

Australian Government

Department of the Environment and Energy

Statement of Reasons for a Decision on Controlled Action Under the Environment Protection and Biodiversity Conservation Act 1999

I, GREGORY MANNING, Assistant Secretary, Department of the Environment and Energy, delegate for the Minister for the Environment, provide the following statement of reasons for my decision of 19 December 2019, under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), that the proposed action by BHP Billiton Olympic Dam Corporation Pty Ltd (BHP) to construct, commission, operate and close an additional tailings storage facility cell, and associated infrastructure at the Olympic Dam mine and processing facility, is not a controlled action under the EPBC Act (EPBC 2019/8465).

LEGISLATION

1. Relevant legislation is set out at Annexure A.

BACKGROUND

- On 24 May 2019, BHP submitted a referral under the EPBC Act for the development of Tailings Storage Facility six (TSF 6). The referral was validated by the Department on 29 May 2019. BHP stated in the referral its belief that the proposal is not a controlled action for the purposes of the EPBC Act.
- 3. On 19 December 2019, I, the Minister's delegate, made a decision in accordance with section 75 of the EPBC Act that the proposed action is not a controlled action.

MATERIAL OR EVIDENCE ON WHICH MY FINDINGS WERE BASED

Referral decision brief

- 4. In making my decision I took into account the referral decision brief prepared by the Department dated 16 December 2019 which had the following attachments:
 - a) The referral documentation and attachments that were submitted in accordance with section 68 of the EPBC Act;
 - b) Additional information from BHP;
 - c) Advice provided on the referral by the Migratory Species section, Supervising Scientist Branch and Office of Water Science.
 - d) Public comments;
 - e) Ministerial comments;
 - f) Decision notice;
 - g) Letters to the person proposing the action and Ministers;
 - h) Statutory documents;
 - i) Additional information from the South Australian (SA) Government;

- j) 1998 letter from Minister for Resources and Energy to BHP;
- k) Analysis of Office of Water Science (OWS) concerns about tailings leaks and seepage.
- 5. The officers of the Department who prepared the referral decision brief did so under my supervision and in consultation with me about its contents.

Public Submissions

- In accordance with section 74(3) of the EPBC Act, the referral was published on the Department's website on 17 June 2019 and public comments were invited until 1 July 2019. There was a delay in publishing the referral and inviting comment after the referral was validated on 29 May 2019; however, this delay did not affect or invalidate the consultation process.
- 7. Nine (9) public submissions were received on the referral. I noted that the submissions were opposed to the proposed action, and that a summary of the public comments was provided to me as part of the referral decision brief.
- 8. I noted that the submissions raised the following issues:
 - failure of the tailings dam wall in Brazil (further detail below) and the 'extreme' risk rating associated with three tailings dams already at Olympic Dam;
 - radiation hazard and the need for BHP to undertake a comprehensive risk assessment to determine the long-term (10,000 years) risk to the public and the environment from the radioactive tailings;
 - impacts to species, including listed threatened species and communities and listed migratory species; and
 - the Olympic Dam operation should be assessed in its entirety with the full project impact to be subject to public consultation.

9. I noted that BHP explained:

The reference to an 'extreme' risk rating associated with three tailings dams already at Olympic Dam was not discussed above. The Australian National Committee on Large Dams (ANCOLD), formed in 1937, is an Australian based apolitical industry body that focuses on disseminating knowledge, developing capability and providing guidance in achieving excellence for all aspects of dam engineering, management and associated issues.

ANCOLD assigns "Consequence Categories" to a dam according to the seriousness, and magnitude, of the adverse consequences affecting the community's interests, including environmental effects, which could be expected to result from that dam's failure. In assigning such consequence categories, no account is taken of the likelihood of dam failure. The consequence rating is not a measure of any dam's stability or other risk status. Thus, a dam which meets the highest safety standards, and therefore is highly improbable to fail, can have an extreme Consequence Category.

Currently, the TSF6 dam has been given a consequence category of 'extreme' due to the possible loss of life from a (an improbable) loss of containment at full height. The consequence category is used to define the level of surveillance, monitoring, audits and the parameters used for the safe design and management of the

proposed facility. The surveillance and design requirements form part of the controls to prevent a failure.

BHP state the recommended actions associated with the findings of an internal tailings dam review that was undertaken by BHP following the Samarco Fundão dam failure in Brazil on 5 November 2015 have been fully implemented. BHP's TSF6 Project Team has reviewed these findings and actions and has incorporated all relevant actions. I have considered the design and management measures in place for the proposed project as set out above under the heading 'Seepage and leakage into soil and groundwater'.

10. The Departmental briefing advised me that the other concerns raised in submissions about the identified relevant impacts were considered.

Comments from Commonwealth Ministers

- 11. On 17 June 2019, in accordance with section 74(1) of the EPBC Act, comments on the referral were invited from the following Commonwealth ministers:
 - The Hon Greg Hunt MP, Minister for Health;
 - The Hon Ken Wyatt AM MP, Minister for Indigenous Australians;
 - Senator the Hon Matt Canavan, Minister for Resources and Northern Australia; and
 - Mr Lloyd Woodford, delegate of Senator the Hon Linda Reynolds CSC, Minister for Defence.
- 12. On behalf of Minister Hunt, the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) responded on 1 July 2019 and noted that the proposed action can be considered a nuclear action under section 22(1)(e) of the EPBC Act due to the establishment of a large-scale disposal facility for radioactive waste. ARPANSA also noted that due to Olympic Dam being an established site with a long history of radiation and TSF management, the proposed action is unlikely to constitute an additional impact to the environment from a radiation protection perspective.
- 13. On behalf of Minister Canavan, Geoscience Australia responded on 1 July 2019 and noted that Geoscience Australia is not aware of any geotechnical or geological considerations associated with the proposed action that have the potential to impact on MNES.
- 14. I took into account the above comments when considering potential environmental impact of the proposed action.
- 15. No comments were received from Minister Wyatt or Minister Reynolds.

