

Title of Proposal - Olympic Dam Resource Development Strategy

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Mining

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Attachment 1 provides a comprehensive project description and supporting maps. A summary is provided here. Note that Attachment 1 is also being provided (in identical form) as part of the major development application under the Development Act 1993 (SA).

Background

BHP Billiton Olympic Dam Corporation Pty Ltd (ODC) operates Olympic Dam, which is located approx. 560 km north west of Adelaide. The current operation consists of an underground mine, milling, mineral processing plant, copper smelter and refinery, and associated infrastructure producing final copper, uranium oxide, gold and silver products.

Operations at Olympic Dam commenced in 1988 following an Environmental Impact Statement (EIS) completed in 1982 for mining and production of up to 150,000 tonnes per annum of copper (tpa Cu) and associated products. A 1995 Environment Review process dealt with several variations to the original 1982 proposal. In 1997 an additional EIS under State and Commonwealth legislation was completed for a phased expansion of the underground mining and surface processing facilities for mining and production up to 350,000 tpa Cu (and associated products). This expansion was proposed to be completed in two phases, a first phase increasing mining and production up to approx. 200,000 tpa Cu (and associated products) and a second phase increasing mining and production up to approx. 350,000 tpa Cu (and associated products) (see Kinhill Engineers 1997)).

The first phase considered in the 1997 EIS has already been substantially implemented and is referred to as Business As Usual (BAU). The second phase considered in the 1997 EIS, production of up to 350,000 tpa Cu and associated products, was subject to potential additional assessment requirements, and has not yet been implemented.

OD-RDS

The primary subject of the Proposed Action is ODC's proposal to implement the Olympic Dam Resource Development Strategy (OD-RDS), which seeks to increase production at the Olympic Dam operation from BAU (approx. 200,000 tpa Cu and associated products) to up to 350,000 tpa Cu and associated products by way of staged increases in production.

The OD-RDS involves a number of projects, currently in pre-feasibility study and if approved by the Board of BHP (subject to obtaining all necessary approvals) OD-RDS activities could commence from mid-late 2021 onwards.

The OD-RDS will require development of some new facilities, infrastructure and services within the Special Mining Lease (SML) and beyond the mine gate, but will predominantly involve staged use and alterations of existing BAU facilities and operations by way of future utilisation,

upgrade, replacement and expansion of them to support an increase in the rate of mining and production.

To support the production increase, it is also proposed to increase (in stages) extraction of water sourced from the Great Artesian Basin (GAB) above the volumes for which impacts were assessed in the 1997 EIS up to a total maximum of 50 ML/d annual average.

The OD-RDS includes development to utilise, upgrade, replace, amend or expand existing, or develop new, facilities, services, infrastructure and operations and support the production of up to 350,000 tpa Cu and associated products, including

1. any augmented or new water supply pipeline from the Great Artesian Basin along with any other wellfield, including any related bores or pumps for the proposed purpose of increasing or monitoring the extraction of water sourced from the Great Artesian Basin from the volume for which impacts were assessed in the 1997 "Olympic Dam Expansion Project Environmental Impact Statement", up to a total maximum of 50 ML/d annual average
2. works to increase the rate of underground mining and the installation of materials handling infrastructure, such as mechanised hoists and/or additional declines, to transport mined material to the surface
3. works to increase the capacity of surface infrastructure to support increased production from the mine, including, but not limited to, ventilation, cooling, backfill (cement or paste), crushers, quarries, borrow pits, concrete batch plants and stockpiles for run of mine ore, low-grade ore and waste rock
4. works to increase surface production capacity, with some changes to the processing methods, including milling, hydrometallurgical plant, smelter, acid plant(s) and refinery
5. works to increase capacity of facilities and operations for waste treatment, storage and disposal
6. works to increase capacity of facilities and operations for tailings storage, evaporation ponds, waste rock storage, low grade ore storage and water dams within the Special Mine Lease
7. utilising, expanding, replacing, demolishing and amending facilities, services, transport, infrastructure and operations for the purpose of enabling development identified in paragraphs 1–6
8. new facilities, services, infrastructure and operations for the above purposes
9. any related or ancillary development associated with development within the ambit of the preceding paragraphs including but not limited to transport, laydown areas, electricity and other services
10. industrial development located in the vicinity of the Olympic Dam Village and the Roxby Downs township
11. airport facilities and parking associated with the Olympic Dam airport
12. workers' accommodation (with the exception of dwellings) in the vicinity of the Olympic Dam Village or in the vicinity of the Roxby Downs township
13. land division for industrial, airport and residential purposes associated with activities above
14. the undertaking of works for the purposes of, or otherwise related to: services such as roads, parking stormwater, water supply, power supply, telecommunications and effluent treatment in connection with the development
15. any change in the use of land associated with any development within the ambit of the preceding paragraphs and
16. facilities, services, infrastructure, operations and development (including excavation and filling) related or ancillary to development within the ambit of the preceding paragraphs but excluding
17. any investigation activities relating to the assessment of development to support the production of up to 350,000 tpa Cu and associated products.

Business as usual operations

The OD-RDS is primarily a brownfields project, and so if it is approved, BAU facilities and activities will be utilised, upgraded, replaced and expanded as needed to enable the OD-RDS. It will then no longer be practical or possible to differentiate between BAU and OD-RDS facilities, impacts, management practises and monitoring results.

The Proposed Action therefore also includes future continuing BAU, but only to the extent such activities occur after approval of the Proposed Action (that is, future use post-approval of the Proposed Action only). Reasons are provided in section 1.12.

All BAU activities up to the time of any approval (if issued) are outside the scope of the Proposed Action. Existing BAU which is already substantially implemented and discrete projects (including any maintenance, new projects and studies) associated with enabling production of approx. 200,000 tpa Cu will be ongoing up to the time of any approval of the Proposed Action. Some new BAU activities have already commenced and others may be subject to separate Commonwealth referrals up until an approval for the Proposed Action is issued. These are outlined in section 1.16.1.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
RDS Study Area	1	-31.467722632901	136.96919383292
RDS Study Area	2	-31.466551298457	136.96919383292
RDS Study Area	3	-31.274841258097	136.8092054296
RDS Study Area	4	-30.659579217302	136.79615916496
RDS Study Area	5	-30.656035187135	136.71032847648
RDS Study Area	6	-30.327651662171	136.70826853996
RDS Study Area	7	-30.326466296168	136.86001719718
RDS Study Area	8	-30.217351296189	136.92044200187
RDS Study Area	9	-29.637144704348	137.25209178214
RDS Study Area	10	-29.492612063457	137.09416331535
RDS Study Area	11	-29.40890380751	137.16763438468
RDS Study Area	12	-29.490221357558	137.29603709464
RDS Study Area	13	-29.619238669443	137.37637461906
RDS Study Area	14	-29.530258237418	137.56794871574
RDS Study Area	15	-29.434621547064	137.64553965812
RDS Study Area	16	-29.132177729032	137.95109690909
RDS Study Area	17	-28.513758935405	137.94835032706
RDS Study Area	18	-28.512552214249	138.26626719718
RDS Study Area	19	-28.303581977414	138.26695384269
RDS Study Area	20	-28.301768295555	139.06689585929
RDS Study Area	21	-28.734958157251	138.83137645011
RDS Study Area	22	-28.562619535004	139.1204542089
RDS Study Area	23	-28.793946035083	139.10672129874
RDS Study Area	24	-28.889579869585	139.20765818839
RDS Study Area	25	-29.247870840373	139.20491160636

Area	Point	Latitude	Longitude
RDS Study Area	26	-29.244875256868	138.61508311515
RDS Study Area	27	-29.250267244034	137.98954905753
RDS Study Area	28	-29.633563751985	137.6263135839
RDS Study Area	29	-29.786833686319	137.2919172216
RDS Study Area	30	-30.324688220265	136.98224009757
RDS Study Area	31	-30.325280915819	137.03030528312
RDS Study Area	32	-30.649537461025	137.0200056005
RDS Study Area	33	-30.653081729405	136.95683421378
RDS Study Area	34	-30.800054179858	136.9492811132
RDS Study Area	35	-31.264863993229	136.9492811132
RDS Study Area	36	-31.441364063663	137.12025584464
RDS Study Area	37	-32.376875769182	137.80415477042
RDS Study Area	38	-32.490465117578	137.8810590673
RDS Study Area	39	-32.539102436571	137.88380564933
RDS Study Area	40	-32.578456221761	137.84260691886
RDS Study Area	41	-32.585399215514	137.79866160636
RDS Study Area	42	-32.576141771028	137.76570262199
RDS Study Area	43	-32.539102436571	137.74372996574
RDS Study Area	44	-31.467722632901	136.96919383292

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

Special Mining Lease and Roxby Downs Municipality

The Olympic Dam Special Mining Lease (SML) covers an area of approximately 17,800 ha. The Roxby Downs Municipality shares a common boundary to the south and covers an area of approximately 11,000 ha. The nearest town is Roxby Downs, located 16 km south of the mine site in the southern section of the Roxby Downs Municipality. Roxby Downs was established in 1988 to service the Olympic Dam operation and houses the majority of the workforce. The current population of Roxby Downs is approximately 4,000. Two accommodation villages; Olympic Village which sits in the northern area of the Municipal Lease approximately 6 km south of the mine site and Roxby Village (located within Roxby Downs Township) provide accommodation for the Olympic Dam operation.

Other nearby communities include Andamooka, approximately 30 km to the east, and Woomera, approximately 90 km to the south.

Wellfields and the water investigation area

Olympic Dam and Roxby Downs are supplied with water from two licenced wellfields, Wellfield A and Wellfield B, which are located approximately 100 km north and 200 km north east of

Olympic Dam respectively. Wellfield B is located on Muloorina and Clayton Stations. The existing pipeline from Wellfield B, from the intersection of the Wellfield A pipeline, through to Wellfield B passes through Stuart Creek Station, Finniss Springs Station and Muloorina Station. Wellfield A is located on Stuart Creek Station and the existing water supply pipeline to site traverses through Stuart Creek Station, Mulgaria Station and Roxby Downs Station.

Investigations are underway to identify the optimal location for the new production bore(s) and associated pipelines and pumping infrastructure which are expected to be located within the indicative water investigation area (See Attachment 1). This area is north and east of the existing production bores in Wellfield B, approximately 200 km north east of Olympic Dam. It is situated north of the dog fence in an area utilised for cattle grazing. The region has been subjected to grazing by sheep and cattle (as well as native fauna, rabbits and camels) since the late 1800s (Gee, 2000) and vegetation varies in condition depending on proximity to water sources. The current primary focus area for water investigations is in the north west of the indicative water investigation area. The new water supply infrastructure will connect to existing infrastructure, which will be upgraded or replaced as may be required.

275 kV transmission line

The existing 275 kV transmission line from Davenport (near Port Augusta) to Olympic Dam lies within a corridor held under freehold title by BHP and traverses a number of predominantly pastoral properties. The transmission line also crosses the Woomera Prohibited Area, which is state owned land used by the Department of Defence for the testing of war materiel. The Woomera Prohibited Area, which is controlled by the Commonwealth for use by the Department of Defence for the testing of war material, comprises extensive lands north of the Indian Pacific railway, from north of Watson in the south-west up to its north-west corner in the Great Victoria Desert, across to Coober Pedy, and west of Roxby Downs down to Woomera in the south-east (Department of Defence 2019).

The three locations where small-scale excavation is expected to be required (in order to accommodate an increase in the loading capacity of the 275 kV transmission line – see Attachment 1) are approximately 9 km south of Roxby Downs on Roxby Downs Pastoral Station (two locations) and approximately 12 km north of Port Augusta on Carriewerloo Pastoral Station at the southern end of the 275 kV transmission line. The two northern locations are generally dealt with in this referral in conjunction with the SML and Roxby Downs Municipality due to their close proximity. The existing 132 kV transmission line (owned by ElectraNet) parallels the 275 kV transmission line. The polygon provided in Section 1.3 of this referral encompasses the existing transmission line described in this referral, including the three excavation locations (shown in Figure 1-3 in Attachment 1) as well as the SML, Roxby Downs Municipality, existing water pipelines, existing wellfields and indicative water investigation area.

Attachment 1 (Figures 1-1, 1-2, 1-3 and 1-4) shows the project area and the current extent and locations of the SML, Roxby Downs Municipality, wellfields (A and B) and infrastructure corridors (water pipeline and transmission line). The primary focus area for water investigations and the indicative water investigation area is shown in Figure 1-2 of Attachment 1. Attachment 2 provides a list of titles (Table 2-1 and Table 2-2) and figures showing land titles of the project area (Figure 2-1 and Figure 2-2). Attachment 3 shows pastoral stations and conservation areas covering the project area (Figures 3-1 and 3-2).

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

Approximately 8350 ha including 4881.9 ha existing disturbance

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title. Refer to Attachment 2 for a list of titles and figures where the proposed action will occur

1.8 Primary Jurisdiction.

South Australia

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 07/2021

End date 12/2046

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

Context and background

Western Mining Corporation Resources Limited (WMC) discovered the Olympic Dam deposit in 1975 and formed a joint venture with BP Group in 1979 to develop the project. In April 1993, WMC (Olympic Dam Corporation) Pty Ltd purchased BP Group's share. Following the BHP Billiton Group takeover of WMC in June 2005, WMC (Olympic Dam Corporation) Pty Ltd became a member of the BHP Billiton Group and changed its name to BHP Billiton Olympic Dam Corporation Pty Ltd (ODC). The Olympic Dam operation has been subject to three previous Environmental Impact Statement (EIS) assessments under three separate South Australian and Commonwealth processes.

Initial operations commenced in 1988 following an Environmental Impact Statement (EIS) completed in 1982 for mining up to 150,000 tonnes per annum of copper (tpa Cu) and associated products. A 1995 Environment Review process then dealt with several variations to the original 1982 proposal.

