BHP

Olympic Dam Smelter and Refinery Expansion Project

Environmental Impact Statement

Executive Summary

October 2026

Currency

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The SRE Project EIS (Document) has been prepared for submission to the South Australian Minister for Energy and Mining (Indenture Minister) under the *Planning, Development and Infrastructure Act 2016* (SA), having regard to Clause 28 of the Olympic Dam and Stuart Shelf Indenture scheduled to the *Roxby Downs (Indenture Ratification) Act 1982* (SA) and the declaration under section 108 of the *Planning, Development and Infrastructure Act 2016* (SA) gazetted on 29 August 2024. No one other than the Minister for Energy and Mining (as the final decision maker), should rely on the information contained in this Document to make, or refrain from making, any decision. In preparing the Document, BHP Olympic Dam Corporation Pty Ltd (BHP) has relied, in part, on information provided by specialist consultants, government agencies and other third parties. BHP has not fully verified the accuracy or completeness of that information, except where expressly acknowledged in the Document.

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BHP

OD SRE EIS

Executive summary

EXECUTIVE SUMMARY

ES1 Introduction

BHP Olympic Dam Corporation Pty Ltd (BHP) is proposing to develop the Smelter and Refinery Expansion Project (SRE Project) at the Olympic Dam mining operation, located on Kokatha Country in the Far North of South Australia.

The objective of the SRE Project is to expand BHP's smelter and refinery capacity, enabling the Copper South Australia (Copper SA) growth plan by:

- increasing copper production capacity up to an average of 650,000 tonnes per annum (tpa) of total copper plus associated products from the current average production of approximately 200,000 tpa
- delivering a sustainable, highly productive, and more resilient smelting and refining flowsheet
- ensuring the copper-to-sulphur ratio (Cu:S) ratio constraint is resolved at Olympic Dam for copper concentrate production
- delivering reliable and predictable production outcomes following the 2023 acquisition of OZ Minerals' Carrapateena and Prominent Hill mining operations to realise Copper SA province opportunities.

Key elements of the SRE Project are:

- expansion of, and additions to, the existing smelter and refinery to enable total production of up to 650,000 tpa copper plus associated products, including approximately:
    - 893,000 ounces per annum of gold
    - 3,950,000 ounces per annum of silver
    - 4,900 tpa of uranium oxide – noting that the SRE Project does not materially change existing uranium production, with an increase of approximately 1% expected as a result of the leaching of Prominent Hill concentrate to remove fluoride
    - 1,700,000 to 1,900,000 tpa of 98% sulphuric acid
- introduction of two-stage smelting, involving the installation of a new primary flash-smelting furnace (FSF) to produce copper matte, providing increased concentrate smelting capacity
- conversion of the existing direct-to-blister flash furnace (DBF) to a flash-converting furnace (FCF), which would process the matte into blister
- addition of an acid plant of similar nature and scale to the existing acid plant, and subsequent upgrade of the existing acid plant
- expansion of the electrorefinery and precious-metals refinery (PMR) facilities to produce cathode copper, gold, and silver.

The SRE Project is projected to generate a net benefit to Australia of $3,195 million in present value terms, including $963 million in producer surplus, $1,730 million in company income tax, $154 million in labour surplus, and $29 million in royalties, partially offset by $200 million in externality costs. The share of these benefits attributable to South Australia is estimated at $342 million in present value terms.

The SRE Project's key elements are primarily located on the existing Special Mining Lease (SML) (Figure ES1.1). The SRE Project would require new supporting facilities, infrastructure and services, and the upgrade, removal and/or relocation of existing facilities and services within the SRE Project Area referred to as the SML Area (Figure ES1.2).

The SRE Project would utilise the existing 275 kilovolt (kV) transmission line from Davenport substation (near Port Augusta) to Olympic Dam mine, located within Clause 28 land[1]. Increased electricity loads may require isolated areas of land disturbance and associated vegetation clearance to maintain electrical clearance within designated Electricity Infrastructure Ground Re-profiling Areas (EIGR Areas). These locations are shown on Figure ES1.3.

The SRE Project would be constructed and operated in a staged manner to enable production capacity up to 650,000 tpa of total copper and associated products. The stages are as follows:

- Stage 1a: an increase of smelter throughput to approximately 1,100,000 tpa of concentrate producing an output of approximately 390,000 tpa of total copper (anticipated construction timing 2028 to 2032)
- Stage 1b: an increase in smelter throughput to approximately 1,400,000 tpa of concentrate producing an output of approximately 500,000 tpa of total copper (anticipated construction timing 2032 to 2036)
- Stage 2: an increase in smelter throughput to approximately 2,000,000 tpa of concentrate producing an output of approximately 650,000 tpa of total copper (anticipated construction timing 2036 to closure).

This Environmental Impact Statement (EIS) is seeking a decision to allow the commencement of the SRE Project under the *Planning, Development and Infrastructure Act 2016* (SA) (PDI Act).

[1] Land as described in Clause 28, *Roxby Downs (Indenture Ratification) Act 1982* (SA)

