BHP

Olympic Dam Smelter and Refinery Expansion Project

Environmental Impact Statement

Appendix E to Appendix F

October 2026

BHP

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Environmental Impact Statement

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Olympic Dam Smelter and Refinery Expansion Project

Environmental Impact Assessment Framework

June 2026

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1. Assessment of potential impacts

Relevant to the SRE Project, Section 113(4) of the *Planning, Development and Infrastructure Act 2016* (SA) (PDI Act) requires that an Environmental Impact Statement (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 (SA) (EPA 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 Smelter and Refinery Expansion (SRE) Project in a consistent and repeatable manner. The EIAF is described in the following sections.

1.1 Context

1.1.1 Environmental values

Environmental values are the physical characteristics and qualities of the environment that contribute to biodiversity conservation, and the social, spiritual and economic health of individuals and society.

In designing, constructing and undertaking the SRE Project, BHP will aim to ensure that the overarching environmental objectives described in Table 1.1 are met, and that environmental values are maintained.

The EIAF supports this goal, providing a systematic framework aimed at determining the level of impact of specific activities, and identifying mitigation and management measures to ensure that the environmental objectives are met.

Table 1.1: Environmental values and environmental objectives

Key aspect	Environmental values	Environmental objectives
Air	Air quality	Minimise emissions to air so that associated environmental values are protected
	Greenhouse gas (GHG) emissions	Reduce net GHG emissions to minimise the risk of environmental harm associated with climate change
Groundwater	Groundwater quantity	Minimise groundwater drawdown so that associated environmental values are protected
	Groundwater quality	Maintain groundwater quality so that associated environmental values are protected
Surface water	Surface water quantity	Maintain hydrological regimes so that associated environmental values are protected

Key aspect	Environmental values	Environmental objectives
	Surface water quality	Maintain the surface water quality so that associated environmental values are protected
Land	Terrestrial environmental quality	Maintain the quality of land and soils so that associated environmental values are protected
	Landforms	Manage post-project closure landforms so that they support associated environmental values
	Native flora and vegetation	Protect flora and vegetation so that biological diversity and ecological integrity are maintained
	Native terrestrial fauna	Protect terrestrial fauna so that biological diversity and ecological integrity are maintained
	Subterranean fauna	Protect subterranean fauna so that biological diversity and ecological integrity are maintained
Public and community	Human health	Protect human health from harm
	Social surroundings	Protect social surroundings from harm
	Cultural and spiritual heritage and values	Protect Indigenous cultural and spiritual values from harm
	Visual amenity	Minimise the visual impact of permanent project infrastructure so that prevailing visual amenity is maintained

1.1.2 Environmental impact assessment framework

BHP has developed an EIAF to assess the environmental and social impacts associated with the SRE Project. 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. 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, if any, controls are required to reduce impacts to as low as reasonably practicable (ALARP) in accordance with a mitigation hierarchy.

The EIAF draws on, and generally aligns to the following:

- Government of South Australia and Australian Government regulations
- ISO 14001: 2026 Environmental Management Systems (ISO 2026)
- internationally recognised frameworks, such as those established by the International Finance Corporation of the World Bank Group
- BHP Risk Management Global Standard (BHP 2025).

To ensure the assessment methodology meets the requirements of the PDI Act and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), the methodology is compliant with:

- State Planning Commission (SPC) Practice Direction 17 Impact Assessment Development, published by the Government of South Australia (SPC 2023)
- Assessment Requirements as gazetted for the SRE Project (Government of South Australia 2025).

1.1.3 Definitions

To ensure a consistent approach to impact assessment for the SRE Project, it is important to understand the EIAF terminology and definitions. These are described in the following sections.

1.1.3.1 The environment

In determining the pathways and receptors for the EIAF, consideration has been given to defining the environment as including:

- land, air, water (including both surface water, groundwater and sea water), organisms, ecosystems, native fauna and other features or elements of the natural environment
- buildings, structures and other forms of infrastructure, and cultural artefacts
- existing or permissible land use
- public health, safety or amenity
- the geological heritage values of an area
- the aesthetic or cultural values of an area.

Section 3 of the EP Act defines the environment as land, air, water, organisms and ecosystems, and includes:

- human-made or modified structures or areas
- the amenity values of an area.

Section 528 of the EPBC Act defines the environment as including:

- ecosystems and their constituent parts, including people and communities
- natural and physical resources
- the qualities and characteristics of locations, places and areas
- heritage values of places
- the social, economic and cultural aspects of the above.

1.1.3.2 Source, pathway and receptors

Sources, pathways and receptors are defined and are applied in the EIAF as follows:

- Source – a description of the source of the potential impact event which, alone or in combination, has the potential to impact a receptor.
- Pathway – a description of the pathway, means or route (with consideration of any natural barriers) by which an identified receptor can be exposed to, or may reasonably be expected to be impacted by, an identified source.
- Receptor – a description of the receptor that may reasonably be expected to be impacted by the source via the pathway, taking into account the elements of the environment as described in Section 1.1.3.1.

1.1.3.3 Impact events and risk events

For the purposes of this EIAF, the distinction between impact and risk is important.

Broadly, impact events are those events which are predicted to occur as a result of the implementation of the SRE Project ('planned events'). For example, for construction of the smelter furnaces, plant and equipment would require permanent land disturbance activities, which would require removal of existing vegetation, and therefore have an impact on receptors. Whilst there may be some uncertainty (Section 1.2.6) regarding the level and/or nature of the impact, it is certain that proposed project activities would result in some level of impact.

Risk events, by contrast, are not predicted to occur during planned project activities, however there is some potential (or likelihood) that they could occur in some circumstances ('unplanned events'), and should they occur, there may be a subsequent impact to a receptor. For example, a water pipeline may fail (the unplanned event), resulting in the release of saline water to the ground, which may subsequently result in an impact to native vegetation. In an EIAF context, risk events are characterised by the likelihood of a linkage between source and receptor occurring where, under planned situations, no linkage would be present.

Discussion regarding hazards and risks associated with the SRE Project, including the risk management method, framework and the risk register developed for the SRE Project, are described in Chapter 11 of the EIS Main Document. The SRE Project Risk Register identifies, assesses and manages risks associated with the various activities and infrastructure that comprises the SRE Project, including risks to occupational health and safety arising from those activities and the proposed SRE Project infrastructure. The SRE Project Risk Register does not specifically address the potential impacts of unplanned events on off-site receptors. Separately, the EIAF, discussed in this document, has been used to assess unplanned events (risks) to identified non-occupational receptors and off-site infrastructure that are not within the scope of the SRE Project Risk Register. These include:

- surface water (flooding) related risks associated with low probability rainfall events (e.g. 1-in-100-year average recurrence interval (ARI) events)
- soil and groundwater contamination risks associated with a loss of the containment (i.e. spills)
- risk to receptors related to fires that may be started on-site and progress off-site.

1.2 Impact assessment and management

The EIAF is based on a series of repeatable process steps, described in the following sections and illustrated in Figure 1.1.

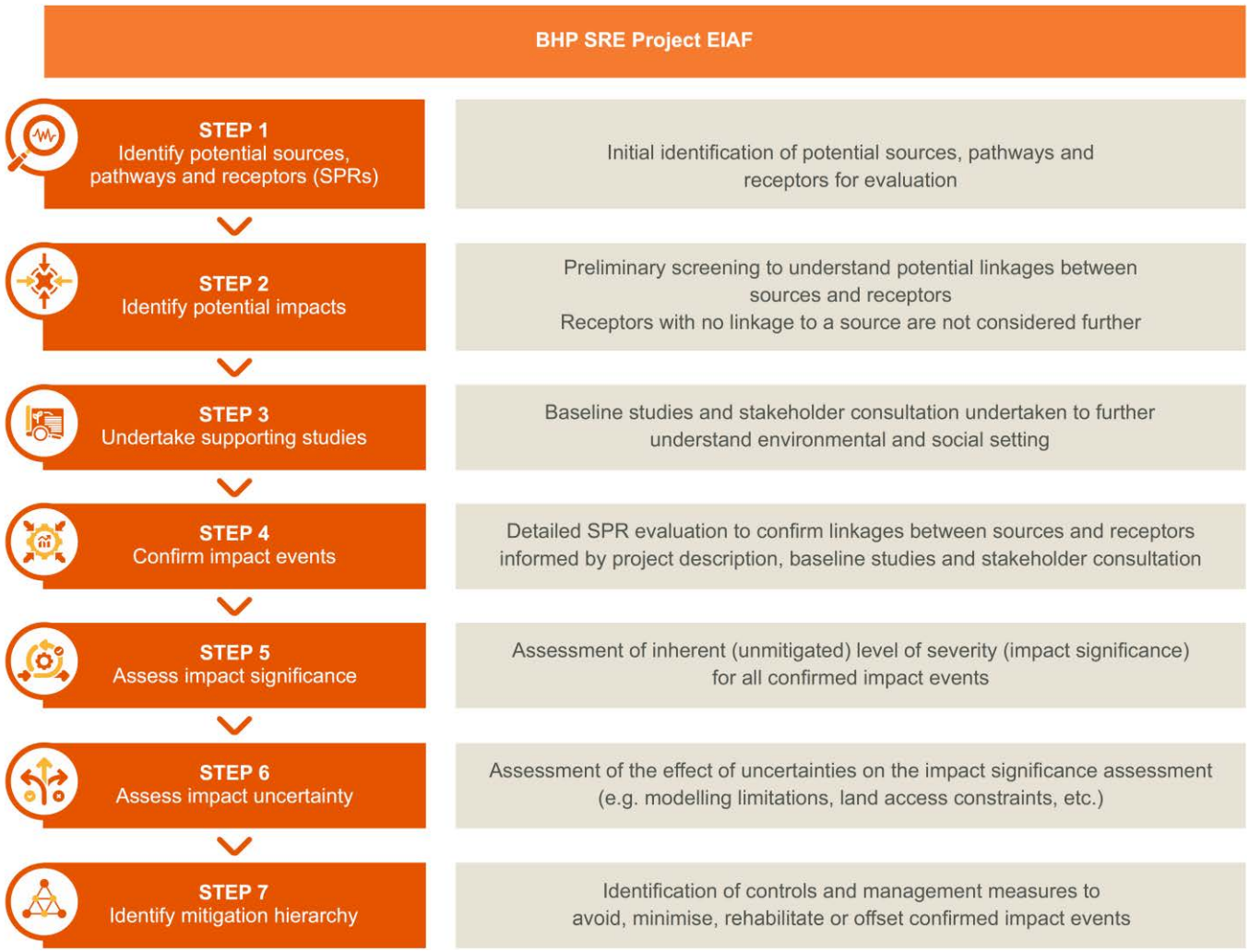


Figure 1.1: Environmental impact assessment framework

1.2.1 Identification of sources, pathways and receptors

Taking into consideration the context provided in Section 1.1, Step 1 describes the identified sources, pathways and receptors for the SRE Project EIAF.

Table 1.2: Sources, Pathways and Receptors under the EIAF

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
	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 – reduction in resource availability
	Future users – recognises the inherent environmental value of the pathways
	State and Commonwealth matters – economy, climate change

1.2.2 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. Unplanned events, in relation to the distinction between those assessed under the EIAF and those assessed via the BHP Risk Framework and presented in the SRE Project Risk Register, are discussed in Section 1.1.3.3.

The SRE Project's EIAF identifies potential impact events through completion of a preliminary (screening) source-pathway-receptor (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). Receptors with no linkage to a source are not considered further.

At the completion of the screening assessment, potential impact events are determined to either have no linkage, an uncertain or unconfirmed linkage, or a likely or confirmed, as described in Table 1.3.

Table 1.3: Preliminary SPR linkage classifications

Potential impact event assessment	Description
No linkage	It is unlikely that a linkage exists between a source, pathway and receptor. For example: • no community interaction with project ground vibration due to significant separation distances (i.e. inherent control) • no visual amenity impact with project due to topography (i.e. inherent control). The potential impact event is recorded in the Preliminary SPR Register and no further impact assessment is undertaken.
Uncertain or unconfirmed linkage	A potential linkage exists between source and receptor, however significant uncertainties are present in the existing knowledge base and/or significant assumptions have been made. For example, radiation bearing concentrates will be processed and potential public exposure to radon and/or radionuclides requiring air quality/radiation modelling to determine the extent of dispersion of radiation, however significant uncertainties exist in the existing knowledge base. Further supporting studies are required to determine if an SPR linkage is present or absent.
Likely or confirmed linkage	A linkage is considered likely or confirmed to exist between a source and receptor. For example: • SRE Project activities (source) would necessitate ground disturbance (pathway) and direct impacts on native flora and vegetation (receptor). The potential impact event is classified as a confirmed impact event and carried forward to the impact assessment.

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. In these instances, a potential impact event may have been determined to have no SPR linkage but may be progressed on the basis of the stakeholder's perceived potential for impacts to occur as a result of proposed project activities.

A visual representation of the SPR evaluation process is illustrated in Figure 1.2.

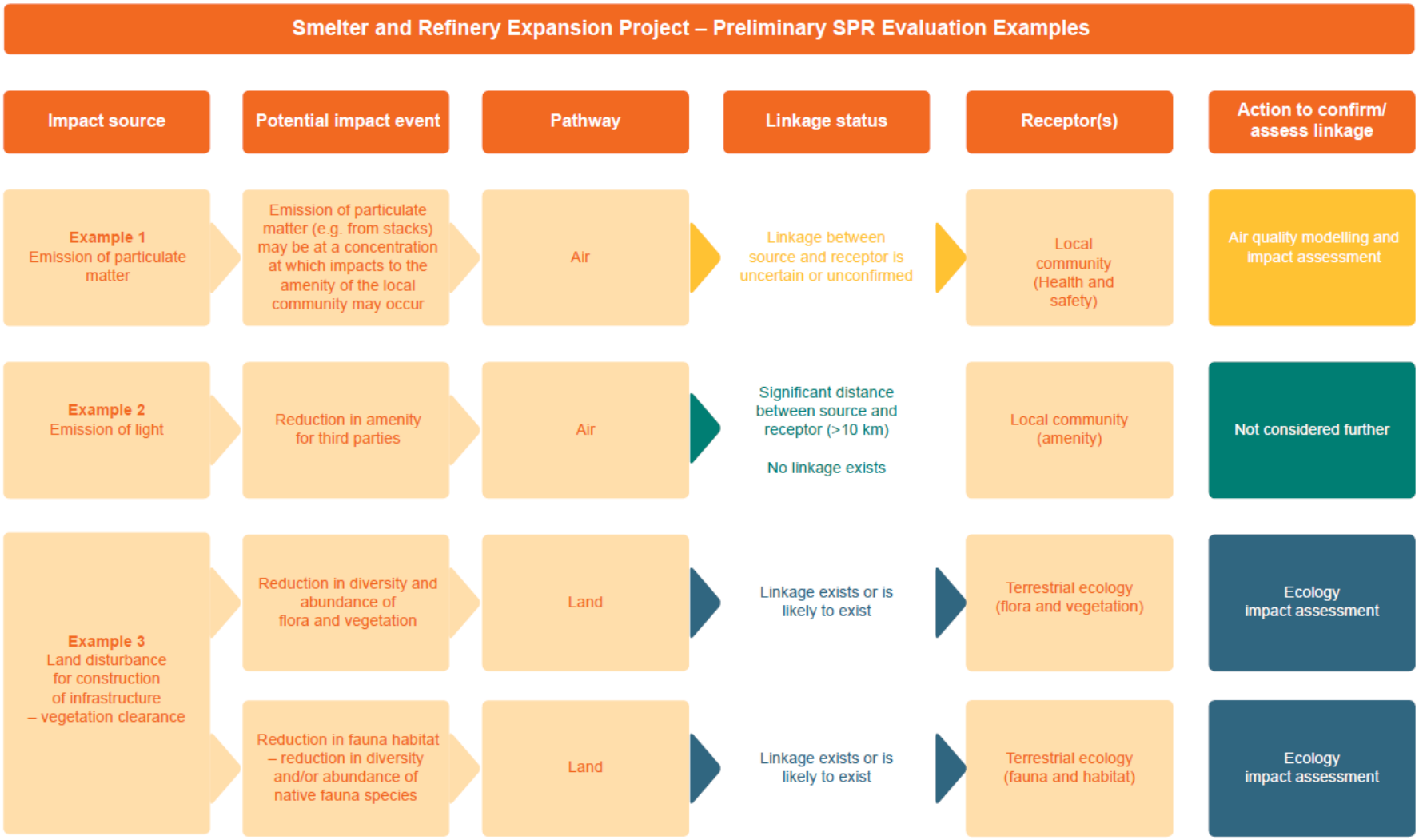


Figure 1.2: Preliminary SPR evaluation examples

1.2.3 Supporting studies

The preliminary SPR outputs are used to inform Step 3 scopes for further technical and supporting studies, which are designed to provide the information necessary to classify uncertain or unconfirmed linkages and to support the impact assessment stage of the EIAF for the confirmed impact events. Examples of supporting studies include:

- engineering studies describing the specifics of proposed site activities, actions and infrastructure (sources)
- baseline social and/or environment studies (pathways and receptors)
- assessment of effects studies, describing and, wherever possible, 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, wherever possible, 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).

1.2.4 Confirm 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). 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.

1.2.5 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 (Step 5) under the EIAF to determine the significance of the impact in the absence of controls.

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 (Section 1.2.6).

BHP applies a standard event consequence matrix across its businesses, and this has been used to inform impact significance under this EIAF (Table 1.4).

Events determined to have an uncontrolled impact consequence of greater than or equal to Severity Level 3, are considered significant and require the application of controls to reduce the consequence severity in keeping with the environmental objectives (Section 1.1.1).

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.

Table 1.4: Consequence definitions and significance determination

Severity Level	1	2	3	4	5
Significance	Not significant		Significant		
Air pathway					
Air quality (human health)	No exceedance of ground-level concentrations (GLCs) as per Environment Protection (Air Quality) Policy 2016 (SA)	Localised exceedance of GLCs as per Environment Protection (Air Quality) Policy 2016 (SA) but no effects on off-site sensitive receptors	Ongoing exceedance of GLCs as per Environment Protection (Air Quality) Policy 2016 (SA) that results in complaints or members of the public requiring medical treatment	Major or ongoing exceedance of GLCs as per Environment Protection (Air Quality) Policy 2016 (SA) resulting in persistent complaints and/or hospitalisation of members of the public	Major ongoing exceedance of GLCs as per Environment Protection (Air Quality) Policy 2016 (SA) that results in severely debilitating chronic health impacts or life-threatening hazards
Air quality (environment values)	No or negligible reduction in air quality at the SML boundary or at sensitive receptors (no exceedance of air quality standards)	Localised exceedance of air quality standards (annual dust deposition greater than 4 g/m^2/month) but no effects on threatened species habitat or community viability	Ongoing exceedance of air quality standards (annual dust deposition greater than 4 g/m^2/month) that results in short-term loss of threatened species habitat or community viability	Major or ongoing exceedance of air quality standards (annual dust deposition greater than 4 g/m^2/month) that results in long-term loss of threatened species habitat or community viability	Major ongoing exceedance of air quality standards ((annual dust deposition (total insoluble dust) is greater than 4 g/m^2/month and greater than 2 g/m^2/month above background levels at that location) that result in total extinction of threatened species habitat or community viability
Greenhouse gas (social-economic and environmental values)	Annual Scope 1 greenhouse gas emissions less than 50,000 t defined as CO_2 equivalent (CO_2-e)	Annual Scope 1 greenhouse gas emissions greater than 50,000 t but less than 100,000 t of CO_2-e	Annual Scope 1 greenhouse gas emissions greater than 100,000 t of CO_2-e for a single year	Annual Scope 1 greenhouse gas emissions greater than 100,000 t of CO_2-e and reduced within a two to five-year period	Annual Scope 1 greenhouse gas emissions greater than 100,000 t of CO_2-e and reduced within a five to ten-year period
Noise and vibration (human amenity)	No exceedance of South Australian Environment Protection (Commercial and Industrial Noise) Policy 2023 and relevant vibration standards	Localised exceedance of South Australian Environment Protection (Commercial and Industrial Noise) Policy 2023 and relevant vibration standards which generates complaints, resolved within one week	Ongoing exceedance of South Australian Environment Protection (Commercial and Industrial Noise) Policy 2023 and relevant vibration standards which generates complaints, resolved within three months	Major or ongoing exceedance of South Australian Environment Protection (Commercial and Industrial Noise) Policy 2023 and relevant vibration standards resulting in complaints over an extended period of years with the need to relocate receptors. Repairable damage to buildings due to vibration	Major ongoing exceedance of South Australian Environment Protection (Commercial and Industrial Noise) Policy 2023 and relevant vibration standards resulting in the need to relocate multiple receptors. Major damage from vibration to multiple structures or infrastructure requiring demolition and rebuild
Light (human amenity)	Local (on-site) short-term, infrequent loss of amenity within the SML boundary	Minimal and short-term, but frequent, loss of amenity within the local area which generates complaints, resolved within one week	Medium-term loss of amenity within the local area which generates complaints, resolved within three months	Medium-term and frequent loss of amenity within the local area resulting in ongoing complaints over an extended period of years with the need to relocate receptor(s)	Long-term loss of amenity within the local area resulting in the need to relocate multiple receptors
Radiation (human health)	Public radiation doses less than 0.3 mSv/y	Public radiation doses greater than 0.3 mSv/y but less than 1 mSv/y	Public radiation doses averaging greater than 1 mSv/y but less than 5 mSv over a five-year period	Public radiation doses greater than 5 mSv over a five-year period	Public radiation doses greater than 20 mSv/year in any year
Water pathway					
Groundwater or surface water quantity (GDEs, third-party users, future users)	No or negligible reduction or change in quantity available to current and potential receptors	Local reduction or change in water quantity that can be immediately (within one year) remediated or will attenuate naturally (within one year)	Local major or regional minor reduction or change in water quantity that can be remediated or is reasonably expected to attenuate in the long term	Regional major reduction or change in water quantity available to current and potential receptors that can be remediated or is reasonably expected to attenuate in the long term	Regional major reduction or change in quantity available to current and potential receptors that cannot be remediated and/or is not expected to attenuate
Groundwater or surface water quality (GDEs, third-party users, future users)	No or minimal reduction in water quality, where water quality objectives are maintained	Local reduction in water quality (exceeding water quality objectives) that can be remediated or will attenuate naturally within one year	Local major or regional minor reduction in water quality (exceeding water quality objectives) that can be remediated or is reasonably expected to attenuate in the long term	Regional major reduction in water quality (exceeding water quality objectives) at location of current or potential receptors that can be remediated or is expected to attenuate naturally in the long term	Regional major reduction in water quality at location of current or potential receptors that cannot be remediated during exploration and is not expected to attenuate naturally

Severity Level	1	2	3	4	5
Significance	Not significant		Significant		
Land pathway					
Listed species and ecological communities (threatened and listed species)	Unmeasurable effect	Localised and short-term reduction in threatened species habitat with little or no reduction in species or community viability	Localised and long-term reduction in threatened species habitat resulting in some change to community viability	Regional and long-term reduction in threatened species habitat resulting in significant change to community viability	Regional or total extinction of the threatened species and/or community viability
Other flora and fauna (terrestrial and aquatic species, vegetation and habitat)	Unmeasurable effect	Localised and short-term reduction in species habitat resulting in little or no change to community viability	Localised and long-term reduction in threatened species habitat resulting in some change to community viability	Regional and long-term reduction in threatened species habitat resulting in significant changes to community viability	Regional or total extinction of threatened species habitat and/or community viability
Radiological impacts to non-human biota (terrestrial and aquatic species, vegetation and habitat, threatened and listed species)	Dose rate assessed to be less than natural background or less than the ERICA screening level (10 µGy/y)	Dose rate assessed to be greater than the ERICA screening level (10 µGy/y) but less than 40 µGy/h (level of potential effects on biota reproductive success)	Dose rate assessed to be greater than 40 µGy/h (level of potential effects on biota reproductive success) but less than 400 µGy/h (level of potential effects on biota populations)	Dose rate assessed to exceed 400 µGy/h (level of potential effects on biota populations)	Demonstrated radiological impacts to non-human biota outside the SML boundary
Future land use/closure (third-party users, future users, indigenous community)	Minor repairable damage to land that can be immediately (within days) remediated and that does not compromise the agreed future land use/closure	Damage to land that requires remediation over a period of up to six months and can be sufficiently remediated so that the agreed future land use/closure can be achieved (future land use are not compromised or delayed)	Damage to land that can be sufficiently remediated during operations such that the agreed future land use/closure can be achieved (future land use are not compromised or delayed)	Damage to land to the extent that remediation delays commencement of the agreed future land use/closure	Damage to land to the extent that the agreed future land use/closure is no longer feasible
Socioeconomic pathway					
Adjoining land and infrastructure (third-party users, indigenous community, social value)	No measurable impact to surrounding land and infrastructure	Minor repairable damage to land and infrastructure with short-term disruption to use. Minor damage to a conservation area that can be repaired without impacting on conservation values. Suspension of important community services (e.g. transport, telecommunications, energy) for up to one hour	Damage to land and infrastructure that results in remediation costs and/or loss of income of up to US$1m. Damage to a conservation area that can be fully remediated within 12 months. Suspension of important community services (e.g. transport, telecommunications, energy) for up to one day	Damage to land and infrastructure that results in remediation costs and/or loss of income of up to US$10m. Damage to a conservation area that cannot be remediated within six months and results in the temporary loss of one or more values for which the area was reserved. Suspension of important services to the community (e.g. transport, telecommunications, energy) for more than one week	Extensive damage to land and infrastructure that results in remediation costs and/or loss of income of over US$10m. Irreversible damage to a conservation area resulting in permanent loss of one or more of the values for which the area was reserved. Suspension of important services to the community (e.g. transport, telecommunications, energy) for more than a month
Economic (social value, local community, indigenous community)	No measurable adverse impact on local communities or businesses	Short-term impacts on local businesses and/or wellbeing of local communities where those affected could be expected to adapt or cope	Ongoing impacts on the wellbeing of local communities that results in members of the community leaving the area and/or significant mental health issues across the community. Ongoing impacts on local businesses that result in closures and (direct and indirect) loss of employment for up to 20 people	Ongoing impacts on the wellbeing of local communities that results in a significant proportion of the community leaving the area and/or serious mental health issues across the affected communities. Ongoing impacts to businesses that result in closures and (direct and indirect) loss of employment for up to 100 people	Ongoing impacts on the wellbeing of communities that leads to towns being unable to effectively function. Ongoing impacts to businesses that result in closures and (direct and indirect) loss of employment for more than 100 people and/or towns in the region becoming unviable
Public health and safety (human health, indigenous community, local community, social value)	Injury or illness requiring first aid treatment with immediate release	Injury or illness requiring short-term (less than one week) hospitalisation with full recovery	Reversable impairment or serious injuries requiring long-term hospitalisation to one or more members of public	Single fatality or injury or illness that results in permanent disablement	Multiple fatalities or serious disabling injuries
Occupational health and safety (human health, social value)	Low-level impact resulting in first aid only	Non-life altering or short-term disabling injury or illness to one or more persons	Life-altering or long-term/permanent disabling injury or illness to one or more persons	One to five fatalities or one to five chronic life-threatening illnesses	Six or more fatalities or six or more chronic life-threatening illnesses

Severity Level	1	2	3	4	5
Significance	Not significant		Significant		
Visual amenity (human amenity, indigenous communities, social value)	Introduction of elements in the landscape that may be visible but are consistent with the agreed future landform/closure	Introduction of elements to the landscape that are visible and inconsistent with the agreed future landform/closure resulting in a reduction in visual amenity that will be remediated at closure	Introduction of elements to the landscape that are visible and inconsistent with the the agreed future landform/closure resulting in a reduction in visual amenity that cannot be remediated	Introduction of elements that result in long-term (during operations) substantial changes to the agreed future landform/closure with the total loss or degradation of elements, features or characteristics resulting in an adverse impact for several receptors	Introduction of elements that result in substantial permanent changes to the agreed future landform/ closure with the total loss or degradation of elements, features or characteristics
Historic heritage (heritage values)	No measurable impact to items of historic heritage significance	Isolated damage to locally significant historic heritage features that is readily rectified	Damage to State or national listed natural, cultural or historic heritage site that does not alter its heritage significance as stated in the listing	Permanent damage to State or national listed natural, cultural or historic heritage site that results in a loss of heritage significance as stated in the listing	Permanent damage to State or national listed natural, cultural or historic heritage site resulting in the site no longer meeting the listing criteria
Cultural heritage (cultural heritage, indigenous communities)	No measurable impact to items or places of cultural heritage significance	Isolated damage to item or place of local cultural heritage significance that is readily rectified. Damage to item or place of local cultural heritage significance of low heritage value due to its poor inherent condition	Damage to an item or place of local cultural heritage significance of low heritage value due to its poor inherent condition	Loss of multiple items of cultural heritage significance. Damage or loss of a locally significant place	Permanent loss of a rare place or substantial reduction in cultural heritage values
Nuisance dust (human amenity)	No exceedance of nuisance dust levels (no exceedance of background dust concentrations (g/m^2/month)	Localised exceedance of nuisance dust concentrations but no effects on off-site receptors	Increase in nuisance dust concentrations at receptors, but average annual dust deposition is less than 4 g/m^2/month	Average annual dust deposition (total insoluble dust) at receptors is greater than 4 g/m^2/month. Multiple complaints received	Average annual dust deposition (total insoluble dust) at receptors is greater than 4 g/m^2/month and greater than 2 g/m^2/month above background levels at that location. Multiple complaints

1.2.6 Uncertainty assessment and sensitivity

Uncertainties exist in the determination of impact significance (Step 6) across any proposed project where actual as-built monitoring data does not exist (Table 1.5), and may include:

- source, pathway or receptor knowledge gaps
- assumptions used to inform modelling, assessment of effects or assessment of impacts
- representativeness of baseline data.

An understanding of the level of uncertainty is required for each pathway (effects) and impact assessment in accordance with Table 1.5.

Table 1.5: Uncertainty levels

Level	Description
High	Low level of confidence in the outcomes of the assessment – the potential changes to the baseline environment, the potential impact and impact significance are not well-defined or understood. For example: • scientific evidence and previous experience are lacking or unreliable, with high potential for variability in impacts • no field verification has been undertaken • assessment of effects undertaken using a new method that is not recognised by industry or has been undertaken using an informal approach • several assumptions have been applied for which there is little scientific basis
Moderate	Moderate level of confidence – the potential changes to the baseline environment, the potential impact and impact significance are partially defined and understood. For example: • some scientific evidence is available, with some potential for variability in impact • some field verification has been undertaken • relevant knowledge of somewhat generally similar projects and impacts is available and has been applied • assessment of effects undertaken with an existing method, using a novel application which is not industry recognised • some assumptions have been applied with a reasonable/relevant basis
Low	High level of confidence – the potential changes to the baseline environment, the potential impact and impact significance are well-defined and understood. For example: • extensive scientific evidence is available, with low potential for variability in impact • extensive field verification has been undertaken • relevant knowledge of similar projects and impacts is available and has been applied • assessment of effects undertaken using industry recognised and/or best-practice methodology and/or modelling approach • limited number of assumptions have been applied with a solid scientific basis

Where the impact assessment has a level of uncertainty that changes the impact significance, a conservative (i.e. worst case) and precautionary approach towards the impact is to be taken and the higher impact assessment rating assumed.

The EIAF also assesses the sensitivity of an impact to change of any assumption related to the SPR relationship, using defined levels of sensitivity (Table 1.6). This assessment will determine whether the sensitivity to change in an assumption result in a significant change to the predicted confirmed impact event.

Table 1.6: Sensitivity levels

Level	Description
High	• Predictions highly sensitive to input variations • Sensitivity not studied/known • High potential for variability in impact
Moderate	• Some sensitivity of predictions to input variations • Moderate potential for variability in impact
Low	• Predictions not sensitive to input variation • Low potential for variability in impact

1.2.7 Control and management strategies

Impact assessments are designed to ensure that decisions on projects are made in full knowledge of potential impacts on the environment, public and community. A key step within the EIAF is Step 7, which is the identification of control and management strategies that 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.

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.

1.3 Risk assessment and management

As described in Section 1.1.3.3, some potential impacts may only be realised as a result of unplanned events. Examples of these include:

- a source (activity or infrastructure) does not operate as intended, resulting in a fire that impacts native vegetation
- a source (activity or infrastructure) fails resulting in a release of chemicals that contaminates local surface water.

The assessment of these events is described in the following sections.

1.3.1 Identification and assessment

1.3.1.1 Risk and inherent control identification

Risk events with the potential to result in impacts to receptors will be identified through:

- undertaking the initial potential impact event SPR works, as described in Section 1.2.1
- a dedicated environmental and social risk workshop
- stakeholder engagement.

Where a risk event is identified, consideration will be given to measures inherent to the design of operations that would eliminate or substitute a hazard, or source, for the protection of the environment (i.e. the control(s) that prevent an impact from occurring under planned operations).

1.3.1.2 Assessment

Identified risk events will be assessed via the impact assessment process described in Section 1.2, assuming that the inherent control(s) identified in Section 1.3.1.1 have failed (i.e. assuming an unplanned event occurs). This allows for the determination of impact significance were the risk event to occur, and thus provides an indication of the relative importance of the inherent controls in managing the risk.

1.3.2 Inherent controls and management

Depending on the outcomes of the EIAF, risk events may be determined to have a high reliance on controls to prevent a significant impact. In these instances, monitoring commitments may be proposed to ensure that the control measures function as intended.

In addition to inherent controls, there may be further controls identified to reduce the likelihood of a risk event manifesting. These will be documented where identified.

2. Supporting information

2.1 SPR impact assessment summary

The SPR impact assessment summary is provided in Appendix A.

2.2 References

BHP (2025) *Risk Management Global Standard (GRIA-GSTD-00003)*. Version 9.0. 7 July 2025.

Government of South Australia (2025) *Assessment Requirements ENVIRONMENTAL IMPACT STATEMENT. Smelter Refinery Expansion Project, Olympic Dam Operations, Roxby Downs*. September 2025. Published by Department for Housing and Urban Development on 5 November 2025. Accessed at: https://plan.sa.gov.au/development_applications/state_development/impact-assessed-development/majors/major_projects/majors/olympic-dam-smelter-refinery-expansion-project

ISO (2026) *Environmental Management Systems* (International Organization for Standardization Standard No. ISO 14001: 2026).