In 1997 an additional EIS was completed for a phased expansion of the underground mining and surface processing facilities to 350,000 tpa Cu (and associated products) with the first phase of approximately 200,000 tpa Cu. The first phase has already been substantially implemented.

The 1997 EIS assessment report prepared by the State and Commonwealth governments concluded that the EIS addressed all relevant issues and that the risks to the biophysical, historical, social and cultural environments from the proposed expansion were acceptable. It also noted that there was no formal decision from WMC (the proponent at that time) to expand from 200,000 tpa Cu to 350,000 tpa Cu and concluded (in respect of expansion from 200,000 tpa Cu to 350,000 tpa Cu) that this may need to be subject to further environmental evaluation in accordance with the appropriate standards and procedures at the time. The referral of the Proposed Action will now ensure this occurs.

A June 1998 letter from the then Commonwealth Minister for Resources and Energy concluded expansion from 200,000 tpa Cu to 350,000 tpa Cu was possible provided there were no substantial changes in technology or mining practice that could cause a significant impact on the environment, no change to the system of tailings management or no change in water use and management beyond that approved by South Australia. The current Proposed Action does not propose any substantial change in technology or mining practice but does now propose to increase (including by staged increases) extraction of water sourced from the Great Artesian Basin (GAB) above the volumes for which impacts were assessed in the 1997 EIS (based on drawdown, extrapolated to an extraction rate of approximately 42 ML/d) up to a total maximum of 50 ML/d annual average.

For completeness, it is noted that an EIS was also undertaken in 2009 and separate approvals granted in 2011 for a major open pit expansion referred to as Olympic Dam Expansion (ODX). There are no plans to progress with ODX at this time and the scope of the assessment for ODX varies significantly from the OD-RDS.

State Government assessment and approval requirements

The two main Acts in South Australia relevant to obtaining the OD-RDS approval are the Roxby Downs (Indenture Ratification) Act 1982 (Ratification Act) and the Development Act 1993.

The Ratification Act provides statutory authority for an agreement (Indenture) between BHP and the State of South Australia. The Indenture establishes the legal framework for existing and future operations at Olympic Dam and defines the roles and responsibilities of the South Australian Government and BHP.

The Development Act and associated Regulations set out the procedures by which different forms of development are assessed in South Australia. Part 4, Division 2 of the Act relates to the assessment process for major development or projects (Major Development process).

The OD-RDS has been declared a Major Development under Section 46 of the Development Act (SA Government Gazette 14 February 2019, pages 461 (land specified under Clause 28 of the Indenture) and 462 (other land not specified under Clause 28 of the Indenture), as amended on the 19th September 2019)). Consequently, it requires an assessment at the level of

Development Report, Public Environment Report (PER) or an Environmental Impact Statement (EIS) (the level is yet to be determined).

BHP has submitted a major development application (MDA) which deals with OD-RDS, and future continuing BAU post OD-RDS approval (consistent with the Proposed Action), under the Major Development provisions. Following submission, assessment guidelines and the level of assessment will be set, following a period of public consultation, as the Major Development provisions include mandatory public consultation on the assessment document.

Following assessment and public comment, and the preparation of an Assessment Report by government, the State Government will make a decision on whether to approve the MDA and conditions to apply. If the State Government decides to approve the MDA, BHP proposes that the impacts of OD-RDS and the future continuation of BAU (post approval only), be subject to a holistic, single, whole of operations Development Act condition set to ensure ongoing efficient and effective management and regulation of Olympic Dam operations.

Olympic Dam is also subject to a number of other Acts, licences and approval conditions including:

- SA Environment Protection Authority (EPA) Licence 1301 – authorisation to undertake activities of environmental significance under the Environment Protection Act 1993 subject to certain conditions.
- Licence LM1 – issued under the Radiation Protection and Control Act 1982, which includes a requirement to follow for the Code of Practice and Safety Guide for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (ARPANSA).
- Special Water Licences (SWLs) – ODC has two SWLs, issued under the Indenture, which provide conditional authorisation to extract water from the Great Artesian Basin for supply to the operation.
- *Native Vegetation Act 1991* (South Australia), which provides regulatory framework for the clearance of native vegetation.

There will be a range of secondary approvals required under these and other relevant legislation.

Olympic Dam also has an Environmental Protection and Management Program (EPMP), which is a requirement of the Indenture. It sets out ODC's program relating to the protection, management and rehabilitation of the environment in respect of BAU operations. BHP proposes to manage OD-RDS and future continuing BAU operations under a consistent EPMP program. Elements of the EPMP (such as acceptable environmental outcomes) may be the subject of approval conditions too, however, the nature of approval conditions (and whether they should include management prescriptions, or be outcomes focussed), will be the subject of the condition setting process should approval be issued.

Commonwealth Government assessment and approval requirements

The Proposed Action is expected to be a controlled action and require assessment and

approval under the EPBC Act, as further discussed in Section 2.

A Bilateral agreement between the South Australian and Commonwealth governments is in place which provides any assessment of the project under the State Major Development processes (i.e. Part 4, Division 2 of the Development Act) will also include assessment under the Commonwealth process, to ensure an efficient and effective environmental assessment process. See section 1.14 for further information about the assessment and approval process and requirements.

As discussed in section 1.2, the OD-RDS is primarily a brownfields project, and so if it is approved, BAU facilities and activities will be utilised, upgraded, replaced and expanded as needed to enable the OD-RDS. It will then no longer be practical or possible to differentiate between BAU and OD-RDS facilities, impacts, management practises and monitoring results.

The Proposed Action therefore also includes future continuing BAU, but only to the extent such activities occur after approval of the Proposed Action (that is, future use post-approval of the Proposed Action only). This is needed, because:

- most BAU are currently exempt from the EPBC Act by operation of the Environmental Reform (Consequential Provisions) Act 1999 (Cth), but if the Proposed Action is approved, this exemption for BAU activities will likely lapse due to the scope and nature of the changes resulting from the OD-RDS. As a result, new EPBC Act referral and decision making for any (post any OD-RDS approval) future continuing BAU activities is therefore required;
- if the OD-RDS is approved, all existing BAU facilities will at some point (but in a staged way) be utilised, expanded, and revised/amended etc, but as the Proposed Action is an integrated brownfields project, it will not be practical or possible to differentiate between BAU and the OD-RDS activities, impacts, management practices, monitoring results, etc;
- the referral of OD-RDS activities with (post approval only) future continuing use of BAU activities will ensure appropriate cumulative impact assessment is carried out of whole of Olympic Dam operations impacts; the future continuing use of BAU post any approval for the OD-RDS is a physical and integral part of the operation of the Proposed Action, and so needs to be included in the referral; and
- this will ensure that, where possible, the overall the OD operations can be subject to a whole of operations environmental approval to ensure effective and efficient environmental approval implementation, management, monitoring, regulation and reporting.

State Planning Framework

Activities associated with the OD-RDS and future continuing BAU are currently covered by three different planning assessment ordinances.

1. the Roxby Downs (Municipality) Development Plan;
2. the Port Augusta (City) Development Plan; and
3. the Planning and Design Code (the Code), which replaced the Land Not Within a Council

Area (Eyre, Far North, Riverland and Whyalla) Development Plan on the 1 July 2019.

Proposed activities are generally consistent with the Objectives and associated Principles of Development Control in the Development Plans and the Code Policies, as discussed below.

The OD-RDS and future continuing BAU is also consistent with the Planning Strategy (the Far North Region Plan), which supports the expansion of mining and related infrastructure in the region, as well as the expansion of Olympic Dam and Roxby Downs.

A detailed planning assessment will be provided in the assessment documentation.

Roxby Downs (Municipality) Development Plan

This Development Plan sets out Council-wide Objectives and Principles of Development Control to be considered in addition to those in the Code, such as the recognition of the importance of exploration and mining. OD-RDS activities are broadly in line with the planning provisions for corresponding zones (Industry, Residential and Special Living) and are consistent with Council wide Objectives in this Development Plan including Objective 3 (Provision of areas for future urban development to permit orderly growth of the township) and Objective 15 (Industrial development in locations to service the requirements of the mining project at Olympic Dam, the town of Roxby Downs and its surrounds).

Development within the Rural Landscape Zone to the east of Olympic Dam Village, if required, would likely be considered as non-complying development (depending on the scope of the development).

Port Augusta (City) Development Plan

This Development Plan sets out Council-wide Objectives and Principles Of Development control for the Port Augusta (City) area, including the promotion of Port Augusta as an attractive regional service centre; and location of industrial, commercial, retail and office development in suitable areas.

One of the locations for small scale excavation underneath the existing 275 kV transmission line falls within the Port Augusta (City) Development Plan, within the Primary Industry Zone. Electricity transmission infrastructure is supported in this zone as an envisaged form of development. The works will be minor and consistent with the objectives and principles of development control.

Planning and Design Code (Phase one)

Phase One of Planning and Design Code became operational on the 1 July 2019 pursuant to the *Planning, Development and Infrastructure Act 2016*. Phase One of the Code affects outback areas previously referred to as 'Land Not Within a Council Area' (LNWCA). The Code sets out a comprehensive set of policies, rules and classifications to be used to assess new development proposals on land outside of regional and metropolitan Adelaide.

The strategic objectives of the Code as they relate to these isolated areas is essentially unchanged from the former LNWCA, with the relevant Code provisions reaffirming the

importance of mining development within the OD-RDS area (being the Remote Areas Zone) and the need for strategic infrastructure assets.

The economic development of the Far North is dependent on growth in mining and both infrastructure and mining related activities are identified within the Desired Outcome statement for the Remote Areas Zone (extracted below):

A diverse range of activities from pastoral, grazing and farming activities, agricultural processing and transportation, mining and petroleum (and associated settlement activities), the generation and storage of energy, pipelines or infrastructure, aerospace and defence related facilities (and associated settlement activities), tourism, remote settlements, Aboriginal lands and related rural land activities.

The project will demonstrate appropriate alignment with the relevant General Development Provisions in the Code including those relevant to supporting mining development, conservation of environmental values, and prevention of conflict between land uses.

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

BHP is committed to ongoing and meaningful engagement with its stakeholders and ensures that each of its operating mines and proposed projects has its own, tailored Stakeholder Engagement Plan which identifies its key stakeholders and provides an action plan for engagement. The Stakeholder Engagement Plan developed by the OD-RDS is a live document that will be reviewed and updated on a regular basis. Key stakeholders recognised in the plan include Aboriginal stakeholders, pastoral stakeholders, government stakeholders, the community and the general public.

BHP's approach to engaging with and supporting communities and stakeholders is set out in the document Our Requirements for Communications, Community and External Engagement and the Olympic Dam Stakeholder Engagement Management Plan. Open and honest dialogue with stakeholders, providing opportunities to be involved and to provide feedback on expectations, concerns and interests are important components of BHP's Engagement Strategy.

BHP maintains ongoing consultation with stakeholders regarding current and proposed operations at Olympic Dam through a number of avenues including regular meetings and/or briefings with its Aboriginal stakeholders, the Roxby Downs community, pastoral stakeholders and government agencies.

BHP has entered into agreements with Aboriginal stakeholders that relate to BHP's operations at Olympic Dam. These foundational agreements, including the Olympic Dam Agreement in 2008 and the Kokatha Settlement ILUA that was registered in 2014, enable BHP's core activities at Olympic Dam. More broadly, BHP's social and economic influence extends beyond its immediate operational footprint in South Australia. To this end, BHP endeavours to establish culturally informed agreements with its key Traditional Owner stakeholders that are mutually beneficial, provide strong social outcomes, genuine economic opportunity and enable the aspirations of these communities.

Consultation to date

BHP is working to strengthen its relationships and support its central Traditional Owner stakeholders in South Australia. This includes:

- Kokatha, Barngarla and Kuyani, the parties to the Olympic Dam Agreement (ODA) and brought together as the Native Title Representative Corporation (NTP Rep Corp);
- Kokatha who hold Native Title over land in the area around Roxby Downs and BHP Special Mine Lease; and
- Arabana and Dieri who hold Native Title over land to the north and north east of Olympic Dam which supports BHP's critical water infrastructure including the M6 pipeline.

In engagements with all of our Traditional Owner groups, over the last 14 months BHP has outlined its commitment to investment in asset integrity and reliability and staged sustainable growth, which is critical to underpin future growth options, now characterised as OD-RDS. This includes Board meetings, correspondence and informal meetings. Under OD-RDS, the key growth study known as the Brownfields Expansion (BFX) is commonly referred to presentations by the Company, this includes meetings with Traditional Owners, Government and Community groups, regional conferences, global market and media updates.

The BFX project has been presented at a high level, focussing on the underground expansion into the Southern Mine Area, proposed investment in surface processing infrastructure and potential increase in GAB abstraction and required infrastructure, with a firm commitment to provide ongoing consultation and engagement as the study progresses and more detailed information is available.

BHP will maintain, regular and detailed communication with all of our Traditional Owner and community groups, in the areas around Roxby Downs and throughout the Upper Spencer Gulf, throughout the assessment of this project. New information about our activities that is relevant to their interests will continue to be shared as soon as it is available.

BHP will use existing channels and processes with each of the groups, including NTP Rep Corp and other Board and informal community meetings during the assessment process. This will include providing updates to the ODA Advisory Council, utilising that forum for consultation about the assessment process for the OD-RDS, undertaking heritage assessments and determining impact minimisation and mitigation measures in accordance with the agreed heritage protocol.

BHP has responsibility to effectively manage our interactions and minimise impacts on water resources. With their particular interest in water and land access, regular consultation and timely cultural heritage approval processes between BHP and Arabana and Dieri will be critical to the success of the project.

BHP is in regular and ongoing communication with senior representatives of Arabana and Dieri to secure the required current heritage approvals to support urgent repairs to the M6 pipeline and is committed to establishing new processes and channels to effectively engage with these communities and facilitate the project.