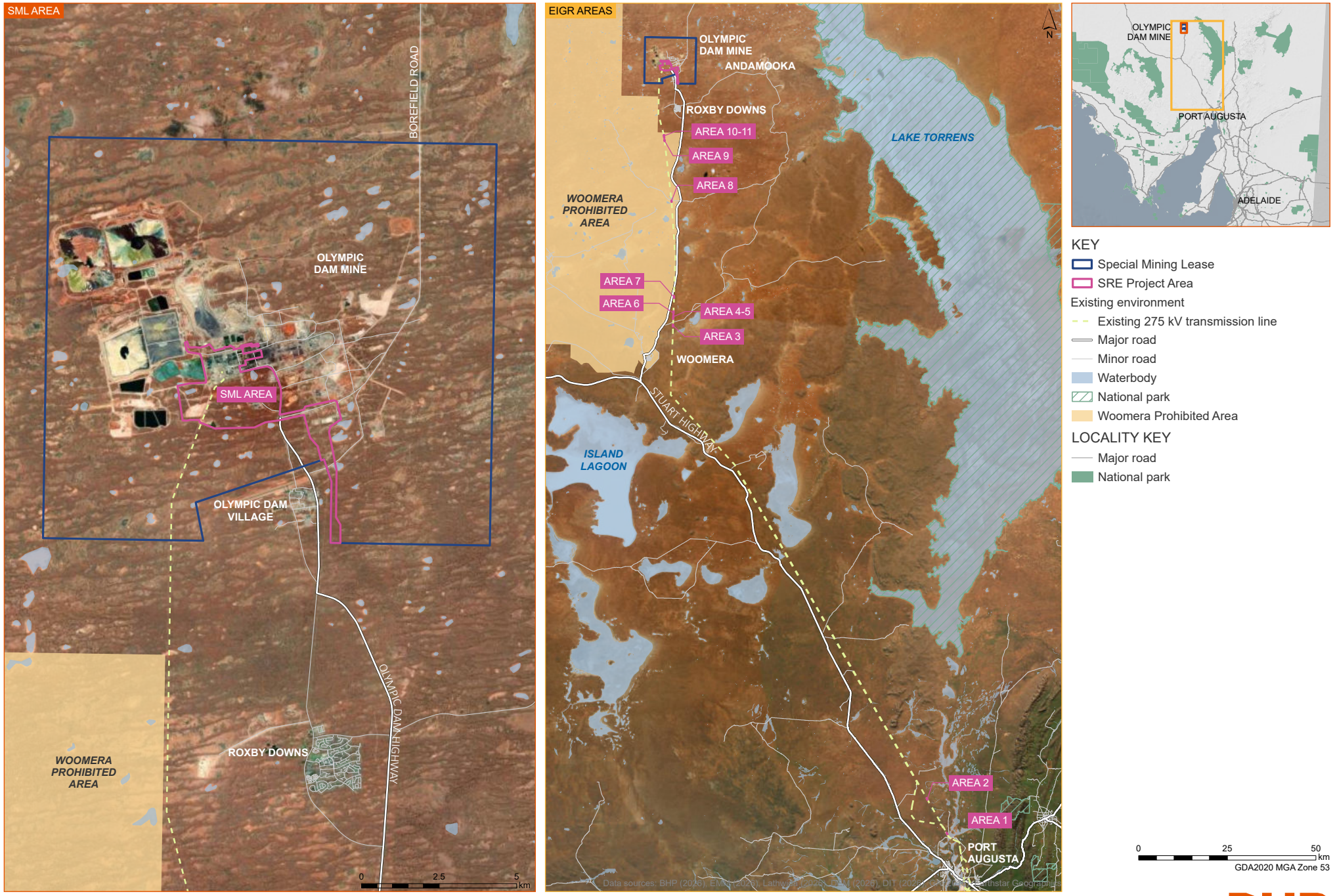


Figure ES1.1 | SRE Project location context

SRE Project BHP

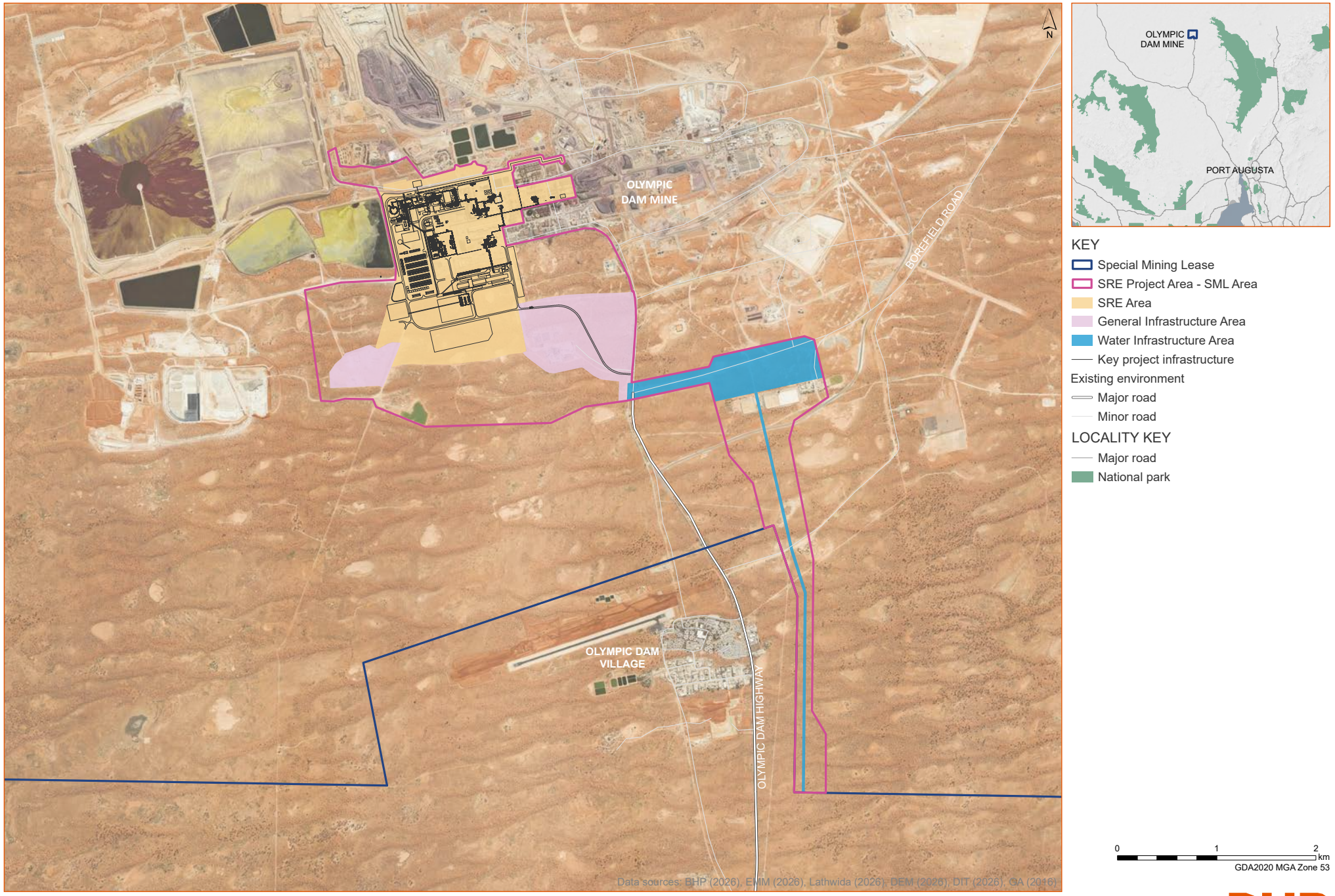


Figure ES1.2 | SRE Project Area - SML Area

SRE Project BHP

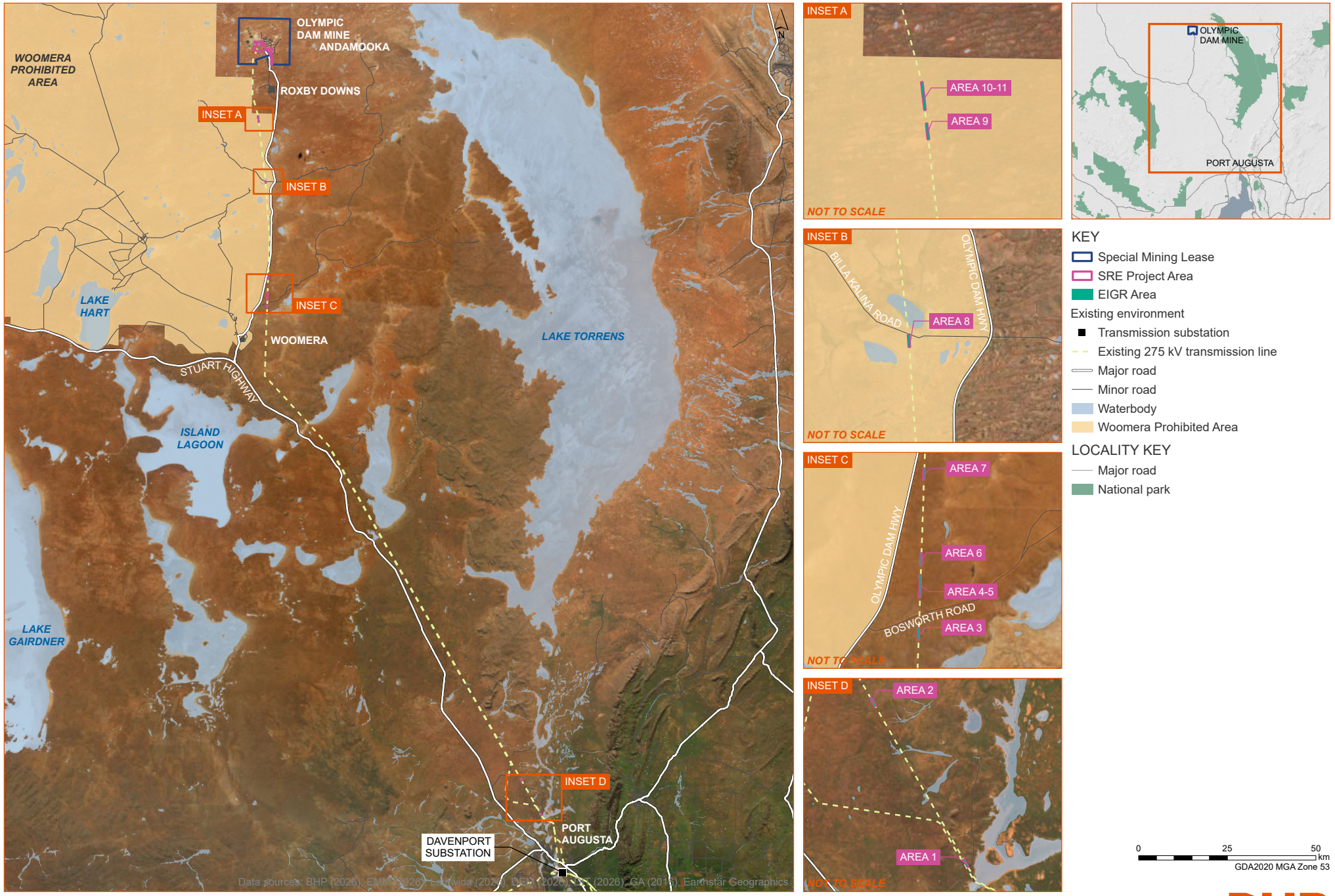


Figure ES1.3 | SRE Project Area - EIGR Areas

SRE Project BHP

ES1.1 Project context

The status of existing Olympic Dam mining and smelter operations and BHP's 2023 acquisition of additional copper assets, located on the Traditional Lands of the Kokatha People in the Far North region of South Australia provide important context and background for the objectives and key elements of proposed SRE Project.

ES1.1.1 Olympic Dam operations (existing)

ES1.1.2 Background

BHP's Olympic Dam mining operations commenced in 1988 following State and Commonwealth regulatory approval of an EIS (1982 EIS). The EIS approved underground mining and production of up to 150,000 tpa of total copper and associated products.

In 1995 an Environment Review addressed several variations to the original 1982 EIS, while an additional EIS was completed in 1997 (1997 EIS) for a phased expansion of underground mining and surface processing facilities of up to 350,000 tpa of total copper and associated products.

The 1997 EIS expansion was proposed to be completed in two phases:

- first phase – increasing mining and production up to approximately 200,000 tpa total copper and associated products
- second phase – increasing mining and production up to approximately 350,000 tpa total copper.

Since 1997, BHP has implemented the first phase and undertaken mining and processing optimisations to reliably produce the nameplate capacity of approximately 200,000 tpa total copper and associated products. The second phase expansion, considered in the 1997 EIS, was subject to potential additional assessment requirements and has not yet been implemented.

ES1.1.3 Underground mining operations

The Olympic Dam orebody resource is located approximately 300 metres (m) below the surface and continues to a depth of over 1 kilometre (km).

The existing underground mining operation uses a sub-level open stope (SLOS) mining method. The mine includes crushing stations, vertical ventilation shafts, and a materials handling system consisting of an automated rail network, hoists and declines used to transport crushed ore to the surface, where it is moved along conveyors to the processing plant.

The current smelting process has suited Olympic Dam's high (greater than 1.5) Cu:S ratio Northern Mining Area (NMA) resource since the expanded mine and surface operation was commissioned in 1998. Since 2017, mining has gradually moved away from the NMA into the Southern Mining Area (SMA).

This different part of the orebody provides a lower Cu:S ratio ore feed. Mining from higher Cu:S ratio areas in the NMA will occur for the life-of-asset, however the NMA volumes will reduce in proportion to the increase in SMA volumes over time.

Further drilling since 2021 within the SMA, and associated mineralogy studies, has confirmed that the Cu:S ratio of the smelter feed will decline as mining progresses, to a point where a change in configuration of the smelter is required to maintain the current process efficiency. This is a key driver for the proposed SRE Project.

ES1.1.4 Minerals processing operations

Olympic Dam surface infrastructure includes a processing plant comprising a concentrator, hydrometallurgical plant, smelter and refinery operations and associated infrastructure to produce final copper, uranium oxide, gold and silver products.

When the ore reaches the processing plant, it is sent to a concentrator, where it is milled, and water added to form a slurry, which is passed through a series of flotation stages to separate the minerals, producing a copper-rich concentrate and uranium-rich tailings.

The concentrate is leached in acid to remove residual fluorine and uranium to tails and produce a neutral slurry, which is dried before being fed into the smelter to produce copper anodes. The existing smelter treats high-grade copper concentrates through a single-stage DBF smelter.

The copper anodes are then processed in the refinery to produce high-purity copper cathodes. The residue from the refining process is treated separately to recover gold and silver. In the past, concentrate and/or anode copper has also been intermittently imported to the site for processing.

The tails from the concentrator pass into the hydrometallurgical plant to extract uranium, which is then precipitated from solution before being heated and dried to produce uranium oxide concentrate. The hydrometallurgical circuit includes a solvent extraction plant to selectively extract and upgrade copper from leach solutions. Tailings from the hydrometallurgical process are deposited to the tailings retention system (TRS), comprising tailings storage facility (TSF) cells and evaporation ponds, for the management of solid and liquid components of the tailings, respectively.

ES1.1.5 Copper SA province

BHP's copper commodity strategy is focused on both organic growth from existing assets, including implementation of innovation and technology initiatives, and discovering, acquiring and developing resources to significantly increase copper production by 2040.