SPC (State Planning Commission) (2023) Practice Direction 17 Impact Assessed Development. Version 2. Published 14 February 2023. Government of South Australia, PlanSA, State Planning Commission.

2.3 Abbreviations and acronyms

Table 2.1: Abbreviations and acronyms

Abbreviation	Description
ALARP	As Low As Reasonably Practicable
ARI	average recurrence interval
EIAF	Environmental Impact Assessment Framework
ERICA	Environmental Risk from Ionising Contaminants Assessment and Management
GDEs	Groundwater-dependent ecosystems
GHG	Greenhouse gas
GLC	Ground-level concentration
ISO	International Organization for Standardization
SPC	State Planning Commission
SPR	source-pathway-receptor
SRE Project	Smelter and Refinery Expansion Project

2.4 Units of measure

Table 2.2: Units of measure

Unit	Description
%	per cent
US$	United States dollars
g	gram
h	hour
m	metre
mg	milligram
m^2	metre squared
m^3	metre cubed
mSv	millisievert
t	tonne
y	year
µGy	microgray

APPENDIX A SPR IMPACT ASSESSMENT SUMMARY

Potential Impact ID	SPR ID No. (as per final SPR register)	
Potential Impact Description	**Impact description (as per final SPR register)**	
Project phase (when impact will occur)	Construction | Operations | Closure | All	
Source	<< Source >>	**Provide a succinct summary of the source, as it relates to the SPR, to provide context to the reader** - *e.g.: 'clearing of XX ha of land'*
Pathway	<< Pathway >>	**Provide a succinct summary of the pathway/medium, as it relates to the SPR, to provide context to the reader -** *e.g.: 'all disturbance areas will be rehabilitated consistent with the pre-disturbance land uses'*
Receptor	<< Receptor >>	**Provide a succinct summary of the receptor, as it relates to the SPR, to provide context to the reader** - *e.g.: 'the proposed disturbance area is primarily on freehold pastoral land, and wholly within the XXX pastoral lease'.*
Fundamental design controls (Elimination, Substitution or Engineering)	Describe the inherent design controls applied to break a linkage between source and receptor (prevent the impact occurring). *e.g. siting of infrastructure to avoid sensitive areas/receptor. If none apply, reference as 'Not applicable'*	
Preliminary SPR linkage status	No linkage | Uncertain or unconfirmed linkage | Likely or confirmed linkage	
Preliminary SPR linkage justification	**Describe basis for the preliminary SPR linkage classification – e.g.:** • Significant distance exists between source and receptor • A potential linkage exists between source and receptor, however significant uncertainties exist in the knowledge base • Project will necessitate ground disturbance with direct impact(s) on << receptor >> • Significant species identified in existing baseline studies within the proposed disturbance footprint	
Work completed to assess/confirm linkage	**List the key activities undertaken to understand the environmental and social setting and confirm the presence or absence of the SPR linkage – e.g. (stakeholder consultation, baseline environmental assessments, assessment of effects etc).** If the preliminary SPR status is 'no linkage', reference as '*no linkage exists – not considered further*') If the preliminary SPR status is 'unconfirmed' or 'likely/confirmed linkage', make reference to the supporting environmental assessment(s) appended to the EIS, e.g. '*Visual Impact Assessment – Appendix XX to EIS*')	
Legislative Requirements		
Applicable regulatory requirements / agreements	**Identify if mandatory regulatory controls or compliance limits apply to the SPR, irrespective of the application of the EIAF and assessment of impact significance – e.g.:** • Not applicable • Air quality limits under the 'Air Quality EPP 2016' • Permissible noise levels within the 'EP (Noise) Policy 2007' • Requirement for offsets for vegetation clearance in accordance with the 'NV Act 1991', • etc. Identify if key agreements are in place that permit disturbance to receptors/impacts to receptors, irrespective of the application of the EIAF and assessment of impact significance – e.g.: • LACAs • NTMAs or other • etc.	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	**In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.**	
Impact Assessment		
Confirmed SPR linkage status	**Select the confirmed SPR linkage status, based on the completed environmental assessment - either:** • *Not linkage* • *Confirmed linkage*	
Linkage justification	**Describe basis for the confirmed SPR linkage classification – e.g.:** • *Significant distance between source and receptor* • *Groundwater modelling predicts reduction in groundwater levels at third-party borefield* • *Potential impact of concern identified during stakeholder consultation / raised by << stakeholder >>* • *Project will result in ground disturbance with direct clearing (loss) of native vegetation* • *etc.*	

Potential Impact ID	SPR ID No. (as per final SPR register)
Severity ranking	For SPRs assessed as confirmed impact events (linkage exists), identify the severity level per the EIAF - e.g.: Level 1 | Level 2 | Level 3 | Level 4 | Level 5 For SPRs assessed as 'no linkage', reference as 'N/A - not considered further'.
Impact significance	For SPRs assessed as confirmed impact events (linkage exists), state the impact significance classification - e.g.: Not significant | Significant For SPRs assessed as 'no linkage', reference as 'N/A - not considered further'.
Impact uncertainty (Assessment confidence)	**Select the impact uncertainty level, with regard to the rating levels and definitions in the EIAF - either:** • Low uncertainty (high confidence) • Medium uncertainty (moderate confidence) • High uncertainty (low confidence)
Impact uncertainty – justification	**Provide a succinct summary justifying the assigned impact uncertainty rating, with regard to the uncertainty level definitions in the EIAF - e.g.:** • Extensive ecological baseline survey data available within the proposed disturbance footprint to inform the assessment (high confidence level) • Site-specified air quality model developed for the Oak Dam site, however, utilises proxy data for Olympic Dam as baseline (moderate confidence level) • Site-specific groundwater numerical model developed for the site in accordance with << best-practice guidelines >>. Limited baseline data available for input to model, however model prediction included multiple potential project scenarios and model uncertainty analysis (moderate confidence level)
Impact sensitivity	**Select the impact sensitivity level, with regard to the rating levels and definitions in the EIAF - either:** • Low • Medium • High
Impact sensitivity – justification	**Provide a succinct summary justifying the assigned sensitivity rating, with regard to the sensitivity level definitions in the EIAF - e.g.:** • Groundwater model is highly sensitive to input variations - the limited baseline groundwater modelling data increases the potential for variability in inflow volumes that will actually be encountered during excavation of the decline. Iterative updates to the groundwater model will be required to improve model accuracy and reliability, and thus reduce model uncertainty.
Key control measures	**For confirmed linkage events, list key control and mitigation measures that will be required/implemented to break a linkage (eliminate) or significantly reduce the severity of impact to ALARP (i.e. the controls will be relied upon to eliminate or mitigate impacts to receptors):** • Installation of shielding on fixed light fixtures to minimise lighting amenity impacts during evening hours (engineering control) • Stormwater retention and drainage system to collect and store turbid runoff and other contaminants (engineering control) • Bunding integrity inspections and maintenance program (administrative control) • etc. • For SPRs assessed as 'no linkage', reference as 'N/A - not considered further'.
Control measure uncertainty	**Describe any significant uncertainties and assumptions regarding the likely effectiveness of proposed control measures in managing and mitigating impacts and achieving environmental outcomes for mine operations and post-mine completion. Include any assumptions used in modelling carried out to assess the effectiveness of proposed control strategies - e.g.:** • The ARI event associated with the design of the surface water management infrastructure. • The effectiveness of haul road water in reducing the generation of dusts from an unpaved road.

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Appendix E2.

Environmental impact assessment tables

BHP

Olympic Dam Smelter and Refinery Expansion Project

Environmental Impact Assessment Tables

July 2026

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1. Air

Identified potential impact events related to the air pathway are assessed in the following source-pathway-receptor (SPR) tables.

1.1 Greenhouse Gas

A1		
During construction, the combustion of fossil fuels via mobile fleet and electricity demands leads to the emission of greenhouse gases (GHGs), which impacts State and Commonwealth matters		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The annual average scope 1 and 2 emissions during the staged development of the SRE Project were estimated to be: • 160,218 t CO_2-e/year for Stage 1a • 182,697 t CO_2-e/year for Stage 1b • 192,524 t CO_2-e/year for Stage 2. Relative to estimated annual average BAU period (i.e. FY26 to FY32) projected smelter and refinery emissions (117,834 t CO_2-e/year), the SRE Project returns an increase of approximately 36% for Stage 1A, 55% for Stage 1B and 63% for Stage 2.
Pathway	Air (GHG)	The current global average concentration of CO_2 in the atmosphere is 421 ppm, an increase of 50% since the start of the Industrial Revolution, up from 280 ppm during the 10,000 years prior to the mid-18th century.
Receptor	State and Commonwealth matters	In the 2022 financial year, SA emitted 15.8 Mt CO_2-e being a 57% decrease in the total net emissions from 2004-2005. 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. Australia has an emissions reduction target of 43% below 2005 levels by 2030, with South Australia's goal to reduce South Australia's greenhouse gas emissions by more than 50% below 2005 levels by 2030, and to achieve net zero emissions by 2050.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Confirmed linkage	
Preliminary SPR linkage justification	The SRE construction activities will result in the emission of GHGs via mobile fleet and electricity demands	
Work completed to assess/ confirm linkage	EIS Appendix C4 Greenhouse gas	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA) • *Environment Protection Act 1993* (SA) • *National Greenhouse and Energy Reporting Act 2007* (Cth)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The combustion of fossil fuels will generate GHG emissions in all years of the SRE Project, including construction	
Severity ranking	Level 1	
Impact significance	Not significant – Emissions from the construction phase are relatively short lived and are expected to constitute a small proportion of total annual GHG emissions from the Olympic Dam site.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence) to high uncertainty (low confidence)	
Impact uncertainty – justification	The estimation of GHG emissions relies on emission factors and assumptions regarding the future decarbonisation of the electricity grid, and as such are subject to a moderate to high uncertainty.	
Impact sensitivity	Low	

A1	
Impact sensitivity – justification	Low potential for variability in impact.
Key control measures	Standard design, engineering and administrative controls to minimise emission from combustion of diesel from the construction fleet, including: • minimise material haulage distances as far as practicable to reduce diesel consumption • routinely maintain haul roads to reduce truck tyre rolling resistance • review construction practices to minimise double handling of materials • consider the use of alternative fuels (e.g. low-sulphur fuel) where economically and practically feasible • minimise the idling of diesel equipment wherever feasible • routinely service all equipment to maintain manufacturers' emission specifications to ensure that operational efficiency • perform pre-start inspections at each shift on mobile plant and vehicles • track fuel usage.
Control measure uncertainty	These measures have been demonstrated to reduce diesel consumption.

A2		
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		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The annual average scope 1 and 2 emissions during the staged development of the SRE Project were estimated to be: • 160,218 t CO_2-e/year for Stage 1a • 182,697 t CO_2-e/year for Stage 1b • 192,524 t CO_2-e/year for Stage 2. Relative to estimated annual average BAU period (i.e. FY26 to FY32) projected smelter and refinery emissions (117,834 t CO_2-e/year), the SRE Project returns an increase of approximately 36% for Stage 1A, 55% for Stage 1B and 63% for Stage 2.
Pathway	Air (GHG)	The current global average concentration of CO_2 in the atmosphere is 421 ppm, an increase of 50% since the start of the Industrial Revolution, up from 280 ppm during the 10,000 years prior to the mid-18th century.
Receptor	State and Commonwealth matters	In the 2022 financial year, SA emitted 15.8 Mt CO_2-e being a 57% decrease in the total net emissions from 2004-2005. 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. Australia has an emissions reduction target of 43% below 2005 levels by 2030, with South Australia's goal to reduce South Australia's greenhouse gas emissions by more than 50% below 2005 levels by 2030, and to achieve net zero emissions by 2050.
Fundamental design controls (elimination, substitution or engineering)	• Oxygen enrichment for the FSF leading to a 19% reduction in diesel/fuel oil consumption. • Upgrade of the anode furnace oxy-fuel burner, leading to a 54% reduction in LPG consumption. • Replacement of the Matte Mill heating system from LPG heating to steam air heating supplied from process co-generation.	
Preliminary SPR linkage status	Confirmed linkage	
Preliminary SPR linkage justification	The SRE operational activities will result in the emission of GHGs directly via combustion of fossil fuels in smelting activities and indirectly via the consumption of purchased non-renewable electricity from the National Electricity Market	
Work completed to assess/ confirm linkage	EIS Appendix C4 Greenhouse gas	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Climate Change and Greenhouse Emissions Reduction Act 2007* (SA) • *Environment Protection Act 1993* (SA) • *National Greenhouse and Energy Reporting Act 2007* (Cth)	

A2	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	The combustion of fossil fuels and consumption of electricity by the smelter process, from business as usual operations to the SRE Project operations, will generate GHG emissions in all future years.
Severity ranking	Level 5
Impact significance	Significant – Annual GHG scope 1 and scope 2 GHG emissions are estimated to be 160,218 t CO_2-e/year for Stage 1a, 182,697 t CO_2-e/year for Stage 1b and 192,524 t CO_2-e/year for Stage 2 (i.e. scope 1 emissions are estimated to be greater than100,000 t CO_2-e/year) . Relative to estimated annual average BAU period (i.e. FY26 to FY32) projected smelter and refinery emissions (117,834 t CO_2-e/year), the SRE Project returns an increase of approximately 36% for Stage 1A, 55% for Stage 1B and 63% for Stage 2.
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence) to high uncertainty (low confidence)
Impact uncertainty – justification	The estimation of GHG emissions relies on emission factors and assumptions regarding the future decarbonisation of the electricity grid, and as such are subject to a moderate to high uncertainty.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact.
Key control measures	Preferred pathway to net zero strategies for the SRE Project (scope 1): • alternative fuels or electrification of fleet and stationary equipment for construction phase emissions • bio-LPG replacement in the launder burners, anode furnace and other LPG users • bio-diesel replacement in the flash furnaces • use of a 50% bio-diesel blend in the mobile fleet • either electrification, bio-LPG or thermal energy storage system for the auxiliary boiler (options to be evaluated) • carbon offsets: used only to neutralise residual emissions Preferred pathway to net zero strategies for the SRE Project (scope 2): • fully abated the BHP Renewable Energy Plan
Control measure uncertainty	The proposed implementation of the P2NZ Roadmap measures would assist BHP with meeting net zero emission commitments and Safeguard Mechanism emission reduction obligations.

1.2 Air Quality

A3		
During construction, activities release emissions of off-gases and fugitive gases that affect air quality, resulting in impacts to flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of the combustion of hydrocarbons during construction activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – 0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the Electricity Infrastructure Ground Re-profiling Area (EIGR Areas). • Protected Matters Search Tool (PMST) outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed Threatened Ecological Communities (TEC) have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The Biological Databases of South Australia (BDBSA) has identified 10 NPW Act-listed flora species which may occur within 50 km of the Special Mining Lease (SML) Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations would not occur during construction	
Work completed to assess/ confirm linkage	Not applicable	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	

A3		
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Not applicable	
Severity ranking	Not applicable	
Impact significance	Not applicable	
Impact uncertainty (Assessment confidence)	Not applicable	
Impact uncertainty – justification	Not applicable	
Impact sensitivity	Not applicable	
Impact sensitivity – justification	Not applicable	
Key control measures	Not applicable	
Control measure uncertainty	Not applicable	

A4		
During construction, activities release emissions of off-gases and fugitive gases that affect air quality, resulting in impacts to fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of the combustion of hydrocarbons during construction activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – 0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	

A4	
Preliminary SPR linkage status	No linkage
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations would not occur during construction
Work completed to assess/ confirm linkage	Not applicable
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Not applicable
Severity ranking	Not applicable
Impact significance	Not applicable
Impact uncertainty (Assessment confidence)	Not applicable
Impact uncertainty – justification	Not applicable
Impact sensitivity	Not applicable
Impact sensitivity – justification	Not applicable
Key control measures	Not applicable
Control measure uncertainty	Not applicable

A5		
During construction, activities release emissions of off-gases and fugitive gases that affect air quality, resulting in impacts to State and Commonwealth-listed threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of the combustion of hydrocarbons during construction activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations would not occur during construction	
Work completed to assess/ confirm linkage	Not applicable	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA)	

A5	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Not applicable
Severity ranking	Not applicable
Impact significance	Not applicable
Impact uncertainty (Assessment confidence)	Not applicable
Impact uncertainty – justification	Not applicable
Impact sensitivity	Not applicable
Impact sensitivity – justification	Not applicable
Key control measures	Not applicable
Control measure uncertainty	Not applicable

A6		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that affect air quality, resulting in impacts to the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air Quality, Section 3.2.2).
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.

A6	
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off-gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may be at a concentration at which impacts to the health and safety of the local community may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from bypass stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Low

A6	
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls. • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A7		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that affect air quality, resulting in impacts to the amenity of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off-gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	

A7	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may be at a concentration at which impacts to the amenity of the local community may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from Bypass Stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls. • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A8		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that affect air quality, resulting in impacts to flora and vegetation		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)		Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status		Uncertain or unconfirmed linkage

A8	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may be at a concentration at which vegetation impacts may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 2
Impact significance	Not significant - The outcomes of the assessment of effects indicate that elevated levels of gaseous pollutants would be localised. SRE Project will include design controls to minimise loss of off-gases and fugitive emissions.
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Gaseous pollutant concentrations associate with industrial processing operations are generally well understood, but there are limited technical studies on the effect of gaseous pollutants on arid zone ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	• Refer to fundamental design controls. • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A9		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that affect air quality, resulting in impacts to fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – 0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air Quality, Section 3.2.2).
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may be at a concentration at which habitat impacts may occur	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality EIS Appendix D1 Ecology	

A9	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of gases will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna.
Severity ranking	Level 2
Impact significance	Not significant - The outcomes of the assessment of effects indicate that elevated levels of gaseous pollutants would be localised. SRE Project will include design controls to minimise loss of off-gases and fugitive emissions.
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Gaseous pollutant concentrations associate with industrial processing operations are generally well understood, but there are limited technical studies on the effect of gaseous pollutants on arid zone ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	• Refer to fundamental design controls. • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A10		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that affect air quality, resulting in impacts to State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).

A10	
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may be at a concentration at which impacts to threatened species may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of gases will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted during operation.
Severity ranking	Level 2
Impact significance	Not significant - The outcomes of the assessment of effects indicate that elevated levels of gaseous pollutants would be localised. SRE Project will include design controls to minimise loss of off-gases and fugitive emissions.
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)

A10	
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Gaseous pollutant concentrations associate with industrial processing operations are generally well understood, but there are limited technical studies on the effect of gaseous pollutants on arid zone ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	• Refer to fundamental design controls. • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A11		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that generates odour, resulting in impacts to the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (odour)	There is anticipated to emissions of sulphur-related pollutants as a result of SRE Project in relation to BAU operations.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere. • • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may result in odours at a concentration at which impacts to the health and safety of the local community may occur	

A11	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of sulphur-related pollutants are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas. Therefore, the likelihood of adverse odour impacts is considered low.
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from bypass stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A12		
Operational activities release emissions of off-gases and fugitive gases from smelting, acid plant and refinery operations that generates odour, resulting in impacts to the amenity of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	The emission of off-gases and fugitive gases may occur as a result of smelting, acid plant and refinery operations and maintenance activities
Pathway	Air (odour)	There is anticipated to emissions of sulphur-related pollutants as a result of SRE Project in relation to business as usual operations.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of off-gases and fugitive gases from smelting, acid plant and refinery operations may result in odours at a concentration at which impacts to the amenity of the local community may occur	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Emissions of sulphur-related pollutants are estimated to increase as a result of the SRE Project relative to business-as-usual operations.	

A12	
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas. Therefore, the likelihood of adverse odour impacts is considered low.
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from bypass stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A13		
Project-related construction activities (e.g. land clearing) release emissions of particulate matter that affect air quality, resulting in impacts to the health and safety of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, the SRE Project has the potential to generate emissions of various air pollutants. Emission sources can include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel used in trucks)
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of particulate matter during construction (e.g. land clearing) activities may be at concentrations at which impacts to the health and safety of the local community would occur	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality	

A13		
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Construction activities would increase the emissions of particulate matter that affect air quality.	
Severity ranking	Level 1	
Impact significance	Not significant – While not quantified in EIS Appendix C2 Air quality, emissions and associated impact from SRE Project construction are anticipated to be lower than business-as-usual operations or SRE Project plus business-as-usual operations.	
Impact uncertainty (Assessment confidence)	Low – Moderate.	
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. Any construction-related air pollution emissions will be generated well within the SML and distant from sensitive receptor locations to the south.	
Impact sensitivity	Low	
Impact sensitivity – justification	Predictions not sensitive to input variations.	
Key control measures	Water cart dust suppression activities.	
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction air quality controls have been demonstrated to reduce air emissions.	

A14		
Project-related construction activities (e.g. land clearing) release emissions of particulate matter that affect air quality, resulting in impacts to the amenity of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, the SRE Project has the potential to generate emissions of various air pollutants. Emission sources can include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel used in trucks)
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air Quality, Section 3.2.2).

A14		
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of particulate matter during construction (e.g. land clearing) activities may be at a concentration at which impacts to the amenity of the local community may occur	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Construction activities would increase the emissions of particulate matter that affect air quality.	
Severity ranking	Level 1	
Impact significance	Not significant – While not quantified in EIS Appendix C2 Air quality, emissions and associated impact from SRE Project construction are anticipated to be lower than business-as-usual operations or SRE Project plus business-as-usual operations.	
Impact uncertainty (Assessment confidence)	Low – Moderate.	
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. Any construction-related air pollution emissions will be generated well within the SML and distant from sensitive receptor locations to the south.	
Impact sensitivity	Low	
Impact sensitivity – justification	Predictions not sensitive to input variations.	
Key control measures	Water cart dust suppression activities.	
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction air quality controls have been demonstrated to reduce air emissions.	

A15		
Project-related construction activities release emission of particulate matter that affect air quality, resulting in impacts to flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, the movement of soil materials and the creation of cleared areas subject to wind erosion results in the emissions of dust and particulate matter
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of particulate matter during construction may be at a concentration at which vegetation impacts may occur	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	

A15	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Dust emissions will occur as a result of construction for the SRE Project activities, which may impact vegetation.
Severity ranking	Level 2
Impact significance	Not Significant – Dust emissions as a result of wind erosion associated with the movement of soil material and the creation of cleared areas are expected to be highly localised. Mitigation measures such as water cart dust suppression activities can largely negate any negative impacts to terrestrial flora.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Dust suppression activities are planned as part of the SRE Project construction and have been used effectively at construction sites across the country.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	Water cart dust suppression activities.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction air quality controls have been demonstrated to reduce air emissions.

A16		
Project-related construction activities release emissions of particulate matter that affect air quality, resulting in impacts to fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	All Project activities	During construction, the movement of soil materials and the creation of cleared areas subject to wind erosion results in the emissions of dust and particulate matter
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable.	

A16	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of particulate matter during construction may be at a concentration at which habitat impacts may occur
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Dust emissions will occur as a result of construction for the SRE Project activities, which may impact vegetation and hence habitat for fauna.
Severity ranking	Level 1
Impact significance	Not Significant – Dust emissions as a result of wind erosion associated with the movement of soil material and the creation of cleared areas are expected to be highly localised. Mitigation measures such as water cart dust suppression activities can largely negate any negative impacts to terrestrial flora.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Dust suppression activities are planned as part of the SRE Project construction and have been used effectively at construction sites across the country.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	Water cart dust suppression activities.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction air quality controls have been demonstrated to reduce air emissions.

A17		
Project-related construction activities release particulate emissions that affect air quality, resulting in impacts to State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, the movement of soil materials and the creation of cleared areas subject to wind erosion results in the emissions of dust and particulate matter
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of particulate matter during construction may be at a concentration at which impacts to threatened species may occur	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	

A17	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Dust emissions will occur as a result of construction for the SRE Project activities, which may impact vegetation and hence habitat for fauna. Although EPBC Act-listed threaten flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur and several State threatened species are considered likely to or to possibly occur in the Project Area, and may therefore be impacted in the short-term during construction.
Severity ranking	Level 2
Impact significance	Not Significant – Dust emissions as a result of wind erosion associated with the movement of soil material and the creation of cleared areas are expected to be highly localised. Mitigation measures such as water cart dust suppression activities can largely negate any negative impacts to terrestrial flora.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Dust suppression activities are planned as part of the SRE Project construction and have been used effectively at construction sites across the country.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	Water cart dust suppression activities.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction air quality controls have been demonstrated to reduce air emissions.

A18		
Project-related operational activities (e.g. stacks or materials handling activities) release emissions of particulate matter that affect air quality, resulting in impacts to the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operation of the SRE Project, there is potential for generation of emission of various air pollutants. Emission sources of particulate matter could include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel use in plants).
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.

A18	
Fundamental design controls (elimination, substitution or engineering)	Design mitigation measures for fugitive dust including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulerss will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of particulate matter during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to the health and safety of the local community may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from bypass stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Low

A18	
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A19		
Project-related operational activities (e.g. stacks or materials handling activities) release emissions of particulate matter that affect air quality, resulting in impacts to the amenity of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operation of the SRE Project, there is potential for generation of emission of various air pollutants. Emission sources of particulate matter could include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel use in plants).
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emissions of particulate matter during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to the amenity of the local community may occur	

A19	
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Air Quality) Policy 2016 • EPA 2016 guidance for Evaluation distances for effective air quality and noise management
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions are estimated to increase as a result of the SRE Project relative to business-as-usual operations.
Severity ranking	Level 1
Impact significance	Not significant – The predicted impacts are below applicable health and safety impact assessment criteria at all sensitive receptor location areas
Impact uncertainty (Assessment confidence)	Low – Moderate.
Impact uncertainty – justification	The potential changes to the baseline environment are well-understood. The atmospheric dispersion model used in the assessment is widely used and has been extensively tested and validated. The predicted SRE Project concentrations of air pollutants are well below the corresponding impact assessment criteria at all surrounding sensitive receptor locations. Emissions from future SRE sources are derived from monitoring data collected at comparable existing sources at the site. However, there remains some uncertainty as emissions from bypass stacks, while infrequent, have been excluded from the modelling undertaken.
Impact sensitivity	Low
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A20		
Project-related operational activities release emissions of particulate matter that affect air quality, resulting in impacts to flora and vegetation		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operation of the SRE Project, there is potential for generation of emission of various air pollutants. Emission sources of particulate matter could include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel use in plants).
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	

A20	
Preliminary SPR linkage justification	The emission of particulate matter during operations (e.g. from stacks or materials handling activities) may be at a concentration at which vegetation impacts may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of particulate matter will occur as a result of SRE Project activities which may impact vegetation.
Severity ranking	Level 2
Impact significance	Not Significant – The outcomes of the assessment of effects indicate that elevated particulate matter levels would be localised. SRE Project will include design controls such as adequate stack height and scrubbers as well as mitigation at material handling and transfer points.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Particulate matter concentrations associated with industrial processing operations are generally well understood, and there is a sufficient body of research into the effects of particulate matter on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A21		
Project-related operational activities release emissions of particulate matter that affect air quality, resulting in impacts to fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operation of the SRE Project, there is potential for generation of emission of various air pollutants. Emission sources of particulate matter could include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel use in plants).
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)		Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status		Uncertain or unconfirmed linkage
Preliminary SPR linkage justification		The emissions of particulate matter during operations (e.g. from stacks or materials handling activities) may be at a concentration at which habitat impacts may occur
Work completed to assess/ confirm linkage		EIS Appendix C2 Air quality EIS Appendix D1 Ecology

A21	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of particulate matter will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna.
Severity ranking	Level 1
Impact significance	Not Significant – The outcomes of the assessment of effects indicate that elevated particulate matter levels would be localised. SRE Project will include design controls such as adequate stack height and scrubbers as well as mitigation and material handling and transfer points.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Particulate matter concentrations associated with industrial processing operations are generally well understood, and there is a sufficient body of research into the effects of particulate matter on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

A22		
Project-related operational activities release emissions of particulate matter that affect air quality, resulting in impacts to State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operation of the SRE Project, there is potential for generation of emission of various air pollutants. Emission sources of particulate matter could include a mixture of fugitive sources (e.g. dust generated by material handling) and combustion sources (e.g. diesel use in plants).
Pathway	Air (air quality)	The baseline air quality concentrations for the SRE Project are: • 24-hour PM_{10} concentration – 70th percentile of ~10.9 µg/m^3 • 24-hour $PM_{2.5}$ concentration – 70th percentile of ~5.6 µg/m^3 • Annual average $PM_{2.5}$ concentration – ~5.3 µg/m^3 • Annual average NO_2 – ~6.2 µg/m^3 • Annual average SO_2 – ~0.07 ppm Baseline air quality concentrations for other pollutants assessed were considered to be accounted for by the modelling of existing operational emissions (EIS Appendix C2 Air quality, Section 3.2.2).
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).

A22	
Fundamental design controls (elimination, substitution or engineering)	Emission control measures for fugitive dust incorporated into the design including: • sealed rotainers for concentrate transport • emptying of rotainers within a suitable enclosure, with dust extraction if required • all conveyors and conveyor transfer points moving concentrate will be fitted with a cover and side wall cladding for wind protection • all other material handling and transfer operations (e.g. silo and day bin loading, bedding plant, slag/revert shed, etc) will occur within suitable enclosures with dust extraction if required • with the exception of the slag haul road, all SRE Project roads will be sealed. Water spraying will occur along all unsealed and sealed roads • slag pot haulers will have a reduced travel. Other emission control measures incorporated into the SRE Project and accounted for in the air quality dispersion modelling: • concentrate retention proposed in ponds (wet), in storage bins, shed, dome, to prevent losses. • matte to be stored as a granulate and damp preventing losses. • crushing and breaking operations to be in a dedicated area, where possible completed with wet techniques (i.e. slag milling). • the concentrate material will feature a high moisture content, reducing dust generation potential. • venturi scrubbers and off gas capture are in place at the acid plant to convert to sulphuric acid. • primary processes are operated under negative pressure which contains all process emissions within the primary processing equipment and buildings • anode furnaces and primary smelting scrubber prior to emissions ventilation to atmosphere • optimised stack heights and release characteristics (exhaust flow rate and temperature, exit diameter) to enhance dispersion performance.
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of particulate matter during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to threatened species may occur
Work completed to assess/ confirm linkage	EIS Appendix C2 Air quality EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of particulate matter will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted during operation.
Severity ranking	Level 2
Impact significance	Not Significant – The outcomes of the assessment of effects indicate that elevated particulate matter levels would be localised. SRE Project will include design controls such as adequate stack height and scrubbers as well as mitigation and material handling and transfer points.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)

A22	
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Emission levels have been modelled based on conservative assumptions. Particulate matter concentrations associated with industrial processing operations are generally well understood, and there is a sufficient body of research into the effects of particulate matter on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Refer to fundamental design controls • Continuous and periodic emissions monitoring of all significant existing and SRE emission stack sources.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard air quality controls have been demonstrated to reduce air emissions.

1.3 Radiation

A23		
Project-related operational activities (e.g. from stacks or material handling activities) release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to the local community, impacting health and safety		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the air. Including stockpiling and handling of copper concentrates, seepage from stockpiles, or smelter activities.
Pathway	Air (radiation)	The radiological characteristics of the Olympic Dam copper concentrate and their processing are well known with the uranium decay chain radionuclides in the copper concentrate not in secular equilibrium, (note that secular equilibrium occurs when the radionuclides have the same activity concentration). It is assumed that radionuclide concentration of the Carrapateena, Prominent Hill and Oak Dam copper concentrates are in the same ratio as that of the Olympic Dam copper concentrate. The indicative radionuclide concentration of copper concentrates for the Olympic Dam copper concentrate has 220 ppm uranium, 2.8 Bq/g U-238 and U234, 2.1 Bq/g Th-230, 10.0 Bq/g Ra-226, 15 Bq/g Pb-210, and 30.5 Bq/g Po-210.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • appropriate ventilation • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • use of dedicated extraction systems in appropriate areas • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of radon and/or radionuclides during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to the health and safety of the local community may occur	
Work completed to assess/ confirm linkage	EIS Appendix C3 Radiation	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation • Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9) • *Radiation Protection and Control Act 2021* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

A23	
Linkage justification	Emissions from the SRE Project will occur
Severity ranking	Level 1
Impact significance	Not significant – the dose assessment indicates that radiological impacts will be low and below the recognised public dose limit of 1 mSv/y and dose constraint of 0.3 mSv/y. In accordance with the ICRP (ICRP 2007-103) and the IAEA (IAEA 2014) statement that controls are to be commensurate with the magnitude of impact, no additional controls for the purposes of radiation protection are considered necessary, other than standard controls. The ongoing monitoring would aim to confirm the conclusions. If measured impact is above specified action levels, as outlined in the RMP, mitigation measures will be implemented.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Baseline and existing operational monitoring results verify previous modelling outputs which provides high degree of confidence on impact assessment. Ongoing monitoring to confirm assessment conclusions.
Impact sensitivity	Low
Impact sensitivity – justification	Low sensitivity of predictions to input variations.
Key control measures	• Existing Radiation Management Plan would be updated and expanded to accommodate the SRE Project, as required. • Existing Radioactive Waste Management Plan would be updated to accommodate the SRE Project components. • The controls for radiation for the SRE Project are expected to be identical to, or similar to BAU controls at Olympic Dam. • Standard management and administrative controls including job safety analyses and safe work procedures, risk assessment, defining restricted access areas, monitoring and worker education and training.
Control measure uncertainty	Control measures are an extension of established systems and processes for radiation management that have been shown to be effective.