More specifically in relation to OD-RDS, Kokatha, Dieri, Barngarla, Arabana and Kuyani Aboriginal Corporations were provided with written correspondence relating to the OD-RDS major development declaration after gazettal by the South Australian Government.

Key pastoral stakeholders have also been engaged including correspondence notifying them of the project including the potential scale of proposed production and associated GAB water abstraction increase. Initial consultation in relation to water supply infrastructure for the OD-RDS and ongoing activities has also been undertaken with pastoralists, most recently in March 2019. Further meetings have been set for later in 2019.

Regular communication and consultation with the local community of Roxby Downs is underway incorporating OD-RDS and other business as usual projects. This includes meetings with Roxby Downs Council, the Community Board, individual stakeholder engagements and the establishment of a new community feedback tool, Local Voices, implemented for BHP by the CSIRO.

As environmental, social and economic impact assessments commence for the OD-RDS, wider and more regular engagement activities, tailored for culture and context, will be undertaken to ensure stakeholders are informed of plans and given the opportunity to provide feedback. Further consultation with stakeholders and the broader public is planned during the development of the assessment documentation. This consultation will be undertaken with local community and Aboriginal stakeholders to ensure they are appropriately informed about the project and are provided with an opportunity to raise issues or concerns with BHP. This will be done through a variety of channels including briefings and discussions with the Roxby Downs Council, the Roxby Downs Community Board, nearby pastoralist stations, and regional traditional owner groups.

The Development Act process also involves public consultation periods, as outlined in Section 1.12.

All stakeholders, engagement activities, details of feedback received and how concerns and issues have been addressed in the planning of the OD-RDS will be set out in the assessment documentation.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

Section 1.12 provides a summary of the previous impact assessments that have been carried out for the Olympic Dam operation (including Environmental Impact Statements undertaken in 1982, 1997 and 2009).

As also discussed in Section 1.12, an environmental assessment (a Development Report, PER or EIS) will be required under the provisions of Major Development Part 4, Division 2 of the South Australian Development Act. It is proposed that the SA Major Development assessment process be relied on for EPBC Act assessment purposes for the Proposed Action, consistent with the Bilateral Agreement made under section 45 of the EPBC Act and agreed between the Commonwealth and the State of South Australia, and to ensure an efficient and effective

environmental assessment process.

A preliminary assessment of the impacts of the Proposed Action has been conducted. This preliminary assessment found that the matters of national environmental significance (MNES) relevant to the Proposed Action (ie those which will be potentially impacted by the Proposed Action), will be threatened species, ecological communities and migratory species, as well as the environment generally (by virtue of the fact that the Proposed Action is a nuclear action). These are discussed further in section 2.

BHP will prepare and submit the required assessment document under the Major Development provisions in a way which also comprehensively deals with these MNES. The assessment document will include assessment of:

- 1 Impacts of new development which are part of the OD-RDS;
- 2 Impacts of utilising, amending, replacing or expanding BAU developments and operations for the OD-RDS;
- 3 Impacts of future continuing BAU (post Proposed Action approval) (alone) (this is required to take account of the potential (post approval) lapsing of the existing EPBC Act exemption for BAU, the fact that the Proposed Action will be a staged project, and (if the Proposed Action is approved) enable a holistic, single, consolidated environmental EPBC Act approval which will ensure efficient and effective environmental management and regulation of the Proposed Action);
- 4 Cumulative impacts of the OD-RDS and future continuing BAU; and
- 5 Indirect and offsite impacts.

The assessment process will also ensure that, as per the 1997 EIS Assessment Report prepared by the Commonwealth and State governments at the time, the Proposed Action is now subject to further environmental evaluation in accordance with the appropriate standards and procedures at this time.

The preliminary assessment also found that, consistent with usual brownfields projects assessment approaches, a whole of operations cumulative impact assessment will in most cases comprehensively encompass all of the above 5 impact assessment areas. Separate consideration was (and will where relevant) also be given to any additional environmental impacts, different environmental factors affected by, or different expected outcomes, from future continuing BAU alone that need to be separately assessed to the cumulative assessment (e.g because the staged nature of the Proposed Action means the OD-RDS impact will not be relevant for some time). Preliminary assessment showed separate assessment is only likely to be needed in respect of the following environmental factors:

- Greenhouse. Separate assessment for future continuing BAU alone is likely needed because although the overall emissions are greater for OD-RDS with continuing BAU, the emissions intensity is likely greater for BAU alone;
- GAB groundwater. Separate assessment for future continuing BAU alone is likely needed because different well locations are likely to be proposed for OD-RDS and continuing BAU together than for continuing BAU alone; and
- GAB springs flora and fauna: Separate assessment for future continuing BAU alone is likely needed because different well locations are likely to be proposed for OD-RDS and continuing BAU together than for continuing BAU alone.

Previous EISs and current Management Plans are available at the BHP website <https://www.bhp.com/environment/regulatory-information>, under the headings 'Copper' and then 'Olympic Dam'.

The documents at the provided link are only made available for the perusal of interested readers but are not relied upon as evidence to support this referral.

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?

Yes

1.16.1 Identify the nature/scope and location of the related action (Including under the relevant legislation).

Refer to discussion of the existing Olympic Dam operation, future continuing BAU and OD-RDS in Sections 1.2, 1.12 and 1.14 above. The BAU activities which are expected to be subject to separate Commonwealth referrals and are not expected to have a significant impact on any Commonwealth matters of national environmental significance are:

- Tailings Storage Facility 6 (TSF6) – EPBC 2019 / 8465 (Olympic Dam Operations Tailings Storage Facility Six, SA);
- Evaporation Pond 6 (EP 6); EPBC 2019 / 8526
- Calcliner replacement (pending submission).

The scope of the BAU activities that will be subject to these separate referrals only includes BAU purposes. The use of the facilities for OD-RDS purposes or BAU activities beyond any Proposed Action approval being granted will not be included in the separate referrals noted above, as that use will form part of the referral of the Proposed Action. This will ensure that the cumulative impacts of OD-RDS and future continuing BAU operations can be appropriately assessed, and also enable a single, whole of operations EPBC Act approval to be issued for OD-RDS and future continuing BAU which ensures efficient and effective environmental management and regulation.

Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The [interactive map tool](#) can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

- [Profiles of relevant species/communities](#) (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- [Significant Impact Guidelines 1.1 – Matters of National Environmental Significance](#);
- [Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and Actions by Commonwealth Agencies](#).

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

Yes

2.4.1 Impact table

Species	Impact
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin (GAB) (Endangered)	Exact bore locations are currently unknown, so the maximum MNES clearance area cannot be provided at this time. Water extraction has the

Species	Impact
	potential to alter the flow and/or chemistry of water discharged at GAB Springs, which could adversely affect habitat critical to the community of native species dependent on natural discharge of groundwater from the GAB or cause a change in species composition associated with the GAB Springs. Assessment of water extraction impacts on GAB Springs including utilising past monitoring data and new hydrogeological modelling will be undertaken as part of the environmental impact assessment. See Attachment 9 for details.
<i>Acacia pickardii</i> (Birds Nest Wattle) (Vulnerable)	Vegetation clearance for new water supply infrastructure could potentially impact this species, if present. However, no preferred habitat occurs in the indicative water investigation area and there are no known populations or database records in this area (or in other areas within the project envelope). Database records and preferred habitat occur north of the indicative water investigation area. On this basis, it is unlikely that individuals, populations or habitat will be impacted. See Attachment 9 for details
<i>Eleocharis papillosa</i> (Dwarf Desert Spike Rush) (Vulnerable)	Approximately 2 ha of potential habitat for this species may be cleared for the new water supply infrastructure (based on a nominal 120 ha project footprint for this infrastructure). Possible impacts to some individuals may be expected during clearing, but impact to whole populations is unlikely. Where practical infrastructure will be located to avoid this species, if it is detected by on- ground ecological assessment for the new water supply infrastructure. Clearance for the new water supply infrastructure will be localised and unlikely to impact an important population and is not likely to cause this species to decline. See Attachment 9 for details.
<i>Eriocaulon carsonii</i> (Salt Pipewort) (Endangered)	While water extraction from the GAB has the potential to impact the flow or water quality at the GAB Spring habitat for this species, the exact bore locations are currently unknown and hence, the exact clearance area for habitat cannot be provided at this time. Assessment of water extraction impacts on GAB Springs, including utilising past monitoring data and new hydrogeological modelling will be undertaken as

Species	Impact
Frankenia plicata (Southern Sea-heath) (Endangered)	part of the environmental impact assessment. See Attachment 9 for details. Vegetation clearance for the new water supply infrastructure has the potential to impact this species, if present. Approximately 55 ha of potential habitat may be cleared within the Project footprint for the new water supply infrastructure with possible long-term impact to a small number of individuals (if present), but impact to whole populations is unlikely. There are no database records in the indicative water investigation area (or in other areas within the Project envelope). In any case, infrastructure will be located to avoid this species where practicable if it is detected by on-ground ecological assessment for the new water supply infrastructure. See Attachment 9 for details.
Amytornus modestus (Thick-billed Grasswren) (Vulnerable)	Vegetation clearance could potentially result in localised impact to potential habitat for this species. Approximately 1200 ha of potential habitat may be cleared within the SML and Roxby Downs Municipality with potential impact to a small number of individuals, but impact to whole populations is unlikely. The species is not dependent on these areas (with only a single record on the SML between 1989 and 2014). This clearance of potential habitat would be regionally insignificant and unlikely to impact an important population or lead to decline of this species. See Attachment 9 for details.
Amytornis textilis myall (Western Grasswren Gawler Ranges) (Vulnerable)	No impact is expected. There will be minimal clearance of potential habitat and vegetation clearance locations are outside the well documented area of occupation for the species. See Attachment 9 for details.
Betongia lesueur lesueur (Burrowing Bettong) (Vulnerable)	Previously locally extinct and reintroduced into the BHP sponsored Arid Recovery reserve. No direct impact on individuals, populations or habitat is likely. Air emissions and noise have the potential to have minor indirect impacts on habitat and individuals in the southern margins of the Arid Recovery reserve (adjacent to the SML), however, the impact would not interfere substantially with the recovery of the species. See Attachment 9 for details.
Calidris canutus (Red Knot) (Endangered)	The species was not predicted by the PMST to occur within the SML, Roxby Downs Municipality and surrounds, pipeline corridor,

Species	Impact
	the wellfields, the primary focus area for water investigations and the wider indicative water investigation area. In addition, BHP monitoring indicates very infrequent visitation of this species to the SML, with no losses recorded on the weekly TRS monitoring database (2005 to 2019). Loss of a small number of individuals may occur if they were to visit the Tailings Retention System (TRS), but impact to habitat or populations is not expected. While the species was predicted by the PMST to potentially occur at the southernmost location along the 275 kV transmission where small scale excavation is required, no preferred habitat occurs at this location and any clearance will not adversely affect habitat critical to the survival of the species or disrupt the breeding cycle of a population. See Attachment 9 for details.
<i>Calidris ferruginea</i> (Curlew Sandpiper) (Critically Endangered)	While the PMST predicted the Curlew Sandpiper to potentially occur in the SML, Roxby Downs Municipality, water pipeline corridor, wellfields and the indicative water investigation area, BHP monitoring indicates very infrequent visitation to the SML, and in extremely low numbers relative to estimates of Australian or global population size. In addition, key populations do not occur within the areas where development activities for the Project will be undertaken (if approved). Loss of a small number of individuals may occur if they were to visit the TRS, but impact to habitat is not expected nor is a decrease in the population of this species. A significant impact is not likely. See Attachment 9 for details.
<i>Charadrius mongolus</i> (Lesser Sand Plover) (Endangered)	There are no records of the species in the SML and one record in the indicative water investigation area. This species was not predicted by the PMST to occur within the SML, Roxby Downs Municipality and surrounds, pipeline corridor, the wellfields and the indicative water investigation area. Key populations have not been recorded within the areas where development activities for the Proposed Action will be undertaken, nor is there any known preferred habitat in these areas. Loss of a small number of individuals may occur if they were to visit the TRS, but impact to

Species	Impact
	habitat or populations is not expected. See Attachment 9 for details.
<i>Dasyurus geoffroii</i> (Western Quoll) (Vulnerable)	Previously locally extinct and reintroduced into the BHP sponsored Arid Recovery reserve. No direct impact is likely to individuals, populations or habitat. Air emissions and noise have the potential to have minor indirect impacts on habitat and individuals in the southern margins of the Arid Recovery reserve (adjacent to the SML), however, the impact would not interfere substantially with the recovery of the species. See Attachment 9 for details.
<i>Leipoa ocellata</i> (Malleefowl) (Vulnerable)	No impact is expected. The species has not been previously recorded in the project area and no preferred habitat occurs at the southernmost clearance location on the transmission line where it was predicted to occur by the PMST. See Attachment 9 for details.
<i>Leporillus conditor</i> (Greater Stick-nest Rat) (Vulnerable)	Previously locally extinct and reintroduced into the BHP sponsored Arid Recovery reserve. No direct impact is likely on individuals, populations or habitat. Air emissions and noise have the potential to have minor indirect impacts on habitat and individuals in the southern margins of the Arid Recovery reserve (adjacent to the SML), however, the impact would not interfere substantially with the recovery of the species. See Attachment 9 for details.
<i>Limosa lapponica baueri</i> (Western Alaskan Bar-tailed Godwit) (Vulnerable) And <i>Limosa lapponica menzbieri</i> (Northern Siberian Bar-tailed Godwit) (Critically Endangered)	No impact is expected. The species are not likely to be present and no suitable habitat occurs at the southernmost clearance location on the transmission line where they were predicted to occur by the PMST. See Attachment 9 for details.
<i>Maccullochella peelii</i> (Murray Cod) (Vulnerable)	No impact is expected. The Cooper Creek system will not be adversely impacted, and where it intersects the indicative water investigation area it is highly ephemeral and does not provide suitable habitat to support Murray Cod. See Attachment 9 for details.
<i>Macrotis lagotis</i> (Greater Bilby) (Vulnerable)	Previously locally extinct and reintroduced into the BHP sponsored Arid Recovery reserve. No direct impact is likely to individuals, populations or habitat. Air emissions and noise have the potential to have minor indirect impacts on individuals in the southern margins of the Arid Recovery reserve (adjacent to the SML),

