Department of Planning, Housing and Infrastructure

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Silver City Energy Storage System

State Significant Development Assessment Report (SSD-47065463)

February 2025

Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past and present through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's assessment and evaluation of the State significant development (SSD) application for the Silver City Energy Storage System project, located three kilometres northeast of Broken Hill, lodged by A-CAES NSW Pty Ltd (owned by Hydrostor Australia Holdings Pty Ltd). The report includes:

- an explanation of why the project is considered SSD and who the consent authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- a recommendation to the decision-maker, along with the reasons for the recommendation, to assist them in making an informed decision about whether development consent for the project should be granted and any conditions that should be imposed.

Executive Summary

A-CAES NSW Pty Ltd, owned by Hydrostor Australia Holdings Pty Ltd (Hydrostor), proposes to develop the Silver City Energy Storage System (SCESS) project. The project includes a 200 megawatt (MW) / 1,600 MW-hour (MWh) advanced compressed air energy storage facility (referred to as the Silver City Energy Storage facility (SCES facility)), a 16 kilometre transmission line, and associated infrastructure in the Broken Hill City local government area (LGA) and the Far West Unincorporated Area of NSW.

The Department exhibited the Environmental Impact Statement and received five submissions from the general public, including four objections and one submission supporting the project. Fifteen government agencies and Broken Hill City Council (Council) provided advice.

The SCES facility is located within land that is zoned SP1 (mining) under the *Broken Hill Local Environmental Plan* (LEP) *2013*. While the SCES facility is situated on two mining leases held by Perilya Broken Hill Limited, it is located on undeveloped land within the mine site. The transmission line runs from the SCES facility, around South Broken Hill and connects to the existing Transgrid substation on the western side of Broken Hill, through land that is zoned Special Activities – SP1 (mining), Rural Landscape – RU2, Private Recreation – RE2, Infrastructure – SP2 (water supply systems), Environmental Conservation – C2, and General Industrial – E4 under the LEP. Overall, the Department considers the site to be suitable for the project.

The Department has undertaken a comprehensive assessment of the full range of potential environmental impacts, including biodiversity, heritage, noise and vibration, landscape character and visual (including lighting), air quality (including greenhouse gas emissions), traffic and transport, land use, hazards and safety, water, waste, and cumulative impacts. The Department has also considered the socio-economic impacts and benefits associated with the project.

The Department considers the project would not result in any significant impacts on the local community or the environment, and any residual impacts would be minor and could be managed through conditions.

The project would provide flow-on benefits to the local community, including up to 400 construction jobs, 26 operational jobs, a capital investment of $638 million and contributions to Council in the order of $3.1 million for community enhancement projects through a Voluntary Planning Agreement.

The Department considers the project would not result in any significant impacts on the local community or the environment, and any residual impacts can be managed through the implementation of the conditions. The Department considers that the project would result in benefits to the State of NSW and the local community and is therefore in the public interest and approvable.

Contents

1 Project

A-CAES NSW Pty Ltd, owned by Hydrostor Australia Holdings Pty Ltd (Hydrostor) (the Applicant), proposes to develop the Silver City Energy Storage System (SCESS) (the project), a State significant development (SSD) comprising the Silver City Energy Storage facility and grid connection. The project is located on the Potosi Mine and Flying Doctor Deposit, approximately three kilometres (km) north east of Broken Hill, in the Broken Hill City local government area (LGA) and the Far West Unincorporated Area of NSW (see **Figure 1-1**).

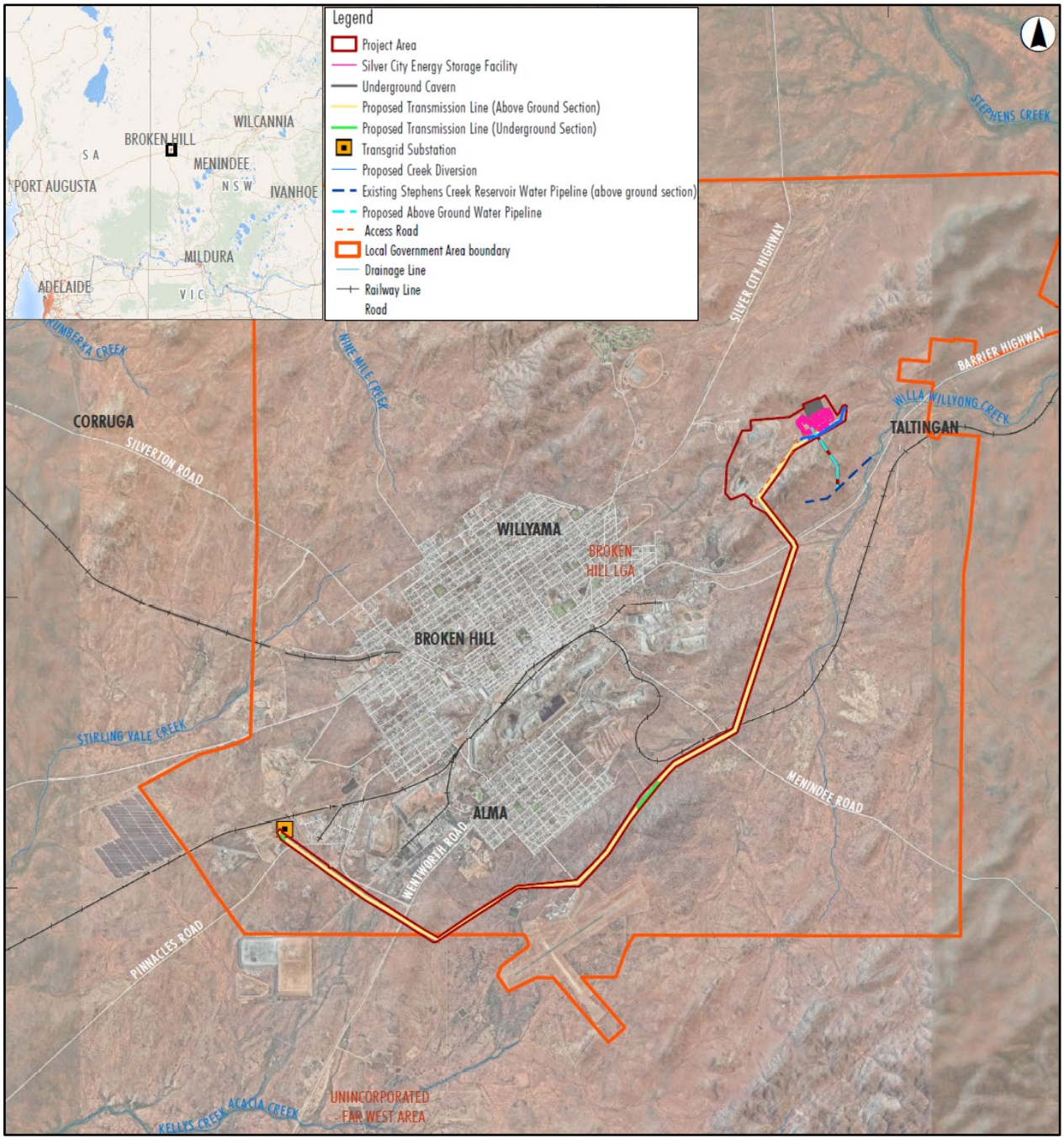


Figure 1-1 | Regional context map

The project would include a 200 megawatt (MW) / 1,600 MW-hour (MWh) advanced compressed air energy storage facility and ancillary works (referred to as the SCES facility). The project would also include the construction of a 16 km 220 kilovolt (kV) electricity transmission line connecting the facility to an existing Transgrid substation.

Construction of the project would occur over approximately 36 to 48 months. Construction works for the transmission line would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm. Construction works for the SCES facility would be undertaken Monday to Saturday, between 7 am and 6 pm. These hours may be extended, subject to meeting post-approval requirements. Operation of the project would be 24 hours per day, 7 days per week.

The SCES facility would be accessed via Silver Peak Road, which is the existing Potosi Mine access road, via the Barrier Highway. An existing access track within the Potosi Mine site would be upgraded from Silver Peak Road to the SCES facility. Key access points for construction of the transmission line would be Silver Peak Road, Menindee Road, Pro Hart Way, Picton Street, Kanandah Road, Pinnacles Road and a new, private access off the Silver City Highway. Established access tracks between the road network and the transmission line corridor would be used to access the transmission line during construction, as shown in **Figure 1-4**.

The project would allow for the upgrading and decommissioning of equipment over time. The expected operational life of the project is approximately 50 years, with the possibility to extend.

The key components of the project are summarised in **Table 1**, shown in **Figure 1-2** and **1-3** and described in detail in the Environmental Impact Statement (EIS) and supporting documentation (see **Appendix A**, **D** and **E**).

Table 1 | Main Components of the Project

Aspect	Description
Project summary	The project includes: • a compressed air energy storage system with up to 200 MW / 1,600 MWh capacity, including: – two 100 MW turbine/generator/compressor trains; – ancillary infrastructure including a switchyard, office, warehouse, guardhouse and utilities (fuel and water storage); – a 300 megalitre (ML) above ground water reservoir; – a 1 km above ground water pipeline, connecting the project's water reservoir to the existing Stephens Creek Pipeline; • a 275,000 cubic metre (m^3) underground cavern with air and water shafts to connect to the surface; and • an approximately 16 km 220 kV transmission line (approximately 15.4 km overhead and approximately 0.6 km underground).