Comments from State Ministers

- 16. On 17 June 2019 2019, in accordance with section 74(2) of the EPBC Act, the following State Minister (or their delegate) was invited to comment on the referral:
 - Mr Andy Burnell, delegate for the Hon David Speirs MP, the South Australian (SA) Minister for Environment and Water.
- 17. On behalf of the SA Government, the SA Department for Environment and Water, responded on 1 July 2019 and noted that, if the proposed action is determined a controlled action, the Assessment Bilateral will not apply because the SA Government considers the state approval process underway to be for a secondary approval. The State advised that it completed the primary approval of TSF6 on 26 November 2010.

- 18. The state assessment is a two-step process. The state advised it is undertaking the first stage assessment of the proposal to construct tailing storage facility 6 in accordance with the Roxby Downs (Indenture Ratification) Act 1982 (SA), Radiation Protection & Control Act 1982 (SA) and Environment Protection Act 1993 (SA).
- 19. Subject to approval of stage 1, BHP will then submit a proposal for the commissioning and operation of the TSF. The state advised it anticipates this will occur in 2021.
- 20. I noted the SA Government completed its assessment and approval for TSF6 and Evaporation Pond 6 (EPBC 2019/8526) at the same time on 26 November 2019. The referral decision brief advised that at the federal level, the referral for Evaporation Pond 6 was still being considered by the Department.
- 21. I took into account the assessment and the decisions of the SA Government when considering the likely impact of the proposed action.

Process

- 22. The referral decision clock was stopped under section 76 of the EPBC Act on 18 June 2019 to request additional information including:
 - technical details about the construction, commissioning, operation and closure of TSF6;
 - an independent review of the TSF6 design; and
 - the decision of the SA Government on whether the construction of the facility can proceed.
- 23. The technical information and independent review were provided by BHP on 12 August 2019, 3 September 2019 and 21 October 2019.
- 24. The SA Minister for Energy and Mining granted an approval on 26 November 2019, subject to a range of specific conditions.
- 25. A further and final regulatory authorisation to commence the construction of TSF6 was granted by the SA Environment Protection Authority on 5 December 2019 under clause 2.9.2 of the Code of Practice for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing (SA).

Related decisions

- 26. The existing Olympic Dam mine was assessed in 1998, consistent with the now repealed *Environmental Protection (Impact of Proposals) Act 1974* (EPIP Act), before the then Minister for Resources and Energy granted an export approval for uranium sourced from the Olympic Dam mine.
- 27. The Environmental Impact Statement submitted to the Department in 1997 to inform the 1998 assessment explained that the Olympic Dam site would include an underground mine, mineral processing plant and associated infrastructure including a network of tailings dams for the management of radioactive waste.
- 28. I considered that the production and storage of tailings would generally be exempt from the operation of Part 3 of the EPBC Act because of section 43A. However, in the referral, BHP expressed the legal situation as follows:

While most BAU activities are exempt from the operation of the EPBC Act by operation of the *Environmental Reform (Consequential Provisions) Act 1999* (Cth) and

the 1997 EIS, [the proposed action] falls outside the scope of the 1997 EIS and so is being separately referred.

Related proposed actions

- 29. A separate referral from BHP to construct, commission, operate and close an additional evaporation pond, and associated infrastructure (EP6) (EPBC 2019/8526) was being considered by the Department at the same time as this referral. EP6 will operate in tandem with TSF6.
- 30. I noted the proposed action and EP6 are two separate stand-alone actions needed by BHP for BAU regardless of a third BHP referral under separate consideration (the Olympic Dam Resource Development Strategy - EPBC 2019/8570).
- 31. Under section 74A of the EPBC Act, the Minister (and delegate) has discretion to refuse to accept a 'split referral'. The Department's *Policy Statement: Staged Developments—Split referrals: Section 74A of the EPBC Act* provides guidance on such decisions.
- 32. BHP acknowledged the three separate referrals are in effect a split referral (i.e. components of a larger action). They argued the separate referrals should be accepted so they can commence TSF6 and EP6 sooner, should both be determined to be not controlled actions.

FINDINGS ON MATERIAL QUESTIONS OF FACT

Referral approach

33. Having regard to BHP's:

- efforts to publicise their proposals; and
- commitment to account for all relevant impacts of each action, and ensure each impact can be considered in a timely, effective and efficient manner,

I considered there has been or will be an opportunity for the public to consider all components of the Olympic Dam development, at the referral stage, and during any assessment (if needed), in their entirety.

34. I considered that:

- the objects of the EPBC Act will not be frustrated by the separate submission of the three referrals; and
- the split nature of the referrals will not diminish the assessment of any significant impacts of the projects on EPBC Act protected matters; nor will it result in particular controlling provisions – that would be triggered if the referral was for the whole development – being avoided.
- 35. For the reasons outlined in paragraphs 33 and 34, while I was satisfied that the referred action is a component of a larger action, I decided to accept this referral.

Description of the proposed action

36. The action proposed by BHP includes the construction, commissioning, operation and closure of an additional tailings storage facility cell, and associated infrastructure (TSF6), at the existing Olympic Dam mine and processing facility.