A24		
Project-related operational activities (e.g. from stacks or material handling activities) release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to the local community, impacting amenity		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the air. Including stockpiling and handling of copper concentrates, seepage from stockpiles, or smelter activities.
Pathway	Air (radiation)	The radiological characteristics of the Olympic Dam copper concentrate and their processing are well known with the uranium decay chain radionuclides in the copper concentrate not in secular equilibrium, (note that secular equilibrium occurs when the radionuclides have the same activity concentration). It is assumed that radionuclide concentration of the Carrapateena, Prominent Hill and Oak Dam copper concentrates are in the same ratio as that of the Olympic Dam copper concentrate. The indicative radionuclide concentration of copper concentrates for the Olympic Dam copper concentrate has 220 ppm uranium, 2.8 Bq/g U-238 and U234, 2.1 Bq/g Th-230, 10.0 Bq/g Ra-226, 15 Bq/g Pb-210, and 30.5 Bq/g Po-210.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • appropriate ventilation • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • use of dedicated extraction systems in appropriate areas • management of stormwater to ensure adequate containment of all run-off water.	

A24	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of radon and/or radionuclides during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to the amenity of the local community may occur
Work completed to assess/ confirm linkage	EIS Appendix C3 Radiation
Legislative Requirements	
Applicable regulatory requirements/ agreements	• Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation • Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9) • *Radiation Protection and Control Act 2021* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Gamma radiation beyond a few kilometres is not discernible from existing background levels.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

A25		
Project-related operational activities (e.g. from stacks or material handling activities) release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to flora and vegetation impacting diversity		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities (e.g. from stacks or materials handling activities) undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the air.
Pathway	Air (radiation)	The radiological characteristics of the Olympic Dam copper concentrate and their processing are well known with the uranium decay chain radionuclides in the copper concentrate not in secular equilibrium, (note that secular equilibrium occurs when the radionuclides have the same activity concentration). It is assumed that radionuclide concentration of the Carrapateena, Prominent Hill and Oak Dam copper concentrates are in the same ratio as that of the Olympic Dam copper concentrate. The indicative radionuclide concentration of copper concentrates for the Olympic Dam copper concentrate has 220 ppm uranium, 2.8 Bq/g U-238 and U234, 2.1 Bq/g Th-230, 10.0 Bq/g Ra-226, 15 Bq/g Pb-210, and 30.5 Bq/g Po-210.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • appropriate ventilation • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • use of dedicated extraction systems in appropriate areas • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of radon and/or radionuclides during operations (e.g. from stacks or materials handling activities) may be at a concentration at which vegetation impacts may occur	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology EIS Appendix C3 Radiation	

A25	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation • Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9) • *Radiation Protection and Control Act 2021* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of radon and/or radionuclides will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna.
Severity ranking	Level 1
Impact significance	Not significant – The assessment of potential radiological impact to flora and fauna indicate that no additional controls are justified due to the very low potential impacts. The standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Existing Radiation Management Plan would be updated and expanded to accommodate the SRE Project, as required. • Existing Radioactive Waste Management Plan would be updated to accommodate the SRE Project components. • The controls for radiation for the SRE Project are expected to be identical to, or similar to BAU controls at Olympic Dam. • Standard management and administrative controls including job safety analyses and safe work procedures, risk assessment, defining restricted access areas, monitoring and worker education and training.
Control measure uncertainty	Control measures are an extension of established systems and processes for radiation management that have been shown to be effective.

A26		
Project-related operational activities (e.g. from stacks or material handling activities) release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to fauna and habitat impacting diversity		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities (e.g. from stacks or materials handling activities) undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the air.
Pathway	Air (radiation)	The radiological characteristics of the Olympic Dam copper concentrate and their processing are well known with the uranium decay chain radionuclides in the copper concentrate not in secular equilibrium, (note that secular equilibrium occurs when the radionuclides have the same activity concentration). It is assumed that radionuclide concentration of the Carrapateena, Prominent Hill and Oak Dam copper concentrates are in the same ratio as that of the Olympic Dam copper concentrate. The indicative radionuclide concentration of copper concentrates for the Olympic Dam copper concentrate has 220 ppm uranium, 2.8 Bq/g U-238 and U234, 2.1 Bq/g Th-230, 10.0 Bq/g Ra-226, 15 Bq/g Pb-210, and 30.5 Bq/g Po-210.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • appropriate ventilation • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • use of dedicated extraction systems in appropriate areas • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of radon and/or radionuclides during operations (e.g. from stacks or materials handling activities) may be at a concentration at which habitat impacts may occur	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology EIS Appendix C3 Radiation	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation • Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9) • *Radiation Protection and Control Act 2021* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Emissions of emissions of radon and/or radionuclides will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted during operation.	

A26	
Severity ranking	Level 1
Impact significance	Not significant – The assessment of potential radiological impact to flora and fauna indicate that no additional controls are justified due to the very low potential impacts. The standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Existing Radiation Management Plan would be updated and expanded to accommodate the SRE Project, as required. • Existing Radioactive Waste Management Plan would be updated to accommodate the SRE Project components. • The controls for radiation for the SRE Project are expected to be identical to, or similar to BAU controls at Olympic Dam. • Standard management and administrative controls including job safety analyses and safe work procedures, risk assessment, defining restricted access areas, monitoring and worker education and training.
Control measure uncertainty	Control measures are an extension of established systems and processes for radiation management that have been shown to be effective.

A27		
Project-related operational activities release emissions of radon and/or radionuclide bearing materials that result in radiation exposure to State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities (e.g. from stacks or materials handling activities) undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the air.
Pathway	Air (radiation)	The radiological characteristics of the Olympic Dam copper concentrate and their processing are well known with the uranium decay chain radionuclides in the copper concentrate not in secular equilibrium, (note that secular equilibrium occurs when the radionuclides have the same activity concentration). It is assumed that radionuclide concentration of the Carrapateena, Prominent Hill and Oak Dam copper concentrates are in the same ratio as that of the Olympic Dam copper concentrate. The indicative radionuclide concentration of copper concentrates for the Olympic Dam copper concentrate has 220 ppm uranium, 2.8 Bq/g U-238 and U234, 2.1 Bq/g Th-230, 10.0 Bq/g Ra-226, 15 Bq/g Pb-210, and 30.5 Bq/g Po-210.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • appropriate ventilation • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • use of dedicated extraction systems in appropriate areas • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of radon and/or radionuclides during operations (e.g. from stacks or materials handling activities) may be at a concentration at which impacts to threatened species may occur	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

A27	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation • Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9) • *Radiation Protection and Control Act 2021* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Emissions of emissions of radon and/or radionuclides will occur as a result of SRE Project activities, which may impact vegetation and hence habitat for fauna. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted during operation.
Severity ranking	Level 1
Impact significance	Not significant – The assessment of potential radiological impact to flora and fauna indicate that no additional controls are justified due to the very low potential impacts. The standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Standard dust and emission controls that all processing operations generally employ would act to control potential impacts.
Impact sensitivity	Moderate
Impact sensitivity – justification	Some sensitivity of predictions to input variations.
Key control measures	• Existing Radiation Management Plan would be updated and expanded to accommodate the SRE Project, as required. • Existing Radioactive Waste Management Plan would be updated to accommodate the SRE Project components. • The controls for radiation for the SRE Project are expected to be identical to, or similar to BAU controls at Olympic Dam. • Standard management and administrative controls including job safety analyses and safe work procedures, risk assessment, defining restricted access areas, monitoring and worker education and training.
Control measure uncertainty	Control measures are an extension of established systems and processes for radiation management that have been shown to be effective.

1.4 Light

A28		
Project-related operational activities result in emissions of light leading to impacts to the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Light sources which may be associated with the SRE Project include surface mobile fleet, such as light towers and stationary light posts to provide artificial light during night shift operations. While BHP will comply with Australian Standards AS 4282 to minimise light spills directly from the source, however a number of lights may still be visible in the immediate vicinity reflecting off surfaces and structures.
Pathway	Air (light)	Existing environment surrounding the SRE Project has existing artificial light sources from the Olympic Dam Operation
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Design will comply, where applicable, with Australian Standards AS 4282	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Due to the SRE Project's distance from receptors and fundamental design controls, lighting required for operations will not impact the health and safety of the local community.	
Work completed to assess/ confirm linkage	N/A	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Planning, Development and Infrastructure Act 2016* (SA) • Australian Standard AS 4282	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Due to the SRE Project's distance from receptors and fundamental design controls, lighting required for operations will not impact the health and safety of the local community.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable - not considered further	
Control measure uncertainty	Not applicable – not considered further	

A29		
Project-related operational activities result in emission of light leading to changes in visual amenity and impacts to the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Light sources which may be associated with the SRE Project include surface mobile fleet, such as light towers and stationary light posts to provide artificial light during night shift operations. While BHP will comply with Australian Standards AS 4282 to minimise light spills directly from the source, however a number of lights may still be visible in the immediate vicinity reflecting off surfaces and structures.
Pathway	Air (light)	Existing environment surrounding the SRE Project has existing artificial light sources from the Olympic Dam Operation
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Design will comply, where applicable, with Australian Standards AS 4282	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of light during operations (e.g. from infrastructure area lighting and vehicles) may be at a level at which impacts to the amenity of the local community may occur	
Work completed to assess/ confirm linkage	EIS Appendix D5 Visual amenity	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Planning, Development and Infrastructure Act 2016* (SA) • Australian Standard AS 4282	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Additional night lighting in the immediate vicinity of the existing Olympic Dam mine infrastructure has the potential to impact visual amenity within the Visual Study Area.	
Severity ranking	Level 1	
Impact significance	Not significant – Changes to the prevailing visual amenity may occur as a result of the SRE Project but are unlikely to materially impact the existing industrial landscape of the site.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	EIS Appendix D5 Visual amenity assumes that the SRE Project will adopt Australian Standard (AS 4282) for lighting that will shield the lights and minimise light spill directly from light sources. While a number of lights may be visible immediately around the surface infrastructure, most of the visible lighting is expected to be reflected off surfaces (walls, structures and ground).	
Impact sensitivity	Low	
Impact sensitivity – justification	Due to the distance from any sensitive receptors and fundamental design controls the SRE Project will have no impact on visual amenity from project related lighting.	

A29	
Key control measures	• Compliance with obtrusive lighting standards • Use of landscape and landform elements, where practicable, to shield the effects of lighting from view • Design considerations include eliminating upward spill of light, directing light downwards (not upwards), use of shielded fittings, avoiding over lighting, switching lights off when not required, use of energy efficient light bulbs, use of asymmetric beams (where flood lights are used), ensuring lights are not directed towards reflective surfaces, use of warm white colours.
Control measure uncertainty	Compliance with relevant Australian Standards with respect to lighting has been demonstrated to reduce light spill.

A30		
Project-related operational activities result in emission of light leading to impacts to fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, lighting required for safety and security during night-time operations emit light into the surrounding environment
Pathway	Air (light)	Existing environment surrounding the SRE Project has existing artificial light sources from the Olympic Dam Operation
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Design will comply, where applicable, with Australian Standards AS 4282	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of light during operations (e.g. from infrastructure area lighting and vehicles) may be at a level at which fauna impacts may occur	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • Australian Standard AS 4282	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	During operations lighting required for the SRE Project activities will result in a marginal increase in the overall lighting required for the current Olympic Dam operation, to ensure safe and efficient operations. Whilst this increase in lighting is expected to be extremely minor (compared with the current lighting environment), it may impact the behaviour of common nocturnal species as a result of increased light spill and potential increases in insect activity around lights. As no State or Nationally listed species which are identified as potentially present in the Project Area are nocturnal, no impacts through behavioural change to these species are anticipated.	
Severity ranking	Level 1	

A30	
Impact significance	Not Significant – The SRE Project will result in an incremental increase to existing lighting on the Olympic Dam SML. While artificial light has the potential to disrupt the behaviour of some species of fauna particularly nocturnal fauna, potential impacts are considered highly localised and are unlikely to result in negative impacts. There are no conservation significant nocturnal fauna species.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Limited studies have been undertaken specifically in relation to disruption of natural behaviours of fauna dur to artificial lighting associated with mine site and industrial operations. However, in this instance the additional light from the SRE Project is an incremental increase only, and there are no conservation significant nocturnal fauna species in the area.
Impact sensitivity	Moderate
Impact sensitivity – justification	Moderate potential for variability in impact
Key control measures	• Compliance with obtrusive lighting standards • Use of landscape and landform elements, where practicable, to shield the effects of lighting from view • Design considerations include eliminating upward spill of light, directing light downwards (not upwards), use of shielded fittings, avoiding over lighting, switching lights off when not required, use of energy efficient light bulbs, use of asymmetric beams (where flood lights are used), ensuring lights are not directed towards reflective surfaces, use of warm white colours.
Control measure uncertainty	Compliance with relevant Australian Standards with respect to lighting has been demonstrated to reduce light spill.

A31		
Project-related operational activities result in emission of light leading to impacts to State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, lighting required for safety and security during night-time operations emit light into the surrounding environment
Pathway	Air (light)	Existing environment surrounding the SRE Project has existing artificial light sources from the Olympic Dam Operation
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Design will comply, where applicable, with Australian Standards AS 4282	

A31	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of light during operations (e.g. from infrastructure area lighting and vehicles) may be at a level at which impacts to threatened species may occur
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • Australian Standard AS 4282
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	As no State or Nationally listed species which are identified as potentially present in the Project Area are nocturnal, no impacts through behavioural change to these species are anticipated.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

1.5 Noise

A32		
Project-related construction activities result in the generation of noise and vibration (e.g. from infrastructure or access road construction, including vehicle movement noise) that is audible above baseline noise levels and impacts the health and safety of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The most significant noise sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to the health and safety of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Due to the distance between the noise generating activities and the nearest local community and residences, no impacts to the health and safety of the local community are predicted.	
Severity ranking	Not applicable - not considered further	
Impact significance	Not applicable - not considered further	
Impact uncertainty (Assessment confidence)	Not applicable - not considered further	
Impact uncertainty – justification	Not applicable - not considered further	
Impact sensitivity	Not applicable - not considered further	
Impact sensitivity – justification	Not applicable - not considered further	
Key control measures	Not applicable - not considered further	
Control measure uncertainty	Not applicable – not considered further	

A33		
Project-related construction activities result in the generation of noise (e.g. from infrastructure or access road construction, including vehicle movement noise) that is audible above baseline noise levels and impacts the amenity of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The most significant noise sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators.
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The SRE Project will result in an increase in surface infrastructure noise generating activities during construction, increasing the predicted noise levels for the local community and sensitive receivers. The construction of the SRE Project will result in an increase in aircraft noise for the local community and sensitive receivers due to an increase in the numbers of flights at Olympic Dam Airport. The construction of the SRE Project will result in an increase in road traffic noise for the local community and sensitive receivers due to an increase in workforce.	
Severity ranking	Level 1	
Impact significance	The increase in noise levels associated with surface infrastructure is below the noise limits set out in the Environment Protection (Commercial and Industrial) Noise Policy 2023. The increase in noise levels associated with road traffic results in two minor exceedances of 1 dB (on Olympic Dam Highway – north of Roxby Downs) and 3 dB (on Olympic Dam Way) of criteria derived from the NSW Road Noise Policy. The SRE Project is expected to meet its general environmental duty related to increased road traffic noise under the EP Act.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) and medium uncertainty (moderate confidence)	
Impact uncertainty – justification	Assumptions made in surface infrastructure noise modelling are highly conservative. Measured noise levels are significantly lower than predicted baseline noise levels, confirming that the noise model is conservative. Medium – Traffic volumes have been based on preliminary modelling and have not been confirmed at this stage.	
Impact sensitivity	Low	
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability of impact.	
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.	

A33	
Control measure uncertainty	Community and/or individual perceptions of impacts to amenity do not always correlate to measured levels of pollutants (including noise), and are likely to vary with consideration to: • the baseline noise environment prior to the addition of noise-generating activities • the receiver's previous exposure to noisy environments • the nature of the receiver's relationship with the generator of the noise • the variability (impulsive, low frequency, modulating or tonal characters) of the noise. As result of the above, the effectiveness of the controls at reducing amenity impacts cannot be predicted with certainty.

A34		
Project-related construction activities result in the generation of noise that is audible above baseline noise levels and impacts fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	All construction activities	The most significant noise sources would be associated with the construction equipment, plant and mobile fleet along access routes, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which fauna impacts may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during construction, potentially impacting common fauna species. Vehicle traffic will marginally increase noise over baseline levels during construction, potentially impacting common fauna species.	
Severity ranking	Level 2	
Impact significance	Not Significant - Elevated noise levels from SRE-related traffic would be localised and minor. Existing roads would be used as access routes for construction and operation. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.	

A34	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with traffic noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of traffic noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction noise controls have been demonstrated to reduce the level and/or variability of noise.

A35		
Project-related construction activities result in the generation of noise that is audible above baseline noise levels and impacts State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The most significant noise sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to threatened species may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		

A35	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Construction activities, including vehicle traffic will marginally increase noise and vibration over baseline levels, potentially impacting threatened fauna species. Only the EPBC listed Southern Whiteface has been detected in the Project Area. There are no records of other EPBC listed or State listed fauna in the Project Area, but some threatened species are considered likely to, or to possibly, occur in the Project Area.
Severity ranking	Level 2
Impact significance	Not Significant - Elevated noise levels from SRE-related traffic would be localised and minor. Existing roads would be used as access routes for construction and operation. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with traffic noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of traffic noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction noise controls have been demonstrated to reduce the level and/or variability of noise.

A36		
Project-related operational activities (e.g. pumps, fans, mobile fleet and including vehicle movement noise) result in the generation of noise that is audible above baseline noise levels and impacts the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which impacts to the health and safety of the local community may occur	

A36	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Due to the distance between the noise generating activities and the nearest local community and residence, no impacts to the health and safety of the local community are predicted.
Severity ranking	Not applicable - not considered further
Impact significance	Not applicable - not considered further
Impact uncertainty (Assessment confidence)	Not applicable - not considered further
Impact uncertainty – justification	Not applicable - not considered further
Impact sensitivity	Not applicable - not considered further
Impact sensitivity – justification	Not applicable - not considered further
Key control measures	Not applicable - not considered further
Control measure uncertainty	Not applicable - not considered further

A37		
Project-related operational activities (e.g. pumps, fans, mobile fleet and including vehicle movement) result in the generation of noise that is audible above baseline noise levels and impacts the amenity of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur	

A37	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	The SRE Project will result in an increase in surface infrastructure noise generating activities during operation, increasing predicted noise levels for the local community and sensitive receivers. The operation of the SRE Project will result in an increase in aircraft noise for the local community and sensitive receivers due to an increase in the number of flights at Olympic Dam Airport. The operation of the SRE Project will result in an increase in road traffic noise for the local community and sensitive receivers due to an increase in workforce.
Severity ranking	Level 1 and Level 2
Impact significance	The increase in noise levels associated with surface infrastructure is below the noise limits set out in the Environment Protection (Commercial and Industrial) Noise Policy 2023. The increase in noise levels associated with road traffic results in two minor exceedances of 1 dB (on Olympic Dam Highway – north of Roxby Downs) and 3 dB (on Olympic Dam Way) of criteria derived from the NSW Road Noise Policy. The SRE Project is expected to meet its general environmental duty related to increased road traffic noise under the EP Act.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) and medium uncertainty (moderate confidence)
Impact uncertainty – justification	Assumptions made in surface infrastructure noise modelling are highly conservative. Measured noise levels are significantly lower than predicted baseline noise levels, confirming that the noise model is conservative. Medium – Traffic volumes have been based on preliminary modelling and have not been confirmed at this stage.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability of impact.
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.
Control measure uncertainty	Community and/or individual perceptions of impacts to amenity do not always correlate to measured levels of pollutants (including noise), and are likely to vary with consideration to: • the baseline noise environment prior to the addition of noise-generating activities • the receiver's previous exposure to noisy environments • the nature of the receiver's relationship with the generator of the noise • the variability (impulsive, low frequency, modulating or tonal characters) of the noise. As result of the above, the effectiveness of the controls at reducing amenity impacts cannot be predicted with certainty.

A38		
Project-related operational activities result in the generation of noise that is audible above baseline noise levels and impacts fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which fauna impacts may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during operation, potentially impacting common fauna species. Vehicle traffic will marginally increase noise over baseline levels during operations, potentially impacting common fauna species.	
Severity ranking	Level 2	
Impact significance	Not Significant - The outcomes of the assessment of effects indicate that elevated noise levels would be localised and would occur in an area where there is existing background noise from current Olympic Dam mining and processing operations. Any noise impacts would be short-term during construction. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with industrial noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of industrial noise on terrestrial ecology.	
Impact sensitivity	Low	
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact	
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.	
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction noise controls have been demonstrated to reduce the level and/or variability of noise.	

A39		
Project-related operational activities result in the generation of noise and vibration that is audible above baseline noise levels and impacts State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (noise)	The existing noise environment primarily consists of activities associated with the Olympic Dam operation. This includes noise emissions from the mine, smelting and refinery activities, intermittent aircraft noise at the Olympic Dam Airport and road traffic noise from the movement of workers and freight to and from the site. Measurements previously collected indicate that baseline vibration is negligible at all sensitive receivers.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which impacts to threatened species may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

A39	
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during operation, potentially impacting threatened fauna species. Only the EPBC listed Southern Whiteface has been detected in the Project Area. There are no records of other EPBC listed or State listed fauna in the Project Area, but some threatened species are considered likely to, or to possibly, occur in the Project Area.
Severity ranking	Level 2
Impact significance	Not Significant - The outcomes of the assessment of effects indicate that elevated noise levels would be localised and would occur in an area where there is existing background noise from current Olympic Dam mining and processing operations. Any noise impacts would be short-term during construction. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with industrial noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of industrial noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability of impact.
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from noise as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction noise controls have been demonstrated to reduce the level and/or variability of noise.

A40		
Project-related construction activities result in vibration (e.g. from infrastructure or access road construction, including vehicle movement) that is at levels which impacts the health and safety of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The most significant noise sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to the health and safety of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		

A40	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Due to the distance between the vibration generating activities and the nearest local community and residence, no impacts to the health and safety of the local community are predicted.
Severity ranking	Not applicable - not considered further
Impact significance	Not applicable - not considered further
Impact uncertainty (Assessment confidence)	Not applicable - not considered further
Impact uncertainty – justification	Not applicable - not considered further
Impact sensitivity	Not applicable - not considered further
Impact sensitivity – justification	Not applicable - not considered further
Key control measures	Not applicable - not considered further
Control measure uncertainty	Not applicable - not considered further

A41		
The emission of vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The most significant vibration sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators. Construction vibration sources are not expected to generate perceptible levels of vibration at distances greater than a few hundred metres from the source.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	

A41	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Due to the distance between the vibration generating activities and the nearest local community and residence, no impacts to the health and safety of the local community are predicted.
Severity ranking	Not applicable - not considered further
Impact significance	Not applicable - not considered further
Impact uncertainty (Assessment confidence)	Not applicable - not considered further
Impact uncertainty – justification	Not applicable - not considered further
Impact sensitivity	Not applicable - not considered further
Impact sensitivity – justification	Not applicable - not considered further
Key control measures	Not applicable - not considered further
Control measure uncertainty	Not applicable - not considered further

A42		
The emission of vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which fauna impacts may occur		
Project phase (when impact will occur)	Construction	
Source	All construction activities	The most significant vibration sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators. Construction vibration sources are not expected to generate perceptible levels of vibration at distances greater than a few hundred metres from the source.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which fauna impacts may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		

A42	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during construction, potentially impacting common fauna species. Vehicle traffic will marginally increase noise over baseline levels during construction, potentially impacting common fauna species.
Severity ranking	Level 2
Impact significance	Not Significant - Elevated vibration levels from SRE-related traffic would be localised and minor. Existing roads would be used as access routes for construction and operation. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with traffic noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of traffic noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from vibration as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction vibration controls have been demonstrated to reduce the level of vibration.

A43		
Project-related construction activities result in vibration that is at levels which impacts State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Construction	
Source	All construction activities	The most significant vibration sources would be associated with the construction equipment, plant and mobile fleet, including earthmoving equipment (e.g. loaders, excavators, trucks, trenching equipment) and fixed plant including generators. Construction vibration sources are not expected to generate perceptible levels of vibration at distances greater than a few hundred metres from the source.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity.

A43		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during construction (e.g. from infrastructure or access road construction, including vehicle movement noise) may be at a level at which impacts to threatened species may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Construction activities, including vehicle traffic will marginally increase noise and vibration over baseline levels, potentially impacting threatened fauna species. Only the EPBC listed Southern Whiteface has been detected in the Project Area. There are no records of other EPBC listed or State listed fauna in the Project Area, but some threatened species are considered likely to, or to possibly, occur in the Project Area.	
Severity ranking	Level 2	
Impact significance	Any vibration impacts would be short-term during construction. Elevated vibration levels from SRE-related traffic would be localised and minor. Existing roads would be used as access routes for construction. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with traffic noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of traffic noise on terrestrial ecology.	

A43	
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from vibration as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction vibration controls have been demonstrated to reduce the level of vibration.

A44		
Project-related operational activities (e.g. pumps, fans, mobile fleet and including vehicle movement) result in vibration that at levels which impacts the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Due to the distance between the noise generating activities and the nearest local community and residences, no impacts to the health and safety of the local community are predicted.	
Severity ranking	Not applicable - not considered further	
Impact significance	Not applicable - not considered further	
Impact uncertainty (Assessment confidence)	Not applicable - not considered further	

A44	
Impact uncertainty – justification	Not applicable - not considered further
Impact sensitivity	Not applicable - not considered further
Impact sensitivity – justification	Not applicable - not considered further
Key control measures	Not applicable - not considered further
Control measure uncertainty	Not applicable - not considered further

A45		
Project-related operational activities (e.g. pumps, fans, mobile fleet and including vehicle movement) result in vibration that is at levels which impacts the amenity of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of vibrationduring operation (e.g. from pumps, fans, mobile fleet and including vehicle movement) may be at a level at which fauna impacts may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	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 will be negligible.	
Severity ranking	Not applicable - not considered further	

A45	
Impact significance	Not applicable - not considered further
Impact uncertainty (Assessment confidence)	Not applicable - not considered further
Impact uncertainty – justification	Not applicable - not considered further
Impact sensitivity	Not applicable - not considered further
Impact sensitivity – justification	Not applicable - not considered further
Key control measures	Not applicable - not considered further
Control measure uncertainty	Not applicable - not considered further

A46		
Project-related operational activities result in vibration that is at levels which impacts fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The emission of noise and vibration during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which impacts to the amenity of the local community may occur	
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Commercial and Industrial Noise) Policy 2023	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during operation, potentially impacting common fauna species. Vehicle traffic will marginally increase noise over baseline levels during operations, potentially impacting common fauna species.	

A46	
Severity ranking	Level 2
Impact significance	The outcomes of the assessment of effects indicate that elevated vibration levels would be localised and would occur in an area where there is existing background noise and vibration from current Olympic Dam mining and processing operations. Existing roads would be used as access routes operation. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Low – Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with industrial noise and traffic noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of industrial noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from vibration as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction vibration controls have been demonstrated to reduce the level of vibration.

A47		
Project-related operational activities result in vibration that is at levels which impacts State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which emit noise and/or vibration including, but not limited to smelting and refinery processing, pumps, fans, mobile fleet, vehicle movement noise.
Pathway	Air (vibration)	Vibration measurements were undertaken during blasting activities as part of the Olympic Dam Expansion: Environmental Impact Assessment – Noise and Vibration, prepared by Arup, November 2008. Measurements were not above ambient levels and continuous vibration from industrial sources was not detected. The Olympic Dam Resource Development Strategy Environmental Impact Statement – Noise and Vibration Assessment by Resonate (2020) concluded that based on the subjective description of measurements undertaken by Arup in November 2008, existing vibration levels were below that of human perception threshold of approximately 0.14 mm/s for the peak particle velocity
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	

A47	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage
Preliminary SPR linkage justification	The emission of noise during operation (e.g. from pumps, fans, mobile fleet and including vehicle movement noise) may be at a level at which fauna impacts may occur
Work completed to assess/confirm linkage	EIS Appendix C1 Noise and vibration EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • Environment Protection (Commercial and Industrial Noise) Policy 2023
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Plant, equipment and mobile fleet associated with project activities will marginally increase noise and vibration over baseline levels during operation, potentially impacting common fauna species. Vehicle traffic will marginally increase noise over baseline levels during operations, potentially impacting common fauna species.
Severity ranking	Level 2
Impact significance	Not Significant - The outcomes of the assessment of effects indicate that elevated vibration levels would be localised and would occur in an area where there is existing background noise and vibration from current Olympic Dam mining and processing operations. Any noise impacts would be short-term during construction. A review of available literature from other, similar operations indicates that abundance and diversity of terrestrial fauna does not materially change at locations close to noise-generating activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Ecological surveys and historical monitoring have been undertaken to determine the presence of terrestrial fauna species, including threatened species. Noise levels associated with industrial noise are generally well understood, there are comparable existing noise sources already present, and there is a significant body of research into the effects of industrial noise on terrestrial ecology.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation with low potential for variability in impact
Key control measures	Impacts are to be mitigated in accordance with the standard operating procedures and designs to minimise the impact from vibration as far as reasonably practicable.
Control measure uncertainty	There is low uncertainty regarding the effectiveness of controls, as all standard construction vibration controls have been demonstrated to reduce the level of vibration.

2. Groundwater

Identified potential impact events related to the groundwater pathway are assessed in the following SPR tables.

2.1 Groundwater quantity

GW1		
During operations, additional water demand from the GAB or local groundwater wellfields to meet SRE water demand results in aquifer drawdown, impacting groundwater availability to aquatic ecology		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Groundwater affecting activities and/or water supply and distribution activities
Pathway	Groundwater (quantity)	Groundwater within the broader Olympic Dam region generally occurs within the fractured rocks tens of metres below the surface. Groundwater generally moves very slowly, from west to east, and ultimately discharges to Lake Torrens, a regional evaporative sink approximately 30 km from the SRE Project. Within the shallow Andamooka Limestone Aquifer (ALA), groundwater mounds have occurred as a result of TSF seepage, approximately 10-20 m above pre-mining baseline levels. The water table sits approximately 52 m bgl (48 mAHD) regionally, but up to 40 m bgl (60 mAHD) locally beneath the TSF facilities. In other areas beneath the SML, the ALA is considered dry or to have negligible saturated thickness. Groundwater levels show no influence due to the water supply developed within the Tent Hill Aquifer (THA) or depressurisation due to the underground mining activities (currently providing saline supply to Olympic dam between 0.3-5.7 ML/d). Within the THA, groundwater levels range between 40-50 m bgl (60-50 mAHD), with a large groundwater cone of depression developed due to mining activities. The underground mine acts as a regional sink below the SML and drawdown within the THA has likely been exacerbated by drainage to raise bores intersecting the THA, and from the existing saline wellfield. Groundwater mounding within the ALA doesn't appear to interact with the groundwater pressures measured within the THA, suggesting the Arcoona Quartzite is an effective aquitard, hydraulically isolating the two main aquifers from one another.
Receptor	Aquatic ecology	No aquatic taxa of conservation significance were identified during the desktop review for the SRE Project Area and Study Area. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no aquatic ecosystems located in proximity to the SML Area. Based on this, it is considered there are no aquatic ecology environments or values in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed	
Work completed to assess/ confirm linkage	No linkage exists – not considered further	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	No drawdown is required as part of the SRE Project, hence impacts to aquatic ecology are not expected	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	

GW1	
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

GW2		
During operations, additional water demand from the GAB or local groundwater wellfields to meet SRE water demand results in aquifer drawdown, reducing groundwater availability to groundwater dependant ecosystems		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Groundwater affecting activities and/or water supply and distribution activities
Pathway	Groundwater (quantity)	Groundwater within the broader Olympic Dam region generally occurs within the fractured rocks tens of metres below the surface. Groundwater generally moves very slowly, from west to east, and ultimately discharges to Lake Torrens, a regional evaporative sink approximately 30 km from the SRE Project. Within the shallow Andamooka Limestone Aquifer (ALA), groundwater mounds have occurred as a result of TSF seepage, approximately 10-20 m above pre-mining baseline levels. The water table sits approximately 52 m bgl (48 mAHD) regionally, but up to 40 m bgl (60 mAHD) locally beneath the TSF facilities. In other areas beneath the SML, the ALA is considered dry or to have negligible saturated thickness. Groundwater levels show no influence due to the water supply developed within the Tent Hill Aquifer (THA) or depressurisation due to the underground mining activities (currently providing saline supply to Olympic dam between 0.3-5.7 ML/d). Within the THA, groundwater levels range between 40-50 m bgl (60-50 mAHD), with a large groundwater cone of depression developed due to mining activities. The underground mine acts as a regional sink below the SML and drawdown within the THA has likely been exacerbated by drainage to raise bores intersecting the THA, and from the existing saline wellfield. Groundwater mounding within the ALA doesn't appear to interact with the groundwater pressures measured within the THA, suggesting the Arcoona Quartzite is an effective aquitard, hydraulically isolating the two main aquifers from one another.
Receptor	Groundwater dependent ecosystems	Groundwater dependent ecosystems (GDEs) have historically been investigated as part of the draft Olympic Dam Expansion EIS in 2009. At the time, the baseline GDE Assessment identified Yarra Wurta Spring as the closest GDE to Olympic Dam, approximately 45 km to the northeast. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no potential GDEs located in proximity to the SRE Area, being the primary location for project activities. However, potential aquatic GDEs were identified in the SML Area, namely claypans that can accumulate sediments and can hold water for a period of time. The Target Soil Assessment indicates that any groundwater opportunistically assessed by GDEs would be hydraulically separate from the Andamooka and THA, and such GDEs are considered unlikely to utilise the high salinity groundwater. It is noted that the limited number of claypan areas within he SML were devoid of vegetation during the baseline survey, in particular no deep-routed vegetation (commonly associated with GDEs) was present. From a regional context, the extent of the Great Artesian Basin is mapped as occurring within proximity to Olympic Dam, however the Far North Prescribed Wells Area is north of Olympic Dam and the SML Area. There are no riparian vegetation that represents those associated with a GDE in the vicinity of the SRE Project Area. One EIGR Area is located between Purple Swamp and Purple lake, but doesn't intersect watercourses. Four EIGR Areas are west of Lake Richardson and avoid intersecting water courses. The southern most EIGR Area north of Port Augusta largely avoids ephemeral watercourses. Ther are no Wetlands of National Importance in or adjacent to the SRE Project Area. As such, based on above, it is considered there are no GDEs in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed	
Work completed to assess/ confirm linkage	No linkage exists – not considered further	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

GW2		
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	No drawdown is required as part of the SRE Project, hence impacts to GDEs are not expected	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

GW3		
During operations, additional water demand from the GAB or local groundwater wellfields to meet SRE water demand results in aquifer drawdown, limiting groundwater availability to third party users		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Groundwater affecting activities and/or water supply and distribution activities
Pathway	Groundwater (quantity)	Groundwater within the broader Olympic Dam region generally occurs within the fractured rocks tens of metres below the surface. Groundwater generally moves very slowly, from west to east, and ultimately discharges to Lake Torrens, a regional evaporative sink approximately 30 km from the SRE Project. Within the shallow Andamooka Limestone Aquifer (ALA), groundwater mounds have occurred as a result of TSF seepage, approximately 10-20 m above pre-mining baseline levels. The water table sits approximately 52 m bgl (48 mAHD) regionally, but up to 40 m bgl (60 mAHD) locally beneath the TSF facilities. In other areas beneath the SML, the ALA is considered dry or to have negligible saturated thickness. Groundwater levels show no influence due to the water supply developed within the Tent Hill Aquifer (THA) or depressurisation due to the underground mining activities (currently providing saline supply to Olympic dam between 0.3-5.7 ML/d). Within the THA, groundwater levels range between 40-50 m bgl (60-50 mAHD), with a large groundwater cone of depression developed due to mining activities. The underground mine acts as a regional sink below the SML and drawdown within the THA has likely been exacerbated by drainage to raise bores intersecting the THA, and from the existing saline wellfield. Groundwater mounding within the ALA doesn't appear to interact with the groundwater pressures measured within the THA, suggesting the Arcoona Quartzite is an effective aquitard, hydraulically isolating the two main aquifers from one another.
Receptor	Third party users (resource availability)	There are no third-party (towns, indigenous communities, pastoralists) groundwater users or aquatic ecosystems in proximity to the SRE Project. While there are existing pastoral bores, these are not within the boundary of the SML area, with the closest being approximately 30 km to the west.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed	
Work completed to assess/ confirm linkage	No linkage exists – not considered further	
Legislative Requirements		

GW3	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

GW4		
During operations, additional water demand from the GAB or local groundwater wellfields to meet SRE water demand results in aquifer drawdown, reducing groundwater availability to future users		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Groundwater affecting activities and/or water supply and distribution activities
Pathway	Groundwater (quantity)	Groundwater within the broader Olympic Dam region generally occurs within the fractured rocks tens of metres below the surface. Groundwater generally moves very slowly, from west to east, and ultimately discharges to Lake Torrens, a regional evaporative sink approximately 30 km from the SRE Project. Within the shallow Andamooka Limestone Aquifer (ALA), groundwater mounds have occurred as a result of TSF seepage, approximately 10-20 m above pre-mining baseline levels. The water table sits approximately 52 m bgl (48 mAHD) regionally, but up to 40 m bgl (60 mAHD) locally beneath the TSF facilities. In other areas beneath the SML, the ALA is considered dry or to have negligible saturated thickness. Groundwater levels show no influence due to the water supply developed within the Tent Hill Aquifer (THA) or depressurisation due to the underground mining activities (currently providing saline supply to Olympic dam between 0.3-5.7 ML/d). Within the THA, groundwater levels range between 40-50 m bgl (60-50 mAHD), with a large groundwater cone of depression developed due to mining activities. The underground mine acts as a regional sink below the SML and drawdown within the THA has likely been exacerbated by drainage to raise bores intersecting the THA, and from the existing saline wellfield. Groundwater mounding within the ALA doesn't appear to interact with the groundwater pressures measured within the THA, suggesting the Arcoona Quartzite is an effective aquitard, hydraulically isolating the two main aquifers from one another.
Receptor	Future users (resource availability)	Individuals or organisations who intent to use the resources of the surrounding area in the future, including but not limited to: • Pastoral lessees • Resources available to surrounding townships, including Woomera, Andamooka, Roxby Downs, Pimba, Port Augusta, Whyalla. Including housing and accommodation, affordability, access to medica and education services, transport, and community facilities. • Indigenous groups such as the Kokatha Aboriginal Corporation

GW4		
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed	
Work completed to assess/ confirm linkage	No linkage exists – not considered further	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Base case is that SRE Project demand will be met through delivery of water from the Northern Water Project pipeline connection, and no additional groundwater abstraction is proposed	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

2.2 Groundwater quality

GW5		
During operations, infiltration of chemicals and/or hydrocarbons used in SRE Project operations, including metals mobilised via acid rock drainage from stockpiles and/or the TSF or effluent released from WWTPs, result in changes to groundwater quality, impacting aquatic ecology		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.