Species	Impact
	however, the impact would not interfere substantially with the recovery of the species. See Attachment 9 for details.
Myrmecobius fasciatus (Numbat) (Endangered)	There is no potential for impact to the species as it is locally extinct and is not known to persist in Arid Recovery where it was previously reintroduced. See Attachment 9 for details.
Notomys fuscus (Dusky Hopping Mouse) (Vulnerable)	Construction of the new water supply infrastructure has the potential for localised and short term impact to individuals of this species (if present) from habitat clearance and entrapment in open trenches. Approximately 110 ha of potential habitat may be cleared in the indicative water investigation area (based on a nominal 120 ha project footprint for the new water supply infrastructure). However, these impacts are unlikely to impact populations of the species, or lead to a long-term decrease in the size of an important population. See Attachment 9 for details.
Numenius madagascariensis (Eastern Curlew) (Critically Endangered)	This species is not predicted by the PMST in the SML, Roxby Downs Municipality and surrounds, pipeline corridor, wellfields, the primary focus area for water investigations or the wider indicative water investigation area. In addition, BHP monitoring indicates very infrequent visitation to the SML, with a single record on the SML in monthly bird databases. While the PMST predicted the species could potentially occur at the southernmost clearance location on the transmission line, there is no suitable habitat occurring at this location. Loss of a small number of individuals may occur if they were to visit the TRS, but impact to habitat or populations is not expected. See Attachment 9 for details.
Pedionomus torquatus (Plains-wanderer) (Critically Endangered)	Vegetation clearance could potentially result in localised impact to habitat that is potentially suitable for this species. Approximately 60 ha of potential habitat in areas identified in the recovery plan where the species may occur could be cleared in the indicative water investigation area (based on a nominal 120 ha project footprint). Possible impact (e.g. short-term displacement) to a small number of individuals may occur during disturbance (if present), but impact to whole populations is unlikely on the basis that presence of the

Species	Impact
<i>Perameles bougainville bougainville</i> (Western Barred Bandicoot) (Endangered)	species is unlikely and there are very few records of the species within the Project envelope. See Attachment 9 for details. Previously locally extinct and reintroduced into the BHP sponsored Arid Recovery reserve. No direct impact is likely on individuals, populations or habitat. Air emissions and noise have the potential to have minor indirect impacts on individuals in the southern margins of the Arid Recovery reserve (adjacent to the SML), however, the impact would not interfere substantially with the recovery of the species. See Attachment 9 for details.
<i>Pezoporus occidentalis</i> (Night Parrot) (Endangered)	The Night Parrot has never been recorded in the Project envelope, however the possibility of presence cannot be completely excluded. Vegetation clearance for the new water supply infrastructure could result in localised impact to potentially suitable habitat. Approximately 115 ha of potential habitat in areas identified by the recovery team with two habitat characters and 2300 ha with one habitat character could be cleared within the Project envelope. Possible impact (e.g. short-term displacement) to a small number of individuals may occur during disturbance, but impact to whole populations is unlikely. See Attachment 9 for details.
<i>Pseudomys australis</i> (Plains Rat) (Vulnerable)	There is potential for localised impact on individuals of this species from clearance of approximately 1250 ha of potential habitat in areas identified in the recovery plan as current and potential habitat in the Project envelope, and localised and short term impact from entrapment in open trenches / excavations. Impacts are unlikely to lead to long-term decrease in the size of an important population or cause this species to decline, and impact to whole populations is unlikely. See Attachment 9 for details.
<i>Rostratula australis</i> (Australian Painted Snipe) (Endangered)	No impact is expected. The species is not likely to be present and there is no preferred habitat. See Attachment 9 for details.

2.4.2 Do you consider this impact to be significant?

No

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?

Yes

2.5.1 Impact table

Species	Impact
Migratory marine species (Apus pacificus) (Fork-tailed Swift)	The proposed action will not substantially modify, destroy or isolate any area of important habitat for this migratory species, or seriously disrupt the lifecycle of an ecologically significant proportion of the population. In addition, given the low number of Fork-tailed Swift visitation records in BHP databases, a significant impact from the TRS is not expected. However, loss of a small number of individuals may occur if they were to visit the TRS, but impact to habitat or populations is not expected. See Attachment 9 for details
Migratory terrestrial species Hirundo rustica (Barn Swallow) Motacilla cinerea (Grey Wagtail) Motacilla flava (Yellow Wagtail)	These species are either not known to be present or very few records exist in the Project envelope and important habitat does not occur. The loss of a small number of individuals may possibly occur if they were to visit the TRS, but this is unlikely given the very small number of records which exist. Impact to important habitat or populations is not expected. See Attachment 9 for details.
Migratory wetland species Pandion cristatus (Osprey) Gelochelidon nilotica (Gull-billed Tern) Hydroprogne caspia (Caspian Tern)	Osprey is not known to be present in the Project envelope. Important habitat for this species does not occur in any area where activities for the Proposed Action will occur. An ecologically significant proportion of a population of the Gull-billed Tern or Caspian Tern is not present in the Project envelope, and important habitat for these species does not occur where activities for the Proposed Action will occur. A small number of individuals of Gull-billed and Caspian terns may be lost if they were to visit the TRS, but impact to habitat or populations is not expected. See Attachment 9 for details.
Migratory waders (wetland) Actitis hypoleucos (Common Sandpiper) Arenaria interpres (Ruddy Turnstone) Calidris acuminata (Sharptailed Sandpiper) Calidris canutus (Red	Most of these listed migratory waders have been recorded within and outside the SML, however visitation rates on the SML by these species are low overall. The SML or Roxby

Species	Impact
Knot) <i>Calidris ferruginea</i> (Curlew Sandpiper) <i>Calidris melanotos</i> (Pectoral Sandpiper) <i>Calidris ruficollis</i> (Red-necked Stint) <i>Charadrius mongolus</i> (Lesser Sand Plover) <i>Charadrius veredus</i> (Oriental Plover) <i>Gallinago hardwickii</i> (Latham's Snipe) <i>Glareola maldivarum</i> (Oriental Pratincole) <i>Limosa lapponica baueri</i> (Western Alaskan Bartailed Godwit) <i>Limosa lapponica menzbieri</i> (Northern Siberian Bartailed Godwit) <i>Limosa limosa</i> (Black-tailed Godwit) <i>Numenius madagascariensis</i> (Eastern Curlew) <i>Plegadis falcinellus</i> (Glossy Ibis) <i>Pluvialis squatarola</i> (Grey Plover) <i>Tringa glareola</i> (Wood Sandpiper) <i>Tringa nebularia</i> (Common Greenshank) <i>Tringa stagnatilis</i> (Marsh Sandpiper)	Downs Municipality do not provide important habitat for any of the listed migratory wader species. The proposed action will not substantially modify, destroy or isolate any area of important habitat for these migratory species, or seriously disrupt the lifecycle of an ecologically significant proportion of the population. The loss of a small number of individuals of some species may occur if they were to visit the TRS, but impact to habitat or populations is not expected. Recorded bird losses on the TRS are very low and bird visitation to the TRS is expected to remain low relative to use of other waterbodies in the region. See Attachment 9 for details.

2.5.2 Do you consider this impact to be significant?

No

2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

Yes

2.10.1 Describe the nature and extent of the likely impact on the whole of the environment.

Please see Section 5 of Attachment 4 (Olympic Dam Resource Development Strategy: Major Development Application for a description and assessment of impacts to the environment as a whole.

The Proposed Action is a brownfields development which may potentially impact on a range of environmental values. Environmental impacts of existing BAU, and most impacts of the Proposed Action, are already well understood and are expected to be able to be managed consistently with the existing framework of current management practices. BHP has a comprehensive EPMP in place for the existing operation, and a consistent system is expected to be able to address additional impacts and/or changed risks from the Proposed Action. Through the EPMP annual reporting process, BHP has to date demonstrated that Olympic Dam operations meet all the environmental and social outcomes listed in section 4.2 of this referral. As the Proposed Action is a brownfield development, BHP is confident it can continue to satisfactorily manage any impact to meet acceptable environmental outcomes.

BHP acknowledges, however, that at this early planning stage for the Proposed Action, there is insufficient data currently available to rigorously assess all potential impacts on the environment, in particular, in relation to impacts on groundwater and threatened ecological communities, and for radiological impacts and air emissions. For this reason, BHP has commenced a targeted but comprehensive set of studies and will complete these through the Major Development assessment process for the OD-RDS and continuing BAU. These will inform government decision making and ensure ongoing effective environmental management for the OD operation.

2.10.2 Do you consider this impact to be significant?

Yes

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on any part of the environment in the Commonwealth marine area?

No

Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

The description of the existing environment in this referral (Section 3) and the description of the existing environment in Attachment 4 (Olympic Dam Resource Development Strategy: Major Development Application) describes the existing environment for the same Project area and for the same Project (the OD-RDS). The same matters are dealt with in both. The text in this referral, however is structured to directly address the questions raised in the EPBC referral format, while Attachment 4 is structured to provide information in a more standard impact assessment format consistent with expectations for a Major Development Application.

Flora and fauna records have been sourced from long term BHP datasets and the Biological Database of SA (BDBSA). The protected matters search tool (PMST) was also reviewed.

Baseline flora and fauna surveys were conducted for the Olympic Dam operation for the 1982, 1997 and 2009 EISs and the 2011 Supplementary EIS. Extensive monitoring and reporting of fauna and flora and the impacts of the operation has also been ongoing since the commencement of the operation, resulting in extensive datasets of fauna and flora species known to occur in different habitats within the area.

PMST searches were conducted for all components of the proposed action including the SML and Roxby Downs Municipality (10 km search buffer), pipeline corridor (from the SML through Wellfield B to the primary focus area for water investigations) (20 km search buffer), the primary focus area for water investigations (using a nominal search location approximately 50 km north of the existing production bores in Wellfield B with a 50 km search buffer), as well as the wider indicative water investigation area (using a polygon of the area with a 1 km buffer) and the 275 kV transmission corridor (1 km search buffer).

Searches of the BDBSA were conducted for the project area using NatureMaps (<https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx>) (DEW 2019).

The environmental features of the Olympic Dam area, including an assessment of listed threatened species and ecological communities within the broader impact footprint of the potential expansion, were comprehensively described and assessed in the 2009 Olympic Dam Expansion Draft Environmental Impact Statement (BHP Billiton 2009), and the 2011 Supplementary Environmental Impact Statement (BHP Billiton 2011).

The 1982, 1997 and 2009/2011 EISs are available for download at <https://www.bhp.com/environment/regulatory-information>.

The documents at the provided link are only made available for the perusal of interested

readers but are not relied upon as evidence to support this referral.

Environmental Setting

The majority of the proposed activities, including those within the SML, Roxby Downs Municipality, 275 kV transmission line and the southern part of the water pipeline corridor, are within the Gawler Bioregion as defined by the Interim Biogeographic Regionalisation for Australia (IBRA). Landforms comprise gently undulating calcareous plains with quartzite uplands, areas of overlying sand dunes and zones of salt lakes. The wellfields, the primary focus area for water investigations and the broader indicative water investigation area intersect the Stony Plains Bioregion, where landforms comprise silcrete capped low tablelands and plains. The indicative water investigation area also intersects the Simpson Strzelecki Dunefields Bioregion, with the landform comprised principally of aeolian dunefields with numerous claypans and into the Channel Country bioregion near the northern boundary, where the landform is characterised by flood plains of the lower Cooper Creek.

Land systems are also used to describe the environment of the OD-RDS in the following sections. Land systems are an area, or group of areas, throughout which there is a recurring pattern of geology, topography, soils and vegetation. They provide a finer level of detail of environmental description than IBRA regions or subregions and form the bottom layer in the regionalisation (DEW 2019).

Attachment 6 (Figures 6-1 and 6-2) shows the land systems and IBRA regions of the area.

Special Mining Lease/Roxby Downs Municipality

Flora

Surveys and opportunistic observations over the 30 years of operation, in the immediate area of the SML and Roxby Downs Municipality have identified 242 native flora species and 45 introduced species, 14 of which are declared weeds (BHP Billiton 2009).

One flora species of conservation significance at State level was recorded (in 1993) within 10 km of the SML/ML; Sandalwood (*Santalum spicatum*) (DEW 2019).

Fauna

Surveys and opportunistic observations in the immediate area of the SML and Roxby Downs Municipality over the past 30 years have identified over 260 fauna species including 184 birds, 29 mammals, 47 reptiles and one amphibian (BHP 2009). Fauna species for the bulk of the Olympic Dam region typify the arid environment, with common species being the Red Kangaroo (*Macropus rufus*), Black faced Woodswallow (*Artamus cinereus*), Zebra Finch (*Taeniopygia guttata*), Gould's Goanna (*Varanus gouldii*), Western Brown Snake (*Pseudonaja nuchalis*) and Sudell's Frog (*Neobatrachus sudellai*).

One EPBC listed terrestrial fauna species (Plains Rat *Pseudomys australis*) has been recorded in the SML and Roxby Downs Municipality. Prior to 1998, Plains Rat was absent from the SML however it has been recorded on a regular basis since then and in 2006 was recorded within the Arid Recovery reserve (Arid Recovery 2017). A large population of Plains Rats is now

established within the Arid Recovery reserve. While they have been recorded in the SML and Roxby Downs Municipality numerous times, their preferred habitat is not prevalent on the SML and Roxby Downs Municipality and records are assumed to occur during favourable conditions when populations have expanded.