- 37. The purpose of the action proposed is to support and enable the continued production of up to 200,000 tonnes per annum of copper and associated products, described by BHP as business as usual (BAU) operations.
- 38. TSF6 is expected to have an operating life of 25 years before it is decommissioned and closed to a standard consistent with high level design principles.
- 39. The proposed action will be located within the Olympic Dam Special Mining Lease (SML) which bounds the whole of the Olympic Dam mine site. The 'proposed action area' for the development is 666 ha which included:
 - a 250 hectares (ha) area of remnant vegetation that may be utilised to support the construction of TSF6 such as laydown yards, borrow pits and soil stockpiles – BHP note that, if the area is so utilised, impacts are likely to be temporary in nature; and
 - a 'TSF6 footprint' of 416 ha which will include the TSF6 cell and associated operational infrastructure. The proposed action will involve the permanent clearance of 300 ha of vegetation in the TSF6 footprint, as 116 ha of the TSF6 footprint has already been cleared.
- 40. The TSF6 footprint is located to the west of, and adjacent to, the existing tailings storage facility 5 (TSF5) cell, within Olympic Dam's broader, existing tailings retention facility. The TSF6 cell will have an evaporative area of approximately 285 ha and share a common wall with TSF5. The two facilities, TSF5 and TSF6, will be operated as a combined single system with decant piping common to both cells.

Description of the environment

- 41. The 116 ha cleared portion of the TSF6 footprint has been utilised for clay borrow for raising other cells.
- 42. The remainder of the proposed action area includes three dominant vegetation communities that are relatively intact and widespread throughout the region: dunefields and swales, each featuring of *Acacia and Chenopod* shrublands, and gibber plains.
- 43. The nearest township is Roxby Downs approximately 16 km south of the site. Roxby Downs was established in 1988 to service Olympic Dam operations and house the majority of the workforce. The population of Roxby Downs is around 4000 people.

Matters protected by the EPBC Act

- 44. As a delegate of the Minister for the Environment, I was aware of my obligation under section 75 of the EPBC Act to decide whether the referred action is a controlled action, and which provisions of Part 3 (if any) were controlling provisions for the action.
- 45. In making my decision I considered all adverse impacts the action has, will have, or is likely to have, on matters protected by each provision of Part 3. In making my decision, I did not consider any beneficial impacts the action has, will have or is likely to have on the matter protected by each provision of Part 3.
- 46. I noted the Department's recommendation that I decide that the proposal is not a controlled action, because there are not likely to be significant impacts on any controlling provisions. I agreed with the Department's recommendation.
- 47. The basis for my decision is detailed below.

Protected matters that are not controlling provisions

Listed threatened species and communities (s18 & s18A)

- 48. Departmental briefing advised me that the proposed action has the potential to impact on listed threatened species and listed migratory species that may utilise the TSF6 as a water resource.
- 49. I noted that the Department's Environment Reporting Tool (ERT) advised that there are seven (7) species that are known or have habitat, or are likely to occur or have habitat, within 5 km of the proposed action:
 - Plains Rat (*Pseudomys australis*) Vulnerable
 - Greater Bilby (*Macrotis lagotis*) Vulnerable
 - Numbat (*Myrmecobius fasciatus*) Endangered
 - Burrowing Bettong (Bettongia lesueur lesueur) Vulnerable
 - Greater Stick-nest Rat (*Leporillus conditor*) Vulnerable
 - Western Barred Bandicoot (Perameles bougainville bougainville) Endangered
 - Frankenia plicata Endangered
- 50. The ERT found that there were no ecological communities within 5 km of the proposed action.
- 51. Based on the location of the action and the likely habitat present in the area of the proposed action, I considered the following impacts in relation to the these matters:

Plains Rat

Species information

- 52. According to the *National Recovery Plan for the Plains Mouse* Pseudomys australis, the Plains Rat is one of the largest rodents still inhabiting the arid zone. Habitat critical to the survival of the Plains Rat includes large open gypseous cracking clay areas associated with minor drainage features, and also depressions, within the gibber stony plains. The Department's Species Profile and Threats (SPRAT Database) explains these critical habitat areas are the more-fertile parts of the gibber plains. The species is nocturnal and lives in burrows located at the base of bushes or within cracks. Individuals range over areas of up to 1.6 ha in size.
- 53. The Department's briefing noted that according to the SPRAT database, this species undergoes massive fluctuations in density in response to available resources; populations can become undetectable as food resources diminish. SPRAT also notes it is likely no population of this species is permanently associated with a particular habitat patch; rather, the Plains Rat utilises a patchwork of primary core areas with only rare widespread dispersal between regions. The Plains Rat Recovery Plan explains any larger populations that persist in drought conditions are likely to be important source-populations for breeding and recolonisation after significant rains.
- 54. A population of Plains Rats has been established in an Arid Recovery Reserve north of the Olympic Dam SML. The Plains Rat Recovery Plan recognises the importance of this colony as it supports high densities of the species and is protected from predation through the fencing; at the same time, without human intervention, the colony cannot expand its distribution beyond the exclusion fence.

Proposed action area

- 55. I noted advice that the Plains Rats have been recorded within the Olympic Dam SML, and that BHP has identified potentially suitable habitat for Plains Rat within the proposed action area.
- 56. The Department's briefing noted that BHP conducted surveys for the presence of the species at 43 sites within the proposed action area (approximately 4 ha in area). The survey method involved identifying potential refuge habitats and observing for evidence of Plains Rats. When considered against the Survey guidelines for Australia's threatened mammals, I found that BHP's Plains Rat survey was adequate.
- 57. Suitable cracking clay habitat was found at three of the surveyed sites; however, no visible evidence of any Plains Rat individuals, including from tracks and scats, was detected at these three or any other of the sites surveyed.

Impact Assessment

- 58. According to the Plains Rat Recovery Plan, all remaining Plains Rat populations are potentially under threat (with the probable exception of the colony within the Arid Recovery Reserve). The SPRAT Database notes habitat degradation, trampling and over grazing by rabbits and cattle are threats of particular concern, while predation by foxes and dingoes may also have contributed to the contraction in their range.
- 59. As no evidence of the species was found within the proposed action area, the Department's brief noted that BHP considered that the Plains Rat is unlikely to be present in this area in large numbers. I noted that the Department disagreed with BHP's conclusion, instead advising me that a population of the species could still be present in or visit all or part of the proposed action area, despite not having been detected during the recent surveys. I agreed with the Department's assessment.
- 60. The Department noted that BHP's referral considered any areas used as refuge habitat would be minor and in relatively poor condition due to the close proximity to previous disturbance and existing operations. In coming to this conclusion, the Department noted that BHP recognised the disturbed condition of the proposed action area, the high level of human activity going on in this area daily, and that permanent clearing for the proposed action (300 ha of native vegetation) will impact only a small fraction of the large area of occupancy (0.015 per cent) identified for the species in the Plains Rat Recovery Plan. The Department and I agreed with this aspect of BHP's assessment.