BHP's Copper SA province includes the Olympic Dam mine, Carrapateena mine, Prominent Hill mine and Oak Dam exploration sites (Figure ES1.4). Copper SA has a mineral resource base of approximately 14.1 billion tonnes (Bt), with a contained 101.8 million tonnes (Mt) of copper metal. This resource base presents potentially attractive economic returns, with provincial-scale synergies, through multiple mines and resource opportunities to supply copper concentrate into a single smelting and refining facility at Olympic Dam.

As part of the establishment of the Copper SA province, the SRE Project would enable Olympic Dam to receive, blend and smelt copper concentrates from Carrapateena and Prominent Hill mining operations. The Oak Dam advanced exploration site is also a potential future source of copper, should it progress into a mining operation. The SRE Project may also provide the capacity to receive copper concentrate from other third-party suppliers. Copper concentrate feed sources, which Olympic Dam would be able to receive due to the SRE Project, are illustrated in Figure ES1.4.

Copper SA copper production was 316,000 tonnes (t) in the financial year FY25. The SRE Project, as a component of the Copper SA growth plan, has the potential to increase copper production capacity to up to 650,000 tpa of total copper plus associated products.

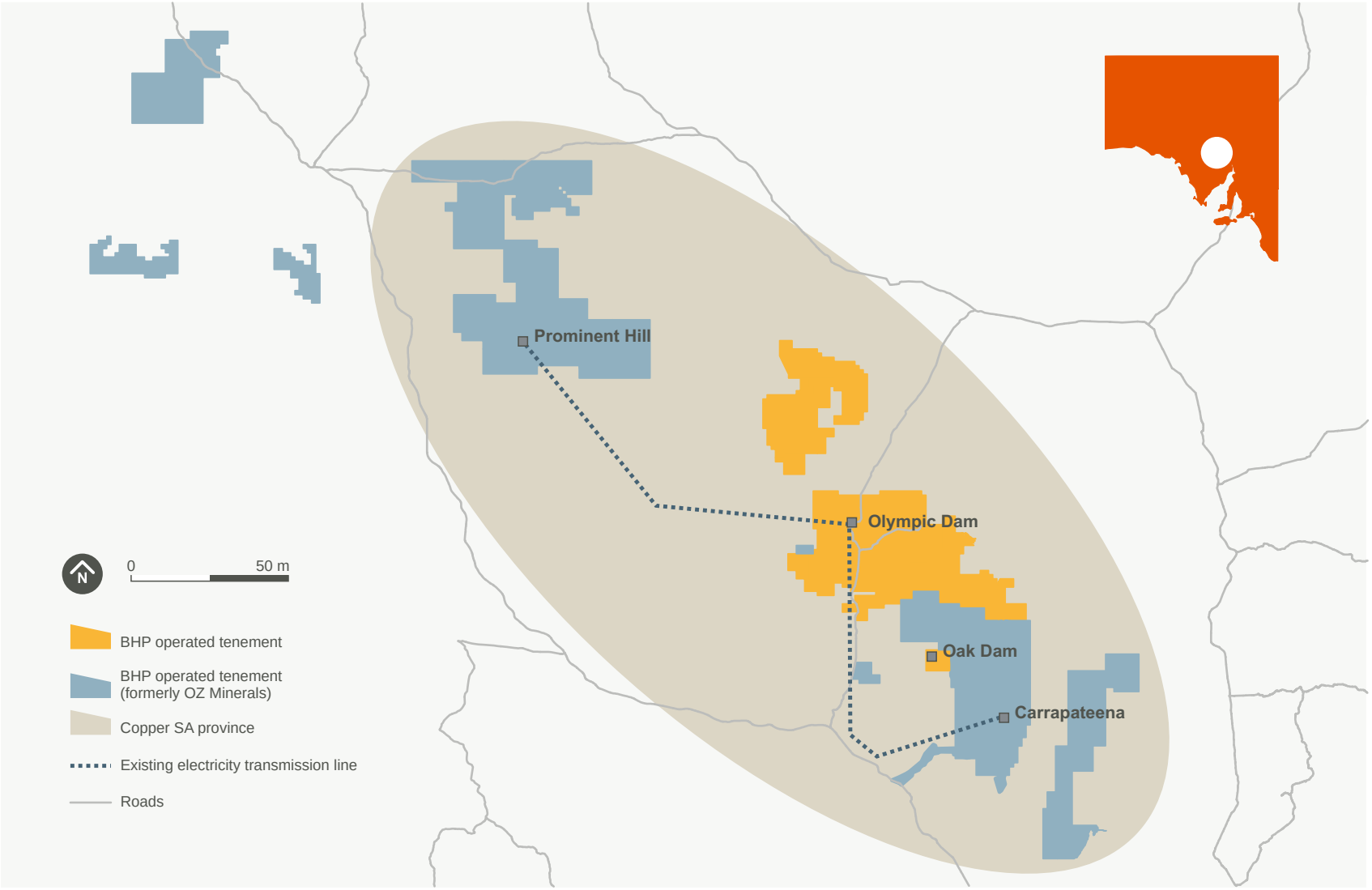


Figure ES1.4 | Copper SA province

ES1.2 Approval pathway

ES1.2.1 *Planning, Development and Infrastructure Act 2016* (SA)

The SRE Project was declared an 'impact assessed development' pursuant to section 108(1)(c) and 108(7) of the PDI Act on 26 August 2024. Impact assessed development is the most rigorous level of development assessment prescribed under the PDI Act. The declaration reflects the nature, scale and significance of the SRE Project to South Australia.

Specifically, the Minister for Energy and Mining (the Indenture Minister) made the following declaration:

> *Pursuant to Section 108(1)(c) and Section 108(7) of the Planning Development and Infrastructure Act 2016, having taken into account those principles prescribed under Regulation 27(2) of the Planning, Development and Infrastructure (General) Regulations 2017 (the Regulations) and having given consideration to the matters under Regulation 27(3) of the Regulations, I declare that all development of a kind specified in the Schedule to this Notice, to the extent that it is undertaken on land identified in Clause 28(1) of the Indenture as impact assessed development and that references to "development" include a project.*

The majority of SRE Project's key elements (Section ES1.1) are located within the existing SML but does not include the following activities, which are subject to separate regulation and approval:

- business-as-usual (BAU) operations, which are operations and activities which enable production of up to the approved total copper production (approximately 200,000 tpa), or
- activities associated with BHP's scheduled campaign maintenance 2027 (SCM27) shutdown.

The SRE Project may also be supported by low impact development outside the SML, which could include, for example, minor road works and upgrades to accommodation infrastructure. It is proposed that any approvals required for these activities would be sought on an as-needs basis, meeting the requirements of the respective legislation, standards and guidelines.

To meet the requirements of an impact assessed development, the Assessment Requirements for the SRE Project EIS (Assessment Requirements), dated September 2025, were published by the Department for Housing and Urban Development (DHUD) on the PlanSA website on 5 November 2025.

Since the Assessment Requirements were prepared in September 2025, the following minor project changes have occurred during the ongoing engineering design for the SRE Project:

- Increased smelter throughput to approximately 2,000,000 tpa of concentrate (from 1,700,000 tpa) to enable resolution of the copper-to-sulphur ratio and production capacity up to 650,000 tpa of total copper.
- Optimised capital investment by constructing and operating the SRE Project in a staged manner via Stage 1a (new), Stage 1b (new) and Stage 2.
- Inclusion of an option to leach other third-party concentrates to remove deleterious elements (e.g. fluorides) prior to smelter feed preparation.
- Upgrade of the existing slag concentrator circuit within the existing (brownfields) processing plant footprint and the development of an interim slag stockpile to support the slag concentrator operations during Stage 1a.
- Minor process flow revisions designed to optimise production and aid efficiencies, none of which require additional vegetation or habitat disturbance or result in increased emissions or other waste generation.

- Increased raw water demand, from 10 ML/d to approximately 16 ML/d, to be supplied by the Government of South Australia, via the Department for Infrastructure and Transport (DIT) Northern Water Project (NWP)[2].
- Changes to the construction and operation workforce profile to reflect the staged manner of development.
- Changes to the SRE Project Area to include the whole of the existing (brownfields) processing plant to allow for upgrades to infrastructure and equipment within these areas as necessary to support the SRE Project (e.g. development of a brownfield slag concentrator) and inclusion of a stormwater overflow pipeline corridor. These changes do not result in additional native vegetation clearance or habitat disturbance.

Key differences between the SRE Project initial project description, from the April 2025 Scoping Application, and the description of the project presented in the SRE Project EIS, have been reviewed against the Assessment Requirements. The review, which has been discussed and provided to the Government of South Australia, indicated that the issued EIS Assessment Requirements remain adequate for the characterisation of potential SRE Project impacts.

ES1.2.2 *Roxby Downs (Indenture Ratification) Act 1982* (SA)

The Olympic Dam mine operates under the Olympic Dam and Stuart Shelf Indenture (Indenture), ratified by the *Roxby Downs (Indenture Ratification) Act 1982* (SA) (Ratification Act) by the Government of South Australia in 1982 and most recently amended in 2026.

Under the provisions of the Indenture the South Australian Minister for Energy and Mining must adopt the provisions contained in Part 7 of the PDI Act. Under the Indenture, the Minister for Energy and Mining made a declaration on 26 August 2024 that the SRE Project is to be assessed as an 'impact assessed development' requiring the preparation and submission of an EIS. The Minister for Energy and Mining adopts the role of the State Planning Commission (SPC) in developing the Assessment Requirements and is the responsible decision-maker under the Government of South Australia's process.

ES1.2.3 *Environment Protection and Biodiversity Conservation Act 1999* (Cth)

The SRE Project was referred to Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) on 23 December 2024 (EPBC 2024/10096) and determined to be not a controlled action via a Decision Notice on 29 April 2025. The referral and not controlled action determination considered all potential impacts to MNES protected under the EPBC Act.

Since the EPBC Referral determination in April 2025, minor project changes have occurred during development of the SRE Project (described in ES1.2.1). Key differences between the SRE Project as referred, and the minor project changes have been considered by undertaking an EPBC Act Significant Impact Assessment/Self-Assessment in accordance with the EPBC Act, EPBC Regulations, and Significant Impact Assessment Guidelines 1.1.