Several other EPBC listed fauna species which were all locally extinct have been reintroduced into the Arid Recovery reserve, including the Greater Bilby (*Macrotis lagotis*), Numbat (*Myrmecobius fasciatus*), Burrowing Bettong (*Bettongia lesueur lesueur*), Western Barred Bandicoot (*Perameles bougainville*), Western Quoll (*Dasyurus geoffroii*) and Greater Stick-nest Rat (*Leporillus conditor*). Arid Recovery is an ecosystem restoration initiative within, and immediately north of the SML (see Figure 1.2 in Attachment 1 for Arid Recovery location). The reserve is fully fenced, providing a predator-free enclosure to facilitate re-establishment of threatened fauna.

EPBC listed threatened bird species recorded on the SML and Roxby Downs Municipality include Thick-billed Grasswren (*Amytornus modestus*), Curlew Sandpiper (*Calidris ferruginea*), Eastern Curlew (*Numenius madagascariensis*) and Plains Wanderer (*Pedionomus torquatus*). BDBSA records of the Thick-billed Grasswren are scattered across the region (with one record on the SML). Low numbers of Curlew Sandpiper have been recorded on the SML. Eastern Curlew and Plains Wanderer are each represented in databases by a single record.

Eight state conservation listed fauna have been recorded in the BDBSA within an approximate 10 km radius of the SML and Roxby Downs Municipality and (DEW 2019). These include three birds (Eastern Cattle Egret (*Bubulcus ibis coromandus*), Olive-backed Oriole (*Oriolus sagittatus sagittatus*) and Flock Bronzewing (*Phaps histrionica*)) and five mammals (all of which are EPBC listed as outlined above; Burrowing Bettong, Greater Stick-nest Rat, Greater Bilby, Western Barred Bandicoot and Plains Rat) (DEW 2019).

BHP databases contain records for additional state conservation listed birds including Darter (*Anhinga melanogaster*), Intermediate Egret (*Ardea intermedia*), Musk Duck (*Biziura lobate*), Banded Stilt (*Cladorhynchus leucocephalus*), Little Egret (*Egretta garzetta*), Blue-billed Duck (*Oxyura australis*), Great Crested Grebe (*Podiceps cristatus*) and Freckled Duck (*Stictonetta naevosa*).

Invasive and Feral Species

Weed species such as Salvation Jane (*Echium plantagineum*), Potato Weed (*Heliotropium europaeum*) and Buffel Grass (*Cenchrus ciliaris*) occur but are generally in low numbers in this arid environment. Feral animals have been eradicated from within the Arid Recovery but are prevalent outside of this reserve. Common feral species include the European Rabbit (*Oryctolagus cuniculus*), European Red Fox (*Vulpes vulpes*) and Feral Cat (*Felis catus*).

Migratory Species

Ten migratory species were predicted through the PMST to have the potential to occur in the SML/Roxby Downs Municipality. BHP database records confirm 20 migratory species have been recorded on the SML and Roxby Downs Municipality. Some of these species are known to visit the tailings retention system in low numbers (see Table 2.5.1). There is no important habitat in the SML or Roxby Downs Municipality.

Threatened Ecological Communities

There are no threatened ecological communities in the SML or Roxby Downs Municipality.

Wellfields and indicative water investigation area

Flora

BDSA (DEW 2019) shows records for nine flora species of state conservation significance within vicinity of the wellfields and the indicative water investigation area including Spreading Cress (*Phlegmatospermum eremaeum*), Downs Flat-sedge (*Cyperus bifax*), *Cyperus dactylotes*, Wild Violet (*Swainsona microcalyx*), *Swainsona oligophylla*, Australian Broomrape (*Orobancha cernua* var. *australiana*), Small Monkey-flower (*Elacholoma prostrata*) and Western Tar-vine (*Gilesia biniflora*) and the nationally listed Dwarf Desert Spike Rush.

The state and EPBC listed threatened Salt pipewort has also been recorded numerous times from 60 GAB springs over the past 34 years (BHP 2017). The nationally endangered Southern Sea-heath (*Frankenia plicata*) has been recorded approximately 20 km north of the indicative water investigation area.

Fauna

Fauna species for the bulk of the project area typify the arid environment, with common species being the Red Kangaroo (*Macropus rufus*), Black-faced Woodswallow (*Artamus cinereus*), Zebra Finch (*Taeniopgia guttata*), Gould's Goanna (*Varanus gouldii*), Western Brown Snake (*Pseudonaja nuchalis*) and Sudell's Frog (*Neobatrachus sudellae*) Brolgas (*Grus rubicunda*) and other waterbirds can be found in creek lines, especially where water is present.

BDBSA and BHP monitoring database records show that Thick-billed Grasswren are known to occur in the Olympic Dam region and throughout the wellfields. BHP monitoring records for the wellfields show one record of a Plains Wanderer at Dulkaninna Station however there are no BDBSA records in this area. There are BDBSA records of Dusky Hopping Mouse (*Notomys fuscus*) and Plains Rat in the vicinity of the wellfields and the primary focus area for water investigations.

Twenty seven fauna species with state conservation significance, have been recorded in the wellfields and the indicative water investigation area. This includes 25 birds (Common Sandpiper (*Actitis hypoleucos*), Thick-billed Grasswren (*Amytornis modestus*), Australasian Shoveler (*Anas rhynchos rhynchos*), Australasian Darter (*Anhinga novaehollandiae*), Chestnut-breasted Whiteface (*Aphelocephala pectoralis*), Australian Bustard (*Ardeotis australis*), Musk Duck (*Biziura lobata*), Curlew Sandpiper (*Calidris ferruginea*), Lesser Sand Plover (*Charadrius mongolus*), Banded Stilt (*Cladorhynchus leucocephalus*), Little Egret (*Egretta garzetta*), Letter-winged Kite (*Elanus scriptus*), Grey Falcon (*Falco hypoleucos*), Peregrine Falcon (*Falco peregrinus*), Brolga (*Grus rubicunda*), Black-breasted Buzzard (*Hamirostra melanosternon*), Black-tailed Godwit (*Limosa limosa*), Restless Flycatcher (*Myiagra inquieta*), Blue-winged Parrot (*Neophema chrysostoma*), Blue-billed Duck (*Oxyura australis*), Flock Bronzewing (*Phaps histrionica*), Glossy Ibis (*Plegadis falcinellus*), Great Crested Grebe (*Podiceps cristatus*), Freckled Duck (*Stictonetta naevosa*), Wood Sandpiper (*Tringa glareola*)) and two mammals (Dusky Hopping-mouse (*Notomys fuscus*) and Yellow-bellied Sheath-tailed

Bat (*Saccolaimus flaviventris*).

Migratory species

Nine migratory species were also predicted by the PMST to have the potential to occur in the vicinity of the wellfields and the indicative water investigation area. BHP database records confirm 15 migratory species have been recorded within the wellfields. There is no known important habitat for these migratory species in the wellfields.

Invasive and Feral Species

Weed species potentially occurring in Wellfield B include Buffel Grass (*Cenchrus ciliaris*), Ward's Weed (*Carrichtera annua*) and Athel Pine (*Tamarix aphylla*) however weeds are generally in low numbers due to the arid environment.

Feral animals in the region include the European Rabbit (*Oryctolagus cuniculus*), Red Fox (*Vulpes vulpes*), Feral Cat (*Felis catus*), House Mouse (*Mus musculus*), Horse (*Equus caballus*), One-humped Camel (*Camelus dromedarius*) and European Cattle (*Bos taurus*).

Threatened Ecological Communities

Wellfield A is located on the perimeter of the GAB approximately 100 km north of Olympic Dam, while Wellfield B is located further north into the basin, approximately 80 km to the north east of Wellfield A. GAB springs naturally occur along the perimeter of the GAB and are found within the wellfields region, and with the closest spring group approximately 40 km south of the indicative water investigation area. These communities are listed as an endangered ecological community ("the community of native species dependent on natural discharge of groundwater from the Great Artesian Basin") under the EPBC Act.

A range of fauna and flora species have been associated with the habitat provided by GAB springs. Given the permanent flow of water provided by the springs into an otherwise arid environment, many of these species are reliant on the springs for survival. Some species have been found to be endemic to the GAB springs or groups of springs.

GAB spring vegetation contains biogeographically important relict species, as well as the nationally listed endangered endemic species Salt Pipewort (*Eriocaulon carsonii*) (Fatchen and Fatchen 1993; Symon 1985). The largest single population of Salt Pipewort exists at the Hermit Hill spring complex near Wellfield A, with several records also occurring in springs in Wellfield B. Salt Pipewort is dependent on a constant supply of flowing water.

Other dominant flora species associated with GAB springs are primarily aquatic species and include Bore-drain Sedge (*Cyperus laevigatus*), Common Fringe-rush (*Fimbristylis dichotoma*), Cutting Grass (*Juncus kraussii*), Common Reed (*Phragmites australis*), Salt Couch (*Sporobolus virginicus*) and Cumbungi (*Typha daningensis*) (Fatchen and Fatchen 1993). Dryland species found on the spring perimeter include Boobialla (*Myoporum montanum*) and Western Beauty-heads (*Calocephalus sp. aff. platycephalus*).

Species of fish that have been recorded in GAB springs near the wellfields include the Desert Goby (*Chlamydogobius eremius*) and the Lake Eyre Hardyhead (*Craterocephalus eyresii*).

A range of invertebrates are reliant on GAB springs and include hydrobiid snails, amphipods, isopods, ostracods and spiders. All species of hydrobiids found in the Lake Eyre supergroup are on the IUCN Red List (International Union for Conservation of Nature and Natural Resources (1996)) and their conservation has been discussed by Ponder (1995). Detailed information on the GAB spring invertebrates can be found in the 1997 EIS (Kinhill Engineers 1997).

275 kV transmission line

Flora

One EPBC listed plant species, Southern Sea-Heath, was predicted to occur within a 1 km buffer around the southernmost excavation location along the 275 kV transmission line (note that the northern excavation locations are covered by searches over the SML and Roxby Downs Municipality). There are no BDBSA records within the vicinity or along the length of the transmission line and it is not likely to be present. The state-listed Sandalwood (*Santalum spicatum*) has been recorded by BHP monitoring and surveys within the 275 kV transmission line corridor. There are no state listed flora species recorded within a 1 km buffer around the southernmost excavation location.

Fauna

Nine EPBC listed fauna species (all birds) were predicted to potentially occur around the southernmost excavation location along the 275 kV transmission line. No preferred habitat for these species occurs at this location. Note that the northern excavation locations are covered by searches over the SML and Roxby Downs Municipality (see above). There are no state listed threatened fauna species within a 1 km buffer around the southernmost excavation location.

Invasive and Feral Species

Weeds potentially occurring in the vicinity of the southernmost excavation location along the 275 kV transmission line include Bridal Creeper (*Asparagus asparagoides*), Prickly Pears (*Cylindropuntia* spp. and *Opuntia* spp.), African Boxthorn (*Lycium ferocissimum*), Parkinsonia (*Parkinsonia aculeata*), Mesquite (*Prosopis* spp.) and Silver Nightshade (*Solanum elaeagnifolium*).

Common feral species include the European Rabbit, Red Fox, House Mouse (*Mus musculus*) and Feral Cat.

Migratory Species

Fourteen migratory species were predicted through the PMST to have the potential to occur within a 1 km buffer around the southernmost excavation location along the 275 kV transmission line. There is no important habitat at this location for these migratory birds.

Threatened Ecological Communities

There are no threatened ecological communities at this location.

3.2 Describe the hydrology relevant to the project area (including water flows).

The area around Olympic Dam receives very little rainfall (the annual average is 167 mm) and has a high evaporation rate (the annual average is around 3,000 mm). However, when it does rain, it is often in high intensity events which can lead to localised flooding given the flat terrain of the area. The region is generally internally draining, with stormwater held temporarily in swales, swamps or claypans before evaporating or infiltrating.

The region is characterised by many small, enclosed catchments, individually bound by east–west trending dunes, generally up to eight metres high. Typically, each catchment contains a boundary formed by the crest of sand dunes, an upper interdunal corridor (swale) and a lower depression, often a clay pan or swamp.

The sand ridges are highly permeable and rainfall infiltrates quickly through the sandy profile, draining into the swales and claypans after being redirected by a thick layer of clayey soil under the sand dunes. The clayey soils of the swales and claypans are less permeable and, in periods of significant rainfall, collect water in low depressions. These dune-swale and claypan catchments vary in size from 10 – 300 ha in area and can be 1 – 3 km long.

Stormwater within the swales and clay pans infiltrates the surface cracks of the clay soils, causing them to swell. In most instances the swelling of the clay soils reduces infiltration significantly, leading to surface water ponding. Depending on the rainfall event, surface water may remain in the swales and clay pans from a few days to a few weeks, but only rainfall events of a significant intensity and duration result in ponding for more than one month. The ponded water is generally fresh and of high quality.

There are no defined watercourses in the area of the SML and Roxby Downs Municipality, and surface waters from the small catchments very rarely flows into neighbouring catchments. No stormwater from the area of the existing operation flows off the SML.

Wellfield A and B, the primary focus area for water investigations and the wider indicative water investigation area intersect the surface water drainage regions of the Cooper Creek, Lake Frome, Gairdner and Lake Torrens basins. These regions are lowland interior basins of Australia where rainfall generally ponds on the surface for short periods of time, prior to infiltration or evaporation. In the vicinity of Lake Eyre, extensive networks of minor watercourses join to form large, broad and often braided watercourses as they traverse the stony plains and approach their terminus at Lake Eyre. The Wellfield B pipeline crosses several watercourses that drain into Lake Eyre, including Screechowl Creek and the Frome River.

