



Statement of Reasons for Approval under the *Environment Protection and Biodiversity Conservation Act 1999*

I, KYLIE CALHOUN, Branch Head, Environment Assessments West Branch, Nature Positive Regulation Division, Department of Climate Change, Energy, the Environment and Water (the **department**), delegate for the Minister for the Environment and Water (the **Minister**), provide the following statement of reasons for my decision of 25 October 2024, under subsection 130(1) and section 133 of the *Environment Protection and Biodiversity Conservation Act 1999* (**EPBC Act**), to approve the proposed action by SOUTHERNLAUNCH.SPACE PTY LTD (the **proponent**) to construct and operate a facility to launch orbital and suborbital rockets from Whalers Way, on the southern tip of the Eyre Peninsula, South Australia (EPBC 2021/9013) (**proposed action**).

Legislation

- 1) Annexure A sets out a copy of relevant provisions of the EPBC Act to this Statement of Reasons.

Evidence or other material on which my findings were based

- 2) In making my decision under subsection 130(1) and section 133 of the EPBC Act as to whether to approve the proposed action, I considered the information in the final approval decision brief dated 25 October 2024 and its attachments as set out in Annexure B.

Description of proposed action

- 3) The proposed action area is on the southern tip of the Eyre Peninsula, South Australia, located on Allotment 101, Deposited Plan 71437, on Certificate of Title 5993/374, approximately 25 km southwest of Port Lincoln, in the District Council of Lower Eyre Peninsula.



Figure 1. Proposed action area of Whalers Way.

- 4) The proposed action is within the Whalers Way area that is predominantly undeveloped vegetated coastal area of moderate to high condition, transitioning to more agricultural character to the north, and includes access roadways, and open areas such as car parking and a picnic/camping area. The coastal interface around much of the Whalers Way area is cliffs of varying heights and rocky outcrops, as well as some coved beaches.
- 5) The proposed action is also within a South Australian Heritage Agreement conservation area (HA) since 1988 and due to the restrictions within the HA, the land has not been subject to any significant development since that time. I noted that the proponent has an in-principle agreement with the Native Vegetation Council (NVC), should the proposed action be granted SA Development Approval, to reconfigure the existing HA such that the proposed action footprint is excluded.

6) The proposed action involves the establishment of infrastructure that will support the launch of a range of launch vehicles including both orbital and suborbital rockets and comprises the following key components:

- launch Site A.
- launch Site B.
- infrastructure Site D, including the excavation and trenching for the construction of a quarry which is to be transformed into a 30 megalitre dam.
- range Control Facility Site E for launch control and site administration.
- construction of new, and upgrading of existing, access roads.
- construction of buildings and infrastructure.
- visitor viewing area and interpretive facilities; and
- temporary infrastructure associated with development and construction.

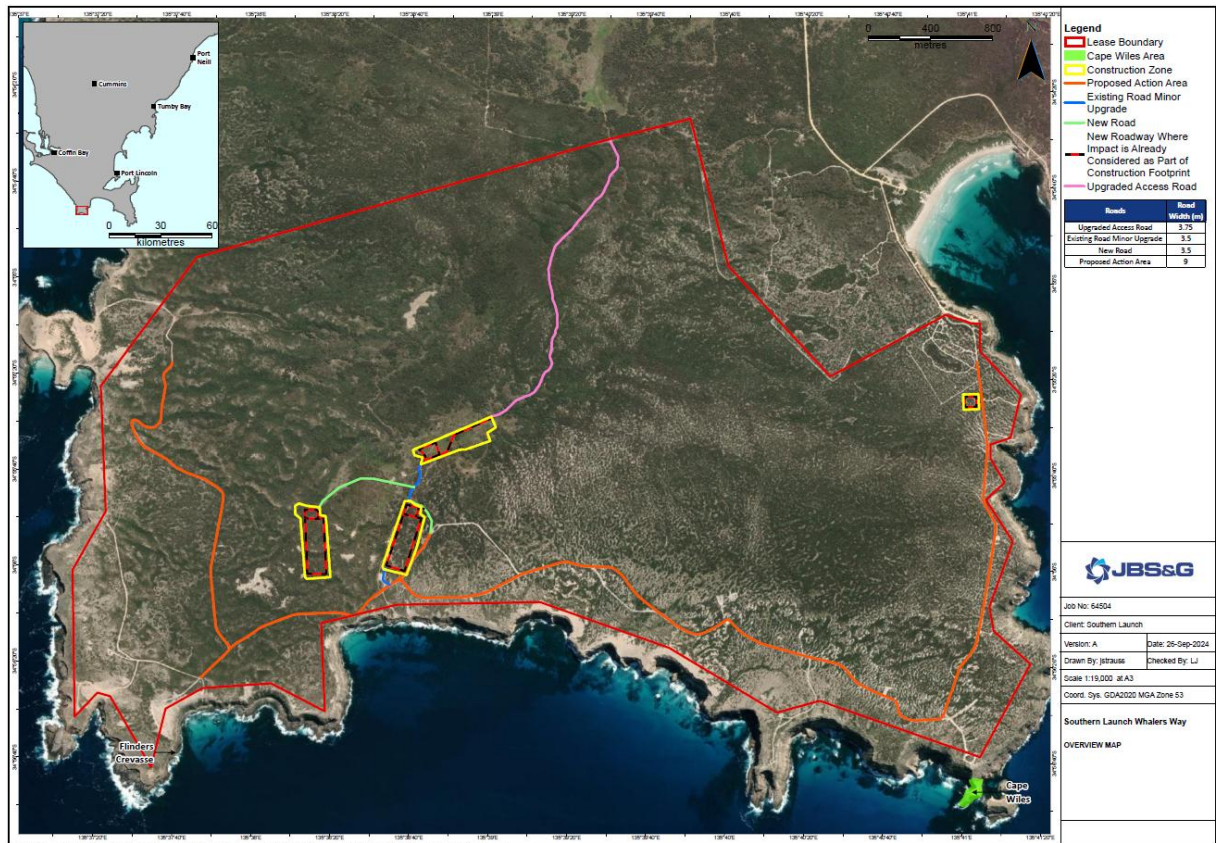


Figure 2. Proposed action footprint location

7) Rockets will range between 9 and 30 m tall with a payload capacity ranging from several kilograms to several hundred kilograms. Approximately 6 launches are anticipated within the first year of operations, increasing to a maximum of 36 orbital launches and 6 suborbital launches per year by year five of operations.

- 8) The launching of rockets involves 'staging', which is the combination of several rocket sections, or stages, that fire in a specific order and then detach. Launch vehicles proposed to be used as part of the proposed action have multiple stages, with all stages of the vehicles returning to earth at varying distances from the launch site, referred to as the potential marine impact zone (PMIZ).
- 9) A significant portion of the PMIZ is within the Commonwealth Marine Area, where Commonwealth marine parks are located including the South-west Marine Parks Network and South-east Marine Parks Network.

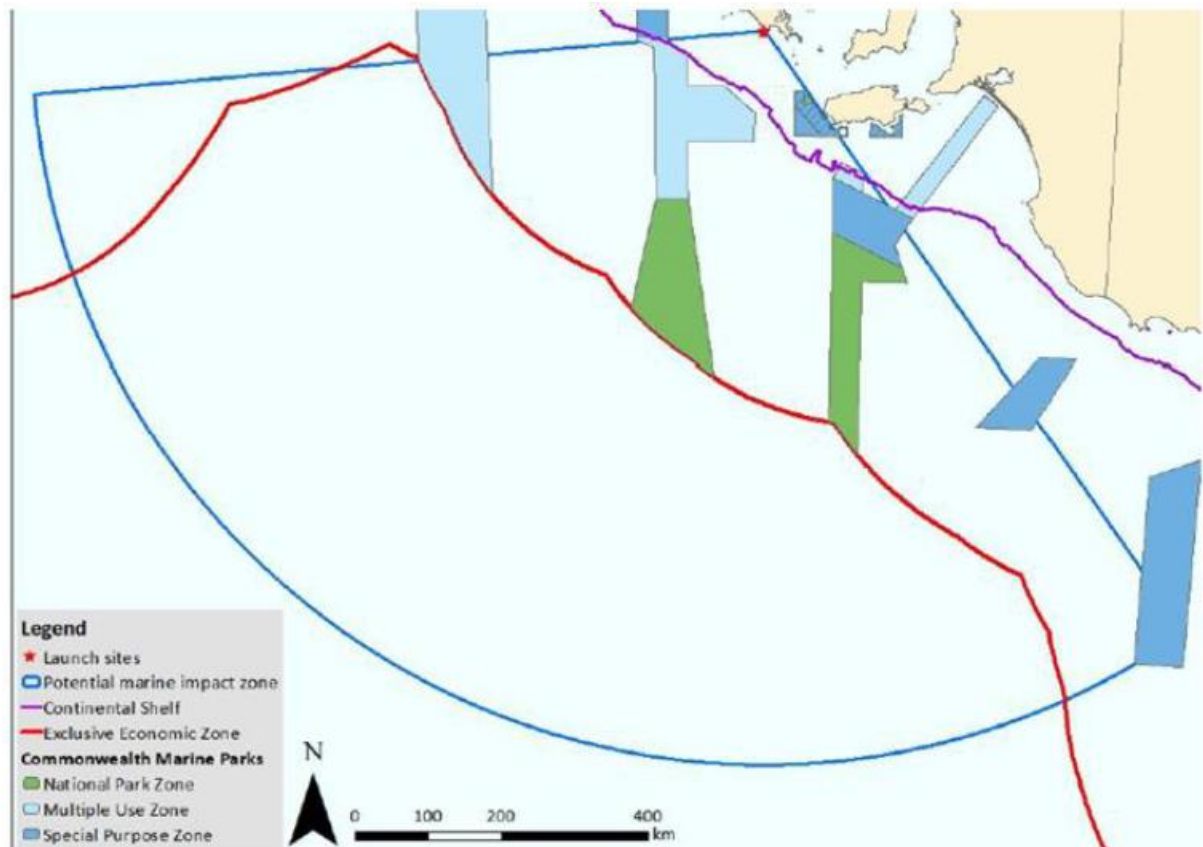


Figure 3. Potential marine impact zone (PMIZ) (blue line) associated with the proposed rocket launches.

- 10) Stages of suborbital rockets are predicted to fall to earth at distances of 3-8 km (stage 1) and 40-150 km (stage 2) from the launch site. Stages of orbital rockets will fall to earth at distances greater than 500 km for all stages of the rocket.

Site Selection

- 11) The site selection process for the proposed action was based on a weighted multi-criteria analysis, which involved consideration of 16 locational criteria. Of these 16 criteria, one criterion, the 'environment', included consideration of flora, fauna (including threatened species), native vegetation, distance to sensitive receivers, and topography.

- 12) Following the multi-criteria analysis, broad site selection was undertaken with critical constraints overlain across Australia. Candidate sites were then identified and analysed for their respective advantages and disadvantages.
- 13) The proponent determined that the Whalers Way area was the best fit site location based on various factors, including unobstructed flight paths, low aircraft and shipping volumes, low population in the immediate vicinity, year-round temperate climatic conditions, coupled with the skilled local workforce and a robust logistics supply network. Also, less native vegetation clearance would be required to support the facility at Whalers Way compared to the other sites considered.

Procedural history

Referral, controlling provisions, assessment approach decision

- 14) On 12 August 2021, the proponent submitted a valid referral for the proposed action to the department under section 68 of the EPBC Act. On the same date and as required by section 74(3) of the EPBC Act, the proposal was published on the department's website and public comments were invited until 26 August 2021. The comment period was subsequently extended until 9 September 2021 because two attachments had not been uploaded when the referral was originally published.

Public comments – Referral

- 15) There was a high degree of public interest in the proposed action at the referral stage with 54 public comments received, including two that were received soon after the due date that I also considered. I noted that all but one submission indicated that the proposed action should be considered a controlled action or expressed a view against the development due to environmental and/or social and economic reasons. I considered a summary of public submissions prepared by the department which raised the following specific issues:
 - Impacts on important populations of two threatened birds (the Southern Emu-wren (Eyre Peninsula) and the Mallee Whipbird) due to clearing of habitat, increased risk of fire, increased number of feral predators and intermittent noise disturbance.
 - The proposed placement of Launch Site A will have significant impacts on the Southern Emu-wrens (often referred to as a 'hotspot' for the subspecies).
 - Impacts on birds, marine mammals (including several whale species and the Australian Sea Lion) and fish species as a result of the propagation of sound and vibration from the launching of rockets through the marine environment as well as the falling of rocket debris.
 - Impacts on nesting sites for Listed marine and migratory species, as well as state Listed species, including Osprey and White Bellied Sea Eagle, due to disturbances associated with regular launches and related activities.
 - Impacts on the tourism and fishing industry in the area as well as disruptions and distress to the community, their livestock and native flora and fauna.

- Impacts on the environment generally (including to human health) due to pollution, including dangerous levels of Hydrochloric Acid, Hydrogen Chloride and Nitrogen Dioxide entering the atmosphere and carcinogenic hydrocarbons being at dangerous levels around the launch site. Additionally, some comments expressed concerns about the contamination of groundwater.
- Impacts to the marine environment as a result of debris from successful and unsuccessful rocket launches being disposed of in the ocean.
- The air quality assessment does not properly assess air quality and toxic fallout, including comment claiming that the wind directions used within the assessment does not accurately represent the true wind directions. Comment claims that by not accurately representing the wind direction, the proponent enables their chemical fallout data to incorrectly represent safe expected values at the nearest sensitive receptor.
- Impacts on the environment generally due to the ongoing climate emergency and extinction crisis.
- Impacts on the environment generally due to the increased risk of bushfire, including risks of a bushfire igniting from fuel decanting, rocket launches, flame stacks, and rockets exploding during take-off while in proximity to the launch site.
- Impacts to the public water supply for the city of Port Lincoln and the lower Eyre Peninsula, including the requirement of 30 million litres of water per year for the two launch pads, and potential contamination. Comments claim that increased levels of extraction from the Southern Basins will further decline water levels and affect ground water dependent ecosystems.
- That the property at Whalers Way is not an appropriate site for a rocket launch facility, given the sites conservation (including a Heritage Agreement covering the project property and being adjacent to the Thorny Passage Marine Park) and tourism values, and increased risks of bushfires. Several comments expressed that alternative locations should be considered, and that an independent review of potential sites for the launch complex should be required.
- Modelled noise impacts to marine mammal species in the air and underwater are inaccurate and understated. Operational noise modelling in the referral is ambiguous and makes no reference to actual noise levels recorded and expected from current rocket launch sites in New Zealand and the Northern hemisphere launch facilities.
- The test launch campaign – comprising of three distinct test launches of the Hapith I rocket (not a component of the proposed action) will result in the pollution of carcinogenic substances and plastic particles that may bio accumulate in the coastal waters.
- That the assessment of the project under the EPBC Act should not proceed until data from the test launch campaign is made available.
- Concerns regarding the adequacy of the Coastal Raptor Assessment.
- Concerns regarding the adequacy of the assessment of impacts of noise and vibration on threatened species.

- Concerns that the stated 23.76 ha of vegetation clearance is underestimated, as it may not incorporate all other intended development, including clearance required for firebreaks and fire management.
 - Concerns regarding possible future developments of the orbital launch complex within the proposed action site that are not included within the referred action, including the development of 'non-conventional launch facilities'.
 - That given the size, complexity and novelty, further assessment of the proposed action under the EPBC Act should be by public inquiry.
 - That there is no management consideration given to *Phytophthora cinnamomi*, which may impact on plant species.
 - The development of the proposed action will create jobs and develop technologies to improve the country.
- 16) On 10 September 2021, I determined the proposed action to be a controlled action under section 75 of the EPBC Act, due to likely significant impacts on:
- Listed threatened species and communities (sections 18 and 18A of the EPBC Act);
 - Listed migratory species (sections 20 and 20A); and
 - the Commonwealth marine area (sections 23 and 24A).
- 17) On the same date, I decided under section 87(1) of the EPBC Act, that the proposal would be assessed by preliminary documentation (further information required).
- 18) I noted that on 26 October 2021, a Statement of Reasons was requested by a third-party in relation to my controlled action decision and that this document was published on the department's website on 26 November 2021.

Assessment – Preliminary documentation (further information required)

- 19) On 1 October 2021, a delegate of the Minister wrote to the proponent requesting further information for assessment of the relevant impacts on Listed threatened and migratory species, and the Commonwealth marine environment.
- 20) On 29 October 2021, the proponent provided a draft preliminary documentation package. Following provision of feedback from the department, subsequent revisions were received on 5 September 2023, 13 November 2023 and 4 December 2023.