GW5		
Receptor	Aquatic ecology	No aquatic taxa of conservation significance were identified during the desktop review for the SRE Project Area and Study Area. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no aquatic ecosystems located in proximity to the SML Area. Based on this, it is considered there are no aquatic ecology environments or values in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing groundwater quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Whilst spillage or leakage of material storage vessels may occur, no aquatic ecological values have been identified in proximity to the SRE Project, so there is no potential for impact to these values.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

GW6		
During operations, Infiltration of chemicals and/or hydrocarbons used in SRE Project operations, including metals mobilised via acid rock drainage from stockpiles and/or the TSF or effluent released from WWTPs, results in changes to groundwater quality, impacting groundwater dependent ecosystems		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment

GW6		
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Groundwater dependent ecosystems	GDEs have historically been investigated as part of the draft Olympic Dam Expansion EIS in 2009. At the time, the baseline GDE Assessment identified Yarra Wurta Spring as the closest GDE to Olympic Dam, approximately 45 km to the northeast. The Soil and Groundwater Appendix to the EIS) has also concluded there are no potential GDEs located in proximity to the SRE Area, being the primary location for project activities. However, potential aquatic GDEs were identified in the SML Area, namely claypans that can accumulate sediments and can hold water for a period of time. The Target Soil Assessment indicates that any groundwater opportunistically assessed by GDEs would be hydraulically separate from the Andamooka and THA, and such GDEs are considered unlikely to utilise the high salinity groundwater. It is noted that the limited number of claypan areas within he SML were devoid of vegetation during the baseline survey, in particular no deep-routed vegetation (commonly associated with GDEs) was present. From a regional context, the extent of the Great Artesian Basin is mapped as occurring within proximity to Olympic Dam, however the Far North Prescribed Wells Area is north of Olympic Dam and the SML Area. There are no riparian vegetation that represents those associated with a GDE in the vicinity of the SRE Project Area. One EIGR Area is located between Purple Swamp and Purple lake, but doesn't intersect watercourses. Four EIGR Areas are west of Lake Richardson and avoid intersecting water courses. The southern most EIGR Area north of Port Augusta largely avoids ephemeral watercourses. Ther are no Wetlands of National Importance in or adjacent to the SRE Project Area. As such, based on above, it is considered there are no GDEs in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing groundwater quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Whilst spillage or leakage of material storage vessels may occur, no moderate to high potential GDE's have been identified in proximity to the SRE Project, so there is no potential for impact to these values.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

GW7		
During operations, release of chemicals and/or hydrocarbons used in the SRE Project beyond containment areas, results in changes to groundwater quality, impacting third-party users		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Third party users (resource availability)	There are no third-party (towns, indigenous communities, pastoralists) groundwater users or aquatic ecosystems in proximity to the SRE Project. While there are existing pastoral bores, these are not within the boundary of the SML area, with the closest being approximately 30 km to the west.
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing groundwater quality, impacting the ability of third party users to continue use of groundwater for their purposes	
Work completed to assess/ confirm linkage	EIS Appendix B1 Soil and Groundwater	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	No concentrations of CoPC related to the current SRE operations were detected above SAC in local soils and geochemistry. The SRE Project proposes no additional water extraction above current Olympic Dam daily average BAU volumes with additional water supply via the DIT's NWP infrastructure. On this basis, the SRE Project would not change or influence the current groundwater regime of existing Olympic Dam operations. From a regional perspective, sensitive receptors outside of the SML include third party pastoral bores, Lake Torrens and potential watercourse springs and drainage lines such as Bosworth Creek, which may have some reliance on the presence of groundwater. Given the location of these sensitive receptors is over 30 km to the east, they are considered unlikely to be effected by SRE Project activities.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

GW8		
During operations, release of chemicals and/or hydrocarbons used in the SRE Project beyond containment areas, results in changes to groundwater quality, impacting future users		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Future users (resource availability)	Individuals or organisations who intent to use the resources of the surrounding area in the future, including but not limited to: • Pastoral lessees • Resources available to surrounding townships, including Woomera, Andamooka, Roxby Downs, Pimba, Port Augusta, Whyalla. Including housing and accommodation, affordability, access to medica and education services, transport, and community facilities. • Indigenous groups such as the Kokatha Aboriginal Corporation
Fundamental design controls (elimination, substitution or engineering)	The SRE Project propose to implement best practice engineering to relevant Australian Standards.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing groundwater quality, impacting the ability of future users of the groundwater to use of groundwater for their purposes	
Work completed to assess/ confirm linkage	EIS Appendix B1 Soil and Groundwater	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • Environment Protection (Water Quality) Policy 2015 • *Landscape South Australia Act 2019* (SA) • Australian Groundwater Modelling Guidelines • The Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	No concentrations of CoPC related to the current SRE operations were detected above SAC in local soils and geochemistry. The SRE Project proposes no additional water extraction above current Olympic Dam daily average business-as-usual volumes with additional water supply via the DIT's NWP infrastructure. On this basis, the SRE Project would not change or influence the current groundwater regime of existing Olympic Dam operations. Groundwater utilisation by landholders is sparse. Where groundwater is used, it is predominately sourced from quaternary sediments that host shallow and perched groundwater lenses. There are no active third-party landholder bores within 30 km of the SML. Given the location of landholder bores is over 30 km to the west, they are considered unlikely to be effected by SRE Project activities.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	

GW8	
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

GW9		
During operations, loss of control of process liquors leads to seepage of radionuclides into the groundwater, increasing concentrations in the natural groundwater impacting abundance and diversity of groundwater dependent ecosystems		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the surrounding environment, including management of process liquors.
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Groundwater dependent ecosystems	Groundwater dependent ecosystems (GDEs) have historically been investigated as part of the draft Olympic Dam Expansion EIS in 2009. At the time, the baseline GDE Assessment identified Yarra Wurta Spring as the closest GDE to Olympic Dam, approximately 45 km to the northeast. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no potential GDEs located in proximity to the SRE Area, being the primary location for project activities. However, potential aquatic GDEs were identified in the SML Area, namely claypans that can accumulate sediments and can hold water for a period of time. The Target Soil Assessment indicates that any groundwater opportunistically assessed by GDEs would be hydraulically separate from the Andamooka and THA, and such GDEs are considered unlikely to utilise the high salinity groundwater. It is noted that the limited number of claypan areas within he SML were devoid of vegetation during the baseline survey, in particular no deep-routed vegetation (commonly associated with GDEs) was present. From a regional context, the extent of the Great Artesian Basin is mapped as occurring within proximity to Olympic Dam, however the Far North Prescribed Wells Area is north of Olympic Dam and the SML Area. There are no riparian vegetation that represents those associated with a GDE in the vicinity of the SRE Project Area. One EIGR Area is located between Purple Swamp and Purple lake, but doesn't intersect watercourses. Four EIGR Areas are west of Lake Richardson and avoid intersecting water courses. The southern most EIGR Area north of Port Augusta largely avoids ephemeral watercourses. Ther are no Wetlands of National Importance in or adjacent to the SRE Project Area. As such, based on above, it is considered there are no GDEs in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Loss of control of process liquors may increase concentrations in natural groundwater, impacting abundance and diversity.	
Work completed to assess/ confirm linkage	EIS Appendix B1 Soil and Groundwater	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation* • *Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9)* • *Radiation Protection and Control Act 2021 (SA)* • *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* • *National Parks and Wildlife Act 1972 (SA)* • *Native Vegetation Act 1991 (SA)*	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

GW9		
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	While groundwater is a potential pathway for radionuclides, it is not considered to be credible due to the physical constraints. To occur, radionuclides must solubilise from solids and this predominantly occurs under acidic or caustic conditions (such as which occurs in the tailings systems). Under neutral conditions, mobilisation of radionuclides into solution is highly unlikely. In addition, for any radionuclide that do mobilise, there are no identified non-human biota pathway to exposure.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

GW10		
During operations, loss of control of process liquors leads to seepage of radionuclides into the groundwater, increasing concentrations in the natural groundwater impacting the ability of third party users to continue use of groundwater for their purposes		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the surrounding environment, including management of process liquors.
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Third party users (resource availability)	There are no third-party (towns, indigenous communities, pastoralists) groundwater users or aquatic ecosystems in proximity to the SRE Project. While there are existing pastoral bores, these are not within the boundary of the SML area, with the closest being approximately 30 km to the west.
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • management of stormwater to ensure adequate containment of all run-off water.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Loss of control of process liquors may increase concentrations in natural groundwater, impacting the ability of third party users to continue use of groundwater for their purposes.	
Work completed to assess/ confirm linkage	EIS Appendix B1 Soil and Groundwater	
Legislative Requirements		

GW10	
Applicable regulatory requirements/ agreements	• *Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation* • *Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9)* • *Radiation Protection and Control Act 2021 (SA)* • *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* • *National Parks and Wildlife Act 1972 (SA)* • *Native Vegetation Act 1991 (SA)*
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	While groundwater is a potential pathway for radionuclides, it is not considered to be credible due to the physical constraints. To occur, radionuclides must solubilise from solids and this predominantly occurs under acidic or caustic conditions (such as which occurs in the tailings systems). Under neutral conditions, mobilisation of radionuclides into solution is highly unlikely. In addition, for any radionuclide that do mobilise, there are no identified human pathway to exposure.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

GW11		
During operations, loss of control of process liquors leads to seepage of radionuclides into the groundwater, increasing concentrations in the natural groundwater impacting the ability of future users of the groundwater to use of groundwater for their purposes		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational activities undertaken to support the SRE Project which release emissions of radon and/or radionuclide bearing materials into the surrounding environment, including management of process liquors.
Pathway	Groundwater (quality)	Groundwater quality generally reflects the regional characteristics of the SRE Project's location with wide ranges in EC (<1,000 - >400,000 µS/cm), primarily influenced by sulphate, chloride and sodium. Most metal concentrations are recorded below the SA EPA exceedance levels, the manganese exceedances most common, followed by arsenic and lead. No copper exceedances have been reported.
Receptor	Future users (resource availability)	Individuals or organisations who intent to use the resources of the surrounding area in the future, including but not limited to: • Pastoral lessees • Resources available to surrounding townships, including Woomera, Andamooka, Roxby Downs, Pimba, Port Augusta, Whyalla. Including housing and accommodation, affordability, access to medica and education services, transport, and community facilities. Indigenous groups such as the Kokatha Aboriginal Corporation

GW11	
Fundamental design controls (elimination, substitution or engineering)	Standard design controls including: • bunding of tanks containing radioactive process slurries and tailings pipeline corridor • adequate access and egress for ease of clean up • wash-down water points and hoses for spillage clean up • consideration of control process stream recirculation to ensure that recirculating loads do not act to concentrate radionuclides • management of stormwater to ensure adequate containment of all run-off water.
Preliminary SPR linkage status	Uncertain linkage
Preliminary SPR linkage justification	Loss of control of process liquors may increase concentrations in natural groundwater, impacting the ability of third-party users to continue use of groundwater for their purposes.
Work completed to assess/ confirm linkage	EIS Appendix B1 Soil and Groundwater
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Various International Commission on Radiological Protection (ICRP) documentation, including those related to dose limitation* • *Various Codes of Practice developed by the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) including the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2003 (RPS No. 9)* • *Radiation Protection and Control Act 2021 (SA)* • *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* • *National Parks and Wildlife Act 1972 (SA)* • *Native Vegetation Act 1991 (SA)*
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	While groundwater is a potential pathway for radionuclides, it is not considered to be credible due to the physical constraints. To occur, radionuclides must solubilise from solids and this predominantly occurs under acidic or caustic conditions (such as which occurs in the tailings systems). Under neutral conditions, mobilisation of radionuclides into solution is highly unlikely. In addition, for any radionuclide that do mobilise, there are no identified human pathway to exposure.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

3. Land

Identified potential impact events related to the land pathway are assessed in the following SPR tables.

3.1 Land quality

L1		
Land clearing associated with the construction of SRE Project infrastructure results in a reduction in land availability, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Clearing of native vegetation for SRE Project infrastructure during construction.
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km^2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure is likely to result in a reduction in abundance and diversity of native vegetation	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

L1	
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Land clearing will be required to establish the SRE Project infrastructure adjacent to existing infrastructure, resulting in a reduction in the extent of vegetation, and non essential habitat for fauna.
Severity ranking	Level 2
Impact significance	Not Significant - Localised land clearing required for the SRE Project is expected to impact on local and commonly occurring habitat types, and therefore local fauna populations.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region. No State or EPBC threatened flora species have been recorded within the SRE Project Area and no critical threatened species habitat would be impacted by the SRE Project.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	When choosing construction access track or infrastructure locations, where possible avoid environmentally and culturally sensitive and restricted areas, avoid disturbance of important native vegetation and fauna habitat (e.g. areas prone to erosion such as dunes with taller vegetation, old growth vegetation containing hollows)
Control measure uncertainty	Low uncertainty as avoidance of sensitive ecological areas where possible will reduce impacts.

L2		
Land clearing associated with the construction of SRE Project infrastructure results in a reduction in land availability, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Clearing of native vegetation for SRE Project infrastructure during construction.
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in a reduction in abundance and diversity of habitat	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

L2	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Land clearing will be required to establish the SRE Project infrastructure adjacent to existing infrastructure, resulting in a reduction in the extent of vegetation, and non essential habitat for fauna.
Severity ranking	Level 2
Impact significance	Not Significant - Localised land clearing required for the SRE Project is expected to impact on local and commonly occurring habitat types, and therefore local fauna populations.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region.
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	When choosing construction access track or infrastructure locations, where possible avoid environmentally and culturally sensitive and restricted areas, avoid disturbance of important native vegetation and fauna habitat (e.g. areas prone to erosion such as dunes with taller vegetation, old growth vegetation containing hollows)
Control measure uncertainty	Low uncertainty as avoidance of sensitive ecological areas where possible will reduce impacts.

L3		
Land clearing associated with the construction of SRE Project infrastructure results in a reduction in land availability, impacting State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, clearing of native vegetation for SRE Project infrastructure
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L3		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in a reduction in abundance and diversity of threatened species	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Land clearing will be required to establish the SRE Project infrastructure adjacent to existing infrastructure, resulting in a reduction in the extent of vegetation, and non essential habitat for fauna. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted	
Severity ranking	Level 2	
Impact significance	Not Significant - Localised land clearing required for the SRE Project is expected to impact on local and commonly occurring habitat types, and therefore local fauna populations. 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, however there may be potential short-term removal of non-essential habitat for Southern Whiteface, which is known to occur in the SRE Project Area.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region. No State or EPBC threatened flora species have been recorded within the SRE Project Area and no critical threatened species habitat would be impacted by the SRE Project.	

L3	
Impact sensitivity	Low
Impact sensitivity – justification	Predictions not sensitive to input variation.
Key control measures	When choosing construction access track or infrastructure locations, where possible avoid environmentally and culturally sensitive and restricted areas, avoid disturbance of important native vegetation and fauna habitat (e.g. areas prone to erosion such as dunes with taller vegetation, old growth vegetation containing hollows)
Control measure uncertainty	Low uncertainty as avoidance of sensitive ecological areas where possible will reduce impacts.

L4		
During construction, the clearing of native vegetation for placement of SRE Project infrastructure may result in disturbance, removal or damage of cultural artefacts		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, clearing of native vegetation for SRE Project infrastructure
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Cultural heritage	The region has a long history of occupation by Aboriginal people and many Aboriginal people maintain a strong connection with the land, water and sky in the region. The SML Area and northern portion of the EIGR Area is located on the traditional lands of the Kokatha People, while the southern portion of the EIGR Area is located within the Native Title determination boundary of the Barngarla. Lake Torrens is a culturally significant site for the Kokatha, Barngarla, Adnyamathanha, and Kuyani peoples, and is central to both tourism and heritage preservation. The presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management the appropriate Indigenous Groups.
Fundamental design controls (elimination, substitution or engineering)	BHP has undertaken, and will continue to undertake predictive modelling, Aboriginal consultation, archaeological field investigations and anthropological assessments in order to satisfy the requirements of the *Aboriginal Heritage Act 1988* (SA) and the Olympic Dam Agreement.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in impacts to sites of cultural significance	
Work completed to assess/ confirm linkage	Cultural Heritage Assessment components within EIS (Sections 5.6.9, 9.8 and 10.3) BHP respects the cultural rights of the Traditional Owners and will not disclose results of sensitive discussions. Therefore, the Aboriginal heritage summary provided within these tables is limited to a high-level overview.	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Aboriginal Heritage Act 1988* (SA) • BHP has negotiated with the Native Title holders (AMYAC RNTBC) an agreement which addresses matters relating to BHP's conduct of operations on the Native Title land.	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Past Aboriginal heritage surveys identified a great number of sites associated with Aboriginal heritage value across the SRE Project Area. The Aboriginal heritage sites identified within the Project Area predominantly consist of archaeological scatters of low heritage significance. The total avoidance of impact to Aboriginal heritage is unachievable during the development of SRE Project.	
Severity ranking	Level 3	
Impact significance	Significant - While the aboriginal significance has been assessed as low, project-related disturbance would result in impact requiring cultural materials to be fully relocated via salvage prior to disturbance	

L4	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)
Impact uncertainty – justification	The SML Area has been archaeologically and ethnographically surveyed in its entirety, between 1981 and 2024. Past engagement records indicated that all heritage engagements within the SML Area were completed in consultation with the Traditional Owner groups who were/are culturally associated with the Olympic Dam and broader Roxby Down area, with the support from their preferred heritage professionals (i.e. archaeologist and anthropologist). Under the ODA, pre-clearance surveys of the EIGR Areas will be undertaken once land disturbance areas have been refined with a sufficient level of certainty. However, a moderate level of uncertainty has been assigned pending these surveys.
Impact sensitivity	Moderate
Impact sensitivity – justification	Moderate potential for variability in impact
Key control measures	• Avoidance of harm to Aboriginal heritage sites and values through avoidance during design where possible • Impacts to Aboriginal heritage managed in accordance with ODA Heritage Protocols, specifically: o Detailed site recording and salvage of artefacts prior to impact, conducted by professional archaeologist(s) or anthropologist (s) nominated by NTPRC. o Develop a thorough inventory of salvaged artefacts. o Rehabilitation (repository) of cultural materials in a culturally appropriate manner. o Access to the cultural materials is provided to heritage representatives nominated by NTPRC. o Heritage Monitoring during the Project execution (initial ground disturbance) by heritage representatives nominated by NTPRC. o In the event of a new discovery, adopt Aboriginal Affairs and Reconciliation Discovery Protocols and report the new discovery as per section 20 of *Aboriginal Heritage Act 1988* (SA).
Control measure uncertainty	The ODA Heritage Protocols are established and shown to be effective at mitigating impacts to Aboriginal heritage.

L5		
During construction, the clearing of native vegetation for placement of SRE Project infrastructure compromises Aboriginal intangible ethnographic values of an area through alteration or damage to the cultural landscape/features		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, clearing of native vegetation for SRE Project infrastructure
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Cultural amenity (cultural values)	The region has a long history of occupation by Aboriginal people and many Aboriginal people maintain a strong connection with the land, water and sky in the region. The SML Area and northern portion of the EIGR Area is located on the traditional lands of the Kokatha People, while the southern portion of the EIGR Area is located within the Native Title determination boundary of the Barngarla. Lake Torrens is a culturally significant site for the Kokatha, Barngarla, Adnyamathanha, and Kuyani peoples, and is central to both tourism and heritage preservation. The protection of Aboriginal cultural amenity remains a priority for BHP.
Fundamental design controls (elimination, substitution or engineering)	BHP has undertaken, and will continue to undertake predictive modelling, Aboriginal consultation, archaeological field investigations and anthropological assessments in order to satisfy the requirements of the *Aboriginal Heritage Act 1988* (SA) and the Olympic Dam Agreement.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in alteration or damage to the cultural landscape/features.	
Work completed to assess/ confirm linkage	Cultural heritage assessment components within EIS (Sections 5.6.9, 9.8 and 10.3) BHP has undertaken, and will continue to undertake predictive modelling, Aboriginal consultation, archaeological field investigations and anthropological assessments. BHP respects the cultural rights of the Traditional Owners and will not disclose results of sensitive discussions. Therefore, the Aboriginal heritage summary provided within these tables is limited to a high-level overview.	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Aboriginal Heritage Act 1988* (SA) • BHP has negotiated with the Native Title holders (AMYAC RNTBC) an agreement which addresses matters relating to BHP's conduct of operations on the Native Title land.	
Stakeholder Consultation		

L5	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	The SRE Project Area has been archaeologically and ethnographically surveyed in its entirety, between 1981 and 2024. Past engagement records indicated that all heritage engagements within the SRE Project Area were completed in consultation with the Traditional Owner groups who were/are culturally associated with the Olympic Dam and broader Roxby Down area, with the support from their preferred heritage professionals (i.e. archaeologist and anthropologist).
Severity ranking	Level 2
Impact significance	Several sites of ethnographic importance such as claypans have also been reported within the SRE Project Area, though these have been avoided through modification of the disturbance footprint during design development. However, there may be some restriction of access due to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	The SRE Project Area has been archaeologically and ethnographically surveyed in its entirety, between 1981 and 2024. Past engagement records indicated that all heritage engagements within the SRE Project Area were completed in consultation with the Traditional Owner groups who were/are culturally associated with the Olympic Dam and broader Roxby Down area, with the support from their preferred heritage professionals (i.e. archaeologist and anthropologist).
Impact sensitivity	Moderate
Impact sensitivity – justification	Moderate potential for variability in impact
Key control measures	• Avoidance of harm to Aboriginal heritage sites and values through avoidance during design where possible • Impacts to Aboriginal heritage managed in accordance with ODA Heritage Protocols, specifically: o Detailed site recording and salvage of artefacts prior to impact, conducted by professional archaeologist(s) or anthropologist (s) nominated by NTPRC. o Develop a thorough inventory of salvaged artefacts. o Rehabilitation (repository) of cultural materials in a culturally appropriate manner. o Access to the cultural materials is provided to heritage representatives nominated by NTPRC. o Heritage Monitoring during the Project execution (initial ground disturbance) by heritage representatives nominated by NTPRC. o In the event of a new discovery, adopt Aboriginal Affairs and Reconciliation Discovery Protocols and report the new discovery as per section 20 of *Aboriginal Heritage Act 1988* (SA).
Control measure uncertainty	The ODA Heritage Protocols are established and shown to be effective at mitigating impacts to Aboriginal heritage.

L6		
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, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Land clearing for construction activities associated with the SRE Project result in favourable conditions for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km^2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L6		
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity, resulting in a reduction in abundance and diversity of native vegetation	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Land clearing will be required for the SRE Project infrastructure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on construction machinery, thereby reducing the amount of and quality of native vegetation, and degrading habitat for common flora and fauna species.	
Severity ranking	Level 2	
Impact significance	Not significant – Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a widespread change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.	
Impact sensitivity	Low	

L6	
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	During construction • Existing roads and fence lines will be utilised, where possible. • Where there are no established tracks and it is intended to traverse the same ground more than once, where possible, the same wheel tracks will be used each time. • Development of a site specific CEMP including routine weed monitoring.
Control measure uncertainty	Standard construction weed control measures have been shown to be effective when implemented appropriately.

L7		
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, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Land clearing for construction activities associated with the SRE Project result in favourable conditions for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity, resulting in a reduction in abundance and diversity of habitat	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

L7	
Linkage justification	Land clearing will be required for the SRE Project infrastructure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on construction machinery, thereby reducing the amount of and quality of native vegetation, and degrading habitat for common flora and fauna species.
Severity ranking	Level 2
Impact significance	Not Significant - Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a widespread change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	During construction • Existing roads and fence lines will be utilised, where possible. • Where there are no established tracks and it is intended to traverse the same ground more than once, where possible, the same wheel tracks will be used each time. • Development of a site specific CEMP including routine weed monitoring.
Control measure uncertainty	Standard construction weed control measures have been shown to be effective when implemented appropriately.

L8		
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, impacting State and Commonwealth listed threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Land clearing for construction activities associated with the SRE Project result in favourable conditions for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L8		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity which may, in turn, result in a reduction in abundance and diversity of threatened species	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Land clearing will be required for the SRE Project infrastructure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on construction machinery, thereby reducing the amount of and quality of native vegetation, and degrading habitat for common flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted by the introduction of weeds.	
Severity ranking	Level 2	
Impact significance	Not Significant - Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a widespread change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.	

L8	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	During construction • Existing roads and fence lines will be utilised, where possible. • Where there are no established tracks and it is intended to traverse the same ground more than once, where possible, the same wheel tracks will be used each time. • Development of a site specific CEMP including routine weed monitoring.
Control measure uncertainty	Standard construction weed control measures have been shown to be effective when implemented appropriately.

L9		
Placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Surface water management infrastructure would be designed to separate surface water flows from that which have contacted disturbed land areas from natural water flows. Three types of infrastructure and/or associated drains or bunds will be considered during the design phase. These include sediment ponds, stormwater collection dams, and runoff collection dams.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may result in sedimentation that impacts abundance and diversity of native vegetation	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

L9		
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *Landscape SA 2019* (SA) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.	
Severity ranking	Level 2	
Impact significance	Not Significant - When disturbed, sandy / clay loam soils do not readily transport sediments across the landscape due to high permeability. Project designs aim to capture surface water run-off within the Project Area, with the exception of only rare very large stormwater events. Local vegetation and habitat is broadly represented throughout the region and does not provide critical habitat for any conservation significant species.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use bunding, sediment ponds and erosion protection where appropriate. Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region.	
Impact sensitivity	Low	
Impact sensitivity – justification	Low potential for variability in impact	
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction	
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.	

L10		
Placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km^2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L10		
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Surface water management infrastructure would be designed to separate surface water flows from that which have contacted disturbed land areas from natural water flows. Three types of infrastructure and/or associated drains or bunds will be considered during the design phase. These include sediment ponds, stormwater collection dams, and runoff collection dams.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may result in sedimentation that impacts abundance and diversity of habitat	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.	
Severity ranking	Level 2	
Impact significance	Not Significant - When disturbed, sandy / clay loam soils do not readily transport sediments across the landscape due to high permeability. Project designs aim to capture surface water run-off within the Project Area, with the exception of only rare very large stormwater events. Local vegetation and habitat is broadly represented throughout the region and does not provide critical habitat for any conservation significant species.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use bunding, sediment ponds and erosion protection where appropriate. Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region.	
Impact sensitivity	Low	
Impact sensitivity – justification	Low potential for variability in impact	
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction	
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.	

L11		
Placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Surface water management infrastructure would be designed to separate surface water flows from that which have contacted disturbed land areas from natural water flows. Three types of infrastructure and/or associated drains or bunds will be considered during the design phase. These include sediment ponds, stormwater collection dams, and runoff collection dams.	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may result in sedimentation that impacts abundance and diversity of threatened species	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

L11	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.
Severity ranking	Level 2
Impact significance	Not Significant - When disturbed, sandy / clay loam soils do not readily transport sediments across the landscape due to high permeability. Project designs aim to capture surface water run-off within the Project Area, with the exception of only rare very large stormwater events. Local vegetation and habitat is broadly represented throughout the region and does not provide critical habitat for any conservation significant species.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use bunding, sediment ponds and erosion protection where appropriate. Baseline ecological surveys have not identified unique vegetation or communities within the SRE Project that are not represented in the wider region. No State or EPBC threatened flora species have been recorded within the SRE Project Area and no critical threatened species habitat would be impacted by the SRE Project.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

L12		
During construction, visual changes may occur as a result of the SRE Project, but are unlikely to materially impact the existing industrial landscape of the site, impacting on the amenity of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Establishment of SRE Project infrastructure located within the SML consisting of existing Olympic Dam Mine operations and infrastructure. Including, but not limited to expansion of the existing smelter and refinery workshop, new primary Flash Smelting Furnace, additional acid plants, expanded electro-refinery and precious metals recovery facilities, and supporting workshops.
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km^2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Local community (amenity)	The amenity to residents and workers who live and occupy the area, acknowledging the existing Olympic Dam Mine, airport and surrounding communities. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Changes to the prevailing visual amenity may occur as a result of the SRE Project but are unlikely to materially impact the existing industrial landscape of the site	
Work completed to assess/ confirm linkage	EIS Appendix D5 Visual amenity	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Planning, Development and Infrastructure Act 2016* (SA)	

L12	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Based on ZVI mapping and photomontages there will be a visual link between the SRE Project and some / all of the identified viewpoint locations.
Severity ranking	Level 2
Impact significance	Not significant
Impact uncertainty (Assessment confidence)	Low (High confidence)
Impact uncertainty – justification	The Olympic Dam mine has a landscape with a high VAC rating given its established mining industrial setting within the SML that is considered capable of absorbing a higher degree of modification/addition, as proposed by the SRE Project, without significant impact on visual amenity or landscape character for the local community.
Impact sensitivity	Low
Impact sensitivity – justification	Changes to the prevailing visual amenity may occur as a result of the SRE Project but are unlikely to materially impact the existing industrial landscape of the site
Key control measures	No design and control measures proposed. The SRE Project infrastructure will not extend above or beyond existing industrial elements, while the undulating topography and existing vegetation in this vicinity will reduce any visual impacts.
Control measure uncertainty	Not applicable – not considered further

L13		
Placement of SRE Project infrastructure, and particularly the installation of electricity distribution lines, results in an increase in fauna interactions, impacting on fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, the placement of SRE Project infrastructure, inclusive of the electricity distribution lines, result in an increased potential for fauna interactions
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	The installation of additional electricity distribution infrastructure is unlikely to materially impact the frequency with which fauna interacts with site infrastructure, and hence is unlikely to impact fauna abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

L13		
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Activities in the EIGR Areas will be limited to vegetation disturbance beneath existing lines. As there will be no installation of new electricity distribution lines, there will be no increase in potential for fauna interactions.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

L14		
Project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L14		
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 2	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)	
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.	
Impact sensitivity	Low	

L14	
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L15		
Project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 2	

L15	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.
Impact sensitivity	Low
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L16		
Project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting on State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed	

L16	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by a bushfire as a result of project activities.
Severity ranking	Level 2
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.
Impact sensitivity	Low
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L17		
Project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting State and Commonwealth matters		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	During construction, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth matters	The closest conservation area is the Arid Recovery Reserve which is located approximately 6 km north of the SRE project. The Arid Recovery Reserve spans a total of 12,300 ha across six large enclosures and is Australia's largest feral animal-proof fenced reserve. Further to this, Lake Torrens National Park is located approximately 40 km to the east of the SRE Project. There are no vegetation Heritage Agreements under the NV Act within 50 km of the SRE Project.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	No linkage	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	Not applicable	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	There are no Protected Areas in the immediate vicinity of SRE Project. The closest Protected Area to the SRE Project Area is the Lake Torrens National Park, located approximately 40 km to the east of the SML. Whilst the ARR is located approximately 4.7 km to the north of the SRE Project Area, it is not formally considered a Protected Area (or State or Commonwealth matter).	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

L18		
During operations of SRE Project activities, increased occupancy of Olympic Dam accommodation due to the SRE Project workforce results in an increase in feral/pest fauna numbers, impacting the abundance and diversity of fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, increased occupancy of Olympic Dam accommodation due to the SRE Project workforce attracts feral/pest animals
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The incremental increase in accommodation occupancy in comparison to existing accommodation occupancy, and the corresponding increase in putrescible waste generation, is unlikely to materially increase feral animal populations and hence is unlikely to materially decrease native fauna abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Increased occupancy of Olympic Dam accommodation due to the SRE Project workforce may result in an unplanned increase in feral/pest animal numbers compared with the existing numbers, the impacts of which could be a reduction in native fauna abundance (and potentially localised diversity).	
Severity ranking	Level 2	
Impact significance	Not Significant - Project activities are not expected to change current accommodation practices or increase the potential for increased weed or pest diversity. Should an increase in weed or pest species or an introduction of new weed or pest species occur, it is unlikely this would result in a widespread change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed or pest species where the impacts would result in a change in abundance or diversity to native flora and fauna. BHP has established and effective waste management practices of its accommodation villages on and off the SML.	