Assessment of these changes, with respect to the potential for significant impacts to matters of national environmental significance (MNES) and, where relevant, the whole-of-the-environment, demonstrated that the changes do not materially change the impact profile of the referred SRE Project and do not change the conclusion that the SRE Project is unlikely to have a significant impact on MNES.

The EPBC Act Significant Impact Assessment/Self-Assessment was discussed and provided to DCCEEW.

[2] Under the EPBC Act the Department for Infrastructure and Transport are the proponent for the Northern Water Desalination Plant and Water Transfer System Infrastructure Project (EPBC 2025/10397)

ES1.2.4 *Native Vegetation Act 1991* (SA)

The SRE Project would require some clearance of remnant native vegetation. As part of the assessment of the SRE Project, the Native Vegetation Council (NVC) would be provided with an opportunity to comment on this EIS, related to:

- whether the proposed development avoids or minimises clearance as far as practicable
- whether there are alternatives that involve no clearance, less clearance or clearance of more degraded vegetation than the vegetation proposed to be cleared
- determining the significant environmental benefit (SEB) required to offset the impact of clearance.

Where possible, infrastructure would be strategically placed to minimise vegetation clearance, however, where avoidance is not possible, an SEB offset would be required to lead to long-term increase in biodiversity values in the local area. BHP would determine the proposed SEB option(s) in consultation with the NVC, which may include the expansion of existing on-ground offset areas (e.g. the existing Emerald Springs SEB area established on Stuart Creek Station in Far North South Australia).

ES1.2.5 Aboriginal heritage

Aboriginal heritage management activities associated with the Olympic Dam operations are primarily undertaken pursuant to the Indenture, the Ratification Act and the Olympic Dam Agreement (ODA). Historical approvals for Olympic Dam have included authorisations obtained under the *Aboriginal Heritage Act 1979* (SA) (AH Act 1979), which applies to Olympic Dam's operations within the Olympic Dam and Stuart Shelf Areas under the Indenture and Ratification Act.

The SRE Project has been designed, assessed and consulted on having regard to both the existing heritage management arrangements applicable to Olympic Dam and the contemporary Aboriginal heritage protection framework in South Australia.

The *Aboriginal Heritage Act 1988* (SA) (AH Act 1988) provides protection for Aboriginal sites, objects and remains in South Australia. The AH Act 1988 currently applies to activities undertaken outside the legislated Olympic Dam and Stuart Shelf Areas and to activities otherwise required by law to be undertaken in accordance with that Act.

Accordingly, for activities proposed within the SML and the EIGR Areas, BHP will continue to comply with the ODA, applicable legislation, approved heritage management procedures and any heritage approvals or authorisations required at the time the activity is undertaken. Where an activity cannot avoid potential impacts to Aboriginal heritage values, BHP will determine the appropriate authorisation pathway in consultation with Traditional Owners and the Government of South Australia, having regard to the legislative framework then in force.

For activities proposed outside of the Olympic Dam and Stuart Shelf Areas, including in EIGR Areas outside of these areas, these will be undertaken in accordance with the requirements of the AH Act 1988 and any authorisations required under that Act.

No construction activity that has the potential to disturb Aboriginal heritage values will occur unless the necessary heritage assessments, consultation processes and approvals or authorisations have first been completed.

ES1.2.6 *Native Title Act 1993* (Cth)

The *Native Title Act 1993* (Cth) (Native Title Act) recognises and protects Native Title, being the rights and interests in land and waters that Aboriginal and Torres Strait Islanders have under their traditional laws and customs.

Under the Native Title Act, Native Title is extinguished by various tenures, including freehold land and gazetted public roads. As the SRE Project Area is located within the SML (SML Area), which overlaps freehold title held by BHP, and within freehold Clause 28 land (EIGR Areas), there are no legal Native Title Act implications associated with the SRE Project.

ES1.3 Project description

In order to maintain consistency throughout this EIS, the following terminology related to project infrastructure has been defined for the SRE Project, where the **SRE Project Area** (Figure ES1.1) is defined as the boundary around the SRE Project for which BHP is seeking approval, including:

- **SML Area**, located within the SML, which is further delineated by the following areas (Figure ES1.2):
  - **SRE Area**: the extent of the proposed SRE Project infrastructure required for construction and operation of the SRE Project within the SML. Includes the existing brownfield plant area, proposed facility relocation(s), proposed plant and laydown areas.
  - **General Infrastructure Area**: the extent of the proposed ancillary infrastructure and ancillary activities required for construction and operation within the SML. Includes the proposed infrastructure laydown areas, proposed stormwater dam location, proposed topsoil and subsoil storage areas.
  - **Water Infrastructure Area**: the extent of the proposed water infrastructure and ancillary activities required for construction and operation within the SML. Includes the proposed water pipeline and water storage dam locations.
- **EIGR Areas**: the extent of the isolated proposed vegetation disturbance required to maintain regulatory clearance distances between the 275 kV transmission line and the ground surface within Clause 28 land (Figure ES1.3).

The key characteristics of the SRE Project are summarised in Table ES1.1.

Table ES1.1 | Key characteristics of the SRE Project

Project element	Summary
SRE Project activities and infrastructure	
Smelter and refinery expansion and additions	Expansion of, and additions to, the existing smelter and refinery to enable production of up to 650,000 tpa copper plus associated products (gold, silver and acid). This would include: • a new concentrate handling and blending facility • additional concentrate leach capacity • upgrade and expansion of the existing smelter feed preparation • installation of a new primary FSF to produce copper matte and conversion of the existing DBF to a FCF to convert matte to blister, including matte handling and grinding infrastructure and additional anode furnace and anode casting infrastructure • upgrade of the existing slag concentrator circuit and subsequent development of a new slag concentrator circuit • new off-gas management infrastructure, including additional gas and dust handling equipment • a new acid plant and upgrade of the existing acid plant, and the addition of a new acid export facility • a new oxygen plant and expansion of existing oxygen plant capacities • a new electrorefinery, associated anode preparation infrastructure and slimes handling infrastructure • expansion of the PMR facility • slag stockpile and treatment.
Electricity demand, supply and distribution	An electricity demand of up to 68 megavolt-amperes (MVA) net load increase would be required for the SRE Project. The additional electrical demand due to the SRE Project would be met by capacity from the national grid via the existing 275 kV transmission line (noting potential for below-line land disturbance and associated vegetation clearance outside of the SML). Minor augmentation of existing onsite electricity supply infrastructure at Olympic Dam within the SML would be required to ensure the additional capacity could be achieved and maintained. New high voltage and low voltage power supply and reticulation infrastructure would be required to all smelter infrastructure on the SML.
Water demand	Water demand of between 2 and 16 megalitres per day (ML/d) is required for the SRE Project in addition to the existing supply for current operations.
Water supply and distribution	The SRE Project proposes no additional water abstraction from the Great Artesian Basin (GAB) above daily average BAU volumes. Water supply for the SRE Project would nominally be provided from the DIT NWP infrastructure, following commissioning of the initial 90 ML/d capacity of the NWP. This would require new water storage and distribution infrastructure to connect the SRE Project to the NWP connection point at the SML boundary. The NWP water supply may be supplemented or offset by the provision of local groundwater supply on the SML. This water supply would occur via existing process storage dams, the desalination plant at the Olympic Dam site, and/or through the distribution of the existing water supply within daily average BAU volumes. The additional water supplies are likely to require augmentation of the existing desalination water treatment plant and water distribution network, and a demineralised water plant would be required to support the SRE Project operations.

Project element	Summary
Supporting infrastructure	Supporting infrastructure includes: • civil infrastructure works, such as roads and stormwater infrastructure • new offices and crib rooms • new workshops • new laydown areas • process control system upgrades • concrete batching • other supporting infrastructure as required to facilitate the implementation and operation of the SRE Project.
Waste management	Development of the SRE Project may require decommissioning of the existing processing plant components including dryers, the electric furnace and the existing concentrate storage and transfer system. Some of the decommissioned infrastructure would be retained in-situ to preserve operational flexibility or for future management under the site Closure and Rehabilitation Management Plan, however some elements may require disposal as a component of the SRE Project. Waste generated during construction would be managed as follows: • where practicable, demolition materials would be removed from site and recycled • materials not suitable for removal from site would be managed on the SML via existing waste management facilities. All waste generated from construction of the SRE Project would be managed in accordance with existing site procedures and approved management plans. Operational wastes associated with the SRE Project consist of processing and non-processing wastes where: • processing wastes are limited to low-copper slags generated from the smelting and slag concentrator operations that are not suitable for reprocessing and effluent streams from various process operations that are directed to tailings, including from the PMR and smelter off-gas systems • non-processing wastes including reagent packaging wastes and operational consumables.

<table>
<tr><th>Project element</th><th>Summary</th></tr>
<tr><td>Workforce</td><td>100% fly-in/fly-out (FIFO) workforce is assumed for construction and the SRE Project operational workforce. Estimated peak construction workforce numbers (in full time equivalents (FTE)) are summarised below.
<table>
<tr><th>Construction stage</th><th>Average FTE</th><th>Peak FTE</th></tr>
<tr><td>Stage 1a</td><td>~708</td><td>~1,313</td></tr>
<tr><td>Stage 1b</td><td>~260</td><td>~515</td></tr>
<tr><td>Stage 2</td><td>~519</td><td>~978</td></tr>
</table>
Following construction, the SRE Project would require a permanent operational workforce summarised below.
<table>
<tr><th>Operational stage</th><th>Additional SRE Project operational workforce</th><th>Total Olympic Dam smelter and refinery workforce</th></tr>
<tr><td>Stage 1a</td><td>~207</td><td>~766</td></tr>
<tr><td>Stage 1b</td><td>~57 (additional to Stage 1a)</td><td>~823</td></tr>
<tr><td>Stage 2</td><td>~244 (additional to Stage 1b)</td><td>~1,067</td></tr>
</table>
SRE Project construction and operational workforce is proposed to utilise existing and new accommodation to be established by BHP for the SCM27 shutdown, Olympic Dam future campaign maintenance accommodation, and/or greenfield accommodation (subject to separate approvals).</td></tr>
<tr><td>Concentrate import</td><td>Import of copper concentrate from Prominent Hill and Carrapateena mining operations, as well as possible future mining operations (e.g. Oak Dam), and maintain the ability to receive copper concentrate from other third-party suppliers.
Prominent Hill concentrate may be passed through concentrate leach to remove fluorides prior to smelter feed preparation. Carrapateena concentrate is expected to pass directly to smelter feed preparation. Other, third-party concentrates may be passed through concentrate leach to remove deleterious elements (e.g. fluorides) prior to smelter feed preparation as required.</td></tr>
<tr><td>Production and export</td><td>Total production volumes of up to:
~650,000 tpa of cathode copper
~893,000 ounces per annum of gold
~3,950,000 ounces per annum of silver
~4,900 tpa of uranium oxide concentrate; note that the SRE Project does not materially change existing uranium production, with an increase of approximately 1% expected as a result of the leaching of Prominent Hill concentrate to remove fluoride. No upgrade or modification of uranium production facilities is proposed as a part of the SRE Project.
~1,700,000 – 1,900,000 tpa of 98% sulphuric acid of which up to approximately 810,000 tpa may be exported from Olympic Dam (i.e. operations become net sulphuric acid producer).</td></tr>
</table>