Aspect	Description
Project location	• The SCES facility is located at Potosi Mine and Flying Doctor Deposit, Silver Peak Rd, Broken Hill. • The 16 km transmission line runs from the south of Potosi Mine, passes between South Broken Hill and Broken Hill airport, and connects to an existing Transgrid substation on Pinnacles Road. • The project is comprised of 30 cadastral lots for the SCES facility and along the transmission line, which are summarised in Appendix 1 of the EIS.
Development footprint	• The project area is approximately 310 ha (SCES facility - 155 ha, transmission line corridor - 155 ha). • The disturbance area is approximately 58 ha (SCES facility - 39 ha, transmission line corridor - 19 ha).
Access routes	• Heavy vehicles would use the following routes to travel to the SCES facility: – From the east: Barrier Highway and Silver Peak Road; – From the west: Barrier Highway / Rakow Street, Creedon Street, Gaffney Street, South Road, Crystal Street, Menindee Road, Argent Street, Barrier Highway and Silver Peak Road; or – From the south: Silver City Highway, Kanandah Road, Ryan Street, Creedon Street, Gaffney Street, South Road, Crystal Street, Menindee Road, Argent Street, Barrier Highway and Silver Peak Road. • Heavy vehicles requiring escort would travel to the site via Barrier Highway (west of the Broken Hill urban area), Rakow Street, Creedon Street, Gaffney Street, South Road, Crystal Street, Menindee Road and Argent Street to Barrier Highway (east of the Broken Hill urban area) and Silver Peak Road. • Vehicles accessing the transmission line for construction would use the following roads to access private access tracks that lead to the transmission line corridor: Silver Peak Road, Menindee Road, Pro Hart Way, Picton Street, Kanandah Road, Pinnacles Road and a new, private access off the Silver City Highway. Pre-established access tracks between the road network and the transmission line corridor would be used. Access routes are shown in **Figure 1-4**.
Road upgrades	A rural property access would be constructed off the Silver City Highway to provide access to the transmission line corridor.
Construction	• Construction would last approximately 3 to 4 years. • Construction hours for the SCES facility would be limited to Monday to Saturday, 7 am to 6 pm, with the following exceptions: – subject to Hydrostor providing further justification, undertaking consultation and further noise impact assessment, construction hours may be varied on a case-by-case or activity specific basis; and – construction works that are no more than 5 dB above Rating Background Level (RBL) at any residence (as defined by the Noise Policy for Industry (NPfI)), in accordance with the *Interim Construction Noise Guideline* (DECC, 2009) (ICNG) and no more than the Noise Management Levels (NMLs) specified in Table 3 of the ICNG at other sensitive land uses are permitted outside of the SCES facility construction hours.

Aspect	Description
	• For construction of the transmission line, hours would be limited to Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm.
Operation	• The expected operational life of the project is approximately 50 years. • Infrastructure upgrades may extend the operational life.
Decommissioning and rehabilitation	• The project includes decommissioning at the end of project life, which would involve: – decommissioning and removal of all above ground infrastructure and decommissioning and sealing of all below ground infrastructure at the SCES facility; – decommissioning and removal of the transmission line infrastructure; and – returning the site to the pre-existing use.
Hours of operation	The SCES facility would operate 24 hours per day, seven days per week.
Employment	Up to 400 FTE jobs during construction and up to 26 FTE jobs during operation.
Estimated development cost	$638 million
Voluntary Planning Agreement	A total contribution of $3.1 million (CPI adjusted), to be paid in two contributions with the first $1.6 million paid within two years of project operations commencement, and the remainder paid within 5 years of project operations commencement, for community benefits, as agreed with Broken Hill City Council (Council).

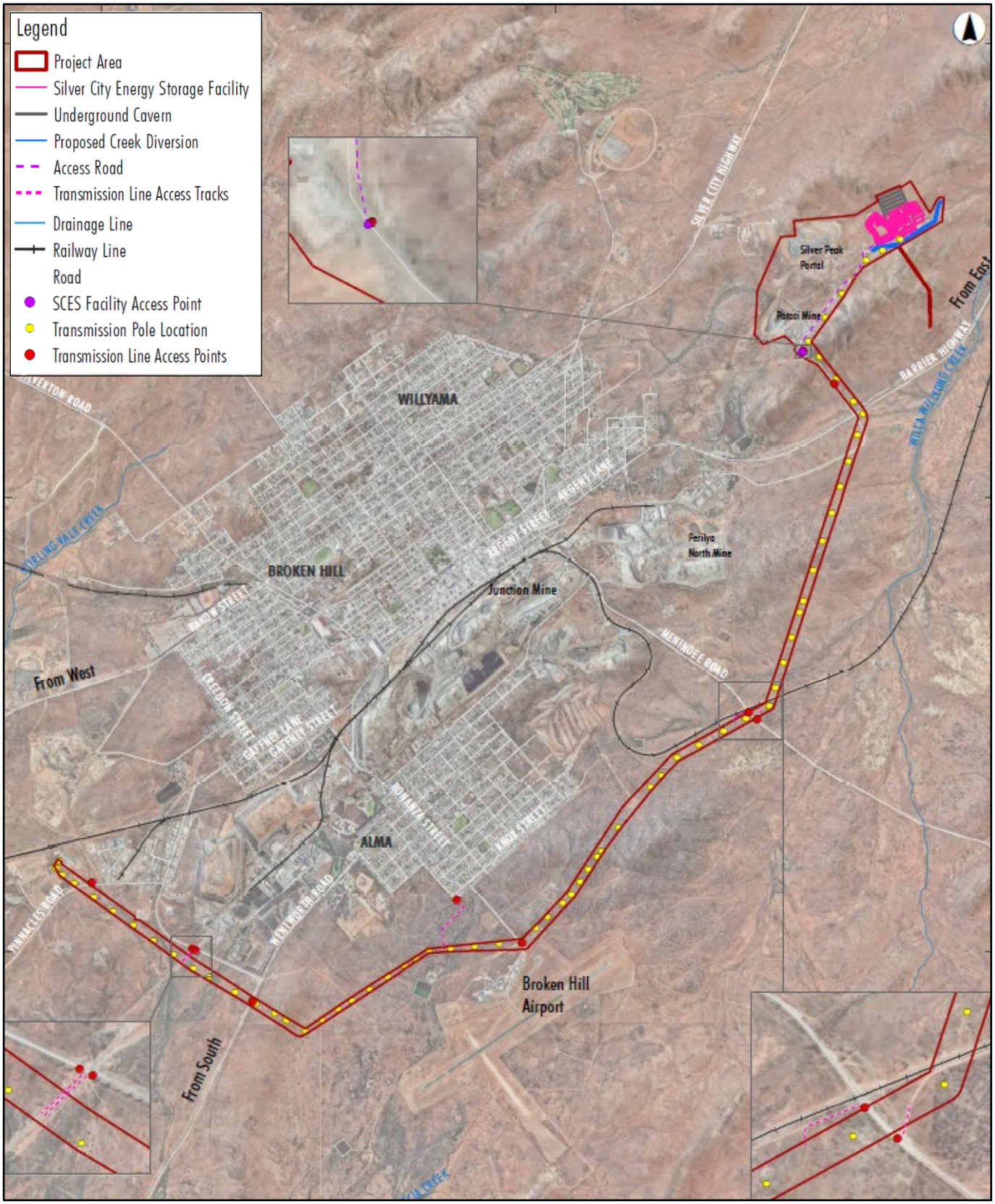


Figure 1-2 | Indicative development plan

Figure 1-3 | Indicative development plan – SCES Facility

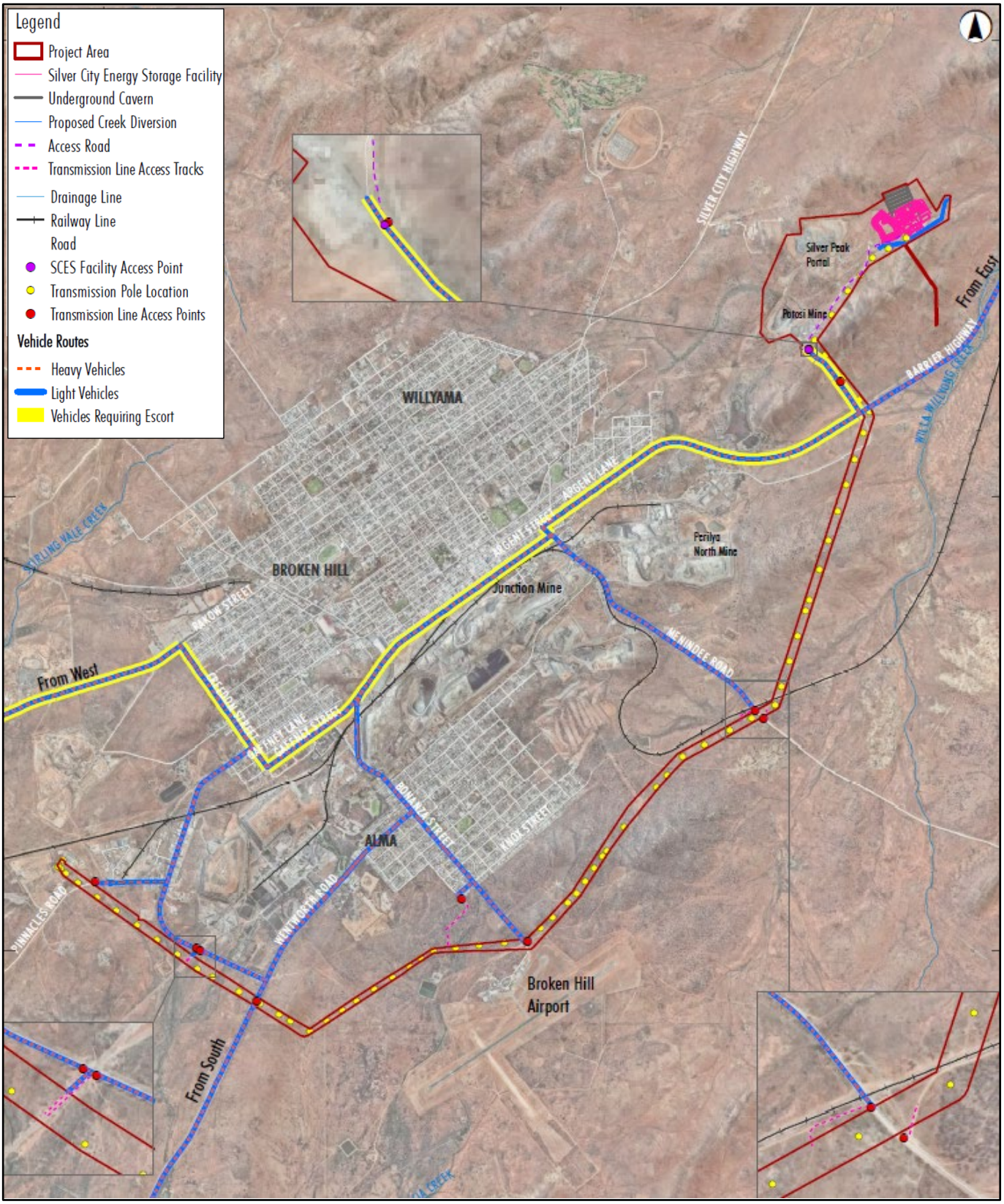


Figure 1-4 | Access routes

1.1 A-CAES Technology

Advanced compressed air energy storage (A-CAES) technology utilises water and compressed air to provide long-duration grid-scale energy storage. A visual overview of the SCES facility is provided in Figure 1-5.