L18	
Impact sensitivity	Low
Impact sensitivity – justification	Should an increase in weed or pest species or an introduction of new weed or pest species occur, it is unlikely this would result in a widespread change in abundance or diversity of native flora and fauna.
Key control measures	Continuation of existing waste management practices at Olympic Dam.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operation.

L19		
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 WWTPs, results in impacts to downstream environments, ultimately impacting flora and vegetation		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may result in the contamination of land, impacting native vegetation abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

L19		
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 1	
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long term. Therefore, negligible impact is expected to the abundance or diversity of native vegetation or fauna. Existing spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Impact sensitivity	Low	
Impact sensitivity – justification	Spill mitigation and management practices will be implemented as part of the SRE Project, including bunding containment in accordance with Australian Standards and EPA Guidelines.	
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented	
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operation, and other similar operations.	

L20		
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 WWTPs, results in impacts to the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L20		
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may result in the contamination of land, impacting habitat abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 1	
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long term. Therefore, negligible impact is expected to the abundance or diversity of native vegetation or fauna. Existing spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Impact sensitivity	Low	
Impact sensitivity – justification	Spill mitigation and management practices will be implemented as part of the SRE Project, including bunding containment in accordance with Australian Standards and EPA Guidelines.	
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented	
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operation, and other similar operations.	

L21		
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 WWTPs, results in impacts to the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, incorrect storage, handling, and management of chemicals and fuels, stockpiles, TSF, or the WWTP result in a release of substance to the environment
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may result in the contamination of land, impacting threatened species abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

L21	
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by the release of chemicals or hydrocarbons as a result of project activities.
Severity ranking	Level 1
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long term. Therefore, negligible impact is expected to the abundance or diversity of native vegetation or fauna. Existing spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.
Impact sensitivity	Low
Impact sensitivity – justification	Spill mitigation and management practices will be implemented as part of the SRE Project, including bunding containment in accordance with Australian Standards and EPA Guidelines.
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operation, and other similar operations.

L22		
During operations, project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting flora and vegetation		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.

L22		
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area.	
Severity ranking	Level 2	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)	
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.	
Impact sensitivity	Low	

L22	
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L23		
During operations, project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas.	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 2	

L23	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.
Impact sensitivity	Low
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L24		
During operations, project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	

L24	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by a bushfire as a result of project activities.
Severity ranking	Level 2
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.
Impact sensitivity	Low
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L25		
During operations, project activities, including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting State and Commonwealth matters		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	During operations, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth matters	The closest conservation area is the Arid Recovery Reserve which is located approximately 6 km north of the SRE project. The Arid Recovery Reserve spans a total of 12,300 ha across six large enclosures and is Australia's largest feral animal-proof fenced reserve. Further to this, Lake Torrens National Park is located approximately 40 km to the east of the SRE Project. There are no vegetation Heritage Agreements under the NV Act within 50 km of the SRE Project.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, construction activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	There are no Protected Areas in the immediate vicinity of the SRE Project. The closest Protected Area to the SRE Project Area is the Lake Torrens National Park, located approximately 40 km to the east of the SML. Whist the Aird Recovery Reserve is located approximately 4.7 km to the North of the SRE Project Area, it is not formally considered a Protected Area.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

L26		
The rehabilitation of cleared land following closure results in conditions that are favourable for an increase in the abundance and diversity of weed species, impacting flora and vegetation		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	Following site closure, the rehabilitation of cleared land results in conditions that are favourable for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity, resulting in a reduction in abundance and diversity of native vegetation	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

L26	
Linkage justification	Rehabilitation of cleared areas is proposed during site closure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on machinery which is used during site closure and land rehabilitation, thereby reducing the quality of native vegetation, and degrading habitat for common flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted by the introduction of weeds during site closure.
Severity ranking	Level 2
Impact significance	Not Significant - Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	Routine weed monitoring and control in line with existing site processes.
Control measure uncertainty	Established weed monitoring and control measures have been demonstrated to be effective at Olympic Dam.

L27		
The rehabilitation of cleared land following closure results in conditions that are favourable for an increase in the abundance and diversity of weed species, impacting fauna and habitat		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	Following site closure, the rehabilitation of cleared land results in conditions that are favourable for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity, resulting in a reduction in abundance and diversity of habitat	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	

L27	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Rehabilitation of cleared areas is proposed during site closure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on machinery which is used during site closure and land rehabilitation, thereby reducing the quality of native vegetation, and degrading habitat for common flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted by the introduction of weeds during site closure.
Severity ranking	Level 2
Impact significance	Not Significant - Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	Routine weed monitoring and control in line with existing site processes.
Control measure uncertainty	Established weed monitoring and control measures have been demonstrated to be effective at Olympic Dam.

L28		
The rehabilitation of cleared land following closure results in conditions that are favourable for an increase in the abundance and diversity of weed species, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	Following site closure, the rehabilitation of cleared land results in conditions that are favourable for weed species
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in an increase in weed abundance and diversity which may, in turn, result in a reduction in abundance and diversity of threatened species	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

L28	
Linkage justification	Rehabilitation of cleared areas is proposed during site closure, and whilst not planned, weed species may establish preferentially in disturbed areas, or be transported to site on machinery which is used during site closure and land rehabilitation, thereby reducing the quality of native vegetation, and degrading habitat for common flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore be impacted by the introduction of weeds during site closure.
Severity ranking	Level 2
Impact significance	Not Significant - Should an increase in weed species or an introduction of new weed species occur, it is unlikely this would result in a change in abundance or diversity of native flora and fauna. Should declared weeds or WoNS be recorded within the SRE Project these will be required to be controlled as defined within the relevant legislation. Current weed monitoring and management for Olympic Dam operations would be expanded to include disturbance associated with the SRE Project, with an emphasis on declared weeds (as listed under the LSA Act) or WoNS.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Project activities are not expected to significantly alter the current abundance or diversity of weed species where the impacts would result in a change in abundance or diversity to native flora and fauna. Routine weed monitoring and management at Olympic Dam demonstrates a capacity and capability to manage weeds on the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	Routine weed monitoring and control in line with existing site processes.
Control measure uncertainty	Established weed monitoring and control measures have been demonstrated to be effective at Olympic Dam.

L29		
During closure, project activities including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting flora and vegetation		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	During closure, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	

L29		
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, closure activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by a bushfire as a result of project activities.	
Severity ranking	Level 2	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the Electricity Ground Re-profiling Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) - medium uncertainty (moderate confidence)	
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.	
Impact sensitivity	Low	
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.	
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems, with ongoing emergency management planning during closure.	
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.	

L30		
During closure, project activities including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting fauna and habitat		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	During closure, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire

L30		
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely or confirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, closure activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by a bushfire as a result of project activities.	
Severity ranking	Level 2	
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)	
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.	
Impact sensitivity	Low	
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.	
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems, with ongoing emergency management planning during closure.	
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.	

L31		
During closure, project activities including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	During closure, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, closure activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

L31	
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, project activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by a bushfire as a result of project activities.
Severity ranking	Level 2
Impact significance	Not Significant - Emergency preparedness and response is well established on the SML as part of current Olympic Dam operations. Should a bushfire occur due to unplanned SRE Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted (the vegetation is sparse in nature), i.e. any impacts would be expected to be localised and short-term. Vegetation disturbance within the EIGR Areas is intended to reduce the potential for fire due to increased electrical loads through existing infrastructure.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence) to medium uncertainty (moderate confidence)
Impact uncertainty – justification	Bushfires are unpredictable by nature, however, a range of mitigation strategies are able to be employed in accordance with Olympic Dam's integrated management system and regulation. There is limited fuel load in the Project Area and surrounds, and vegetation is low and very low open shrublands, as described by the ecological assessments.
Impact sensitivity	Low
Impact sensitivity – justification	Should a bushfire occur due to unplanned Project-related activities it is unlikely the results of the fire will result in destruction to the effect that the abundance and diversity of flora and fauna will be impacted. Any impacts would be expected to be localised and short-term.
Key control measures	Fire risk and emergency management processes which align with established site emergency management systems, with ongoing emergency management planning during closure.
Control measure uncertainty	These controls have been demonstrated to be effective at the existing Olympic Dam mining operations.

L32		
During closure, project activities including planned construction and maintenance activities and unplanned equipment and plant failures, create conditions that result in a bushfire, impacting State and Commonwealth matters		
Project phase (when impact will occur)	Closure	
Source	SRE Project activities	During closure, project activities, including planned maintenance activities and unplanned equipment and plant failures lead to conditions that result in a bushfire
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	State and Commonwealth matters	The closest conservation area is the Arid Recovery Reserve which is located approximately 6 km north of the SRE project. The Arid Recovery Reserve spans a total of 12,300 ha across six large enclosures and is Australia's largest feral animal-proof fenced reserve. Further to this, Lake Torrens National Park is located approximately 40 km to the east of the SRE Project. There are no vegetation Heritage Agreements under the NV Act within 50 km of the SRE Project.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	Whilst not planned, closure activities may result in the creation of a bushfire, the impacts of which could be a reduction in native vegetation and habitat, including impacts to threatened species or protected areas	
Work completed to assess/ confirm linkage	EIS Appendix D1 Ecology	
Legislative Requirements		

L32	
Applicable regulatory requirements/ agreements	• *Environment Protection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • *Environment Protection Act 1993* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	There are no Protected Areas in the immediate vicinity of SRE Project. The closest Protected Area to the SRE Project Area is the Lake Torrens National Park, located approximately 40 km to the east of the SML. Whilst the ARR is located approximately 4.7 km to the north of the SRE Project Area, it is not formally considered a Protected Area (or State or Commonwealth matter).
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

L33		
During construction, land clearing associated with the construction of SRE Project infrastructure results in disturbance to an unknown non-Indigenous heritage site		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Clearing associated with the construction of SRE Project infrastructure, during construction.
Pathway	Land (quality)	The SRE Project is situated in the Gawler Interim Biogeographic Regionalisation of Australia (IBRA) Bioregion. This region spans approximately 123,605 km2 and the landscape is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lake beds. Vegetation types across the bioregion include open woodlands of Black Oak and Wattles, open mallee scrub, chenopod shrublands (bluebush/saltbush) and tall Mulga shrublands. The native vegetation across the area is generally relatively intact, but highly disturbed in some areas, particularly near stock watering points or infrastructure. More specifically, the majority of the SRE Project Area sits within the Roxby IBRA Subregion which is characterised by low sand dunes with low open woodland and mixed grasses, sandy interdune swales within Acacia low open woodland over Chenopod low open shrubland and interdune swales with clay soils supporting Cane-grass tall grasslands.
Receptor	Historic heritage	Historic pastoral activities have resulted in the construction of fences, stockyards, huts and windmills which may be preserved as archaeological sites. There are no surface indications of archaeological sites created during European settlement in the SRE Project Area.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain or unconfirmed linkage	
Preliminary SPR linkage justification	The clearing of native vegetation associated with the construction of SRE Project infrastructure may result in impacts to sites of non-indigenous heritage significance.	

L33	
Work completed to assess/ confirm linkage	EIS Appendix D4 Historic heritage (non-indigenous)
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Planning Development and Infrastructure Act 2016* (SA) • *Heritage Places Act 1993* (SA) • *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Unconfirmed linkage
Linkage justification	There is low to very low potential for subsurface archaeological sites to be within the SRE Project Area.
Severity ranking	Level 1
Impact significance	Not significant - Should an archaeological site be uncovered, it can be archaeologically investigated and assessed for heritage significance.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There is low to very low potential for subsurface archaeological sites to be within the SRE Project Area (i.e. high level of certainty) due to: • historic records • no unidentified archaeological sites having been encountered during earthworks/excavations associated Olympic Dam site infrastructure within the SML.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	Implementation of a stop works procedure for unexpected historical archaeological finds in the construction environmental management plan.
Control measure uncertainty	Stop works measures shown to be effective at mitigating impacts to historic heritage

4. Socio-economic

Identified potential impact events related to the socio-economic pathway are assessed in the following SPR tables.

4.1 Local community

SE1		
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		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The highest peak daily vehicle movements across the construction stages are expected to occur in Stage 2 during Q3 2037 (July to September), being approximately 269 heavy vehicles per day, where it overlaps with Stage 1a and Stage 1b operations.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increases in road traffic results in the degradation of the roads and increases risks to public health and safety	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The proposed SRE Project activities will increase heavy vehicle traffic on the road network requiring impact assessment	
Severity ranking	Level 2	
Impact significance	Not significant	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	

SE1	
Impact uncertainty – justification	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.
Impact sensitivity	Low
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.
Key control measures	Preparation of a Construction Transport Management Plan (CTMP) prior to commencement of construction, in consultation with the relevant authorities and the nominated construction contractor, to ensure the safety of all workers and road users within the vicinity of the SRE Project.
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.

SE2		
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		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The highest peak daily vehicle movements across the construction stages are expected to occur in Stage 2 during Q3 2037 (July to September), being approximately 269 heavy vehicles per day, where it overlaps with Stage 1a and Stage 1b operations.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increases in road traffic result in an increased likelihood of traffic accidents, impacting public health and safety	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	

SE2	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	The proposed SRE Project activities will increase heavy vehicle traffic and potential for traffic accidents requiring impact assessment
Severity ranking	Level 2
Impact significance	Not significant
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.
Impact sensitivity	Low
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.
Key control measures	Preparation of a Construction Transport Management Plan (CTMP) prior to commencement of construction, in consultation with the relevant authorities and the nominated construction contractor, to ensure the safety of all workers and road users within the vicinity of the SRE Project.
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.

SE3		
Increases in heavy vehicle traffic associated with the movement of construction materials, including oversized and restricted movements, results in increases in travel times, affects road users, impacting on the social value of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The highest peak daily vehicle movements across the construction stages are expected to occur in Stage 2 during Q3 2037 (July to September), being approximately 269 heavy vehicles per day, where it overlaps with Stage 1a and Stage 1b operations.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.

SE3		
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely linkage	
Preliminary SPR linkage justification	The increased movement of heavy vehicles, including road closures as necessary, results in increases in travel times within the local and regional areas, impacting existing social values	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The SRE Project activities will increase travel time within the local and regional areas, impacting existing social values	
Severity ranking	Level 2	
Impact significance	Not significant	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Construction traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, workforce traffic is confined to travel between the accommodation villages and the SRE Project. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.	
Impact sensitivity	Low	
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible social impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.	
Key control measures	Preparation of a Construction Transport Management Plan (CTMP) prior to commencement of construction, in consultation with the relevant authorities and the nominated construction contractor, to ensure the safety of all workers and road users within the vicinity of the SRE Project.	
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.	

SE4		
During operations, increase in road traffic results in the degradation of the roads and increases risk to the public health and safety		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site.

SE4		
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increases in road traffic results in the degradation of the roads and increases risks to public health and safety	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The Proposed SRE Project activities will increase heavy vehicle traffic on the road network, leading to the degradation of roadways	
Severity ranking	Level 2	
Impact significance	Not significant	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.	
Impact sensitivity	Low	
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible social impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.	
Key control measures	An Operational Traffic Management Plan will be required in consultation with the relevant road authorities which should include a Driver's Code of Conduct	
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.	

SE5		
During operations, increase in road traffic results in the degradation of the roads and increases risk to the public health and safety		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increases in road traffic result in an increased likelihood of traffic accidents, impacting public health and safety	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The Proposed SRE Project activities will increase vehicle traffic and potential for traffic accidents	
Severity ranking	Level 2	
Impact significance	Not significant	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	

SE5	
Impact uncertainty – justification	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.
Impact sensitivity	Low
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible social impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.
Key control measures	An Operational Traffic Management Plan will be required in consultation with the relevant road authorities which should include a Driver's Code of Conduct
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.

SE6		
During operations, the increased movement of heavy vehicles results in increases in travel times within the local and regional areas, impacting existing social values		
Project phase (when impact will occur)	Operations	
Source	SRE Project activities	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Likely linkage	
Preliminary SPR linkage justification	The increased movement of heavy vehicles results in increases in travel times within the local and regional areas, impacting existing social values	
Work completed to assess/ confirm linkage	EIS Appendix C8 Traffic	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Heavy Vehicle National Law Act 2013* (SA) • *Road Traffic Act 1961* (SA) • *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		

SE6	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	The Proposed SRE Project activities will increase travel time within the local and regional areas
Severity ranking	Level 2
Impact significance	Not significant
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Operational traffic for the SRE Project will comprise of materials and equipment deliveries, as well as workforce traffic. However, 90% of workforce traffic is confined to travel between the ODV and ODS accommodation village and the Olympic Dam mine site. The exact number and origin of vehicle traffic cannot be known with certainty, but is unlikely to affect the assessed significance.
Impact sensitivity	Low
Impact sensitivity – justification	EIS Appendix C8 Traffic has determined that the SRE Project will generate negligible changes to existing traffic patterns on Olympic Dam Highway and Olympic Dam Way. These negligible changes are unlikely to generate a tangible social impact. The Traffic Impact Assessment has been undertaken for the worst-case construction and operational scenarios for the SRE Project.
Key control measures	An Operational Traffic Management Plan will be required in consultation with the relevant road authorities which should include a Driver's Code of Conduct
Control measure uncertainty	These measures have been demonstrated to reduce the probability of traffic incidents and accidents.

SE7		
The construction workforce demand results in decreased access to essential services (e.g. medical), impacting on the social value of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increase in the local population has the potential to place pressure on existing local services	

SE7	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	SRE Project workforce will be accommodated at permanent accommodation facilities which are equipped with dedicated on-site health services.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SE8		
The operational workforce demand results in decreased access to essential services (e.g. medical), impacting on the social value of the local community		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.

SE8		
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increase in the local population has the potential to place pressure on existing local services	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Work Health and Safety Act 2011* (Cth) • *Work Health and Safety Act 2012* (SA) • Stakeholder Land Access and Compensation Agreement(s)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	SRE Project workforce will be accommodated at permanent accommodation facilities which are equipped with dedicated on-site health services.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

SE9		
During construction, 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		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.

SE9		
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased potential for road and workplace accidents has the potential to place pressure on emergency services	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project may necessitate demand for emergency services.	
Severity ranking	Level 3	
Impact significance	Significant - The SRE Project will require a construction peak Stage 1a workforce of 1,313 FTEs, a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). Additional peak operational workforce requirement of 508 workers. The presence of a large workforce in a remote setting potentially increasing demand for emergency services due to the heightened risk of traffic accidents along Olympic Dam Highway or Olympic Way. While on-site first aid facilities will provide immediate medical response for work related incidents, the significant increase in non-resident workers is still expected to place additional demand on public emergency services.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)	
Impact uncertainty – justification	No consultation has been undertaken with stakeholders at time of development of EIS Appendix D2 Social. Engagement with existing emergency services providers would enhance understanding and verify significance of impact.	
Impact sensitivity	Moderate	
Impact sensitivity – justification	Moderate potential for variability in impact.	
Key control measures	• Project site to continue provision of first aid facility and if necessary, utilise BHP employed paramedics based at Olympic Dam. • BHP to collaborate with local emergency services providers (including Police, Ambulance and RFDS) on SRE Project activities and update to the Emergency Response Plan where relevant. • Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response.	
Control measure uncertainty	Established processes for provision of first aid, emergency response and community grievance have demonstrated to reduce demand on emergency services.	

SE10		
During operations, 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		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased potential for road and workplace accidents has the potential to place pressure on emergency services	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project may necessitate demand for emergency services.	
Severity ranking	Level 3	
Impact significance	Significant - The SRE Project will require a construction peak Stage 1a workforce of 1,313 FTEs, a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). Additional peak operational workforce requirement of 508 workers. The presence of a large workforce in a remote setting potentially increasing demand for emergency services due to the heightened risk of traffic accidents along Olympic Dam Highway or Olympic Way. While on-site first aid facilities will provide immediate medical response for work related incidents, the significant increase in non-resident workers is still expected to place additional demand on public emergency services.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)	

SE10	
Impact uncertainty – justification	No consultation has been undertaken with stakeholders at time of development of EIS Appendix D2 Social. Engagement with existing emergency services providers would enhance understanding and verify significance of impact.
Impact sensitivity	Moderate
Impact sensitivity – justification	Moderate potential for variability in impact.
Key control measures	• Project site to continue provision of first aid facility and if necessary, utilise BHP employed paramedics based at Olympic Dam. • BHP to collaborate with local emergency services providers (including Police, Ambulance and RFDS) on SRE Project activities and update to the Emergency Response Plan where relevant. • Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response.
Control measure uncertainty	Established processes for provision of first aid, emergency response and community grievance have demonstrated to reduce demand on emergency services.

SE11		
The construction workforce demand results in decreased access to accommodation or increases in rental prices, impacting the social value of the local community		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increase in the local population has the potential to place pressure on existing local accommodation and/or result in a decrease in the affordability of housing	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	

SE11	
Linkage justification	SRE Project workforce will be accommodated at permanent accommodation facilities.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SE12		
The operational workforce demand results in decreased access to accommodation or increases in rental prices, impacting the social value of the local community		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased potential for road and workplace accidents has the potential to place pressure on emergency services	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	

SE12	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	SRE Project workforce will be accommodated at permanent accommodation facilities.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SE13		
Increased labour force participation and reduced unemployment during construction, contributes to enhanced socio-economic wellbeing in FIFO source communities, including those within the regional study area		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased labour force participation and reduced unemployment may lead to enhanced socio-economic wellbeing in FIFO source communities, including those within the regional study area.	

SE13		
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project would directly generate demand for labour.	
Severity ranking	Level 1	
Impact significance	Not significant – An overall benefit to the local community is expected (i.e. there will be no measurable adverse impact on local communities or business due to increased labour force participation).	
Impact uncertainty (Assessment confidence)	Moderate	
Impact uncertainty – justification	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models • extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)	
Impact sensitivity	High	
Impact sensitivity – justification	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.	
Key control measures	Implementation of noise, air quality, radiation, traffic, visual amenity and social mitigation strategies outlined in their respective impact assessment tables are expected to contribute to the reduction of long-term environmental impacts.	
Control measure uncertainty	Established environmental and socio mitigation strategies and systems to support implementation of the strategies have been shown to be effective at mitigating.	

SE14		
Increased labour force participation and reduced unemployment during operations, contributes to enhanced socio-economic wellbeing in FIFO source communities, including those within the regional study area		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.

SE14		
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased labour force participation and reduced unemployment may lead to enhanced socio-economic wellbeing in FIFO source communities, including those within the regional study area.	
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project would directly generate demand for labour.	
Severity ranking	Level 1	
Impact significance	Not significant – An overall benefit to the local community is expected (i.e. there will be no measurable adverse impact on local communities or business due to increased labour force participation).	
Impact uncertainty (Assessment confidence)	Moderate	
Impact uncertainty – justification	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models • extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)	
Impact sensitivity	High	
Impact sensitivity – justification	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.	
Key control measures	Implementation of noise, air quality, radiation, traffic, visual amenity and social mitigation strategies outlined in their respective impact assessment tables are expected to contribute to the reduction of long-term environmental impacts.	

SE14	
Control measure uncertainty	Established environmental and socio mitigation strategies and systems to support implementation of the strategies have been shown to be effective mitigation.

SE15		
Construction of 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.		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The SRE Project would increase numbers of non-resident workers in the local economy and may create new business and supply chain opportunities	
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project would directly generate demand for labour.	
Severity ranking	Level 1	
Impact significance	Not significant – An overall benefit to the local community is expected (i.e. there will be no measurable adverse impact on local communities or business due to increased labour force participation).	
Impact uncertainty (Assessment confidence)	Moderate	

SE15	
Impact uncertainty – justification	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)
Impact sensitivity	High
Impact sensitivity – justification	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.
Key control measures	Implementation of noise, air quality, radiation, traffic, visual amenity and social mitigation strategies outlined in their respective impact assessment tables are expected to contribute to the reduction of long-term environmental impacts.
Control measure uncertainty	Established environmental and socio mitigation strategies and systems to support implementation of the strategies have been shown to be effective mitigation.

SE16		
Operation of 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.		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The SRE Project would increase numbers of non-resident workers in the local economy and may create new business and supply chain opportunities	
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	

SE16	
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	SRE Project would directly generate demand for labour.
Severity ranking	Level 1
Impact significance	Not significant – An overall benefit to the local community is expected (i.e. there will be no measurable adverse impact on local communities or business due to increased labour force participation).
Impact uncertainty (Assessment confidence)	Moderate
Impact uncertainty – justification	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)
Impact sensitivity	High
Impact sensitivity – justification	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.
Key control measures	Implementation of noise, air quality, radiation, traffic, visual amenity and social mitigation strategies outlined in their respective impact assessment tables are expected to contribute to the reduction of long-term environmental impacts.
Control measure uncertainty	Established environmental and socio mitigation strategies and systems to support implementation of the strategies have been shown to be effective mitigation.

SE19		
The construction workforce demand reduces the availability of flights due to increased demand driven by SRE Project workforce, indirectly increasing flight fares		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.

SE19		
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increase in workforce demand has the potential to indirectly increase flight fares.	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	SRE Project proposes no changes to the availability of flights and will ensure no material impact on the availability of commercial flights for other passengers	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

SE20		
The operational workforce demand reduces the availability of flights due to increased demand driven by SRE Project workforce, indirectly increasing flight fares		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.

SE20		
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increase in workforce demand has the potential to indirectly increase flight fares.	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	SRE Project proposes no changes to the availability of flights and will ensure no material impact on the availability of commercial flights for other passengers	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

SE21		
Construction of the SRE Project results in potential community impacts (e.g. cohesion and vitality) in Roxby Downs due to an increase in non-resident workers		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increased non-resident population has the potential to effect local community cohesion	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The SRE Project will increase the number of non resident workers in the region.	
Severity ranking	Level 3	
Impact significance	Significant - The SRE Project will increase the number of non-resident FIFO workers in the region, potentially exacerbating existing negative community sentiment towards FIFO workforce expansion. Concerns over community disengagement, reduced local investment, and declining population stability have already been raised, and the project may intensify these perceptions. This could lead to a significant impact on Roxby Downs, potentially prompting some community members to leave the area, further weakening local cohesion and economic sustainability.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)	
Impact uncertainty – justification	Community perceptions are inherently subjective and may evolve over time. Further engagement with the local community will be essential to better understand concerns, gauge the extent of potential impacts, and identify opportunities for mitigation, helping to increase certainty around the impact of FIFO workforce expansion on Roxby Downs.	
Impact sensitivity	Moderate	
Impact sensitivity – justification	Moderate potential for variability in impact.	

SE21	
Key control measures	• SRE Project workforce to abide by worker code of conduct, including staff and contractors to be alcohol and drug free at work and comply with applicable alcohol limitations at accommodation villages and during other work-related activities or travel. • Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response. • Implementation of the SRE Project Stakeholder Communication and Engagement Strategy and Plan. • Continued implementation of BHP Social Investment initiatives in Roxby Downs and the Upper Spencer Gulf Region. • Quarterly BHP/ Community - Community connect activity • Introduction of Roxby Downs Township group • SRE construction roster to be day shift only with plans for half day Saturday to enable better workforce/community cohesion and participation in recreational activities
Control measure uncertainty	Established processes for provision engagement with the community have been demonstrated to be effective.

SE22		
Operation of the SRE Project results in potential community impacts (e.g. cohesion and vitality) in Roxby Downs due to an increase in non-resident workers		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increased non-resident population has the potential to effect local community cohesion	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	

SE22		
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	The SRE Project will increase the number of non resident workers in the region.	
Severity ranking	Level 3	
Impact significance	Significant - The SRE Project will increase the number of non-resident FIFO workers in the region, potentially exacerbating existing negative community sentiment towards FIFO workforce expansion. Concerns over community disengagement, reduced local investment, and declining population stability have already been raised, and the project may intensify these perceptions. This could lead to a significant impact on Roxby Downs, potentially prompting some community members to leave the area, further weakening local cohesion and economic sustainability.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)	
Impact uncertainty – justification	Community perceptions are inherently subjective and may evolve over time. Further engagement with the local community will be essential to better understand concerns, gauge the extent of potential impacts, and identify opportunities for mitigation, helping to increase certainty around the impact of FIFO workforce expansion on Roxby Downs.	
Impact sensitivity	Moderate	
Impact sensitivity – justification	Moderate potential for variability in impact.	
Key control measures	• Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response. • Implementation of the SRE Project Stakeholder Communication and Engagement Strategy and Plan. • Continued implementation of BHP Social Investment initiatives in Roxby Downs and the Upper Spencer Gulf Region. • Quarterly BHP/ Community - Community connect activity • Introduction of Roxby Downs Township group.	
Control measure uncertainty	Established processes for provision engagement with the community have been demonstrated to be effective.	

SE23		
Construction of the SRE Project results in an increased non-resident workforce resulting increased crime and anti-social behaviour		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	

SE23	
Preliminary SPR linkage justification	An increased non-resident population has the potential to increase undesirable behaviour.
Work completed to assess/ confirm linkage	EIS Appendix D2 Social
Legislative Requirements	
Applicable regulatory requirements/ agreements	Not applicable
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	SRE Project will increase the number of non-resident workers in the region
Severity ranking	Level 2
Impact significance	Not significant - The SRE Project will increase the number of non-resident FIFO workers in the region, contributing to existing community concerns that a higher FIFO presence may correlate with increased crime and antisocial behaviour. This perception could negatively impact residents' sense of safety and overall enjoyment of living in Roxby Downs. However, this impact is not expected to be significant due to existing measures such as workforce screening and security protocols.
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)
Impact uncertainty – justification	Community perceptions are inherently subjective and may evolve over time. Further engagement with the local community will be essential to better understand concerns, gauge the extent of potential impacts, and identify opportunities for mitigation, helping to increase certainty around the impact of FIFO workforce expansion on Roxby Downs.
Impact sensitivity	Moderate
Impact sensitivity – justification	Moderate potential for variability in impact.
Key control measures	• Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response. • SRE Project workforce to abide by worker code of conduct, including staff and contractors to be alcohol and drug free at work and comply with applicable alcohol limitations at accommodation villages and during other work-related activities or travel.
Control measure uncertainty	Established processes for provision engagement with the community have been demonstrated to be effective.

SE24		
Operation of the SRE Project results in an increased non-resident workforce resulting increased crime and anti-social behaviour		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.

SE24		
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	An increased non-resident population has the potential to increase undesirable behaviour.	
Work completed to assess/ confirm linkage	EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE Project will increase the number of non-resident workers in the region	
Severity ranking	Level 2	
Impact significance	Not significant - The SRE Project will increase the number of non-resident FIFO workers in the region, contributing to existing community concerns that a higher FIFO presence may correlate with increased crime and antisocial behaviour. This perception could negatively impact residents' sense of safety and overall enjoyment of living in Roxby Downs. However, this impact is not expected to be significant due to existing measures such as workforce screening and security protocols.	
Impact uncertainty (Assessment confidence)	Moderate uncertainty (moderate confidence)	
Impact uncertainty – justification	Community perceptions are inherently subjective and may evolve over time. Further engagement with the local community will be essential to better understand concerns, gauge the extent of potential impacts, and identify opportunities for mitigation, helping to increase certainty around the impact of FIFO workforce expansion on Roxby Downs.	
Impact sensitivity	Moderate	
Impact sensitivity – justification	Moderate potential for variability in impact.	
Key control measures	• Continued implementation of a community grievance mechanism for the public to raise grievances and receive an appropriate response. • SRE Project workforce to abide by worker code of conduct.	
Control measure uncertainty	Established processes for provision engagement with the community have been demonstrated to be effective.	

