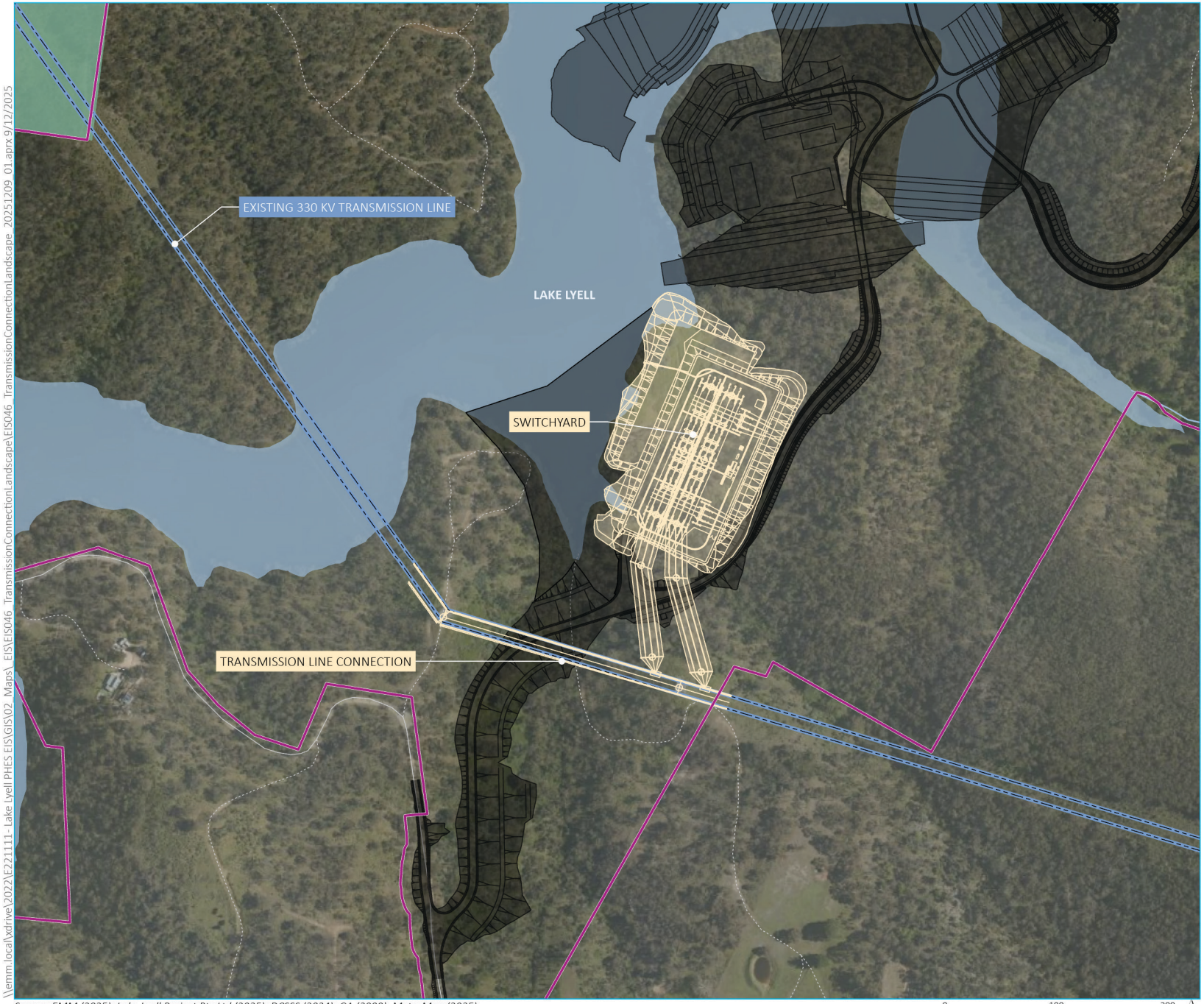
Table 2 | Transmission connection components

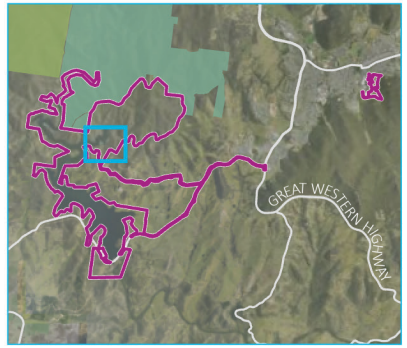
Project element	Description
Transmission connection components	• A high voltage switchyard will contain the electrical equipment required to facilitate the connection between the project and the existing transmission network. • A short transmission connection will be constructed to connect the switchyard to the nearby Wallerawang to Sydney South 330 kV transmission line. • An underground cable in a trench will connect the main transformers and the switchyard.

Key infrastructure within the site will include overhead 330kV towers and conductors, cable bays, busbars, overhead gantries, voltage and current transformers, control building, communication systems and firefighting equipment.

From the switchyard, an approximate 220 m long dual turn-in single circuit transmission line will be constructed to connect with the existing 330 kV lines that pass through the project area. Due to the relatively short length of the transmission connection, up to six monopole towers are anticipated.

A cleared easement of about 60 m will be maintained along the transmission connection (i.e. ongoing vegetation maintenance). Access to the new towers will be via the main entrance road and access to the grid connection tie-in point will be via existing easements.





KEY

- Project area
- Transmission connection component
- Project design

Existing environment

- 330 kV transmission line
- Minor road
- Vehicular track
- Named watercourse
- Named waterbody
- NPWS reserve

INSET KEY

- Major road
- NPWS reserve
- State forest

0 100 200 m

GDA2020 MGA Zone 56

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Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

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Transmission connection

Lake Lyell PHES
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Figure 4

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Site access and ancillary facilities

The design of site access and ancillary facilities is summarised in **Table 3**.

Table 3 | Site access and ancillary facilities project elements

Project element	Description
Upgrading external roads	• The project area will be accessed via Magpie Hollow Road and Sir Thomas Mitchell Drive, which will undergo upgrades to the road and intersection to ensure project vehicles have safe access • The intersection of the Greater Western Highway and Magpie Hollow Road will require a temporary, signalised intersection modification to allow construction traffic and maintain public safety.
Internal access roads and bridges	• Existing access roads within the project area will be upgraded as required and new ones will be constructed to allow access to key areas within the project area. Pioneering access tracks will be utilised for vehicle access before main construction access is completed, to allow pre-construction and enabling works such as geotechnical investigations. • Four temporary bridges will be established across Farmers Creek to provide construction access to the northern part of the project area. • A permanent bridge will be established to cross the diverted path of Farmers Creek arm of Lake Lyell.
Lake Lyell diversion	• The Farmers Creek arm of Lake Lyell will be diverted near the lower inlet/outlet structure to mitigate risks to project operation from flooding, risks associated with sedimentation, and to improve the overall constructability of the project. The lake diversion will be an open channel and designed to allow fish and aquatic fauna to move through it.
Administration and utilities (operation)	• An administration building will act as a control centre, staff centre and office.

Access works are required to facilitate the safe movement of deliveries and workers in and out of the construction site. Access to the project site will be via Magpie Hollow Road and Sir Thomas Mitchell Drive, which would be upgraded where needed to ensure they can withstand the increased traffic during construction and delivery of large loads.

A jetty will be installed at the switchyard location to allow boat access to Lake Lyell, used both during construction and operation. A temporary workboat launch facility will be established at the lakeside accommodation camp and will allow for launching and loading of barges. This will not restrict the foreshore currently used for recreational purposes and access by the public. It is currently intended the workboat launch facility will be temporary and used for the duration of construction of the project.

To minimise the impacts of sedimentation and debris on the operation of the lower inlet/outlet structure, as well as to improve the constructability of the lower inlet/outlet structure and tailrace tunnel, the Farmers Creek arm of Lake Lyell will be diverted before its junction with the natural extent of Farmers Creek. The diverted path of the Farmers Creek arm will comprise a waterway with a width of around 40 m with sides with berms and overall slope of 70 degrees. An open waterway between the Lake Lyell and Farmers Creek intends to allow aquatic passage and the location/orientation of the channel provides a pathway for flood debris to enter the lake downstream of the inlet/outlet structures. It also allows separation between the project inlet/outlet area and the Farmers Creek.

During construction, no public access to the construction envelope will be allowed, with fencing and signage established. Water-based public recreation activities will continue, except for access to the Farmers Creek arm of Lake Lyell. During operation, access to the inlet/outlet structure will be restricted by a floating boom placed across the waterway.

Photograph | Current intersection at Magpie Hollow Road and Sir Thomas Mitchell Drive to be upgraded

Other construction components

The design of site access and ancillary facilities is summarised in **Table 4**.

Table 4 | Construction components

Project element	Description
Other construction components	• Geotechnical investigations are proposed to assist ongoing design refinement. • Temporary workforce accommodation – a temporary workforce accommodation facility is proposed to house up to 500 workers (referred to as an accommodation camp). Two locations are proposed as options (a preferred lakeside camp, and an alternative town camp) with only one being selected and built for the project. • Site work pads, laydown areas and facilities – supporting construction facilities will be established throughout the disturbance footprint. • Spoil management – spoil will be reused in construction of the dam wall, switchyard pad, laydowns and infill of the Farmers Creek arm of Lake Lyell its diversion. Excess spoil will be transported offsite to a facility approved to accept the material.

The project's peak workforce is expected to be approximately 600 full-time equivalent workers, 80% of which are expected to require temporary accommodation. For this reason, temporary accommodation for approximately 500 workers will be provided near the site. Currently, two locations are being considered:

- A preferred site along Magpie Hollow Road and adjacent to Lake Lyell, referred to as the lakeside camp.
- An alternative site off Silcock Street in Lithgow (the former Pottery Estate), referred to as the town camp.

Buses will be provided to transport workers to and from the accommodation camp to the work site. The indicative layout and artist impression of both are shown here.

Artist impression | Preferred lakeside camp

Artist impression | Alternative town camp

Construction staging and management

Lake Lyell PHES will involve several phases of construction to ensure efficient progression of the project to operation. The construction of Lake Lyell PHES is outlined in **Figure 5** and will occur over a 4–5-year period, commencing in 2026/2027.

Construction will be completed in stages, including:

- pre-construction/enabling works (referred to as 'early works') – consisting of initial access works (internal and external roads), geotechnical investigations, site establishment and preparation of the worker's accommodation camp
- main works – consisting of all other construction activities needed to enable operation of the project.

The project will have an operational life of 80–100 years.

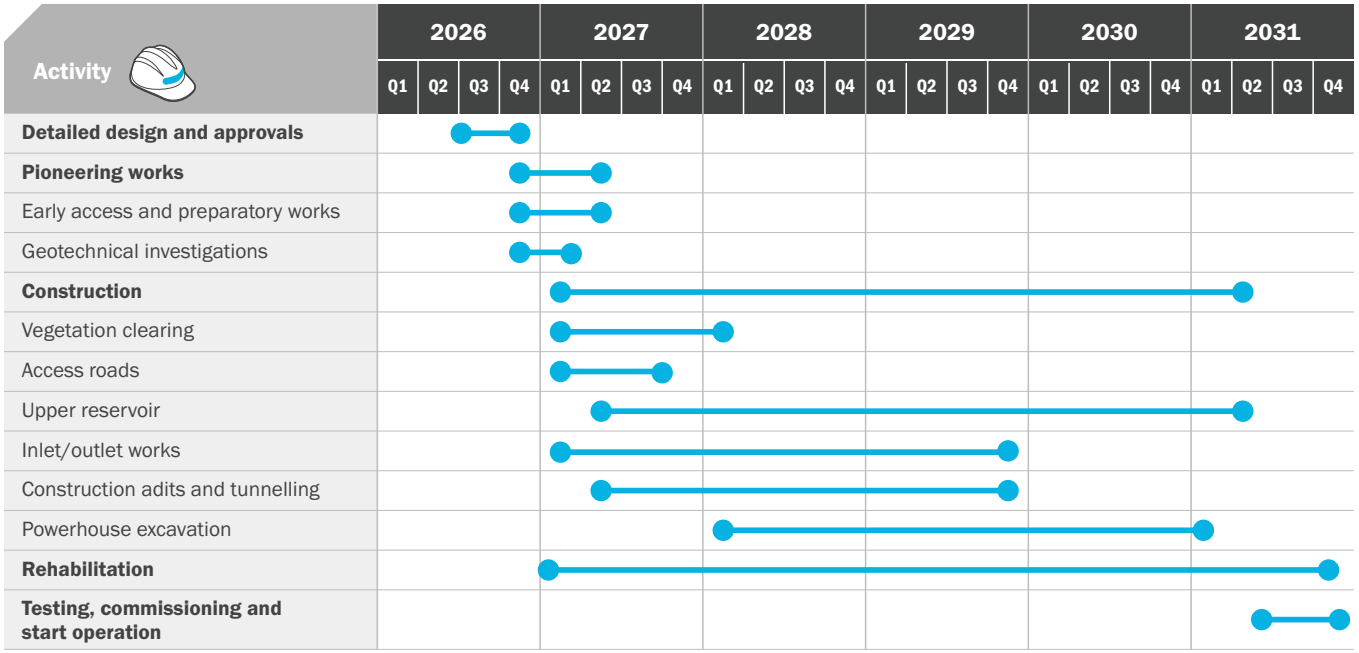


Figure 5 | Project timing and staging

Early Works

Early works are needed to inform finalisation of the design and construction methodologies, as well as enabling works to prepare the site for construction and including implementing any early environmental management measures. These activities occur before the main construction work and are critical to the overall construction timeframe. It is anticipated this phase will involve:

- Geotechnical drilling and geophysical survey, including utilising existing access tracks (no clearing required) and clearing new pioneering tracks and drill pads, and barge launch and access where needed.
- Establishing temporary power supply to an early works staging area and commencing the application for Endeavour Energy 11 kV connection for main construction works.
- External road upgrades (Magpie Hollow Road and Sir Thomas Mitchell Drive, and respective intersection works) to facilitate heavy vehicle access.
- Establish early works compounds, including a storage area off Sir Thomas Mitchell Drive within existing cleared areas, and a compound at the proposed switchyard location.
- Establishment of the workers accommodation camp.
- Securing the site using fencing and gates, as required.
- Temporarily lowering existing Lake Lyell reservoir by up to 3.2 m through concurrent maintenance works on the fuse gates (required as part of existing operations) at Lilyvale Dam.