Variation

- 21) On 8 September 2023, a delegate of the Minister decided to accept a variation of the proposed action under section 156B of the EPBC Act to expand the northern boundary of the proposed action area, relocate Launch Site A, redesign the network of access roads, and incorporate clearance buffers around infrastructure, resulting in a reduction in the disturbance area from 23.76 hectares (ha) to 23.4 ha.

- 22) The delegate of the Minister considered the nature of the varied proposal to be substantially the same as that of the referred action, and that for the purpose of the EPBC Act, the varied action would not increase the impact on protected matters or change the assessment that impacts are subject to.

Preliminary documentation assessment

- 23) On 4 January 2024, pursuant to section 95A of the EPBC Act a delegate of the Minister issued a direction to publish the draft preliminary documentation and invitation to comment.
- 24) On 4 January 2024, the proponent published the preliminary documentation package for public consultation for 20 business days until 2 February 2024. The department informed me that several members of the public and Non-Government Organisations (NGOs) sought and were given an extension by the proponent to provide comments until 16 February 2024.
- 25) The department informed me that the draft preliminary documentation received a total of 9,521 valid public submissions, of which 9,192 were in template form (i.e., suggesting a campaign) which were all against the proposed action. The remaining 329 submissions were unique, with 250 of those being for, and 79 against, the proposed action. I noted the department received copies of these public comments on 1 March 2024.

Public comments – Draft preliminary documentation

- 26) The department informed me that public comments were received from active community groups and NGOs strongly opposed to the proposed action. I considered a summary of public submissions prepared by the department which raised areas of concern including potential impacts to:
- Important populations of threatened bird species including Southern Emu-wren and Mallee Whipbird from vegetation clearance, increased risk of bushfire and noise.
 - Threatened marine species such as whales, turtles and seals from noise and rocket debris.
 - Migratory and marine species including Osprey and White Bellied Sea Eagle, due to disturbances associated with regular launches and related activities.
 - The environment generally including air quality, water supply, groundwater contamination, and ground water dependent ecosystems.
- 27) I noted that other concerns included the suitability of the:
- proposed action site given its conservation and tourism values and listing under a state Heritage Agreement.
 - Redacted version of the offset strategy which limited the public's ability to provide an informed comment.
- 28) I also noted that a submission received by a South Australian government Landscape Board representative raised matters related to introducing fire into the landscape, the unknown impact of noise on protected matters, uncertainty of the Area of Occupancy of Southern Emu-wren populations and weed and pest management.

- 29) The department informed me that most comments in support of the proposed action included local business owners in the Port Lincoln area who anticipate a boost to the local economy and labour market.
- 30) On 7 March 2024, the proponent submitted a summary of public comments and responses and preliminary documentation accounting for comments.
- 31) Under section 95B(2) of the EPBC Act, the documents referred to above in point [30] were required to be published within 10-business days of being provided; however, the department informed me that their publication was delayed because they were not determined adequate.
- 32) On 10 July 2024, the proponent submitted a summary of public comments and responses and finalised preliminary documentation. On 8 August 2024, a delegate of the Minister determined the documents were adequate and compliant with section 95B(1)(a) of the EPBC Act. Consequently, the statutory timeframe for making my decision on whether to approve the proposed action started on 10 July 2024.
- 33) I noted that on 13 August 2024, the proponent published the documents mentioned in point [32] in accordance with the regulations, for 10-business days.
- 34) On 29 August 2024, I decided under section 130(1A) of the EPBC Act to extend the approval timeframe to 20 September 2024 to allow additional time for the department's assessment, including further consultation internally and with the proponent on both potential impacts to protected matters and the potential need for conditions, along with the standard consultation period for the proposed decision of 10-business days.
- 35) On 19 September 2024, I decided under section 130(1A) of the EPBC Act to further extend the approval timeframe to 21 October 2024 to allow time for internal consultation on proposed revised conditions.
- 36) On 1 October 2024, pursuant to sections 131 and 131AA of the EPBC Act, a delegate of the Minister wrote to relevant state and Commonwealth ministers and the proponent seeking comments on the proposed decision.
- 37) On 21 October 2024, I decided under section 130(1A) of the EPBC Act to further extend the approval timeframe to 25 October 2024 to allow time for the department to consult with the proponent and internally on proposed revised conditions.
- 38) On 25 October 2024, I decided under sections 130(1) and 133(1) of the EPBC Act to approve the action with conditions attached.

Status of State and other Commonwealth assessments and approvals

Australian Space Agency

- 39) I noted that the Australian Space Agency (ASA) regulates the country's civil space and high-power rocket activities under the *Space (Launches and Returns) Act 2018* (Space Act). I noted that the proponent is required to obtain a Launch Facility Licence from the ASA to authorise the

facility as a place from which space launches can be conducted and that the maximum time the ASA can issue a Launch Facility Licence is 20 years.

- 40) I noted that a condition of being granted a licence requires the proponent to have obtained all relevant environmental approvals. Each space launch from the facility will also need a Launch Permit authorised by ASA, though this may be applied for by the proponent or its launch customer.
- 41) The department advised me that the proponent does not currently hold any approvals under the Space Act for the proposed action.
- 42) The department informed me that the proponent was previously granted a launch facility licence to operate the facility for a test launch campaign, but the licence expired in April 2024. I noted that the proponent indicated they have provided the ASA with an expression of interest in applying for a new licence, however, have not yet submitted an application as the ASA requires all relevant environmental approvals to be in place before a licence can be granted.

Australian Marine Parks

- 43) I observed that the PMIZ overlaps with the South-east and South-west Marine Park networks (Australian Marine Parks). The department informed me that Parks Australia advised that certain activities including rocket stages entering a marine park require an assessment and authorisation from the Director of National Parks.
- 44) I was informed that to date Parks Australia have not received an application from the proponent for the proposed action.
- 45) I noted that the proponent stated that rocket stage drop zones will be located outside National Park Zones with a suitable buffer to minimise the likelihood of spent stages drifting into these zones.

South Australian Department of Planning, Transport and Infrastructure (now Department of Housing and Urban Development)

- 46) The department informed me that on 20 August 2020, the State Planning Commission issued to the proponent guidelines for the preparation of an Environmental Impact Statement (EIS) on the proposed action. The EIS underwent public consultation from 5 August 2021 until 16 September 2021.
- 47) I noted that the proponent prepared a Response Document in response to the issues raised and feedback received from state agencies, the local council and the public more generally on the EIS. This Response Document was released by the Minister for Planning on 9 November 2022.
- 48) The department informed me that the State Planning Commission provided an Assessment Report and recommendation to the state minister for Planning, who would make a decision on the proposed action in due course.

Findings on material questions of fact

- 49) In deciding whether to approve the proposed action, I considered all impacts that the proposed action would have or would likely have on each matter protected by the controlling provisions for the proposed action (being sections 18 and 18A, 20 and 20A, and 23 and 24A of the EPBC Act).
- 50) I considered that the information before me was sufficient to decide whether or not to approve the proposed action.

Listed threatened species and ecological communities (sections 18 and 18A)

- 51) I noted that the species discussed below are protected as Listed threatened species under the EPBC Act.
- Southern Emu-wren (Eyre Peninsula) (*Stipiturus malachurus parimeda*) – Endangered
 - Mallee Whipbird (*Psophodes leucogaster leucogaster*) – Endangered
 - Australian Sea-lion (*Neophoca cinerea*) – Endangered
- 52) I noted both the Southern Emu-wren and Mallee Whipbird Listing status changed from Vulnerable to Endangered on 5 July 2023 and 21 December 2023, respectively; and on the same dates new Conservation Advice came into effect. In making my approval decision, pursuant to sections 139 and 158A of the EPBC Act, I had regard to the new Conservation Advice but disregarded these Listing events in making my decision.
- 53) I considered the description of the proposed action area, impacts, threats and avoidance and mitigations measures to be substantially the same for both the Southern Emu-wren and the Mallee Whipbird.

Southern Emu-wren and Mallee Whipbird

Description – Southern Emu-wren

- 54) I noted in the Conservation Advice for *Stipiturus malachurus parimeda* (Eyre Peninsula southern emu-wren) 2023 that Southern Emu-wren can be found at the southern tip of the Eyre Peninsula, South Australia (SA), where it is currently known from 11 locations, all of which are likely to be isolated and fragmented.
- 55) I noted that the total population is estimated to be less than 750 mature individuals, with each separate location likely containing no more than 150 mature individuals.
- 56) I noted that the Southern Emu-wren inhabits a range of habitats characteristically comprising low dense vegetation types, such as shrub thickets, sedgelands, and heathy shrubland, mallee, woodland or forest.
- 57) I noted that the Southern Emu-wrens breed in solitary, monogamous pairs. Their breeding season extends from late winter to late summer (August to March). Pairs occupy territories during the breeding season, each pair usually occupying around 1 ha of good quality habitat.

58) I noted that further detailed information on the characteristics, status, threats, and habitat requirements for Southern Emu-wren can be found in the following statutory documents:

- *Conservation Advice for Stipiturus malachurus parimeda (Eyre Peninsula southern emu-wren) 2023 (Southern Emu-wren Conservation Advice);*
- *Threat abatement plan for predation by the European red fox, 2008 (threat abatement plan for European fox);* and
- *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi 2018 (threat abatement plan for Phytophthora cinnamomi).*

Description – Mallee Whipbird

59) I noted that the National Recovery Plan for the Mallee Emu-Wren (*Stipiturus mallee*), Red-lored Whistler (*Pachycephala rufogularis*) and Western Whipbird (*Psophodes nigrogularis leucogaster*) 2016 has been adopted for the Mallee Whipbird. The eastern subspecies of the Mallee Whipbird occurs in South Australia and Victoria. In South Australia, it is found across three widely separated areas of the Eyre and York Peninsulas and the Murray mallee.

60) I noted that the total population is estimated at about 6,000 mature birds with 80% of the population inhabiting the southern Eyre Peninsula, encompassing Whalers Way and Lincoln and Coffin Bay National Parks.

61) I also noted in the Conservation Advice for *Psophodes leucogaster leucogaster* (Mallee Whipbird) 2023 that the Mallee Whipbird population between the Eyre and Yorke Peninsulas is estimated at between 1,050 – 2,150 individuals with approximately 460 - 770 individuals inhabiting Whalers Way and Lincoln National Park.

62) I noted that the Mallee Whipbird occurs in mallee scrub on sandy flats, dunes or limestone, with an overstorey of mallee eucalypts. The species is largely sedentary and can only make short distance flights which limits its movement across the areas that have been largely cleared.

63) I noted that further detailed information on the characteristics, status, threats, and habitat requirements for the Mallee Whipbird can be found in the following statutory documents:

- *National Recovery Plan for the Mallee Emu-Wren Stipiturus mallee, Red-lored Whistler Pachycephala rufogularis and Western Whipbird Psophodes nigrogularis leucogaster 2016 (Mallee Whipbird Adopted Recovery Plan),* and
- *Conservation Advice for Psophodes leucogaster leucogaster (Mallee Whipbird) 2023 (Mallee Whipbird Conservation Advice).*

Proposed action area

64) I noted that the proposed action area is considered relatively undisturbed with significant vegetation cover generally consisting of coastal shrubland and mallee. The proposed action disturbance footprint encompasses approximately 23.4 ha of native vegetation that comprises the following 6 vegetation associations:

- a) Pale Turpentine Bush (*Beyeria lechenaultii*) Dryland Tea-tree (*Melaleuca lanceolata*) Low Shrubland over sclerophyllous shrubs.
 - b) Prickly Ground Berry (*Acrotriche patula*) Very Low Open Shrubland.
 - c) Coastal White Mallee (*Eucalyptus diversifolia*) Low Mixed Mallee over sclerophyllous shrubs.
 - d) Ridge Fruited Mallee (*Eucalyptus angulosa*) +/- Coastal White Mallee (*Eucalyptus rugosa*) Low Mixed Mallee.
 - e) Coastal Bearded Heath (*Leucopogon parviflorus*) Low Very Open Shrubland over exotic annual grasses.
 - f) Native Pine (*Callitris* sp. 'Limestone') Low Shrubland.
- 65) The northern section of the Whalers Way area is described as dense mallee vegetation, which poses the greatest risk of fire, in contrast to the southern section where the proposed action would be located. The vegetation in the southern section is described as smaller, less dense coastal shrubland that is discontinuous with outcropping limestone and predominant cool and humid winds due to its proximity to the coastline.
- 66) I noted that there is some pre-existing clearing in the proposed action area due to access tracks constructed for recreational and tourist access to Whalers Way. The preliminary documentation noted that there have been no bushfires in the Whalers Way area since 1931 despite a history of camping in the area.

Habitat assessment

- 67) I noted that the Southern Emu-wren and Mallee Whipbird are known to occur within the proposed action area.
- 68) The department informed me that the vegetation within the proposed action disturbance footprint and surrounding area is relatively undisturbed with significant vegetation cover generally consisting of coastal shrubland and mallee and consistent with the known habitat types for both bird species.
- 69) I noted that all fauna habitats recorded during the proponent's field surveys provide breeding and foraging habitat for both species.
- 70) I noted that habitat within the proposed action area is considered habitat critical to the survival of the Southern Emu-wren and the Mallee Whipbird, as defined in the Conservation Advice. I also noted that the populations of these species in the proposed action area are considered important populations according to their respective Conservation Advice.
- 71) I noted that Southern Emu-wren and Mallee Whipbird are cryptic species in nature with a low level of detectability and that were recorded within the proposed action area through desktop review and targeted avian field surveys. I considered these survey efforts adequate to establish

the species' presence and that they met the department's *Survey guidelines for Australia's threatened birds, 2010*.

Potential impacts

- 72) I noted the key direct impact pathways resulting from the proposed action to both species include:
- vegetation clearance through construction of the proposed action.
 - increased bushfire risk through construction activities or rocket launches.
 - introduction of short and long-term operational noise and vibration impacts; and
 - introduction of artificial lighting.
- 73) I noted the Conservation Advice for these species identify climate change as a threat due to an increased likelihood of extreme events including wildfire, heatwave and drought. I considered it highly unlikely the proposed action will exacerbate extreme temperatures, droughts or changes in precipitation. However, I did find that the proposed action will increase the bushfire risk in the Whalers Way area.
- 74) I noted that other potential direct and indirect impacts from the proposed action include exposure to contaminants from the water deluge system, vehicle strike, increased dust emissions and decreased air quality, changes to surface water run-off, and increases in the abundance or diversity of predatory or invasive species. Given the nature and scale of the proposed action, I considered that these impacts are likely to be minor and short-term. I also considered that through the implementation of the proposed action's Construction Environmental Management Plan (CEMP) and Operational Environmental Management Plan (OEMP), that will need to be approved by the Minister before the proposed action commences, these impacts are unlikely to have a significant impact on the Southern Emu-Wren and the Mallee Whipbird.
- 75) I considered the concerns raised in public comments which included the key direct impacts mentioned on point [72] which are the most detrimental impacts for the Southern Emu-Wren and the Mallee Whipbird caused by the proposed action.

Vegetation clearance impacts

- 76) I noted the proposed action involves clearing 23.4 ha of habitat critical to the survival of the Southern Emu-wren and Mallee Whipbird, which supports important populations for both bird species according to their Conservation Advice.
- 77) I noted the clearance of 23.4 ha of this habitat, according to the Conservation Advice of each species, equates to:
- a) 0.09% of the Area of Occupancy and 0.009% Extent of Occurrence (Southern Emu-wren); and
 - b) 0.06% of the Area of Occupancy and 0.005% Extent of Occurrence (Mallee Whipbird).

- 78) The department estimated, and I agreed that 23.4 ha of vegetation clearance would represent approximately 1.8% of known habitat critical to the survival of these species within the Whalers Way area.
- 79) I also noted the clearance footprint is spread over four areas: site A (7.73 ha), site B (7.22 ha), site D (6 ha) and site E (1 ha), and access roads (1.4 ha).

Vegetation clearance avoidance and mitigation measures

- 80) I noted the proponent committed to include in the CEMP and OEMP the following avoidance, mitigation, and management measures relevant to addressing impacts resulting from vegetation clearance:
- a) Applying vegetation clearing methods that maintain rootstock, minimise land disturbance, maintain soil stability and aid natural regeneration.
 - b) Ensuring all vehicles and construction equipment use designated access tracks and hardstands within the proposed action area and do not travel outside of these areas (apart from initial earthworks to construct access tracks and hardstand areas).
 - c) The construction of windrows (small soil berms) on the edge of access tracks and hardstands and use of exclusion barriers to delineate the boundary and prevent vehicles and construction equipment damaging vegetation beyond the construction impact zone.
 - d) Ensuring all physical flora control measures, such as windrows, signage and exclusion barriers/bunting are checked and maintained on a regular basis (weekly as a minimum).
 - e) Ensuring construction work beneath the canopy of trees is carried out carefully and by hand to avoid damage by equipment.
 - f) Undertaking weed control measures.
 - g) Carrying out maintenance activities and refuelling a minimum of 50 m from vegetation, with appropriate interception measures in place to avoid impacts.