Lake Eyre is located approximately 35 km to the west and north west of the existing Wellfield B and to the west of the primary focus area for water investigations and the indicative water investigation area. The western extent of the extensive Coongie Lakes Ramsar wetland site is east of the primary focus area for water investigations and outside the indicative water investigation area (see Attachment 1, Figure 1-1).

The Great Artesian Basin (GAB) springs are natural surface expressions of groundwater. They follow the perimeter of the GAB which lies approximately 100 km north of Olympic Dam in the wellfields area. The springs are important habitats for endemic plant and animal species, including macroinvertebrate groups as discussed previously.

Stone free areas with cracking clay soil (i.e. gilgai) form a component of the landscape on sections of the water pipeline south of Wellfield B and on sections of the 275 kV transmission line. These areas accept much of the run off from the largely impermeable gibber areas during smaller rainfall events. All watercourses in these land systems are truly ephemeral. However, waterholes can persist on many of the larger watercourses for many months after flow occurs.

Much of the region traversed by the 275 KV transmission line comprises low land interior basins where rainfall generally ponds on the surface for short periods of time, prior to infiltration or evaporation. There are no defined watercourses at the southernmost location along the 275 kV transmission line where small scale excavation is required. Drainage across the wider northern Spencer Gulf region consists of small drainage lines that run into the salt pans at the top of Spencer Gulf.

3.3 Describe the soil and vegetation characteristics relevant to the project area.

The SML and Roxby Downs Municipality are both within the Roxby land system. This is characterised by an extensive dunefield overlying a calcareous plain. Vegetation consists of dunes of White Cypress Pine (*Callitris glaucophylla*) and Mulga woodland (*Acacia ramulosa*) over Hopbush (*Dodonaea viscosa*), Woollybutt (*Eragrostis eriopoda*) and Kerosene Grass (*Aristida holathera*); swales of Mulga woodland (*A. ramulosa*) over Sandhill Wattle (*A. ligulata*), Hopbush (*Dodonaea viscosa*) and grasses; Western Myall (*Acacia papyrocarpa*) woodland plains over Pearl Bluebush (*Maireana astrotricha*) and Limestone Copperburr (*Sclerolaena* sp.); flats of Saltbush (*Atriplex vesicaria*), Sea-heath (*Frankenia* sp.) with swamps of Tea-tree (*Melaleuca glomerata*), Canegrass (*Eragrostis australasica*) or Lignum (*Duma florulenta*).

Soils in the Olympic Dam region are relatively homogeneous, with repeated landforms of dune sands and clay swales dominating the SML and infrastructure corridors. The swales can contain claypans or gibber plains.

Wellfield B primarily spans the Kalatinka land system in the south (clay and loam flats) and the Tiari land system (sandhills and flats of the Tiari Desert) in the north. Vegetation largely consists of saltbush (*Atriplex* spp.) and bluebush (*Maireana* spp.). The large plains are intersected by minor creeks, which drain into the Lake Eyre system, which are lined with Coolibah (*Eucalyptus coolabah*) and Inland Paperbark (*Melaleuca glomerata*). Many species appear after rainfall and include the Mulla (*Ptilotus* spp.), Bindyi (*Sclerolaena* spp.), and other species of daisy and grasses. Undulating gibber tableland with gilgai depressions dominate the Wellfield A region (Oodnadatta land system with vegetation characterised by saltbush and scattered samphire (*Tecticornia* sp.) over native millet (*Panicum decompositum*), Mitchell grass (*Astrebla* sp.) and Flinders grass (*Iseilema* spp.); low hills and mesas with bluebush, bladder saltbush (*Atriplex vesicaria*) and harlequin emubush (*Eremophila duttonii*) and creeks with mulga (*Acacia anuera*) and coolibah.

The primary focus area for water investigations primarily spans the Tirari and the Strezelecki land systems. The Tirari land system is characterized by dunes with sandhill canegrass and scattered Sandhill Wattle, variable flats with low bluebush (*Maireana* spp.) and annual grasses, channels with coolibah and scattered nitrebush, goosefoot (*Chenopodium* sp.) swamps and salt lakes and claypans with samphire. The Strezelecki land systems comprises dunefields with whitewood (*Atalaya hemiglauc*), mulga (*Acacia anuera*), sandhill wattle, sandhill canegrass

and lobed spinifex (*Trodia basedowii*), sandy interdune flats with colony wattle (*Acacia murrayana*) over copperburrs (*Sclerolaena* spp.) and annual grasses and clay swales with Mitchell grass (*Astrebla* sp.).

Other land systems intersected by the indicative water investigation area are characterised by channels and floodplains with coolabah and lignum and sand dunes with sandhill wattle and sandhill canegrass (Cooper land system); tablelands with gilgai supporting chenopods and grasses (Mumpie land system); channels, swamps and alluvial plains with chenopods, lignum, grasses and coolabah adjacent to channels (Cooryaninna land system); sandplains and dunes with needlewood and sandhill wattle, salt lakes with samphire and creeks with coolibah (Wirringina); and gypsiferous crabhole flats, undulating plains and shallow creeks with copperburrs, saltbush and samphire (Kopi).

The 275 kV transmission line traverses a number of land systems, predominantly Roxby, Arcoona (undulating stony tableland) and Hesso (extensive sand sheets with calcareous soils). The two locations requiring small scale excavation along the existing southern 275 kV transmission line closest to Roxby Downs Municipality are within the Roxby land system (as described above). The southernmost excavation location along the 275 kV transmission line is within the Tent Hill land system characterised by strongly dissected stony tablelands complex. Salt bush and glasswort shrubland line plains and tablelands, with water courses comprising of Black Oak (*Casuarina pauper*) and Bladder Salt Bush (*Atriplex vesicaria*). Soils are characterised by thin loamy topsoils overlying clay and shallow sandstone.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

There are no outstanding natural features in the immediate area of the SML or Roxby Downs Municipality.

The Great Artesian Basin springs are outstanding natural features in close proximity to the existing water supply infrastructure in Wellfield A and B. They follow the perimeter of the GAB which lies approximately 100 km north of Olympic Dam. Wellfield A sits near the perimeter of the basin while Wellfield B is located further out into the basin, over 70 km to the north east of Wellfield A. Lake Eyre is located approximately 35 km to the west and north west of Wellfield B. The indicative water investigation area is approximately 40 km from the closest spring group, and with the primary focus area for water investigations approximately 65 km from the closest spring group.

There are no outstanding natural features along the 275 kV transmission line or in the immediate area of the three locations where small scale excavation is required.

3.5 Describe the status of native vegetation relevant to the project area.

Vegetation associations in the project area are common and widespread across the region. Native vegetation in the region is relatively intact, however some areas are highly disturbed. While the area is too arid for agriculture, sheep and cattle grazing of the rangelands is extensive. Grazing by livestock and rabbits has degraded vegetation to varying degrees. The

vegetation within the SML has been fenced from grazing since the mid-1980s and is in reasonable condition, however some impacts from air emissions are visible in close proximity to the mine site.

The condition of the vegetation along the 275 kV transmission line corridor is generally typical of the arid zone, and can vary, being dependent upon the season (and amount of rainfall), abundance of feral animals and pastoral stocking pressure.

3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The topography in the SML and Roxby Downs Municipality is of generally low relief, the area being dominated by a landform of low undulating dunes, swales and clay pans, with extensive sand sheets, dunes and low silcrete-capped rises.

The topography of the wellfields, the primary focus area for water investigations and the wider indicative water investigation area is of generally low relief. The region of Wellfield A is dominated by undulating gibber tableland with gilgai depressions. Existing production bores in Wellfield B occur on land characterised by clay and loam flats. The proposed primary focus area for water investigations and the wider indicative water investigation area span sandhills and flats towards the north and dune fields and undulating tableland to the east. The existing pipeline corridor connects the SML and Wellfield A and B with topography transitioning between that described above.

The topography of the 275 kV transmission line is varied, transitioning from dunefields, plains and undulating tableland at the northern end, through to sand sheets, stony rises and plains midway, and stony tablelands, saline sandplains, dunes and plains along the southern end of the transmissions line. The southern end of the transmission line is of low relief.

3.7 Describe the current condition of the environment relevant to the project area.

As outlined in Section 3.5, native vegetation in the region is relatively intact, with some areas highly disturbed. Extensive grazing of rangelands by livestock and rabbits has degraded vegetation to varying degrees.

Weed species such as Salvation Jane (*Echium plantagineum*), Potato Weed (*Heliotropium europaeum*) and Buffel Grass (*Cenchrus ciliaris*) occur but are generally in low numbers in this arid environment. Feral animals have been eradicated from within the Arid Recovery reserve (see Figure 1-2 in Attachment 1 for Arid Recovery location) but are prevalent outside of this reserve. Common feral species include the European Rabbit, European Red Fox and Feral Cat.

The vegetation within the SML has been fenced from grazing since the mid-1980s and is in reasonable condition, however some impacts from air emissions are evident in close proximity to the mine site.

Olympic Dam land disturbance is reported annually to the State by way of detailed reporting against project element footprints. The EPMP Report (2019) reported that 4881.9 ha has

already been disturbed for all Olympic Dam operations and related activities to 30 June 2019. This existing land disturbance project footprints for Olympic Dam include the Roxby Downs town development, Olympic Dam village development, airport and related infrastructure, the power line corridor from Port Augusta, the wellfields pipeline corridor, pump stations and related infrastructure, the SML and the expansion open pit project (ODX) 2009.

The overall land disturbance project footprint for the proposed action, including existing land disturbance for all Olympic Dam operations at the date of approval, is expected to be approximately 8350 ha. Further information is provided in Attachment 1 Project Description.

Once the water pipeline corridor leaves the SML north of Olympic Dam, it is located solely on pastoral properties. The pipeline corridor transects the dog fence approximately 20 km north of Olympic Dam and as such, the surrounding land is utilised for cattle grazing. The region has been subjected to grazing (camels, sheep and cattle) since the late 1800s (Gee 2000) and vegetation is in varying condition depending on proximity to water sources. The above description also applies to the proposed location of the new water supply infrastructure in the indicative water investigation area.

The southern section of the 275 kV transmission line is located on pastoral properties and is utilised predominantly for sheep grazing. Weeds commonly associated with sheep grazing are prevalent in the area.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

There are no Commonwealth Heritage Places related to the proposed action.

Finniss Springs Mission and Pastoral Station, Kati Thanda-Lake Eyre National Park and Elliot Price Conservation Park have been nominated for inclusion on the National Heritage List (DEW 2019) however they have not yet been assessed for inclusion. Finniss Springs (Indigenous Land) is located approximately 75 km northeast of the SML (and is crossed by the existing water supply pipeline) (see Figure 3-1 in Attachment 3). Kati Thanda-Lake Eyre National Park is located immediately west of the western border of the indicative water investigation area and Elliott Price Conservation Park is approximately 48 km from the western border of the indicative water investigation area.

A number of places listed under State heritage legislation occur in the vicinity of the Project area, including Andamooka Historic Precinct (24 km east of the SML), Dick Clark's Residence (25 km east of the SML), Lake Palankarina Fossil Reserve (~ 45 km north east of the closest production bore in Wellfield B) within the indicative water investigation area and Lakes Kanunka, Pitikanta and Ngapakaldi (Tertiary Vertebrate Fossil Sites – designated place of palaeontologic significance) (located approximately 80 – 87 km north north east of the closest production bore in Wellfield B; Lakes Kanunka and Pitikanta are located just within the north western corner of the indicative water investigation area and Lake Ngapakaldi is located just outside the north western corner of the indicative water investigation area).

3.9 Describe any Indigenous heritage values relevant to the project area.

As noted in Section 2.10.1, the proposed action encompasses traditional lands of the Kokatha, Barngarla, Kuyani, Arabana and Dieri Traditional Owners.

Historically, the wider region of Olympic Dam and the wellfields was subject to Aboriginal occupation, and no Aboriginal communities lived there permanently. However, many sites and artefacts remain as evidence of historical Aboriginal occupation and use, and the area is rich in surface scatters of stone artefacts and quarries. Cultural heritage is important to contemporary Aboriginal people.

The 2009 BHP Billiton Olympic Dam Expansion draft Environmental Impact Statement (EIS) contains a detailed overview of cultural heritage matters related to the Olympic Dam area (See Chapter 17 in BHP Billiton 2009). This is further supported by chapter 18 of the 2011 Supplementary EIS (BHP Billiton 2011).

Both documents reflect a high level of consultation with traditional owner groups on cultural heritage management and outline the detailed assessments undertaken as part of that project proposal. The documents also outline the extensive cultural heritage surveys which have been completed over several decades. Although those assessments were undertaken for an expansion project that was ultimately not carried out, the assessment of heritage values is relevant for the OD-RDS since many activities for the OD-RDS will be in the same area.

Indigenous heritage values in the Olympic Dam area include archaeological and anthropological sites. The SML and Roxby Downs Municipality have been extensively surveyed for Aboriginal heritage artefacts and sites. Extensive salvage activities have also been undertaken with the Traditional Owners on the SML in accordance with consents issued in 2010 pursuant to sections 25 (1) and 25 (2) of the Aboriginal Heritage Act. Further, over 20 archaeological and anthropological surveys have been undertaken on the existing wellfields, pipelines and transmission line.

Olympic Dam maintains an online GIS database which contains all previous heritage surveys and known site locations within the existing Olympic Dam infrastructure footprint.

Regular consultation with traditional owner groups, and further cultural heritage assessment, is planned for the Proposed Action in accordance with relevant legislation and the Stakeholder Engagement Plan. This will be described in more detail in the assessment documentation.