Conclusion

- 61. Given the historic contraction in the distribution of the species as a result of grazing and predation pressures, and given the high level of disturbance and human activity in the proposed action area, I considered it is unlikely any significant proportion of any important population is continuing to utilise the proposed action area.
- 62. I consider the proposed action is not likely to lead to a long-term decrease in the size of an important population of Plains Rat, and that the proposed action is unlikely to have a significant impact on the Plains Rat.

Other listed species

- 63. The Department's ERT and the referral identify the potential presence of the following additional threatened species, or their habitat, as likely or known to occur within five km of the proposed action area:
 - Greater Bilby (Macrotis lagotis) Vulnerable

- Numbat (Myrmecobius fasciatus) Endangered
- Burrowing Bettong (Bettongia lesueur lesueur) Vulnerable
- Greater Stick-nest Rat (Leporillus conditor) Vulnerable
- Western Barred Bandicoot (Perameles bougainville bougainville) Endangered
- Frankenia plicata Endangered.

Discussion

- 64. Populations of Greater Bilby and Numbat were reintroduced into the Arid Recovery Reserve near Olympic Dam, however, during surveys (which I accepted as adequate), no individuals or evidence of either species was detected in the proposed action area.
- 65. Translocated populations of the Burrowing Bettong, Greater Stick-nest Rat, and Western Barred Bandicoot are all known to occur within 5 km of the proposed action area, however, these are all located within the Arid Recovery Reserve which will not be impacted by the proposed action.
- 66. *Frankenia plicata* was also identified by the ERT as likely to occur within the area, however, despite 30 years of surveys by BHP, this species has not been identified on the SML and thus BHP considers that it is not present in the proposed action area. I agreed with this conclusion.

Conclusion

67. Based on information available to me, including species' habitat preferences expressed in SPRAT and information in the referral documentation, I consider that it is unlikely any of the above threatened species occur on the proposed action site. As a result, I consider that significant impacts to these species are unlikely as a result of the proposed action.

Listed migratory species (s20 and s20A)

- 68. The Department's ERT indicates that a total of two (2) migratory species are likely to occur within 5 km of the proposed action: the Sharp-tailed Sandpiper (*Calidris acuminate*) and Fork-tailed Swift (*Apus pacificus*).
- 69. The Fork-tailed Swift has widespread distribution. Given the nature of the proposed action and this species' habitat requirements (it is exclusively aerial), I consider the Fork-tailed Swift is not likely to be significantly impacted by the proposed action.
- 70. Information in the referral suggests habitat is likely to be present in the proposed action area for Sharp-tailed Sandpiper and the following additional four (4) listed migratory species:
 - Common Sandpiper (Actitis hypoleucos)
 - Red-necked Stint (Calidris ruficollis)
 - Caspian Tern (*Hydroprogne caspia*)
 - Gull-billed Tern (*Gelochelidon nilotica*)
- 71. Consequently, I consider that impacts that need to consideration may arise in relation to these five species.

Proposed action area and impact assessment

- 72. Based on weekly monitoring surveys undertaken at the existing tailings retention system (TRS) by BHP between June 2005 and November 2018 individuals of all five species were identified as visitors to the proposed action site. However, the presence of each species in the Olympic Dam SML occurs at very low levels.
- 73. The Department's briefing noted that the referral states that while critical habitat for these five species is not considered to occur within the proposed development footprint, impacts to migratory species derive from exposure to acidic liquor in the TFS which could result in deaths of individuals.
- 74. According to the EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (December 2013) an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will: substantially modify, destroy or isolate an area of important habitat for a migratory species, or seriously disrupt the lifecycle of an ecological significant proportion of the population of a migratory species.
- 75. The referral states that the potential impact of individual bird deaths is not expected to change as a result of the operation of TSF6. This is supported by an analysis of bird numbers observed at the tailings retention system from June 2005 to November 2018 which showed no significant change in bird visitation despite the commissioning of EP5 in 2009 and TSF5 in 2011, which increased the tailings/liquor surface area by 282 ha.
- 76. The Department provided me with advice from the Migratory Species Section which states that the proposed action area is not an area of internationally or nationally important habitat for migratory birds. Although listed migratory shorebirds may use habitats in the region, i.e. grazing/farmland habitat, seasonally ephemeral wetlands, permanent wetlands or the air space above the site, the proposed action is unlikely to cause adverse impacts to an ecologically significant proportion of the population of any listed migratory species.

Conclusion

77. Based on the information presented in the referral documentation and the briefing provided by the Department which is summarised in paragraphs 72 to 76 above, I considered that the proposed action area is unlikely to support an ecologically significant proportion of the population of any of Fork-tailed Swift, Sharp-tailed Sandpiper, Common Sandpiper, Rednecked Stint, Caspian Tern or Gull-billed Tern. I further found that the proposed action will not result in the destruction, modification or isolation of any important habitat for these species. Therefore, I considered that significant impacts to these six migratory species are unlikely to occur as a result of the proposed action.