Acceptability of vegetation clearance impacts

- 81) I took into account the small and dispersed nature of the clearance and the linear nature of the creation or widening of roads, the habitat availability adjacent to the proposed action area including large areas of the same habitat and quality for both bird species and considered that this clearance does not represent widespread clearing of Southern Emu-wren and Mallee Whipbird habitat. The department considered, and I agreed that the scale of this impact is not inconsistent with the adopted Recovery Plan for the Mallee Whipbird.
- 82) I noted that both species have a poor capacity for flight and dispersal. The Southern Emu-wren is known to move up to 2.5 km between habitat sites connected by dense vegetation while the Mallee Whipbird may disperse a few kilometres through dense vegetation.
- 83) The department considered, and I agreed that the vegetation surrounding the proposed action area is largely contiguous and provides sufficient connectivity for these species. Given the layout of the clearance area and nominal clearance size relative to the total available habitat within the

Whalers Ways area, and ability of these species to fly short distances to traverse access roads and utilise the surrounding vegetation to circumnavigate the cleared areas, I found that fragmentation caused by the proposed action is not widespread and is unlikely to lead to a long-term decrease in the size of important populations, to fragment these important populations into two or more populations, or lead to a loss of genetic diversity.

- 84) Considering that mating and site fidelity is high within the breeding season for these species, I determined that an approval condition should be imposed to not conduct vegetation clearing during the breeding season of these bird species in order to not interfere with the breeding cycle of these important populations.
- 85) The department considered, and I agreed that the proposed avoidance and mitigation measures, strengthened by conditions on clearing limits and restrictions will reduce the vegetation clearance impacts of the proposed action on Southern Emu-wren and Mallee Whipbird to a level that I considered acceptable.
- 86) However, the department considered, and I agreed that the clearing of 23.4 ha of habitat critical to the survival of these important populations would still have a residual significant impact as it would reduce their area of occupancy and may disrupt their breeding cycles. Therefore, I decided that compensatory measures are required to be implemented by the proponent to compensate for that residual significant impact.

Compensatory measures for vegetation clearance impacts

- 87) As considered at [86], the proposed action will have a residual significant impact on Southern Emu-wren and Mallee Whipbird, therefore I decided that compensatory measures would be required to be implemented under the EPBC Act.
- 88) I noted the proponent proposed an offset strategy to compensate for the residual significant impact indicated in point [86]. This strategy identifies five sites as direct on-ground offset sites, and the proponent is working with landowners to secure direct on-ground offset sites. I also noted that the proponent has engaged with Flinders University to undertake research as a potential indirect compensatory measure.
- 89) I noted that the proponent provided an assessment of the proposed offset sites using the department's offsets assessment guide. The department considered, and I agreed that the offset strategy is sufficiently progressed to demonstrate that a combination of the proposed offset sites is feasible in meeting the EPBC Act offset requirements for these species.
- 90) Also, given the known distribution of the species relatively close to the proposed action area, I considered that it is likely that the more options of proposed offsets sites that can be identified means that it is more likely that a suitable offset can be secured. However, I found that further work is required to secure and confirm the proposed offsets suitability, including conducting on-ground surveys.
- 91) I noted that the proponent has confirmed that they will legally secure offset sites once their suitability has been agreed to by the department.

- 92) To ensure suitable offset sites are secured, the department recommended, and I agreed to implement a condition requiring the proponent to submit an Offset Management Plan for approval by the Minister prior to the proposed action commencing.
- 93) I agreed with the department's recommendation that the offset strategy and offset management plan must meet the requirements of the department's Environmental Offsets Policy and the Environmental Management Plan Guidelines, respectively, to the satisfaction of the Minister in order to be approved.

Conclusion for vegetation clearance impacts

- 94) I concluded that provided the proposed avoidance, mitigation, approval conditions and compensatory measures as outlined above are implemented by the proponent, the impacts of the proposed action on Southern Emu-wren and Mallee Whipbird from vegetation clearance are not unacceptable.

Impacts from fire

- 95) The department considered, and I agreed that bushfire is a major threat to Southern Emu-wren and Mallee Whipbird. I considered the Conservation Advice of both species and noted that fire can cause catastrophic loss of habitat by removing the dense vegetation required by the species for survival and dispersal and can kill individual birds.
- 96) I noted that the proposed action has potential to ignite bushfire in the proposed action area during construction and operational phases. I noticed that potential ignition sources include the use of power tools, welders, heavy plant during construction and launching of rockets, including launch failures.
- 97) I noted that the large and thick Mallee vegetation north of the proposed action area has significant fuel loads but is less of a fire risk given the southerly rocket trajectories. I also noted that the southern areas of the proposed action area are not likely support intense fires due to the nature of the coastal shrubland, south of the launch sites (under rockets flight paths), that is reduced in size and density of vegetation (reduced fuel loads), has discontinuous vegetation and is close to the coast, subject to cool and humid winds.
- 98) I considered the various sources of bushfire ignition from the proposed action and the environmental condition of the site and found that there is potential that accidental fire from construction and/or launch operations could kill individual birds, reduce the area of occupancy and fragment these important populations.

Avoidance and mitigations for impacts from fire

- 99) I noted that the preliminary documentation includes an independently prepared bushfire risk assessment based on current environmental conditions, which concludes that the risk rating from construction and operation is extreme, but that with the implementation of mitigation and management measures, the risk rating falls to medium. I agreed with this determination.

100) I noted the proponent committed to include in the CEMP, OEMP and Native Vegetation Management and Monitoring Plan (NVMP) the following avoidance, mitigation, and management measures relevant to addressing impacts resulting from fire.

101) I noted the relevant fire avoidance, mitigation, and management measures proposed for the pre-construction stage are:

- a) Development of a Fire and Emergency Bushfire Emergency Plan, risk assessment and subsequent mitigation measures for construction and operation phases of the proposed action.
- b) Development of policies and procedures to appropriately manage bushfire risk to visitors, staff and contractors, including site induction, bushfire response, actions on forecast high fire weather days, reported bushfire emergencies, visitor management and site closure.
- c) Development of a database of assets and a maintenance register.
- d) Implementation of a communication system that ensures that all staff, contractors, and visitors can always be contacted and be notified of any emergency warnings and alerts.
- e) Appointment of a dedicated Chief Bushfire Warden and deputies as part of the Emergency Control Organisation requirements.
- f) Consideration of installation of surveillance cameras to assist with bushfire detection and site security.
- g) Liaison with all stakeholders across the southern peninsula and application of a tenure blind approach to bushfire mitigation and response.

102) I noted the relevant fire avoidance, mitigation, and management measures proposed for the construction stage are:

- a) Reporting of any incidence of fire to the Project Director and to the Country Fire Service (CFS).
- b) Incorporation of firebreaks (10 m wide) along launchpad fences to protect and mitigate threat of fire.
- c) Upgrading of fire access and egress tracks.
- d) Implementation of fire weather monitoring.
- e) Ensuring safe areas - designing and constructing an onsite Shelter in Place building.
- f) Transport, management, and storage of all dangerous goods will be managed in accordance with SA Government regulations.
- g) All staff and contractors to carry basic firefighting equipment (including fire extinguisher) along with communications devices in all vehicles.

- h) Basic bushfire awareness training for all staff on site during the fire danger period.
- i) Appropriate nationally accredited training for all staff involved in initial attack bushfire suppression operations.
- j) Site-specific bushfire risk information for construction activities (e.g., welding near vegetation) included in site induction.
- k) Assembly building, fuel pad and oxidiser pad will have firefighting services and equipment as per legislation.
- l) Maintenance of a database of assets and a maintenance register.
- m) Provision of advice to the Bushfire Management Area Committee of bushfire mitigation actions being carried out on the proposed action area and update the CEMP, OEMP and NVMP with this information, accordingly.
- n) Collaboration with fire agencies, surrounding land managers and private properties to ensure landscape risk is being appropriately managed.
- o) Ensuring that any future revegetation projects and rehabilitation works do not contribute to an increased bushfire risk to assets, infrastructure, or access, , in line with safety requirements.

103) I noted the relevant fire avoidance, mitigation, and management measures proposed for the operation stage are:

- a) No launch activities will be undertaken if the Fire Behaviour Index (FBI) is greater than 49 in the Australian Fire Danger Rating System, which is categorised as Extreme and Catastrophic.
- b) The Fire Danger Season (FDS) Relevant permits will apply under the *Fire and Emergency Services Act 2005* to enable the safe lighting of a fire (rocket) which must comply with any directions issued by the South Australian Country Fire Service (SACFS).
- c) During the final launch countdown Remotely Piloted Aircraft Systems (RPAS) will be airborne to provide real time spatial awareness of the launch area during rocket ignition and lift off. Post-lift off, the RPAS will be used to detect if any vegetation was ignited with the position and status of the fire reported to an onsite fire response team.
- d) The creation of no fuel and low fuel areas around launch pads (exclusion green grass 50 m, and buffer zones 10 m beyond fence) based on modelled launch trajectory to minimise the chance of nearby area ignition.
- e) Initial water needs will be supplied by water trucked onto the individual sites and stored on site. Once the dam is constructed, water would be supplied in each site's stormwater detention basin from Infrastructure Site D via direct pumped mains. This water would then be used for deluge, fire and irrigation.

- f) Firefighting equipment and crew will be installed at every launch event. Initial firefighting capabilities during rocket launch attempts will be augmented by SACFS crews including a fire truck on site during launches.
 - g) Other fire management measures such as controlled burns and monitoring of high-risk fire weather will be jointly managed by the SACFS, Traditional Owners and site landowners.
 - h) Strict management of access to the site with minimal number of people on site during launch operations.
 - i) Reporting any incidence of fire to the Project Director and to the SACFS.
- 104) I noted that launch pad sites A and B have a clearance buffer surrounding them to protect Southern Emu-wren and Mallee Whipbird habitat from catching fire from rocket exhaust. I noted that the proponent undertook detailed calculations and concluded that a 52 m clearance buffer is sufficient to avoid impacts on the Southern Emu-wren and Mallee Whipbird habitat from catching fire due to operational activities. However, I noted the proponent took a conservative approach and proposed to place a 60 m clearance buffer between the launch pads and surrounding habitat, which the department considered, and I agreed is a reasonable buffer area.
- 105) It is my understanding that the above-mentioned clearance buffer area is already included as part of proposed action area and vegetation clearance for the proposed action.

Acceptability of impacts from fire

- 106) The department recommended, and I agreed to imposing a condition to reduce the risk of a catastrophic fire event to “unlikely” by not allowing launches on any day for which fire rating of Extreme or Catastrophic has been declared by the SACFS and by not allowing launches unless approval has been granted from the SACFS.
- 107) I considered additional information provided by the proponent during the consultation period on the proposed decision relating to a condition that requires an approval from SACFS before a launch can proceed. I was made aware by the proponent that SACFS do not approve activities, rather, they administer a permit system and only during a declared fire danger season. Therefore, the department recommended, and I agreed to amend the relevant condition of a SACFS approval to requiring a SCAFS permit during a declared fire danger season.
- 108) I also considered additional information provided by the SA Government, who noted that requesting permission for approval to launch on a specific day would be dependent on weather conditions on a given day which can be subject to change and therefore would place an administrative burden on SACFS. They suggested instead that it may be more reasonable to request permission for a launch campaign, rather than a specific day. However, the department considered, and I agreed that the amended condition, discussed in the previous point [107], does not limit permission to a specific day and that the time permission is granted under a permit is a matter for the SACFS.

- 109) The department also recommended, and I agreed to imposing a condition requiring the proponent to commence rehabilitation of any habitat damaged by operations and implement corrective measures and monitoring, as outlined in the NVMP that the proponent will need to develop and get approved by the Minister before the proposed action commences.
- 110) Given the low fuel load around the launch pads and on their southern areas (i.e., under rockets flight path), the implementation of the proposed avoidance and mitigation measures, and the imposition of approval conditions, the department considered, and I agreed that the risk of fire impacts from the proposed action on Southern Emu-wren and Mallee Whipbird will be reduced to a not unacceptable level.
- 111) The department considered, and I agreed that residual significant impacts from fire are unlikely; however, to ensure the protection of protected matters from fire impacts, I decided to impose an additional condition that requires the proponent to report any non-compliance to the department for a corrective action determination.

Conclusion for impacts from fire

- 112) I concluded that provided the proposed avoidance and mitigation measures, and approval conditions, as outlined above, are implemented by the proponent, the potential impacts from fire caused by the proposed action on Southern Emu-wren and Mallee Whipbird will be reduced to not unacceptable levels and additional compensatory measures are not required

Noise Impacts

- 113) I noted the proposed action would impact the Southern Emu-wren and Mallee Whipbird from noise throughout its lifecycle including during construction and operation. For the purposes of my decision, given different impact pathways, noise impacts were assessed as three components of the proposed action, being construction, operation (without rockets) and operation (with rockets).

Permanent and Temporary hearing damage in birds

- 114) I noted that the sound pressure level 'A-weighting' was applied to the noise thresholds discussed below at [115] that took into account the equal loudness contours of human hearing. I noted that this form of sound frequency weighting is incorporated in most sound level meters and is convenient for use in noise studies. I noted that this scale has been used in bird studies previously and is considered a conservative scale for birds, especially at low frequencies.
- 115) I noted that the maximum A-weighted sound pressure level (LA_{max}) is used to describe the maximum level of sound produced while the sound exposure level (LA_{eqT}) is used to represent the intensity and duration of a noise event.
- 116) I found that Permanent Threshold Shift (PTS) is a term used in scientific literature to describe the irreversible and permanent reduction in auditory sensitivity, and Temporary Threshold Shift (TTS) is a term used to describe short-term reversible reduction in auditory sensitivity.

- 117) I noted that there is variation in potential for hearing loss between different bird species and there is no information available, based on the information before me, on the hearing sensitivity and acoustic thresholds for Southern Emu-wren or Mallee Whipbird.
- 118) I noted that environmental noise advice included a literature review of noise impacts on birds, which concluded that 140 dB L_{Amax} and 93 dB L_{Aeq24hr} are reasonable PTS and TTS thresholds, respectively, to apply for these species. I agreed that these are reasonable thresholds, but noted, in the scientific paper of Dooling and Popper (2016), that birds can tolerate continuous (i.e., up to 72 hrs) exposure to noises of up to received levels of 110 dBA down to about 93 dBA, where birds may experience a TSS.
- 119) I noted that the preliminary documentation includes scientific references that demonstrate that birds, in general, have a capacity to regenerate hearing physiology following damage; however, there is no scientific information available on the capacity for these species specific to noise regimes generated from rocket launches. For the purposes of this assessment the department considered, and I agreed that Southern Emu-wren and Mallee Whipbird exposed to noise levels above 93 dB L_{Aeq24hr} but below 110 dB L_{Aeq24hr} may acquire TTS and above 140 dB L_{Amax} will acquire PTS.
- 120) I noted that the PTS threshold is based on a maximum or peak level for impulsive noise, and the TTS threshold is based on an equivalent noise level for continuous noise over a 72-hour exposure. A launch event is expected to generate significant noise levels in the project area for only approximately 35 seconds and so the TTS threshold is considered conservative, as the potential for hearing damage depends on both the level and duration of noise exposure.

Behavioural changes

- 121) I noted that the preliminary documentation included scientific references demonstrating that birds exposed to noise levels above 50 dBA can result in behavioural changes including stress, startle responses, and masking of threats and communication. Behavioural responses may cause displacement of these species from habitat impacted by noise from the proposed action above 50 dBA, which could affect their feeding, growth, predation, survival, and reproductive success.
- 122) I noted that the scientific paper by Dooling & Popper (2016) states that any audible noise has the potential of causing behavioural effects in birds, independent of any direct TTS or PTS effects on the auditory system. This paper also notes that the ear structure of birds varies to mammals and may account for a narrower range of frequency detected by birds compared to mammals. The paper discussed the absence of noise thresholds in nestlings. Any noise at this critical stage of vocal development may affect a bird's ability to acquire and develop its species-typical vocalisations.

Noise impact from construction phase

- 123) I considered that noise impacts from construction activities are expected to occur over 4-5 years and include short bursts of impulsive noise and continuous noise produced by mobile and fixed machinery. I noted that the maximum noise level produced during construction will not exceed the TTS noise level of 93 dBA beyond 20 m from the proposed action area, therefore the

department considered, and I agreed that it is unlikely birds will be sufficiently close to acquire TTS from construction activities.

- 124) I was made aware of the details of ambient noise levels which have been measured at 38 dBA during the day and 30 dBA at night within the disturbance footprint. I noted that construction noise levels are predicted to be 20 dBA above ambient levels for 1 km surrounding the disturbance footprint causing intermittent behavioural changes in this area.