These works will require some clearing of vegetation but will only have minor or short term environmental and community impacts.

Transport route

Transport of materials and equipment would be via heavy and light vehicles. The primary transport route for construction vehicles is shown on **Figure 6**.

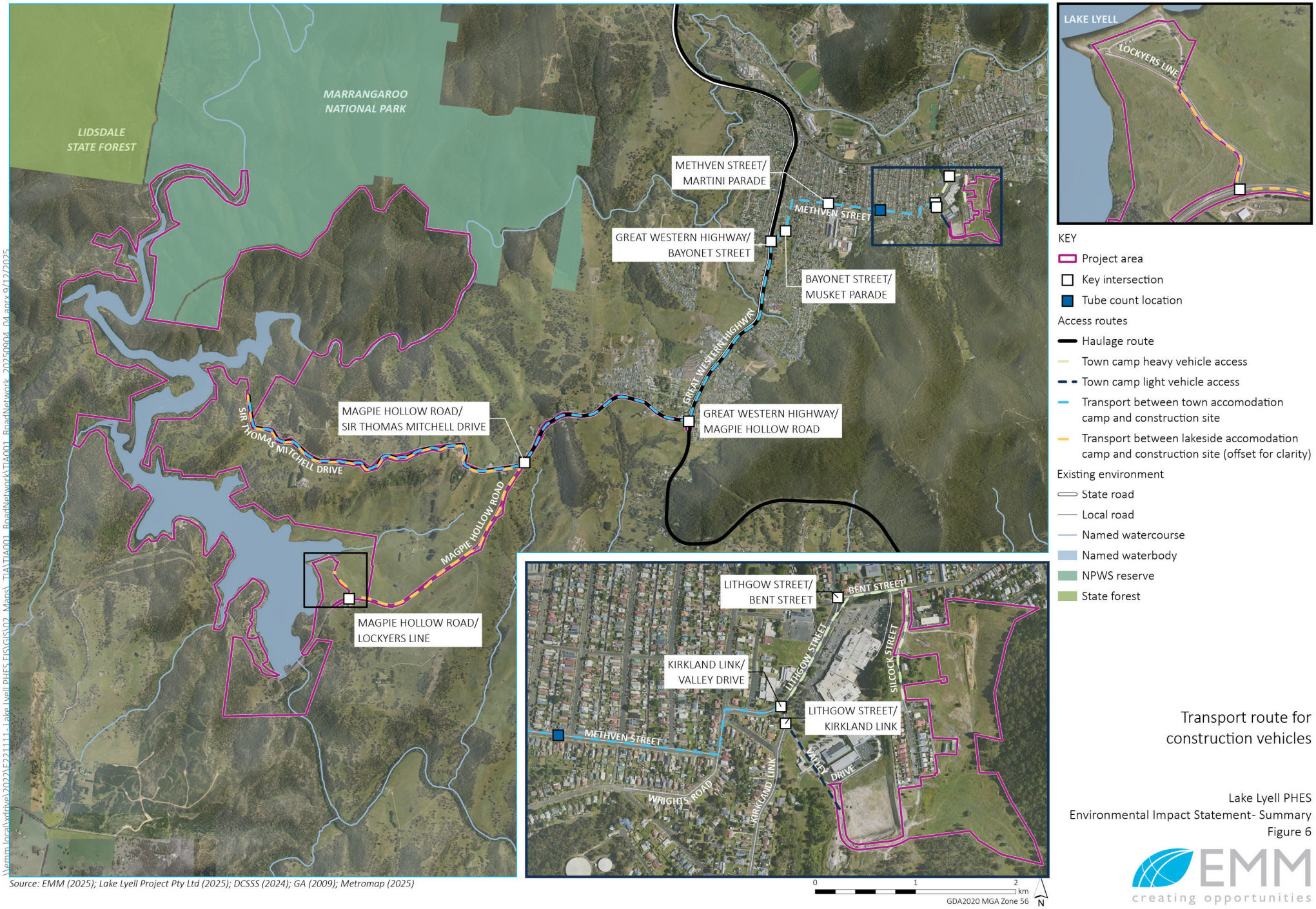
Construction hours

Construction works would generally be within the hours outlined in **Table 5**. Utilising a 24/7 construction schedule for key activities (i.e. tunnelling) will significantly reduce the duration of the construction program to ensure an earliest operation target is met, thereby reducing the project's potential impacts to the local community and demands on local infrastructure.

The project construction environmental management plan (CEMP) would include out-of-hours mitigation measures to reduce potential impacts of these construction activities at nearby receptors during these periods.

Table 5 | Construction works

Work type	Hours of work
Normal construction	Monday to Saturday 6.00 am to 6.00 pm Sundays or public holidays 9 am to 5 pm (low noise work only)
Deliveries	Monday to Saturday 6.00 am to 10.00 pm No work on Sundays or public holidays
Blasting (at surface)	Monday to Saturday 9.00 am to 6.00 pm No work on Sundays or public holidays
Underground excavation and tunnelling (including blasting)	Monday to Saturday 24 hours Sundays or public holidays 24 hours
Camp operation	Monday to Saturday 24 hours Sundays or public holidays 24 hours



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Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); Metromap (2025)

Transport route for construction vehicles

Lake Lyell PHES
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Figure 6

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Operating principles and management

Lake Lyell operates under a regional water scheme including Thompsons Creek Reservoir and Lake Wallace, which currently provide the cooling water to Mount Piper Power Station (and previously to the former Wallerawang Power Station). Lake Lyell also serves as a recreational reservoir for fishing, boating, water-skiing, kayaking, camping, and swimming on land and waters that are leased from EnergyAustralia to Lithgow City Council.

Lake Lyell has a MOL of 761.3 m AHD and FSL of 785.5 m AHD. Water levels within the lake fluctuate due to the drawing of water for use in Mount Piper Power Station, natural evaporation and in events of drought.

Previously, when both Mount Piper and Wallerawang Power Stations were operating, drought conditions have seen the lake as low as 765 m AHD (2007). However, during the most recent drought event (2018–2020) and as a result of Wallerawang Power Station no longer operating, the water level in Lake Lyell was able to be maintained above 780 m AHD.

The project will operate within the existing Lake Lyell system as shown in **Figure 7**. The minimum operating level for the project is 780 m AHD. During recent drought events, water levels have been sustained above this level, with only extreme drought events resulting in lower water levels.

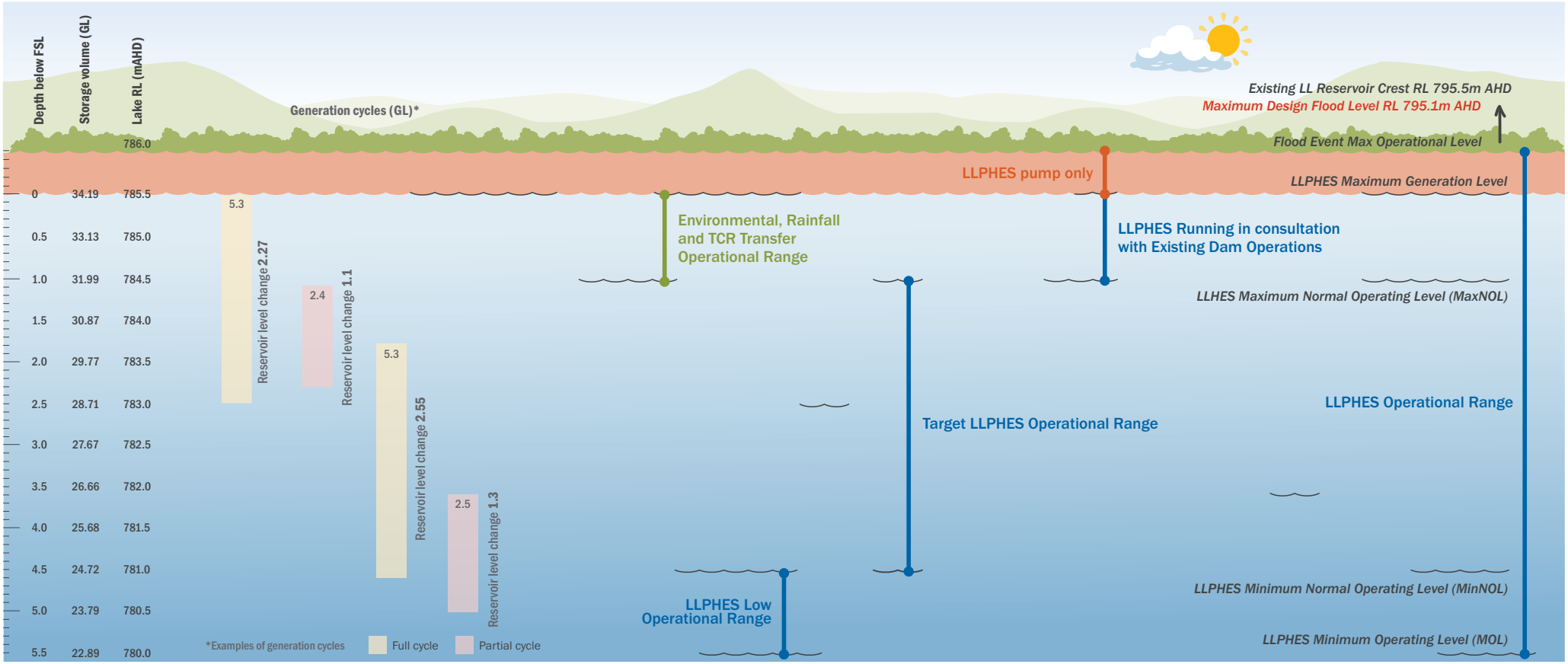


Figure 7 | Lake Lyell PHES operational philosophy

Environmental Impact Statement – Summary

Strategic need and context of the project

Strategic need and context of the project

Needs of the National Energy Market

The National Energy Market (NEM) is one of the world's largest interconnected power networks, providing electricity throughout Australia's eastern and southern states and is overseen by an independent body, the Australian Energy Network Operator (AEMO).

The strategic context of Lake Lyell PHES relates to its significance for the NEM, key Commonwealth and State government plans and policies, and economic, social and environmental trends driving a shift in the energy market. Electricity within the NEM has traditionally come from coal-fired power plants, however a transition is underway to renewable energy and firming technologies, like batteries and pumped hydro to support the transition and balance supply and demand. The AEMO forecasts that all coal-fired power generation would retire before 2049, and therefore there is a need for further investment in grid-scale renewable energy sources and firming capacity.

With 120 GW of grid-scale wind and solar needed to replace coal, the NEM is forecast to need 27 GW of dispatchable storage capacity in 2030, rising to 33 GW of dispatchable storage capacity in 2050 (AEMO, draft 2026 ISP), and will require a mix of storage, comprising:

- Consumer-owned storage: behind-the-meter household, business or industrial batteries
- Shallow storage: grid-connected storage to dispatch electricity for less than four hours
- Medium storage: to dispatch electricity for four to 12 hours, including batteries or pumped hydro projects (such as Lake Lyell PHES) which can shift large quantities of electricity to meet evening or morning peaks
- Deep storage: to dispatch electricity for more than 12 hours, to shift energy over weeks or months (such as Snowy 2.0 or the potential Borumba PHES in Queensland).

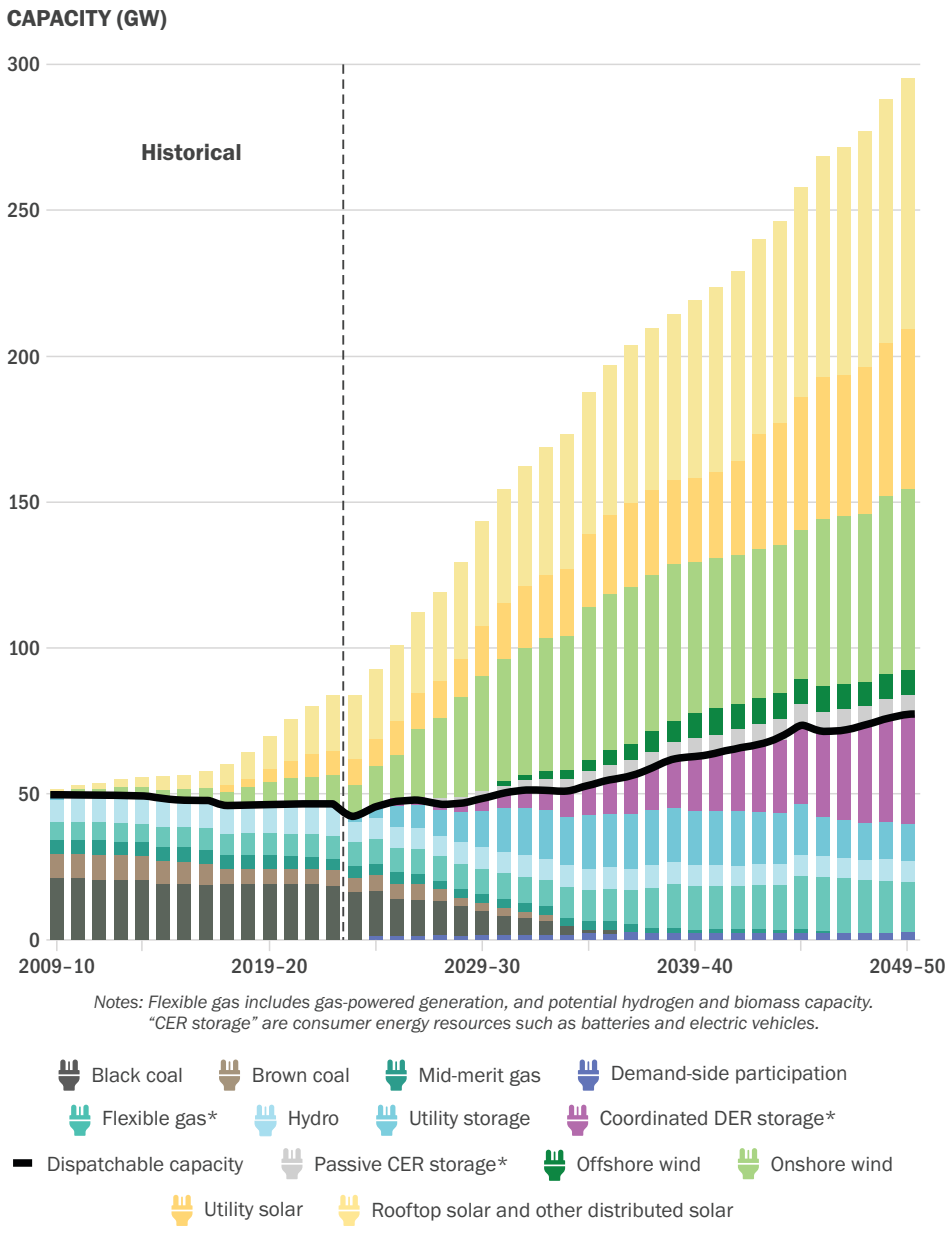


Figure 8 | Forecast NEM capacity under the step change scenario (Source: AEMO, 2024 ISP)