SE25		
Reduced rural and agricultural amenity due to presence of heavy industry of the project		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Expansion of heavy industry associated with operation of the SRE Project.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	Local community (social value)	The SRE Project is located in the far north of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta, and Whyalla. The Kokatha People are the Native Title Determined Group for the SRE Project. The Kuyani People have traditional lands west of the Flinders Ranges, while the Barngarla People are the Native Title Determined Group for the area spanning from northern Spencer Gulf to the south of Port Lincoln. The closest residents include the Olympic Dam Village, Roxby Downs Village, and Roxby Downs township. Nearby pastoral stations include Roxby Downs Station to the west and north, and Andamooka Station to the north-east.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Increased industrial activity in the region has the potential to effect rural and agricultural amenity.	
Work completed to assess/ confirm linkage	EIS Appendix C7 Land use and planning	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	The SRE Project is identified as being within the Remote Areas Zone of the Code (PlanSA 2023). The Desired Outcome (DO1) of Remote Areas Zone envisages a diverse range of uses, including mining and associated infrastructure with the SRE Project: • considered compatible with the scale, function, character and intensity of the existing land uses and surrounding areas • is not located in proximity to sensitive receptors • would be designed and constructed to minimise potential impacts to meet relevant environmental and amenity criteria.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	

SE25	
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

4.2 State and national

SE17		
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		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	The construction personnel profile has a peak Stage 1a workforce of 1,313 full time equivalents (FTEs), a Stage 1b workforce of 515 FTEs and a Stage 2 peak workforce of 978 FTEs (Hatch Fluor 2025). All construction personnel are assumed to be residing at the ODV and ODS accommodation villages.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	State and Commonwealth matters	The SRE Project is located in the Far North of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta and Whyalla. Over the past decade, Gross Regional Product (GRP) increased by 119% reaching $6.544 billion in 2024. The area in the Far North Region generating the most output is Roxby Downs, contributing 70.8% of the Far North Region's total output. The mining industry is also the largest employer with 6,041 jobs which represents 32.9% of the total employment within the region.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The SRE Project would contribute to GRP and the state economy and may indirectly support economic diversification and provision of greater resilience to economic downturns	
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	SRE project would enable continuation and expansion of mining activities in the Copper South Australia province, further contributing to GRP and to the State through royalties.	
Severity ranking	Level 1	
Impact significance	Not significant – An overall benefit to the State is expected through the payment of royalties, taxes and wage premiums (i.e. there will be no measurable adverse impact on the State economy).	
Impact uncertainty (Assessment confidence)	Moderate	
Impact uncertainty – justification	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models • extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)	

SE17	
Impact sensitivity	High
Impact sensitivity – justification	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.
Key control measures	Benefit – no specific control measures proposed
Control measure uncertainty	Not applicable – not considered further

SE18		
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		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Following construction, the SRE Project would require an operational workforce of approximately 508 personnel, which would build upon the existing smelter and refinery operations workforce of approximately 766 personnel. It is assumed that both the construction and operational workforce for the SRE Project will be predominantly fly in-fly-out (FIFO). This is due to the specialist skills required and the significant shortage of skilled labour in Roxby Downs.
Pathway	Socio-economic environment	The SRE Project is located at the Olympic Dam mining operations, approximately 580 km north of Adelaide. The existing operation is fully operational, with site access via the Olympic Dam Highway. The SRE Project will be serviced by internal (and proposed new) access road, with public access restricted at the main entrance to the mine site. The Olympic Dam airport is located approximately 6 km south of the existing Olympic Dam mine. The closest township is Roxby Downs which is approximately 15 km south of the mine site. The workforce is supported by local residents, individuals who drive-in drive-out (DIDO), or fly-in fly-out (FIFO). With 90% of operational staff residing in one of the two villages, while the remaining 10% of staff residing in Roxby Downs in individual houses. The surrounding community is made up of residents of Roxby Downs, Andamooka, Port Augusta, Whyalla and Woomera. Social infrastructure and community facilities are limited in Woomera, Pimba and Andamooka due to their smaller populations, with residents often travelling to Roxby Downs or Port Augusta for health and other essential services. No non-Indigenous historic heritage sites have been identified within or near the SRE Project, while the presence of any artefacts or identified Aboriginal cultural heritage values, including landscape features, within the SRE Project will be handled in accordance with legislation and the agreed procedures and protocols for heritage management with the Kokatha Aboriginal Corporation (KAC), Kuyani Yartah Association (KYA) and Barngarla Determination Aboriginal Corporation (BDAC) Indigenous Groups.
Receptor	State and Commonwealth matters	The SRE Project is located in the Far North of South Australia. Nearby communities and population centres include Roxby Downs, Woomera, Pimba, Andamooka, Port Augusta and Whyalla. Over the past decade, Gross Regional Product (GRP) increased by 119% reaching $6.544 billion in 2024. The area in the Far North Region generating the most output is Roxby Downs, contributing 70.8% of the Far North Region's total output. The mining industry is also the largest employer with 6,041 jobs which represents 32.9% of the total employment within the region.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The SRE Project would contribute to GRP and the state economy and may indirectly support economic diversification and provision of greater resilience to economic downturns	
Work completed to assess/ confirm linkage	EIS Appendix D3 Economic EIS Appendix D2 Social	
Legislative Requirements		
Applicable regulatory requirements/ agreements	Not applicable	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	

SE18	
Linkage justification	SRE project would enable continuation and expansion of mining activities in the Copper South Australia province, further contributing to GRP and to the State through royalties.
Severity ranking	SRE project would enable continuation and expansion of mining activities in the Copper South Australia province, further contributing to GRP and to the State through royalties.
Impact significance	Level 1
Impact uncertainty (Assessment confidence)	Not significant – An overall benefit to the State is expected through the payment of royalties, taxes and wage premiums (i.e. there will be no measurable adverse impact on the State economy).
Impact uncertainty – justification	Moderate
Impact sensitivity	Uncertainty associated with: • use of financial and operating data not able to be independently verified in all instances • analysis unable to disaggregate and validate water-related operating costs provided by BHP associated with the Northern Water Project from broader operating expenditure categories • the modelling of production scenarios required combining inputs from two different financial models • extent of benefit that is realisable to suppliers due to uncertainty around the magnitude of crowding out effects (addressed by excluding this from the core results)
Impact sensitivity – justification	High
Key control measures	Analysis indicates that the conclusions of the cost-benefit analysis are highly sensitive to changes in key input parameters, The results of the cost-benefit analysis are subject to assumptions that are applied to each cost and benefit. As the largest quantified benefit in the central case, labour surplus benefits for South Australian workers have a notable effect on the estimated net benefits. Downside sensitivities were tested for this parameter, as the estimate assumes that BHP pays a wage premium above prevailing market rates. While this is estimated to be the case currently, the extent of this premium may reduce over time as the SRE Project progresses and labour market conditions evolve.
Control measure uncertainty	Benefit – no specific control measures proposed

5. Surface water

Identified potential impact events related to the surface water pathway are assessed in the following SPR tables.

5.1 Surface water quantity

SW1		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Earthworks, construction and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion. The change in smelter configuration and additional refinery infrastructure will also require removal and/or relocation of existing facilities and services within the existing Olympic Dam SML. In addition, changes to the electricity power transmission requirements will require isolated areas of land disturbance and vegetation clearance to maintain regulatory safe distances between the existing 275 kV line and ground surface. With minor augmentation of existing onsite electricity supply and reticulation infrastructure.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		

SW1	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. There may be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.
Severity ranking	Level 2
Impact significance	The SRE Project is expected to result in localised and negligible changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features. No impact expected at the EIGR Areas as no infrastructure development will occur.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Negligible – Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW2		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Earthworks, construction and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion. The change in smelter configuration and additional refinery infrastructure will also require removal and/or relocation of existing facilities and services within the existing Olympic Dam SML. In addition, changes to the electricity power transmission requirements will require isolated areas of land disturbance and vegetation clearance to maintain regulatory safe distances between the existing 275 kV line and ground surface. With minor augmentation of existing onsite electricity supply and reticulation infrastructure.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	

SW2	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *Landscape South Australia Act 2019* (SA) • *National Parks and Wildlife Act 1972* (SA)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. There may be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.
Severity ranking	Level 2
Impact significance	The SRE Project is expected to result in localised and negligible changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features. No impact expected at the EIGR Areas as no infrastructure development will occur.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Negligible – Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW3		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Earthworks, construction and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion. The change in smelter configuration and additional refinery infrastructure will also require removal and/or relocation of existing facilities and services within the existing Olympic Dam SML. In addition, changes to the electricity power transmission requirements will require isolated areas of land disturbance and vegetation clearance to maintain regulatory safe distances between the existing 275 kV line and ground surface. With minor augmentation of existing onsite electricity supply and reticulation infrastructure.

SW3		
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. There may be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.	
Severity ranking	Level 2	

SW3	
Impact significance	The SRE Project is expected to result in localised and negligible changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features. No impact expected at the EIGR Areas as no infrastructure development will occur.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Negligible – Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW4		
During construction. placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting aquatic ecology		
Project phase (when impact will occur)	Construction	
Source	SRE Project activities	Earthworks, construction and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion. The change in smelter configuration and additional refinery infrastructure will also require removal and/or relocation of existing facilities and services within the existing Olympic Dam SML. In addition, changes to the electricity power transmission requirements will require isolated areas of land disturbance and vegetation clearance to maintain regulatory safe distances between the existing 275 kV line and ground surface. With minor augmentation of existing onsite electricity supply and reticulation infrastructure.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	Aquatic ecology	No aquatic taxa of conservation significance were identified during the desktop review for the SRE Project Area and Study Area. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no aquatic ecosystems located in proximity to the SML Area. Based on this, it is considered there are no aquatic ecology environments or values in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity within surface water drainages	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		

SW4		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	No aquatic ecological values have been identified in proximity to the SRE Project, so there is no potential for impact to these values as a result of changes surface water flows.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

SW22		
During operation, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting flora and vegetation		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Operation of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.

SW22		
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	• Stormwater catchments in dune swales will be excluded from the site by bunding and the building up of pads above the stormwater pooling level • Culverts and associated rock aprons would be designed to Aust Roads standards • Excess stormwater would be conveyed to the existing Olympic Dam stormwater management system for reasonable design storm scenarios	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Simulation of flooding effects indicates that areas which would have been wet or dry without the project will remain so following construction. Changes to pool water depth within individual swales following rain could have minor variance in the order of centimetres for a short period prior to evaporation and infiltration, however this is not expected to be meaningful for flora, fauna or fauna and will not alter the frequency of water availability.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	

SW22	
Control measure uncertainty	Not applicable – not considered further

SW23		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting fauna and habitat		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Operation of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)		• Stormwater catchments in dune swales will be excluded from the site by bunding and the building up of pads above the stormwater pooling level • Culverts and associated rock aprons would be designed to Aust Roads standards • Excess stormwater would be conveyed to the existing Olympic Dam stormwater management system for reasonable design storm scenarios
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *Landscape South Australia Act 2019* (SA) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Simulation of flooding effects indicates that areas which would have been wet or dry without the project will remain so following construction. Changes to pool water depth within individual swales following rain could have minor variance in the order of centimetres for a short period prior to evaporation and infiltration, however this is not expected to be meaningful for flora, fauna or fauna and will not alter the frequency of water availability.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	

SW23	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW24		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Operation of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia), *and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	• Stormwater catchments in dune swales will be excluded from the site by bunding and the building up of pads above the stormwater pooling level • Culverts and associated rock aprons would be designed to Aust Roads standards • Excess stormwater would be conveyed to the existing Olympic Dam stormwater management system for reasonable design storm scenarios	
Preliminary SPR linkage status	Uncertain linkage	

SW24	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Simulation of flooding effects indicates that areas which would have been wet or dry without the project will remain so following construction. Changes to pool water depth within individual swales following rain could have minor variance in the order of centimetres for a short period prior to evaporation and infiltration, however this is not expected to be meaningful for flora, fauna or fauna and will not alter the frequency of water availability.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW25		
During construction. placement of SRE Project infrastructure and associated surface water management infrastructure disrupts, reduces or increases surface water flows, impacting aquatic ecology		
Project phase (when impact will occur)	Operation	
Source	SRE Project activities	Operation of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings required to support the expansion.
Pathway	Surface water (quantity)	The SRE Project is located within the Gawler Interim Biogeographic Regionalisation for Australia (IBRA) bioregion and is characterised by semi-arid to arid flat to rounded landscapes, rocky hills, plains and salt-encrusted lack beds. The immediate surrounds consist of a dune field system of small catchments that cause stormwater to pool in dune swales. Clays within the dune swales can inhibit infiltration, causing water to remain pooled for several weeks until it is evaporated/infiltrated after intense rainfall events. The resulting flow regime for undeveloped areas is low velocity flow that moves a short distance before pooling. There are no waterways within the vicinity of the SRE Project Surface water flows are observed typically following significant rainfall events. Rainfall in the region is low, with no clear seasonal patterns. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m. The existing drainage network is represented by 29 culverts throughout the processing plant area that convey stormwater to Stormwater Pond 1 and 2.

SW25		
Receptor	Aquatic ecology	No aquatic taxa of conservation significance were identified during the desktop review for the SRE Project Area and Study Area. The Soil and Groundwater Assessment Appendix to the EIS has also concluded there are no aquatic ecosystems located in proximity to the SML Area. Based on this, it is considered there are no aquatic ecology environments or values in the SRE Project Area and surrounds.
Fundamental design controls (elimination, substitution or engineering)	• Stormwater catchments in dune swales will be excluded from the site by bunding and the building up of pads above the stormwater pooling level • Culverts and associated rock aprons would be designed to Aust Roads standards • Excess stormwater would be conveyed to the existing Olympic Dam stormwater management system for reasonable design storm scenarios	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing access to surface water, impacting abundance and diversity within surface water drainages	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA)	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Simulation of flooding effects indicates that areas which would have been wet or dry without the project will remain so following construction. Changes to pool water depth within individual swales following rain could have minor variance in the order of centimetres for a short period prior to evaporation and infiltration, however this is not expected to be meaningful for flora, fauna or fauna and will not alter the frequency of water availability.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	
Impact sensitivity – justification	Not applicable – not considered further	
Key control measures	Not applicable – not considered further	
Control measure uncertainty	Not applicable – not considered further	

5.2 Surface water quality

SW5	
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting flora and vegetation	
Project phase (when impact will occur)	Construction

SW5		
Source	SRE project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.	
Severity ranking	Level 2	

SW5	
Impact significance	Not Significant - The SRE Project is expected to result in localised and minor changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features No impact expected at the EIGR Areas as no infrastructure development will occur
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW6		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		

SW6	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.
Severity ranking	Level 2
Impact significance	Not Significant - The SRE Project is expected to result in localised and minor changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features No impact expected at the EIGR Areas as no infrastructure development will occur
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW7		
During construction, placement of SRE Project infrastructure and associated surface water management infrastructure results in the sedimentation of the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	During construction, earthworks and placement of SRE Project infrastructure, including but not limited to pipelines, roads, stormwater infrastructure, tanks, ponds, stockpiles, workshops, plants and other buildings result in loose material, washed into downstream environments during periods of rainfall
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.

SW7		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Surface water flows in newly developed areas of the SRE Project will flow back to existing operational areas. Clean flows will be maintained to adjacent undisturbed areas. There may however be a loss or reduction of surface water flow volume from the newly developed areas which may reduce the abundance and diversity of native vegetation, which represents potential habitat for common and threatened species.	
Severity ranking	Level 2	
Impact significance	Not Significant - The SRE Project is expected to result in localised and minor changes to existing surface water catchments in the SRE Area due to the absence of significant surface water features No impact expected at the EIGR Areas as no infrastructure development will occur	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	

SW7	
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	An erosion and sediment control plan to be developed as part of detailed design, will be implemented during construction
Control measure uncertainty	Standard construction sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW8		
During construction, the use of water for dust suppression activities results in saline water run-off into surrounding environments, causing salinisation which impacts the downstream environment, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	During construction, saline water may be used for dust suppression of potentially dust-generating activities associated with the SRE Project, including roadways, stockpiles, and cleared areas where wind erosion may otherwise occur. Water used for dust suppression may contain high concentrations of salinity after undergoing different stages of processing, or no processing at all (i.e. native groundwater).
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain Linkage	
Preliminary SPR linkage justification	The use of saline water for dust suppression may result in salinisation, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		

SW8	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Water for dust suppression activities will be sourced from the existing Reverse Osmosis plant, and as such, any run-off from areas where dust suppression water has been added will not have salinity levels which would cause impacts to surrounding environments.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW9		
During construction, the use of water for dust suppression activities results in saline water run-off into surrounding environments, causing salinisation which impacts the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	During construction, saline water may be used for dust suppression of potentially dust-generating activities associated with the SRE Project, including roadways, stockpiles, and cleared areas where wind erosion may otherwise occur. Water used for dust suppression may contain high concentrations of salinity after undergoing different stages of processing, or no processing at all (i.e. native groundwater).
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	

SW9	
Preliminary SPR linkage justification	The use of saline water for dust suppression may result in salinisation, impacting abundance and diversity
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	No linkage
Linkage justification	Water for dust suppression activities will be sourced from the existing Reverse Osmosis plant, and as such, any run-off from areas where dust suppression water has been added will not have salinity levels which would cause impacts to surrounding environments.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW10		
During construction, the use of water for dust suppression activities results in saline water run-off into surrounding environments, causing salinisation which impacts the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	During construction, saline water may be used for dust suppression of potentially dust-generating activities associated with the SRE Project, including roadways, stockpiles, and cleared areas where wind erosion may otherwise occur. Water used for dust suppression may contain high concentrations of salinity after undergoing different stages of processing, or no processing at all (i.e. native groundwater).
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.

SW10		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Not applicable	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The use of saline water for dust suppression may result in salinisation, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	No linkage	
Linkage justification	Water for dust suppression activities will be sourced from the existing Reverse Osmosis plant, and as such, any run-off from areas where dust suppression water has been added will not have salinity levels which would cause impacts to surrounding environments.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	
Impact uncertainty – justification	Not applicable – not considered further	
Impact sensitivity	Not applicable – not considered further	

SW10	
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW11		
During operations, the release of chemicals or hydrocarbons used in SRE Project operations, results in impacts to the downstream environment, impacting the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE project activities	Chemicals and hydrocarbons will be required during operations of the SRE Project. Transport and storage will be undertaken in line with relevant Australian Standards AS 1940, AS 1894, and EPA Guidelines. However, there is potential for unplanned chemical or hydrocarbon release as a result of management, storage, and transportation activities.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	Bunding for chemicals and hydrocarbon storages will be provided in accordance with the provisions associated with the relevant Australian Standards AS 1940, AS 1894, EPA (SA) Bunding and spill management guidelines (2016)	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas to surface waters may impact the health and safety of the local community	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Incomplete linkage	
Linkage justification	Contaminant sources will be bunded to appropriate guidelines and stored away from stormwater flow paths. Runoff will be captured within a stormwater containment system which will not discharge to the environment.	
Severity ranking	Not applicable – not considered further	
Impact significance	Not applicable – not considered further	
Impact uncertainty (Assessment confidence)	Not applicable – not considered further	

SW11	
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW12		
During construction, the release of chemicals or hydrocarbons used in SRE Project operations, results in impacts to the downstream environment, impacting flora and vegetation		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	Chemicals and hydrocarbons will be required during operations of the SRE Project. Transport and storage will be undertaken in line with relevant Australian Standards AS 1940, AS 1894, and EPA Guidelines. However, there is potential for unplanned chemical or hydrocarbon release as a result of management, storage, and transportation activities.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Bunding for chemicals and hydrocarbon storages will be provided in accordance with the provisions associated with the relevant Australian Standards AS 1940, AS 1894, EPA (SA) Bunding and spill management guidelines (2016)	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		

SW12	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.
Severity ranking	Level 2
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	• All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	Standard construction chemical and fuel management measures have been shown to be effective when implemented appropriately.

SW13		
During construction, the release of chemicals or hydrocarbons used in SRE Project operations, results in impacts to the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	Chemicals and hydrocarbons will be required during operations of the SRE Project. Transport and storage will be undertaken in line with relevant Australian Standards AS 1940, AS 1894, and EPA Guidelines. However, there is potential for unplanned chemical or hydrocarbon release as a result of management, storage, and transportation activities.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.

SW13		
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Bunding for chemicals and hydrocarbon storages will be provided in accordance with the provisions associated with the relevant Australian Standards AS 1940, AS 1894, EPA (SA) Bunding and spill management guidelines (2016)	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 2	
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Impact sensitivity	Low	
Impact sensitivity – justification	Low potential for variability in impact	
Key control measures	• All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented	
Control measure uncertainty	Standard construction chemical and fuel management measures have been shown to be effective when implemented appropriately.	

SW14		
During construction, the release of chemicals or hydrocarbons used in SRE Project operations, results in impacts to the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Construction	
Source	SRE project activities	Chemicals and hydrocarbons will be required during operations of the SRE Project. Transport and storage will be undertaken in line with relevant Australian Standards AS 1940, AS 1894, and EPA Guidelines. However, there is potential for unplanned chemical or hydrocarbon release as a result of management, storage, and transportation activities.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Bunding for chemicals and hydrocarbon storages will be provided in accordance with the provisions associated with the relevant Australian Standards AS 1940, AS 1894, EPA (SA) Bunding and spill management guidelines (2016)	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		

SW14	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by the release of chemicals or hydrocarbons as a result of project activities.
Severity ranking	Level 2
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	• All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	Standard construction chemical and fuel management measures have been shown to be effective when implemented appropriately.

SW15		
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 WWTPs, results in impacts to the downstream environment, impacting the health and safety of the local community		
Project phase (when impact will occur)	Operations	
Source	SRE project activities	During operations, incorrect management of waste material causing the release of chemicals or hydrocarbons (including metals mobilised via acid rock drainage from stockpiles and/ or the TSF or effluent release from WWTP) into the surrounding environment
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Local community (health and safety)	The health and safety of residents and workers who live and occupy the area. The closest townships to the Olympic Dam Operation include Olympic Dam Village (approximately 3.5 km), Roxby Downs (approximately 10 km), Andamooka (approximately 30 km), and Woomera (approximately 80 km). According to the Australian Bureau of Statistics, 2021 census data outlines the population size for Olympic Dam is 308 people, Roxby Downs 3,976 people, Andamooka 262 people, and Woomera 132 people respectively. In addition, nearby pastoral stations hold varying numbers of residents/ workers which fluctuate throughout the year, these include Roxby Downs Station, Andamooka Station, and Purple Downs.
Fundamental design controls (elimination, substitution or engineering)	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas to surface waters may impact the health and safety of the local community	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water	
Legislative Requirements		

SW15	
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Incomplete linkage
Linkage justification	Contaminant sources will be bunded to appropriate guidelines and stored away from stormwater flow paths. Runoff will be captured within a stormwater containment system which will not discharge to the environment.
Severity ranking	Not applicable – not considered further
Impact significance	Not applicable – not considered further
Impact uncertainty (Assessment confidence)	Not applicable – not considered further
Impact uncertainty – justification	Not applicable – not considered further
Impact sensitivity	Not applicable – not considered further
Impact sensitivity – justification	Not applicable – not considered further
Key control measures	Not applicable – not considered further
Control measure uncertainty	Not applicable – not considered further

SW16		
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 WWTPs, results in impacts to the downstream environment, impacting flora and vegetation		
Project phase (when impact will occur)	Operations	
Source	SRE project activities	During operations, incorrect management of waste material causing the release of chemicals or hydrocarbons (including metals mobilised via acid rock drainage from stockpiles and/ or the TSF or effluent release from WWTP) into the surrounding environment
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.

SW16		
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.	
Severity ranking	Level 2	
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	

SW16	
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	Standard chemical and fuel management measures have been shown to be effective when implemented appropriately.

SW17		
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 WWTPs, results in impacts to the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Operations	
Source	Closed infrastructure	During operations, incorrect management of waste material causing the release of chemicals or hydrocarbons (including metals mobilised via acid rock drainage from stockpiles and/ or the TSF or effluent release from WWTP) into the surrounding environment
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		

SW17	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species.
Severity ranking	Level 2
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	Standard chemical and fuel management measures have been shown to be effective when implemented appropriately.

SW18		
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 WWTPs, results in impacts to the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Operations	
Source	Closed infrastructure	During operations, incorrect management of waste material causing the release of chemicals or hydrocarbons (including metals mobilised via acid rock drainage from stockpiles and/ or the TSF or effluent release from WWTP) into the surrounding environment
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.

SW18		
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	The release of chemicals and/or hydrocarbons beyond containment areas may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	Whilst not planned, spillage or leakage of material storage vessels may occur, and although the volumes are likely to be sufficiently low, there is the potential that these spilled materials may be transported to surface water drainages during subsequent rainfall events, the impacts of which could be a reduction in native vegetation and habitat condition, and therefore subsequently to the abundance (and potentially local diversity) of flora and fauna species. Although EPBC Act-listed threatened flora species are considered unlikely to occur in the SRE Project Area, one EPBC Act-listed fauna species is known to occur, and several State threatened species are considered likely to, or to possibly occur in the Project Area, and may therefore potentially be impacted by the release of chemicals or hydrocarbons as a result of project activities.	
Severity ranking	Level 2	

SW18	
Impact significance	Not Significant - Should a failure of a primary chemical or hydrocarbon storage vessel occur it is expected it would occur within a highly localised area and would not be significant to impact the soil quality long-term or negatively impact the abundance or diversity of native vegetation or fauna. Existing fuel and chemical storage and spill mitigation and management practices for Olympic Dam operations would be extended to SRE Project activities.
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	There are established requirements for hydrocarbon and chemical storage, handling, management and containment associated with the relevant Australian Standards AS1940, AS1894, EPA (SA) Guidelines (2016) and BHP practices.
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact
Key control measures	• Ensure hydrocarbon materials are securely captured within designed drains (i.e. oily water separators) within workshop areas • All hydrocarbon and chemical storage locations and stockpiles would be bunded (includes temporary storage) and located away from stormwater flow paths in accordance with relevant Australian Standards • All refuelling locations would be bunded • BHP's fuel and chemical spills management procedure would be implemented
Control measure uncertainty	Standard chemical and fuel management measures have been shown to be effective when implemented appropriately.

SW19		
Erosion of closed structures and rehabilitated areas results in the sedimentation of the downstream environment, impacting flora and vegetation		
Project phase (when impact will occur)	Closure	
Source	Closed infrastructure	Rainfall runoff at the site is low throughout the year, with no clear seasonal pattern. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Flora and vegetation	Extensive survey efforts have been undertaken for the region dating back to studies that supported the Olympic Dam Expansion Draft EIS (2009). Based on this and recent studies, flora and vegetation can be summarised as: • There are five broad vegetation communities and unvegetated claypans, represented by ten vegetation associations for the SRE Project. Additionally, there are five broad vegetation communities represented by six vegetation associations for the EIGR Areas. • PMST outputs identified two EPBC Act threatened flora species, being *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood). Yet considering suitable habitat conditions, nearest historic records, and that both species have not previously been identified in baseline or vegetation surveys, they are both considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • The BDBSA has identified 10 NPW Act-listed flora species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea). • BDBSA extract for the SRE Study Area has identified 20 weed species with national and/or state weed status as potentially occurring. Monitoring during FY23 identified seven pest plant species declared under the LSA Act in the Olympic Dam area of influence. None of these species have been detected during recent survey efforts yet are likely present. There are also records for non-declared weeds in the SRE Project Area and an additional 49 species recorded across Olympic Dam in the BHP Pest Database. Additionally, there are three non-declared weeds in the EIGR Areas.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	

SW19	
Preliminary SPR linkage status	Uncertain linkage
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	While not planned, sediment-laden run-off from areas where structures have been removed and cleared land rehabilitated may occur as a result of SRE Project activities, which may impact adjacent vegetation, and habitat for common flora and fauna species, as well as for threatened species which have been determined to be potentially present.
Severity ranking	Level 2
Impact significance	Not Significant - Rehabilitation of the SRE Project Area is expected to result in localised and minor changes to existing surface water catchments due to the absence of significant surface water features
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact. Runoff velocities are low, and the landscape segmented into small swales. As parts of the site are closed and rehabilitated, these characteristics will mean that any potential landform erosion risk will be negligible/isolated.
Key control measures	Erosion and sediment control will be incorporated into closure planning.
Control measure uncertainty	Standard sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW20		
Erosion of closed structures and rehabilitated areas results in the sedimentation of the downstream environment, impacting fauna and habitat		
Project phase (when impact will occur)	Closure	
Source	Closed infrastructure	Rainfall runoff at the site is low throughout the year, with no clear seasonal pattern. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	Fauna and habitat	The Gawler bioregion is a diverse area supporting native and pest species adapted to arid conditions. The changing sub-environments, such as acacia woodlands, chenopod shrublands, drainage lines, cracking clays, and intact understory and leaf litter/wood debris supports a range of bush birds, mammal, reptile and amphibian species. Introduced species including *Capra hircus* (goat), *Vulpes vulpes* (fox), *Oryctolagus cuniculus* (rabbit), *Canis lupus familiaris* (wild dog), *Felis catus* (feral cat), *Sturnus vulgaris* (starling), and *Camelus dormedarius* (camel) pose major threats to native species through predation and competition. Fauna species present in this bioregion are subject to population boom and busts dependent on climatic conditions.
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	
Legislative Requirements		
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894	
Stakeholder Consultation		
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.	
Impact Assessment		
Confirmed SPR linkage status	Confirmed linkage	
Linkage justification	While not planned, sediment-laden run-off from areas where structures have been removed and cleared land rehabilitated may occur as a result of SRE Project activities, which may impact adjacent vegetation, and habitat for common flora and fauna species, as well as for threatened species which have been determined to be potentially present.	
Severity ranking	Level 2	
Impact significance	Not Significant - Rehabilitation of the SRE Project Area is expected to result in localised and minor changes to existing surface water catchments due to the absence of significant surface water features	
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)	

SW20	
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact. Runoff velocities are low, and the landscape segmented into small swales. As parts of the site are closed and rehabilitated, these characteristics will mean that any potential landform erosion risk will be negligible/isolated.
Key control measures	Erosion and sediment control will be incorporated into closure planning.
Control measure uncertainty	Standard sediment and erosion control measures have been shown to be effective when implemented appropriately.

SW21		
Erosion of closed structures and rehabilitated areas results in the sedimentation of the downstream environment, impacting State and Commonwealth threatened species		
Project phase (when impact will occur)	Closure	
Source	Closed infrastructure	Rainfall runoff at the site is low throughout the year, with no clear seasonal pattern. Rainfall is unpredictable and sporadic throughout the year, often occurring in intense short bursts. Average rainfall recorded at Roxby Downs (Olympic Dam Aerodrome BOM ID# 16096) record 149.2 mm/year, with the highest rainfall record of 320.2 mm/year. Flood modelling indicates for a 1% AEP storm event the proposed drainage scheme infrastructure will perform as intended, with flood depths on graded surfaces expected to be <0.1 m.
Pathway	Surface water (quality)	Within the dune environments in northern South Australia, salinity and turbidity of stormwater runoff is typically highly variable. Dust and salt can build up on the surface over time and be transported to ponds in the dune swales when rainfall runoff occurs. It is common within northern South Australia for dust and soil to contain metals, such that metals concentrations in pooled water following rain will often exceed ANZG freshwater guideline values. This is typically not a concern, as pooled stormwater runoff does not support aquatic species, and downstream environments (where they exist) are typically salt lakes, not freshwater ecosystems. As such, there is no regular water quality monitoring program for stormwater runoff within the dune swale environment surrounding Olympic Dam.
Receptor	State and Commonwealth threatened species	A number of field studies have been completed historically for Olympic Dam proving valuable understanding of State and Commonwealth listed species. To support the EIS, the PMST and BDBSA outputs outlined: Fauna species - • There are 32 threatened fauna species and seven migratory species (not also listed as threatened). Of note, two EPBC Act species not highlighted by the PMST, but have had records within the Study Area. Only of which, one has previously and currently been detected as part of surveys for the project, being the *Aphelocephala leucopsis* (Southern Whiteface). An additional four species have potential to occur, being *Pseudomys australis* (Plains Mouse), *Neophema chrysostoma* (Blue-winged Parrot), *Falco hypoleucos* (Grey Falcon), and *Apus pacificus* (Fort-tailed Swift). The remaining species are considered unlikely to occur or do not occur in the SML or EIGR Areas. • There are 24 NPW Act-listed fauna species which may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of these, seven are considered likely or possible to occur within the Project Area. These include *Ardeotis australis* (Australina Bustard), *Falco subniger* (Black Falcon), *Phaps histrionica* (Flock Bronzewing), *Hieraaetus morphnoides* (Little Eagle), *Lophochroa leadbeateri* (Major Mitchell's Cockatoo), *Falco peregrinus Macropus* (Peregrine Falcon), *Neophema splendida* (Scarlet-chested Parrot). Flora species - • Two EPBC Act threatened flora species, *Frankenia plicata* (Frankenia)*, and Pterostylis xerophila* (Desert Greenhood) have been identified via PMST outputs yet both are considered unlikely to occur. • No EPBC Act-listed TEC have been identified or are considered to potentially occur for the SRE Project, and none have been identified onsite. One TEC is considered likely to occur (in the buffer area only) for the EIGR Areas. This being the Subtropical and Temperate Coastal Saltmarsh, as outlined in the PMST output. However, considering the locality of the EIGR Areas being inland and not tidally connected in any way, it is considered this TEC will not occur. • Ten NPW Act-listed flora species have been identified that may occur within 50 km of the SML Area and 5 km of the EIGR Areas. Of those, four species are considered likely or possible to occur, being the *Frankenia cupularis* (Cupped Sea-heath), *Gratwickia monochaeta* (One-bristle Everlasting), *Santalum spicatum* (Sandalwood), and *Swainsona oligophylla* (Clay-pan Swainson-pea).
Fundamental design controls (elimination, substitution or engineering)	Fundamental design controls include: • Construction of newly developed bunding, sediment ponds and erosion protection where appropriate • No stormwater discharge points will be created by the SRE Project	
Preliminary SPR linkage status	Uncertain linkage	
Preliminary SPR linkage justification	Changes to the prevailing surface water catchments may change existing surface water quality, impacting abundance and diversity	
Work completed to assess/ confirm linkage	EIS Appendix C6 Surface water EIS Appendix D1 Ecology	

SW21	
Legislative Requirements	
Applicable regulatory requirements/ agreements	• *Landscape South Australia Act 2019* (SA) • *Environment Protection Act 1993* (SA) • *Environment Projection and Biodiversity Conservation Act 1999* (Cth) • *National Parks and Wildlife Act 1972* (SA) • *Native Vegetation Act 1991* (SA) • Native Vegetation Regulations 2003 (SA) • Policy for Significant Environmental Benefit 2020 • EPA (SA) Bunding and spill management Guidelines (2016) • Australian Standards AS 1940 and AS 1894
Stakeholder Consultation	
Outcomes of consultation under s112 of the *Planning, Development and Infrastructure Act 2016*	In accordance with Section 112 of the PDI Act, BHP will take reasonable steps to consult the relevant landowner(s). Engagement is necessary so that key stakeholder's views are respected and taken into account in the identification of potential environmental impacts, opportunities for management of those impacts, and the development of environmental outcomes which are mutually acceptable.
Impact Assessment	
Confirmed SPR linkage status	Confirmed linkage
Linkage justification	While not planned, sediment-laden run-off from areas where structures have been removed and cleared land rehabilitated may occur as a result of SRE Project activities, which may impact adjacent vegetation, and habitat for common flora and fauna species, as well as for threatened species which have been determined to be potentially present.
Severity ranking	Level 2
Impact significance	Not Significant - Rehabilitation of the SRE Project Area is expected to result in localised and minor changes to existing surface water catchments due to the absence of significant surface water features
Impact uncertainty (Assessment confidence)	Low uncertainty (high confidence)
Impact uncertainty – justification	Surface water run-off and associated erosion and sediment control can be managed across the SRE Project with robust engineering design, including mitigation structures such as the use of bunding, sediment ponds and erosion protection where appropriate
Impact sensitivity	Low
Impact sensitivity – justification	Low potential for variability in impact. Runoff velocities are low, and the landscape segmented into small swales. As parts of the site are closed and rehabilitated, these characteristics will mean that any potential landform erosion risk will be negligible/isolated.
Key control measures	Erosion and sediment control will be incorporated into closure planning.
Control measure uncertainty	Standard sediment and erosion control measures have been shown to be effective when implemented appropriately.