Noise impacts from operational phase (excluding launches)

- 125) I considered that during operation there will be several sources of constant noise, including building generators and workshop activities and a lifting crane. The predicted noise level of these activities is not predicted to exceed 62 dBA 25 m from the disturbance footprint. In addition, there will be temporary noise events from up to 16 truck movements per week producing a maximum of approximately 85 dBA at 10 m from a pass by.
- 126) I considered the noise from the operational phase (excluding launches) is not expected to exceed the TTS threshold but are predicted to be 20 dBA above ambient levels for 100 m surrounding the disturbance footprint, causing behavioural changes in this area.

Noise impacts from launches

- 127) I noted that it is predicted that launch events will generate noise impacts in the proposed action area for approximately 15 seconds during testing and up to 2 minutes during a launch. The maximum noise levels produced are expected to occur when the rocket is at maximum thrust close to the ground. Noise levels are expected to radiate omnidirectionally away from the launch site as the rocket elevates, reducing in intensity over time.
- 128) I was made aware that the proponent anticipates six launches in the first year of operations, increasing to a maximum of 36 orbital launches and 6 sub-orbital launches per year by year five of operation.
- 129) The department informed me that the noise modelling data predicts noise levels from the Vega rocket, considered a 'worst-case' scenario. This modelling used the industry standard 'Rumble 3.0' software used for predicting noise from rocket launch activities.
- 130) I noted that the model predicts sound levels above the PTS and TTS thresholds for these species at the launch site with sound levels reducing with distance from the launch site. The nearest Southern Emu-wren and Mallee Whipbird habitat to the proposed launch pads is 60 m from the launch pad and the model predicts noise levels are likely to be around or slightly below the thresholds at this distance. The department recommended, and I agreed with imposing a condition to ensure these levels are not exceeded and a condition for the implementation of an adaptive Noise Monitoring Plan to ensure limits are not exceeded.
- 131) During the consultation period on the proposed decision, the proponent advised that noise monitoring at the launch pad is not feasible due to extreme conditions during launches. Given the nearest Southern Emu-wren and Mallee Whipbird habitat is 60 m away from the launch pad, the department recommended, and I agreed that the relevant condition be amended to specify

that the noise level produced does not exceed the acceptable PTS and TTS thresholds for these species from 60 m from the launch pad.

132) I was made aware that the test launch campaign had limited success, with two unsuccessful launches and the third abandoned. There was, however, some useful data generated during a rocket firing test on 15 September 2021 to inform likely impacts from noise on Southern Emu-wren and Mallee Whipbird. The department informed me that significant noise levels were recorded on the launcher during this test which included:

- 16 seconds (s) at 117 dB (Ignition Command)
- 3 s at 135 dB (Main Valve Open)
- 4 s at 137 dB (Abort Command)

133) I noted that surveys were conducted before and after the rocket firing test on 18 – 21 August 2021 and 21 – 24 September 2021. The department's view was, and I agreed that these surveys were adequate, and both species were recorded before and after the rocket firing test. A total of 23 individual Southern Emu-wrens were recorded before (16 at Impact Sites and 7 at Control Sites) and 19 (14 at Impact Sites and 5 at Control Sites) after. While a total of 17 individual Mallee Whipbirds were recorded before (12 at Impact Sites and 5 at Control Sites) and 20 individual Mallee Whipbirds (14 at Impact Sites and 6 at Control Sites) after.

134) Relevantly, I noted that both species were recorded at their closest impact sites after the rocket firing test. I noted that the closest impact sites to the test launch pad were 200 m for the Southern Emu-wren and 800 m for the Mallee Whipbird and that the highest noise level recorded at these two sites were 92 dB and 77 dB, respectively.

135) I noted that the Conservation Advice for Southern Emu-wren states that pairs occupy territories approximately a hectare in size during breeding. The department considered, and I agreed that given this rocket firing test and surveying occurred in September (within breeding season) and individuals were detected using the call back method, it is reasonable to assume the individuals surveyed before and after this event at the closest impact site, were subject to around 92 dB and did not have significant hearing damage after 6-9 days.

136) I considered that noise impacts from sonic booms are unlikely to occur on the coast or Liguanea Island because sonic booms would be generated approximately 3 km offshore at an altitude of several kilometres and are directed in front of the rocket. I also noted, considering the noise modelling of the proposed action, that any noise impacts from a sonic boom on the proposed area would be below the TTS and PTS thresholds for these species and limited to behavioural impacts.

137) Regarding vibration impacts, I consider that significant vibration impacts on Southern Emu-wren or Mallee Whipbird from rockets launching would be unlikely because, according to the preliminary documentation of the proposed action, vibration is expected to be limited to the launch pad and supporting structures.

Avoidance and mitigations for noise impacts

138) I noted the proponent's commitment to the following avoidance, mitigation, and management measures relevant to addressing impacts resulting from noise.

139) I noted the relevant noise avoidance, mitigation, and management measures proposed for the construction stage are:

- a) Training and induction processes will cover noise and vibration management and complaints. This will be reinforced through ongoing training such as toolbox meetings.
- b) Location of haul routes and construction laydown areas away from sensitive receptors as far as possible.
- c) Use of off-site construction or other alternative processes that eliminate or lessen resulting noise when determined as reasonable by the Southern Launch General Manager - Infrastructure.
- d) Avoidance of blasting.
- e) Where practicable, use of site structures as a method of acoustic screening.
- f) Selection of processes and equipment which generate lower noise wherever feasible.
- g) Siting of noisy plant, access roads and site compounds as far away from neighbouring properties as is practical.
- h) Siting of fixed plant and equipment which emits noise in a particular direction such that noise is directed away from neighbouring properties.
- i) Installation of acoustic enclosures or barriers around above ground equipment where noise levels are predicted to exceed the relevant noise level targets at neighbouring properties wherever safe and practical.
- j) Limiting truck movements on local roads as much as possible.
- k) Restricting vehicle speeds in construction zones to 10 km/h and 40 km/h elsewhere on site.
- l) Maintaining equipment and installation of mufflers and silencers that meet the manufacturers specifications where relevant.
- m) Avoidance of metal-to-metal contact where possible.
- n) Works only to be undertaken in daylight hours. Where this is not feasible, every attempt will be made to only schedule works which will not generate sufficient noise to be audible at the neighbouring properties.
- o) Use of low vibration plant alternatives, such as the smallest practical vibratory compactor, where feasible.

140) I noted the relevant noise avoidance, mitigation, and management measures proposed for the operation stage are:

- a) Use of earth bunds to reduce noise during rocket take-off.
- b) Implementation of a water deluge and flame trench, which will reduce the noise level by approximately 5 – 10 dB.

- c) Undertaking noise monitoring at varying distances from the launch pad to determine and record noise levels.
- d) Undertaking launches during daylight hours whenever possible.
- e) Installation of acoustic enclosures or barriers around above ground equipment where noise levels are predicted to exceed the relevant noise level targets at neighbouring properties wherever safe and practical.
- f) Use of site structures as a method of acoustic screening for noisy equipment.
- g) Restriction of truck movements on site roads to a low-speed limit – maximum 40 km/h on site roads and maximum 10 km/h on work sites.
- h) Location of launch sites as far away from residential and other sensitive areas as possible.
- i) Selection of processes and equipment which generate lower noise wherever feasible.
- j) Siting of equipment which emits noise in a particular direction such that noise is directed away from neighbouring properties.
- k) Induction will cover noise management and complaints. This will be reinforced through ongoing training.
- l) Avoidance of metal-to-metal contact where possible.

Acceptability of impacts from noise

141) I considered that the proposed avoidance and mitigation measures, strengthened by the imposed approval conditions to ensure these measures are implemented, will reduce the risk of noise impacts from the proposed action on the Southern Emu-wren and Mallee Whipbird to a level that I considered not unacceptable.

142) I also considered that residual significant impacts from noise are unlikely.

143) The department recommended, and I agreed the imposing of additional conditions to limit the level of noise allowable during launches, a condition requiring the approval holder to submit a Noise monitoring Plan for the construction and operational phases, and conditions requiring the department to approve the CEMP and OEMP to protect, mitigate and repair harm to these species.

144) I considered additional information provided by the SA Government during the consultation period on the proposed decision relating to specifying the maximum number of rocket firing tests per year, which was not previously specified in the proposed conditions. I noted that the department considered impacts of up to ten rocket firing tests per year during the assessment, therefore, I agreed with the SA Government to include a condition that limits the amount of rocket firing tests to a maximum of ten per year.

Conclusion of impacts from noise

145) I concluded that provided the proposed avoidance and mitigation measures and approval conditions imposed, as outlined above, are implemented by the proponent, the impacts of the proposed action on Southern Emu-wren and Mallee Whipbird from noise are not unacceptable and additional compensatory measures are not required.

Impacts from light

146) The department considered, and I agreed that light exposure and impacts to the Mallee Whipbird are considered the same as those to the Southern Emu-wren.

147) I noted that the species' Conservation Advice state that the most notable impacts from light are the potential increase in predation as result of higher exposure to light from construction and operation, and forcing changes in foraging and reproductive behaviour, by changing the availability of food resources or habitat.

148) I also noted that artificial light will be introduced to the Southern Emu-wren and Mallee Whipbird habitat through construction and operation of the proposed action, including temporary lighting for construction activities, permanent established facility lighting, and temporary light emitted through rocket launches.

149) I noted the number of night-time launches is expected to be 1 or 2 per year but could be up to a maximum of 6 per year.

150) I also noted the proposed night-time lighting of launch facilities would include a 40 m high launch pad lighting tower and approximately twenty 12 m high light poles at each launch site.

151) I noted that during normal operations, night-time lighting would be limited to security lighting of the launch pads and assembly building and will be designed to avoid impacts on the surrounding environment.

Avoidance and mitigations for impacts from light

152) I noted the proponent's commitment to the following avoidance, mitigation, and management measures relevant to addressing impacts resulting from artificial light, which will be included in the CEMP and OEMP.

153) I noted that the relevant light management measures proposed during the construction stage are the minimisation of lighting and appropriate selection and location of lighting to limit spill beyond the boundary of the development footprint.

154) I also noted that the relevant light management measures proposed during the operation stage are:

- a) Undertake lighting calculations during detailed design of operational lighting, to ensure lighting at site boundaries is within acceptable levels.
- b) Minimisation of lighting and appropriate selection and location of lighting to limit spill beyond the boundary of the development footprint.

Acceptability of impacts from light

- 155) The department recommended, and I agreed that the imposition of an approval condition to limit the night-time launches to a maximum of 6 per year to reduce behavioural impacts on the Southern Emu-wren and Mallee Whipbird caused by the light emitted during rocket launches.
- 156) I considered the proponent's commitment to implementing an Artificial Light Management Plan consistent with the National Light Pollution Guidelines, including appropriate selection and location of lighting to achieve high levels of 'cut-off' of the illumination produced by the proposed action to minimise impacts to Southern Emu-wren and Mallee Whipbird. The department recommended, and I agreed that the approval of CEMP and OEMP must consider the National Light Pollution Guidelines for Wildlife.

Conclusion for impacts from light

- 157) I concluded that provided the proposed avoidance and mitigation measures as outlined above, are implemented by the proponent, the impacts of the proposed action on Southern Emu-wren and Mallee Whipbird from artificial light are not unacceptable and additional compensatory measures are not required.

Australian Sea-lion**Description**

- 158) I noted the Australian Sea-lion (ASL) is the only pinniped endemic to Australia, with breeding colonies located in South Australia and Western Australian waters. ASL are known to forage in Commonwealth waters adjacent to these states, feeding on the continental shelf at depths of 20 - 100 m, with males known to travel longer distances than females. ASL are considered to be specialised benthic foragers, eating a range of prey including fish, cephalopods, sharks, rays, rock lobsters and penguins.
- 159) I noted the population of ASL is estimated at 11,000 individuals, making it the rarest pinniped in the world. ASL do not have an annual breeding cycle with pupping occurring over a 4 to 5-month period with a break of 17 to 18 months between each cycle. Adult females haul-out a day or two before giving birth and leave 10 days later to forage at sea. Breeding can occur at any time of the year and females only breed at the site in which they were born which is especially problematic for the species.
- 160) I noted in the *Conservation Advice Neophoca cinerea Australian Sea Lion 2020* that breeding colonies have been recorded at 47 sites in South Australia. ASL's historic threat was hunting, and populations have not yet recovered to pre-exploitation levels.
- 161) I noted further specific information on the characteristics, status, habitat requirements and impacts for ASL can be found in the department's Species Profile and Threats Database (SPRAT).

Proposed action area

- 162) I noted Biologically Important Areas (BIA) have been identified within proximity to the proposed launch sites. Liguanea island approximately 5 km south of the project area is a known breeding

area for ASL. I also noted in the *Recovery Plan for the Australian Sea Lion (Neophoca cinerea) 2013* that Liguanea Island is considered habitat critical to the survival of the species. ASL breed mainly on the southern side of the island although pups have been seen on the east coast and haul-out all around the coastline.

- 163) I noted that pup numbers on Liguanea Island were estimated to be 30 (1990), 43 (2004), 25 (2015) and 27 individuals in 2019 and the total population can be estimated by using a multiplier of approximately 4 against pup counts, providing for 165 ASL in 2004 and 100 individuals in 2015.
- 164) I considered the anecdotal evidence suggesting that Cape Wiles, approximately 4 km from the proposed action area, is a known haul-out site for ASL that may be used throughout the year.
- 165) I considered the concerns raised in public comments regarding the importance of this area to ASL and its proximity to launch pads.

Impacts

- 166) I noted the *Recovery Plan for the Australian Sea Lion (Neophoca cinerea) 2013* identifies the primary threat to the recovery of the species as interactions with the fishing sector. Other factors that may be contributing to the lack of recovery include habitat degradation, interactions with aquaculture operations; human disturbance to colonies; deliberate killings; disease; pollution and oil spills; prey depletion and climate change. I also noted the *Issues Paper for the Australian Sea Lion (Neophoca cinerea) 2013* includes noise pollution as a secondary threat.
- 167) I noted in the *Issues Paper for the Australian Sea Lion (Neophoca cinerea) 2013* that individual ASL may display outward signs of fright, vigilance, aggression, reduced pup suckling time and/or relocation of females to suboptimal habitat when subjected to human disturbance, while disturbance at colonies during breeding may be particularly detrimental. Pups are likely to be the most affected, when their mothers flee a perceived or real threat and thus disrupt or end a feeding attendance session, or when the entire colony stampedes toward the sea for the same reason and tramples pups in the process.
- 168) I noted in the *Marine bioregional plan for the South-west Marine Region 2012* that unlike other species with seasonally defined breeding or migratory cycles, the timing of an action would not greatly affect the likelihood of significant impacts on ASL, as the species is not migratory and has a non-annual breeding cycle of 17 to 18 months, and colonies do not have synchronised breeding.

Noise impacts

- 169) I noted the *Marine bioregional plan for the South-west Marine Region 2012* considers that actions with a real chance or possibility of increasing the ambient noise levels within female ASL foraging areas to a level that might result in site avoidance, or other physiological or behavioural responses have a high risk of a significant impact.
- 170) I considered that noise impacts from construction activities are expected to occur over 4-5 years and include short bursts of impulsive noise and continuous noise produced by mobile and fixed

machinery. I also considered that the maximum noise level produced during construction is unlikely to have an impact on ASL.

- 171) I agreed with environmental noise advice in the preliminary documentation regarding the PTS and TTS noise levels for hearing damage to ASL in air and underwater. I considered the noise modelling of the worst-case scenario Vega rocket that concluded that levels will not exceed PTS or TTS thresholds in air or underwater at the nearest ASL habitat.
- 172) I considered noise (in air) modelling in the preliminary documentation predicting the potential for behavioural impacts on ASL at the nearest coastline including the known haul-out site at Cape Wiles and the breeding site at Liguanea Island. I also considered that the underwater noise modelling predicts noise levels slightly above the behavioural criteria for ASL within 750 m south of the shoreline of the proposed action area.
- 173) I noted human disturbance to ASL colonies is Listed as a known threat in the *Recovery Plan for the Australian Sea Lion (Neophoca cinerea) 2013* and I considered the proposed action would be inconsistent with the ASL Recovery Plan, therefore I decided to impose the conditions to monitor the nearest shoreline and waters and not launch if ASL are detected within 1.5 km.
- 174) I considered additional information provided by the proponent during the consultation period on the proposed decision on noise modelling which takes account of the noise shadowing effect the cliffs provide on the ASL habitat below. This information demonstrated that noise levels at these locations are predicted to be below the threshold for behavioural impacts on ASL and would not be inconsistent with the ASL Recovery Plan. Therefore, I imposed an approval condition limiting noise levels below the ASL behavioral threshold at nearby haul-out sites on the mainland and Liguanea Island.