The role of Lake Lyell PHES

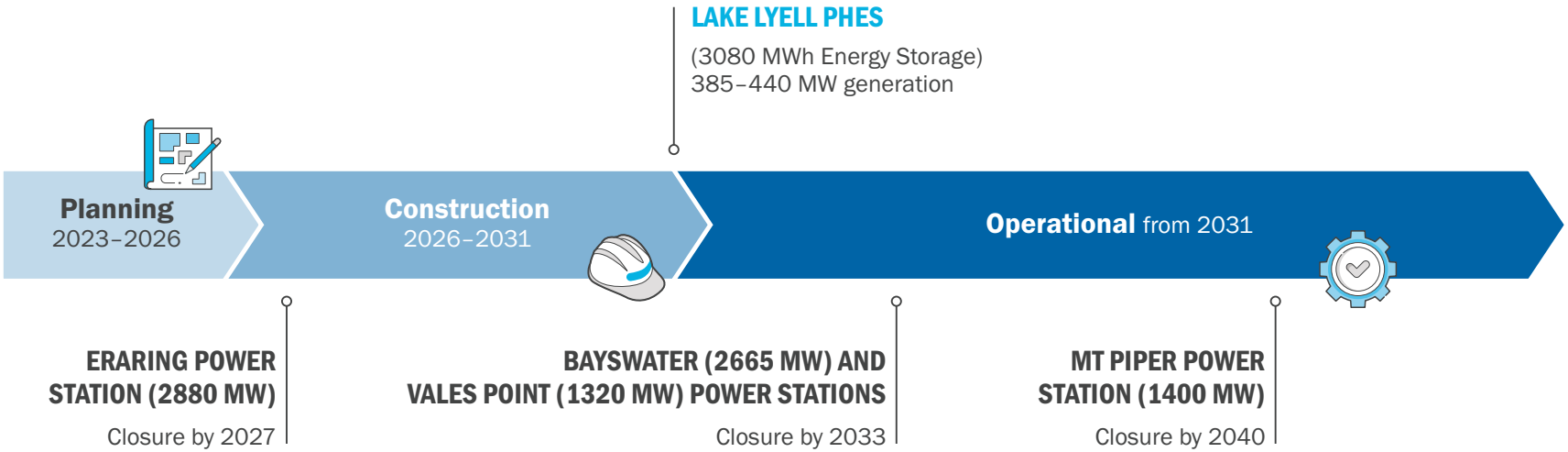
Medium or large energy storage projects will be required to support the stability of the NEM, and at present, there are insufficient projects in development that would satisfy the targets set by AEMO.

Pumped hydro can smooth out troughs and peaks in both supply and demand for electricity by pumping water to the upper reservoir when intermittent renewable energy output is high, and releasing water down to the lower reservoir, providing electricity generation when renewable energy output is low and when demand is high. Pumped hydro projects can shift large quantities of electricity to meet evening or morning peaks and is particularly well suited to providing medium duration storage (dispatching electricity for four to 12 hours) due to the large energy potential of water reservoirs. AEMO forecasts that 33 GW of utility storage, including 6 GW of pumped hydro storage, is needed by 2050.

Lake Lyell PHES is ideally placed to meet the urgent and critical need to deliver the 6 GW of pumped hydro storage target set by the ISP in support of the energy transition as the NEM moves from coal-fired to variable renewable energy technologies.

The project will utilise existing land and assets used for power generation and transmission and aligns with key government strategy and policy in supporting the transition of the energy market to renewable and low carbon alternatives.

The project has a lifespan of over 80 years, with no reduction in storage or generation capacity. Lake Lyell was created by the construction of Lilyvale Dam and impoundment of water for the purposes of water supply to coal fired power stations (Wallerawang and Mount Piper). Mount Piper power station is owned and operated by EnergyAustralia and is likely to be one of the last coal-fired power stations in operation until its planned closure in 2040 (as Wallerawang has already been retired). Lake Lyell is an associated asset that would no longer be needed for energy generation once Mount Piper closes, therefore creating uncertainty in its ongoing ownership, use and maintenance. EnergyAustralia, through its partnership with EDFA, has a unique opportunity to continue Lake Lyell's purpose for energy generation by supporting a pumped hydro scheme. This would also allow continued public access and recreation on the lake for the long term.



Location and context

The project is located at Lake Lyell, approximately 5 km west of Lithgow, on land primarily owned by EnergyAustralia and characterised by mostly steep gradients. The project is situated wholly within the City of Lithgow local government area (Lithgow LGA), on the western edge of the Blue Mountains in the Central Tablelands region of NSW.

The local setting of the project is characterised by a mix of rural landscapes and vegetated areas. The Marangaroo National Park and Lidsdale State Forest are located to the north of the project. An existing 330 kilovolt (kV) transmission line passes directly through the project area which is presently used to connect Mount Piper Power Station to the NEM. The Great Western Highway is located about 5 km to the east of the project.

The area immediately north of Lake Lyell includes Mount Walker, which reaches about 1,190 metres (m) at its peak. This provides a steep slope down to the shore of Lake Lyell. The steep slope makes Lake Lyell a naturally suitable place for a pumped hydro project. This location is also suitable because of its existing accessibility, topography, zoning and the existing infrastructure present.

Alternative sites and technologies from the project have been considered. This project is considered favourable as the project strategically capitalises on the unique opportunity of the landscape, with direct access to an existing reservoir (Lake Lyell) and existing high voltage transmission lines to minimise impacts. Without the project, the opportunity to re-purpose existing assets would be lost, and the future management of Lake Lyell uncertain.

The project would also provide immediate and long-term benefits to the regional and local community through:

- reliable, renewable energy generation and storage, providing grid and system stability
- security of the operation of Lake Lyell
- job creation and training opportunities
- community benefits sharing – if the project proceeds, a range of community benefits can be funded, such as recreational improvements on Lake Lyell.

Environmental Impact Statement – Summary

Approval pathway

Approval pathway

The Minister declared the Lake Lyell PHES as SSI and CSSI on 19 June 2024, in accordance with Sections 5.12(4) and 5.13 of the EP&A Act. The project's status as CSSI means "it is of a category that, in the opinion of the Minister, is essential for the State for economic, environmental or social reasons".

As CSSI, the project requires assessment and approval under Part 5, Division 5.2 of the EP&A Act. The Minister is the relevant consent authority.

The project is a controlled action under the Commonwealth EPBC Act and therefore requires assessment and approval under that Act. The Minister for the Environment is the relevant approval authority for the EPBC Act. The project will be assessed under the Bilateral agreement between the Commonwealth and NSW Governments, meaning the assessment process under the EP&A Act is accredited for the purposes of assessment under the EPBC Act.

An overview of the approvals process is shown in **Figure 9**.

Other licenses, approvals and permits required for the project to be carried out are detailed in the EIS.

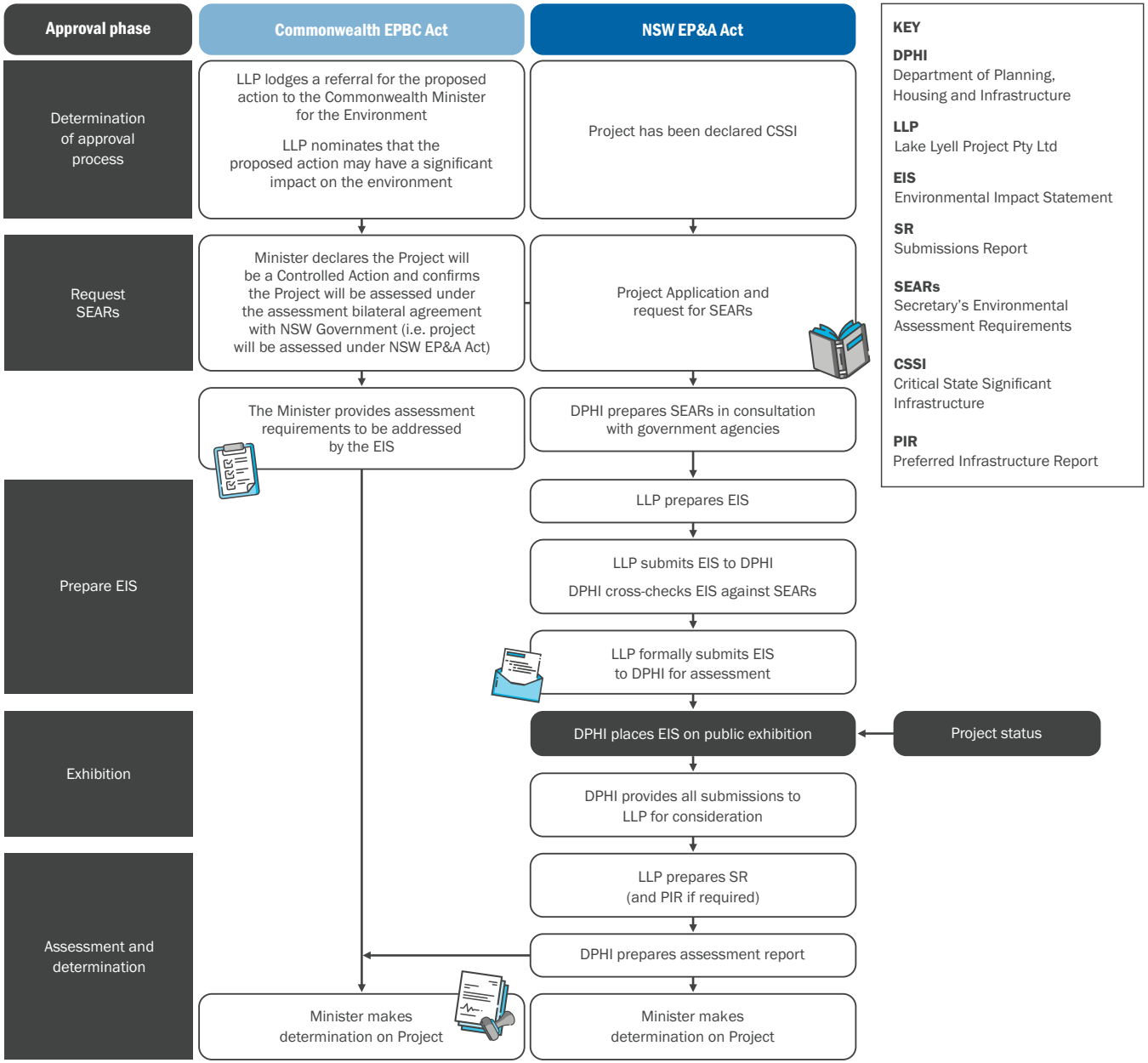


Figure 9 | Overview of the approvals process

Environmental Impact Statement – Summary

Engagement

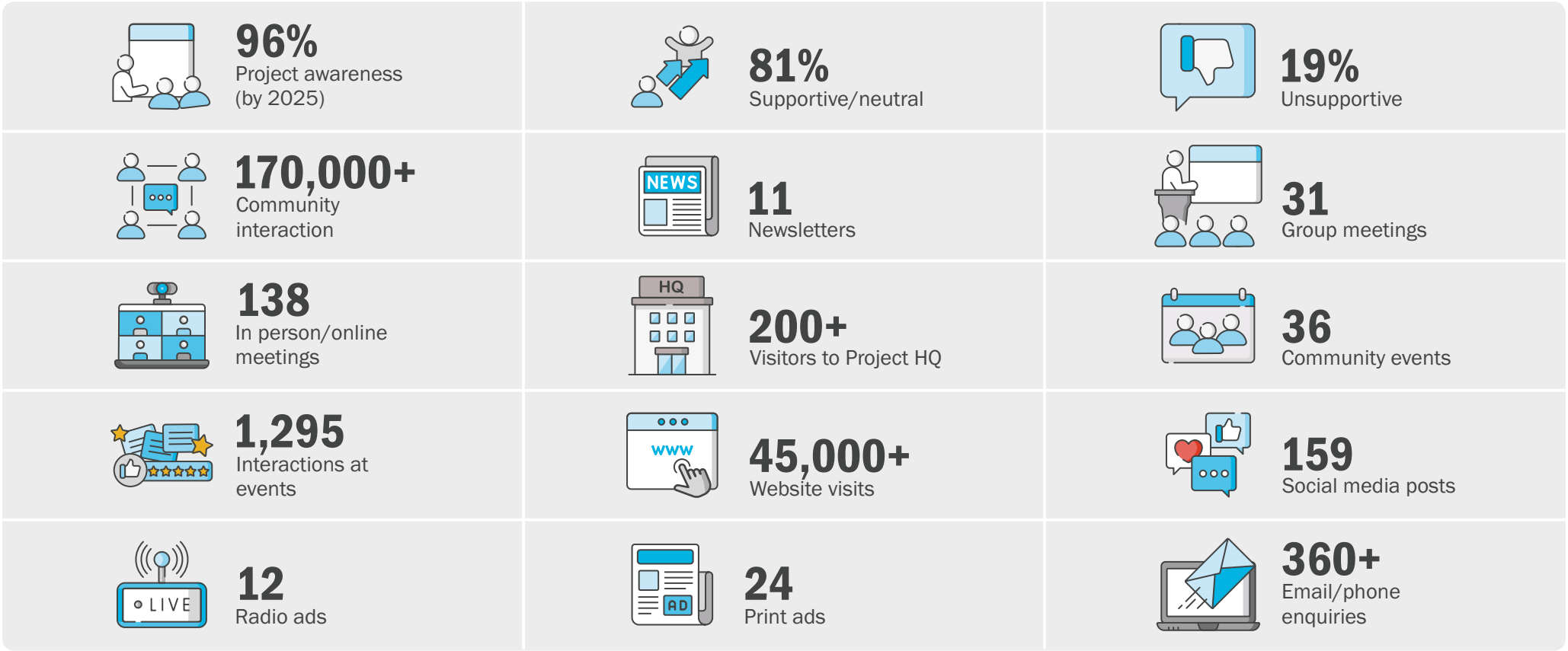
Engagement

The project team began engaging and consulting with community members and other stakeholders across the Lithgow region in 2021. This engagement has continued through the development of the project's design and preparation of the EIS. The purpose of engagement activities has been to raise project awareness, keep community and stakeholders informed, and collect feedback and insights through meaningful conversations.