BHP

Appendix E3.

Risk register

SRE Project Risk Register

As part of BHP's SRE Project Sustainability in Design Report (H375231-0000-121-060-001), the sustainability in design risk register has been provided below, representing the SRE Project's risk register.

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
Risk ID	Area	Sub-area	Issue type	Title/hazard	Root cause	Impact or consequence	Severity category	MFL	Existing controls	SF*	L*	IRR*	Preventative	Mitigating	SF*	L*	RRR*
1	Infrastructure	High Voltage 132kv Supply Switchyard	Electrical energy	Operators contact with 132kV HV cable during road/ground excavations as part of standard operational maintenance activities	Highly congested utilities area underground	Operators contact HV 132KV cables resulting in High voltage electrocution	Health and safety	4	• Cable jacketing • Marker tape at half the depth • Administrative Signage of HV • Dedicated easement for HV cables	300	0.3	90	Further mechanical protection in high traffic/high density areas	None specified	300	0.3	90
				Exposure/damage to two 132kV HV cable during road/ground excavations as part of standard operational maintenance activities	132kv incomers (from Prom Hill and Pimba) Proximity to slag pit excavation	High voltage electrocution	Health and safety	4	• Buried services in designated corridors • Design criteria implemented to ensure sufficient depth, markers, and concrete protection	300	0.3	90	• Relocation of HVT - lines to East (underground) • Design separation between cables and pit • Minimise road crossings	Ensure detailed design 3D model clash detection activities are completed prior to DMC	300	0.1	30
2	Infrastructure	High Voltage 132kv Supply Switchyard	Electrical energy	Penetration of two 132KkV HV cable (active and redundant) during road/ground excavations, resulting in complete plant outage and uncontrolled stop	Single trench	Complete outage results in 1 week outage, and downtime to repair. $7.5MUSD Lost per day	Financial	3	None specified	100	0.3	30	• Cables installed in separate trenches to enable maintenance without isolating 132kV supply (OD north to OD West) • Concrete Slab as mechanical protection on top of trench	• Review spacing of cables • Earth cables at the transition yards	100	0.1	10
3	Infrastructure	High Voltage 132kv Supply Switchyard	Electrical energy	Slag pot laid down on top of HV underground cable location	Cables located 1.5m depth	Radiant heat, results in shortened life of cable, requiring earlier than expected OPEX for repair	Financial	3	None specified	100	0.3	30	• 1.5m depth • Separate slag facility from cable locations • Concrete Slab as mechanical protection	None specified	100	0.1	10
4	Infrastructure	High Voltage 132kv Supply Switchyard	Electrical energy	Corrosion/Damage to the cables	Cables installed in aggressive environment	• Fault in cables requiring significant outage time to repair (1 week) for in use cables. $7.5MUSD Lost per day	Financial	3	• Redundancy in cables • Redundancy in Conduits	100	0.1	10	• New trenches will be filled with "clean material" contaminated soils will be removed	None specified	100	0.03	3

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
						• Fault in 132kV backup power supplies to site							• Cables installed in separate trenches to enable maintenance without isolating 132kV supply (OD north to OD West)				
5	Infrastructure	High Voltage 132kv Supply Switchyard	Electrical energy	Molten metal spills onto ground above cables, Slag pot falls and spills onto road	Pits, cables are exposed or installed in Molten metal zone	Significant outage time to repair (1 week) for in use cables. $7.4M USD lost per day	Financial	3	None specified	100	0.1	10	• All pits are backfilled, as they are conduit installed • 1-1.5m depth • Pits and exposed areas will be outside earth bunds in the designated slag haul zone • Concrete Slab as mechanical protection	None specified	100	0.03	3
6	Infrastructure	Water storage and reservoirs	Engulfment	Failure of Tailing dam/levee with PAR working downstream	Construction/ maintenance activities close to the levee (works at toe of the TSF) resulting in instability and potential failure	TSF failure towards site will be catastrophic	Health and safety	4	Flood levee constructed to prevent TSF failure reaching site	300	0.03	9	Levee stability assessment to be completed and seek approval from EOR for work to be completed as part of SRE Project	None specified	300	0.03	9
7	Infrastructure	Water storage and reservoirs	Lack of access	Excessive rainfall during the construction period limiting access to work sites	Inadequate design of temporary construction works	Delay in construction period	Financial	1	• Safe systems of work (e.g., weather monitoring/ advisory notices) • PPE • Emergency response including medical treatment, escape, muster, evacuation and rescue	10	0.3	3	Adequate design of temporary works taking rainfall into consideration	None specified	10	0.3	3
8	Metallurgical plant	Smelter 2 flash furnace	Heat/cold	Loss of containment of hot gas, whilst performing Tie-ins and equipment changeout on FCF during SRE Hot shut period	• Proximity to hot metals • Hot gas • Congested areas	Severe burns to operator from contact with hot metals/gas	Health and safety	3	• Cut over strategy and sequencing of work • Minimising of Hot Shutdown works by completing them during cold shuts • Tie-ins to be completed in SCM 27 cold shut	100	0.3	30	None specified	None specified	100	0.3	30
9	Metallurgical plant	Slag handling and electric furnace	Dropped objects	Make safe demolition of electric furnace post SRE Project shut	Operating plant in conjunction with demolition activities	• Single to multiple fatalities • Damage to adjacent plant	Health and safety	4	Engagement of furnace specialist ECI to develop the demolition furnace scoping	300	0.3	90	• Additional permanent barricading and fencing required around redundant EF equipment • Factor in design impact to availability due to issues with slag mud gun and slag launder cleaning device • Review EF changes to tapholes/slag notch for previous incident and countermeasures for adopting on the FCF	Reviewed constructability sequence during SPS constructability reviews H375231-0000-400-034-0001 and ensure alignment with schedule with regards to SIMOPS and drop zones	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
													• Remediate level 5 floor where EF cans are welded to make safe and provide area for operations and maintenance • SRE operation readiness to develop maintenance procedures to ensure ongoing EF structural integrity				
10	Metallurgical plant	Flash converting furnace to blister	Dropped objects	Demolition of Steam Dryers post SRE Project shut	Operating plant in conjunction with demolition activities	• Single to multiple fatalities • Damage to adjacent plant	Health and safety	4	Engagement of furnace specialist ECI to develop the demolition furnace scoping	300	0.3	90	None specified	Reviewed constructability scoping during SPS H375231-0000-400-034-0001 constructability reviews and ensure alignment with schedule with regards to SIMOPS	300	0.1	30
11	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Dropped objects	Demolition of concentrate handling system post SRE Project shut	Operating plant in conjunction with demolition activities	• Single to multiple fatalities • Damage to adjacent plant	Health and safety	4	None specified	300	0.3	90	None specified	Demolition to be planned and executed within an access controlled zone limiting personnel exposure.	300	0.1	30
12	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Dropped objects	Demolition of EF wet gas cleaning plant post SRE Project shut	Operating plant in conjunction with demolition activities	• Single to multiple fatalities • Damage to adjacent plant	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
13	Metallurgical plant	Smelter 2 anode furnaces and copper casting	Dropped objects	Anode furnace building extension/ demolition during concurrent operations	Operating plant in conjunction with demolition activities	• Single to multiple fatalities • Damage to adjacent plant	Health and safety	4	Construction sequencing	300	0.3	90	• Engagement of experienced brownfield contractor • Develop construction plan that mitigates risk • Exclusion zone for operating personnel from construction site	None specified	300	0.1	30
14	Metallurgical plant	Smelter 2 anode furnaces and copper casting	Dropped objects	Lifting Scrap boat over operating equipment to discharge into Anode Furnace 5	Inability to choose path for scrap boat which doesn't cross existing equipment	Damage to sidewall LPG burner, and loss of containment of LPG resulting fire/explosion	Health and safety	4	Concrete roof on AF. Dedicated viewing platform for operator to monitor lift and discharge of scrap boat	300	0.1	30	None specified	None specified	300	0.1	30
15	Metallurgical plant	Smelter 2 anode furnaces and copper casting	Manual handling	Connecting the scrap boat and lifting to discharge into the anode furnace	Current system relies on manual connection if the scrap boat to cranes and up to four people to conduct the task	Injuries associated with connecting the crane hooks to the scrap boat and placing personnel	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
						near an operating furnace											
16	Metallurgical plant	Smelter 2 anode furnaces and copper casting	Human factors	Equipment difference between new AF to old AF. Existing AF rebricking occurs through end wall, whereas new AF occurs through top	New AF is different to existing anode furnace	Unfamiliarity with furnace maintenance resulting in severe injury	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
17	Metallurgical plant	Flash converting furnace to blister	Head/cold	Spillage from blister Launder from FCF passes over LPG headers	Congested area, restricts potential Launder routing	Hot metal contacts with LPG header resulting in damage, loss of containment and subsequent fire/explosion	Health and safety	4	• Concrete spill tray along the length of the launder to contain spillage and drain to AF aisle • Platform directly below the launder will be concrete. • Intermediate spill zone	300	0.1	30	None specified	Review routing of LPG pipework to minimise interaction with hot metal	300	0.1	30
18	Sitewide	Transportation and logistics	Vehicles and mobile equipment	Vehicle-vehicle collision or vehicle pedestrian collision	Mobile equipment in feed preparation plant; Slag hauler traffic movements; Lime delivery (congestion); and Cathode despatch from site (electrolytic refinery)	• Increased frequency of pedestrian-vehicle interactions across site with potential for 1 - 5 fatalities • Increased wear on not-as-frequently travelled road leading to more vehicle damage • Vehicle congestion • Equipment damage • Fugitive emission with potential environmental impact • Collision of slag haulers	Health and safety	4	• Traffic management covered by a detailed set of work instruction • Anode and cathode handling on opposite sides of the tank house, less interactions • Road from Smelter to Refinery is detached from other roads • Dedicated/ isolated slag haul road in the design • PPE • Emergency response including medical treatment and rescue	300	0.1	30	• Proposed new roads external to existing site roads which lessen on-site operational traffic • Inclusion of waiting bays in layout	• Updated traffic management plan • Review and update traffic management plan and design based on intermodal vehicle updates • Designated exclusion zones for unloading	300	0.1	30
19	Sitewide	Sitewide	Fire and explosion	Release of combustible or flammable materials with potential for fire event	Inadequate coverage of the existing fire safety system with potential for escalation	Fire and/or explosion event with potential for 1 - 5 fatalities	Health and safety	4	Fire safety study outlines preliminary identification of risk areas	300	0.1	30	Design of combustible or flammable materials storage facilities (e.g., plant layout and segregation of storage, material selection and corrosion allowance, ventilation system, basic control system to control and monitor upset conditions and etc.) Ref: Existing OD BowTie ODS-2 [HOLD 3]: • Pressure and inventory management (e.g., level indication and monitoring)	Ref: Existing OD BowTie ODS-2 [HOLD 3]: • Bund to contain release • Ignition control • Gas detection or operator discovery and PPE	300	0.03	9

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
													• Design integrity (e.g., plant layout and segregation of storage, material selection and corrosion allowance, flange guard boots etc.) • Third party governance on storage tanker(s) • Integrity management - plan, inspect, assess, repair or replace.	• Fire detection and suppression/ manual firewater application where necessary • Emergency response including firefighting, medical treatment, escape, muster, evacuation and rescue			
20	Sitewide	Sitewide	Other chemical	Presence of hazardous substance	Presence of hazardous substances and associated exposure risks across site	Exposure to hazardous substances with potential for 1 - 5 fatalities	Health and safety	4		300	0.1	30	Ref: Existing OD BowTie ODS-3 [HOLD 3]: • Review effected areas of project scope against MHF SRE Report and Process Description and CP as part of 80% SPS Design Review checklist • Design integrity (e.g., plant layout and segregation of storage and storage container(s)/ box(es) designed to standard / code etc.) • Third party governance on storage and handling procedures • Integrity management - plan, inspect, assess, repair or replace	Optimised plant layout. Ref: Existing OD BowTie ODS-3 [HOLD 3]: • Bund to contain release • Ignition control • Safety Shower and eye wash stations • Emergency response including firefighting, medical treatment, escape, muster, evacuation and rescue	300	0.03	9
21	Sitewide	Sitewide	Noise	Excessive Noise	• Noise from mobile equipment with potential for hearing loss • Noise from stacker/ reclaimer • Noise from Loesche mill with potential for hearing loss • Noise emission from rock breaking	Potential hearing loss	Health and safety	3	PPE (i.e., ear plugs)	100	0.1	10	As per Global SiD Design Recommendations Section 5.3 [HOLD 3]: • Limit the cumulative noise emissions to 80 dB(A) within 1 m in workplaces. Exposure to noise should not exceed 140dB (lin) within 1 m	None specified	100	0.1	10

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
													• For any noise above 80 dB(A), an attempt to reduce exposure to the lowest practicable level should be achieved by using the control hierarchy; otherwise, a deviation form is required: eliminate noise at the source, select and use low noise emission equipment accounting for multiple proximity, control noise along the transmission path with enclosures, mufflers, and techniques such as acoustically sealed cabins. Where noise levels cannot be reduced through reasonably practical means as defined through a risk-based approach, incorporate visual signage in the design to delineate the minimum PPE requirements				
22	Metallurgical plant	Smelter 3 flash furnace	Fire and explosion	Fire	2.18 - Inadequate storage of flammable material	Potential fires from incorrect material storage	Health and safety	3	None specified	100	0.1	10	Design of storage facilities Ref: Existing OD BowTie ODS-2 [HOLD 3]: • Safety systems of work (e.g., procedural control for handling flammable material) • Integrity management - plan, inspect, assess, repair or replace	Fire protection report H375231-0000-120-066-0001 outlines flammable scenarios	100	0.03	3
23	Metallurgical plant	Smelter 3 slag handling	Loss of production	Interaction of flag haulers vs slag haulers along road	Slag hauler in flash smelting furnace slag handling facility	Potential production interruption (to wait for vehicles to pass before proceeding) with financial impact	Financial	2	Traffic management plan	30	0.3	9	Dedicated lane per direction, isolated slag haul road in the design	Updated traffic management plan	30	0.1	3
24	Metallurgical plant	Smelter 3 slag handling	Loss of integrity of equipment	Damage to FSF flash handling equipment	Hot slag poured into pits in flash smelting furnace slag handling facility.	Potential equipment damage to adjacent facilities	Financial	2	Safe systems of work (e.g., hot slag handling procedure)	30	0.3	9	Design integrity (e.g., plant layout and separation distance between pits and other plant equipment)	None specified	30	0.1	3

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
25	Metallurgical plant	Smelter 2 flash furnace	Loss of integrity of equipment	Quicklime material hangup in bin	4.01 - Repurposing of current silica day bin for quicklime in flash converting furnace area	Different flow behaviour may cause hang-ups, quicklime is reactive	Financial	2	Per existing controls for handling quicklime in acid plant	30	0.3	9	Design integrity based on outcomes of test work	None specified	30	0.1	3
26	Metallurgical plant	Smelter 3 matte handling	Loss of integrity of equipment	Granulated matte hangup in bin	4.02 - Repurposing of current concentrate day bin for granulated matte	Different flow behaviour may cause hang-ups	Financial	2	None specified	30	0.3	9	Design integrity based on outcomes of test work	None specified	30	0.1	3
27	Metallurgical plant	Smelter 2 flash furnace	Manual handling	Inability to access blister launder for cleaning	4.05 - Flash converting furnace slag bypass launder and blister launder not accessible by machine for cleaning	Potential personnel injury during cleaning	Health and safety	2	• Safe systems of work (e.g., cleaning procedure) • PPE • Safety shower and eye wash station • Emergency response including medical treatment	30	1	30	Design integrity (e.g., adequate access for machine cleaning)	None specified	30	1	30
28	Metallurgical plant	Anode furnaces and casting wheels	Loss of production	Supplying AF	• 5.01 - Skimming Anode Furnaces and sampling • 5.13 - Mobile equipment for Anode Furnace slag handling	• Access to scrap charging is limited in designed layout • Original Equipment Manufacturer standard layout is staggered to facilitate better scrap charging access, contrary to design	Financial	1	None specified	10	0.3	3	Design integrity (e.g., adequate access for removal of slag)	None specified	10	0.1	1
29	Metallurgical plant	Utilities and services	Vehicle and mobile equipment	Increased traffic movements with anode haulage	5.34 - Forklift and anode hauler (increased frequency of vehicular movements)	Potential equipment damage	Financial	1	• Traffic management covered by a detailed set of work instruction • PPE • Emergency response including medical treatment and rescue	10	0.3	3	Use of transporter (e.g., bespoke trailer) which will require less trips	None specified	10	0.1	1
30	Sitewide	Sitewide	Electrical	Unknown underground services	8.44 - Unknown underground services (power, fuel, sewer etc.)	Potential for injury/fatality due to impact on unknown underground services (power, fuel, sewer etc.)	Health and safety	4	• PPE • Emergency response including medical treatment and rescue	300	0.1	30	Safe system of work (e.g., permit to work, risk assessment prior excavation work including review and identify location of underground infrastructure)	None specified	300	0.1	30
31	Metallurgical plant	HV power supply	Electrical	Entanglement in overhead powerlines	8.43 - Overhead powerlines	Potential for vehicle interactions with overhead powerlines leading to personnel injury/fatality	Health and safety	4	• Maintain clearance • PPE • Emergency response including medical treatment and rescue	300	0.1	30	Design integrity of plant layout (i.e., easements and clearance for high voltage infrastructure including overhead power lines)	None specified	300	0.1	30
32	Metallurgical plant	Site Development	Lack of access	Localised flooding during construction	8.45 - Potential for localised flooding due to construction activities on existing storm water pond.	Localised flooding leading to personnel injury, equipment damage, environmental impacts and interruption to site activities	Health and safety	3	• Safe systems of work (e.g., weather monitoring/ advisory notices) • PPE • Emergency response including medical treatment, escape, muster, evacuation and rescue	100	0.1	10	Construction execution strategy which will install new drainage infrastructure prior other construction activities		100	0.1	10
33	Metallurgical plant	Sitewide	Vehicles and mobile equipment	High traffic flow resulting in vehicle-vehicle collision	4.23 – High traffic flow – operational and construction traffic impacting on	Vehicle/pedestrian/ workforce interaction with potential for personnel injury/fatality	Health and safety	4	• Concrete barriers in place • Controlled access roads (potential for shared use)	300	0.1	30	Construction execution strategy including designated laydown areas and methods to	New traffic management plant	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
					pedestrians/ workforce in flash converting furnace area				• Isolated construction boundaries/ access restrictions • Construction traffic management covered by a detailed set of work instruction • Emergency response including medical treatment, evacuation and rescue				transport materials and equipment				
34	Metallurgical plant	Smelter 3 flash furnace	Chemicals	Loss of containment – sulphur dioxide rich offgas	Smelter operational hazards (normal operations)	• Potential for personnel injury • Plant and equipment damage	Health and safety	3	• Safe systems of work (e.g., permit to work) • Experienced OD contractors familiar with site hazards • Isolated construction boundaries/ access restrictions • Emergency response including medical treatment, evacuation and rescue	100	0.3	30	New construction philosophy with minimised site-based work	New traffic management plant	100	0.1	10
35	Metallurgical plant	Smelter 2 flash furnace	Chemicals	Loss of containment – sulphur dioxide rich offgas during construction activities	Smelter operational hazards (process upsets) with potential for personnel injury, equipment damage, risk to operation from construction personnel damaging existing services/ equipment	• Potential for personnel injury • Plant and equipment damage • Risk to operation from construction personnel damaging existing services/equipment	Health and safety	3	• Safe systems of work (e.g., permit to work) • Experienced OD contractors familiar with site hazards • As-building, identification of existing services that could be impacted by construction activities • Isolated construction boundaries/ access restrictions • Emergency response including medical treatment, evacuation and rescue	100	0.3	30	New demolition strategy	None specified	100	0.3	30
36	Metallurgical plant	Electrolytic refining	Manual handling	Manual handling injury during blank maintenance handling	Blank maintenance and electrolytic refining	Ergonomic strains on workers with potential for personnel injury/fatality	Health and safety	3	None specified	100	0.3	30	Design integrity (e.g. machine assisted equipment for maintenance activities to minimise personnel involvement) Ref: Existing BHP OD BowTie ER-3 [HOLD 3]: Safe systems of work (e.g., permit to work and isolation procedures, specific tools for maintenance	Ref: Existing BHP OD BowTie ER-3 [HOLD 3]: • PPE • Emergency response including medical treatment and rescue	100	0.1	10

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
37	Metallurgical plant	Slimes treatment	Chemicals	Operators exposed to Tellurium during handling of new Cu Telluride product	New Cu Telleride product, requires handling (possible storage) at slime treatment facility	• Additional manual handling/operator intervention required to move product resulting in new pinch points or Strains (depending on how product is stored and moved) • Environmental concerns include potential contamination of water and soil	Health and safety	3	None specified	100	0.3	30	None specified	• Provision of hazard awareness, training, emergency response including medical treatment, escape, muster, evacuation and rescue associated to Cu. Telluride product hazards. • PPE - gloves, respirator	100	0.3	30
38	Metallurgical plant	Slimes treatment	Chemicals	Other chemical – cyanide	13.00 - Increased quantity of Cyanide in Precious Metal Recovery area cyanide and acid mixing results in formation of HCN	• Toxic exposure with potential for injury/fatality • Environmental impact	Health and safety	4	• Aciding tank positioned outdoors • Separation of acid and sodium cyanide lines • Separation of cyanide and acid bunds	300	0.1	30	Ref: Existing BHP OD BowTie GR-7 [HOLD 3]: • Design integrity (e.g., area segregation, equipment design, redundancy etc.) • Basic indication, monitoring and control system • Instrumented protective functions • Safe systems of work (e.g., permit to work, procedural controls and instructions)	Ref: Existing BHP OD BowTie GR-7 [HOLD 3]: • Operators alarms and response • Secondary containment (e.g., bunding) • Exclusion zones, guarding and barricading • PPE • Emergency response including clean-up of spills, medical treatment, escape, muster, evacuation and rescue	300	0.1	30
39	Metallurgical plant	Smelter 3 matte handling	• Acceleration • Deceleration • Shock (vehicular energy)	Interaction of heavy vehicle with plant personnel (FEL for delivery to matte reclaim hopper)	None specified	HC contacts operator resulting in single fatality of operator	Health and safety	4	None specified	300	0.3	90	None specified	Segregation of vehicles and separation of pedestrians (mechanical protection to be included) needs to be considered as per the OD bowtie	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
40	Metallurgical plant	Smelter 3 Matte Handling	Chemical Energy	Flammability of matte dust	New product at OD	Potential fire/explosion within baghouse or mill and subsequent material handling	Health and safety	4	• Product is a low risk • Using steam heating to limit heat input (temperature <185degC)	300	0.03	9	None specified	None specified	300	0.03	9
41	Metallurgical plant	Smelter 3 matte handling	Dust	Dust exposure to operators	Dry heavy metal product due to drying out during shutdowns and/or fume emissions from downstream storage bins Matte can dry out on outdoor pad	Impact to health and hygiene due to silica fumes/heavy metal dust	Health and safety	3	• Matte grinding baghouse and enclosed pneumatic conveyors • Matte stored within shed	100	0.1	10	None specified	None specified	100	0.1	10
42	Metallurgical plant	Smelter 3 matte handling	Contamination	Blockage of equipment	Offspec granulation of matte (varying PSD) resulting in different bulk density of matte	Material hangup/cement-up, blockage of chutes and equipment resulting in operator injury from manual handling.	Health and safety	2	None specified	30	1	30	None specified	None specified	30	1	30
43	Metallurgical plant	Smelter 3 matte handling	Contamination	Blockage of pneumatic conveyors	• Excessive water addition to matte product due to dust suppression • Wet plant air for pneumatic conveying	• Material hangup/cement-up, blockage of chutes and equipment resulting in operator injury from manual handling • Inability to pneumatically convey leading to downtime to clean out	Financial	2	• Dry classification of matte in losche mill • Downstream system is a sealed pneumatic based system	30	1	30	Ensure conveying air is sufficiently dry	None specified	30	0.1	3
44	Metallurgical plant	Smelter 3 matte handling	Contamination	Matte grinding mill offgas stack emissions	Hole in baghouse	Dust emissions sent through offgas stack resulting in exceedance/non-conformance of environmental/regulatory requirements	Regulation	2	None specified	30	1	30	None specified	None specified	30	1	30
45	Metallurgical plant	Smelter 3 matte handling	Stored energy	Engulfment of matte stockpile	• Reclaimer out of service resulting in use of FEL inside storage shed to manually reclaim • Pedestrian access for maintenance activities	• Stockpile slumps onto FEL resulting in single fatality • Single fatality from stockpile engulfment of pedestrian	Health and safety	4	None specified	300	0.1	30	None specified	None specified	300	0.1	30
46	Metallurgical plant	Smelter 3 matte handling	Stored energy	Material fall off hangup from conveyors, stackers, bins	Moisture Conveyor spillage and subsequent hangup	Large lumps/chunks of material falling from height resulting in fatality	Health and safety	4	None specified	300	0.3	90	Physical barriers around stockpile for pedestrian access/entry	None specified	300	0.1	30
47	Metallurgical plant	Smelter 3 matte handling	Material deformation	Corrosion impacting reliability of equipment	Residual moisture in matte resulting in acidic conditions	Corrosion of day bins require premature maintenance activities	Financial	2	None specified	30	0.3	9	None specified	None specified	30	0.3	9
48	Metallurgical plant	Smelter 3 matte handling	Stored energy	Uncontrolled movement of reclaimer	Accessing and egressing moving reclaimer	Operator caught between/crushed causing injury	Health and safety	2	Slow moving piece of equipment in normal operation	30	0.1	3	None specified	None specified	30	0.1	3

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
49	Metallurgical plant	Matt handling	Confined space	Blocked/insufficient emergency egress	Matte reclaim transfer conveyor within a tunnel	Fatality of operator during egress	Health and safety	4	None specified	300	0.3	90	None specified	None specified	300	0.3	90
50	Metallurgical plant	Smelter 3 Matte Handling	Heat/cold	Hotter than expected matte on matte belt conveyor (above design temperature of belt)	Upset condition in the granulation system	Conveyor belt fire resulting in equipment damage and downtime to repair	Financial	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
51	Metallurgical plant	Smelter 3 Slag Handling	Heat/cold	Ejection of slag bay areas during high rainfall event	Insufficient drainage of water during wet weather event	Fatality of operator/ truck driver waiting on weighbridge from contact with hot material	Health and safety	4	None specified	300	0.3	90	Ensure wet weather pits are not located in close proximity of trafficable areas.	None specified	300	0.1	30
52	Metallurgical plant	Smelter 2 flash furnace	Human factors	Location of new maintenance bay for existing mud guns is constrained	Proximity to tapping box (uncovered) and stilling box vent	Injury/burns to personnel from contact with hot surfaces/flames	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
53	Metallurgical plant	Smelter 2 flash furnace	Human factors	Manual clearing of the bypass launder (currently bypass becoming the continuous launder)	No slag launder cleaning equipment on the bypass launder currently	Injury to personnel from manually cleaning the bypass slag launder	Health and safety	2	None specified	30	3	90	Slag launder cleaning devices to be implemented	None specified	30	1	30
54	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Chemical energy	Blockage of quicklime pipes and day bin	Moisture to quicklime via plant air	Production impact (2 days to clean route)	Financial	2	None specified	30	1	30	None specified	None specified	30	1	30
55	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Chemical energy	Exposure of personnel to quicklime	Spillage or maintenance of quicklime silos	Potential chemical burns to eyes or skin	Health and safety	3	Enclosed in a pneumatic conveying system Not a new chemical to OD	100	0.1	10	None specified	None specified	100	0.1	10
56	Metallurgical plant	Flash converting furnace to blister	Chemical energy	Uncontrolled ignition of LPG within blister/anode launders	Burner flame out during startup resulting in buildup of LPG in the launders that meets an ignition source (anode furnace)	Explosion up back launder resulting in permanent injury	Health and safety	3	None specified	100	1	100	New BMS will monitor flame	None specified	100	0.3	30
57	Metallurgical plant	Smelter 2 anode furnaces and copper casting	Mechanical/kinetic energy	Uncontrolled movement of the robot arm	Change in technology for casting wheel	Impact or collision with operator resulting in burns or other equipment	Health and safety	3	• central elevated control room • exclusion zone around casting wheel • proven technologies/functionalities	100	0.1	10	None specified	None specified	100	0.1	10
58	Metallurgical plant	Smelter 2 anode furnace and copper casting	Chemical energy	Uncontrolled ignition of LPG within anode furnace during a cold start	Burner flame out during startup resulting in buildup of LPG that meets an ignition source	Explosion resulting in fatality	Health and safety	4	None specified	300	0.1	30	New central BMS for all furnaces to monitor flame	None specified	300	0.1	30
59	Metallurgical plant	Concentrator 3 flotation,	Manual handling	Simultaneous discharge of filter cake onto belt	Operators will be operating larox filters occurring within a more	Manual handling injuries	Health and safety	2	None specified	30	1	30	None specified	None specified	30	1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
		thickening and regrind		requiring operator intervention	congested area and adjacent to operating filters												
60	Metallurgical plant	Slimes treatment	Chemical energy	Loss of Containment - Cyanide mixed with HCl	Residual Cyanide in truck may contact with HCl (vehicle-vehicle collision or vehicle/equipment)	Production of HCN (toxic) resulting in 2 fatalities	Health and safety	4	• Cyanide detection and alarming • Cyanide unloading is fenced and barricaded	300	0.1	30	• Confirm vehicle movement and interactions between HCL and Cyanide trucks in vicinity • Swept path has been confirmed for HCN delivery truck to safely complete on internal delivery road	None specified	300	0.1	30
61	Metallurgical plant	Slimes treatment	Chemical energy	Increased exposure to Ferrous Sulphate, Zinc, Silica, Soda Ash, Borax, Sodium Nitrate, Sodium Chloride, Sodium Sulphide	Increased manual handling of Ferrous Sulphate, Zinc, Silica, Soda Ash, Borax, Sodium Nitrate, Sodium Chloride, Sodium Sulphide due to increased throughput and frequency of dosing	Operator injury/back strain/health and hygiene exposure resulting in long term illness	Health and safety	3	None specified	100	0.3	30	Review current manual handling procedures including current risk rating and how this increased frequency will effect	Follow the correct procedures: • Peroxide Unloading (44479) • Ferrous Sulphate Unloading (18072) • Zinc Unloading (37453745) • Borax Unloading (3741) • Silica Unloading (69699) • Salt (3906) • Sodium Sulphide (3907) • Cyanide Sparging (012968652)	100	0.3	30
62	Metallurgical plant	Slimes treatment	Chemical energy	Increased exposure to HCN	Reduced separation from the cyanide sparge to the entry of the PMR	Potential single fatality from increased exposure	Health and safety	4	• Cyanide sparge system is located at A similar distance from entry point as existing system • Cyanide sparge area is fenced off to restrict access	300	0.1	30	None specified	None specified	300	0.1	30
64	Metallurgical plant	Slimes treatment	Chemical energy	Material handling of acided precipitate is corrosive and of high value material	Acided filter cake from new and existing filters will be loaded into the kibble via a combination of Pallet Jack and Crane and manual handling activities increasing the risk of spillage due to the increased frequencies	• Potential acidic exposure to operators resulting in burns • Manual handling of spillage resulting in back strain • Production impact from double handling/ rehandling/ downtime	Health and safety	2	None specified	30	0.3	9	• Review vehicle movements to reduce risk of spillage • Update of work instructions relating to vehicle movement and clean up procedures.	Review kibble support arrangement	30	0.3	9