ES1.4 Benefits of the SRE Project

ES1.4.1 Benefits for local and regional communities

BHP is committed to maximising economic benefits for the region wherever possible. The SRE Project would contribute to this by:

- directly employing or contracting up to approximately 1,313 people during peak construction, and up to approximately 508 additional SRE Project workforce during operation, indirectly contributing to the South Australian economy
- supporting outcomes for Traditional Owners and Indigenous people though employment and procurement opportunities
- increasing the net benefits of local employment, defined as the additional employment income in excess of average wages in the local Outback SA – North and East region, by between $1 million to $4 million a year over the life of the project
- supporting ongoing non-labour expenditure to the local Outback SA – North and East region, such as materials and equipment, fuel and utilities, estimated to be $66 million a year during construction and $39 million a year during operations
- providing value-add regional processing which supports increasing South Australia's economic complexity
- provisioning capital expenditure for infrastructure, plant and equipment, a proportion of which would be sourced from local and regional providers.

In addition, BHP would continue with regional community events, training and education programs established to support the existing Olympic Dam operations. These programs would assist in up-skilling Indigenous and local communities and providing employment opportunities that would help maintain regional populations.

ES1.4.2 Benefits for South Australia

The SRE Project is expected to have positive economic benefits for the local, regional and state economies with direct and indirect benefits including:

- Increased labour force participation, indirectly enhancing socio-economic wellbeing of individuals and communities.
- Strengthening of the regional economy through contribution to Gross Regional Product (GRP) and to the State, indirectly supporting economic diversification and providing greater resilience to economic downturns.
- Increased economic productivity and prosperity for local and regional businesses (e.g. civil and engineering construction, professional, technical and scientific services, freight and logistics) due to increased demand for goods and services, indirectly leading to potential generation of further employment opportunities.
- Increased social capital due to population retention or growth driven by SRE Project employment and business opportunities, indirectly contributing to improved community cohesion and connectedness and enhanced community vitality.

ES1.5 Partnerships and community engagement

BHP's approach to partnerships and community engagement aligns with BHP's partnering approach, the Better Together engagement principles, and State Planning Commission Community Engagement Charter, which applies in circumstances where consultation is required on an Impact Assessed development application that is subject to an EIS.

BHP uses informative and inclusive practices to support maintaining and enhancement of partnership and community interest and confidence. BHP's engagement approach is underpinned by BHP's Indigenous People policy and working with partners and stakeholders to ensure their needs, views and concerns are heard and documented.

During the preparation of this EIS, BHP has undertaken engagement and will continue to undertake engagement with the following key partners:

- Kokatha Aboriginal Corporation as the Registered Native Title Body Corporate
- Native Title Party Representative Corporation (NTPRC)
- local communities
- local government entities
- local business community and industry bodies
- government authorities and boards with local interests
- environmental interest groups
- Copper SA employees and contractors.

The Indenture Minister will place this EIS on public exhibition for a period of at least 30 business days. The public exhibition process is the government's formal consultation with partners, providing an opportunity for all interested parties to read about the SRE Project and submit feedback to both the regulatory authorities and BHP regarding the SRE Project.

During the public exhibition phase, BHP propose to hold in-person and online information sessions regarding the SRE Project.

ES2 Assessment of potential environmental impacts

ES2.1 Impact assessment methodology

Relevant to the SRE Project, Section 113(4) of the PDI Act requires that an EIS must include a statement of:

- the expected environmental, social and economic effects of the development
- the expected effects of the development on the climate and any proposed measures designed to mitigate or address those effects
- the extent to which the expected effects of the development are consistent with the provisions of any relevant state planning policy, regional plan, the Planning and Design Code, and any matters prescribed by the regulations
- the extent to which the expected effects of the development are consistent with the *Environment Protection Act 1993* (SA) (EP Act)
- commitments to avoid, mitigate or satisfactorily manage and control any potentially adverse effects of the development on the environment.

BHP has developed an Environmental Impact Assessment Framework (EIAF) to identify and, wherever possible, quantify, the potential environmental and social impacts associated with the SRE Project in a consistent and repeatable manner, ensuring community feedback and knowledge is embedded. The SRE Project EIAF has been used to inform the preparation of this EIS.

The EIAF provides a systematic approach to identify and evaluate potential environmental and social impacts associated with the SRE Project through the project life cycle (construction, operations and closure) in a consistent, repeatable and transparent manner, ensuring community feedback and knowledge is embedded. This allows focus on the appropriate avoidance, mitigation and management measures to meet the environmental objectives.

The EIAF is used to:

- determine which combinations of sources and pathways are likely to result in impacts to receptors
- make consistent and repeatable determinations of the impact to receptors across multiple pathways
- understand the uncertainties, and resultant sensitivities, associated with the determination of impact
- allow consideration of perspectives that arise from stakeholder consultation about the SRE Project activities and the potential for impacts
- determine where controls, if any, are required to reduce impacts to as low as reasonably practicable (ALARP) in accordance with a mitigation hierarchy.

The SRE Project EIAF is summarised in Figure ES1.5.

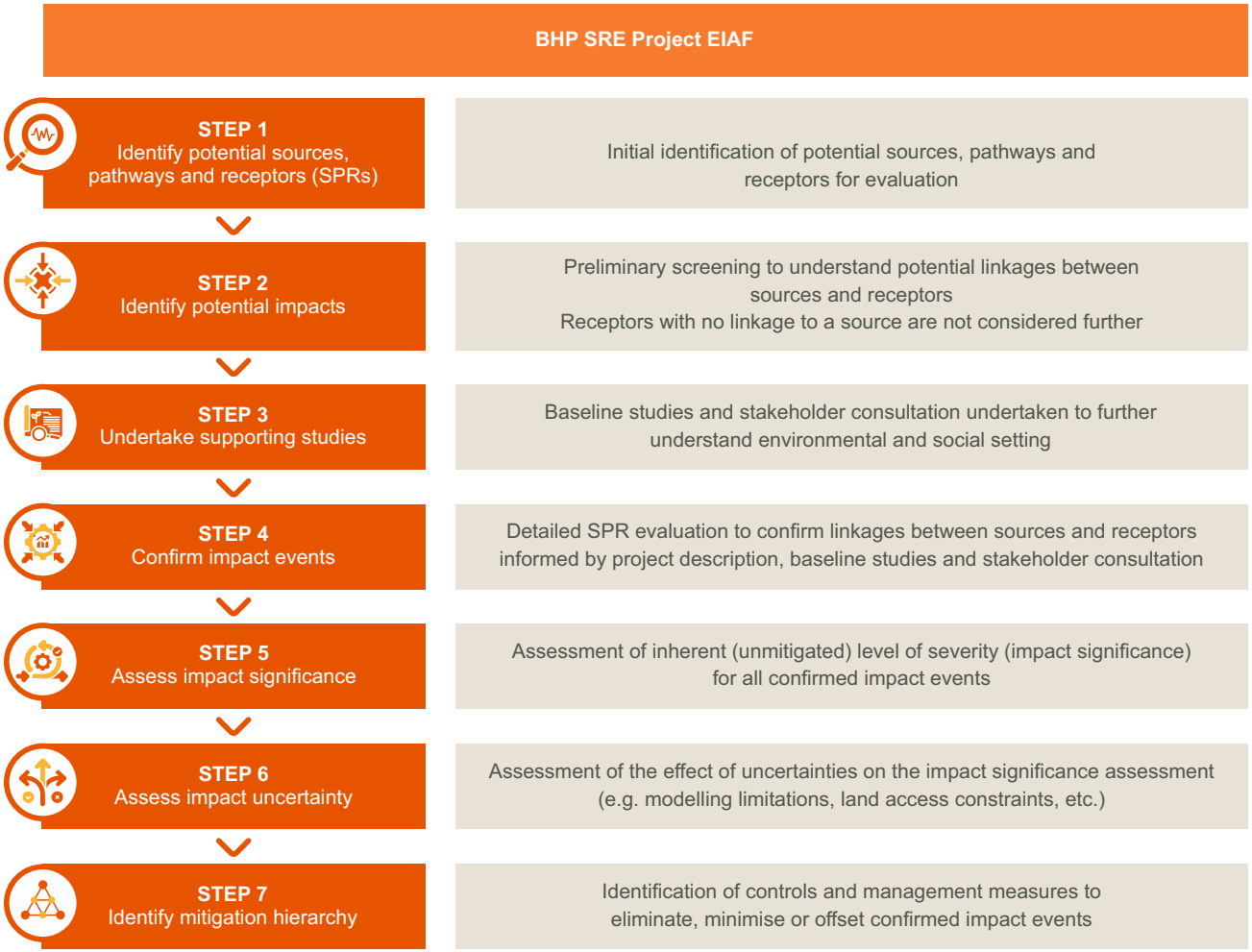


Figure ES1.5 | Environmental Impact Assessment Framework

ES2.1.1 Identification of sources, pathways and receptors

An evaluation is undertaken for initial identification of potential source-pathway-receptors (SPRs) for the SRE Project (Step 1, Figure ES1.5). The identified sources, pathways and receptors for the SRE Project are described as Table ES1.2.