Falling debris impacts

- 175) I noted that noise from debris falling into the ocean has the potential to generate noise through the initial 'slap' at the water entry, vibrations of the impacting object, and pulsations of an air cavity created by the impact. I also noted that falling rocket debris are not expected to generate underwater noise levels above typical background noise levels, other than in the immediate vicinity of the impact.
- 176) I considered debris from failed launches have the potential to impact ASL including on Liguanea Island in the event of an air or ground burst. I also considered that potential impacts, although less likely, are also possible from successful launches in relation to spent stages that fall to the earth. I noted that the proponent does not intend for any rocket stages to impact Liguanea Island.
- 177) I considered and agreed with the risk modelling undertaken by the proponent which concluded the risk of orbital rocket debris killing ASL in the ocean or on Liguanea Island from an air burst is one in 194,470 launches and 30 to 100 times lower for sub-orbital rockets. I noted the probability of casualties from a ground burst is estimated at one ASL in 44,998 launches and lower for sub-orbital rockets. I also considered that in the unlikely event a ground burst occurs

on Liguanea Island predicted mortalities are around 11 ASL from the largest class of launch vehicle, or 3–4 from smaller vehicles.

Avoidance and mitigations for ASL

178) I considered that the noise avoidance and mitigation measures discussed in the Southern Emu-wren and Mallee Whipbird section of this document also apply to the ASL, which include the use of earth bunds, acoustic screening and a water deluge to reduce noise during take-off, on-range termination decision making aids, limited in-flight control, flight termination system, and investigations of ground and air bursts.

Acceptability of impacts on ASL

179) The department considered, and I agreed that the risk of noise and collision impacts from the proposed action on ASL are not unacceptable and would not be inconsistent with the Recovery Plan for the ASL, if proposed avoidance and mitigation measures are implemented and additional approval conditions are imposed. The conditions I imposed will limit the level of noise allowable during launches and minimise the probability of rocket debris landing on Liguanea Island. A further condition imposed will ensure the proponent monitors the shorelines and marine waters south of the proposed action area, to develop and get approval for a Noise Monitoring Plan for the construction and operational phases, and to get the CEMP and OEMP approved by the Minister before the commencement of the proposed action.

Conclusion of impacts on ASL

180) The department's considered, and I agreed that provided the proposed avoidance and mitigation measures as outlined above are implemented by the proponent, and approval conditions are imposed, the impacts of the proposed action on ASL are not unacceptable and additional compensatory measures are not required.

Listed migratory species (sections 20 and 20A)

181) I noted that the department's Environment Reporting Tool (ERT) identified that 47 Listed migratory species may occur within 10 km of the launch site.

182) Based on the nature and location of the proposed action, information in the preliminary documentation and advice received from the department's Migratory Species Section, I was satisfied that the proposed action area is not within an area of internationally or nationally important habitat for migratory birds. However, I considered that ongoing monitoring for migratory seabirds that could enter or return to the area in the future, specifically species that have nested in the area previously (but were absent at the time of assessment) like the Eastern Osprey (*Pandion haliaetus*) and White-bellied Sea Eagle (*Haliaeetus leucogaster*) is required. Therefore, the department recommended, and I agreed, to impose an approval condition to protect future nesting locations within and directly adjacent to the proposed action area.

183) Based on the nature and location of the proposed action, the habitat values present in the vicinity of the launch site and internal advice, the department considered, and I agreed that potential impacts may occur to the following Listed migratory and Listed threatened species:

- Southern Right Whale (*Eubalaena australis*) – Migratory and Endangered
- Blue Whale (*Balaenoptera musculus*) – Migratory and Endangered
- Great White Shark (*Carcharodon carcharias*) – Migratory and Vulnerable
- Loggerhead Turtle (*Caretta caretta*) – Migratory and Endangered
- Leatherback Turtle (*Dermochelys coriacea*) – Migratory and Endangered

Description

184) I noted that the migratory whales, shark and turtle species identified as potentially being impacted are all widely distributed, travelling great distances between breeding, foraging and aggregation grounds. These species are integral to the marine ecosystems surrounding the proposed action area and all face various threats from human activities and environmental changes. Conservation efforts are crucial for their protection and recovery given all these migratory marine species are also Listed threatened species under the EPBC Act. I considered the potential impacts on the species Listed in point [183] under the Listed migratory species section as the same analysis

185) I noted further specific information on the characteristics, status, habitat requirements and impacts for the above EPBC Act Listed migratory species can be found in the department's Species Profile and Threats Database (SPRAT).

Proposed action area

186) I noted the proposed action area is located in close proximity to recognised Biologically Important Areas (BIAs) as identified in the National Conservation Values Atlas. These BIAs are crucial in providing for critical life functions including reproduction, feeding, migration or resting for the Southern Right Whale, Blue Whale and Great White Shark.

187) I noted the BIAs for the Southern Right Whale within the proposed action area is identified as an important migratory habitat and the BIA adjacent to the proposed action is for calving Southern Right Whale at the Head of Bight Bay. Although it is not a designated aggregation area for mother-calf pairs, they are known to use the inshore coastal area adjacent to the proposed action area annually between May until November for this critical life cycle period.

188) I noted the proposed action area is adjacent to a designated BIA for foraging Blue Whales, approximately 35 km south, and they are known to forage in this area annually from November to May.

189) I noted the proposed action area is adjacent to Neptune Islands to the south-east and the Great Australian Bight to the west which are identified as BIAs for the Great White Shark. These are identified foraging areas, aggregation areas, and sites to which Great White Sharks return on a regular basis, which may represent habitat critical to the survival of the species. Although not a BIA, Liguanea Island is identified as a possible secondary Great White Shark aggregation site within South Australia, with residency periods and return visits recorded by multiple individuals and demonstrated movement to and from Neptune Islands.

190) I noted there are no important nesting habitats for marine turtles (which are found on land) within or adjacent to the proposed action area identified in the relevant Conservation Advice and Recovery Plans, which are available on the SPRAT database.

Impacts

191) I considered the potential impacts on the species Listed in point [183] under Listed migratory species (sections 20 and 20A) and not the Listed threatened species and ecological communities (sections 18 and 18A) as the impact pathways for these species was more appropriate under this Listing category.

192) The department considered, and I agreed that potential impacts to the above Listed migratory species may arise in relation to the following components of the proposed action:

- Launch initiation – the ignition of engines and commencement of flight; and
- Stage 1 debris release – the release of the stage 1 rocket debris.

193) These components are discussed respectively below.

Launch initiation

Noise impacts

194) I noted that launches will generate airborne sound levels to 125 dB and underwater sound levels to 105 dB at the shoreline for a duration of approximately one to two minutes and up to 15 seconds during any launch testing. The maximum frequency of the launches is proposed to be 42 per year from 36 orbital and 6 sub-orbital rockets.

195) I noted that significant transmission of airborne sound into the ocean would only occur when a rocket reaches approximately 2 km in altitude, due to the angle of incidence. I considered that the predicted maximum underwater noise levels would reduce below the hearing damage thresholds for fish, turtle and marine mammal species. However, behavioural noise thresholds for these species may be exceeded within 750 m of the closest shoreline to the launch sites, for periods of up to 30 seconds. I noted the preliminary documentation states that behavioural impacts are only expected for worst case scenario rockets which will account for approximately 5 % of launches.

196) I considered other than the infrequency of potential behavioural impacts from noise, impacts would be further reduced with the imposition of an approval condition requiring a dedicated 1.5 km cautionary zone to ensure no whales are within 750 m of the launch site within 30 minutes of launch time.

197) I considered that the Southern Right Whale and Blue Whale species are unlikely to be impacted by the airborne noise created by rocket launches, since their ears are underwater (even when surfacing to breathe), other than on rare occasions when breaching. I noted the maximum underwater noise of 105 dB is lower than their own vocalisations (Southern Right Whales produce sounds up to 133 dB, and Blue Whales up to 188 dB), therefore, I determined that significant impacts on these species from noise are unlikely.

198) I noted that although noise is not considered to be a direct threat to Great White Sharks in the *Recovery Plan for the White Shark (Carcharodon carcharias) 2013*, indirect impacts could occur if seal colonies (that Great White Sharks prey on) are impacted by noise. I noted that in the impact assessment for Australian Sea Lions, noise levels from launches may have a behavioural impact on seal populations. Because there are no important nesting habitats for marine turtles within or adjacent to the proposed action area, it was not necessary to consider noise impacts on turtles. Therefore, I imposed an approval condition limiting noise levels below the ASL behavioral threshold at nearby haul-out sites on the mainland and Liguanea Island.

Noise avoidance and mitigations on Listed migratory species

199) I considered the noise avoidance and mitigation measures Listed in the threatened species section of this document also apply to Listed migratory species, which include the use of earth bunds, acoustic screening and a water deluge to reduce noise during take-off, on-range termination decision making aids, limited in-flight control, flight termination system, and investigations of ground and air bursts.

Acceptability of noise impacts on Listed migratory species

200) The department considered, and I agreed, the risk of noise impacts from the proposed action on migratory species are acceptable with the imposition of approval conditions which include:

- a) limiting the level of noise allowable during launches,
- b) monitoring of marine waters south of the proposed action area,
- c) the approval of a noise monitoring plan for the construction and operational phases,
- d) the approval of the CEMP and OEMP by the Minister.

Conclusion of noise impacts on Listed migratory species

201) The department considered, and I agreed that, provided the proposed avoidance and mitigation measures as outlined above are implemented by the proponent, and approval conditions are imposed, the impacts of the proposed action on migratory species are not unacceptable and additional compensatory measures are not required.

Light impacts

202) I noted the number of night-time launches is expected to be 1 or 2 per year but could be up to a maximum of 6 per year. The proposed night-time lighting of launch facilities would include a 40 m high launch pad lighting tower and approximately twenty 12 m high light poles at each launch site. I also noted that during normal operations, night-time lighting would be limited to security lighting of the launch pads and assembly building and will be designed to avoid impacts on the surrounding environment.

203) I noted in the *Wildlife Conservation Plan for Seabirds 2020* that migratory seabirds, particularly juveniles, can be disoriented by artificial light. However, departmental internal advice confirmed, and I accepted that the proposed action area is not within an area of internationally

or nationally important migratory seabird habitat and does not support any known important populations.

204) I noted in the *Recovery Plan for Marine Turtles in Australia 2017* that although artificial light is known to impact turtle nesting, the proposed action area is not within a breeding area for turtles and there are no known significant populations in the surrounding area.

205) I also noted light pollution is not considered a threat to migratory whales or sharks according to the relevant Conservation Advice and Recovery Plans Listed below.

Avoidance and mitigations for light impacts

206) I considered that the proponent committed to implementing an Artificial Light Management Plan consistent with the *National Light Pollution Guidelines for Wildlife 2023* including appropriate selection and location of lighting to achieve high levels of 'cut-off' of the illumination produced by the proposed action to minimise impacts on migratory species.

Acceptability of light impacts

207) I considered the proposed avoidance and mitigation measures, are sufficient to reduce the risk of light impacts from the proposed action on migratory species to a level I considered acceptable. In addition, I imposed approval conditions requiring the approval by the Minister of the CEMP and OEMP to ensure light mitigation measures are implemented.

Conclusion of light impacts

208) I concluded that provided the proposed avoidance and mitigation measures and approval conditions, as outlined above, are implemented, the impacts of the proposed action on migratory species from light are not unacceptable and additional compensatory measures are not required.

Chemical impacts

209) I noted there are likely to be various hazardous materials required on-site during construction and operational phases of the proposed action, including fuel for construction and operational machinery. To manage the environmental risks associated with an accidental release of such materials, the proponent plans to implement a Total Surface Water Cycle Management (TSCM) Framework for the management of stormwater runoff.

210) I noted there is potential for water used in the water deluge system to be contaminated from rocket exhaust substances. However, any run-off from the launch pad will be directed and contained in swales, tested and treated or disposed of appropriately. I considered it unlikely any hazardous substances will enter the marine environment or cause any significant impacts on migratory species.

Avoidance and mitigations measures for chemical impacts

211) I noted the proponent's commitment to implementing the CEMP and OEMP, including mitigation measures to minimise surface water impacts at all phases of the proposed action.

Measures include the bunding of fuel and chemical storage areas, the implementation of a Total Surface Water Cycle Management (TSCM) Framework and the testing of water in the flame trenches and surrounding soil for contaminants and treatment or disposal.

Acceptability of chemical impacts

212) I considered the proposed avoidance and mitigation measures are sufficient to reduce the risk of chemical impacts from the proposed action on migratory species to a level I considered not unacceptable. In addition, I imposed approval conditions requiring the approval of the CEMP and OEMP to ensure chemical mitigation measures are implemented.

Conclusion of chemical impacts

213) I concluded that provided the proposed avoidance and mitigation measures as outlined above are implemented by the proponent, the impacts of the proposed action on migratory species from chemicals are not unacceptable and additional compensatory measures are not required.

Staged Debris Release

214) I noted that rocket stages from successful launches are planned to enter the ocean at distances of 3–8 km and 40–150 km for suborbital rockets and >500 km for orbital rockets. The department informed me that typically 93% of launches are successful. I was also made aware that rocket debris from unsuccessful launches have the potential to enter the ocean anywhere within the PMIZ.

215) The preliminary documentation states that except for lithium (within batteries) and copper (within electrical wiring), all component materials of rocket stages are inert and harmless to the marine environment. I noted that rocket fuel is expected to be spent before rocket stages enter the ocean; however, in the event unspent fuel reaches the ocean it will either remain inert (rubber-based solid fuel) or vaporise (liquid fuels).

216) I noted that lithium and copper can potentially contaminate the marine environment and accumulate in large marine mammals like the Southern Right Whale, Blue Whale and Great White Shark. I noted that in large amounts, this has the potential to cause health issues and affect growth and reproduction over time. However, the department considered, and I agreed that the risk is low because these contaminants would be dispersed across a large area and would be present in relatively small quantities over the life of the approval.

217) I considered the impact assessment of the disposal of rocket stages in the Commonwealth marine area and found that except for lithium and copper, rocket components are inert and harmless to the marine environment. I noted that these substances are expected to have localised effects on benthic dwelling organisms; however, I concluded that impacts would not be significant given the extent of the potential marine impact zone.

218) I noted that other potential impacts on these migratory species from debris entering the ocean include:

- a) Debris collision resulting in injury or mortality.

- b) Noise disturbance resulting in mortality, physical and hearing damage, masking of communication and alteration of behaviour; and
- c) Ingestion of debris.

219) I noted that the rocket debris colliding with marine species in the drop zone is remote with a chance of between one in 100 million and one in a billion. The department concluded, and I agreed that the risk of migratory species casualties from rocket debris strike is negligible.

220) I noted that noise from debris falling into the ocean has the potential to generate noise through the initial contact at water entry, vibrations of the impacting object, and pulsations of an air cavity created by the impact. I considered that falling rocket debris are not expected to generate underwater noise levels above typical background noise levels, other than in the immediate vicinity of the impact.

221) I considered that rocket debris are expected to breakup upon impact with the ocean surface and could create particles small enough to be ingested by most marine species. However, particles will sink and given the extent of the receiving environment, I concluded that impacts from the ingestion of rocket debris by these migratory species are unlikely to be significant.

Avoidance and mitigations for debris release

222) I noted that rocket debris would remain in the marine environment and the only toxic substances contained in this debris is lithium and copper. No further avoidance or mitigation measures were proposed for impacts from staged debris release on migratory species.

223) To address concerns of chemical contamination of the Commonwealth marine area I imposed a condition requiring the approval of an OEMP including the provision of further information on launch vehicles and their constituent chemicals as they become available.

Acceptability for debris release

224) The department considered, and I agreed that the risk of significant impacts on migratory species from staged debris release is unlikely due to the minor and localised impacts in a vast marine area.

Conclusion for debris release

225) I concluded that impacts of the proposed action on migratory species from staged debris release are not unacceptable and additional compensatory measures are not required.

Commonwealth marine areas (sections 23 and 24A)

226) I noted that a Commonwealth marine area (CMA) comprises any part of the sea, including the waters, seabed, and airspace, within Australia's exclusive economic zone and/or over the continental shelf of Australia, that is not state or territory waters.

227) Under sections 23(1), 24A(1) and 24A(2) of the EPBC Act, I considered whether the components of the proposed action being taken within the CMA are likely to have a significant impact on the environment generally. I also considered under section 23(2) of the EPBC Act whether

components of the proposed action being taken outside the CMA are likely to have a significant impact on the CMA (including CMA values, such as marine species).