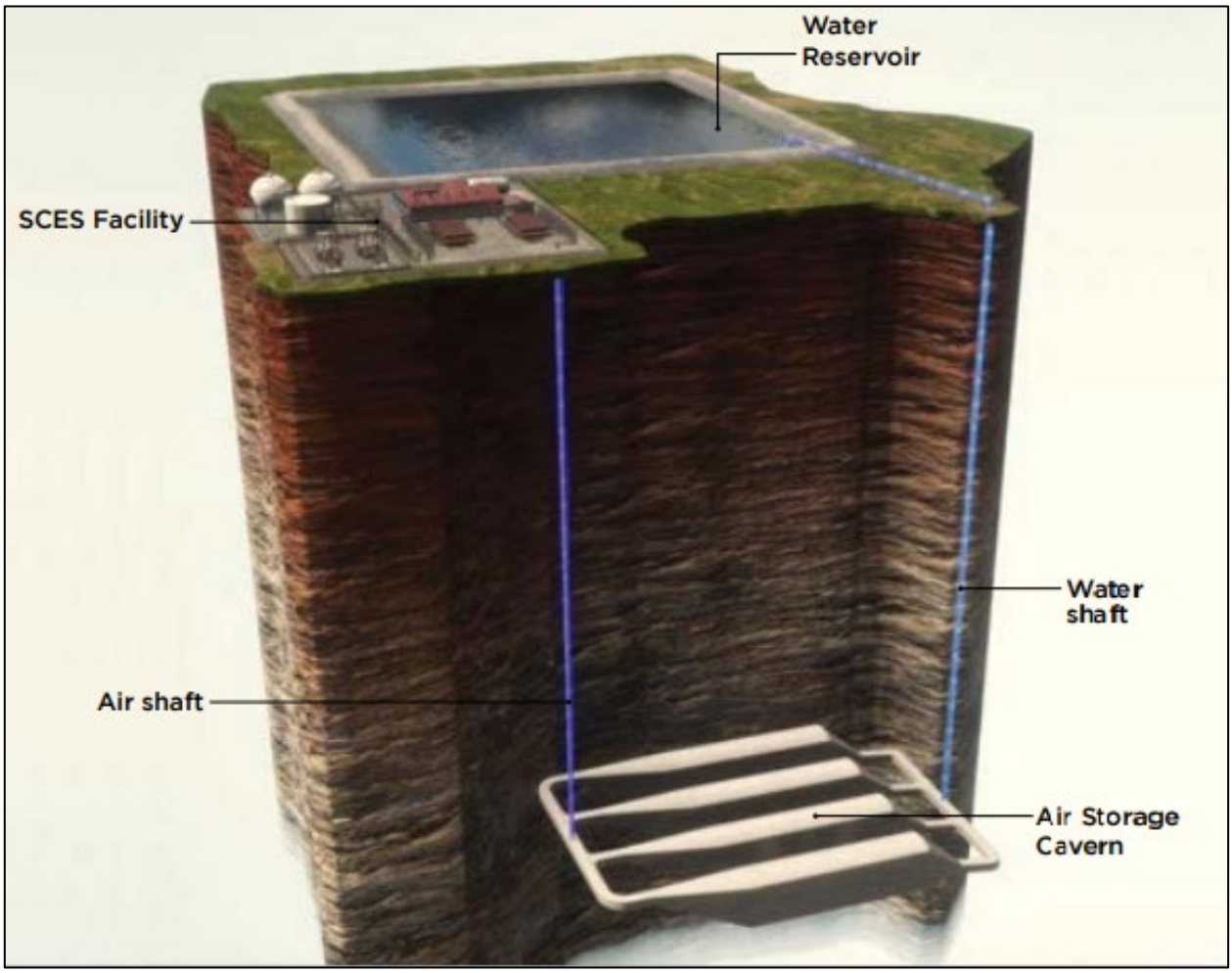


Figure 1-5 | SCES facility

To charge the system, electricity is drawn from the grid when it is in abundance or in low demand to compress air from the atmosphere. Heat from the process of compressing the air is recovered and stored separately in thermal storage tanks at the surface. The compressed air is injected into a deep underground storage cavern via an air shaft. The air remains in the cavern, sealed under pressure by the weight of water in a connecting water shaft and a water storage reservoir at the surface.

When energy is in demand, the discharge cycle is initiated to generate electricity. The compressed air stored in the cavern is released, which allows the water to re-flood the underground cavern. The high-pressure air exiting the cavern is re-heated using the heat stored during the charge cycle, this air is then used to drive the air expansion turbine generators, converting the energy back to electricity and transmitting it into the grid.

2 Strategic context

2.1 Local Context

The project (SCES facility and transmission line) is located on approximately 310 hectares (ha) of land which comprises 30 freehold and Crown Land lots.

The SCES facility is located on two mining leases held by Perilya Broken Hill Limited (Perilya), both subject to separate development consents and management plans. These include:

- the operational Potosi Mine which is subject to the following approvals:
  - Development Consent (DA) 448/2004
  - Potosi Mining Operations Plan (MOP) 801/06
  - Rehabilitation Management Plan (RMP) 801/08; and
  - Environmental Protection License (EPL) 2683; and
- the mining operations for the Flying Doctor Deposit, which is subject to DA 336/2008.

Further information on the interaction of the project with these approved projects is provided as follows:

- The Potosi Mine site comprises Crown land and freehold land owned by Perilya. Hydrostor has a commitment with Perilya and Crown Lands regarding the construction and operational life of the project.
- No change is proposed to the existing Potosi mining operations for the project, however the DA applicable to the existing mining operation would require minor modification to accommodate the project. It is noted that, based on current production rates at the Potosi Mine and the extent of known resources, mining operations are indicated to be completed in 2024, unless extended due to the identification of further resources. The Department has conditioned the project to manage the potential continuation of mining at the Potosi mine site during construction and operation of the project. The Department has discussed the potential modification with the Council, and they have indicated that they are open to a modification request.
- During construction of the project, activities that would occur under the existing Potosi Mine approvals include crushing of material, use of the concrete batching plant, use of the dewatering and water treatment plant, placement of surplus or unsuitable material to rehabilitate the Potosi Mine and use of the access and vent shafts. These activities do not form part of the project.
- Works associated with the Flying Doctor Deposit has commenced, however full-scale mining within the Flying Doctor Deposit is yet to commence. While the site of the surface infrastructure associated with the SCES facility overlaps with a part of the surface ancillary operational areas provided for by DA 336/2008, consultation between Hydrostor and Perilya has indicated that the

project would not constrain the development of the Flying Doctor Deposit and would not impact the mining areas. A minor modification to amend the location of supporting surface infrastructure for the Flying Doctor Deposit may be required due to the overlap.

- Perilya would be responsible for the changes required to the existing approvals, licenses and management plans for the Potosi and Flying Doctor mining operations. Perilya has written to the Department to confirm that Perilya and Hydrostor has a contractual arrangement in place to address this.
- Council would be the consent authority for any modifications to DA 448/2004 and DA 336/2008. While these proposed modifications do not form part of the Development Application for the project, the Department has undertaken discussions with Council and understand that Council is open to approving these modifications, if they are required.
- Dewatering of the underground work would be undertaken by Perilya under their existing water access licence (WAL) No 409595, which is subject to a commercial agreement between Hydrostor and Perilya.
- During operation, water from the Potosi mine site may be used to top up the water reservoir.

The 16 km transmission line runs from the south of the SCES facility, passes between South Broken Hill and Broken Hill airport, and connects to the existing Transgrid substation located on the western side of Broken Hill.

Other renewable energy projects in the vicinity of the site that have either recently been approved or are operational, include the Broken Hill Battery Energy Storage System (located approximately 11 km southwest of the SCES facility), the Broken Hill Solar Farm (located approximately 13 km southwest of the SCES facility), and Silverton Wind Farm (located approximately 28 km northwest of the SCES facility).

2.2 Energy Policy Context

With a capacity of 200 MW / 1,600 MWh, the project could power around 80,000 homes during peak demand, increasing grid stability and energy security. In addition to the storage of electricity for use on the broader National Energy Market (NEM), the SCES facility would maintain a reserve capacity of 250 MWh to provide back-up electricity generation to Broken Hill during times of planned and unplanned outages. Accordingly, the project aligns with several Commonwealth and State policies, including *Australia's Long Term Emissions Reduction Plan* and the *NSW Net Zero Plan Stage 1: 2020-2030* and associated *Implementation Update*. These policies identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability.

3 Statutory context

3.1 State Significant Development

The project is classified as SSD under section 4.36 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This is because it triggers the criteria in Clause 20 of Schedule 1 of *State Environmental Planning Policy (Planning Systems) 2021*, as it is development for the purpose of electricity generating works with a capital investment value of more than $30 million.

Consequently, the Minister for Planning and Public Spaces is the consent authority. However, under the Minister's delegation of 9 March 2022, the Director Energy Assessments may determine the development application as Council did not object, there were less than 15 unique objections from the general public, and Hydrostor has not made any political donations.

3.2 Permissibility

The project is located within land zoned SP1 (mining), RU2 (rural landscape), RE2 (public recreation), SP2 (water supply systems), C2 (environmental conservation) and E4 (general industrial) under the *Broken Hill Local Environmental Plan* (LEP) *2013.* A short portion of the transmission line also extends into the Far West Unincorporated Region which does not have any applicable zoning. Clause 2.36 of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) states that development for the purpose of electricity generating works may be carried out with consent on any land in a prescribed non-residential zone, including SP1, RU2, SP2 and E4 zoned land.

In addition, although land zoned RE2 and C2 are not a prescribed zone under Transport and Infrastructure SEPP, section 4.38(3) of the EP&A Act allows development consent to be granted for SSD applications where the development is partially prohibited.