An Engagement and Consultation Report has been prepared (Appendix D of the EIS) that documents the engagement activities completed to date and sets out the plans for future engagement, should the project proceed.

Engagement has been carried out with identified stakeholders and the community using a variety of methods, including community events and drop-in sessions, newsletters and fact sheets, in person or online meetings and email, hosting a project specific website, phone and email, and a physical shopfront in Lithgow ('Project HQ') for enquiries and information. A summary of all engagement interactions is shown on **Figure 10**.

Figure 10 | Engagement interactions



Key issues and how they have been addressed

All community and stakeholder interactions have been recorded and documented by LLP, with feedback informing aspects of the project such as design, mitigation measures for potential impacts, and how notification and engagement should be conducted before construction impacts occur. The key themes of feedback have been considered by stakeholder group and documented in the Engagement and Consultation Report (Appendix D), including government and agency feedback, Lithgow City Council feedback, local and regional community feedback and near neighbours.

Near neighbours are those living or operating businesses in closest proximity to the proposed infrastructure that are likely to experience the most tangible day-to-day impacts during construction and operation. For this reason, the near neighbour views were considered separately to capture the individualised effects, sensitivities, and adaptation needs of those most directly affected.

There were common themes amongst all stakeholder groups consulted, with the most common issues or topics raised focused on:

- Need for the project, including uncertainty for why pumped hydro (e.g. instead of coal or other renewable energy) is needed and why the project has been sited at Lake Lyell instead of other locations
- Community engagement, including the need for providing transparent information, responsiveness and accountability. Government stakeholders provided comments on engagement with the most directly impacted communities and how impacts are communicated
- Environmental, social and economic impacts, with key concerns for impacts to threatened species and habitats, management of platypus impacts, visual and landscape impacts, Aboriginal cultural heritage, traffic management, changing water levels and recreational use of Lake Lyell, understanding noise impacts and management, and concerns regarding the influx of workforce and associated social impacts on local community values. Key opportunities raised by the community largely focused on local employment, skills training and business, and recreational and access improvements.
- Project justification, including whether the project can be justified in its current location and whether the benefits outweigh the impacts.
- Other feedback raised included issues beyond the scope of the project and EIS, such as broader energy policy and government decision-making.

Photograph | Project HQ in Lithgow Main Street

Photograph | Drop-in stand at Lake Lyell Recreation Park

The project has addressed the relevant feedback in the EIS through the preparation of detailed technical assessments for the potential environmental, social and economic impacts of the project, and the identification of reasonable and feasible mitigation measures to reduce those impacts. Additional measures beyond the required mitigation have also been proposed to incorporate community feedback to provide long term benefits to the Lithgow community, primarily through the commitment for a Shared Benefits Program. A Neighbour Agreement Guide has also been developed to support the most impacted residences and businesses.

Future engagement

The project will continue to generate interest and concern within the community and stakeholders. This can be managed through effective engagement and communication activities. These activities will be informed by feedback on engagement to date.

If the project is approved, the future focus of engagement will be on construction readiness to prepare the community and key stakeholders for the project to move from planning stage and into construction. This means providing updated information about construction impact management as well as enabling communication pathways between the community and the contractor that will be appointed to build the project. There will also be a process to ensure the community can be an active participant in the project's Shared Benefits Program.

Environmental Impact Statement – Summary

Assessment of impacts

Assessment of impacts

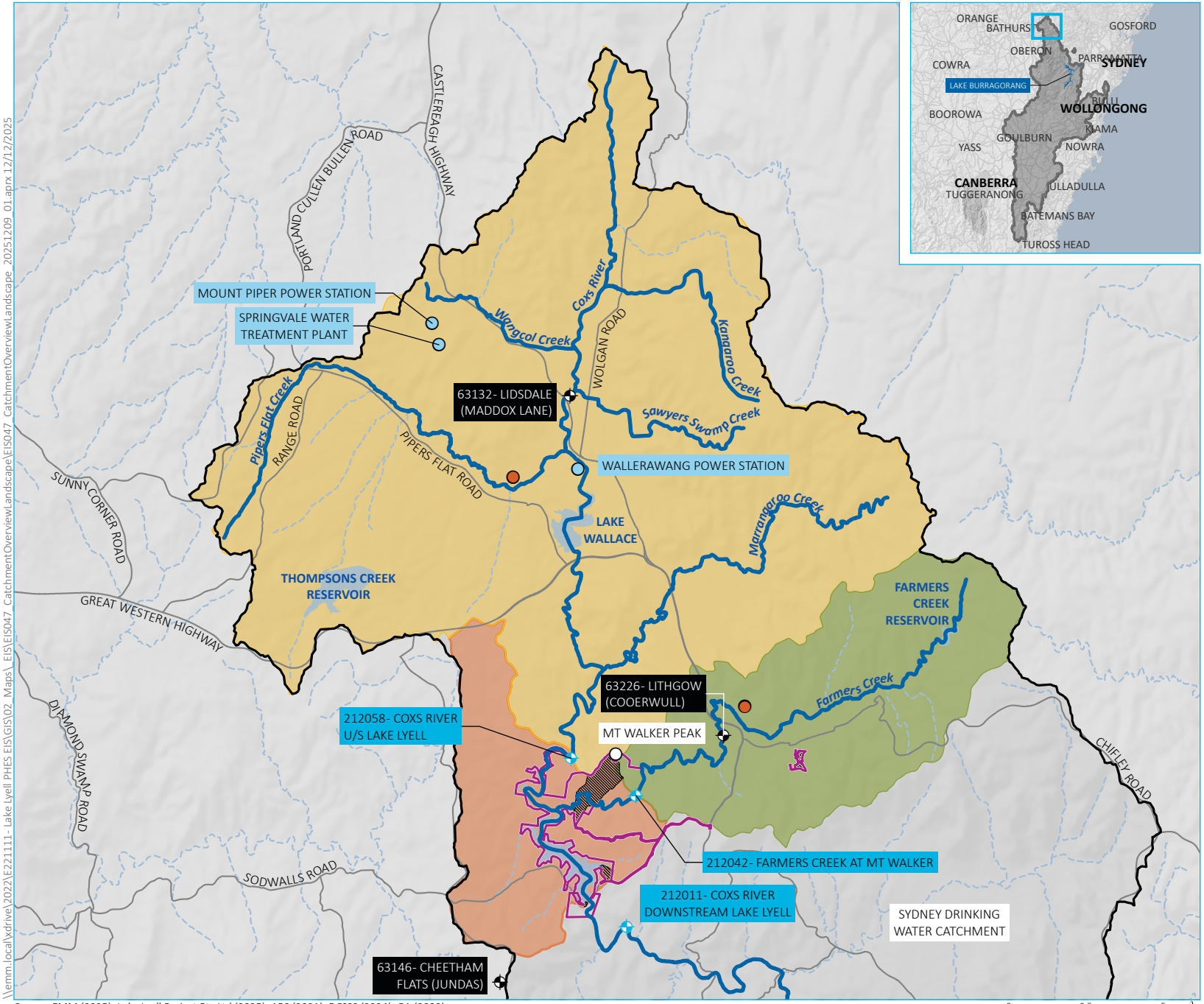
The project has been developed following a robust and iterative process based on design and refinement, environmental assessment and stakeholder engagement. Where reasonable and feasible, the project has aimed to avoid and minimise impacts. Where impacts are unavoidable, mitigation measures have been identified to reduce the likelihood, magnitude and consequences of any residual impacts. The following sections provide a summary of the key project impacts and how they will be managed. Detailed mitigation measures for the project are consolidated in Appendix E of the EIS.

Water

The project is located within and near Lake Lyell, in the upper Coxs River catchment. Lake Lyell is formed by the impoundment of water by Lilyvale Dam. Lake Lyell is part of the Coxs River Water Supply Scheme, which was developed to ensure an adequate supply of water for the operation of the former Wallerawang and current Mount Piper Power Station. The scheme comprises Lake Lyell and Lake Wallace on the Coxs River and Thompsons Creek Reservoir on Thompsons Creek, a tributary of the Coxs River, as well as several interconnecting pipelines and pumping stations.

Due to Wallerawang Power Station closing and a trend of declining power generation at Mount Piper Power Station, demand for Lake Lyell water has decreased and water levels have been maintained close to FSL and resilient to drought conditions. **Figure 11** shows an overview of the Lake Lyell Catchment.

The project area predominantly comprises fractured rock groundwater systems associated with the Lachlan Fold Belt and Sydney Basin geology. Minor porous rock groundwater systems likely form part of the Sydney Basin geology. Alluvial and colluvial deposits occupy valley floors near watercourses. These localised systems typically reflect the flow regimes in the associated watercourse and are not considered a regional groundwater system.



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Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); ABS (2021); DCSSS (2024); GA (2009)

Overview of Lake Lyell Catchment

Lake Lyell PHES
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Figure 11

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Key avoidance and minimisation in project design considered in the EIS in relation to surface and groundwater include:

- Lowering of the Lake Lyell water level during construction to prevent and minimise sedimentation and other impacts that would potentially otherwise arise from in-water works. The dry work environment also allows for more effective management of potential contaminated water from excavation and placement areas.
- Applying “cease to generate” rules to avoid increasing flood impacts downstream of Lake Lyell.
- Separation of stormwater and contaminated water systems to avoid cross-contamination, with targeted treatment of nitrogen-laden water and surplus contaminated water prior to discharge.

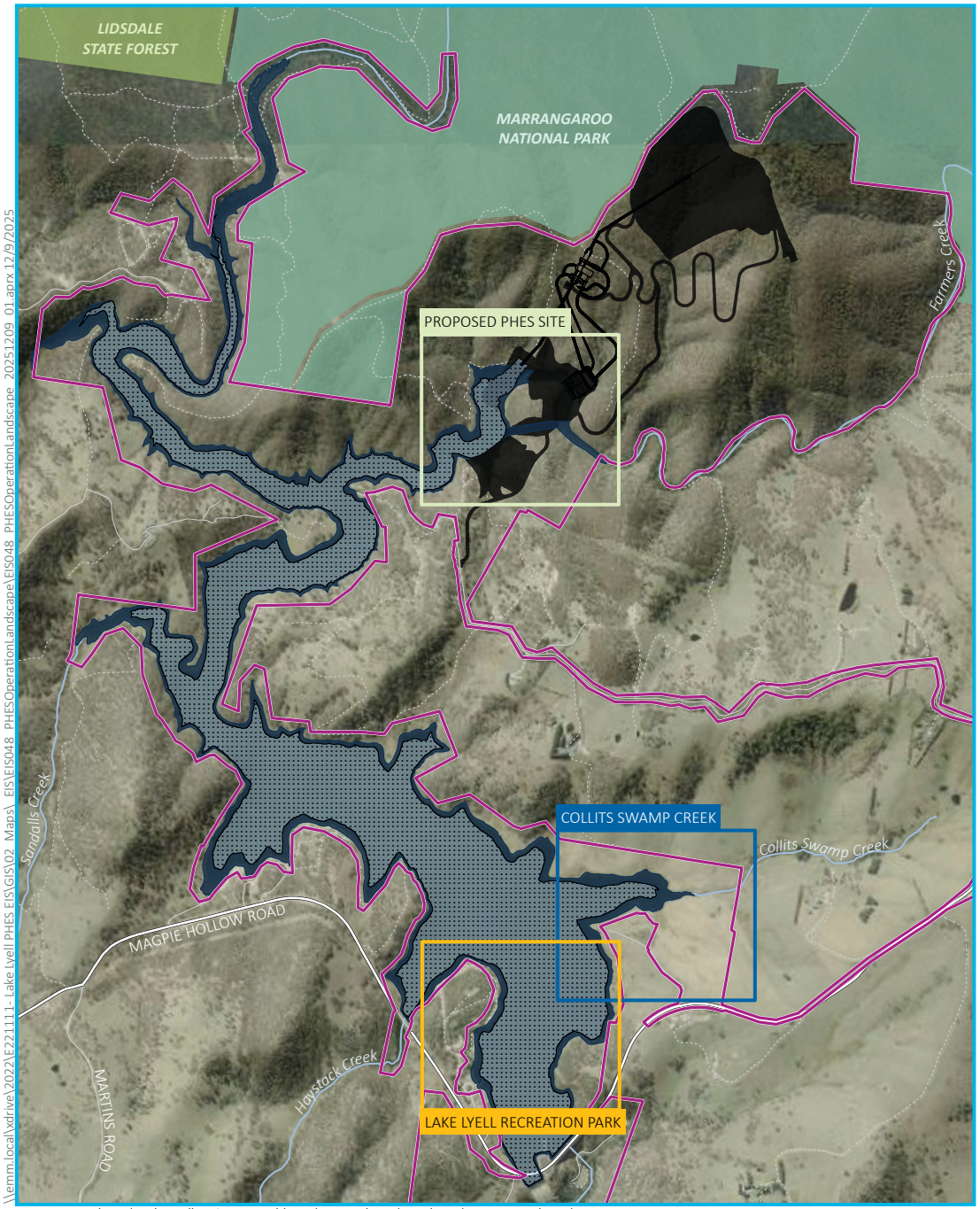
A surface water assessment has been completed to assess the potential impacts of the project on existing water levels, water flow and water quality on the environment. Construction impacts include controlled releases and overflows of stormwater, and controlled releases of treated contaminated water. However, water quality is expected to remain similar to a minimal harm criteria. No changes to water coming into the lake, or lake processes are expected during construction. However, some small watercourses will be unavoidably disturbed during construction.

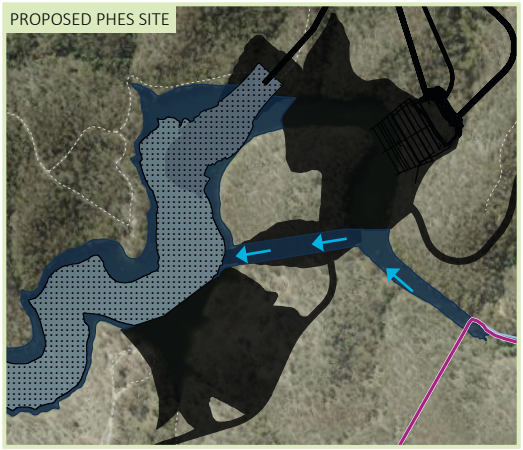
The project will result in changes within Lake Lyell during operation, as the PHES will fluctuate water levels and promote mixing of the water in the lake. Lake Lyell will be 78% full at the minimum PHES operating level of 780.0 m AHD. A view of areas of the lake that would be subject to fluctuating levels is shown on **Figure 12**.