Table ES1.2 | Sources, pathways and receptors under the EIAF

Element	Description
Sources	All proposed SRE Project activities or actions, in whole or in part, and categorised by the timeframe at which the activity or action would be undertaken (i.e. construction, operation, and closure). This includes: • actual and reasonably foreseeable activities under BHP control (i.e. construction, operation, and closure) • associated activities that are essential for the SRE Project, but may not be directly owned, operated or managed by BHP • actual and reasonably foreseeable activities of others that may materially contribute to the severity of the impacts
Pathways	Air – air quality, noise, vibration, light, radiation and greenhouse gases (GHG)
	Surface water – quality and quantity
	Groundwater – quality and quantity
	Land – quality
	Socio-economic – infrastructure, economy
Receptors	Ecology – terrestrial flora (including vegetation) and fauna (including habitat), aquatic ecology, groundwater dependent ecosystems (GDEs), South Australian listed threatened species, EPBC Act listed threatened species
	Cultural amenity – historic heritage, cultural heritage, Indigenous communities
	Local community – health and safety, amenity, community values
	Third-party users – change in resource availability
	Future users – recognises the inherent environmental value of the pathways
	State and Commonwealth matters – economy, climate change

ES2.1.2 Identification of potential impact events

The PDI Act requires that the EIAF describe potential impact events associated with each phase of the proposed operations (construction, operation, and closure) and relevant to each element of the environment. Noting that, for the purpose of the impact assessment, a potential impact event is the combination of a (planned or unplanned) source, a pathway and a receptor, and is identified in the absence of the implementation of engineering or administrative control measures.

The SRE Project's EIAF identifies potential impact events through completion of a preliminary (screening) SPR evaluation. This is undertaken to identify linkages between project sources (i.e. proposed activities or project elements), pathways and receptors. This considers potential linkages for the full project life cycle (construction, operation, and closure). This preliminary screening identifies where potential impacts may occur (Step 2, Figure ES1.5). Receptors with no linkage to a source are not considered further.

In addition to the SPR screening of potential impact events, stakeholder engagement also informs which of the potential impact events are progressed to confirmed impact events, and therefore to the impact assessment stage of the EIAF (Step 3, Figure ES1.5). In these instances, a potential impact event may have been determined to have no SPR linkage but may be progressed based on the stakeholder's perceived potential for impacts to occur as a result of proposed project activities.

ES2.1.3 Supporting studies

The preliminary SPR outputs are used to inform scopes for further technical and supporting studies (Step 3, Figure ES1.5). The supporting studies are designed to provide the information necessary to classify uncertain or unconfirmed linkages and to support the effects and or impact assessment stages of the EIAF for the confirmed impact events.

Supporting studies for the SRE Project included:

- engineering studies describing the specifics of proposed site activities, actions and infrastructure (sources)
- baseline social and/or environment studies (i.e. noise and vibration, air quality, radiation, greenhouse gas, soil and groundwater, surface water, ecology, land use and planning, visual, social, traffic, historic heritage (non-indigenous), economic) (pathways and receptors)
- assessment of effects studies, describing and quantifying the likely change in the pathway values as a result of proposed project activities (e.g. air quality modelling, noise and vibration modelling) (pathways)
- impact assessment studies, describing and quantifying how the changed pathway values may impact the receptor (e.g. how a change in air quality may result in health or amenity impacts, or how land disturbance may reduce the abundance or diversity of flora, vegetation and/or fauna habitat) (receptors).

ES2.1.4 Confirmation of impact events

Outcomes of the supporting studies undertaken on sources and pathways determine potential impact events to either have no linkage, a possible linkage, or a confirmed linkage (Step 4, Figure ES1.5). Potential impact events that remain uncertain or unconfirmed following the completion of supporting studies shall be subject to the precautionary principle and carried forward assuming that a linkage exists.

ES2.1.5 Determination of impact significance

Confirmed impact events (i.e. those determined to have an SPR linkage and those other events carried forward as a result of the outcomes of stakeholder consultation) are subject to an impact assessment under the EIAF to determine the significance of the impact in the absence of controls (Step 5, Figure ES1.5).

In determining the impact significance, consideration is given to the:

- type of impact, including direct, indirect, cumulative and/or perceived
- geographic extent, size and scale
- duration, frequency, reversibility of the potential impact
- whether the potential impact is from a planned or unplanned event
- uncertainty associated with the determination of impact significance, and subsequently the sensitivity to change).

For the purposes of the EIS, an EIAF, including an impact significance determination matrix, was developed specifically for the SRE Project, with consideration to significance requirements under the PDI Act, other relevant state legislation and BHP's internal risk management classifications. Consequence definitions, severity levels and significance determinations under the EIAF relate specifically to the SRE Project and use different, and distinct, criteria from those assignments of significance under the EPBC Act. The SRE Project EIAF refers to 5 severity levels (Level 1 to Level 5), with severity of impact categorised as 'not significant' for Level 1 to Level 2, and as 'significant' for Level 3 to Level 5. Confirmed impact events are assessed against the consequence definitions to determine the severity level and allow a determination of impact significance.

Events determined to have an uncontrolled impact consequence of greater than or equal to Level 3, are considered significant and require the application of controls to reduce the consequence severity in keeping with the environmental objectives.

Alternatively, a confirmed impact event may be determined to be significant as an outcome of stakeholder engagement and may also necessitate the application of controls to eliminate or otherwise reduce the impact to ALARP.

Assessment outcomes of 'significant' under the EIAF also allow for the development of relevant environmental outcomes and associated compliance, which may subsequently be incorporated into the Olympic Dam Environmental Protection and Management Program (EPMP) and regulated under the Indenture. This provides assurance regarding the requirements for implementation of mitigation and management measures to reduce impact significance.

ES2.1.6 Control and management strategies

Control and management strategies are then identified which can be implemented to ensure the potential of adverse impacts is ALARP, that Environmental Outcomes are complied with, and where possible, positive impacts are realised (Step 7, Figure ES1.5).

The EIAF specifically aims to identify control and management strategies where the impact assessment has determined that the uncontrolled impact is significant, or where such uncertainty exists that a significant impact may occur.

When developing control and management strategies for the SRE Project, the following mitigation hierarchy of controls is considered:

- Avoid: Adjust a project layout or eliminate the effect of the proposed project on the receptor by design. Significant avoidance and minimisation measures have been incorporated into decision making and project design
- Minimise: Measures that minimise or reduce an impact (e.g. reducing speed limits to reduce dust emissions from vehicle travel on unsealed roads)
- Rehabilitate: Measures that rectify, repair, rehabilitate or restore an impact
- Offset: Required if significant residual environmental impacts remain following the application of the above measures.

Control and management strategies should be developed with consideration to any significant uncertainties and assumptions regarding the likely effectiveness of proposed control measures in managing and mitigating impacts and achieving Environmental Outcomes for operations and closure.

ES2.2 Assessment of effects

The identified potential impact events, summarised by pathway, represent scenarios for which there is, or is likely to be, a linkage between SRE Project activities and infrastructure (sources), the relevant pathways, and the identified receptors.

A total of 141 potential impact events were identified during initial impact identification studies. A subsequent preliminary SPR assessment identified 131 of the potential impact events as having, or potentially having, a linkage between source and receptor as a result of the SRE Project. These identified potential impact events (i.e. those that have either a confirmed linkage or unconfirmed linkage) have been carried forward to the assessment of effects presented within this chapter.

Assessment of effects studies, comprising noise and vibration, air quality, radiation, greenhouse gas, soil and groundwater, surface water, ecology, land use and planning, visual, social, traffic, historic heritage (non-indigenous), and economic, have been undertaken to quantify the change in the existing (baseline) pathway environment as a result of SRE Project activities and infrastructure. This allows both the confirmation of any potential impact events with an unconfirmed linkage and informs a subsequent assessment of the likely impact significance.

Confirmed impact events for the SRE Project, determined following completion of the assessment of effects studies, are summarised in the following sections.

ES2.2.1 Noise and vibration

There were 10 confirmed impact events associated with noise and vibration, specifically:

- Project-related construction activities result in the generation of noise and vibration that is audible above baseline noise levels and impacts the amenity of the local community and fauna (5 confirmed impact events).
- Project-related operational activities result in the generation of noise and vibration that is audible above baseline noise levels and impacts the amenity of the local community and fauna (5 confirmed impact events).

The noise and vibration impact assessment, using 3D noise modelling software ‘SoundPLAN version 9.1’, predicts that under worst-case noise enhancing conditions, the baseline, construction and operational scenarios comply with the Environment Protection (Commercial and Industrial Noise) Policy 2023 (Noise EPP) at all sensitive receptor locations.

Construction and operational vibration sources are not expected to generate perceptible levels of vibration at distances greater than a few hundred metres from the source. As the nearest sensitive receptor is approximately 3 km from any potential vibration sources, vibration levels from activities are considered to be negligible.

ES2.2.2 Light

There were 2 confirmed impact events associated with light, specifically:

- Project-related operational activities result in emissions of light leading to changes in visual amenity and impacts to the local community and fauna.

The visual impact assessment determined the existing Olympic Dam mine has a landscape with a high visual absorption capacity rating. This is due to the site being an established mining industrial setting within the SML, which is considered capable of absorbing a higher degree of modification or addition, as proposed by the SRE Project, without significantly changing the landscape character for the local community.

The SRE Project would adopt Australian Standard (AS 4282:2023) 'Control of the obtrusive effects of outdoor lighting') for lighting that would shield the lights and minimise light spill directly from light sources. As no State or Nationally listed species which are identified as potentially present in the SRE Area are nocturnal, no impacts through behavioural change to these species are anticipated.

ES2.2.3 Air quality

There were 17 confirmed impact events associated with air quality, specifically:

- Operational activities release emissions of off-gases and fugitive gases that affect air quality, resulting in impacts to the health and safety, and amenity of the local community (2 confirmed impact events).
- During operation, emission of off-gases and fugitive gases from smelting, acid plant and refinery operations results in concentrations that impact terrestrial flora and vegetation, fauna and habitat and State and Commonwealth threatened species (3 confirmed impact events).
- Operational activities release emission of off-gases and fugitive gases that generates odour, resulting in impacts to the health and safety, and amenity of the local community (2 confirmed impact events).
- Project-related construction activities release emissions of particulate matter that affect air quality, resulting in impacts to the amenity of the local community, flora and vegetation (2 confirmed impact events).
- During construction, the movement of soil materials and the creation of cleared areas subject to wind erosion results in the emission of dust that reduces air quality, impacting the abundance and diversity of terrestrial flora and vegetation, habitat and State and Nationally threatened flora species (3 confirmed impact events).
- Project-related operational activities release emissions of particulate matter that affect air quality, resulting in impacts to the health and safety, and amenity of the local community (2 confirmed impact events).
- During operation, the emission of particulate matter from stacks or material handling activities results in concentrations that impact terrestrial flora and vegetation, fauna and habitat and State and Commonwealth threatened species (3 confirmed impact events).