Other listed migratory species

- 78. The Department noted that BHP considers that other migratory species listed as 'may occur' in the ERT Report, or that the referral notes may occur in the proposed action area, do not have populations associated with the proposed action area. These species are either widely distributed and/or there are either very limited or no records of individuals from these species in the proposed action area between 2005 and 2018. There is also no preferred habitat for these species in the proposed action area or in the broader Olympic Dam SML.
- 79. I agreed with this conclusion and considered that these other listed migratory species are unlikely to occur in the proposed action area and therefore the proposed action will not result in the destruction, modification or isolation of any important habitat for these migratory

species. I considered that a significant impact on these other listed migratory species as a result of the proposed action is unlikely.

Nuclear action (s21 & s22A)

- 80. The Departmental briefing which I received included the referral documentation, and advice provided by ARPANSA and the Department's Supervising Scientist Branch (SSB), which noted that the proposed action is a 'nuclear action'. Advice from ARPANSA attached to the referral brief noted the proposed action can be considered a nuclear action under s 22(1)(e) of the EPBC Act as it involves the establishment of a large-scale disposal facility for radioactive waste. I agreed with the advice presented by ARPANSA and considered that the proposed action meets the requirements to be determined a nuclear action for the purposes of the EPBC Act.
- 81. On this basis, I considered whether the proposed action, when considered as a nuclear action, is likely to have a significant impact on the environment. The 'environment' is defined in section 528 of the EPBC Act to include 'ecosystems and their constituent parts', 'natural and physical resources', 'the qualities and characteristics of locations, places and areas' and the heritage values of places.
- 82. In order to determine whether or not an action is likely to have a significant impact on the environment, it is necessary to consider the total adverse impact of the action in the context of the environment that will be impacted, particularly those elements of the environment which are sensitive or valuable.
- 83. I considered the components of the environment which could be impacted by the proposed action include (but are not limited to): plants and animals; landscapes and soils; ecosystems, people and communities; water resources; and heritage.
- 84. I considered impacts to the environment from the proposed action are likely to include: the clearance of vegetation and associated impacts to species and habitats; the exposure of birds and mammals to acidic liquor; seepage into soil and groundwater, insofar as that seepage could impact water resources and other components of the environment; radiological impacts to the public, workers and non-human biota; and impacts to heritage.

Clearance of vegetation and associated impacts to species and habitats for species

- 85. The above discussion of the impacts of the proposed action on listed threatened species and listed migratory species is relevant here, and the conclusions that I made there in respect of those species apply here also.
- 86. As noted above under the heading listed threatened species, I found that the species and habitats found in the proposed action area are distributed widely in the region; as such, the clearance of 300 ha in an area already heavily disturbed and subject to a continuing, relatively high degree of human interaction is not likely to have a significant impact on other species or their habitats.

Exposure of birds and mammals (other than threatened species and migratory species) to acidic liquor

- 87. The above discussion of the impacts of the proposed action on listed threatened species and listed migratory species is relevant here, and the conclusions that I made there in respect of those species apply here also.
- 88. In relation to the impact of the proposed action exposing birds and mammals (other than threatened species and migratory species) to acidic liquor, as the tailings are expected to remain consistent with tailings deposited in previous TSF cells, the additional facility is

considered unlikely to pose any additional threat to any birds and mammals, listed or otherwise.

Seepage and leakage into soil and groundwater

- 89. The Department noted that initial advice provided by OWS states that the primary impact to water resources from TSF6 is the seepage of tailings liquor into the shallow groundwater system, particularly the Andamooka Limestone aquifer and the Tent Hill aquifer. OWS raised the concern that seepage may not be neutralised (in terms of its pH) to the degree claimed by BHP; one possible consequential impact of acidic seepage would be sink hole development in exposed bedrock (and particularly any heavily-weathered bedrock) below any embankment of the TSF 6; and that proposed monitoring and mitigation measures related to structural stability and leakage from TSF 6 are inadequate.
- 90. Between September and December 2019, the Department liaised extensively in relation to OWS concerns with BHP and the SA Department of Energy and Mining (DEM). I was provided a detailed analysis of the follow-ups, starting with an outline of what BHP said in their referral about seepage and leakage, including about the degree to which seepage and leakage can and will be controlled. The key points from this analysis are as follows:
 - BHP obtained an independent review of the design of TSF6 by the project's engineers of record. The review considered the design of TSF6 against legal requirements, Australian industry standards and international best practice, considering aspects including (but not limited to): foundation geology; geotechnical investigations; embankment design; slope stability; depositional strategy; potential failures; associated controls and contingency plans; and closure plans. The Department focussed its attention on the report's consideration of Australian industry standards and international best practice; the Department considered the proposed action against legal requirements.
 - The independent review recommended:
 - i. BHP and its design engineer identify the critical controls for TSF6 and developing the associated trigger action response plans in accordance with international best practice prior to commissioning the starter embankment.
 - ii. BHP obtain appropriate information such as tailings strength data and karst mapping to support the future design of the ultimate embankment using the upstream method, and complete the design in accordance with design standards applicable at the time of design.
 - In the cover letter under which BHP provided the independent review to the Department for review, BHP detailed how they would implement the controls recommended by the independent reviewer.
 - BHP subsequently provided additional information to specifically address the matters raised by OWS. BHP explained how leakage from TSF6 will be monitored, how karst features that occur will be managed and the process and the adequacy of the buffering (or neutralising) capacity of the shallow surficial sediments.
 - On reviewing this additional information, OWS again expressed concerns about the degree to which surficial sediments would retard and neutralise acidic seepage to the extent indicated by BHP. This means that if the carbonate no longer existed in the sedimentary limestone layer immediately underlying TSF6, that instability could affect the structural integrity of the TSF6 embankments.