While the consent authority can override a partial prohibition for a SSD, it must assess the merits of such a decision. The Department has considered the merits of such a decision as follows:

- the project is consistent with State and Local Strategic plans, as set out within **Section 2** of this report;
- the transmission line will be installed underground on RE2-zoned land to avoid disrupting the use of the recreational area;
- the Department has confirmed with the Council that the land zoned C2 is part of Willyama Common and that installing infrastructure for electricity supply to support community or

industrial purposes beyond the common aligns with the uses permitted under the Willyama Common Management Plan (2003);

- Council raised no objection and have granted landowners consent for the RE2 and C2 zoned land; and
- the Department has fully considered the impacts of the proposal and consider it can be approved.

Based on the above assessment, and via Section 4.38(3) of the EP&A Act, the Department is satisfied that the proposed development is permissible with consent on the project site.

3.3 Integrated and Other Approvals

Under section 4.41 of the EP&A Act, a number of other approvals are integrated into the SSD approval process, and therefore are not required to be separately obtained for the project. Under section 4.42 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any development consent for the project.

The Department consulted with the relevant government agencies responsible for the integrated and other approvals, considered their advice in its assessment of the project, and included suitable conditions in the recommended conditions of consent to address these matters (see **Appendix C** and **Appendix F**).

3.4 Mandatory Matters for Consideration

Section 4.15 of the EP&A Act outlines the matters that a consent authority must take into consideration when determining development applications. The Department has considered all of these matters in its assessment of the project, as well as Hydrostor's consideration of environmental planning instruments in its EIS. The Department has also considered relevant provisions of the environmental planning instruments in **Appendix G.**

4 Engagement

4.1 Department's Engagement

The Department exhibited the EIS from 16 November 2023 until 13 December 2023, notified surrounding landowners and advertised the exhibition in the *Northern Daily Leader*. The Department also consulted with Council and government agencies throughout the assessment, inspected the site in March 2024, and notified and sought comment from Transgrid and Transport for NSW (TfNSW) in accordance with the Transport and Infrastructure SEPP.

4.2 Submissions and Submissions Report

During the exhibition the Department received five submissions from the general public (four objections and one support).

The key issues raised in objections were regarding interactions of the project with the Potosi Mine and Flying Doctor Deposit, environmental and amenity impacts, and socioeconomic concerns. Other concerns included the merits of renewable energy and energy storage systems.

Fifteen government agencies provided advice, and Council provided comment. Copies of all submissions and agency advice are attached in **Appendix C**.

Hydrostor provided a response to all matters raised in submissions and agency advice in a submissions report (see **Appendix D**) and provided additional information during the Department's assessment (see **Appendix E**).

4.3 Summary of Advice Received from Government Agencies and Council

A summary of the key matters raised in the government agency advice is provided in **Table 2**. The Department's consideration of the matters raised is summarised below and provided in **Section 5** of this report.

Table 2 | Summary of advice received

Aspect	Key matters raised
Australian Rail Track Corporation (ARTC)	• ARTC is progressing the terms of the license agreement with Hydrostor and Transgrid (the asset operator for the transmission line). ARTC has stated that it will not approve an easement crossing over its railway but is open to Transgrid entering into a license agreement for the construction and operation of the transmission line infrastructure over the railway.

Aspect	Key matters raised
	• ARTC has no objections to the location of the proposed transmission line, subject to the design, construction and maintenance of the overhead crossing being in accordance with ARTC's standards, policies and procedures, and ARTC's EPL. The Department has included these requirements as a condition of consent.
NSW DCCEEW – Biodiversity Conservation and Science Directorate (BCS)	• Requested further information be provided in a revised Biodiversity Development Assessment Report (BDAR) to align with the requirements of the Biodiversity Assessment Method (BAM). • Requested further information regarding potential impacts for species that have been assumed present (including Serious and Irreversible Impact (SAII) entities). • BCS confirmed that all requests for further information had been addressed and resolved within the response provided by Hydrostor (17 October 2024) and the amended final BDAR (31 October 2024).
Broken Hill City Council (Council)	• Generally supportive of the project. • Requested that the mouths of the access tracks, where they connect with the local road, be sealed prior to use. As confirmed in a letter from Council, (12 December 2024), these works do not require development consent and are not part of the project. The Department has included a condition requiring Hydrostor to complete these works before the access tracks are used.
Crown Lands	• Noted Hydrostor would be required to seek authorisation for the use of Crown land, and apply for an easement for the transmission line. • Noted a number of Aboriginal Land Claims, some which are managed by Council. Recommended to engage Council for use of, or access to, this Crown land, with engagement with Crown Lands if further assistance is required. • Crown Lands identified that Lot 7320 DP 1201053 may include a previous mine site and requested Hydrostor to undertake due diligence in relation to any contaminants and impacts on the project. Hydrostor undertook an assessment of contamination on this Lot as part of its Baseline Environmental Assessment (10 April 2024) which concluded that the Lot suitable for Hydrostor's intended use of the site. • Crown Lands has confirmed it has no further comments.
Department of Primary Industries (DPI) – Fisheries	• Requested that waterway crossings are to be designed and constructed in accordance with *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (DPI, 2003) and the *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI, Update 2013). • Requested that the proposed 3rd order stream realignment ensures the final landform is geomorphologically stable and acts as a fully functional ephemeral watercourse ecosystem at detailed design. • The Department has conditioned that all activities on waterfront land are constructed in accordance with the guidelines listed above, and that creek diversions are designed to be geomorphologically stable. • Fisheries confirmed it is satisfied with the Department's conditions of consent.

Aspect	Key matters raised
NSW Environment Protection Authority (EPA)	• Requested further detail on the Noise and Vibration Impact Assessment including feasible and reasonable control measures, tonal noise, corona discharge, emergency equipment, and water pipes and valves. • Requested updates to the Air Quality Impact Assessment to provide further clarification on the assessment of potential impacts and describe the proposed mitigation measures and provide detail on their implementation. • Requested further clarification on licensing of the project during construction and operation under the POEO Act. Hydrostor provided further information and met with the EPA and Resource Regulator. The EPA has confirmed that it is satisfied that the proposal can be constructed and operated under the licensing arrangements proposed. • Requested further information on the Greenhouse Gas Assessment regarding the conservative estimation of scope 2 emissions for operation of the project. • Hydrostor adequately addressed EPA's requests for further information in their responses (5 September 2024, 5 December 2024). • EPA requested the inclusion of conditions relating to the preparation of a Climate Change Mitigation Plan, which the Department has included in the conditions of consent.
NSW DCCEEW – Heritage NSW	• Requested further investigation to establish the nature and extent of proposed impact on Aboriginal cultural heritage values including clarification on community consultation, Aboriginal cultural heritage assessment report (ACHAR) mapping, test excavations of Potential Archaeological Deposits (PADs), management and mitigation measures, and significance and impact assessments. • Requested further information on the proposed testing methodology and mapping of landforms of higher sensitivity. • Heritage NSW confirmed that all requests for further information had been adequately addressed in the response provided by Hydrostor (10 December 2024), and that it was satisfied with the Department's conditions of consent regarding the preparation of an Addendum ACHAR and Heritage Management Plan.
Rural Fire Service (RFS)	• Recommended preparation of a bushfire report to address safe operational access and access layout for emergency vehicles, suitable construction standards for project infrastructure, and the requirements of section 8.3.9 of *Planning for Bush Fire Protection* (2019). • Requested clarification on the transmission pole spacing for bushfire protection and required that the access roads, access to power or other services to the project and associated fencing to comply with the requirements of Table 7.4a of *Planning for Bush Fire Protection 2019*. The Department has conditioned Hydrostor to comply with the relevant access requirements.
Transport for NSW (TfNSW)	• Requested an updated Transport Impact Assessment (TIA) including further information on routes for construction traffic, turn warrant assessments and strategic designs for intersection and access upgrades, traffic generation, over size over mass (OSOM) vehicle route assessment, and placement of the transmission line outside of the State road reserve.

Aspect	Key matters raised
	• TfNSW have confirmed that all requests for information were adequately addressed in the response provided by Hydrostor (19 December 2024), and that it has no further concerns, subject to the implementation of the Department's recommended conditions.
NSW DCCEEW – Water Group	• Requested further detail on the water balance, supply, take and licencing. Hydrostor addressed this issue in a response to Water Groups' request for information (10 October 2024, 9 December 2024) to which Water Group have noted a risk to the project's ability to hold sufficient entitlement to account for groundwater take during construction. To mitigate this, the Department has included a condition requiring Hydrostor to ensure sufficient water is available for all stages of development. • Requested clarification on the treatment of the northern 3rd order stream and further information on how tributaries of the proposed southern diverted stream would connect to the southern watercourse. Hydrostor addressed this issue in a response to Water Groups' request for information (10 October 2024), and Water Group had no further comments on this matter. • Recommended updates to the project design to ensure transmission poles aren't within the diverted stream. • Recommended that a Soil and Water Management Plan be provided to for review, including a procedure to identify and address any impacts detected by the stream stability and riparian health monitoring. The Department has included this in the conditions of consent. • Recommended that in addition to Hydrostor's commitments in the EIS, the Groundwater Monitoring and Management Plan must also provide a suitable groundwater baseline status, process for risk review, and update of the groundwater conceptual model. The Department has included this in the conditions of consent.

Following the provision of additional information by Hydrostor during the assessment of the project no further concerns were raised by the agencies listed in **Table 2**.

Council, DPI Agriculture, Fire and Rescue NSW (FRNSW), Heritage Council of NSW, Department of Regional NSW – Mining, Exploration & Geoscience (MEG), Transgrid and the Office of the Chief Engineer advised they had no concerns or comments on the project.