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
65	Metallurgical plant	Slimes treatment	Gravitational/object energy	Dropped anodes or dropped objects from crane	Larger size anodes and new crane in new silver cell facility	Dropped anode./objects from crane moving between casting area to cells, resulting in fatality of operators	Health and safety	4	None specified	300	0.1	30	• Review lifting zones and update design with exclusion zones for activity • Review requirement for hard barricading for activity • Confirm entry/exit areas are not within crane operating envelopes	None specified	300	0.1	30
66	Metallurgical plant	Slimes treatment	Chemical energy	Emissions exceeding air quality assessment limit	Scrubber failure /underperformance	Regulatory non conformance	Regulation	3	None specified	100	0.3	30	• Confirm capacity of existing scrubber is suitable for complaints based on new loading • Scrubber will be designed to compliant to South Australia Environmental Protection (Air Quality) Policy 2016	Update of maintenance and inspection procedures of scrubber system	100	0.3	30
67	Metallurgical plant	Slimes treatment	Chemical energy	NOX emissions from silver cell facility	Upset condition of the silver cell	NOX exposure to operators resulting in fatality	Health and safety	4	• NOX scrubber • Operator wears personal gas detector	300	0.1	30	New Silver Refining Cell design (Mobius cells) will add hydrogen peroxide to ensure no NOx gases are generated	None specified	300	0.1	30
68	Metallurgical plant	Slimes treatment	Chemical energy	Increased manual handling of gold and silver bullion	Increased production	Operator injury/back strain	Health and safety	2	None specified	30	1	30	None specified	None specified	30	1	30
69	Metallurgical plant	Slimes treatment	Chemical energy	Heat/stress on operators and chemical exposure	Poor ventilation within the PMR extension	Long term health issues	Health and safety	3	Installation of new HVAC / A/C	100	0.1	10	Complete review of ventilation assessment to capture requirements in HVAC specification.	None specified	100	0.03	3
70	Metallurgical plant	Electrolytic refining	Mechanical/kinetic energy	Interactions between mechanised equipment with personnel at Cathode Blank Maintenance	Poor separation of machine and personnel	Personnel contacted with mechanical device resulting in crushed injuries, potential fatality	Health and safety	4	Demarcated exclusion zone	300	0.3	90	Exclusion zones with fencing or guarding. Suction cup on lifting devices with hooks. Lifting operation is a manually assisted task not automated. Vendor CSM package typically includes light curtains and doors being linked to an emergency stop	None specified	300	0.1	30
71	Metallurgical plant	Smelter 3 gas and dust handling	Chemical energy	Exposure of SO2 to personnel	Upset conditions FSF Effluent Overflows will contain unstripped weak acid	SO2 exposure results in long term health illness.	Health and safety	4	Personal gas monitoring.	300	0.1	30	None specified	None specified	300	0.1	30
72	Metallurgical plant	Smelter 3 utilities	Contamination	Cooling tower water contamination from fugitive SO2	Proximity of cooling tower to FSF wet gas cleaning	Cooling water pH is escalated resulting in corrosion and damage to equipment with downtime to repair	Financial	2	pH monitoring	30	0.1	.	None specified	None specified	30	0.1	3

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
73	Metallurgical plant	Smelter 2 acid plant	Chemical energy	Purging acid line for maintenance activities	Length of pipe from acid plant to storage ~ 2km	Volume of acid to be drained for maintenance activities is large, resulting in contact and acid burns of operators	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
74	Metallurgical plant	Feed preparation	Dust	Dust generation during materials handling of the FCF slag feed/reverts to and from stockpile/bins	Prevailing southeast winds	• Dust exposure to operators resulting in long term health impacts (radiation exposure) • Dust emitted off site/outside site footprint resulting in non-conformance	Health and safety	4	None specified	300	0.1	30	Mill baghouse and dust collection pickup points	None specified	300	0.1	30
75	Metallurgical plant	Feed preparation	Gravitational/object energy	Oversized material falls from grizzly onto pad	Insufficient rock breaking/size reduction at the FCF slag pits	Potential fatality from large lumps falling from mobile plant onto pad	Health and safety	4	None specified	300	0.3	90	Include suitable separation (fencing) of pedestrian from bunker access	None specified	300	0.1	30
76	Metallurgical plant	Feed preparation	Contamination	Arsenic and Copper leached into the groundwater from stockpiles	Larger FCF Slag stockpile than previous	Groundwater contamination over time	Environmental	3	What existing procedures	100	0.1	10	• Drainage from the FCF Slag pad is sloped towards a new lined surface water pond for collection • Flooding analysis of 1:100 was conducted and pad elevation set to separate interaction of flood and pad drainage • Existing ground water table sits at approx 50m from ground surface, refer to geotech interpretation report PS202443-WSP-ADL-GEO-REP-004 RevA.	None specified	100	0.03	3
77	Metallurgical plant	Smelter 3 utilities	Contamination	Blockage of pneumatic conveyors	Wet plant air for pneumatic conveying	Blockage of the pneumatic lines and equipment resulting in operator injury from manual handling Inability to pneumatically convey leading to downtime to clean out	Financial	2	Downstream is sealed pneumatic based system	30	1	30	None specified	None specified	30	1	30
78	Metallurgical plant	Smelter 3 gas and dust handling	Chemical energy	Offgas stack emissions	Hole in baghouse	Dust emissions sent through offgas stack resulting in exceedance/non-conformance of environmental/regulatory requirements	Regulation	2	None specified	30	3	90	• Gas testing/maintenance (NATA accreditation) as part of standard site reporting • Broken bag detector in each compartment	None specified	30	1	30
79	Metallurgical plant	Smelter 2 feed preparation and	Vehicles and mobile equipment	Vehicle-vehicle collision near rotainers	• Mobile equipment in feed preparation plant	• Increased traffic movement • Vehicle congestion • Equipment damage	Health and safety	4	None specified	300	0.1	30	Segregation of loading areas	• Updated traffic management plan	300	0.03	9

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
		concentrate storage			• Interactions with trucks delivering rotainers and reach stacker	• Increased emission from truck movement • Fugitive emission with potential environmental impact • Collision of heavy vehicles							• Designated exclusion zones for unloading				
80	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Mechanical/kinetic energy	Engulfment from concentrate stockpile	• Reclaimer out of service resulting in use of front end loader inside storage dome/ Concentrator shed to manually reclaim • Pedestrian access for maintenance activities	• Stockpile slumps onto FEL resulting in single fatality • Single fatality from stockpile engulfment of pedestrian	Health and safety	4	None specified	300	0.1	30	None specified	None specified	300	0.1	30
81	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Mechanical/kinetic energy	Material fall off/hangup from conveyors, stackers, bins and rotainers	Moisture Conveyor spillage and subsequent hangup	Large lumps/chunks of material falling from height resulting in fatality	Health and safety	4	Rotainer liner has a radius in the corners to minimize hang ups and material left in the corners	300	0.1	30	None specified	None specified	300	0.1	30
82	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Mechanical/kinetic energy	Uncontrolled movement of radial stacker	Accessing and egressing moving stacker/reclaimer	Operator caught between/crushed causing injury	Health and safety	2	Slow moving piece of equipment in normal operation	30	0.1	3	None specified	None specified	30	0.1	3
83	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Confined space	Blocked/insufficient emergency egress on reclaim transfer conveyor	Concentrate reclaim transfer conveyor within a tunnel	Fatality of operator during egress	Health and safety	4	Secondary emergency egress from Northwest	300	0.1	30	• Restricted access controls during normal operation (SOP) • Operation of bobcat separated from pedestrian access by conveyor in middle of tunnel (procedural)	None specified	300	0.1	30
84	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Contamination	Corrosion impacting reliability of equipment	Residual moisture in concentrate and matte resulting in acidic conditions	Corrosion of day bins, equipment and structure require premature maintenance activities	Financial	2	None specified	30	0.1	3	None specified	None specified	30	0.1	3
85	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Chemical energy	Concentrate fire on stockpile in bedding plant/storage shed/concentrate feed bins	Self-heating concentrate oxidizes over time	Hot material reclaim resulting in damage to belts and equipment, and downtime to repair Sulphur Dioxide generated/emitted from hot concentrate	Health and safety	2	None specified	30	1	30	Concentrate bins have short residence time (6 hours)	Fogging sprays in bedding plant/storage shed	30	0.3	9
86	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Gravitational/object energy	Reclaiming from an active stockpile concentrate storage	Working under an operating stacker	Material impacts front end loader resulting in operator first aid requirement Material impacts front end loader resulting in damaged windscreen	Health and safety	2	Two bunkers for discharge of concentrate from conveyors.	30	0.3	9	None specified	None specified	30	0.3	9

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
87	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Weather events	High wind event blows over empty stack containers of External concentrate (Prom Hill/ Carrapeteena)	Containers to be stacked 3 in height	Toppled containers result in single fatality	Health and safety	4	None specified	300	0.3	90	• Full containers stacked 3 high and empty containers stacked 2 high in the 3D model • Operational Readiness operating procedures to document the maximum allowable container stacking height and also align with Carrapateena and Prominent Hill procedures	None specified	300	0.1	30
88	Metallurgical plant	Anode furnaces and casting wheel	Thermal energy	Molten metal spill during foundations prep and work for future AF6	Working in close proximity to an operating furnace	Molten metal spill from Anode furnace 5, while AF6 foundations are being poured resulting in fatality more than one person	Health and safety	4	None specified	300	0.1	30	"Temporary bunding to be used during construction to isolate personnel from hot metal spills Consider doing works during AF5 offline"	None specified	300	0.1	30
89	Metallurgical plant	Anode furnaces and casting wheels	Gravitational/object energy	Settlement of existing footings supporting AF5 and the casting building	Excavations for AF6 footings being in close proximity to existing footings, potentially causing undermining/subsidence	Settlement of existing footings and subsequent misalignment/damage to equipment/structures	Financial	1	The underside of the proposed AF6 footings is at the same level as existing footings, so undermining is unlikely with careful construction.	10	3	30	None specified	None specified	10	3	30
90	Metallurgical plant	Smelter 2 flash furnace	Gravitational/object energy	Damage to the FCF due to misalignment	Installation of truss to enable removal of existing column which allows access to new BTHs. The truss supporting the uptake and reaction shafts deflects, causing misalignment of the shafts relative to the settler	Reaction/uptake shaft may transfer load to the settler roof and potentially damage to one or more coolers, resulting in downtime to repair	Financial	2	Monitor truss deflections at a suitable frequency (e.g. initially monthly, extending to 6-monthly if little change, and after any significant event such as seismic) and if necessary, realign by jacking/packing	30	0.1	3	None specified	None specified	30	0.1	3
91	Metallurgical plant	Smelter 2 flash furnace	Interface/interaction	Feeders do not work requiring manual intervention	Design is based on benchmark data as no bulk flow test work has been completed	The Matte, dust do not cope with the change of duty resulting in blockages, and manual intervention and downtime to clear out. More cumulative financial impacts	Financial	2	Assessment of change performed in SPS to determine potential for upgrade in existing equipment under new duty	30	0.3	9	Source material test or supplier data for new duties and revisit design assessment to determine suitability. Upgrade equipment if risk too high	None specified	30	0.1	3
92	Metallurgical plant	Smelter 2 acid plant	Pressure	Misalignment of Dampers	New Damper fails closed/accidentally closed	Increased negative pressure through the duct resulting in failure of the duct and foreign material sucked through blower and catastrophic failure, and fatality.	Health and safety	4	None specified	300	0.3	90	Include additional mechanical relief between TP- 279 and drying tower inlet	None specified	300	0.1	30
93	Metallurgical plant	Smelter 2 acid plant	Human factors	Maintenance access required to SCM tie in valve	None specified	Fatality from fall from height to access new valve.	Health and safety	4	Existing working at heights procedures, familiar activity for maintenance with experienced maintainers	300	0.3	90	None specified	Temporary scaffold or permanent platform to be used to access	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
														for maintenance activities as per existing site procedures			
94	Metallurgical plant	Smelter 2 acid plant	Mechanical/kinetic energy	Isolation of duct	None specified	Inability to isolate AP2, resulting in additional downtime to isolate	Financial	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
95	Metallurgical plant	Smelter 2 acid plant	Interface/interaction	Control system logic AP2 vs AP3	Failure of one system	Failure of control, resulting in tripped system, loss of production and multiple days downtime to troubleshoot	Financial	2	Mechanical Safety protection	30	0.1	3	None specified	None specified	30	0.1	3
96	Metallurgical plant	Smelter 2 acid plant	Metal deformation	Duct failure following installation of new damper	Additional weight of new damper	FRP Duct failure (crack), from installation of new damper, resulting in downtime to repair 7 days	Financial	3	None specified	100	0.1	10	None specified	None specified	100	0.1	10
97	Metallurgical plant	Slimes treatment	Thermal energy	Hot metal contact between cupel furnace and liquid during concurrent operations.	Loss of containment of liquid contacts with hot metal. Filter press operation in close proximity to Cupel furnace.	Hot metal explosion resulting in single fatality.	Health and safety	4	Areas separated and new sump included in wet area to prevent hot metal contacting liquids.	300	0.1	30	Confirm hot area has sufficient bunding to capture hot metal to prevent it entering the wet area.	Review alarm settings on sump pump for HHH level.	300	0.03	9
98	Metallurgical plant	Slimes treatment	Radiation	Operators exposed to Polonium during handling of Cu Telluride product	Unknown Polonium process deportment to Cu Telluride product	• Health effects from exposure can range from acute symptoms to chronic toxicity • Environmental concerns include potential contamination of water and soil	Health and safety	4	Hygiene and procedural controls will be implemented similar to controls in handling all RN material in OD (slimes, concentrate etc).	300	0.3	90	• Confirm if material is radioactive. • Based on test results confirm if material can be sold or needs to be stored onsite similar to current radioactive storing procedure/protocols	None specified	300	0.3	90
99	Metallurgical plant	Slimes treatment	Thermal energy	Steam explosion risk by feeding wet filter cake into cupel furnace	Feeding wet filter cake to a molten bath.	• Damage to furnace and other equipment in the building • Severe risk of injury to employees in the area • Production time loss	Health and safety	4	• Procedures to ensure an empty furnace before each batch. A single batch is performed each day and therefore there is no topping off on the charge • Acided filter cake has a low moisture content (10 wt%) • Operator distancing from furnace during feeding	300	0.1	30	None specified	Confirm operator location during this operation to ensure sufficient distance away from risk	300	0.1	30
100	Metallurgical plant	Slimes treatment	Gravitational/object	Working under suspended loads	Kibble contents (acided precip and flux) are lifted into the mouth of the cupel furnace	Safety risk of load dropping onto workers nearby	Health and safety	4	Managed through existing protocols on site for working under suspended loads	300	0.1	30	• Review lifting zones and update design with exclusion zones for activity • Review requirement for hard barricading for activity • Confirm entry/exit areas are not within crane operating envelopes	None specified	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
101	Metallurgical plant	Smelter 3 feed preparation and concentrate storage	Interface/interaction	Collision between front end loader and reach stacker while existing the shed for shift change or other activities	Exit of the shed is direct on to the container pad	Vehicle-Vehicle collision resulting in fatality	Health and safety	4	Current layout of concentrate shed and rotainer operating area has increased separation distance	300	0.1	30	None specified	None specified	300	0.1	30
102	Metallurgical plant	Smelter 3 feed preparation and concentrate storage	Mechanical/kinetic energy	Rotainers collide with personnel at the unloading station	Maintenance activities in the area	Crush Injuries resulting in fatality	Health and safety	4	• Maintenance for the kamengo feeder has been mirrored to have the working area on the outside of the unloading station • Existing BHP 10 m rule	300	0.1	30	None specified	None specified	300	0.1	30
103	Metallurgical plant	Feed preparation	Material deformation	Material hardstand degradation overtime leads to unsafe operating conditions for reach stackers	• Hardstand materials is designed to degrade overtime (is less than 20 years) • Accelerated by heavy weather events	Unstable surface results in tipping of reach stackers resulting in fatality	Health and safety	4	Maintenance activities	300	0.1	30	Pad has been designed with thicker pavement	None specified	300	0.1	30
104	Metallurgical plant	Feed preparation	Mechanical/kinetic energy	Rotainer Truck driver is in the line of fire during unloading and loading	No designated area for truck driver during unloading and loading	Crush Injuries resulting in fatality	Health and safety	4	None specified	300	0.3	90	Provide driver hut/waiting area outside of line of fire	None specified	300	0.1	30
105	Metallurgical plant	Feed preparation	Mechanical/kinetic energy	Rotainer Truck driver is in the line of fire during unpinning of containers while standing on road	Dual lane on, one way road	Vehicle-Pedestrian collision resulting in fatality	Health and safety	4	None specified	300	0.3	90	• Road is one way designated for unloading of concentrate only. • Include additional hard barrier along Western pull over bay to protect driver from interacting with passing truck	None specified	300	0.1	30
106	Metallurgical plant	Feed preparation	Contamination	Operator incorrectly loads flux, slag and revert into the wrong bin	Operator error	Incorrect slag chemistry resulting in process upsets and impact production	Financial	2	Site assay two hours	30	3	90	None specified	Include visual indication for FEL to load to the correct bin i.e. traffic light	30	0.3	9
107	Metallurgical plant	Feed preparation	Interface/interaction	HV and LV Vehicle to Vehicle interaction and personnel	Insufficient operating space / HV and LV operating in proximity	Vehicle-Vehicle collision resulting in fatality	Health and safety	4	None specified	300	0.3	90	• Segregated BHP access for flux deliveries and contractor access. • Included designated LV parking spots for contractor	None specified	300	0.1	30
108	Metallurgical plant	Feed preparation	Radiation	Personnel exposed to process dust which contains RN, heavy metals, silicates, etc.	Inherent nature of slag, revert and stored outside	Personnel exposed to hazardous materials resulting in adverse health conditions	Health and safety	3	• Dust collectors on the hopper • Slag and revert is coarse in nature	100	0.3	30	None specified	None specified	100	0.3	30
109	Metallurgical plant	Feed preparation	Radiation	Personnel exposed to process dust which contains RN,	Inherent nature of concentrate in the shed	Personnel exposed to hazardous materials resulting in adverse health conditions	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
				heavy metals, silicates etc.													
110	Metallurgical plant	Smelter 3 slag handling	Contamination	Dust environmental contamination outside SRE boundary	12m high from slag stockpiles with high wind events	Dust environmental contamination outside SRE boundary results in exceedance of environmental licencing	Environmental	2	None specified	30	1	30	None specified	None specified	30	0.3	9
111	Metallurgical plant	Smelter 3 slag handling	Gravitational/object	Engulfment of mobile equipment on FSF stockpile and/or rolling off bench during operation	Operating on12m high slag stockpiles	Operator fatality	Health and safety	4	Existing procedure for operating on slag stockpile	300	0.3	90	Intermediate benches to be introduced to limit vertical height to 4m	None specified	300	0.1	30
112	Metallurgical plant	Smelter 3 slag handling	Contamination	SO2 fumes from slag cooling pits impacting operators to the north	Slag pouring emits SO2 fumes, SRE will have increased frequency of pouring activities	Operator exposure results in mild short-term injury	Health and safety	2	• All operators carry respirators • Sufficient separation from pits to other operational areas	30	0.3	9	None specified	None specified	30	0.3	9
113	Metallurgical plant	Smelter 2 flash furnace	Interface/interaction	Operators required to manually handle taphole parts for maintenance activities	access constraints for existing device to new tapholes	Operators obtain back injuries due excessive heavy load and awkward positions	Health and safety	3	Existing procedures for manual handling of tapping machines	100	0.3	30	None specified	None specified	100	0.3	30
114	Metallurgical plant	Smelter 2 flash furnace	Human factors	Reduced access for maintenance activities due to introduction of truss adjacent to matte burner	Additional structural requirement impedes on working floor area	Operators/maintainers obtain back injuries due excessive heavy load and awkward positions	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
115	Metallurgical plant	Smelter 2 flash furnace	Interface/interaction	Compromised ability to clean launder with existing and new cleaning devices	• Two tapholes merging into single launder • Modified launder transitions • Require cleaning after each tap • Dropped object risk due to potential for uncontrolled fall of slag (consider operator position)	Operators sustain injury from trying to conduct manual cleaning	Health and safety	2	None specified	30	3	90	Review automated cleaning abilities of the entire launder to remove requirement for any manual cleaning	None specified	30	1	30
116	Metallurgical plant	Smelter 2 flash furnace	Contamination	Operators are exposed to SO2 fumes at the tapholes and the launders	Release the fumes during tapping activities	Operators exposed to SO2/others during tapping resulting in respiratory irritation	Health and safety	3	Operators wear respirators during tapping Existing site procedures for tapping	100	0.1	10	None specified	None specified	100	0.1	10
117	Metallurgical plant	Smelter 2 flash furnace	Thermal energy	Spillage from slag launder at transition point	Geometry of slag launder with constraint	Hot slag spillage with potential contact to operators resulting in significant burns	Health and safety	3	Operators wear hot metal PPE during tapping	100	0.3	30	None specified	None specified	100	0.3	30
118	Metallurgical plant	Smelter 2 anode furnace and copper casting	Thermal energy	Operating FEL underneath the blister launder for removing slag	Current layout arrangement	Hot metal contact with FEL operator resulting in fatality	Health and safety	4	New concrete spill tray underneath launder with nib wall	300	0.1	30	None specified	None specified	300	0.1	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
119	Metallurgical plant	Smelter 3 oxygen plant	Energy	Loss containment of oxygen	• Upset conditions within the oxygen plant • Mechanical failure	Fire explosion	Health and safety	4	None specified	300	0.1	30	None specified	None specified	300	0.1	30
120	Metallurgical plant	Smelter 3 oxygen plant	Contamination	Dust contamination around the oxygen plant from adjacent materials handling activities	Dust egress into air compressor and cooling tower due to high wind events	Damage to equipment resulting in higher than expected maintenance activities (by BOOT contractor which may impact negatively on OPEX)	Financial	2	None specified	30	0.3	9	None specified	None specified	30	1	30
121	Metallurgical plant	Smelter 3 oxygen plant	Contamination	CO2/ hydrocarbon from mobile equipment results in contamination of O2 plant	• High traffic movements adjacent to the proposed location of oxygen plant • Diesel operated crushing plant adjacent to the proposed location of oxygen plant	Fire and explosion events	Health and safety	4	None specified	300	0.3	90	Pre-purification units to be rated for CO2 expected levels	None specified	300	0.1	30
122	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Gravitational/object	Injury to personnel during lifting of equipment and (Larox) filter components	Congested area	Dropped objects resulting in fatality	Health and safety	4	New lifting zone identified and work stations relocated to alternative location	300	0.1	30	None specified	None specified	300	0.1	30
123	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Interface/interaction	Vehicle to Vehicle interaction between FEL and Moxy delivery at Trim Flux Shed	• Timing of operations and loading of trim flux requirements • High amount of reversing movements required for existing the shed	Operator fatality	Health and safety	4	None specified	300	0.3	90	• Relocate trim flux shed to limit interactions with other vehicles • Show designated park-up bay for FEL for trim flux deliveries • Include barricading to prevent vehicle and pedestrian access into the trim flux area to prevent interactions with FEL	None specified	300	0.1	30
124	Metallurgical plant	Smelter 2 feed preparation and concentrate storage	Interface/interaction	Vehicle and pedestrian interactions at the trim flux shed	• Shift change requirement • Maintenance requirement • High pedestrian traffic area	Vehicle collision with pedestrian resulting in fatality	Health and safety	4	None specified	300	0.3	90	• Trim flux shed relocated to South west of FSF area, pedestrian to be reviewed in DPS • Review nominated pedestrian access around the shed and ensure sufficient segregation adjacent the 10 meter rule	None specified	300	0.1	30
125	Metallurgical plant	Smelter 3 gas and dust handling	Pressure	Create a vacuum between blower and surrounding ducts	Incorrect damper alignment	High vacuum exceeding duct design resulting in collapse loss of containment on SO2 and exposure to operators	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
126	Metallurgical plant	Smelter 3 gas and dust handling	Chemical energy	Loss containment of weak acid to grade	accumulation of weak acid at the low point of the duct	• Equipment damage from corrosion • Loss of containment of weak acid onto contacting with personnel	Financial	2	None specified	30	0.3	9	None specified	None specified	30	0.3	9
127	Metallurgical plant	Smelter 2 acid plant	Interface / interaction	Vehicle to Vehicle interactions at the acid loading area	Adjacent access road to acid loading	• Vehicle collision resulting in fatality • Loss of containment of acid from isotainers	Health and safety	4	None specified	300	0.3	90	• Acid loadout area is bunded for spillage • Improve vehicle entry design into loadout bay	None specified	300	0.1	30
128	Metallurgical plant	Smelter 2 acid plant	Interface/interaction	Vehicle and pedestrian interactions	Truck driver and operator assistance at Acid loading facility	Vehicle collision with pedestrian resulting in fatality	Health and safety	4	None specified	300	0.3	90	Determine safe location for truck driver during acid loading activities orientation of Acid loading facility so that truck driver can exit onto safe location	Nominate pedestrian routes in and out within the acid loading area	300	0.1	30
129	Metallurgical plant	Smelter 2 acid plant	Human factors	Acid contact during manual handling of hoses	Require manual connection to isotainers Heavy hoses	• Loss of containment of acid onto contacting with personnel resulting in severe acid burns • Back strains and injuries to operators	Health and safety	3	Operators to wear Acid Plant PPE during acid unloading activities	100	0.3	30	None specified	None specified	100	0.3	30
130	Metallurgical plant	Smelter 2 acid plant	Thermal energy	Dehydration of operators during acid unloading	• Operators wearing high PPE acid suit • High ambient temperature during summer	Severe dehydration resulting in fatality	Health and safety	4	Cool room at existing unloading facility	100	0.3	30	None specified	None specified	100	0.3	30
131	Metallurgical plant	Smelter 2 acid plant	Pressure	Uncontrolled flow from existing acid tanks	Higher static head and volume on existing tank	Draining of acid tanks at loading facility resulting in environmental impact	Environmental	4	None specified	300	0.1	30	Current Tanker unloading area is a concrete bunded for first flush volume (not a full tank)	None specified	300	0.1	30
132	Metallurgical plant	Smelter 2 acid plant	Pressure	Acid mist at isotainer loading point	Lack of venting control	Acid misting onto operator resulting chemical burns	Health and safety	3	Operators to wear Acid Plant PPE during acid unloading activities	100	0.3	30	None specified	None specified	100	0.3	30
133	Metallurgical plant	Smelter 3 matte handling	Material /deformation	Drying of outdoor storage of matte stockpile	High ambient temp. Excessive storage time	Loss of product Dust causing uncontrolled hygiene exposure	Health and safety	3	None specified	100	0.3	30	None specified	• Water trucks as to be used as dust suppression of stockpiles • Site monitoring of RN on site	100	0.1	10
134	Metallurgical plant	Smelter 3 matte handling	Gravitational/object	Streams of matte falls onto FEL on outdoor matte pad	Unrestricted access on pad	Engulfment of cab of FEL with matte resulting in fatality	Health and safety	4	Matte reclaimer moves slowly	300	0.3	90	Stacker reclaimer discharge arrangement improved to eliminate requirement for FELs to operate under discharge zone	None specified	300	0.1	30
135	Metallurgical plant	Slimes treatment	Biochemical	Manual transfer of kibbles from existing high security building to	It is a process requirement to manually transfer	Increased manual handling operation to manoeuvre kibbles with pallet jack may result in	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
				southern extension building		back strains and/or crush fingers/toes											
136	Metallurgical plant	Refinery slimes treatment 2	Chemical energy	Kibble spills during transport from existing high security building to southern extension building and during unloading	An acidic filter cake Faulty kibble valve at base	Contents of kibble spills resulting in acidic burns to operator	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
137	Metallurgical plant	Refinery slimes treatment 2	• Acceleration • Deceleration • Shock (vehicular energy)	Increased traffic movements and collision with operator	Increased traffic movements for increased operation	Operator crush injury	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
138	Metallurgical plant	Refinery slimes treatment 2	Gravitational/object energy	Dropped objects from kibble during loading of furnace	• Malfunction of the kibble • Hang up of material in the kibble • Incorrect mounting and/or failure of lifting equipment	Kibble falls from height resulting in fatality of operator	Health and safety	4	Exclusion zones added with physical fencing	300	0.3	90	• Review drop zones with latest design arrangement and adjust to exclude potential interface with operators • Review lifting locking mechanism between crane and kibble	None specified	300	0.1	30
139	Metallurgical plant	Refinery slimes treatment 2	Chemical energy	Unwanted reactions in new detox sump	Shared bund and sump	Evolution of hydrogen gas resulting in flammable atmosphere and ignition	Health and safety	4	None specified	300	0.3	90	Separate tanks and bunds where chemical reactions can mix	None specified	300	0.1	30
140	Metallurgical plant	Refinery slimes treatment 2	Chemical energy	Combustible zinc dust	Inherent nature of zinc dust	Creation of zinc dust cloud resulting in explosion	Health and safety	4	None specified	300	0.3	90	• Review existing zinc unloading risk assessment to ensure initial ranking aligns with this new system • Ensure zinc bag unloading system specification includes a suitable dust collection system for zinc dust and the combustion/explosion hazard • Ensure risk is included in HAC Report • Review location of local control panel and exclusion zone	None specified	300	0.1	30
141	Metallurgical plant	Refinery slimes treatment 2	Gravitational/object energy	Dropped objects during transfer of anodes into silver cell	Failure of lifting device Operator error during connecting	Operator struck by dropped object Dropped object into silver cell results in splash of electrolyte and subsequent acidic burns	Health and safety	4	Engineered lifting device for activity	300	0.3	90	Exclusion zone for lifting anodes included	None specified	300	0.1	30
142	Metallurgical plant	Refinery slimes treatment 2	Chemical energy	Sodium nitrate is toxic	New sodium nitrate being introduced in flux	Sodium nitrate dust contact with operators resulting in respiratory irritation	Health and safety	2	None specified	30	0.3	9	Kibble has mobile dust collection system included	None specified	30	0.3	9

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
143	Metallurgical plant	Electrolytic refining	Gravitational/object energy	Lifting of cathode blanks onto tables and racks to a horizontal position	None specified	Pinch points from manoeuvring cathode blanks to horizontal position results in crush injury	Health and safety	3	None specified	100	1	100	None specified	Vendor has proposed the use of standard suction lifting device	100	0.3	30
144	Metallurgical plant	Electrolytic refining	Mechanical/kinetic energy	Operator hands stuck in pinch-points during feeding of cathode blank	None specified	Operator limbs caught between rollers resulting in crush injury	Health and safety	3	• Existing designated pedestrian crossing tot Blank maintenance fram drop off zone • Existing barricading	100	1	100	Vendor can include light curtain which has associated interlocks	None specified	100	0.3	30
145	Metallurgical plant	Electrolytic refining	• Acceleration • Deceleration • Shock (vehicular energy)	Introduction of a new traffic route at blanks maintenance facility	Increased traffic movements	Collision of rack during unloading with pedestrian results in fatality	Health and safety	4	None specified	300	0.1	30	Increased traffic movements confirmed as 100 additional blanks/day, which requires only one additional vehicle movement per day	None specified	300	0.03	9
146	Metallurgical plant	Electrolytic refining	Gravitational/object energy	Cathode blanks dislodge during transport	• Transition to existing road and its condition • Reduced weight of cathode blanks	Retrieval of cathode blank results in injury	Health and safety	3	None specified	100	0.3	30	None specified	None specified	100	0.3	30
147	Metallurgical plant	Electrolytic refining	• Acceleration • Deceleration • Shock (vehicular energy)	Vehicle - pedestrian collision	Increased frequency of traffic movement in the area during casting	Vehicle - pedestrian collision results in fatality	Health and safety	4	Anti-collision system on existing cranes	300	0.3	90	• Designated forklift routes separated from Pedestrian access • Inclusion of hard concrete barriers to Segregate pedestrians	None specified	300	0.1	30
148	Metallurgical plant	Electrolytic refining	• Acceleration • Deceleration • Shock (vehicular energy)	Concurrent operation of cranes in ER results in collision	• Two cranes operating on single/common runway • Failure of control system	Crane collision results in fatality	Health and safety	4	None specified	300	0.1	30	None specified	None specified	300	0.1	30
149	Metallurgical plant	Smelter 3 feed preparation and concentrate storage	• Acceleration • Deceleration • Shock (vehicular energy)	Concentrate trucking vs conveyor HAZID risks	None specified	None specified	None specified		None specified				None specified	None specified			
150	Metallurgical plant	Smelter 2 flash furnace	Material deformation	Risk of overflowing slag pot	Failure to plug slag taphole due to issue with the slag mud gun or similar (refer to HFJV-GCOR-002704 for further info)	Production stoppage to clear slag	Financial	1	None specified	1	0.3	0.3	None specified	• Review and revise procedure for over filled slag pot • Review and revise feasibility of manually plugging slag taphole	1	0.3	0.3
151	Not specified	Not specified	Natural environment	Backwater rising from open channels and across slag haul	During infrequent, extreme rainfall events e.g. 1% (1 in 100 year) AEP	Unsafe driving conditions for slag haulers or no access	Financial	1	None specified	10	0.3	3	Flood assessment to confirm	None specified	10	0.1	1

Risk definition							Current risk ranking						Additional control measures		Residual risk ranking		
				road in extreme flooding events		across road, resulting in Production impact											

*SF = Severity Factor, L = Likelihood, IRR = Initial Risk Rating, RRR = Residual Risk Rating

BHP

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OD SRE EIS

Appendix F
Other legislative requirements



Appendix F1.

EPBC Act – Notice of Referral Decision

Australian Government
Department of Climate Change, Energy, the Environment and Water

Notification of referral decision – not controlled action

Olympic Dam Smelter Refinery Expansion (SRE) Project, SA (EPBC 2024/10096)

This decision is made under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Proposed Action

person proposing to take the Action	BHP OLYMPIC DAM CORPORATION PTY LTD ABN: 99 007 835 761
proposed action	To commission, construct and operate a new smelter and refinery facility, and associated supporting infrastructure at Olympic Dam, located approximately 580 km north-west of Adelaide, and ground re-profiling at 11 sites between Roxby Downs and Port Augusta, South Australia.

Referral decision: not a controlled action

status of proposed action	The proposed action is not a controlled action.

Person authorised to make decision

name and position	Kylie Calhoun Branch Head Environment Assessments West
signature	
date of decision	29 April 2025

BHP