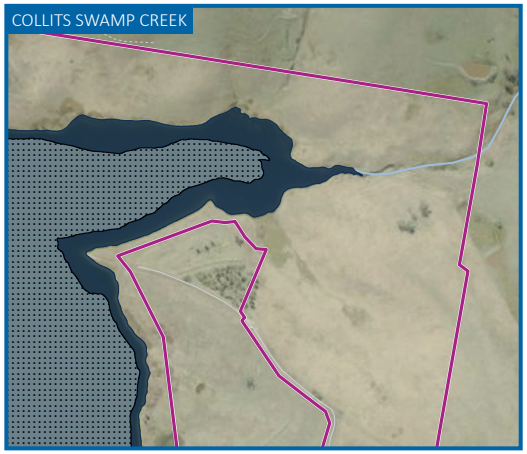
The pumping and releasing of water from the intake structure also has the potential to result in some erosion of the shoreline, however this requires more detailed investigation as part of detailed design. Due to the proposed water management systems and operating principles, impacts to the downstream environment are considered negligible. Both the construction and operation of the project have been assessed to have a neutral or beneficial impact on water quality in the Coxs River downstream of Lake Lyell.

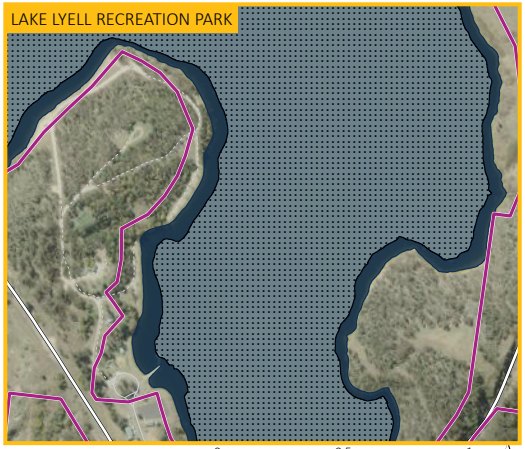
Groundwater modelling predicts localised reduction in the watertable throughout construction and operation. It is not expected that this will impact groundwater users and will have minimal impacts on groundwater dependent ecosystems. There will be a minor reduction in baseflow available to rivers and creeks, however impacts are predicted to be negligible.

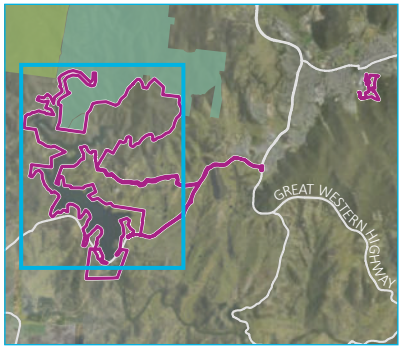
To mitigate impacts of the project, a combination of construction method mitigations, operating rules and water management plans are proposed. Ongoing monitoring will be undertaken and documented as part of these management plans. Overall, water impacts of the project are expected to be manageable with the implementation of these measures.











KEY

- Project area
- Farmers creek flow direction
- Operational footprint
- Lake inundation extent at minimum PHES operating level (780.0 m AHD)*
- PHES operating range to FSL (780.0 to 785.5 m AHD)*

*The 780 m AHD contour was derived using bathymetry data provided by Energy Australia. The 785.5 m AHD contour was derived using a 1 m DEM obtained from the ELVIS portal.

Existing environment

- Major road
- Minor road
- Vehicular track
- Named watercourse
- NPWS reserve
- State forest

0 0.5 1 km

GDA2020 MGA Zone 56

N

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

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Lake Lyell areas impacted by fluctuating water level

Lake Lyell PHES
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Figure 12

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Biodiversity

The project is located on largely forested land, with small areas previously cleared for agriculture and other purposes. The limited disturbance in the past means the project will result in the clearing of large areas of native vegetation which currently provide habitat for several native and threatened species. Some impacts have been avoided through siting the project in an area where existing infrastructure can be utilised by the project, however large areas are still needed to build and operate the project.

The impacts to biodiversity mostly come from land clearing and construction and operation of the lake diversion and intake. It is expected there will be a loss of about 130 ha of vegetation, of which about 102 ha is native vegetation and threatened species habitat. This habitat loss includes approximately 568 trees with hollows (greater than 7 cm) and 294 trees with hollows (greater than 20 cm) which may be used by animals for nesting. Another 11 trees with hollows used by the endangered Gang-gang Cockatoos for breeding will be removed.

No species are likely to be at risk of serious or irreversible impacts as mapped important habitat for candidate species are absent from the construction envelope. However, the project is likely to have a significant impact on the EPBC Act listed Gang-gang Cockatoos, Glossy Black Cockatoos and Koala.

Indirect impacts may include edge effects (i.e. zones of changed environmental conditions occurring along the edges of habitat), disturbance to native animals in adjacent habitat during construction, vehicle strike of animals and impact to water quality.

No threatened aquatic species occur in Lake Lyell. Lake Lyell's aquatic environment contains predominately invasive species, however, also has suitable habitat for the native platypus. Live trapping and tracking of platypuses were undertaken in 2023 and 2024 by Austral Research and Consulting and leading experts from the University of New South Wales. A total of 17 platypuses were detected in the Farmers Creek and Coxs River arms of Lake Lyell.

Risks to platypus have been considered, especially the potential loss of burrowing and feed ing habitat, changes to platypus movements and behaviour in the local area, and increased predation and entrapment risks. Research shows that platypus have been resilient to some levels of disturbance however there is a lack of data and research into platypus within a dynamic water environment such as the project. A combination of preventative actions (platypus exclusion methods), and adaptive management and monitoring measures are proposed to assess and mitigate impacts throughout the project.

Direct impacts to the aquatic environment are expected from the disturbance and change to the lake profile within the Farmers Creek arm of Lake Lyell, to allow for the construction and operation of the lake diversion and intake. About 11.88 ha of key fish habitat will be lost within Lake Lyell. Potential blockage of fish and platypus passage from the lake diversion could occur during low flow or drought conditions, although consideration of these events will be incorporated into the design by including deep pools and riffle sequences.

Offsets are required for direct impacts and would be sought by LLP through a staged offsetting strategy. Following consultation with Department of Primary Industries (DPI) – Fisheries it has been agreed that the offset approach for key fish habitat will focus on local/catchment level initiatives and re-stocking.

A Biodiversity Management Plan will be developed for the project to guide the mitigation, management and monitoring of biodiversity and aquatic fauna. Specific sub plans will be prepared to complement this, including a Platypus Management Plan and Biosecurity Management Plan.

Photograph | Gang-gang Cockatoo recorded in project area

Heritage

Aboriginal cultural heritage

The Country on which the project is located is part of the traditional lands of the Wiradjuri people, with neighbouring groups including the Dharug and Gundungurra people.

The survey and assessments completed for the project have contributed to our understanding of Aboriginal cultural heritage in the project area. Archaeological field surveys and test excavations were undertaken with Aboriginal representatives to explore and document the Aboriginal objects, sites and places within the project area. Transparent, two-way dialogue between the Aboriginal community and the project team has been promoted with feedback invited throughout the development of the project.

Throughout the project, LLP has undertaken design refinements and discussions with the Aboriginal participants, which has resulted in the avoidance or partial avoidance of two significant sites. The proposed upper reservoir and associated activities were also moved off the peak ridgeline of Mount Walker, in part because of the mountain's contemporary cultural values..

There are 21 Aboriginal sites/places within the project area (**Figure 12**), of which five would be directly impacted by construction activities. Three of these five sites are of high significance. The project would also cause a partial loss of value to two places of cultural value – the peak of Mount Walker and the Platypus Dreaming story which includes parts of the Coxs River. Indirect impacts are also likely to occur because of the visual and aesthetic changes of view lines to and from Mount Walker.

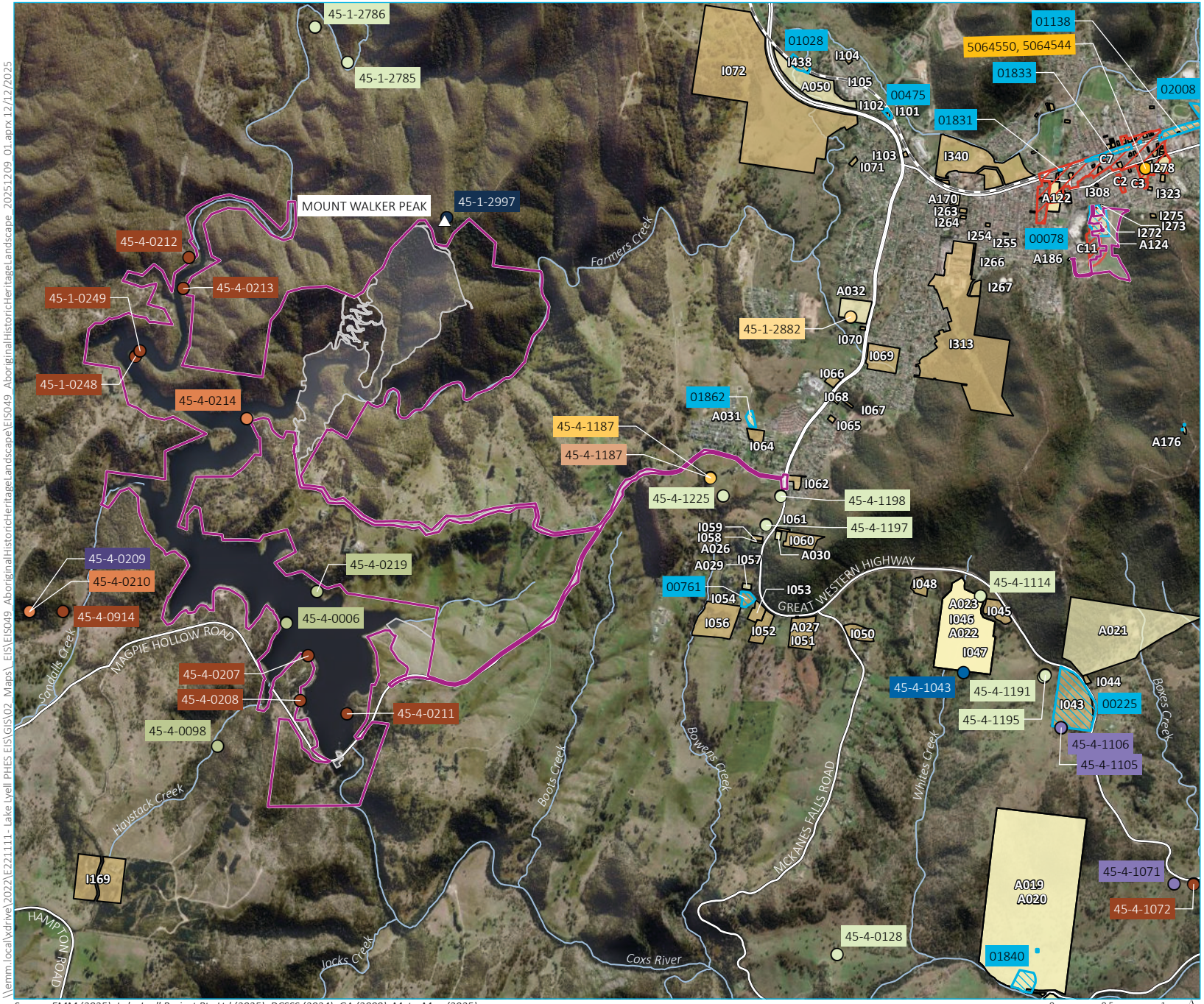
It is proposed to investigate cultural materials below the surface as a mitigation technique for direct impacts to archaeology. Discussions have been undertaken with Elders and knowledge-holders to explore suitable non-archaeological mitigation in relation to impacts to contemporary cultural values and a cultural values mitigation strategy and interpretation strategy has been recommended. However, further discussion and engagement is needed to agree on ongoing and long term management measures.

Historical heritage

There are no historical heritage sites within the disturbance footprint for the preferred project (PHES and Lakeside camp) and therefore direct impacts are considered neutral. Visual impacts may indirectly impact the locally listed Highland House and Royal Hotel. Impacts are expected to be low as they are mitigated by distance from permanent infrastructure (for Highland House) or are temporary as they are limited to road works (for Royal Hotel).

The alternative temporary workforce accommodation, the 'Town camp', has three listed heritage sites within the disturbance footprint. These sites are associated with the establishment of a colliery, followed by a brickworks site and later, a pottery site. Construction activities to establish the Town camp would result in negative impacts to the fabric and setting of this area. It would be a major negative impact to State significant archaeology and would decrease the potential for research. Consultation with Heritage NSW recommended that avoidance of the heritage listed site is preferred, followed by avoidance of areas of high archaeological sensitive. Where avoidance is not possible, specific management measures would be required in accordance with the Lithgow Development Control Plan and in consultation with Heritage NSW.

Photograph | Lithgow Pottery and Brickworks, 1880



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Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

Heritage values of the project area

Lake Lyell PHES
Environmental Impact Statement- Summary
Figure 13

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Landscape and visual

Lake Lyell and the Coxs River are some of the defining landscape features of the local area, adding to the character and uniqueness of the region. Mount Walker is also a prominent feature visible from most directions, including the more heavily populated areas to the east of the project area.

Construction impacts would be temporary and the sites for construction infrastructure would be selected to reduce visual impacts. Impacts would mainly be from vegetation clearing, vehicle movements, temporary laydown areas, installation of transmission towers and construction of buildings.

Temporary construction visual impacts associated with the two accommodation camp options will be mainly from the use of machinery and cranes during site establishment. The accommodation camp will be in place for up to five years, with specific mitigation measures to minimise visual impacts incorporated into the design (such as perimeter vegetation to provide screening where appropriate).

Operational impacts are long-term and permanent in some instances. Impacts will mainly be caused by permanent infrastructure within Lake Lyell and on the southern face of Mount Walker (i.e. the upper reservoir and access road), fluctuating water levels within Lake Lyell and infrequent vehicle movements. Nighttime lighting during operation will come from lower elevation components and would impact a small number of residents.