5 Assessment

The Department has assessed the merits of the project in accordance with the requirements of the EP&A Act and applicable NSW policies and guidelines. The Department's consideration and assessment of issues related to the project is provided in **Table 3.**

Table 3 | Assessment of Issues

Issue
Energy security
• The project aligns with a range of National and State policies (see **Section 2**), which identify the need to diversify the energy generation mix and reduce the carbon emissions intensity of the grid while providing energy security and reliability. • The project would support the State's continued transition away from traditional power generation derived from fossil fuels, which is largely dispatchable, to renewable energy generation such as wind and solar, which is inherently variable. • The AEMO's *2024 Integrated System Plan* (ISP) forecasts that there will be a demand for 36 GW / 522 GWh of energy storage capacity in the National Electricity Market by 2034-35, and 56 GW / 660 GWh by 2049-50. The ISP highlights the need for different forms of storage to support this growth, by providing storage of varied depths and technologies to time-shift electricity supply and smooth out peaks and troughs in renewable generation. • Compressed air energy storage systems, such as this project, provide 'firming capacity' by contributing to dispatchable energy availability during peak energy demands or when renewable production is low. • The project would also contribute to energy security and reliability by providing frequency control ancillary services, meaning the project would contribute to energy supply and grid stability.
Biodiversity
• The project would clear 55.07 ha of native vegetation, located across the SCES facility site and the transmission line easement. The remainder of the development footprint (2.76 ha) has previously been cleared, with some street tree plantings (0.01 ha). • Of the 55.07 ha of impacted vegetation most is in good condition (53.10 ha).

- None of the impacted native vegetation meets the criteria for listing as a Threatened Ecological Community (TEC) under the *Biodiversity Conservation Act 2016* (BC Act) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Habitat assessment of the project area identified that targeted surveys were required for 10 threatened and candidate flora and 31 candidate fauna species, including 12 threatened fauna species listed under the BC Act. Targeted surveys were undertaken for all threatened flora species. No candidate flora or fauna species were recorded during field surveys.
- No serious and irreversible impact (SAII) entities were recorded during field surveys. BCS raised no concerns about the SAII assessment within the final BDAR.
- The impacts on native vegetation would generate a total of 1,038 ecosystem credits under the BC Act and would be retired in accordance with the NSW Biodiversity Offset Scheme.
- The Department has included a condition requiring the preparation and implementation of a Biodiversity Management Plan, in consultation with BCS, to manage and minimise impacts on biodiversity values. The Biodiversity Management Plan must include an incidental finds protocol for native vegetation and threatened species, should they be discovered on the site or on the access tracks between the road network and the transmission line corridor.
- The Department considers the project is unlikely to result in significant impacts on biodiversity values.

Heritage

Aboriginal Cultural Heritage

- Field surveys undertaken in consultation with Registered Aboriginal Parties (RAPs) identified Aboriginal cultural heritage sites including features such as a stone arrangement, grindstone fragments, stone artefact scatters, heat retainer hearths, stone quarries and potential archaeological deposits (PADs).
- The project would impact a total of 41 Aboriginal heritage items (22 wholly impacted and 19 partially impacted) and would avoid a total of 29 Aboriginal heritage items.
- A model was used to determine the location of PADs within the project area, based on the results of the test excavations, the location of waterways and alluvial deposits and heavily disturbed areas. The model identified 19 PADs within the project area.
- Hydrostor has committed to undertaking a staged salvage program during construction, that would include investigation of the PADs within the disturbance footprint. At the request of Heritage NSW, the Department has included a condition requiring Hydrostor to prepare an Addendum ACHAR, prior to commencing works, including testing of PADs within the disturbance footprint, a procedure for micro-siting to avoid impacts and further details of surface salvage.

- Hydrostor has committed to preparation of an Aboriginal Cultural Heritage Management Plan in consultation with RAPs and Heritage NSW, which would detail the development and implementation of the staged salvage program.
- Hydrostor has committed to implementing an unexpected finds procedure. Should any Aboriginal artefacts or Ancestral remains be identified during construction all work would cease and a management protocol implemented.
- The Department has included a condition requiring Hydrostor prepare a Heritage Management Plan, including a Chance Finds Protocol, for the project, in consultation with the Aboriginal stakeholders and to be reviewed by Heritage NSW. The Heritage Management Plan must be prepared prior to Hydrostor commencing construction.

Historic Heritage

- The project is located within the curtilage of the National heritage item 'City of Broken Hill', which encompasses the entirety of the Broken Hill LGA. The visual characteristics of Broken Hill, including the industrial mining areas and arid landscape, contribute to its national heritage values.
- The Department considers that in context of the existing industrial features of Broken Hill's landscape, the discrete location of the facility to the north of Broken Hill and the dispersed nature of the transmission line would not result in significant change to the landscape and would not impact on the heritage features of the 'City of Broken Hill'.
- The project was referred to the Commonwealth DCCEEW under the EPBC Act due to potential impact on matter of national environmental significant (MNES). The referral confirmed that the project would not significantly impact the National heritage listing of the 'City of Broken Hill', and therefore does not require approval from the Commonwealth Minister for the Environment and Water.
- Within 2 km of the project area, there are 24 heritage items listed on the Broken Hill LEP 2013, and 13 heritage items that are listed on the NSW State Heritage Register (SHR), which would not be impacted by the project. Heritage NSW acknowledges that the project area does not contain any SHR items or any known historical archaeological relics.
- Hydrostor has committed to including an unexpected finds protocol in the Construction Environment Management Plan (CEMP), if an item of potential heritage significance is discovered.
- In conclusion, the Department considers that with the implementation of the mitigation measures and conditions the project would not significantly impact the Aboriginal or historic heritage values of the locality.

Noise and Vibration

- There are 15 non-associated receivers within 3 km of the SCES facility, comprising eight rural residential dwellings (R2-R9), one business (Outback Astronomy (R2)), one holiday accommodation facility (R10), five commercial facilities (R11-R15) and one active recreation facility (R16).

Residential receiver (R17) is located within 100 m of the transmission line corridor and 120 m of the towers. Receiver R1 is located within 1 km of the SCES facility, however this receiver does not meet the definition of a residence under the *Noise Policy for Industry* (EPA, 2017) (NPfI).

Construction noise

- Hydrostor has proposed to construct the transmission line during the following hours: 7 am to 6 pm, Monday to Friday, and 8 am to 1 pm on Saturdays.
- Noise impact modelling was based on a worst-case scenario, assuming all construction equipment operates at the closest point to residential receivers, without accounting for any acoustic shielding from property fencing or buildings. The modellin**g** indicates that construction noise may exceed the noise management levels (NMLs) set by the EPA's *Interim Construction Noise Guidelines* (ICNG) for approximately 2,200 residential lots in the southern part of Broken Hill. One residence (R17) could experience noise levels up to 69 dBA under the worst-case scenario, for a period of about 6 weeks. However, no residences are predicted to be highly noise affected.
- The transmission line construction will be temporary, covering approximately 600 meters every 6 weeks. The work will be carried out in stages, with breaks between each stage to allow for concrete curing and the installation of the line between poles. While the overall construction project in the southern Broken Hill area is expected to last 9 months, no residence will experience noise levels exceeding the NMLs for more than 3 weeks during any stage of the work.
- Hydrostor has committed to implementing standard construction noise mitigation measures in accordance with the ICNG, including noise monitoring and development of a Trigger Action Response Plan with a response process to be implemented in the event that exceedance of the noise impact assessment criteria is recorded. This would be applicable to construction of both the transmission line and the SCES facility.
- The proposed construction activities are unlikely to result in significant adverse impacts due to the conservative assumptions in the assessment and the short-term and intermittent nature of construction of the transmission line. The Department has included a condition requiring Hydrostor to implement all reasonable and feasible steps to minimise construction noise generated by the project.
- Hydrostor proposed to construct the SCES facility (excluding the caverns and cavern shafts) between the hours of 7 am and 6 pm, 7 days per week.
- Hydrostor proposed to construct the caverns and cavern shafts for the SCES facility, comprising of underground works, and limited above-ground works, including drilling, craning, welding, use of compressors and concrete pumps, 24 hours per day, seven days per week.
- Construction activities for the SCES facility, including the caverns and cavern shafts, are not predicted to exceed the construction noise criteria at any receivers during any time period.
- The Department has considered Hydrostor's request for construction activities outside of standard construction hours and has included conditions requiring further assessment and justification of out of hours works on a case-by-case or activity specific basis, for approval by the

Planning Secretary, for activities that are more than 5 dB above the rating background level at receivers. An exemption has been included for works that would be less than 5 dB above the rating background level and would therefore be inaudible at residential receivers.

- No vibration impacts are predicted at any sensitive receivers. Blasting is proposed for excavation of the caverns and would be managed in accordance with the blast management plan for Perilya's Potosi Operations. Blasting carried out for the Potosi mine under the existing blast management plan has demonstrated not to exceed the airblast criteria prescribed for the Potosi mine. The Department has included a condition prescribing limits for airblast overpressure and vibration from blasting activities at residential receivers.

Operational impacts

- Noise modelling for operation of the project included a noise barrier around the Cooling Water Air Cooled Exchanger and several noise barriers and acoustic hoods at the larger transformers. Noise barriers range between 7 to 10 m in height and form part of the project.
- Predicted operational noise levels at all receivers would comply with the project noise trigger levels (PNTL) under the NPfI, including during adverse meteorological conditions of Stability Category F, with winds up to 0.5 m/s**.**
- To protect the amenity of the area, the Department has set operational noise limits for the project at all residences (as defined under the NPfI), with noise assessment locations identified as residences R2 and R9. The operational noise limits include a limit for project operations during Very Noise Enhancing Conditions, as defined under the NPfI, in accordance the PNTLs.
- An assessment of corona discharge noise emissions, which is a crackling sound resulting from an accumulation of dust, pollution or water on the transmission lines, was carried out for the transmission line, based on a 500 kV line, which identified that the evening and night-time PNTLs would be exceeded at receiver R17. Hydrostor concluded that, as the transmission line would operate at 220 kV, the operation of the transmission line is likely to comply with PNTLs and there is opportunity to provide at source or at receiver mitigation to achieve compliance.
- The Department has carefully considered the potential risk of 'corona' noise discharge and its impact on residences near the transmission line and towers, particularly in wet or dusty conditions, due to the area's low rating background levels (RBLs). To mitigate this risk, the Department has included a condition requiring Hydrostor to assess the corona noise impact on residences within 100 m of the transmission line and 200 m of the towers. The condition requires Hydrostor to validate the noise levels predictions and implement best practices to reduce any corona discharge noise that exceeds RBLs in these areas.
- Hydrostor has committed to noise monitoring 3 months post commencement of operation at full capacity and nine months post commencement of operation at full capacity to confirm compliance.
- The Department has included a condition for preparation and submission of a Noise Monitoring Report within 12 months of commencing operation, including a requirement for monitoring at the noise assessment locations during typical worst-case meteorological scenarios.