There are no formally listed non-Aboriginal heritage sites within the SML, Roxby Downs Municipality, Wellfield B or on the pipeline or transmission line corridors.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

The area of the mine site is on the SML and is freehold land held by BHP. Tenure of land relevant to the proposed action in the Roxby Downs Municipality, wellfields, existing infrastructure corridors and the indicative water investigation area is varied, including freehold land held by BHP, and easements, leases or licences over the underlying land tenure (which includes freehold, Crown land, or pastoral lease). Attachment 2 provides a list of titles and figures for the Proposed Action. It is noted that additional titles may be involved as

investigations progress and the project detail is developed.

When the details of any supporting infrastructure off the SML are identified and confirmed, a review of tenure will be completed, and additional licences/leases or other tenure will be sought as may be required.

3.11 Describe any existing or any proposed uses relevant to the project area.

The SML is currently used for mining and processing purposes and the future land use will be consistent with the existing mining and processing. Facilities and infrastructure on the SML include but are not limited to those related to mining, processing, on site waste management, water supply, energy supply and transport. Buffer areas of vegetation and habitat occur within the SML, while a dedicated conservation area, Arid Recovery, is within and immediately north of the SML.

Land on the Roxby Downs Municipality is largely nature reserve or recreation, except for the Roxby Downs township and Olympic Dam Village. These areas are used for housing and accommodation, recreation, light industrial, waste storage and treatment and commercial.

Land use outside the SML on the pipeline corridor, wellfields and the 275 kV transmission line corridor is largely used for sheep and cattle grazing and is expected to remain the same, with appropriate arrangements in place for long-term access and maintenance. The primary focus area for water investigations and the wider indicative water investigation area on pastoral land adjacent to Kati Thanda-Lake Eyre National Park.

The existing 275 kV transmission line also crosses the Woomera Prohibited Area, which is state owned land used by the Department of Defence for the testing of war materiel. The Woomera Prohibited Area comprises extensive lands north of the Indian Pacific railway, from north of Watson in the south-west up to its north-west corner in the Great Victoria Desert, across to Coober Pedy, and west of Roxby Downs down to Woomera in the south-east (Department of Defence 2019).

Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The proposed action will primarily involve upgrades, intensifications, replacements and expansions of existing operations, though it will also include some new projects. Given the proposed action is a continuation of existing operational procedures and within the existing SML, Roxby Downs Municipality, wellfields and extending into the indicative water investigation area and in existing and new infrastructure corridors, measures to avoid or reduce impacts from OD-RDS are proposed to be consistent with those successfully implemented and managed at Olympic Dam since 1988.

Olympic Dam currently has an EPMP, which is a requirement of the Indenture. It sets out ODC's program relating to the protection, management and rehabilitation of the environment in respect of BAU operations. BHP proposes to manage the Proposed Action under a consistent EPMP program. Elements of the EPMP may be the subject of approval conditions too, however, the nature of approval conditions (and whether they should include management prescriptions, or be outcomes focussed), will be the subject of the condition setting process should approval be issued.

The current EPMP comprises the following;

- The Environmental Management Manual: this document provides background information, explains the environmental management system used to manage environmental risks and obligations in relation to ODC's Olympic Dam operations and explains the regulatory framework for the EPMP and how the EPMP operates (including the enforcement regime).
- The Environmental Management Program: documents the processes, systems, criteria and other requirements designed to manage environmental aspects and impacts.
- The Environmental Management Program Targets, Actions and Major Changes (Annual Actions and Targets (AAT)) which guide ongoing environmental improvement.
- The Monitoring Programs: set out how requirements of the Management Program are measured. Monitoring Programs include Airborne Emissions, Energy Use and Greenhouse Gas, Environmental Radiation, Fauna, Flora, Great Artesian Basin, Groundwater, Social Effects and Waste.

- The Closure Management and Rehabilitation Plan: describes how the Olympic Dam operation will be successfully closed and rehabilitated to achieve the agreed postclosure land-uses and environmental outcomes. The plan also outlines the performance criteria that will be used to measure successful closure and rehabilitation.

Potential impacts of the proposed action on MNES are detailed in Table 2.4.1 and Table 2.5.1.

Specific MNES and the measures which are proposed to be implemented to avoid, reduce or manage impacts are detailed below.

The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin (GAB) (Endangered) and Salt Pipewort (Eriocaulon carsonii) (Endangered)

- Detailed modelling will be undertaken to assess suitable locations for production bore(s) and minimise any potential impacts to GAB springs.

- As part of the EPMP, monitoring programs currently assess aspects of GAB and spring health in the vicinity of the wellfields, and collectively provide an assessment of the impacts to GAB spring dependent listed species and threatened communities, and assess performance against outcomes listed in the EPMP. These include measurement of GAB spring flow rates, surveys of aquatic spring invertebrates and surveys of spring dependant plant communities including the Salt Pipewort (*Eriocaulon carsonii*). Monitoring programs consistent with this are proposed to be used for the proposed action.

Frankenia plicata Southern Sea-heath (Endangered)

- An onground ecological assessment of the location for the new water supply infrastructure in Wellfield B will be undertaken to determine the potential presence of Southern Sea-heath. If detected, infrastructure will be located to avoid significant impact on Southern Sea-heath.

Dusky Hopping Mouse (*Notomys fuscus*) (Vulnerable); Plains Rat (*Pseudomys australis*) (Vulnerable)

- Onground ecological assessment of the potential location of new water supply infrastructure will clarify the potential for presence of these species to verify or update the assessment summarised in this referral.

- Implementation of a trench management plan for the construction of the new connecting water pipeline will ensure any potential impacts to fauna are minimized.

Additional measures that are proposed to be implemented to protect all MNES are further detailed below:

- BHP are currently seeking opportunities to reduce water use and demand through the implementation of equipment to aid in the recovery of excess steam not consumed within the processing phase, reducing process water used through increasing the neutral thickener underflow and including covering neutral (process) water ponds to reduce water evaporation. Additional water sources (e.g. supply by third parties) will continue to be investigated.

- The current internal Land Disturbance Permit process which assess and condition land clearing, and aims to reduce impacts from land disturbance (e.g. by avoiding listed species habitat and known populations) is proposed to continue as an internal procedural document.
- Clearance will avoid preferred habitat of listed species where practicable.
- Expansion of and new existing facilities and infrastructure is proposed to occur in previously cleared or disturbed areas where practicable. Significant environmental benefit offsets will be provided using appropriate mechanisms, for example, under the Native Vegetation Act 1991 (SA).
- Flora and Fauna monitoring programs and reporting. Protocols to be implemented for management of waste during construction to avoid attracting feral pest animals.
- Vehicle hygiene practices to be implemented during and post construction to limit the establishment of weed species or diseases.

If the environmental assessment determines that a significant residual impact will remain, BHP will propose a strategic biodiversity offsets package to be considered as part of the action.

Any strategic biodiversity offsets package will be developed in consultation with the DoEE and DEW based on the principles as set out in the Australian Government Environmental Offsets Policy (DSEWPaC, 2012) (Cth Policy) and the South Australian Government Policy for a Significant Environmental Benefit (2016) (SA Policy), to provide environmental offsets if there are expected significant residual impacts of the proposal.

In identifying any environmental offsets to be considered as part of the proposal, the following will be considered:

- The overall objective of the Cth Policy is to ensure the efficient, effective, timely, transparent, proportionate, scientifically robust and reasonable use of offsets under the EPBC Act to achieve an overall conservation outcome that improves or maintains the viability of the relevant aspect of the environment
- The overall objective of the SA Policy is an action that results a positive impact on the environment that is over and above the negative impact of native vegetation clearance
- The use of environmental offsets will not replace proper onsite environmental practices, such as avoidance and mitigation
- Environmental offsets should be proportionate to the significance of the environmental value being impacted with a preference for cost effective solutions
- Environmental offsets should be applied within a framework of adaptive management

In any consideration of environmental offsets for any significant residual environmental impacts, BHP will be seeking ways in which a strategic biodiversity offsets strategy can utilise and complement existing offsets programs, such as the Gosse Springs and Emerald Springs SEBs. Consideration will also be given to long term strategic biodiversity offsets, including a staged

approach to offsets, to ensure that any biodiversity offsets packages take into account Olympic Dam's life of operation.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

Environmental outcomes that ODC aims to achieve relating to potential environmental impacts of current Olympic Dam operations are detailed in the current Environmental Management Program as part of the EPMP. Environmental outcomes for the proposed action are expected to be similar to current operations.

The current environmental outcomes as outlined in the Environmental Management Program (BHP 2018c) are listed below, divided into five categories and further subdivided into specific Environmental Management Programs focused on one specific aspect and impact.

Use of Natural Resources

Land disturbance and rehabilitation

- No significant adverse impacts to populations of listed species (South Australian, Commonwealth) as a result of the construction, operation and closure of Olympic Dam.

Aquifer Level Drawdown

- No significant adverse impacts to existing thirdparty users' right to access water from within the GAB wellfield Designated Areas for the proper development or management of the existing use of the lands as a result of ODC activities.

- No significant adverse impacts to the availability and quality of groundwater to existing Stuart Shelf thirdparty users as a result of groundwater drawdown associated with ODC activities.

- No significant adverse impact on groundwaterdependent listed species or ecological communities as a result of groundwater drawdown associated with ODC activities

Storage, Transport and Handling of Hazardous Materials

Chemical/hydrocarbon spills

- No significant site contamination of soils, surface water or groundwater, as a result of the transport, storage or handling of hazardous substances associated with ODC's activities.

Radioactive Process Material Spills

- No adverse impacts to public health as a result of radioactive process material spills from ODC's activities.

- No significant adverse impacts to populations of listed species or ecological communities as a result of radioactive process material spills from ODC's activities.

Operations of Industrial Systems

Particulate emissions

- No adverse impacts to public health as a result of particulate emissions from ODC's activities.

Sulphur dioxide emissions

- No adverse impacts to public health as a result of sulphur dioxide emissions from ODC's operations.

Saline Aerosol Emissions

- No significant adverse impacts to populations of listed species (South Australian, Commonwealth) as a result of ODC's activities.

Radioactive emission

- No adverse impacts to public health as a result of radioactive emissions from ODC's activities.
- No significant adverse impacts to populations of listed species or ecological communities as a result of radioactive emissions from ODC's activities.

Greenhouse Gas emissions

- Contribute to stabilising global atmospheric greenhouse gas concentrations to minimise environmental impacts associated with climate change.

Generation of Industrial Waste

Embankment stability of TSF

- No significant TSF embankment failure

Tailings Seepage

- No significant adverse impact on vegetation as a result of seepage from the TSF.
- No compromise of current and future land uses on the SML or adjoining areas as a result of seepage from the TSF.
- No compromise of the environmental values of groundwater outside the SML as a result of seepage from the TSF.

Fauna interactions with tailings retention system

- No significant adverse impacts to listed species (South Australian, Commonwealth) as a result of interactions with the Olympic Dam tailings retention system.

Solid Waste Disposal

- No significant adverse impacts as a result of management of solid waste.

Radioactive waste

- No adverse impacts to public health as a result of radioactive waste from ODC's activities.
- No significant adverse impacts to populations of listed species or ecological communities as a result of radioactive waste from ODC's activities.

Interaction with Communities

Community interactions

- Residents in Roxby Downs, Andamooka and Woomera have a favourable view of ODC.

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

5.1.1 World Heritage Properties

No

5.1.2 National Heritage Places

No

5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)

No

5.1.4 Listed threatened species or any threatened ecological community

No

5.1.5 Listed migratory species

No

5.1.6 Commonwealth marine environment

No

5.1.7 Protection of the environment from actions involving Commonwealth land

No

5.1.8 Great Barrier Reef Marine Park

No

5.1.9 A water resource, in relation to coal/gas/mining

No

5.1.10 Protection of the environment from nuclear actions

Protection of the environment from nuclear actions - Yes

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

Not applicable

Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

ODC has operated the Olympic Dam mine since the commencement of underground mining in 1988. Extensive monitoring, regulation, reporting and review of the operation has occurred over that time and the operation has had no significant adverse impacts on the environment.

Environmental performance is reported annually to the State Government. Past copies of the annual environmental management and monitoring report are available on the website of the SA Government Department for Energy and Mining.

(http://www.energymining.sa.gov.au/minerals/mining/mines_and_quarries/olympic_dam)

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

Not applicable

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

Olympic Dam has an environmental management system (EMS) certified in accordance with the operation's AS/NZS ISO 14001:2015, a principal component of which is the EPMP. The EPMP is approved by both the State and Commonwealth Governments.

The overall structure of the ODC EMS and hierarchy of documents is illustrated in Attachment 8. The scope of the EPMP is defined within the central, orange portion of the diagram.

Within BHP, the management of environment and community is guided by the BHP Charter and

Our Requirements. These cover the entire lifecycle of operations, from exploration and planning through to operation and closure (decommissioning, remediation and rehabilitation).

The relevant objectives of Our Requirements are to support the implementation of the Charter and the Guide to Business Conduct across BHP and include:

- Providing a risk-based environment and community management system framework, consistent with BHP Risk Management Policy; international policies, standards and management practices to which BHP has committed. These international standards and management practices include United Nations Global Compact; United Nations Universal Declaration of Human Rights; International Council on Mining and Metals (ICMM) Sustainable Development Framework; World Bank Operational Directive on Involuntary Resettlement; US-UK Voluntary Principles on Security and Human Rights; recommendations of the International Commission on Radiological Protection (specifically the system of dose limitation); negotiated agreements with local communities and other regional commitments.
- Setting out and formalising the expectations for progressive development and implementation of more specific and detailed Environment and Community management systems at all levels of BHP;
- Providing auditable criteria, against which environment and community management systems across BHP can be measured; and
- Driving continual improvement towards leading industry practice.