Proposed Action Area

- 228) I noted that the proposed action is not located within the Commonwealth marine environment however a significant portion (approximately 11,000 square km) of the PMIZ is within Commonwealth marine areas (i.e., Australia's exclusive economic zone and over the continental shelf of Australia).
- 229) I noted that two Commonwealth marine areas are in proximity to the proposed action: the South-east Marine Region and the South-west Marine Region, where several EPBC Listed threatened and migratory species are known or likely to occur. I discussed the potential impacts to these species in detail above.
- 230) I noted that successful orbital launches would result in rocket stages falling in drop zones approximately 500 and 1000 km from the launch site, with the first stage potentially entering the CMA. Whereas both the first and stages of successful sub-orbital launches would enter the CMA in drop zones approximately 3-8 km and 40-150 km from the launch site, respectively.
- 231) The department informed me that the following Commonwealth Marine Parks fall within the PMIZ:
- Murray Marine Park.
 - Western Eyre Marine Park.
 - Western Kangaroos Island Marine Park; and
 - Great Australian Bight Marine Park.
- 232) I noted that the proposed action is not inconsistent with the relevant South-west Marine Parks Management Plan 2018 and transitional South-east Marine Parks Network Management Plan 2013 and no launch debris are intended or expected to enter an Australian Marine Park. However, to strengthen this view, the department recommended, and I agreed to impose the approval condition to ensure debris are not disposed in an Australian Marine Park unless authorised by the Director of National Parks.

Impacts

- 233) The department considered, and I agreed that the above impact assessments are commensurate with the potential impacts to the CMA, including risk of debris collision, chemical contamination and waste pollution in the marine environment in conjunction with the following additional considerations:

Result in a known or potential pest species becoming established in the CMA

- 234) The department considered, and I agreed that rocket components would not provide a vector for invasive or pest species to enter the marine environment. I noted that rocket debris may provide substrate and facilitate the spread of pests already established in the area, but that this

impact would be a localised impact. Therefore, the department considered, and I agreed that the proposed action is unlikely to result in the introduction of a pest species or aid in the establishment of a pest species.

Modify, destroy, fragment, isolate or disturb an important or substantial area of habitat such that an adverse impact on marine ecosystem functioning or integrity in a CMA

- 235) The department considered, and I agreed that due to large area of the PMIZ (approximately 11,000 square km), impacts are likely to be localised and not adversely impact on marine ecosystem functioning or integrity in a CMA. In addition, I noted that the PMIZ only forms a small part of much larger biologically important area for marine species such as Blue Whales and Southern Right Whales.

Have a substantial adverse effect on a population of a marine species or cetacean including its life cycle (for example, breeding, feeding, migration behaviour, life expectancy) and spatial distribution

- 236) The department considered, and I agreed that substantial adverse effects to marine species or cetaceans from impacts including pollution, debris strike and noise are unlikely, similarly to Australian Sea Lions and Listed migratory species as discussed above.

Result in a substantial change in air quality or water quality (including temperature) which may adversely impact on biodiversity, ecological integrity, social amenity or human health

- 237) The department considered, and I agreed that that the proposed action will not result in a substantial change in air quality or water quality within the CMA due to the low frequency of launches and large area of the PMIZ. I considered that any changes to air quality or water quality are expected to be of a minor temporal and spatial extent.

Result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected

- 238) I noted that successful launch of orbital and sub orbital rockets would require the disposal of rocket stages into the Southern Ocean including the CMA. I also noted that there is the risk for failed rocket launches to impact upon a CMA and that most components of the rockets are expected to shatter into many pieces upon impact and sink to the sea floor except rubber-based solid fuels, liquid fuels prior to vaporisation and some small pressure vessels which have not been punctured.

- 239) I noted that except for lithium and copper, rocket components are inert and harmless to the marine environment. I noted that copper (from wiring) is known to have long-term effects on benthic dwelling organisms and localised impacts are expected. Lithium (from batteries) is not expected to bioaccumulate though may result in localised and temporary highly alkaline seawater conditions.

- 240) Given the rocket componentry, large area of the PMIZ and frequency of launches, I considered it unlikely that the proposed action would introduce harmful chemicals at levels that would

accumulating in the marine environment such that biodiversity, ecological integrity, social amenity or human health may be adversely affected.

Have a substantial adverse impact on heritage values of the CMA, including damage or destruction of an historic shipwreck.

241) I noted that there are four potential shipwrecks in the PMIZ, none of which are protected under the *Underwater Cultural Heritage Act 2018*.

Avoidance and mitigations

242) I noted that no launch debris are intended or expected to enter an Australian Marine Park, and the proponent proposed a range of avoidance and mitigation measures to reduce the likelihood of this occurring including on-range termination decision making aids, limited in-flight control, flight termination systems, and investigations of ground and air bursts.

243) I noted that an approval condition was proposed in the proposed decision to ensure that no Listed marine pollutants are used in, or carried by, any rocket. However, after considering comments from the proponent and the Australian Space Agency that the definition used in the proposed condition for marine pollutants was not fit for purpose as copper and lithium are included on the defined list, and after receiving advice from the Environmental Contamination Advice and Standards Section, the department recommended, and I agreed, to remove this condition.

244) I concluded at point [225] that provided the proposed avoidance and mitigation measures outlined at point [223] are implemented by the proponent, impacts of the proposed action on migratory species from chemicals are not unacceptable and additional compensatory measures are not required.

Acceptability

245) The department considered and I concurred that the risk of residual significant impacts on the CMA from the proposed action are unlikely.

Conclusion

246) Based on the large area of the Commonwealth marine area in the PMIZ and localized nature and low scale of potential impacts in the marine environment due to debris collision, chemical contamination and waste pollution, and compliance with the proposed avoidance and mitigation measures, I concluded that the proposed action would not have a significant impact on the Commonwealth marine area. As such, compensatory measures are not required.

Social and economic matters

247) Pursuant to section 136(1)(b) of the EPBC Act, in deciding whether or not to approve the proposed action, and what conditions to attach to an approval, I considered economic and social matters, which were not inconsistent with any other requirement of Subdivision B of Division 1 of Part 9 of the EPBC Act.

248) I noted in the preliminary documentation the capital cost of the proposal included: two launch sites, maintenance site, range control site roads and other infrastructure estimated at approximately \$50 million AUD.

249) I considered the benefits the proposal is expected to provide to the local and wider community including:

- New employment opportunities during planning and development of the site.
- Business opportunities to support the launch facility generated for security, maintenance operators, road and traffic management, marine vehicle operators.
- Indigenous engagement – Southern Launch has commenced discussions with the First Nation cultural custodians of the site, the Nauo Community and hopes to enter business and employment opportunities; and
- Promoting space launch tourism through public viewing of launches.

250) I noted in the preliminary documentation the proposed action is expected to achieve an average employment increase of over 97 full time equivalent (FTE) workers over a 10-year period, with peak of 142 FTE jobs during the 2 major construction phases.

251) I noted space launch tourism is expected to have a positive impact on the local tourism sector with additional visitors and associated spending for the state, and more locally in Port Lincoln area. Increases in domestic and international travel, associated accommodation, food and beverages and local transport are all expected to contribute to ongoing economic benefit.

252) I considered the proposal has the potential to contribute to national security by providing a facility enabling rapid and responsive access to space for customers including the Australian and United States (US) Department of Defence. I had regard to the Technical Safeguards Agreement between Australia and the US that facilitates technology sharing between the two countries and that the US Department of Defence have expressed interest in using this site for a range of activities.

253) I considered the proposal would also have negative impacts on the community including restrictions on access to lands and waters and airspace. I noted that for safety reasons, the PMIZ will be closed during launches to all marine users, including commercial fishing and tourism operators, which will restrict fishing and tourism operations and could result in impacts to these industries.

254) I noted that maritime exclusions would be in place for approximately 4 hours on each launch day and the proponent will engage with industry in advance to inform representatives of the proponent's planned launch activities. I also noted that as part of the launch process, and in consultation with the Civil Aviation Safety Authority and Australian Hydrographic Office, respectively, Notices to Airmen (NOTAMS) and Notice to Mariners (NtM) will be required.

Additional considerations

Principles of ecologically sustainable development – section 136(2)(a)

255) In deciding whether or not to approve the taking of an action and the conditions to attach to an approval, I was required under section 136(2)(a) of the EPBC Act to take into account the principles of ecologically sustainable development (ESD). The principles of ESD, as defined in Part 1, section 3A of the EPBC Act, are:

- a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations.
- b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.
- c) the principle of inter-generational equity – that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.
- d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making.
- e) improved valuation, pricing and incentive mechanisms should be promoted.

256) In addition, section 391 of the EPBC Act provides that I must take into account the precautionary principle in deciding whether or not to approve the taking of an action. The precautionary principle requires that, if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

257) I have taken account of the precautionary principle by considering whether there are threats of serious or irreversible damage with respect to the matters protected by the EPBC Act that will be, or are likely to be, impacted by the proposed action, and considering whether there is a lack of full scientific certainty. The department considered, and I agreed that there is a threat of serious or irreversible damage and a lack of full scientific certainty of noise impacts from the proposed action on Southern Emu-wren and Mallee Whipbird. I imposed conditions as part of the approval to prevent and mitigate impacts on these species, and to prevent degradation of the environment.

258) I noted that there is variation in potential for hearing loss between different bird species and there is no information available on the hearing sensitivity and acoustic thresholds for Southern Emu-wren or Mallee Whipbird. I considered the preliminary documentation that included a literature review of noise impacts on birds that indicated that 140 dBA and 93 dBA are reasonable PTS and TTS thresholds to apply for these species, and I agreed with this finding.

259) I took into account the principles of ecologically sustainable development, and the precautionary principle, in the following ways:

- a) The recommendation report and the preliminary documentation provided contain information on the long-term and short-term economic, environmental, social, and equitable considerations that are relevant to my decision.

- b) Any lack of certainty related to the potential impacts of the projects is addressed by conditions that restrict environmental impacts, impose strict monitoring, and adopt environmental standards which, if not achieved, require the application of response mechanisms in a timely manner to avoid adverse impacts.
- c) The approval conditions will ensure protection of EPBC Listed species and communities, Listed migratory species and the environment of the Commonwealth marine area. Those conditions allow for the proposed action to be delivered and operated in a sustainable way to protect the environment for future generations and preserve EPBC Listed species and communities, Listed migratory species and Commonwealth marine areas in perpetuity.
- d) I considered the importance of conserving biological diversity and ecological integrity in relation to all the controlling provisions for this proposed action.

Preliminary documentation – section 136(2)(bc)

- 260) In accordance with section 136(2)(bc)(i), I was given the final preliminary documentation relating to the proposed action for consideration under section 95B(1) of the EPBC Act.
- 261) In accordance with section 136(2)(bc)(ii), I was given a recommendation report relating to the proposed action for consideration under section 95C.
- 262) I took into account the finalised preliminary documentation and recommendation report in deciding whether or not to approve the proposed action, as referred to above in the section on 'Findings on material questions of fact'.

Relevant comments – section 136(2)(f)

- 263) Public comments were invited on the referral and the draft assessment documentation. I considered that adequate public consultation for the proposed action had occurred. Therefore, I did not recommend inviting public comment under section 131A on the proposed decision and proposed conditions of approval as this was unlikely to elicit views or information that were not already considered in relation to the proposed action.
- 264) The following Ministers, considered to potentially have administrative responsibilities relating to the proposed action, were invited to comment as required by section 131 of the EPBC Act:
- Minister for Defence.
 - Minister for Indigenous Australians.
 - Minister for Industry and Science.
 - Minister for Infrastructure, Transport, Regional Development and Local Government; and
 - SA Minister for Environment and Water.
- 265) I noted that the Minister for Infrastructure, Transport, Regional Development and Local Government and the Minister for Defence did not provide comments on the proposed decision and proposed conditions of approval.

266) Under section 131AA(1), the proponent was invited to give the Minister comments on the proposed decision and proposed conditions of approval within 10 business days of the proposed decision date. My department informed me that the proponent provided comments on the proposed approval conditions, and I considered a summary of these comments prepared by the department which included:

- a) Noise monitoring at the launch pad is not feasible and proposed a distance of 75 m.
- b) Proposed definition for marine pollutants is unworkable for space industry.
- c) Additional information provided demonstrating noise levels below behavioural threshold for Australian Sea Lion.
- d) Revise condition to allow launches on Extreme or Catastrophic fire rating days providing permission has been granted by the SA Country Fire Service (SACFS).
- e) Change reference from SACFS 'approval' to 'permit granted' and limit requirement to the declared fire danger season.
- f) The approval of management plans is an administrative burden.
- g) Update definition of 'Commence the Action' to include minor physical disturbances of the site prior to the action commencing including rubbish removal, storage and maintenance of existing infrastructure.

267) My department also informed me that the Australian Space Agency (ASA) (on behalf of the Minister for Industry and Science) provided comments on the proposed approval conditions and I considered a summary of these comments prepared by the department which included:

- a) Proposed definition for marine pollutants is unworkable for space industry.
- b) Suggestion to use a probabilistic exclusion method for impacts to Liguanea Island and to also include orbital rockets.

268) I noted that the South Australian Government provided comments on the proposed approval conditions, and I considered a summary of these comments prepared by the department which included:

- a) Include additional condition to limit the number of rocket firing tests.
- b) Limit nighttime launches to occur outside of whale breeding season.
- c) Replace requirement for a marine biologist with a suitably qualified ecologist.
- d) Requirement to also monitor whales in Sleaford Bay.
- e) Reference 'launch campaign' rather than 'specific launch' to allow SACFS permission to cover several days.

- f) An adaptive management approach should be adopted for the Operational Environment Management Plan so that some monitoring could potentially be discontinued.

269) I also noted that the National Indigenous Australians Agency (NIAA) responded on behalf of the Minister for Indigenous Australians with no comment on the proposed conditions of approval. However, I noticed that the NIAA *did* provide general comments on First Nations-related economic and social factors relevant to this proposed action. I noted that my department, with permission of the NIAA, provided the NIAA comments to the proponent to assist them in their ongoing engagement with Traditional Owners and other First Nations stakeholders.

270) I considered all the comments mentioned in deciding whether or not to approve the taking of the proposed action.

Person's environmental history – section 136(4)

271) In deciding whether or not to approve the taking of an action by a person, and what conditions to attach to an approval, under section 136(4) of the EPBC Act, I may consider whether the person is a suitable person to be granted an approval, having regard to:

- a) the person's history in relation to environmental matters.
- b) if the person is a body corporate—the history of its executive officers in relation to environmental matters; and
- c) if the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.

272) I noted that the proponent is a start-up company, so does not have a direct record of undertaking development. I also noted that there are no past or present proceedings under any relevant Commonwealth, state or territory law against the proponent.

273) On 9 October 2024, the department's Compliance and Enforcement Branch advised me that an Environmental History Check on the proponent was conducted in compliance with section 136(4) of the EPBC Act and disclosed that no adverse history was identified against the proponent relating to contraventions of national environmental law.

274) I noted that the proponent engaged suitably qualified and experienced environmental professional services to assist them to develop the proposed action, including help with design development and development of the preliminary documentation and appendices.

275) Based on the information above, I considered that the proponent is a suitable person to be granted an approval under the EPBC Act.

Minister not to consider other matters – section 136(5)

276) In deciding whether or not to approve the taking of an action, and what conditions to attach to an approval, as provided by section 136(5) of the EPBC Act, I did not consider any matters that the Minister is not required or permitted to consider by Division 1, Part 9 of the EPBC Act.

Threatened species and endangered communities – section 139

277) In accordance with section 139(1) of the EPBC Act, in deciding whether or not to approve for the purposes of a subsection of section 18 or section 18A the taking of an action, and what conditions to attach to such an approval, I must not act inconsistently with:

- a) Australia's obligations under:
 - i) the Biodiversity Convention; or
 - ii) the Apia Convention; or
 - iii) CITES; or
- b) a Recovery Plan or Threat Abatement Plan.

278) Under section 139(2), if:

- a) the delegate is considering whether to approve, for the purposes of a subsection of section 18 or section 18A, the taking of an action; and
- b) the proposed action has or will have, or is likely to have, a significant impact on a particular Listed threatened species or a particular Listed threatened ecological community.
- c) the delegate must, in deciding whether to so approve the taking of the action, have regard to any approved conservation advice for the species or community.

Biodiversity Convention

279) I acknowledged that the objectives of the Biodiversity Convention, to be pursued in accordance with its relevant provisions, are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding.

280) I considered that the approval of the proposed action is not inconsistent with the Biodiversity Convention, which promotes environmental impact assessment (such as this process) to avoid and minimise adverse impacts on biological diversity. I particularly considered an appropriate combination of avoidance and mitigation measures for the management of species potentially impacted by the proposed action.

281) I acknowledged that the Biodiversity Convention has been considered in, and is not inconsistent with, the approval which requires avoidance, mitigation and management measures for Listed threatened species and communities. The approval requires information related to the proposed action to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity.