- With the implementation of the above measures and conditions, the Department considers that construction and operational noise can be appropriately managed and would not impact the amenity of the locality.

Landscape Character and Visual Assessment

- The nearest receiver (R1) is located approximately 900 m east of the SCES facility. Receiver R2 is located approximately 1.3 km east of the SCES facility and comprises a residence and a business, Outback Astronomy. Receiver R9 is located approximately 1.9 km east, and another five residential receivers are located between 2 km and 3 km of the SCES facility (R3, R4, R6, R7 and R8). The nearest residential receiver to the transmission line (R17) is located within 100 m of the transmission line corridor and 120 m of the towers. The main residential areas in Broken Hill are located approximately 500 m from the transmission line. Other receivers in vicinity of the transmission line mainly include industrial properties, public vantage points and heritage listed items including Mining Precinct 10 and Old Broken Hill City Abattoir.
- Hydrostor undertook a visual assessment within the EIS and prepared a supplementary *Lighting Impact Assessment* (LIA) (including a detailed lighting design) as a response to submissions.
- The Department visited the site and nearby non-associated residences and Outback Astronomy to assess visual impacts and to further understand residents' concerns.
- The site and surrounds are located within a rural arid landscape interspersed with historic and operational mining and industrial infrastructure and heritage items. The topography around the SCES facility is undulating, with elevation varying between 260 m AHD (Australian Height Datum) to 300 m AHD and reaching up to 315 m AHD along the transmission corridor. The project area generally comprises native remnant arid land vegetation, however the area has been disturbed and highly modified by historic clearing.
- Due to intervening topography, the buffer distance between the SCES facility infrastructure and roads, and the retention of remnant native vegetation around the SCES facility, views of the SCES facility would be limited during both construction and operation. While the transmission line would be visible from industrial receivers and public vantage points (including roads and recreational areas) views from residential receivers would be limited. The presence of large machinery for laydown areas and pole construction along the transmission line would increase visual impacts, however, these impacts would be temporary.
- The Department considers that visual impacts to the landscape character would also be low due to the presence of existing mining and industrial infrastructure, and that the SCES facility itself would not be visible from the township of Broken Hill. The Department also considers that the southern alignment of the transmission line around Broken Hill would also reduce impacts to visually sensitive receptors including heritage listed items, dense residential development, and scenic tourist areas.

Lighting

- Concern was raised regarding night lighting impacts on the astronomy activities conducted at receiver R2 (by their associated business, Outback Astronomy). In their response to submissions, Hydrostor prepared a LIA to understand the existing baseline night lighting condition and modelled potential project impacts.
- Monitoring was undertaken to the north and south of Outback Astronomy, which determined that the current sky brightness at the location falls within Bortle Class 4 – rural/suburban transition, as did the whole-of-sky and horizon sky brightness values.
- The LIA modelled the lighting impact of the project with and without mitigation. The mitigation measures include restricting the number of active security lights at the SCES facility to three, utilising smart sensors for the remaining 17 lights, and reducing colour temperature of the lighting. The modelling found that, while the brightness increased in both scenarios compared to the current baseline case, the Bortle Class 4 was retained.
- The Department has included a condition requiring Hydrostor to design lighting for the operational phase of the development in accordance with the commitments and recommendations of the LIA and consult with Outback Astronomy during design of the operational phase lighting.
- Noting the above, the Department considers that potential lighting impacts of the project on the surroundings and the operation of Outback Astronomy can be managed under the mitigation measures and recommended conditions of consent.

Air Quality

- The project would generate dust during construction activities, with the highest potential dust emissions being generated near the SCES facility and on the Potosi Mine site, where the majority of material handling and earthworks would occur.
- Dispersion modelling for particulate matter (PM) emissions from the project during construction demonstrated that concentrations of $PM_{2.5}$, PM_{10} and Total Suspended Particles (TSP) would be below the Impact Assessment Criteria established under the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) at all sensitive receivers. The Department has included a condition requiring compliance with air quality criteria at any residence on privately owned land (including residence R2, adjacent to Outback Astronomy).
- Hydrostor has committed to a number of mitigation measures to manage any potential air quality impacts during construction, including dust suppression and controls.
- The EPA has recommended the inclusion of a condition to monitor and manage air quality impacts associated with the project, in particular the potential for lead dust generation, through the development and implementation of an Air Quality Management Plan. The Department has included this as a condition of consent.

- Modelling of venting the heated compressed air demonstrated that the maximum height at which the plume vertical velocity would fall below the vertical velocity of 6.1m/s, as prescribed in *AC 139.E-02 - Plume rise assessments* (CASA, 2023), is 70 m. CASA has advised that it does not consider the plume to be a hazard to aircraft operations. No air quality impacts are predicted during operation of the project.
- Noting the above, and that any potential air quality impacts would be limited to construction, the Department considers that, with the implementation of the mitigation measures identified by Hydrostor and the conditions proposed, the project would not significantly impact the air quality in the locality.

Greenhouse Gas Emissions

- Greenhouse gas emissions have been assessed for the construction and operational stages of the project. During construction, the assessment reported that there would be no scope 1 emissions, 134,291 tonnes of carbon dioxide equivalent per year (t CO_2-e/year) scope 2 emissions and 11,038 t CO_2-e/year scope 3 emissions. The project operations were estimated to result in 20 t CO_2-e/year of scope 1 emissions, 7,402 t CO_2-e/year of scope 2 emissions and 1 t CO_2-e/year of scope 3 emissions.
- The EPA noted that the assessment adopted a conservative estimation of scope 2 emissions for operation of the project. Hydrostor provided further information noting that the SCES facility would draw energy from the grid when renewable generation is at a peak and the assumption of 20% non-renewable energy in the grid adopted for the project represents an overestimate of the Scope 2 emissions, which would continue to decrease over time. The Department considers that the scope 2 emissions factor adopted is appropriate**.**
- Hydrostor has committed to including measures in the environmental management system to minimise scope 1 emissions during construction and operation.
- To align with the commitments under the EPA's *Climate Change Action Plan 2023–26* the Department has included a condition requiring the preparation of a Climate Change Mitigation Plan, in consultation with the EPA.

Traffic and Transport

Access routes

- The SCES facility would be accessed via an upgraded access track within the Potosi Mine site, which would be accessed via Silver Peak Road and the Barrier Highway. The transmission line would be accessed from multiple locations along the development footprint during construction. Council has requested that the project use pre-existing access tracks to access the development footprint from the road network. Access points to the transmission line include Silver Peak Road**,** pre-established access tracks off Menindee Road (east and west), pre-established access track off Pro Hart Way (west), pre-established access track off Picton Street, pre-established access tracks off Pinnacles Road, access track off Silver City Highway and pre-established access tracks off Kanandah Road at the intersection with the pipeline.

- Council has requested that the mouths of the access tracks, where they connect with the local road, be sealed prior to use. These works do not require development consent (as confirmed in a letter from Council, dated 12 December 2024) and are not part of the project. However, the Department has included a condition requiring Hydrostor to complete these works before the access tracks are used.
- The public roads at the access points have low traffic volumes and have sufficient capacity to accommodate the vehicle numbers proposed to access the transmission line. The number of vehicles using the access points would be managed to minimise impacts on the local road network.
- The access point from the Silver City Highway would be upgraded to a rural property access in accordance with Austroads design standard for rural type access, and has been conditioned.
- The Department has included conditions requiring Hydrostor to carry out dilapidation surveys and obtain all relevant approvals and undertake any works on local roads required by Council, prior to use of the existing access tracks.

Vehicle numbers and movements

- During peak construction the project would generate 46 heavy vehicle movements, 32 shuttle bus movements, 64 light vehicle movements per day. The project would generate a total of 86 movements of heavy vehicles requiring escort during construction.
- Traffic generation during operations would be significantly less than the construction phase. Vehicle movements during operation would be up to 50 movements per day during peak maintenance periods.
- The Department has included a condition requiring Hydrostor to obtain all relevant approvals for the use of heavy vehicles requiring escort on the public road network prior to these vehicle movements occurring for the project.
- TfNSW noted that there is currently sufficient capacity at the intersection of Barrier Highway and Silver Peak Road to accommodate the Project, however this would likely change if operations or rehabilitation at the North Mine or Potosi Mine commence. The Department has included a condition requiring Hydrostor to prepare a Traffic Management Plan, in consultation with the relevant roads authorities, that requires monitoring of the bi-directional traffic volumes on the Barrier Highway at the Silver Peak Road intersection and limiting construction traffic associated with the development to ensure vehicle movements through the Barrier Highway / Silver Peak Road intersection remain consistent with the 'combined future traffic volumes' in the *Transport Impact Assessment* (July 2023).

Interaction with rail network

- The transmission line would cross the main railway line east of Broken Hill, to the east of Menindee Road. ARTC has confirmed it is progressing the terms of the licence agreement for construction and operation of the transmission line with Hydrostor and Transgrid (as the asset operator for the project) regarding the terms of the licence agreement for construction and operation of the transmission line. ARTC noted that design and construction of the project must comply with ARTC and Australian Standards and ARTC's EPL, and that construction works should not affect

ARTC's operations. The Department has included a condition requiring the design, construction and maintenance of the overhead crossing of ARTC's railway by the transmission line be in accordance with ARTC's standards, policies, procedures and EPL.

- With the access upgrade, road maintenance, and the implementation of a Traffic Management Plan, the Department considers that the project would not result in unacceptable impacts on the capacity, efficiency or safety of the road network. TfNSW and Council have confirmed they have no concerns, subject to the implementation of the recommended conditions.

Water

Hydrology

- The site is located within the Willa Willyong Creek Catchment in the broader Darling River catchment. Willa Willyong Creek is an ephemeral stream located approximately 1.5 km to the east of the site and drains in a north-easterly direction to Stephens Creek Reservoir.
- A third order unnamed tributary of Willa Willyong Creek intersects the site and would require the construction of a 900 metre (m) long creek diversion from the south-west corner of the site running up along the southern boundary. Hydrostor has committed to monitoring the stream stability and riparian health of streams to the north and south of the reservoir and remediation of erosion of the constructed diversion, should inspections indicate the channel is becoming less stable.
- The transmission line easement intersects several unnamed first, second and third order tributaries to Willa Willyong Creek, Kellys Creek and Acacia Creek. These streams are all ephemeral and are located in the broader Darling River catchment.
- The stormwater evaporation dam and the reservoir would discharge during very high rainfall or prolonged wet weather events to third order tributaries of Willa Willyong Creek, which drains to Stephens Creek. Discharge would only occur when runoff from the broader catchment would dilute sediment and other contaminants from the dams. Hydrostor has committed to surface water monitoring at the point of discharge and in the stormwater evaporation dam during operation.