- The Department contacted SA DEM which noted considerable work has been carried out by BHP since the 1980s to prevent and monitor seepage at the existing tailings storage facilities. SA DEM emphasised that:
 - i. Once tailings build up within any storage facility, the volume of seepage decreases from that point in time forward, because the tailings themselves provide a platform (or 'beach') upon which the liquor runs off over the surface of the beach to a decant structure in the centre of the facility where it is captured and transported through pipelines to a separate evaporation pond nearby
 - their experience to date is that, after an initial period during which seepage is minimised, seepage from the existing tailings storage facilities at Olympic Dam has been largely prevented
 - iii. any seepage that has occurred has been neutralised within the first metre of the natural ground
 - iv. there have never been any structural issues arising in any of the existing tailings storage facilities, despite there being weathered limestone throughout the region.
- Reports published accounting for BHP's monitoring and management to date of existing tailings storage facilities at the Olympic Dam mine site shows seepage and leakage have been controlled. BHP note that the monitoring that has informed the Olympic Dam Environmental Protection and Management Program annual report series demonstrates that the impacts from the existing tailings storage facilities are not significant and are confined to the Olympic Dam SML:
 - i. Analysis of seepage from the base of the existing TSF has shown that seepage undergoes a process of in-situ neutralisation and attenuation as it passes through the upper limestone layers.
 - ii. Groundwater chemistry around the existing tailings storage facilities is similar to the regional groundwater chemistry, with the exception of slightly increased uranium concentrations (all within regulatory limits) and slightly reduced pH.
 - iii. Annual sampling of groundwater at locations off the SML have water quality similar to regional groundwater chemistry.
 - iv. Groundwater levels of bores along the SML are consistent with other regional bores.
 - v. No significant adverse impact to vegetation has occurred as a result of seepage from the existing tailings storage facilities, with groundwater remaining below 20 m below ground level–which is considered as the level below which groundwater cannot interact with the root zone of plants in the Olympic Dam region.
 - vi. No embankment failures of any magnitude have occurred. The rate of rise of tailings has been limited to 2 m per annum or less for all cells, to ensure consolidation of tailings material.
- On 15 November 2019, SA DEM provided a draft information package that was, at the time, being presented to the SA Minister for Energy and Mining for a decision on

whether construction of TSF6 should be approved. This package included SA DEM's:

- i. assessment of BHP's referral to the SA Government (which is understood to mirror the referral submitted to the Department)
- ii. assessment of the report prepared by the independent reviewer on the design of the TSF6 facility
- iii. recommended conditions, along with justification for each condition being recommended.
- Noting—as the independent reviewer had observed, that—any surface weaknesses cannot be located, investigated and treated until sand dunes lying where the embankments for TSF6 will be located are cleared, SA DEM proposed conditions that require BHP to implement the measures recommended by the independent reviewer, and that the company had already committed to implement. I understand these conditions will prevent instability and consequential impacts on the structural integrity in the TSF6 embankments.
- On 26 November 2019, the SA Minister for Energy and Mining approved the construction of TSF6 subject to the recommended conditions.
- 91. The Department noted that while the SA Regulator's most recent approval is for construction of TSF6 only, the SA Minister for Energy and Mining's conditions require BHP to complete specific actions, report on actions and then prepare and submit an application which must be approved before BHP can commence each new stage. I noted that planning for closure of the Olympic Dam tailings storage facilities is well underway, and that closure plans are to be revised to account for the new SA Government approval of TSF6. On consideration of the above, I found the form and pattern of regulation being applied by SA DEM to be appropriate. I anticipate the SA regulatory system will continue to be effective at identifying critical concerns and ensuring they are addressed.
- 92. On 9 December 2019, OWS reviewed the detailed information provided by BHP and SA DEM and the SA conditions. OWS indicated they are comfortable that the issues raised in the OWS advice have been addressed.

Conclusion

93. Given:

- the information provided to the Department by BHP and SA DEM
- the SA Minister's adoption the independent reviewer's recommendations in conditions for the project at the state (SA) level
- that the independent engineer of record will continue to oversee all stages of the facility's construction, commissioning, operation and closure
- BHP's commitments to complete additional geotechnical and geochemical analysis prior to embankment construction
- SA DEM's demonstrated competence in identifying and controlling issues arising,

I considered that all risks related to seepage and tailing dam structural integrity have been or will be appropriately identified for all phases of the proposed action, and those risks will be controlled effectively. 94. Based on the information before me, I considered that the seepage control and monitoring measures for TSF6 are adequate and therefore seepage from TSF6 is unlikely to affect vegetation or the beneficial uses of soil or groundwater. As a result, I found that seepage and leakage of tailings liquid from the proposed action is not likely to have a significant impact on the environment.

Radiological impacts to the public, workers and non-human biota

- 95. The Departmental briefing included advice from the SSB which stated that, during commissioning and operation of the proposed action, workers have the greatest likelihood of increased radiation exposure but this will depend on how long they spend in the vicinity of TSF6. The advice concluded that any increase in public exposure and exposure to the environment (i.e. wildlife) is expected to be small to insignificant. I noted and accepted the advice provided by the SSB in relation to this matter.
- 96. The advice provided by SSB also noted that mitigation and monitoring measures during the commissioning and operation of TSF6 are adequate. The radioactive tailing will be contained with TSF6 itself and therefore release to the broader environment is prevented. Additionally, the monitoring of workers and public radiation exposure pathways will continue in accordance with that of the existing operation. There is no indication of proposed post-closure radiation monitoring of TSF6 provided. I noted and accepted the advice provided by SSB and considered that the SA Environment Protection Authority (EPA) is a competent regulator in this regard.
- 97. The Department also sought advice from ARPANSA which is the Commonwealth's regulator of nuclear activity and radiation safety. Under the *Australian Radiation Protection and Nuclear Safety Act 1998* (Cth), ARPANSA regulates Commonwealth entities dealing with radiation as well as with radioactive and nuclear material including waste and spent fuel, and the transport of such material. Guided by international standards and best practices, ARPANSA promotes a nationally uniform approach to radiation protection and nuclear safety policy and practices across Commonwealth, state and territory jurisdictions.
- 98. The SA EPA, guided by ARPANSA, is the key state government agency responsible for regulating radiation safety for entities operating in SA that are not Commonwealth entities. The SA EPA ensures members of the public are protected from radiation and that exposure to radiation does not exceed the international regulatory limits. Radiation management is regulated in SA by the SA EPA under the *Radiation Protection and Control Act 1982* (SA) (RPC Act) and the *Code of Practice for Radiation Protection and Radioactive Waste Management in Mining and Mineral Processing 2005* (Mining Code). The SA EPA is responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation.
- 99. The Department's briefing package to me included advice from ARPANSA which advised that, due to Olympic Dam being an established site with a long history of radiation and TSF management, the proposed action is unlikely to constitute an additional impact to the environment from a radiation protection perspective. I noted and accepted the advice from ARPANSA on this matter.
- 100. As noted above, on 5 December 2019, authorisation to commence the construction of TSF6 was granted by the SA Environment Protection Authority under clause 2.9.2 of the Mining Code.