The air quality impact assessment, using the AMS/USEPA regulatory model AERMOD (model version v24142), predicts the SRE Project to increase air quality impacts at neighbouring sensitive receptor locations relative to BAU operations. However, despite the predicted increase in air quality emissions, the predicted concentrations for all pollutants, including PM_{10}, $PM_{2.5}$, sulphur dioxide, and nitrogen dioxide, and for all averaging periods are below the applicable ground-level concentration limits listed in Schedule 2 and Schedule 4 of the Environment Protection (Air Quality) Policy 2016 (Air Quality EPP) at all sensitive receptor locations (Olympic Dam Village and Roxby Downs) for the SRE Project.

The predicted in-stack emission concentration for hydrogen sulphide is above the relevant Air Quality EPP stack emission concentration limit for the tails leach hygiene stack and roaster scrubber (hydrosonic scrubber) stack. Despite this, no exceedance of the ground-level concentration criteria for hydrogen sulphide is predicted at any sensitive receptor.

ES2.2.4 Radiation

There were 4 confirmed impact events associated with radiation, specifically:

- Project-related operational activities release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to the local community, impacting health and safety (1 confirmed impact event).
- During operations, the emission of radon and/or radionuclides (e.g. from stacks or materials handling activities) results in concentrations that impact terrestrial flora and vegetation, habitat and threatened species (3 confirmed impact events).

The radiological impact assessment determined potential radiological impacts due to the SRE Project during construction are expected to be insignificant and able to be appropriately managed in accordance with existing site radiation management practices. During operations, the handling of copper concentrate containing elevated concentrations of radionuclides results in an increased potential for emissions of radon and radionuclides leading to potential changes in airborne concentrations in local communities and residences. Gamma radiation and groundwater pathways were not assessed to be credible exposure pathways.

The conservative estimates of potential total radiation doses to humans at the receptors, due to the SRE Project, are low and below the recognised public dose limit of 1 millisieverts per year (mSv/y) and dose constraint of 0.3 mSv/y. The radiological impact to flora and fauna, as assessed using the ERICA tool, showed dose rates well below the screening level of 10 micrograys per hour (µGy/h), with the maximum absorbed dose rate being 6.93 µGy/h for Australian reptiles.

ES2.2.5 Greenhouse gases and climate change

There were 2 confirmed impact events associated with the emission of greenhouse gases, specifically:

- During construction, the combustion of fossil fuels leads to the emission of GHGs which impacts State and Commonwealth matters (1 confirmed impact event).
- During operation, the combustion of fossil fuels leads directly to the emission of GHGs from combustion of fossil fuels in smelting activities and indirectly via the consumption of purchased non-renewable electricity from the National Electricity Market impacting on State and Commonwealth matters (1 confirmed impact event).

The greenhouse gas impact assessment calculated annual average Scope 1 and Scope 2 emissions during the staged development of the SRE Project to be:

- 160,218 t of carbon dioxide equivalent (CO_2-e) per year for Stage 1a
- 182,697 t CO_2-e/year for Stage 1b
- 192,524 t CO_2-e/year for Stage 2.

Overall, Scope 1 emissions from the SRE Project when combined with Olympic Dam BAU projected whole-of-site operations are estimated to be 253,029 t CO_2-e/year for Stage 1a, 279,696 t CO_2-e/year for Stage 1b and 256,891 t CO_2-e/year for Stage 2, or approximately 9% higher, 21% higher and 11% higher respectively.

Scope 2 emissions from the SRE Project when combined with Olympic Dam BAU projected whole-of-site operations are estimated to be 91,834 t CO_2-e/year for Stage 1a, 98,684 t CO_2-e/year for Stage 1b and 122,952 t CO_2-e/year for Stage 2, or approximately 26% lower, 20% lower and 1% lower respectively.

When considering Scope 2 emissions, it is noted that no consideration of sourcing of additional renewable energy via power purchasing agreements has been made in the calculations. Scope 2 emission calculations are therefore highly conservative.

ES2.2.6 Groundwater quality and quantity

There were no confirmed impacts to groundwater quality and quantity.

The soil and groundwater impact assessment, comprising preliminary site investigation and associated targeted soils and geochemistry sampling, concluded the following:

- No exceedances of contaminants of potential concern above the adopted human health and ecological site assessment criteria were identified within the 19 test pits investigated locations for the SRE Project. All soils assessed were classified as non-acid forming, with generally low metal and metalloid concentrations.
- Baseline and post-baseline groundwater quality data indicate that groundwater within and down-gradient of the SRE Area has remained generally consistent over time. Groundwater in the shallow Andamooka Limestone Aquifer and the deeper Tent Hill Aquifer is naturally saline to hypersaline, with neutral to slightly alkaline pH and generally low dissolved metal concentrations.
- The conceptual site model did not identify any complete SPR linkages related to the SRE Area, being the primary location for proposed smelter and refinery expansion infrastructure for the SRE Project.
- The potential contamination risk related SRE Project operations and construction are considered low risk and can be appropriately mitigated and managed in accordance with best practice to relevant Australian Standards, construction environmental management and operational control measures to relevant environmental legislation, guidelines and policies.
- Any leaching from material disturbed by SRE Project activities is likely to have less of an impact on the receiving environment than mine affected water already present on site (such as the TSF) and can be appropriately management in accordance with Olympic Dam's waste management plan.
- The potential for SRE Project activities to increase exposure to, or mobilise existing, per- and polyfluoroalkyl substances (PFAS) chemicals can be appropriately managed through targeted investigation of work areas during construction.

ES2.2.7 Surface water quality and quantity

There were 15 confirmed impact events associated with surface water quality and quantity, specifically:

- During construction and operations, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting abundance and diversity of native vegetation, habitat, threatened species and aquatic species (3 confirmed impact events).
- During construction, placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting the abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).

- During construction and operation, the release of chemicals or hydrocarbons used in SRE Project operations, including metals mobilised via acid rock drainage from stockpiles and/or the TSF or effluent released from wastewater treatment plants (WWTPs), results in impacts to the downstream environment, impacting the abundance and diversity of native vegetation, habitat and threatened species (6 confirmed impact events).
- During closure, erosion of closed structures and rehabilitated areas results in the sedimentation of the downstream environment (3 confirmed impact events).

The surface water impact assessment concluded that construction of the SRE Project infrastructure would result in collection of stormwater from some areas which currently exist as natural swales and banking up of water against the edge of proposed bunds, roads and raised pads.

Flood modelling, using TUFLOW release 2023-AB, indicated that 27 dune swales may have altered flood hydrology for a 1% annual exceedance probability event following SRE Project development. There was a negligible difference in wet and dry areas in each modelled scenario. These are predominantly located south of the existing Olympic Dam mine process plant infrastructure pad and result in increases and decreases to water levels either side of a bund or access road. The addition of culverts to the access road in detailed design is predicted to return many of these to near-baseline conditions.

Pooling and depth increases also occurred next to the southern pad surface, however detailed design of the drainage system in this area will be able to at least partially ameliorate this. In each case, the change in water level is not expected to result in an impact to sensitive receptors.

ES2.2.8 Landscape values, vegetation and habitat

There were 32 confirmed impact events associated with landscape values, vegetation and habitat, specifically:

- During construction, clearing of native vegetation for SRE Project infrastructure results in a reduction in abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).
- During construction, land clearing associated with the construction of SRE Project infrastructure results in disturbance to an unknown non-Indigenous heritage site (1 confirmed impact event).
- During construction, land clearing associated with the construction of SRE Project infrastructure results in disturbance, removal or damage to cultural artefacts (1 confirmed impact event).
- During construction, land clearing associated with the construction of SRE Project compromises Aboriginal intangible ethnographic values of an area through alteration or damage to the cultural landscape/features (1 confirmed impact event).
- During construction, land clearing associated with the construction of SRE Project infrastructure results in conditions that are favourable for an increase in the abundance and diversity of weed species and an associated reduction in abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).
- During construction, placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, with changes to the prevailing surface water catchments resulting in a reduction in abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).

- Placement of SRE Project infrastructure changes the prevailing visual amenity of the area (1 confirmed impact event).
- During operations the operations increases occupancy of Olympic Dam accommodation due to the SRE Project workforce results in an increase in feral/pest fauna numbers that results in a decrease in native fauna abundance and diversity (1 confirmed impact event).
- During construction, operation and closure project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, resulting in destruction of habitat and vegetation and impacting the abundance and diversity of flora, fauna, State and Nationally threatened species and protected areas (12 confirmed impact events).
- During construction and operation, the release of chemicals or hydrocarbons used in the SRE Project, including temporary storages, transport and unloading/loading activities, metals mobilised via acid rock drainage from stockpiles and/or the TSF or effluent released from WWTPs, results in the contamination of land, impacting the abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).
- During closure, the rehabilitation of cleared land following closure results in conditions that are favourable for an increase in the abundance and diversity of weed species resulting in a reduction in the abundance and diversity of native vegetation, habitat and threatened species (3 confirmed impact events).

The ecological impact assessment determined vegetation communities identified within the SRE Project Area are well represented within the wider region.

Where clearance of land, and consequently habitat, is proposed to occur, there would be localised impacts on both flora and fauna species within that immediate area. Home ranges of many small mammals and reptiles are small and therefore those individuals within the clearance area are likely to be directly impacted, however, vegetation (and thus habitat clearance) is not expected to have significant impacts to those species at a local population, or species as a whole, level (i.e. it is clearance of non-essential, or not critical habitat only).

The SRE Project is expected to result in a total disturbance footprint (excluding existing disturbance) of 234.04 ha, comprising 101.71 ha for the SRE Area, 64.01 ha for the General Infrastructure Area, 39.82 ha for the Water Infrastructure Area and 28.50 ha for the EIGR Areas.