Flooding

- The site would not be inundated during the 1% Annual Exceedance Probability (AEP) flood event as rises in water levels would be localised adjacent to the site within the creek diversion and not exceed 100mm.
- Hydrostor has committed to constructing the surface facilities above the flood planning level and to constructing the creek diversion to accommodate the 1% AEP peak flow storm event and sizing the stormwater evaporation dam to accommodate a 2% AEP rainfall event.

Water quality

- Hydrostor has committed to managing water quality impacts during construction through preparation of a soil and water management plan n accordance with Landcom's *Managing Urban Stormwater: Soils and construction (*2008).

Groundwater

- Groundwater inflows for the project during construction are estimated to range from 16 to 158 ML per year. Dewatering will be managed by Perilya using the existing Potosi Mine water management system, under their current WAL 409595. Mining at the Potosi Mine is expected to cease before construction of the project begins, and Hydrostor has an agreement with Perilya allowing it to preferentially extract water under the WAL. The groundwater will be treated at the Potosi Mine site before being reused on-site or discharged in accordance with the Potosi Mine approvals.
- The DCCEEW Water Group noted that Perilya operations used approximately 1,400 ML of water in 2021/2022, out of a total entitlement of 1,466 ML. They highlighted a risk of exceeding this by 92 ML under WAL 409595 if the Potosi Mine continues operations and the upper estimates of dewatering requirements for the project are met. To mitigate this, the Department has included a condition requiring Hydrostor to ensure sufficient water is available for all stages of development.
- Hydrostor has committed to implementing a groundwater monitoring network, and metering of groundwater extracted during construction. The Department has included a requirement for a Groundwater Monitoring Plan to establish a groundwater model to confirm predicted groundwater take and detail the groundwater monitoring system and program for monitoring.
- Once sealed, there would be no groundwater inflows to the cavern and groundwater impacts during operation are not predicted.

Water use

- Construction of the project would require 150 megalitres (ML) of water sourced from the existing Potosi Mine supply. Potable water would be supplied by an existing reverse osmosis (RO) water treatment plant at the Potosi Mine or by water tanker.
- 250-300 ML would be required during construction to fill the water reservoir, which would be sourced over a 12-month period via a proposed pipeline connecting to an above ground section of the existing Stephens Creek Pipeline. Hydrostor has a water supply agreement with Essential Water for the construction and operation of the project.
- The project would make use of reject water from RO water treatment plants on the Pototsi Mine site and the SCES facility, process water condensate, treated wastewater from dewatering of the Potosi Mine and rainfall captured on site during operation. Approximately 16 ML of water would be required to be imported to the site annually during operation. This would come from several sources, including water piped to the site from the Stephens Creek Reservoir and potable water trucked to site.
- Noting the above, the Department considers that with the implementation of the project commitments the project would have negligible impacts on water resources and any potential impacts can be managed under the recommended conditions of consent.

Hazards

Hazard Analysis

- Hydrostor undertook a preliminary hazard screening associated with transport and storage of hazardous materials, including the use and transport of explosives during construction, as well as the operation of the SCES facility, in accordance with the *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP), and the relevant Hazardous Industry Planning Advisory Papers (HIPAP).
- The screening identified that the project would not store or transport materials to the project site in quantities above the screening thresholds established under the HIPAP documents.
- Class 1.1 Dangerous Goods would be transported to the SCES facility during the construction phase for excavation of the caverns. These would be transported to the Potosi Mine site, for storage within the existing magazines in accordance with the Potosi mine approval (DA 448/2004), until required for use on the project site. Transport of Dangerous Goods Class 1.1 in accordance with the volume, frequency and transport route proposed is not potentially hazardous in terms of dangerous goods transport under the *State Environmental Planning Policy (Resilience and Hazards).*
- The Department considers the hazard risk for the project can be managed subject to compliance with the Potosi Mine approval (DA 448/2004) and the Department's recommended conditions of consent.

Bushfire Risk

- The majority of the site is identified as Category 3 Vegetation on RFS's bushfire prone land mapping.
- Hydrostor has confirmed that the transmission line has been designed in accordance with Transgrid's *Transmission Line Design Standard* (November 2021) and the Australian/New Zealand Standard *Overhead Line Design* (AS/NZS 7000:2016) and would be maintained and operated in accordance with Transgrid's *Bush Fire Risk Management Plan*.
- To actively manage risk, Hydrostor would implement a range of management measures including (but not limited to):
  - comply with the requirements of RFS's *Planning for Bushfire Protection 2019* and Standards for APZ's;
  - comply with the requirements of *Electricity Supply (Safety and Network Management) Regulation 2014*, *Utilities (Technical Regulation) Act 2014 – Technical Code* and Transgrid's Bushfire Management Plan; and
  - provision of a dedicated static water supply for bushfire protection at the commencement of construction and a water cart will also be available for use during construction.

- RFS require the access roads, access to power or other services to the project and associated fencing to comply with the requirements of Table 7.4a of *Planning for Bush Fire Protection 2019*. The Department has conditioned Hydrostor to comply with the relevant access requirements.

Contamination

- While the Potosi Mine has been used for mining and industrial activities, the SCES facility sits on undeveloped land within the mine site, and accordingly has not been directly exposed to potentially contaminating activities. Hydrostor carried out a baseline environmental assessment of contamination for all Crown land within the project area, which determined that the land is suitable for Hydrostor's intended use. Hydrostor concluded that the risk of contamination at the SCES facility site is unlikely and no further assessment or remediation is required. Residual risks would be managed with the implementation of an unexpected finds procedure.
- The water management system and processes of the existing Potosi Mine operations includes suitable containment, clean-up and disposal of potential contamination sources during operation of the project.
- Crown Lands identified that Lot 7320 DP 1201053 may contain a former mine site and requested Hydrostor conduct due diligence regarding any potential contaminants and their impact on the project. This lot was considered in the baseline environmental assessment, which concluded that the lot is suitable for development of the project.
- The Department has included a condition requiring the preparation and implementation of an unexpected contamination finds procedure for the duration of construction and decommissioning of the project.

Geotechnical Stability & Dam Safety

- Hydrostor has considered the geotechnical stability of the proposed underground cavern based on geotechnical data collected for the Potosi Mine and the project-specific design considerations of the cavern through a Conceptual Design Report.
- The geological conditions at Potosi Mine are characterised by strong competent rock with few joints, which is favourable for the establishment of CAES-technology. The proposed underground cavern would be situated at a depth of 600m, which would result in little to no subsidence and therefore no significant surface impacts, even in the event of a collapse.
- The Department's Chief Engineer reviewed the documents relating to geotechnical stability provided by Hydrostor and noted that, given the geological conditions present at the site and the physical separation of the SCES facility from Potosi's mining works, the risk of mine subsidence affecting the project is minor.
- The Department requires a suitably qualified and experienced geotechnical engineer, independent of the design team, to review and verify that the cavern has been assessed and designed to be stable in the long term, prior to commencing construction.

- Hydrostor considers that the failure of the reservoir would not result in a major or catastrophic consequence under the consequence categories established under the Dams Safety Regulation 2019. Walls of the reservoir would not exceed 15 m in height, therefore the reservoir would not be considered a declared dam under the *Dam Safety Act 2015*. Hydrostor has committed to consulting with NSW DCCEEW Water Group (formerly Dam Safety NSW) during detailed design to confirm the consequence category of the water reservoir and whether declaration of the reservoir is required.
- The Department considers that any matters relating to hazards and risk associated with the project would be adequately managed through the recommended conditions of consent.

Social and Economic Impact

- The project would generate direct and indirect benefits to the local and broader community, including:
  - around $638 million capital investment into the NSW economy;
  - up to 400 construction jobs and 26 operational jobs; and
  - the procurement of goods and services by Hydrostor and associated contractors, noting Hydrostor's preference to source local workers where possible.
- One community submission raised concerns about impacts to their business due to loss of short-term accommodation availability. Hydrostor has provided further information to the Department and has identified a number of accommodation options within Broken Hill that could be used to accommodate construction workers for the project. Accommodation options include a combination of long-term leases and the use of two caravan parks that have existing development approvals in place that may be developed for workforce accommodation. Hydrostor has committed to preparing an Accommodation, Employment and Procurement Strategy to address social impacts relating to the construction workforce. Council raised no concerns about the accommodation options proposed for the project. The Department has included a condition of consent requiring the preparation of an Accommodation and Employment Strategy in consultation with Council prior to commencing construction.
- Hydrostor has committed to continuing to implement a Community Engagement Strategy to ensure that positive community benefits are enhanced and any potential adverse impacts are minimised. A dedicated Stakeholder and Permitting Manager has also been employed by Hydrostor to manage the strategy.
- Hydrostor and Council have signed a VPA with a total contribution of $3.1 million (CPI adjusted), to be paid in two contributions with the first $1.6 million paid within two years of project operation, and the remainder paid within 5 years of project operation. The funds would be used for, or

applied towards, public purposes including a community energy project, a heritage restoration project and the installation of a new telecommunications tower for the North of Broken Hill. The Department has included this as a condition of consent.

- Hydrostor has committed to developing and implementing Community Benefit Agreements and has already reached an agreement with Landcare Broken Hill. Hydrostor is progressing a community benefit agreement with the Broken Hill Local Aboriginal Land Council to offer a program of tertiary scholarships for Aboriginal students.
- Noting the above, the Department considers that the project would have a positive socio-economic impact on the local community.

Land Use

- The site is currently utilised by Perilya for mining operations. The surroundings land uses include other mining, commercial (including Outback Astronomy), residential, and telecommunications.
- Land within the development footprint is mapped as Class 6 and 7 (severe to extremely severe limitations) under the *Land and Soil Capability Mapping for NSW* (OEH, 2017), and does not contain Biophysical Strategic Agricultural Land.
- The Department considers the project is suitable within the land use context of the locality, that it aligns with the objectives of the *Far West Regional Plan 2036*, and it would not detract from the character of the area or result in any land use conflicts.