Operational impacts were assessed from selected viewpoints, representing:

- private residences and local roads, including Martins Road, Sandalls Drive, Sir Thomas Mitchell Drive and Magpie Hollow Road
- from the Great Western Highway and the western edge of the Lithgow urban area, including residences and commercial enterprises
- from tourist destinations such as the Lake Lyell Recreation Area, and nearby accommodation venues including Seclusions Blue Mountains, Eagle View Escape and Springmead B&B.

Table 6 summarises the findings from the analysis of each representative viewpoint and generally show:

- the project will be difficult to see from most public locations other than nearby roads
- views from residences and other sensitive receivers will vary considerably
- visual impacts will be highest for sensitive receivers and motorists/visitors to the south-west of the project, particularly during the period of vegetation reestablishment
- for most viewpoints, vegetation reestablishment will significantly reduce the visual impact of the project.

Photograph | Nearest public viewing location to the project (VP01)

Visual impact ratings from each assessed, representative viewpoint is shown on **Figure 14**.

The project is potentially visible from Lithgow as a result of clearing for the upper reservoir. However, this visibility will be significantly reduced with time as tree cover is reestablished on the ridge beside the upper reservoir, resulting in no visibility or long term impact to the view from the Lithgow urban area.

The project has evolved over time to minimise impacts however due to the nature and scale of permanent infrastructure, the visual landscape will be altered for the life of the project. Overall, the project will result in a range of impacts to the existing landscape character and visual amenity, from very low to high residual visual impacts, depending on the viewing location.

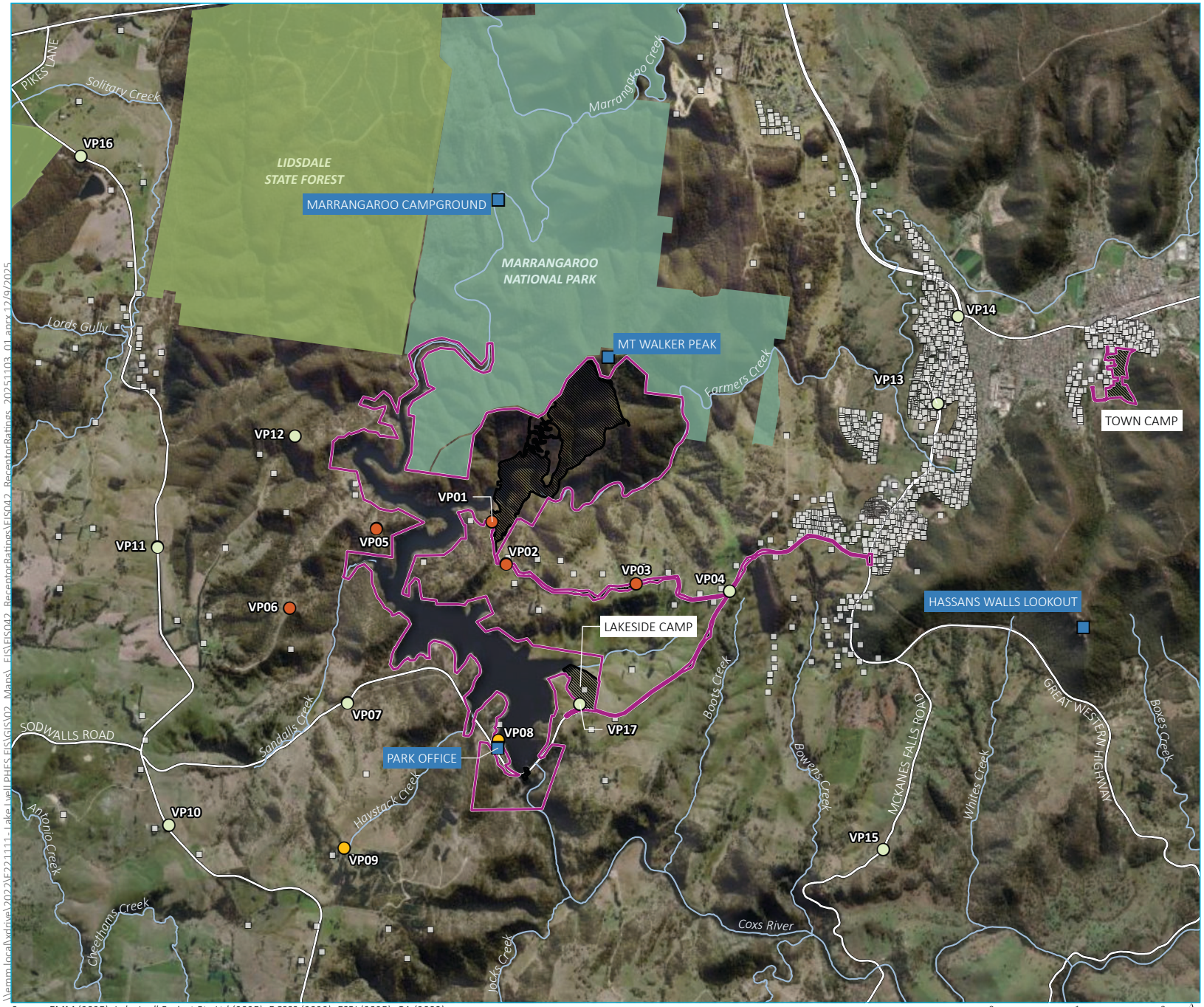
Recommendations have been made to mitigate visual impacts, seeking to mitigate through design and mitigation at the source. This includes consideration of the placement of infrastructure where possible, material and colour selection, and the planned staging of vegetation clearing, its management and rehabilitation.

The results of the representative viewpoint analysis were used to inform further, detailed assessment of individual sensitive receivers (private residences and businesses) where they were predicted to experience a moderate or high visual impact. Views from these locations have varying existing screening or are located in lower terrain which has influenced their visual impact rating. In many cases, the magnitude of visual impact has reduced when compared to the representative viewpoints due to this existing screening. Of the sensitive receivers individually assessed (without mitigation), five are rated as likely to experience high visual impacts, 11 are rated as likely to experience moderate visual and seven are rated as likely to experience low or very low visual impacts.

Reasonable and feasible mitigation at each receiver was explored through a series of visualisations including modelled vegetative screening. A residual impact assessment was carried out and demonstrated that vegetative screening would reduce visual impacts to low or very low at the majority of sensitive receivers. Noting however, any mitigation or screening introduced on private property would be subject to agreement with individual landowners and as part of the Neighbour Agreement Guide process.

Table 6 | Visual impact findings

Viewpoint	Potentially visible project elements	Visual impact rating
1	Temporary vegetation clearing, upper reservoir and some permanent buildings	High
2	Temporary vegetation clearing and upper reservoir	High
3	Temporary vegetation clearing and upper reservoir	High
4	Temporary vegetation clearing and small part of the upper reservoir	Moderate
5	Large part of the project: temporary vegetation clearing, upper reservoir, switchyard and associated buildings	High
6	Temporary vegetation clearing, upper reservoir, buildings and other structures at lower elevations	High
7	Temporary vegetation clearing and upper reservoir	Low
8	Parts of the upper reservoir	Moderate
9	Temporary vegetation clearing and upper reservoir	Moderate
10	Temporary vegetation clearing	Low
11	Temporary vegetation clearing and upper reservoir	Low
12	Temporary vegetation clearing and upper reservoir	Low
13	Temporary vegetation clearing and part of the upper reservoir	Low
14	Temporary vegetation clearing, part of the dam construction, and some change to the ridge due to excavation of the upper reservoir	Low
15	Temporary vegetation clearing	Low
16	Temporary vegetation clearing	Low



KEY

- Project area
- Disturbance footprint
- Sensitive receiver
- Key location

Visual impact rating

- Low
- Moderate
- High

Existing environment

- Major road
- Named watercourse
- NPWS reserve
- State forest

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2023); ESRI (2025); GA (2009)

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GDA2020 MGA Zone 56

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Visual impacts

Lake Lyell PHES
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Figure 14

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Social and economic

Both positive and negative social impacts have been identified as potentially occurring because of construction and operation of the project.

Negative impacts include a change to the local area, particularly with changes to scenic, cultural and environmental values and amenity. The influx of workers is associated as a negative impact as it could alter community composition and place pressure on community cohesion and local accommodation options. However, it is also associated as a positive impact for local economic benefits. The most significant positive impacts of the project are associated with employment and business opportunities for the local and regional community.

The two workforce accommodation camp options have a range of social impacts and benefits during the 4–5-year construction phase of the project. The lakeside camp impacts relate to significant amenity changes for a small number of local residents and a larger amount of Lake Lyell visitors. The town camp has moderate amenity impacts for a large number of residents, and major adverse impacts on the State heritage significance of the site, however provides greater opportunity for benefits to local businesses in Lithgow.

Overall, there may be opportunities to enhance the recreation facilities at Lake Lyell for long term community benefit, such as repurposing worker accommodation facilities for social infrastructure or establishing pumped hydro tourism facilities. Opportunities to enhance recreation would be explored as part of a Shared Benefits Program if the project proceeds.

The project is estimated to make up to the following contributions annually to the regional economy during construction and operation:

- $400 million annually in direct and indirect output during construction and $290 million during operation
- 658 direct and indirect jobs annually during construction and 50 jobs during operation.

Mitigation of social impacts is recommended through the development of targeted engagement and management plans relating to workforce management, procurement and Aboriginal participation. A Shared Benefits Program is proposed in addition to recommended mitigation measures to provide opportunities for social and recreational benefits.

Traffic

The main transport route to the project is via the Great Western Highway, Magpie Hollow Road and Sir Thomas Mitchell Drive. The assessment prepared as part of the EIS has identified intersection upgrades and road pavement improvements required to ensure the project complies with the relevant standards. It is proposed to install temporary traffic lights at the Great Western Highway and Magpie Hollow Road intersection, to ensure it continues to function at a standard that meets or exceeds its current performance, subject to ongoing consultation with Transport for NSW.

To mitigate the impacts of the project on local school bus operation, truck drivers will be notified about the presence of school buses and will need to operate under a Traffic Code of Conduct. A Construction Traffic Management Plan will be prepared to minimise risks to the safety of all workers and road users, inclusive of this Code of Conduct. Permits would be obtained for over-size over-mass vehicle movements.

Overall traffic impacts of the project are expected to be manageable with the implementation of the required road and intersection upgrades and suitable management and mitigation measures. These road improvements will also offer long term benefits to road users in the future.

Photograph | Sir Thomas Mitchell Drive

Noise and vibration

The project area is close to several recreational areas including Mount Walker Trig Point, Marrangaroo Campground, Hampton River Road campground and Lake Lyell recreation park. The closest residence to the project area is about 250 m south-east of the southern access road. Existing ambient noise is dominated by rural noise sources and natural elements, with intermittent traffic noise. Existing ambient noise at the Town camp is from urban and commercial activities and road noise. Residences near the Great Western Highway experience existing road traffic noise.

During main works construction, it is predicted that noise will exceed the relevant noise criteria at some locations during all assessment periods (i.e. daytime and nighttime hours). No locations are highly noise affected (i.e. experiencing greater than 75 dB). Up to four receivers may experience a magnitude of change greater than 30 dB from their existing background noise levels, during the morning shoulder period (between 6 am and 7 am).

Any exceedances during the early works construction of the project are anticipated to be of short duration at any location as the road works would progressively move away from that location.

There would be increased traffic noise from increased movements on Sir Thomas Mitchell Drive and Magpie Hollow Road during construction. Given the relatively large distances between construction areas and the nearest residences, vibration impacts during construction are unlikely.

Operation of the project would not result in any exceedances in noise levels, vibration or road traffic noise

Management measures will be implemented through a Construction Noise and Vibration Management Plan to mitigate noise impacts of the project, including a procedure to validate predicted noise levels and amend work practices where needed to reduce noise levels.

Air quality and greenhouse gas

The main impacts to air quality during construction will come from dust from the movement of spoil and diesel fuel use in construction equipment. Despite this, air quality during construction will remain compliant with the NSW Environment Protection Authority's criteria at all locations. During operation, the amount of traffic, fuel use and associated air quality emissions will be substantially lower than during the construction phase and will have a negligible impact.

Greenhouse gas (GHG) emissions will come from fuel use, explosives, vegetation clearing and electricity use. GHG emissions are anticipated to be the greatest during construction and reduce following the first year of operation. GHG emissions during operation would mostly come from electricity use and would decrease as the NEM continues to decarbonise.

Land

Lake Lyell is currently used for recreation and Mount Walker is generally vacant except for some access tracks. More broadly, the area is used for agriculture, urban and residential development, power generation, mining, tourism and forestry.

Up to 137 ha of land will be disturbed as part of the project, which could result in erosion, increasing the deposition of sediment in waterways. In turn, this could decrease water quality. Steep areas may also increase the risk of erosion. While no agricultural activities are undertaken within the construction envelope, some agricultural land would be impacted during construction. Other impacts could include land use conflict because of a change in visual amenity, recreational activities and proximity to project infrastructure.

An assessment of potential land use impacts on Marrangaroo National Park was completed and concluded that direct impacts are not anticipated and potential indirect impacts will be minimised, such that the use and values of the Park are not compromised into the future.

There will be no impacts on flood prone land, irrigated lands, travelling stock routes, mining, quarries or mineral and petroleum rights.

An assessment on land resources and land uses has been undertaken and shows that potential impacts can be appropriately managed. A Rehabilitation Strategy has been developed and provides the principles and concepts to achieve stable landforms and enable the project to co-exist within its existing setting.

Hazards

Potentially hazardous impacts of the project and public health safety risks, including bushfire and dam break risks have been assessed. The project will be designed to comply with asset protection zones, emergency access and safe refuge requirements to protect it from bushfire impacts. The upper reservoir will be constructed in accordance with the safety requirements of the *Dams Safety Regulation 2019*. Through these actions, potential impacts to hazards can be appropriately managed.

The project is not potentially hazardous development or offensive industry. Compliance with the storage and handling requirements of hazardous goods will be included in the project's construction environment management plan (CEMP). There are no risks to the public from electric and magnetic fields as the switchyard and transmission connection will be on private land which is inaccessible to the public.

Climate Change

The risk of climate change impacts on the project is generally low. Measures to mitigate, adapt or build resilience to the identified risks were assessed through a climate risk and adaption workshop. Some of these measures include designing dam components to account for temperature variability and extreme rainfall, the incorporation of the ability to move water within the broader system and geotechnical stability embedded into the dam design.