Localised land clearing is expected to have minor impacts on local and commonly occurring habitat types and therefore local populations of fauna species. The removal of habitat may result in a short-term reduction in abundance of those species, if present. No critical threatened species habitat, or habitat which any common or conservation significant fauna are reliant on, has been identified in the SRE Project Area. One EPBC listed (Vulnerable) species, the Southern Whiteface, is known to occur within the SRE Project Area, with several State listed species considered likely to be present, or potentially present. Impacts to threatened fauna have been conservatively assessed; due to the potential short-term removal of non-essential habitat for Southern Whiteface.

Impacts to non-threatened fauna species are not expected to have a significant effect on either abundance or diversity of species present in the region. Impacts to common flora and fauna species are therefore considered to be localised only, and short-term during construction where rehabilitation following construction is proposed (e.g. over the buried water pipeline).

ES2.2.9 Social environment

There were 16 confirmed impact events associated with the social environment, specifically:

- Increases in vehicle traffic associated with the movement of construction materials, general travel, including oversized and restricted movements, leads to degradation, increasing the risk to public health and safety (1 confirmed impact event).
- Increases in vehicle traffic associated with the movement of construction materials, general travel, including oversized and restricted movements, results in an increase in likelihood of traffic accidents, impacting on the health and safety of the local community (1 confirmed impact event).
- Increases in heavy vehicle traffic associated with the movement of construction materials, including oversized and restricted movements, leads to increase travel times affects road users, impacting on the social value of the local community (1 confirmed impact event).
- During operations, increases in heavy vehicle traffic associated with the movement of operational reagents and concentrates affects road users and impacts on the health and safety of the local community (1 confirmed impact event).
- During operations, increase in road traffic results in the degradation of the roads and increases risk to the public health and safety (1 confirmed impact event).
- During operations, the increased movement of heavy vehicles results in increases in travel times within the local and regional areas, impacting existing social values (1 confirmed impact event).
- During construction and operation, the SRE Project results in reduced access to emergency services for existing residents in nearby communities due to increased demand for emergency services to respond to increased risk of traffic accidents and workplace accidents at Project site and on Olympic Dam Highway (2 confirmed impact events).
- Increased labour force participation and reduced unemployment during the SRE Project, contributes to enhanced socio-economic wellbeing in FIFO source communities, including those within the regional study area (2 confirmed impact events).
- The SRE Project results in enhanced economic prosperity for local businesses through increased engagement from non-resident workers in the local economy, alongside new business and supply chain opportunities generated by the SRE Project (2 confirmed impact events).
- During construction and operation, the workforce demand reduces the availability of flights due to increased demand driven by SRE Project workforce, indirectly increasing flight fares (2 confirmed impact events).
- The SRE Project results in potential community impacts (e.g. cohesion and vitality) in Roxby Downs due to an increase in non-resident workers (2 confirmed impact events).

The social impact assessment identified both negative and positive social impacts of the SRE Project on local and regional communities. Key negative impacts relate to perceived increased traffic delays and a perceived heightened risk of road incidents, reduced access to emergency services, and community cohesion in Roxby Downs, along with concerns about a potential rise in crime and antisocial behaviour associated with a larger transient workforce. To mitigate the negative effects, measures such as implementation of traffic management strategies, continued collaboration with local emergency service providers to update emergency response plans where required, and the ongoing use of a community grievance mechanism to address concerns as they arise.

Despite these challenges, the SRE Project is expected to generate significant socio-economic benefits, including increased labour force participation, enhanced business opportunities, and strengthened local economic resilience. With proactive engagement and mitigation strategies, the SRE Project is expected to balance potential risks while delivering long-term socio-economic benefits to the region.

ES2.2.10 Economic environment

There were 2 confirmed impact events associated with the economic environment, specifically

- Construction of the SRE Project results in strengthening of the regional economy through contribution to GRP and to the State, indirectly supporting economic diversification and providing greater resilience to economic downturns (1 confirmed impact event).
- Operation of the SRE Project results in strengthening of the regional economy through contribution to GRP and to the State, indirectly supporting economic diversification and providing greater resilience to economic downturns (1 confirmed impact event).

The economic assessment concluded that the SRE Project is estimated to deliver a net incremental economic benefit to the South Australian community of approximately $342 million in present value terms over the period of FY27 to FY76, or a benefit-cost ratio (BCR) of 18.4. Including a potential economic benefit to suppliers, the net benefit could reach up to $763 million in present value terms attributed to the SRE Project.

One of the primary effects of the SRE Project on the local area is generating employment. Overall, the economic assessment estimates additional wages to workers to total an incremental benefit to South Australia of $147 million in present value terms (or $771 million in undiscounted terms). Employment is expected to peak during the construction period, where the SRE Project is expected to generate up to 1,313 FTE positions in Stage 1a. Further, the SRE Project Stage 2 operational workforce will support 508 additional FTEs.

Locally, 10% of operations positions are expected to reside in Roxby Downs. Further to this, it has been estimated that 96% of direct employment will be supplied by South Australia, with 22% of total direct employment supplied by the local region.

As a result, the total economic benefit to workers is estimated to be driven by BHP's internal operational workforce. This is due to the high-skill requirements needed to operate the smelter and refinery. The economic benefit to South Australian workers is estimated to be $147 million in present value terms (or $771 million in undiscounted terms). This is in addition to an estimated economic benefit to South Australian suppliers of $421 million in present value terms above the base case (or $1,174 million in undiscounted terms).

Within the local region, the wage premiums paid to workers during the SRE Project are estimated to generate a total increase in net income of $1 million per year (equivalent to 8 new FTEs) over the construction phase and $4 million per year (equivalent of 38 new FTEs) over the operations phase.

ES2.3 Assessment of impact significance

Following an assessment of impact significance of the confirmed impact events, it was determined that:

- The following impact events were assessed to have a significance Level 2 or below (not significant):
  - One construction phase impact event for GHG emissions has a significance Level 1 (not significant). This relates to Scope 1 and Scope 2 emissions impacts from fuel combustion.
  - Seventeen local community-related impact events were significance Level 1 (not significant). Twelve of these are related to air quality, radiation and noise impacts to amenity and safety associated with air quality emissions, radiation, noise and light, with the remaining 5 related to labour force participation, socio-economic wellbeing and enhanced economic prosperity.
  - Two economic impacts to the State have been assessed with a significance Level 1 (not significant). These relate to economic impacts to the local and regional communities and the state.
  - All 63 flora, vegetation, fauna and habitat-related impact events were significance Level 2 (not significant) or below and no significant impacts are predicted.
  - Nine local community-related impact events were significance Level 2 (not significant). These are related to visual impacts to amenity, traffic impacts to social values, and health and safety, and impacts to social values from an increase in the non-resident population.
  - Two cultural heritage-related impact events were assessed as significance Level 2 or below (not significant). These relate to continuing to minimise impacts by managing cultural heritage in accordance with the ODA.
- The following impact events were assessed to have a significance level of Level 3 or above (significant):
  - Four local community-related impacts were significance Level 3 (significant). These are related to impacts to social values from increased potential for road and workplace accidents and potential impacts to community from an increase in the non-resident population.
  - One cultural heritage-related impact event was assessed as significance Level 3 (significant), with project-related disturbance resulting in impact requiring cultural materials to be relocated via salvage prior to disturbance.
  - One operational phase impact event for GHG emissions has an assessed impact significance Level 5 (significant). These are related to Scope 1 emissions impacts from fuel combustion being greater than 100,000 t CO_2-e/annum.

ES2.4 Assessment of hazards and risks

A hazards and risk assessment was undertaken for the SRE Project in accordance with BHP's risk framework and the relevant EIS assessment requirements. This EIS considered credible unplanned events during construction and operation, evaluated their likelihood and maximum foreseeable consequences, and identified controls to prevent events occurring to ensure potential impacts are minimised as far as practicable through design, construction, operations, monitoring and emergency responses.

Key identified hazards and risks associated with the SRE Project are:

- Hazardous materials and major incident hazards: potential loss of containment from storage and handling of fuels, reagents and process chemicals (including acid), with consequences managed through engineered containment, inventory controls and emergency response.
- Fire and explosion: risks associated with combustible materials and process operations, managed through design standards, ignition control, fire detection/suppression and emergency management.
- Process upset and emissions: unplanned process upsets (including off-gas and acid plant systems) that could increase emissions or affect air quality, managed through process controls, alarms/interlocks, maintenance and contingency operating procedures.
- Transport and logistics incidents: construction traffic and delivery of large components, and operational concentrate transport, with risks managed through route planning, traffic management, contractor controls and incident response.
- Spills and contamination: spills during storage/transfer and wastewater management with potential impacts to land and water, managed through bunding, separation of clean/dirty water, monitoring and cleanup procedures.
- Power and utilities reliability: reliance on secure power supply and supporting utilities, managed through system redundancy, protection systems and operational planning for outages.
- Extreme weather and natural hazards: heat, wind, storm and flooding events that may affect safety and operations, managed through design allowances, flood modelling inputs, operational triggers and emergency response.
- Workforce health and safety: construction and operational safety risks (including working at heights, confined spaces and mobile equipment interactions), managed through safety management systems, training, supervision and verification of critical controls.

ES3 Management of environmental impacts

Environmental management for the SRE Project is proposed to be implemented through BHP's existing environmental management system at Olympic Dam, supported by updated environmental outcomes, compliance criteria and monitoring designed to verify performance and inform adaptive management.

Key changes include proposed integration of the SRE Project into the existing EPMP to reflect the expanded smelter and refinery configuration and increased throughput and ensuring potential impacts arising from the SRE Project and identified in this EIS are adequately addressed. The management framework is intended to consolidate commitments and controls, identify all impact events requiring management focus, and provide clear processes for reporting, corrective actions and continuous improvement through construction and operations.

Specifically, the EPMP would be updated following approval and implementation of the SRE Project. Should the SRE Project approval be granted, the update to the EPMP would broadly require revision of:

- descriptive elements of the EPMP to reflect the additional scope (i.e. infrastructure and activities) associated with the SRE Project
- Environmental Outcomes and associated aspects within the EPMP to reflect the impacts and risks identified and assessed within this EIS
- administrative elements of the EPMP to reflect the conditions of approval associated with the SRE Project.

BHP