Conclusion

101. Based on the information provided in the Department's briefing package and outlined above, I considered that the TSF6 is unlikely to result in any material change to the level of environmental radiological emissions or dose to members of the public in the overall context of Olympic Dam operations. I found that radiation pathways that already exist have been or will be adequately addressed through proposed monitoring and control processes. I further considered that the proposed action is unlikely to provide additional pathways for radiation exposure.

Heritage

- 102. The Department's briefing package noted that potential environmental impacts to surface water, outstanding natural features, Commonwealth heritage places or other places recognised as having heritage values, Indigenous heritage values and other important or unique aspects of the environment were considered by BHP to be non-applicable or negligible.
- 103. Recognising the disturbed condition of the proposed action area (Attachment A12), the high level of human activity going on in this area daily, I agree with the conclusion put forward by BHP on this matter.
- 104. Given the above, I considered that the proposed action is unlikely to have a significant impact on heritage when considered as a component of the environment.

Conclusion

- 105. Based on the advice provided to me from SSB and ARPANSA, I found that the proposed action is a nuclear action under s 22(1)(e) of the EPBC Act as it involves the establishment of a large-scale disposal facility for radioactive waste.
- 106. In making my decision, I considered the likely impacts of the proposed action on the environment, including:
 - the clearance of vegetation and associated impacts to species and habitats
 - the exposure of birds and mammals to acidic liquor
 - seepage into soil and groundwater, in so far as that seepage could impact water resources and other components of the environment
 - radiological impacts to the public, workers and non-human biota
 - impacts to heritage.

107. Upon consideration of the Department's briefing package I found that:

- the species and habitats found in the proposed action area are distributed widely in the region
- the proposed action area is already heavily disturbed and subject to a continuing, relatively high degree of human interaction
- the proposed action is not introducing new exposure pathways
- BHP's, the independent design engineer's and the SA Government's demonstrated competence in identifying and controlling issues arising, including in relation to seepage and leakage and radiation exposure,
- 108. On this basis, I found that the proposed action is unlikely to have a significant impact on the environment.

Ramsar Wetlands (s16 & 17B)

- 109. The Department advised in its brief that the ERT did not identify any Ramsar listed wetland of international importance within or adjacent to the proposed action area.
- 110. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to Ramsar listed wetlands of international importance, the Department recommended that proposed action is unlikely to have a significant impact on Ramsar listed wetlands of international importance. I agreed with the conclusions presented by the Department in relation to this matter.
- 111. For these reasons I considered that sections 16 and 17B are not controlling provisions for the proposed action.

World Heritage properties (s12 & 15A)

- 112. The Department advised in its brief that the ERT did not identify any World Heritage properties located within or adjacent to the proposed action area.
- 113. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to World Heritage properties, the Department recommended that the proposed action is unlikely to have a significant impact on World Heritage properties. I agreed with the conclusions presented by the Department in relation to this matter.
- 114. For these reasons I considered that sections 12 and 15A are not controlling provisions for the proposed action.

National Heritage places (s15B & 15C)

- 115. The Department advised in its brief that the ERT did not identify any National Heritage places located within or adjacent to the proposed action area.
- 116. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to National Heritage places, the Department recommended that the proposed action is unlikely to have a significant impact on National Heritage places. I agreed with the conclusions presented by the Department in relation to this matter.
- 117. For these reasons I considered that sections 15B and 15C are not controlling provisions for the proposed action.

Commonwealth marine environment (s23 & 24A)

- 118. The proposed action does not occur in a Commonwealth marine area.
- 119. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to a Commonwealth marine area, the Department recommended that the proposed action is unlikely to have a significant impact on the environment in a Commonwealth marine area. I agreed with the conclusions presented by the Department in relation to this matter.
- 120. For these reasons I considered that sections 23 and 24A are not controlling provisions for the proposed action.

Commonwealth action (s28)

121. The referring party is not a Commonwealth agency. For this reason I considered that section 28 is not a controlling provision for the proposed action.

Commonwealth land (s26 & 27A)

- 122. The proposed action is not being undertaken on Commonwealth land.
- 123. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to Commonwealth land, the Department recommended that the proposed action is unlikely to have a significant impact on the environment on Commonwealth land. I agreed with the conclusions presented by the Department in relation to this matter.
- 124. For these reasons I considered that sections 26 and 27A are not controlling provisions for the proposed action.

Great Barrier Reef Marine Park (s24B & 24C)

- 125. The proposed action is not being undertaken in the Great Barrier Reef Marine Park.
- 126. Further, given the information contained in the referral documentation, the nature and scale of the proposed action and its potential impacts, and the distance to the Great Barrier Reef Marine Park, the Department recommended that the proposed action is unlikely to have a significant impact on the Great Barrier Reef Marine Park. I agreed with the conclusions presented by the Department in relation to this matter.
- 127. For these reasons I considered that sections 24B and 24C are not controlling provisions for the proposed action.