Remaining risks include delays to construction due to heavy downpours and the increased severity (and possibly frequency) of lightning strikes.

Waste

Waste generated by the project will include a mix of general solid and liquid waste, hazardous waste and special waste. The largest amount of waste will be spoil generated from excavation of the upper reservoir, tunnels and powerhouse cavern. Approximately 97% of this spoil will be reused on site for dam wall construction, site recontouring and road embankments.

Waste management will align with the hierarchy to firstly avoid and reduce waste, then reuse, and then dispose of waste as a last resort. Lake Lyell PHES has applied the hierarchy in the development of its design and construction strategy, with the majority of excavated spoil being reused on-site.

Cumulative impacts

There are a range of renewable, transmission and extractive industry developments currently within the Lithgow region and surrounding areas. The project could potentially contribute to cumulative impacts; however, an assessment has determined that the project's contribution to cumulative impacts in the Lithgow region is expected to be limited and primarily during the construction of the project.

Several mining projects interact with the Coxs River upstream of the project. No adverse cumulative impact on water quality, hydrology or the functioning of the Coxs River–Lake Lyell system is anticipated as a result of the Lake Lyell PHES.

There would be cumulative habitat loss due to vegetation clearing needed for construction of other projects with this project. All projects would have biodiversity offsetting requirements to compensate for these impacts.

Cumulative impacts are mainly associated with potential temporary strain on housing and short-term accommodation during the peak of construction; however, the proposed accommodation camp will reduce this pressure on local housing and services. Cumulative amenity (visual) and traffic impacts are likely to be minor due to low population density and distances between different projects.

Cumulative social and economic benefits would come from increased employment and contracting opportunities.

Photograph | Magpie Hollow Road

Environmental Impact Statement – Summary

Early works impacts

Early works impacts

Early works is the first stage of construction and will focus on establishing access and preparing the site for main construction. The impacts relating to early works are summarised in the following sections. An Early Works Environment Management Plan is proposed to mitigate and manage impacts associated with early works construction.

Land and water

During early works, Lake Lyell will be temporarily lowered by up to 3.2 m by temporary relocation of one or more fusegates (a spillway control device) at Lilyvale Dam. During this, maintenance works required on the fusegates will be carried out. Removal of the fusegates would result in lower reservoir flood levels, should a flood event occur. The fusegates will be reinstated and returned to permanent operation once construction is complete.

The early works disturbance footprint covers an area of around 36 ha (including the Lakeside camp), as shown on **Figure 15**. Of this, about 9 ha is existing roads or existing cleared areas. The remaining 27 ha contains vegetation that will be cleared. Erosion and sediment control measures are proposed to manage the risk of sedimentation, as part of the broader construction water management system.

The stormwater management system will manage runoff and sedimentation from areas disturbed that have a low risk of producing contaminated water such as roads and earthworks areas. It is expected that the stormwater system discharges (controlled discharges and overflows) may have elevated suspended solids but are expected to have water quality that is similar to minimal harm criteria established for the project.

Water needed during early works for dust suppression, geotechnical drilling and for use in concrete batching and other processes will be sourced via a water access licence.

Potential changes to water resources during early works will result in negligible change to the inflow of water into the lake. No material changes to water quality area expected in the Farmers Creek arm or other parts of the lake. There will also be minimal change to the streamflow or water quality in the Coxs River downstream of Lake Lyell as existing releases will be maintained.

During early works, geotechnical investigations may intercept with groundwater however no chemicals are used that would result in impacts to groundwater quality. It is not expected that any watertable drawdown will occur during early works.

Biodiversity

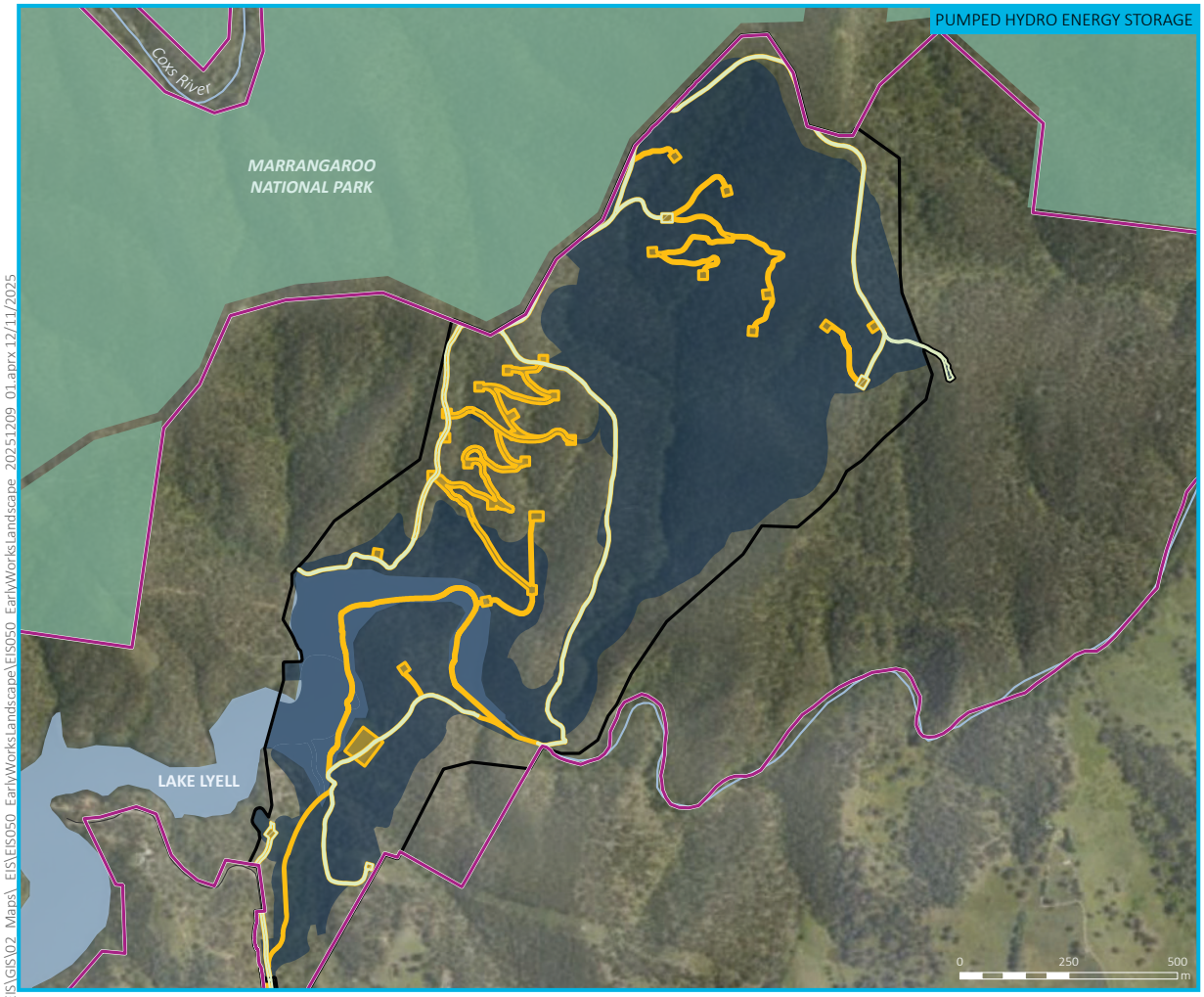
Early works will involve the clearing of vegetation for new access tracks, drill pads, external road upgrades and the establishment of the early works compound and accommodation camp. This will result in the direct loss of about 27 ha of native vegetation which also provides habitat for threatened species.

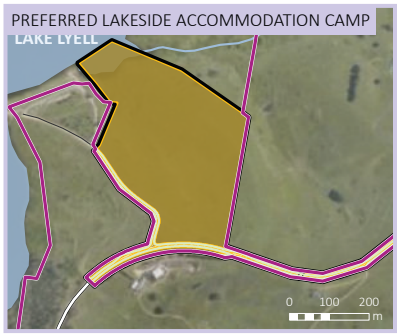
The lowering of the lake for construction has the potential to strand fish and platypus. Monitoring of platypus during early works and lowering the lake outside of the platypus breeding season (i.e. avoiding October to March) is recommended to reduce risks. Any platypus detected will be re-located to Farmers Creek, outside of the lake impact areas.

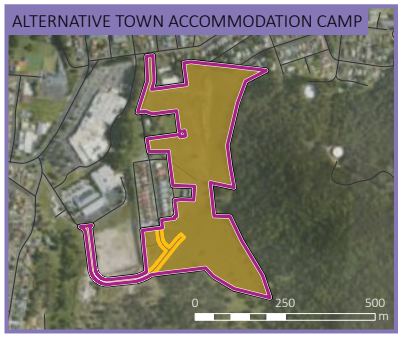
Offsets are required for direct impacts to biodiversity and would be sought by LLP. A total of 416 ecosystem credits and 1,188 species credits are needed for the activities undertaken during early works. No loss of key fish habitat would occur during early works therefore offsets will not be required until main works construction.

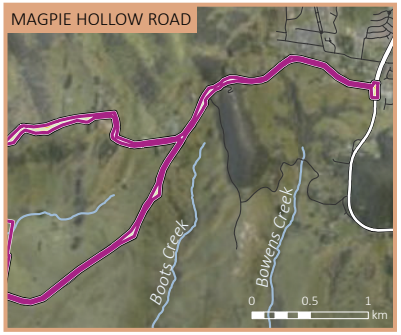
Mitigation, management and monitoring of biodiversity and aquatic fauna during early works will be incorporated into the Early Works Environment Management Plan.

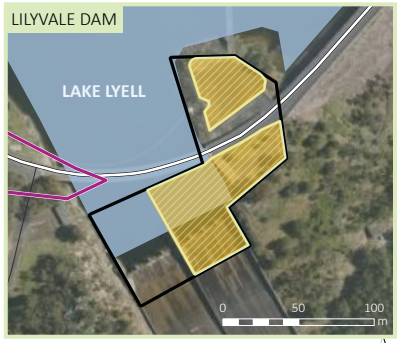
Photograph | Geotechnical investigations access works

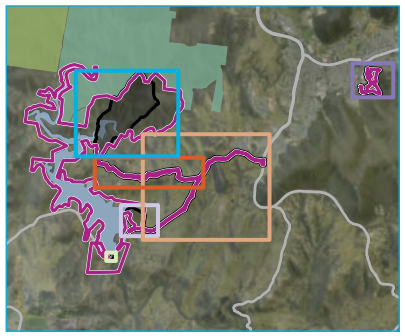












KEY

- Project area
- Construction envelope (offset for clarity)
- Existing disturbance
- Early works disturbance footprint
- Main works disturbance footprint

Existing environment

- Major road
- Minor road
- Named watercourse
- Named waterbody
- NPWS reserve
- State forest

GDA2020 MGA Zone 56

N

Early works disturbance footprint

Lake Lyell PHES
Environmental Impact Statement- Summary
Figure 15

EMM
creating opportunities

Source: EMM (2025); Lake Lyell Project Pty Ltd (2025); DCSSS (2024); GA (2009); MetroMap (2025)

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Heritage impacts

Of the Aboriginal sites/places within the project area, early works on the main PHES site would intersect two areas of high significance. These two sites/places are proposed for archaeological mitigation activities, such as salvage excavation and the development of an Archaeological Research Design. Apart from these two areas, early works would be undertaken in areas where cultural materials are not expected to be encountered, or are characterised as low significance.

Due to the presence of these two sites/places, early works may proceed in advance of main works under direction of a heritage specialist and/or Registered Aboriginal Party. Where cultural materials are encountered, they would be managed in accordance with an unexpected finds process.

No historical heritage items of significance were identified on the main PHES site. However, the Town camp is located within an area of historical heritage. The archaeological potential within the footprint of the Town camp ranges from low to high, with each zone having specific management requirements before works can proceed. Early works would result in adverse impacts to the fabric, setting and the conservation area, representing a major adverse impact to State significant historical archaeology through disturbance and potential removal of relics, diminishing research potential. The development of specific management measures for the final design would be required in accordance with the Lithgow Development Control Plan and in consultation with Heritage NSW.

Landscape and visual amenity

Existing native vegetation will be cleared, involving the use of heavy machinery for earthworks and transport. This will result in visual impacts that are considered temporary even though it may take some years beyond the construction period to be fully reinstated. Vehicle movements (which will occur daily) may be visible along access tracks in some locations. Dust caused by activities during early works may be visible at times and will have a temporary visual impact.

Construction of the accommodation camp will be of a much smaller scale than for the main project and will have a much smaller visual impact. Construction activities that will have a visual impact during early works include the use of excavators and other machinery for earthworks and site preparation and additional truck deliveries.

Lighting may be used to support early works activities and for security. Due to the undulating topography and existing vegetation, impacts from this is expected to be negligible.

Air quality

The main impact on air quality from early works is dust, generated from construction vehicles along unpaved roads, loading and unloading of construction materials and stockpiling, and wind erosion from stockpiles and exposed surfaces. Diesel fuel combustion from construction plant, equipment and trucks are the main GHG source during early works. Early works is expected to remain compliant with the relevant EPA criteria at all locations.

Noise and vibration

During early works, construction noise levels are predicted to be above the relevant noise management levels at 49 locations during standard construction hours. However, they are not expected to exceed the highly noise affected noise level at any assessment location. Outside of standard construction hours, noise is predicted to be above the relevant noise management levels at 60 locations during the day, seven locations in the evening and eight locations at night-time. Predicted noise levels are expected to satisfy the relevant sleep disturbance screening criteria except for three locations during the nighttime period.

Road traffic noise levels are predicted to increase from existing levels as a result of upgrade works on both Magpie Hollow Road and Sir Thomas Mitchell Drive. These traffic noise increases result in levels above the relevant assessment criteria and hence feasible and reasonable measures must be considered, in the context of the temporary nature of the works.

The Town camp is in close proximity to sensitive (residential) receivers. Noise impacts are expected to be greatest during establishment of the camp, with worst-affected receivers located on Silcock Street predicted to experience construction noise levels up to 71 dB during the daytime. No night-time works would take place as part of construction of the Town camp, therefore, no assessment of sleep disturbance is required.