Apia Convention

282) I noted that the Convention on the Conservation of Nature in the South Pacific (**Apia Convention**) encourages the creation of protected areas which together with existing protected

areas will safeguard representative samples of the natural ecosystems occurring therein (particular attention being given to endangered species), as well as superlative scenery, striking geological formations, and regions and objects of aesthetic interest or historic, cultural or scientific value.

283) The Apia Convention was suspended with effect from 13 September 2006. While this Convention has been suspended, I considered Australia's obligations under the Convention. I considered that, in approving the proposed action, subject to conditions, they would not be acting inconsistently with the Convention which has the general aims of conservation of biodiversity.

International trade in endangered species

284) I acknowledged that the Convention on International Trade in Endangered Species of Wild Fauna and Flora (**CITES**) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten their survival.

285) I accepted the department's advice that approving the proposed action, subject to conditions, would not be inconsistent with CITES as the proposed action does not involve international trade.

Recovery Plans and Threat Abatement Plans

286) I acknowledged that the Recovery Plans relevant to the proposed action and assessment are:

- Department of Environment, Land, Water and Planning (2016). National Recovery Plan for the Mallee Emu-Wren *Stipiturus mallee*, Red-lored Whistler *Pachycephala rufogularis* and Western Whipbird *Psophodes nigrogularis leucogaster*. Australian Government, Canberra. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/three-mallee-birds>. In effect under the EPBC Act from 06-May-2016.
- Department of Sustainability, Environment, Water, Population and Communities (2013). Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*). Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/resource/recovery-plan-australian-sea-lion-neophoca-cinerea>. In effect under the EPBC Act from 05-Jul-2013.
- Department of Climate Change, Energy, the Environment and Water (2024). National Recovery Plan for the Southern Right Whale *Eubalaena australis*. Department of Climate Change, Energy, the Environment and Water, Canberra. Available from: <http://www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/southern-right-whale>. In effect under the EPBC Act from 31-Jul-2024.
- Department of the Environment (2015). Conservation Management Plan for the Blue Whale - A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999. Canberra, ACT: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/recovery/blue-whale-conservation-management-plan>. In effect under the EPBC Act from 03-Oct-2015

- Department of Sustainability, Environment, Water, Population and Communities (2013). Recovery Plan for the White Shark (*Carcharodon carcharias*). Department of Sustainability, Environment, Water, Population and Communities. Available from: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/recovery-plan-white-shark-carcharodon-carcharias>. In effect under the EPBC Act from 06-Aug-2013.
- Department of the Environment and Energy (2017). Recovery Plan for Marine Turtles in Australia. Australian Government, Canberra. Available from: <http://www.environment.gov.au/marine/publications/recovery-plan-marine-turtles-australia-2017>. In effect under the EPBC Act from 03-Jun-2017.

287) In making my decision on whether or not to approve the taking of an action, and what conditions to attach to an approval, I considered the above-mentioned Recovery Plans. I was satisfied that the approval of the proposed action, subject to conditions, would not be inconsistent with these statutory documents.

288) I acknowledged that the Threat Abatement Plan relevant to this action are:

- Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008). Threat abatement plan for predation by the European red fox. DEWHA, Canberra. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/predation-european-red-fox>. In effect under the EPBC Act from 01-Oct-2008
- Department of the Environment and Energy (2018). Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomi*. Canberra: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/threat-abatement-plan-disease-natural-ecosystems-caused-phytophthora-cinnamomi-2018>. In effect under the EPBC Act from 22-Feb-2019.
- Department of the Environment and Energy (2018). Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018). Canberra, ACT: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/marine-debris-2018>. In effect under the EPBC Act from 21-Jul-2018.
- Department of the Environment and Energy (2017). Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*) (2017). Canberra, ACT: Commonwealth of Australia. Available from: <http://www.environment.gov.au/biodiversity/threatened/publications/tap/feral-pig-2017>. In effect under the EPBC Act from 18-Mar-2017

289) I considered the Threat Abatement Plans in making my decision for the Listed threatened species and communities and Listed migratory species. I was satisfied that the approval of the proposed action, subject to conditions, would not be inconsistent with these statutory documents.

290) I considered all relevant Recovery Plans and Threat Abatement Plans and accepted that approval of this action would not be inconsistent with the above obligations.

Conservation Advice

291) I considered that the Approved Conservation Advice relevant to this proposed action are:

- Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for Stipiturus malachurus parimeda (Eyre Peninsula southern emu-wren)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/26006-conservation-advice-05072023.pdf>. In effect under the EPBC Act from 05-Jul-2023.
- Department of Climate Change, Energy, the Environment and Water (2023). *Conservation Advice for Psophodes leucogaster leucogaster (mallee whipbird)*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/81025-conservation-advice-21122023.pdf>. In effect under the EPBC Act from 21-Dec-2023.
- Threatened Species Scientific Committee (2020). *Conservation Advice Neophoca cinerea Australian Sea Lion*. Canberra: Department of Agriculture, Water and the Environment. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/22-conservation-advice-23122020.pdf>. In effect under the EPBC Act from 23-Dec-2020.
- Department of the Environment, Water, Heritage and the Arts (2008). *Approved Conservation Advice for Dermochelys coriacea (Leatherback Turtle)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: <http://www.environment.gov.au/biodiversity/threatened/species/pubs/1768-conservation-advice.pdf>. In effect under the EPBC Act from 08-Jan-2009.

292) I had regard to the Approved Conservation Advice relevant to the proposed action and gave consideration to the likely impacts of the proposed action on Listed threatened species and endangered ecological communities and Listed migratory species (see above).

Migratory species – section 140

293) In accordance with section 140 of the EPBC Act, in deciding whether or not to approve for the purposes of section 20 or 20A the taking of an action relating to a Listed migratory species, and what conditions to attach to such an approval, I must not act inconsistently with Australia's obligations under whichever of the following conventions and agreements because of which the species is Listed:

- a) the Bonn Convention.
- b) CAMBA.
- c) JAMBA.
- d) an international agreement approved under subsection 209(4).

The Bonn Convention

- 294) I acknowledged that the Convention on the Conservation of Migratory Species of Wild Animals (**Bonn Convention**) aims to conserve terrestrial, aquatic and avian migratory species throughout their range.
- 295) I considered that the approval of the proposed action is not inconsistent with the Bonn Convention. I particularly considered an appropriate combination of avoidance and mitigation measures for the management of species potentially impacted by the proposed action.
- 296) I acknowledged that the Bonn Convention has been considered in, and is not inconsistent with the approval, which requires avoidance, mitigation and management measures for Listed migratory species. The approval requires information related to the proposed action to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity.

CAMBA, JAMBA, ROKAMBA

- 297) I noted that the China-Australia Migratory Bird Agreement (**CAMBA**), Japan-Australia Migratory Bird Agreement (**JAMBA**), and Republic of Korea-Australia Migratory Bird Agreement (**ROKAMBA**) lists terrestrial water and shorebird species which migrate between Australia and the respective countries. The majority of the Listed species are shorebirds.
- 298) I considered that these agreements require the parties to protect migratory birds by:
- a) limiting the circumstances under which migratory birds are taken or traded.
 - b) protecting and conserving important habitats.
 - c) exchanging information; and
 - d) building cooperative relationships.
- 299) I acknowledged that the CAMBA, JAMBA and ROKAMBA have been considered in, and are not inconsistent with the approval, which requires avoidance, mitigation and management measures for Listed migratory species. The approval requires information related to the proposed action to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity.
- 300) I am of the opinion that likely impacts on Listed migratory species will be avoided and mitigated by the proponent to a reasonable degree under the proposed conditions. Therefore, I agreed with the department that approving the proposed action subject to the proposed approval conditions would not be inconsistent with these international agreements.

Bioregional Plans - section 176(5)

- 301) In making my decision and in accordance with section 176(5) of the EPBC Act, I must have regard to bioregional plans relevant to the proposed action.
- 302) I acknowledged that the Bioregional Plan relevant to the proposed action and assessment are:

- Commonwealth of Australia 2012. Marine bioregional plan for the South-west Marine Region. Department of Sustainability, Environment, Water, Population and Communities, Public Affairs. [Marine bioregional plan for the South-west Marine Region - DCCEEW](#)
- Commonwealth of Australia 2015. South-east marine region profile: A description of the ecosystems, conservation values and uses of the South-east Marine Region. Department of the Environment, Public Affairs. [South-east marine region profile: A description of the ecosystems, conservation values and uses of the South-east Marine Region - DCCEEW](#)

303) I understood that the proposed action is likely to impact on important habitat for EPBC Listed threatened species. However, I found that the likely impacts of the proposed action on Listed threatened species will be not unacceptable, provided the action is undertaken in accordance with the approval conditions and consistent with the avoidance, mitigation, offset and management measures proposed by the proponent. I was satisfied that the approval of the proposed action, subject to conditions, would not be inconsistent with the Marine bioregional plan for the South-west Marine Region and South-east Marine Region.

Conditions of approval

304) The department considered, and I agreed that it is necessary or convenient to apply approval conditions in approving the proposed action to strengthen the proponent's proposed avoidance and mitigation measures to ensure that there are no residual significant impacts to Listed threatened species and communities, Listed migratory species or to the general Commonwealth marine's environment.

305) I determined that it is necessary or convenient to apply approval conditions to this proposed action, as detailed in this document. I discussed the key conditions relating to protected matters under each controlling provision.

306) I considered that the conditions meet the requirements in s 134(1) of the EPBC Act because they are required to protect threatened and migratory species and the environment of the Commonwealth marine area and are sufficient management measures as the conditions account for uncertainties associated with the novel proposed action.

Additional considerations for conditions

307) In accordance with section 134(4), in deciding whether to attach a condition to an approval, I must consider any relevant conditions that have been imposed, or the Minister considers are likely to be imposed, under a law of a state or self-governing territory or another law of the Commonwealth on the taking of the action.

308) The department informed me that the South Australian Government was drafting conditions in relation to control temporary (potential) impacts to the local environment during construction and operation of the proposed action. I noted that some of those draft conditions were about:

- a) An Environmental Improvement Program, prepared in consultation with the SA Department for Environment and Water (DEW) and the Eyre Peninsula Landscape Board.

- b) A Construction Environment Management Plan and Operational Environmental Management Plan, prepared in consultation with the SA Environment Protection Authority (EPA), the SA DEW, the Country Fire Service, the Eyre Peninsula Landscape Board and the District Council of Lower Eyre Peninsula.
- c) A Native Vegetation Management and Monitoring Plan, prepared in consultation with SA DEW and the Eyre Peninsula Landscape Board.
- d) A Threatened Species Management and Monitoring Plan, prepared in consultation with SA DEW and the Eyre Peninsula Landscape Board.
- e) A Noise Monitoring Program for the construction and operational phases, prepared in consultation with the SA EPA.
- f) A Pest Plant and Animal Management and Monitoring Plan, prepared in consultation with SA DEW and the Eyre Peninsula Landscape Board.
- g) A Sand Drift Hazard, Soil Erosion and Drainage Management Plan, prepared in consultation with the SA EPA and SA DEW.
- h) A Fire and Emergency Management Plan, prepared in consultation with the South Australian Country Fire Service and Safework SA.
- i) A Cultural Heritage Management Plan, prepared in consultation with the Traditional Owner groups and the relevant Aboriginal heritage representatives, that establishes protocols to apply to the discovery of any Aboriginal sites, objects and/or remains during construction.

309) I noted that ASA will likely impose conditions that address social and economic impacts that may potentially arise from the proposed action. I noted that under the *Space Act 2018*, the ASA also requires that the responsible party for the launch or return of a space object is liable to pay compensation for any damage the object causes to a third party.

310) I took into account the information mentioned above in finalising conditions when making my decision on whether or not approve the proposed action.

s134(4)(aa) Information provided by the person proposing to take the action or by the designated proponent of the action

311) I took into account the information in the documentation provided by the proponent in making my decision on whether or not to approve the proposed action. The proponent was given 10 business days to comment on the proposed decision and conditions of approval, and the comments provided by the proponent were included in the final approval decision briefing package for my consideration.

s134(4)(b) The desirability of ensuring as far as practicable that the condition is a cost-effective means for the Commonwealth and the person taking the action to achieve the object of the condition.

312) I considered that the conditions are practicable and cost effective because they enforce the management measures and environmental outcomes which the proponent has already

proposed. I agreed with the department's view that the administration of approving these management plans will be a cost to the department, however they are required to ensure impacts to protected matters are not unacceptable and appropriately avoided, mitigated and offset. I agreed with the department that the conditions proposed are a cost-effective means of achieving their purpose.

313) Where the department conditioned additional management measures to the measures proposed by the proponent, I considered them achievable, low cost and are standard requirements of other actions of the same or similar nature. On this basis, I agreed that the approval conditions set out in the decision notice are practical and cost effective.

Conclusion

314) I considered that the proposed action is likely to impact on EPBC Listed threatened species and ecological communities, Listed migratory species and the environment of Commonwealth marine areas. However, I concluded that the likely impacts of the proposed action will be not unacceptable, provided the proposed action is undertaken in accordance with the conditions and consistent with the avoidance, mitigation and management measures proposed by the proponent and approved action management plans.

315) Having considered all matters required to be considered under the EPBC Act and in light of the findings described and discussed above, I decided to approve the taking of this proposed action, subject to conditions, for the purposes of sections 18, 18A, 20, 20A, 23 and 24A of the EPBC Act.

316) My approval will remain valid until 25 October 2068 to allow sufficient time for the completion of installation, pre-commission, operation, and decommissioning of the proposed action.

name and position	Kylie Calhoun Branch Head Environment Assessments West (WA, SA, NT) Branch
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Signature



date of decision	17 December 2024
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Annexure A- Relevant Provisions of the EPBC Act

Section 130 of the (EPBC Act) relevantly provides:

Basic rule

- 1) The Minister must decide whether or not to approve, for the purposes of each controlling provision for a controlled action, the taking of the action.
- 1A) The Minister must make the decision within the relevant period specified in subsection (1B) that relates to the controlled action, or such longer period as the Minister specifies in writing.

Notice of extension of time

- 4) If the Minister specifies a longer period for the purposes of subsection (1A), he or she must:
 - a) give a copy of the specification to the person proposing to take the action; and
 - b) publish the specification in accordance with the regulations.

Section 131 of the EPBC Act relevantly provides:

- 1) Before the Minister (the Environment Minister) decides whether or not to approve, for the purposes of a controlling provision, the taking of an action, and what conditions (if any) to attach to an approval, he or she must:
 - a) inform any other Minister whom the Environment Minister believes has administrative responsibilities relating to the action of the decision the Environment Minister proposes to make; and
 - b) invite the other Minister to give the Environment Minister comments on the proposed decision within 10 business days.
- 2) A Minister invited to comment may make comments that:
 - c) relate to economic and social matters relating to the action; and
 - d) may be considered by the Environment Minister consistently with the principles of ecologically sustainable development.

This does not limit the comments such a Minister may give.

Section 131AA of the EPBC Act relevantly provides:

- 1) Before the Minister decides whether or not to approve, for the purposes of a controlling provision, the taking of an action, and what conditions (if any) to attach to an approval, he or she must:
 - a) inform the person proposing to take the action, and the designated proponent of the action (if the designated proponent is not the person proposing to take the action), of:
 - i) the decision the Minister proposes to make; and
 - ii) if the Minister proposes to approve the taking of the action – any conditions the Minister proposes to attach to the approval; and

- b) invite each person informed under paragraph (a) to give the Minister, within 10 business days (measured in Canberra), comments in writing on the proposed decision and any conditions.
- 2) If the Minister proposes not to approve, for the purposes of a controlling provision, the taking of the action, the Minister must provide to each person informed under paragraph (1)(a), with the invitation given under paragraph (1)(b):
- a) a copy of whichever of the following documents applies to the action:
 - i) an assessment report.
 - ii) a finalised recommendation report given to the Minister under subsection 93(5).
 - iii) a recommendation report given to the Minister under section 95C, 100 or 105; and
 - b) any information relating to economic and social matters that the Minister has considered; and
 - c) any information relating to the history of a person in relation to environmental matters that the Minister has considered under subsection 136(4); and
 - d) a copy of any document, or part of a document, containing information of a kind referred to in paragraph 136(2)(e) that the Minister has considered.
- 3) The Minister is not required to provide under subsection (2):
- a) information that is in the public domain; or
 - b) a copy of so much of a document as in the public domain; or
 - c) in the case of information referred to in paragraph (2)(b) or (c) – any conclusions or recommendations relating to that information included in documents or other material prepared by the Secretary for the Minister.
- 6) In deciding whether or not to approve, for the purposes of a controlling provision, the taking of the action, the Minister must take into account any relevant comments given to the Minister in response to an invitation given under paragraph (1)(b).