Guided by the Charter and Our Requirements, the EMS (and EPMP) at Olympic Dam are implemented through a four-tiered approach. These consist of an overarching policy (in the form of the sustainable development commitment), followed by the standards and procedures (the Environmental Management Manual (EMM), Environmental Management Program (EMP) and Monitoring Programs that together make up the EPMP.

The EPMP incorporates an environmental management program (EMP) that addresses the potentially significant environmental aspects and impacts that have been identified through an analysis and prioritisation of the environmental risks, legal obligations and community concerns relevant to ODC. It documents the processes, systems, criteria and other requirements designed to manage the prioritised aspects and impacts, including (as appropriate):

- Environmental values, and the key risks to those values;
- Environmental outcomes that ODC is required to achieve relating to potential environmental impacts;
- Clear, specific and measurable compliance criteria that demonstrate achievement of the outcome(s);
- Leading indicator(s) criteria, providing early warning of trends that indicate a compliance criterion may not be met;
- Management and operational controls designed to deal with the environmental risk (of the

impact), including any regulatory conditions (where specified); and

- Contingency options to be used in the event that identified risks are realised.

The EMP is divided into five distinct categories or 'IDs', each related to an area of the operation for which specific environmental management measures are required. Each ID is further subdivided into the specific EMP focused on one specific aspect and impact. The five top level IDs are:

- Use and disturbance of natural resources. This includes measures for dealing with environmental impacts associated with land clearing and disturbance, spread of weeds and other pest species, and groundwater level drawdown.
- Storage, transport and handling of hazardous materials. This includes prevention and mitigation of environmental impacts as a result of spills involving chemicals, hydrocarbons or radioactive process materials.
- Operation of industrial systems. This includes control and prevention measures for emissions associated with the operation of the Olympic Dam mine and processing facility. These include particulate (dust) and radioactive emissions, sulphur dioxide and greenhouse gases.
- Generation of industrial wastes. This includes measures for dealing with environmental impacts resulting from waste generation and storage. This includes issues associated with the storage of tailings, such as seepage to groundwater, embankment wall stability, and impacts to native fauna (birds) arising from contact with the tailings storage facilities. Also included are controls for waste rock storage, and the disposal and storage of radioactive and solid wastes.
- Interaction with communities. This covers employment and accommodation of people and measures for social cohesion.

The EMP also refers to a number of monitoring programs describing how data is collected to support the outcomes and criteria of each ID in the EMP.

See Attachment 8 for the Olympic Dam Environmental Policy. The planning framework and the EPMP itself, can be found for the financial year 2018 (FY18) under Environmental Protection and Management Program; <https://www.bhp.com/environment/regulatory-information>) (under 'Copper' and then 'Olympic Dam').

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

BHP Billiton Olympic Dam Corporation Pty Ltd/Mining/Roxby Downs/South Australia/Olympic Dam Evaporation Pond 6 (Reference number 2019/4436)

BHP Billiton Olympic Dam Corporation Pty Ltd /Mining/Volume 5140 Folio 575 (Section 1475 and 1516 Out of Hundreds (Andamooka))/South Australia/Olympic Dam Operations Tailings Storage Facility Six, SA (Reference number: 2019/8465)

BHP Billiton Olympic Dam Corporation Pty Ltd/Mining/Olympic Dam/SA/Increasing a wall height of the tailings storage facility (TSF4), Olympic Dam, SA (Reference number: 2015/7416)

BHP Billiton Olympic Dam Corporation Pty Ltd/Mining/Olympic Dam, Roxby Downs, SA/South Australia/Olympic Dam Heap Leach Trial, Roxby Downs, SA (Reference number 2014/7280)

BHP Billiton Olympic Dam Corporation Pty Ltd/Commercial development/Port Bonython/SA/Pilot desalination plant, Olympic Dam Expansion Project (Reference number: 2007/3391) (Note this project has not commenced).

Expansion of the Olympic Dam copper, uranium, gold and silver mine, processing plant and associated infrastructure (EPBC 2005/2270). (Note this project has not substantially commenced).

Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
Arid Recovery 2017. Build it and they will come. http://www.aridrecovery.org.au/arid-recovery-news/build-it-and-they-will-come	Reliable	Nil
Arid Recovery 2018a. Burrowing Bettong. http://www.aridrecovery.org.au/CatalogueRetrieve.aspx?ProductID=9798900&A=SearchResult&SearchID=11878713&ObjectID=9798900&ObjectType=27	Reliable	Nil
Arid Recovery 2018b. Western Quoll. http://www.aridrecovery.org.au/western-quoll	Reliable	Nil
Arid Recovery 2018c. Greater Stick-nest Rat. http://www.aridrecovery.org.au/greater-stick-nest-rat	Reliable	Nil
Arid Recovery 2018d. Greater Bilby. http://www.aridrecovery.org.au/greater-bilby	Reliable	Nil
Arid Recovery 2018e. Western Barred Bandicoot. http://www.aridrecovery.org.au/western-barred-bandicoot	Reliable	Nil
Barrett GA, Silcocks S, Poulter BR and Cunningham R (2002). Australian Bird Atlas 1998-2001 Main Report To Environment Australia. Melbourne: Birds Australia.	Reliable	Age of information
Bamford M, Watkins D, Bancroft W, Tischler G and Wahl J (2008). Migratory Shorebirds of the East Asian – Australasian Flyway: Population	Reliable	Age of information

Reference Source	Reliability	Uncertainties
estimates and internationally important sites. Department of the Environment, Water, Heritage and the Arts, Wetlands International-Oceania. Canberra, ACT. http://www.environment.gov.au/biodiversity/migratory/publications/shorebirds-east-asia.html .		
BHP Billiton 2009. Olympic Dam Expansion Draft Environmental Impact Statement. https://www.bhp.com/environment/regulatoryinformation	Reliable	Age of information
BHP Billiton 2011. Olympic Dam Expansion Supplementary Environmental Impact Statement. https://www.bhp.com/environment/regulatoryinformation	Reliable	Age of information
BHP Billiton 2013a. Monitoring Program – Fauna'. No. 2663 V.16. https://www.bhp.com/-/media/bhp/regulatory-information-media/copper/olympic-dam/0000/monitoring-programs-mps/130717_copper_olympicdam_2663monitoringprogramfauna2013.pdf	Reliable	Age of information
BHP 2017. Annual Environmental Protection and Management Program Report, Olympic Dam, 1 July 2016 – 30 June 2017.	Reliable	Nil
BHP 2018a. Annual Environmental Protection and Management Program Report, Olympic Dam, 1 July 2017 – 30 June 2018. https://www.bhp.com/-/media/bhp/regulatory-information-media/copper/olympic-dam/0000/annual-environment-reports/fy18-epmp-report.pdf	Reliable	Nil
BHP 2018b. Olympic Dam Great Artesian Basin Wellfields Report, 1 July 2017 – 30 June 2018. https://www.bhp.com/-/m	Reliable	Nil

Reference Source	Reliability	Uncertainties
edia/bhp/regulatory-information-media/copper/olympic-dam/0000/annual-environment-reports/awr_fy18_final.pdf		
BHP 2018c. Environmental Management Program. https://www.bhp.com/-/media/bhp/regulatory-information-media/copper/olympic-dam/0000/environment-protection-and-management-program-current-sa-govt/environment-management-program.pdf	Reliable	Nil
Department of Defence 2019. About the Woomera Prohibited Area. http://www.defence.gov.au/woomera/about.htm	Reliable	Nil
DEW (Department for Environment and Water) 2019. Biological Databases of South Australia – NatureMaps. https://data.environment.sa.gov.au/NatureMaps/Pages/default.aspx	Reliable	Nil
Department of the Environment (DOE) 2015. Draft Referral Guide for 14 migratory birds listed under the EPBC Act. http://www.environment.gov.au/biodiversity/threatened/publications/epbc-act-referral-guidelines-migratory-birds .	Reliable. High- Government prescribed document.	Nil
Duguid A, Kerrigan R and Albrecht A 2006. Threatened Species Information Sheet – Eleocharis papillosa, Northern Territory Parks & Wildlife Commission. https://nt.gov.au/_data/assets/pdf_file/0020/208433/eleocharis-papillosa.pdf	Reliable. High- Government prescribed document.	Age of information
Fatchen TJ and Fatchen DH 1993. Dynamics of vegetation on mound springs in the Hermit Hill region, northern South Australia. Unpublished report prepared for WMC (Olympic Dam Operations) Pty Ltd.	Reliable	Age of information
Gee P 2000. A History of Pastoralism in the Lake Eyre South Drainage Basin. Lake	Reliable	Age of information

Reference Source	Reliability	Uncertainties
Eyre South Monograph Series, Volume 7, Royal Geographical Society of South Australia Inc.		
Higgins, P.J. and Davies SJJF (eds) 1996. Handbook of Australian, New Zealand and Antarctic Birds. Volume Three - Snipe to Pigeons. Melbourne, Victoria: Oxford University Press.	Reliable	Age of information
Higgins P.J. Peter J.M. and Steele W.K. (eds) 2001. Handbook of Australian, New Zealand and Antarctic Birds. Volume Five - Tyrant-flycatchers to Chats. Oxford University Press. Melbourne.	Reliable	Age of information
International Union for Conservation of Nature and Natural Resources 1996. 1996 IUCN red list of threatened animals. Gland, Switzerland: IUCN.	Reliable	Age of information
Kinhill Engineers (Pty Ltd) 1997. Olympic Dam Expansion Project: Environmental Impact Statement. May 1997. https://www.bhp.com/environment/regulatory-information	Reliable	Age of information
Kinhill-Stearns Roger Joint Venture 1982. Olympic Dam Project: Draft Environmental Impact Statement. https://www.bhp.com/environment/regulatory-information	Reliable	Age of information
Moseby K 2012. National Recovery Plan for the Plains Mouse <i>Pseudomys australis</i> . Department of Environment, Water and Natural Resources, South Australia. http://www.environment.gov.au/system/files/resources/1b308359-c8ec-49e7-a41-be78ea7f68fe/files/pseudomys-australis.pdf	Reliable. High- Government prescribed document.	Age of information.
National Murray Cod Recovery Team 2010. National Recovery Plan for the Murray Cod	Reliable. High- Government prescribed document.	Age of information.

Reference Source	Reliability	Uncertainties
Maccullochella peelii peellii. https://www.environment.gov.au/system/files/resources/bcc0fbf6-279b-4c52-88c5-42ce4d44b864/files/murray-cod.pdf		
Orchard AE. and Wilson AJG. (eds) 2001. Flora of Australia, Volume 11A, Mimosaceae, Acacia Part 1. CSIRO Publishing. Collingwood.	Reliable.	Age of information.
Ponder WF 1995. Mound spring snails of the Australian Great Artesian Basin. In: Kay EA (ed). The conservation biology of molluscs, IUCN: Gland, Switzerland. pp. 13-18.	Reliable.	Age of information.
Symon DE 1985. Botanical notes on mound springs and bores. In: eds. Greenslade P, Joseph JL and A. Reeves South Australia 's mound springs,. Adelaide: Nature Conservation Society of South Australia Inc.	Reliable.	Age of information.
WA DPW (Western Australia Department of Parks and Wildlife) 2017. Numbat (Myrmecobius fasciatus) Recovery Plan. Wildlife Management Program No. 60. Prepared by J.A. Friend and M.J. Page, Department of Parks and Wildlife, Perth, WA.	Reliable	Nil

Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

Not applicable.

If the OD-RDS does not proceed, BAU activities will continue, as described above. There are no other feasible alternative actions.

8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?

No

Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Asset President

9.2.2 First Name

Laura

9.2.3 Last Name

Tyler

9.2.4 E-mail

gregory.hill@bhp.com

9.2.5 Postal Address

GPO Box 1777
Adelaide SA 5000
Australia

9.2.6 ABN/ACN

ABN

99007835761 - BHP BILLITON OLYMPIC DAM CORPORATION PTY LTD

9.2.7 Organisation Telephone

0467782374

9.2.8 Organisation E-mail

gregory.hill@bhp.com

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature: Date:

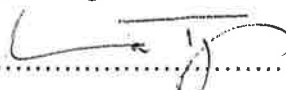
9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, LAURA TYLER, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature:  Date: 23/10/19

I, _____, the person proposing the action, consent to the designation of _____ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature: Date:

9.3 Is the Proposed Designated Proponent an Organisation or Individual?

Organisation

9.5 Organisation

9.5.1 Job Title

Asset President

9.5.2 First Name

Laura

9.5.3 Last Name

Tyler

9.5.4 E-mail

gregory.hill@bhp.com

9.5.5 Postal Address

GPO Box 1777
Adelaide SA 5000
Australia

9.5.6 ABN/ACN

ABN

99007835761 - BHP BILLITON OLYMPIC DAM CORPORATION PTY LTD

9.5.7 Organisation Telephone

0467782374

9.5.8 Organisation E-mail

gregory.hill@bhp.com

Proposed designated proponent - Declaration

I, LAURA TYLER, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.

Signature:  Date: 23/10/19

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Manager Environment A&I South Minerals Australia

9.8.2 First Name

Gregory

9.8.3 Last Name

Hill

9.8.4 E-mail

gregory.hill@bhp.com

9.8.5 Postal Address

GPO Box 1777
Adelaide SA 5000
Australia

9.8.6 ABN/ACN

ABN

99007835761 - BHP BILLITON OLYMPIC DAM CORPORATION PTY LTD

9.8.7 Organisation Telephone

0467782374

9.8.8 Organisation E-mail

gregory.hill@bhp.com

Referring Party - Declaration

I, Gregory Hill, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.

Signature:  Date: 23.10.19

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

1. Att1.pdf
2. Att2.pdf
3. Att3.pdf
4. Att4.pdf
5. Att5.pdf
6. Att6.pdf
7. Att7.pdf
8. Att8.pdf
9. Att9.pdf
10. Att9_v2.pdf