Traffic

Early works will complete road upgrades needed to facilitate traffic during main construction. Upgrades will take place on Magpie Hollow Road and Sir Thomas Mitchell Drive to facilitate heavy vehicle access, involving:

- services investigation and relocation works
- drainage works
- localised vegetation clearing where required
- road widening and surface works.

Social impacts

Social impacts likely to occur during the early works phase include changes to way of life and rural lifestyle values caused by amenity impacts, impacts on impacts on scenic and environmental values, impacts to heritage items and sites, reduced access for nearby neighbours due to increased traffic and road upgrade works, and community safety and wellbeing risks.

Impacts on tourism and recreation have been assessed and the following impacts could be experienced as a result of early works:

- construction of the Lakeside accommodation camp may negatively affect the perceptions of serenity and connection to the environment, and may subsequently impact other nearby accommodation providers that rely on this serenity
- increased construction traffic could deter visitation to recreational areas
- change in amenity (noise, dust, visual) from early works
- loss of biodiversity – changes to terrestrial and aquatic ecology could affect environmental values which attract some visitors to the region.

If the Town Camp is chosen, impacts of reduced residential amenity in the local area are also predicted.

Social benefits identified that could be provided from the early works stage could include employment and training opportunities for residents in the regional area and business opportunities for residents in the regional area.

Mitigation for social impacts would be through the implementation of management measures identified for amenity and biodiversity impacts. The Shared Benefits Program will also provide opportunities for mitigation of impacts and enhancement of benefits targeting local employment and procurement.

Environmental Impact Statement – Summary

Justification and evaluation for the project

Justification and evaluation of the project

Objectives

The project aims to respond to the need to transition away from coal fired power generation and supports the NSW and Commonwealth Government's plans for the provision of reliable and clean electricity. With the ability to generate at up to 440 MW and to store up to 3,080 MWhrs, the project would provide meaningful contribution to the remaining capacity needed to meet renewable energy targets.

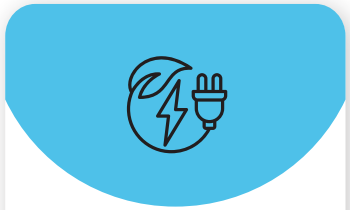
This need has been recognised by the Minister with the project being declared CSSI, as it is essential for economic, environmental or social reasons.

The project was developed to satisfy the following objectives:

Strategic alignment

Electricity within the NEM has traditionally been dependent on coal-fired power plants, however two-thirds of the NEM's coal fleet would retire by 2035 and all by 2049, with only Queensland coal plants operating from 2040. With 120 GW of grid-scale wind and solar needed to replace coal, the NEM is forecast to need 27 GW of storage in 2030, rising to 33 GW in 2050, including a requirement for 6 GW of pumped hydro storage.

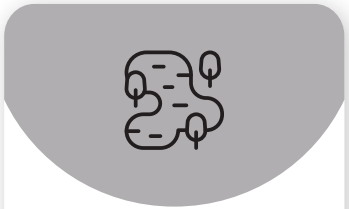
As the energy market transitions to more variable renewable energy generation, PHES plays an important role in both storing variable renewable energy when supply is greater than demand to enable a "time shift" in electricity supply, as well as firming variable renewable energy and synchronous inertia to help maintain grid stability. Lake Lyell PHES is ideally placed to meet the urgent and critical need to deliver 6 GW of pumped hydro storage in support of the energy transition as the NEM moves from coal-fired to variable renewable energy technologies.



Deliver a reliable energy system for the future and contribute to Australia's goal to achieve net zero emissions by 2050

Support a more affordable, secure and diverse NEM for NSW electricity consumers

Plan and design the pumped hydro facility with the aim of avoiding or mitigating environmental impacts wherever possible



Re-purpose existing power generation assets for long term support of NSW energy storage needs while ensuring the project can coexist with lake users and can create wider benefits for the Lithgow community

Work with the local community to provide meaningful opportunities to participate in the project's planning, development and the creation of a broad package of shared benefits for the region

Consideration of community views

Community engagement for the EIS began in 2021 and set out to understand community views and incorporate feedback into the project's design and assessment where possible. A key refinement to the project in response to early community feedback is the relocation of the upper reservoir from near the peak of Mount Walker to a site behind the southern ridge, and nesting of the facility into the terrain to avoid high visibility impacts from Lithgow and surrounding suburbs. More recent engagement (in 2024 and 2025) has shown an increase in positive sentiment for the project, noting that moving the upper reservoir alleviates project impacts to a large number of people.

Most of the local community will not be directly affected by the physical impacts of the project, and this has generally been reflected in the feedback received from engagement activities conducted for the project with positive sentiment. This is different to those who are likely to be physically impacted or disrupted by the project's construction or operation, who have expressed their concerns or opposition to the project.

The key concerns raised by the community include, but are not limited to, long term visual impacts, impacts on local biodiversity and platypus population, Aboriginal cultural heritage impacts, construction noise and traffic, changes to recreational use of the lake, and concern about integration of the workforce with the community and associated social impacts. There is also a strong view by those most impacted that the project is not suitable in its current location. There has also been apathy towards the community engagement for the project and cite a lack of information being provided to understand the impacts and management of the project.

There has also been emerging support for the project from the local business community who can anticipate the regional economic benefit and employment opportunities the project can bring.

The EIS has considered these concerns and provided detailed technical assessments that articulate the potential impacts of the project and how they will be mitigated. Community members have also been invited to participate in key studies, such as the platypus survey, to provide transparency.

A series of community workshops were also held to help identify possible community benefit programs that could be developed should the project proceed. This has resulted in a framework for the Shared Benefits Program provided in the EIS. Further detail on how community views have been incorporated into the EIS is documented in the Engagement and Consultation Report (Appendix D of the EIS).

Efforts to avoid and minimise impacts

The project has been developed to avoid and minimise impacts where reasonable and feasible to do so and has been informed by numerous design and technical specialist studies. Examples of avoidance measures include the selection of a rockfill embankment dam within a gully to maximise re-use and minimise the need for disposal or transport of excavated material off site, using existing access roads where possible to reduce overall disturbance needed for the project, locating the powerhouse and waterways underground to minimise visual impacts and disturbance at the surface, and development of operational principles that allow for continued public recreation and access to Lake Lyell.

Biophysical, social and economic considerations

The project has been assessed with regard to biophysical, social and economic considerations, and taken into account the principles of ecologically sustainable development. Detailed research, field investigation and modelling (where required) has been completed to inform technical studies to ensure a level of certainty has been achieved and to establish a good understanding of the existing environment.

The key residual biophysical impacts that are unable to be avoidable are:

- Loss of approximately 130 ha of native vegetation in varying condition (of which 102 ha requires offset), and loss of threatened species habitat including breeding habitat for Gang-gang Cockatoo and Glossy Black Cockatoo. Assessments of Significance for threatened and migratory EPBC Act listed species concluded that the project is likely to have a significant impact on the Gang-gang Cockatoo, Glossy Black Cockatoo and Koala.
- Loss of approximately 11.88 ha of key fish habitat and loss of macroinvertebrate assemblages within Lake Lyell. This includes impact to platypus burrowing and feeding habitat.
- Erosion and sedimentation, controlled discharges and overflows of stormwater, and controlled discharge of treated contaminated water, however the water management system and erosion and sediment control plans will mitigate impacts and water quality discharged to the environment is expected to be similar to minimal harm criteria.
- Loss of both native and introduced fish species through the PHES intake. The pumping and dispersion of water from the intake structure also has potential to result in some scouring of the shoreline, which could be maintained and managed by shoreline armouring, if required.
- Stormwater runoff from infrastructure areas and potential for seepage from PSEs during operation and/or dilution with lake water. Active management (treatment) will be carried out where required based on the results of proposed monitoring of water quality against minimal harm criteria.
- PHES will fluctuate water levels and promote mixing and destratification of the water column in Lake Lyell (with anticipated beneficial water quality impacts).

Social impacts are predicted due to the influx of workers for construction, visual impacts associated with the upper reservoir, amenity impacts (dust, noise and traffic), and uncertainty on the ongoing recreational use of Lake Lyell and Mount Walker. Management of these impacts would be through the implementation of relevant controls specified in the relevant technical assessments as well as a suite of management plans focused on construction environmental management, procurement strategies and workforce management.

Residences and businesses located near to the project and that are expected to be impacted will be offered compensation through the process outlined in the project's Neighbour Agreement Guide, where eligible. In particular, it aims to compensate for long term visual impacts and highly intrusive noise impacts during construction.

Key social and economic benefits identified include continued recreational access to Lake Lyell and economic and employment opportunities for residents in the regional area, including training and business opportunities. These opportunities will be enhanced through setting targets for local procurement and employment, working with Lithgow City Council, education providers and local suppliers, and implementation of the Shared Benefits Program.

A direct and indirect contribution to the regional economy is also expected in the order of $400 million annually during construction and $72 million during operation

Other impacts identified in the EIS such as bushfire and contamination risks, waste generation, and amenity impacts due to dust and traffic generation, are considered manageable through standard mitigation measures. The project is considered resilient to climate change however adaptation measures have been explored.

Cumulative impacts of the project with other future projects are related to existing mining projects and approved and/or proposed renewable energy projects within the Lithgow LGA, primarily due to cumulative biodiversity, water, social or potential visual impacts. When considered collectively, the combined effect of cumulative impacts on key matters is expected to be minor, short-term and manageable. Long term impacts associated with the loss of biodiversity will be offset, similar to other projects.

Uncertainties and how they will be addressed

The EIS has been prepared on the basis of a concept design and using available information at the time. The detailed design process will involve the appointment of a construction contractor, and details of the project may change or be refined. For example, this may include changes to the orientation, arrangement or depth of the underground powerhouse cavern, or re-alignment of internal roads.

Other uncertainties in the design or mitigation would be resolved through ongoing and future consultation. This includes with Lithgow City Council and Transport for NSW for specifications and upgrade requirements of existing external roads and intersections.

Uncertainties in assessment have been limited or resolved through precautionary principle, such as (but not limited to):

- where the presence of a threatened species has not been accurately verified it has been assumed to be present,
- mitigation and monitoring measures have been applied to allow for an adaptive management approach as impacts are uncertain, such as platypus response to fluctuating water levels
- conservative model assumptions to provide a worst-case scenario with regard to modelling of air quality, noise and traffic impacts.

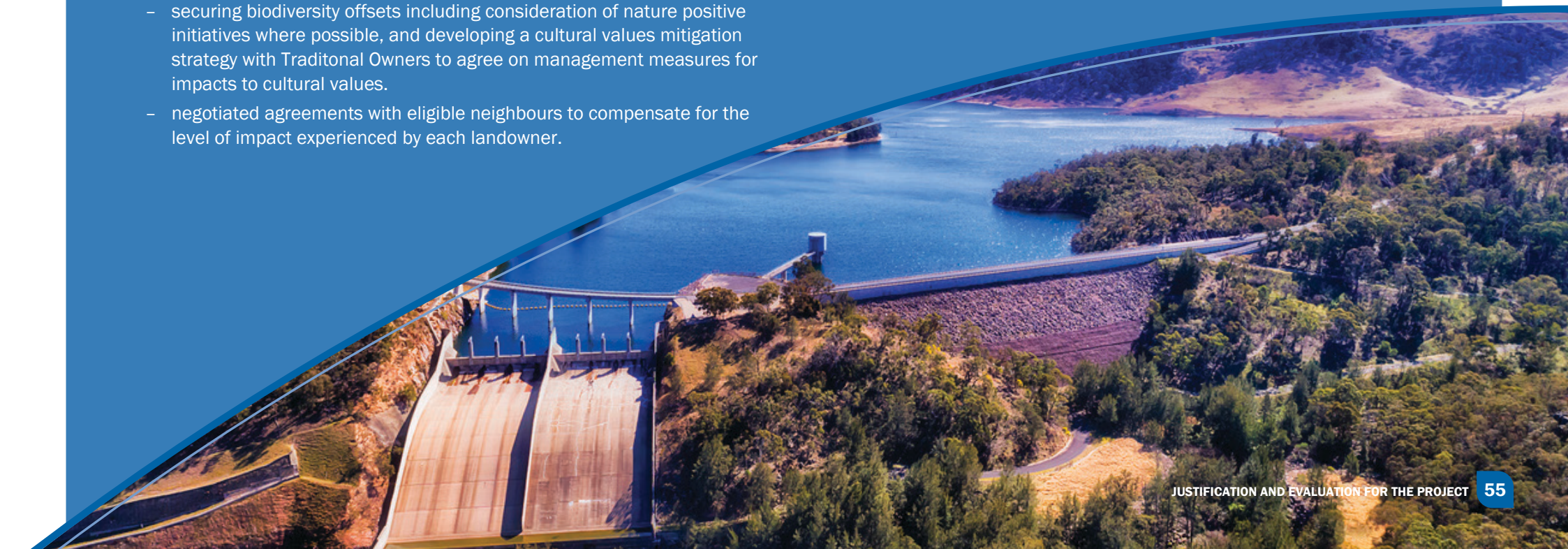
Where possible, the EIS has allowed for some flexibility by following a conservative assessment. Any deviations from the project as described in the EIS would be subject to a consistency assessment and if required, subject to further environmental assessment and approval process.

Evaluation and conclusion

The evaluation of the project as a whole, taking into account the principles of ecologically sustainable development and the biophysical, social and economic impacts of the project, is summarised as:

- The project supports and will contribute to State and Commonwealth emissions reductions policies and commitments for a more affordable, secure and diverse NEM by providing crucial medium-duration energy storage, leading to improved energy security for NSW electricity consumers.
- The project provides certainty in the ongoing, long-term use of Lake Lyell, including continued public access for recreation.
- The project has incorporated avoidance and minimisation measures where possible. Residual project risks have been identified and can be managed through implementation of a combination of project-specific and standard mitigation measures. Unavoidable impacts will be managed through bespoke actions including:
  - securing biodiversity offsets including consideration of nature positive initiatives where possible, and developing a cultural values mitigation strategy with Traditonal Owners to agree on management measures for impacts to cultural values.
  - negotiated agreements with eligible neighbours to compensate for the level of impact experienced by each landowner.
- The project will provide direct and indirect economic benefits, including numerous employment opportunities and increased demand for local goods and services. These benefits are substantial during construction and opportunities to extend benefits through operation of the project form part of the Shared Benefits Program proposed by the project.

On balance, it is considered that the project can deliver considerable positive outcomes that are aligned to decarbonising the NEM, outweigh the mitigated project impacts. The project is therefore considered justified and in the public interest.



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