Section 131A of the EPBC Act relevantly provides:

Before the Minister decides whether or not to approve, for the purposes of a controlling provision, the taking of an action, and what conditions (if any) to attach to an approval, he or she may publish on the Internet:

- a) the proposed decision and, if the proposed decision is to approve the taking of the action, any conditions that the Minister proposes to attach to the approval; and
- b) an invitation for anyone to give the Minister, within 10 business days (measured in Canberra), comments in writing on the proposed decision and any conditions.

Section 133 of the EPBC Act relevantly provides:

Approval

- 1) After receiving the assessment documentation relating to a controlled action, or the report of a commission that has conducted an inquiry relating to a controlled action, the Minister may approve for the purposes of a controlling provision the taking of the action by a person.

1A) If the referral of the proposal to take the action included alternative proposals relating to any of the matters referred to in subsection 72(3), the Minister may approve, for the purposes of subsection (1), one or more of the alternative proposals in relation to the taking of the action.

Content of approval

- 2) An approval must:
 - a) be in writing; and
 - b) specify the action (including any alternative proposals approved under subsection (1A)) that may be taken; and
 - c) name the person to whom the approval is granted; and
 - d) specify each provision of Part 3 for which the approval has effect; and
 - e) specify the period for which the approval has effect; and
 - f) set out the conditions attached to the approval.

Persons who may take action covered by approval

2A) An approval granted under this section is an approval of the taking of the action specified in the approval by any of the following persons:

- a) the holder of the approval.
- b) a person who is authorised, permitted, or requested by the holder of the approval, or by another person with the consent or agreement of the holder of the approval, to take the action.

Notice of approval

- 3) The Minister must:
 - a) give a copy of the approval to the person named in the approval under paragraph 133(2)(c); and
 - b) provide a copy of the approval to a person who asks for it (either free or for a reasonable charge determined by the Minister).

Notice of refusal of approval

- 7) If the Minister refuses to approve for the purposes of a controlling provision the taking of an action by the person who proposed to take the action, the Minister must give the person notice of the refusal.

Section 134 of the EPBC Act relevantly provides:

Condition to inform persons taking action of conditions attached to approval

1A) An approval of the taking of an action by a person (the first person) is subject to the condition that, if the first person authorises, permits, or requests another person to undertake any part of the action, the first person must take all reasonable steps to ensure:

- a) that the other person is informed of any condition attached to the approval that restricts or regulates the way in which that part of the action may be taken; and
- b) that the other person complies with any such condition.

For the purposes of this Chapter, the condition imposed by this subsection is attached to the approval.

Generally

- 1) The Minister may attach a condition to the approval of the action if he or she is satisfied that the condition is necessary or convenient for:
 - a) protecting a matter protected by a provision of Part 3 for which the approval has effect (whether or not the protection is protection from the action); or
 - b) repairing or mitigating damage to a matter protected by a provision of Part 3 for which the approval has effect (whether or not the damage has been, will be or is likely to be caused by the action).

Conditions to protect matters from the approved action

- 2) The Minister may attach a condition to the approval of the action if he or she is satisfied that the condition is necessary or convenient for:
 - c) protecting from the action any matter protected by a provision of Part 3 for which the approval has effect; or
 - d) repairing or mitigating damage that may or will be, or has been, caused by the action to any matter protected by a provision of Part 3 for which the approval has effect.

This subsection does not limit subsection (1).

Examples of kinds of conditions that may be attached

- 3) The conditions that may be attached to an approval include:
 - aa) conditions requiring specified activities to be undertaken for:
 - i) protecting a matter protected by a provision of Part 3 for which the approval has effect (whether or not the protection is protection from the action); or
 - ii) repairing or mitigating damage to a matter protected by a provision of Part 3 for which the approval has effect (whether or not the damage may or will be, or has been, caused by the action); and
 - ab) conditions requiring a specified financial contribution to be made to a person for the purpose of supporting activities of a kind mentioned in paragraph (aa); and
 - a) conditions relating to any security to be given by the holder of the approval by bond, guarantee or cash deposit:

- i) to comply with this Act and the regulations; and
 - ii) not to contravene a condition attached to the approval; and
 - iii) to meet any liability of a person whose taking of the action is approved to the Commonwealth for measures taken by the Commonwealth under section 499 (which lets the Commonwealth repair and mitigate damage caused by a contravention of this Act) in relation to the action; and
- b) conditions requiring the holder of the approval to insure against any specified liability of the holder to the Commonwealth for measures taken by the Commonwealth under section 499 in relation to the approved action; and
 - c) conditions requiring a person taking the action to comply with conditions specified in an instrument (including any kind of authorisation) made or granted under a law of a State or self-governing Territory or another law of the Commonwealth; and
 - d) conditions requiring an environmental audit of the action to be carried out periodically by a person who can be regarded as being independent from any person whose taking of the action is approved; and
 - e) if an election has been made, or is taken to have been made, under section 132B in respect of the approval – conditions requiring:
 - i) an action management plan to be submitted to the Minister for approval, accompanied by the fee (if any) prescribed by the regulations; and
 - ii) implementation of the plan so approved; and
 - f) conditions requiring specified environmental monitoring or testing to be carried out; and
 - g) conditions requiring compliance with a specified industry standard or code of practice; and
 - h) conditions relating to any alternative proposals in relation to the taking of the action covered by the approval (as permitted by subsection 133(1A)).

This subsection does not limit the kinds of conditions that may be attached to an approval.

Certain conditions require consent of holder of approval

3A) The following kinds of condition cannot be attached to the approval of an action unless the holder of the approval has consented to the attachment of the condition:

- a) a condition referred to in paragraph (3)(aa), if the activities specified in the condition are not reasonably related to the action;
- b) a condition referred to in paragraph (3)(ab).

3B) If the holder of the approval has given consent, for the purposes of subsection (3A), to the attachment of a condition:

- a) the holder cannot withdraw that consent after the condition has been attached to the approval; and
- b) any person to whom the approval is later transferred under section 145B is taken to have consented to the attachment of the condition and cannot withdraw that consent.

Conditions attached under paragraph (3)(c)

(3C) A condition attached to an approval under paragraph (3)(c) may require a person taking the action to comply with conditions specified in an instrument of a kind referred to in that paragraph:

- a) as in force at a particular time; or
- b) as is in force or existing from time to time.

even if the instrument does not yet exist at the time the approval takes effect.

Considerations in deciding on condition

- 4) In deciding whether to attach a condition to an approval, the Minister must consider:
 - c) any relevant conditions that have been imposed, or the Minister considers are likely to be imposed, under a law of a State or self-governing Territory or another law of the Commonwealth on the taking of the action; and
 - aa) information provided by the person proposing to take the action or by the designated proponent of the action; and
 - b) the desirability of ensuring as far as practicable that the condition is a cost effective means for the Commonwealth and a person taking the action to achieve the object of the condition.

Effect of conditions requiring compliance with conditions specified in another instrument

4A) If:

- a) a condition (the principal condition) attached to an approval under paragraph (3)(c) requires a person taking the action to comply with conditions (the other conditions) specified in an instrument of a kind referred to in that paragraph; and
 - b) the other conditions are in excess of the power conferred by subsection (1);
- the principal condition is taken to require the person to comply with the other conditions only to the extent that they are not in excess of that power.

Validity of decision

- 5) A failure to consider information as required by paragraph (4)(aa) does not invalidate a decision about attaching a condition to the approval.

Section 136 of the EPBC Act relevantly provides:

Mandatory considerations

- 1) In deciding whether or not to approve the taking of an action, and what conditions to attach to an approval, the Minister must consider the following, so far as they are not inconsistent with any other requirement of this Subdivision:
 - a) matters relevant to any matter protected by a provision of Part 3 that the Minister has decided is a controlling provision for the action.
 - b) economic and social matters.

Factors to be taken into account

- 2) In considering those matters, the Minister must take into account:
- a) the principles of ecologically sustainable development; and
 - b) the assessment report (if any) relating to the action; and
 - ba) if Division 3A of Part 8 (assessment on referral information) applies to the action – the finalised recommendation report relating to the action given to the Minister under subsection 93(5); and
 - bc) if Division 4 of Part 8 (assessment on preliminary documentation) applies to the action:
 - i) the documents given to the Minister under subsection 95B(1), or the statement given to the Minister under subsection 95B(3), as the case requires, relating to the action; and
 - ii) the recommendation report relating to the action given to the Minister under section 95C; and
 - c) if Division 5 (public environment reports) of Part 8 applies to the action:
 - i) the finalised public environment report relating to the action given to the Minister under section 99; and
 - ii) the recommendation report relating to the action given to the Minister under section 100; and
 - ca) if Division 6 (environmental impact statements) of Part 8 applies to the action:
 - i) the finalised environmental impact statement relating to the action given to the Minister under section 104; and
 - ii) the recommendation report relating to the action given to the Minister under section 105; and
 - d) if an inquiry was conducted under Division 7 of Part 8 in relation to the action – the report of the commissioners; and
 - e) any other information the Minister has on the relevant impacts of the action (including information in a report on the impacts of actions taken under a policy, plan, or program under which the action is to be taken that was given to the Minister under an agreement under Part 10 (about strategic assessments)); and
 - f) any relevant comments given to the Minister in accordance with an invitation under section 131 or 131A; and
 - g) if a notice relating to the action was given to the Minister under subsection 132A(3) – the information in the notice.

Person's environmental history

- 4) In deciding whether or not to approve the taking of an action by a person, and what conditions to attach to an approval, the Minister may consider whether the person is a suitable person to be granted an approval, having regard to:

- a) the person's history in relation to environmental matters; and
- b) if the person is a body corporate – the history of its executive officers in relation to environmental matters; and
- c) if the person is a body corporate that is a subsidiary of another body or company (the parent body) – the history in relation to environmental matters of the parent body and its executive officers.

Minister not to consider other matters

- 5) In deciding whether or not to approve the taking of an action, and what conditions to attach to an approval, the Minister must not consider any matters that the Minister is not required or permitted by this Division to consider.

Section 139 of the EPBC Act relevantly provides in part:

- 2) If:
 - a) the Minister is considering whether to approve, for the purposes of a subsection of section 18 or section 18A, the taking of an action; and
 - b) the action has or will have, or is likely to have, a significant impact on a particular Listed threatened species or a particular Listed threatened ecological community.

the Minister must, in deciding whether to so approve the taking of the action, have regard to any approved conservation advice for the species or community.

Annexure B – Documents considered

- A: Notice of decision
- B: Letters to relevant parties
 - B1: Letter to proponent
 - B2: Letter to South Australian Government
 - B3: Letter to the Minister for Defence
 - B4: Letter to the Minister for Industry and Science
 - B5: Letter to the Minister for Indigenous Australians
- C: Responses to invitation for comment on proposed decision
 - C1: Proponent response
 - C2: South Australian Government response
 - C3: Minister for Defence response
 - C4: Minister for Industry and Science response
 - C5: Minister for Indigenous Australians response
- D: Departmental documents
 - D1: Supplementary Analysis Report
 - D2: Notice of decision with track changes
 - D3: EPBC Act Species and Ecological Communities Report (18 October 2024)
 - D4: Protected Species and Communities Branch statutory document check (received 22 October 2024)
 - D5: Environmental Contamination Advice and Standards Section advice (received 18 October 2024)
 - D6: Environmental history check (received 9 October 2024)
 - D7: EPBC Support and Assurance Section advice (received 22 October 2024)
- E: Statutory documents
 - E1: Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)
 - E2: Conservation Advice *Neophoca cinerea* Australian Sea Lion (2020)

- E3: Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (2008)
- E4: Conservation Advice for *Psophodes leucogaster leucogaster* (mallee whipbird) (2023)
- E5: Conservation Advice for *Stipiturus malachurus parimeda* (Eyre Peninsula southern emu-wren) (2023)
- E6: National Recovery Plan for the Mallee Emu-Wren (*Stipiturus mallee*), Red-lored Whistler (*Pachycephala rufogularis*), Western Whipbird (*Psophodes nigrogularis leucogaster*) (2016)
- E7: Marine bioregional plan for the South-west Marine Region (2012)
- E8: Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) (2013)
- E9: Conservation Management Plan for the Blue Whale A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 (2015)
- E10: Recovery Plan for Marine Turtles in Australia (2017)
- E11: National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (2024)
- E12: Recovery Plan for the White Shark (*Carcharodon carcharias*) (2013)
- E13: South-east Commonwealth Marine Reserves Network Management Plan (2013)
- E14: South-east marine region profile A description of the ecosystems, conservation values and uses of the South-east Marine Region (2015)
- E15: Issues Paper for the Australian Sea Lion (*Neophoca cinerea*) (2013)
- E16: South-west Marine Parks Network Management Plan (2018)
- E17: Threat abatement plan for predation by the European red fox (2008)
- E18: Threat Abatement Plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*) (2017)
- E19: Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomic* (2018)
- E20: Wildlife Conservation Plan for Seabirds (2020)
- F: Proposed Approval Decision Brief
 - FA: Recommendation Report
 - FB: Proposed approval decision notice
 - FC: Letters to relevant parties
 - FC1: Proponent Letter

- FC2: Minister for Indigenous Australians Letter
- FC3: Minister for Industry and Science Letter
- FC4: Minister for Infra, Tran, Reg Dev and LG Letter
- FC5: Defence Minister Letter
- FC6: SA Minister Letter.docx
- FD: Referral documentation
 - FD1: Referral Decision Brief
 - FD2: Referral Decision Notice
 - FD3: Referral Decision Letter to Proponent
 - FD4: Referral
- FE: Assessment documentation
 - FE1: Final Preliminary Documentation
 - FE2: Response Document to Preliminary Documentation
 - FE3: Department Comments on Response to Submissions
 - FE4: Public Comments on Preliminary Documentation
- FF: Supporting documents
 - FF1: Conservation Advice for *Stipiturus malachurus parimeda* (Eyre Peninsula southern emu-wren) (2023)
 - FF2: Threat abatement plan for predation by the European red fox (2008)
 - FF3: Threat abatement plan for disease in natural ecosystems caused by *Phytophthora cinnamomic* (2018)
 - FF4: National Recovery Plan for the Mallee Emu-Wren (*Stipiturus mallee*), Red-
lored Whistler (*Pachycephala rufogularis*), Western Whipbird (*Psophodes
nigrogularis leucogaster*) (2016)
 - FF5: Conservation Advice for *Psophodes leucogaster leucogaster* (mallee
whipbird) (2023)
 - FF6: Conservation Advice *Neophoca cinerea* Australian Sea Lion (2020)
 - FF7: Issues Paper for the Australian Sea Lion (*Neophoca cinerea*) (2013)

- FF8: Marine bioregional plan for the South-west Marine Region (2012)
- FF9: Recovery Plan for the Australian Sea Lion (*Neophoca cinerea*) (2013)
- FF10: National Recovery Plan for the Southern Right Whale (*Eubalaena australis*) (2024)
- FF11: Recovery Plan for the White Shark (*Carcharodon carcharias*) (2013)
- FF12: Recovery Plan for Marine Turtles in Australia (2017)
- FF13: Statutory Document Check
- FF14: South-west Marine Parks Network Management Plan (2018)
- FF15: South-east Commonwealth Marine Reserves Network Management Plan (2013)
- FF16: National Light Pollution Guidelines for Wildlife (2023)
- FF17: Robbins et al (2015)
- FF18: Wildlife Conservation Plan for Seabirds (2020)
- FF19: Survey guidelines for Australia's threatened birds (2010)
- FF20: Dooling & Popper (2016)
- FF21: Protected Species & Communities Report (20 September 2024)
- FF22: Threat Abatement Plan for the impacts of marine debris on the vertebrate wildlife of Australia's coasts and oceans (2018)
- FF23: Threat Abatement Plan for predation, habitat degradation, competition and disease transmission by feral pigs (*Sus scrofa*) (2017)
- FF24: Conservation Management Plan for the Blue Whale A Recovery Plan under the Environment Protection and Biodiversity Conservation Act 1999 (2015)
- FF25: Conservation Advice for *Stipiturus malachurus parimeda* (Eyre Peninsula southern emu-wren) (2013) - Superseded
- FF26: Conservation Advice for *Dermochelys coriacea* (Leatherback Turtle) (2008)
- FF27: South-east marine region profile A description of the ecosystems, conservation values and uses of the South-east Marine Region (2015)
- FG: Other
- FG1: Variation Brief

- FG2: Variation Decision Notice
- FG3: Migratory Species Section advice
- FG4: Australian Space Agency advice
- FG5: Parks Australia advice
- FG6: NASA Report (2018)
- FG7: Extension of Time Decision Notice
- FG8: EPBC Act Protected Matters Report (1 September 2021)
- FG9: EPBC Support and Assurance Section advice (received 2 September 2024)
- FG10: EPBC Support and Assurance Section advice (received 5 September 2024)