Waste

- Approximately 300,000 m³ of rock would be excavated for the project that would be reused for the project or for rehabilitation of the Potosi Mine. The material would be transferred to the Potosi Mine site for crushing and testing. Suitable material would be reused on the site for construction of the water reservoir. Hydrostor has committed to leachate testing of material prior to use to confirm that contaminants of concern in the material could not mobilise off-site. Unsuitable material would be transported to the Potosi Mine overburden emplacement areas for use in rehabilitation of the Potosi Mine.
- Construction of the project would occur under EPL 2683, which would permit the transfer and placement of material.
- Hydrostor has committed to preparation of a Waste Management Plan during construction of the project. The Department has included a requirement for a Waste Management Plan during construction and operation of the development, to be developed in consultation with the EPA.
- Noting that Council has not raised any concerns regarding waste, the Department considers that waste generated by the project would be adequately managed through the conditions of consent.

Cumulative Impacts

- Several operational renewable energy and battery projects are located near the site, including the Broken Hill Battery Energy Storage System (BESS) 8 km southwest, the Broken Hill Solar Farm 10 km southwest, and the Silverton Wind Farm 12 km northwest.
- Operational projects in the vicinity of the project site include Potosi Mine, Broken Hill North Mine, Junction Mine, and Broken Hill Airport. The Flying Doctor Deposit has been approved and the consent has been activated, however the main works are yet to commence. Outback Astronomy is a star gazing business, located 1.3 km to the east. Projects that are yet to be approved include Broken Hill Cobalt Blue, Blue Bush and Hawsons Iron Ore.
- Hydrostor conducted a cumulative impact assessment in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (including a detailed assessment of traffic and transport, noise and vibration and social and economic) and concluded that cumulative impacts would not be significant.
- Traffic and transport cumulative impacts with operational projects have been appropriately considered within Hydrostor's *Traffic Impact Assessment*. For proposed projects that yet to be approved, Hydrostor has considered the worst-case scenario of transport routes being shared at the same time, and the Department is satisfied that, with the conditions of consent, including the monitoring and management of traffic volumes at the intersection of Silver Peak Road and the Barrier Highway, the existing road network capacity would be sufficient to account for the increased traffic volumes.
- Broken Hill BESS was identified as the only project to potentially contribute to noise cumulative impacts due to the close proximity to the project's transmission line works, and as it was still under construction at the time the EIS was prepared. The BESS has since become operational and therefore those cumulative construction noise impacts are no longer an issue. Other projects have been included in the background noise environment and considered in Hydrostor's *Noise Impact Assessment* or are located at least 20 km from the project area and are therefore not likely to contribute to noise impacts. The Department requested further information on the potential for cumulative noise impacts from operation of the project and Flying Doctor Deposit, once Flying Doctor Deposit is fully operational. Hydrostor confirmed that operation of the project and Flying Doctor Deposit would be below the PNTLs under the NPfI during daytime hours when Flying Doctor Deposit is operational.
- As discussed in the Social and Economic Impacts section above, Hydrostor must prepare an Accommodation and Employment Strategy, in consultation with Council, that would manage the cumulative impacts that the proposed construction workforce would otherwise have on the availability of short-term accommodation in the local and regional area.
- The Department considers that any residual cumulative impacts associated with the project and surrounding operations, would be adequately managed through the proposed mitigation measures and conditions of consent.

Decommissioning and Rehabilitation

- The project is estimated to operate for 50 years, however there is potential to operate longer, subject to continued land agreements and upgrading of the compressed air energy storage system plant, which would be permitted under the conditions of consent.
- Decommissioning would occur at the end of the project's life. Hydrostor has committed to the removal of all plant associated with the SCES facility and transmission line, sealing of the air and water shafts and draining of the water reservoir. Hydrostor has committed to the preparation of a Decommissioning and Rehabilitation Strategy two years prior to the closure of the SCES facility to guide the rehabilitation of the site, including watercourse and watercourse crossings and stabilisation of disturbed area. No agencies raised concerns with the decommissioning of the project.
- The Department has developed conditions to cover this stage of the project life cycle, including clear decommissioning triggers and rehabilitation objectives.
- With the implementation of these measures, the Department considers that the project would be suitably decommissioned at the end of the project life, or within 18 months if operations cease unexpectedly, and that the site would be appropriately rehabilitated.

6 Evaluation

The Department has assessed the development application, EIS, Submissions Report, Amendment Report and additional information, along with public submissions, Council's comments and agency advice. The Department has also considered the objectives and relevant considerations under section 4.15 of the EP&A Act.

The project is permissible with consent in accordance with the Transport and Infrastructure SEPP. The project is situated on an undeveloped portion of two Perilya-owned mining lease sites.

The project has been designed to largely avoid key constraints and minimise environmental impacts, including impacts on biodiversity values, watercourses, hazards, noise and visual impacts, including light spill to nearby receivers, and land use conflicts. The Department considers that any residual impacts would be minor and could be managed through the recommended conditions of consent.

The Department considered the submissions made through the exhibition of the project and the issues raised by the community and agencies during consultation, including environmental, amenity (noise and visual) and traffic and access impacts. These matters have been addressed through changes to the project and the recommended conditions of consent, including strict requirements to manage any biodiversity impacts, noise levels and traffic and access.

The project would provide flow-on benefits to the local community, including up to 400 construction jobs during peak construction and a capital investment of $638 million.

On balance, the Department considers the site to be appropriate for the project and aligns with the objectives of the Far West Regional Plan 2036. Further, the project would provide additional and substantial investment towards improving the reliability of the energy network, storage and firming capacity to the National Energy Market, and additional services to assist grid stability, including frequency control ancillary services.

Accordingly, the Department considers that the benefits of the project outweigh its residual costs and that the project is in the public interest and is approvable, subject to conditions.

7 Recommendation

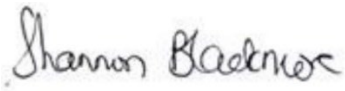
It is recommended that the Director, as delegate of the Minister for Planning and Public Spaces:

- considers the findings and recommendations of this report;
- accepts and adopts the findings and recommendations in this report as the reasons for making the decision to grant consent to the application;
- agrees with the key reasons for approval listed in the notice of decision;
- grants consent for the application in respect of Silver City Energy Storage (SSD-47065463); and
- signs the attached development consent (**Appendix F**).

Prepared by:

Pragya Mathema, Environmental Assessment Officer

Recommended by:



21/02/2025

Shannon Blackmore
Team Leader
Energy Assessments

8 Determination

The recommendation is **adopted**~~**/not adopted**~~ by:

21/02/2025

Iwan Davies
Director
Energy Assessments

Appendices

Appendix A – Environmental Impact Statement

Appendix B – Additional Information

Appendix C – Submissions and Government Agency Advice

Appendix D – Submissions Report

Appendix E – Amendment Report

Appendix F – Recommended Instrument of Consent

Appendix G – Notice of Decision

Appendices A to F available at: https://www.planningportal.nsw.gov.au/major-projects/projects/silver-city-energy-storage-system

Appendix H – Statutory considerations

In line with the requirements of section 4.15 of the EP&A Act, the Department's assessment of the project has given detailed consideration to a number of statutory requirements. These include:

- the objects found in section 1.3 of the EP&A Act; and
- the matters listed under section 4.15(1) of the EP&A Act, including applicable environmental planning instruments and regulations.

The Department has considered all of these matters in its assessment of the project and has provided a summary of this assessment below.

Summary	Consideration
Objects of the EP&A Act	The objects of most relevance to the Minister's decision on whether to approve the project are found in section 1.3(a), (b), (c), (e) and (f) of the EP&A Act. The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project:

Summary	Consideration
	• is permissible under the EP&A Act; • is located in a logical location for efficient energy storage, with access via a transmission line to a substation; • is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard; • would contribute to a more diverse local industry, thereby supporting the local economy and community; • would not fragment or alienate resource lands in the LGA; and • is consistent with the goals of NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020 – 2030* and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. The Department has considered the encouragement of ESD (Object 1.3 (b)) in its assessment of the project. This assessment integrates all significant socioeconomic and environmental considerations and seeks to avoid any environmental damage. The Department believes that a well-designed SSD energy storage development aligns with many of the principles of ESD. Hydrostor has also assessed the project against these principles. Following this evaluation, the Department is confident that the project can be implemented in a way that aligns with the principles of ESD. Consideration of environmental protection (Object 1.3(e)) is provided in **Section 5** of this report. Following its consideration, the Department considers that the project could be undertaken in a manner that would at least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department is also satisfied that any residual biodiversity impacts could be managed and/or mitigated by imposing appropriate conditions and retiring the required biodiversity offset credits. Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is also provided in **Section 5** of this report. Following its consideration, the Department considers the project would not significantly impact the built or cultural heritage of the locality, and any residual impacts can be managed and/or mitigated by imposing appropriate conditions.

Summary	Consideration
State Significant Development	Under section 4.36 of the EP&A Act the project is considered a State Significant Development. The Minister for Planning and Public Spaces is the consent authority for the development. Under the Minister's delegation of 9 March 2022, the Director Energy Assessments, may determine the project.
Environmental Planning Instruments	The *Broken Hill Local Environmental Plan (LEP) 2013* applies and is discussed in **Section 3.2** of this report, particularly regarding permissibility and land use zoning. As discussed in **Section 3**, while the project would be prohibited under the LEP, it is permissible under the Transport and Infrastructure SEPP. In accordance with the Transport and Infrastructure SEPP, the Department has given written notice of the project to Transgrid and TfNSW. Hydrostor completed a preliminary risk screening in accordance with the Resilience and Hazards SEPP and confirmed the project was not categorised as potentially hazardous or potentially offensive development, notwithstanding a PHA was undertaken as required by the SEARs. The Department has considered the remediation of land provisions of the Resilience and Hazards SEPP. The site is not listed as a contaminated site in the NSW EPA Contaminated Land Record and list of NSW contaminated sites. Given the site has historically been used for mining exploration and underground mining, with minimal ground disturbance, the Department considers the site would be suitable for the proposed development.