Commonwealth Heritage places overseas (s27B & 27C)

128. The proposed action is not located overseas. For this reason I considered that sections 27B and 27C are not controlling provisions for the proposed action.

A water resource, in relation to coal seam gas development and large coal mining development (s24D & 24E)

129. The proposed action is not a coal seam gas or a large coal mining development. For this reason I considered that sections 24D and 24E are not controlling provisions for the proposed action.

REASONS FOR DECISION

- 130. In making my decision under section 75 of the EPBC Act, I took account of the precautionary principle as required by section 391 of the EPBC Act. The precautionary principle is that a lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.
- 131. I reviewed the information in the referral against the EPBC Act Policy Statement 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (December 2013) and other relevant material. While I noted that this material is not binding or exhaustive, the factors identified are considered adequate for decision-making in the circumstances of this referral. I found that adequate information was available to support my decision in relation to this proposal.
- 132. In light of my findings, I was satisfied that the proposed action is not likely to have a significant impact on any matter protected by Part 3 of the EPBC Act. I therefore decided on 19 December 2019 that the proposed action is not a controlled action.

Signed

GREGORY MANNING

29 January 2020

Annexure A

Section 68 of the EPBC Act relevantly provides:

- (1) A person proposing to take an action that the person thinks may be or is a controlled action must refer the proposal to the Minister for the Minister's decision whether or not the action is a controlled action.
- (2) A person proposing to take an action that the person thinks is not a controlled action may refer the proposal to the Minister for the Minister's decision whether or not the action is a controlled action.

Section 74 of the EPBC Act relevantly provides:

Inviting other Commonwealth Ministers to provide information

- (1) As soon as practicable after receiving a referral of a proposal to take an action, the Minister (the *Environment Minister*) must:
 - (a) inform any other Minister whom the Environment Minister believes has administrative responsibilities relating to the proposal; and
 - (b) invite each other Minister informed to give the Environment Minister within 10 business days information that relates to the proposed action and is relevant to deciding whether or not the proposed action is a controlled action.

...

Inviting comments from appropriate State or Territory Minister

- (2) As soon as practicable after receiving, from the person proposing to take an action or from a Commonwealth agency, a referral of a proposal to take an action in a State or self-governing Territory, the Environment Minister must, if he or she thinks the action may have an impact on a matter protected by a provision of Division 1 of Part 3 (about matters of national environmental significance):
 - (a) inform the appropriate Minister of the State or Territory; and
 - (b) invite that Minister to give the Environment Minister within 10 business days:
 - (i) comments on whether the proposed action is a controlled action; and
 - (ii) information relevant to deciding which approach would be appropriate to assess the relevant impacts of the action (including if the action could be assessed under a bilateral agreement).

Inviting public comment

- (3) As soon as practicable after receiving a referral of a proposal to take an action, the Environment Minister must cause to be published on the Internet:
 - (a) the referral; and
 - (b) an invitation for anyone to give the Minister comments within 10 business days (measured in Canberra) on whether the action is a controlled action.

Section 74A of the EPBC Act relevantly provides:

- (1) If the Minister receives a referral in relation to a proposal to take an action by a person, and the Minister is satisfied the action that is the subject of the referral is a component of a larger action the person proposes to take, the Minister may decide not to accept the referral.
- (2) If the Minister decides not to accept a referral under subsection (1), the Minister:
 - (a) must give written notice of the decision to the person who referred the proposal to the Minister; and
 - (b) must give written notice of the decision to the person who is proposing to take the action that was the subject of the referral; and
 - (c) may, under section 70, request of the person proposing to take the action that was subject of the referral, that they refer the proposal to take the larger action, to the Minister.
- . . .
- (3) If the Minister decides to accept a referral under subsection (1), the Minister must, at the time of making a decision under section 75:
 - (a) give written notice of the decision to the person who referred the proposal to the Minister;
 - (b) publish in accordance with the regulations (if any), a copy or summary of the decision.

Section 75 of the EPBC Act relevantly provides:

Is the action a controlled action?

- (1) The Minister must decide:
 - (a) whether the action that is the subject of a proposal referred to the Minister is a controlled action; and
 - (b) which provisions of Part 3 (if any) are controlling provisions for the action.
- (1AA) To avoid doubt, the Minister is not permitted to make a decision under subsection (1) in relation to an action that was the subject of a referral that was not accepted under subsection 74A(1).

Minister must consider public comment

- (1A) In making a decision under subsection (1) about the action, the Minister must consider the comments (if any) received:
 - (a) in response to the invitation under subsection 74(3) for anyone to give the Minister comments on whether the action is a controlled action; and
 - (b) within the period specified in the invitation.

Considerations in decision

(2) If, when the Minister makes a decision under subsection (1), it is relevant for the Minister to consider the impacts of an action:

- (a) the Minister must consider all adverse impacts (if any) the action:
 - (i) has or will have; or
 - (ii) is likely to have;

on the matter protected by each provision of Part 3; and

- (b) must not consider any beneficial impacts the action:
 - (i) has or will have; or
 - (ii) is likely to have;

on the matter protected by each provision of Part 3.

Timing of decision and designation

(5) The Minister must make the decisions under subsection (1) and, if applicable, the designation under subsection (3), within 20 business days after the Minister receives the referral of the proposal to take the action.

Section 391 of the EPBC Act relevantly provides:

Taking account of precautionary principle

(1) The Minister must take account of the precautionary principle in making a decision listed in the table in subsection (3), to the extent he or she can do so consistently with the other provisions of this Act.

Precautionary principle

(2) The *precautionary principle* is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.

Decisions in which precautionary principle must be considered

(3) The decisions are:

Decisions in which precautionary principle must be considered		
Item	Section decision is made under	Nature of decision
1	75	whether an action is a controlled action