

Kangaroo Island Golf Resort (Pennington Bay, Kangaroo Island)

Response to Public Environmental Report (PER) Submissions



branford planning+design



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1.0 Introduction

On 19 February 2014, the Minister for Planning declared that a proposal to develop a golf course resort on Kangaroo Island would be assessed using the major development provisions of the Development Act 1993.

A Development Application for the proposed development was received from Programmed Turnpoint Pty. Ltd. on 11 April 2014. The application was referred to the independent Development Assessment Commission (DAC) for initial examination, in accordance with the requirements of the Act. The DAC determined, in June 2014, that Programmed Turnpoint Pty. Ltd. should prepare a Public Environmental Report (PER) regarding the proposal, and issued formal Guidelines outlining the environmental, social and economic issues the PER had to address.

The PER was prepared on behalf of Programmed Turnpoint in April 2015 and went on exhibition for public and agency consultation for a 6 week period from Friday 15 May until Tuesday 30 June 2015. This included the conducting of 2 public meetings on Kangaroo Island on the 15th and 16th of June in Penneshaw and Kingscote respectively. Representatives of DPTI, Programmed Turnpoint and Branford Planning and Design were in attendance to answer any questions.

This Response Document prepared by Branford Planning and Design, outlines responses to the matters raised by various government agencies and the broader community following the public consultation process. It is submitted to DPTI as part of the development assessment requirements under Section 46 (7) of the Development Act 1993. Consultants initially engaged to prepare reports/studies informing the draft PER have been further consulted where necessary as part of this response document and their comments are reflected accordingly.

For ease of reference responses have been organised under the broad headings/categories referred to in the Draft PER. Where appropriate specific responses to agency comments etc have been noted.

2.0 Executive Summary

Responses via government agencies generally highlighted areas where some additional information and/or clarification were sought on statements provided as part of the draft PER. The Federal Department of the Environment highlighted matters for clarification and inclusion substantially in reference to the EPBC Act. DEWNR similarly sought clarification on a number of matters concerning native vegetation, flora, fauna, biodiversity, water and hydrology. Their response, as with the Federal Department of the Environment, was broadly accepting and supportive of the information provided, with any necessary amendments/additions addressed in this report.

The EPA also made a number of recommendations for inclusion in the final report which has been addressed. In a number of instances it has been recognised that further studies cannot be effectively concluded until detail elements of the proposal are finalised prior to construction commencing. Under these circumstances, a condition of approval has been recommended to ensure that various agency requirements are dealt with effectively.

The preliminary Environmental Management Plan provided as part of the draft PER will now be more comprehensively informed as a result of a number of matters raised/clarified via various government agencies. This again can be dealt with via an appropriate condition of approval ensuring that this plan is finalised prior to works commencing on site.

Cultural heritage investigations that formed part of the draft PER were based on an initial desktop analysis recognising that consultation with local aboriginal groups was to occur ahead of any formal proposal being finalised. Initial discussions commenced with the Ramindjeri people on Kangaroo Island in August.

Feedback from DPTI regarding proposed traffic/access arrangements with the development were also clarified at further discussions held in August. This is reflected in the body of the report.

A large number of responses were received from members of the public and other interested parties and the issues raised have been broadly consolidated under key headings and responded to in the body of this report. In many cases, matters raised were consistent with questions that were dealt with to the satisfaction of Government agencies in considering the draft PER.

In a number of cases some matters raised by members of the public have been addressed in this report in response to issues raised by various agencies. Some additional matters that were raised and summarised below, and are responded to accordingly.

3.0 Flora, Fauna and Biodiversity

3.1 Department of the Environment

Matters addressed under the Draft PER concerning the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) with reference to Matters of National Environmental Significance (MNES) were determined to be broadly consistent with the Departments requirements. Some particular requirements were noted to be addressed according to Schedule 4 of the EPBC Act Regulations 2000. These are described in more detail below.

Comment

The Department considers that the draft PER would benefit with elaboration of the surveys, for instance “no EPBC Act listed flora and fauna species were surveyed on site during two ecological surveys conducted in spring 2014”; and ‘an active nest for the EPBC Act listed migratory Eastern Osprey (*Pandion cristatus*) is located approximately 1.6 km from the proposal site

Response

There is greater elaboration in the EBS Ecology report regarding the fauna and flora survey. Some targeting of threatened species was undertaken during the spring 2014 survey and recorded in the EBS Ecology report – “In addition, targeted bird survey was undertaken, focusing on key habitats for threatened bird species identified as potentially occurring in the area. The coastal fringe was surveyed to identify: nesting sites e.g. for Osprey and foraging behaviour e.g. for White-bellied Sea-eagle and observations of seabirds e.g. Tern, Albatross and Giant Petrels etc that may utilise the area.” It has been recorded that Osprey are known to occur and has a potential nesting site nearby (east of site).

Comment

The Department considers that the draft PER would benefit by explicitly stating that the fauna surveys conducted by the two consultants met the requirements of the EPBC Act survey guidelines (perhaps within section 4.6, pages 60-61).

Response

EBS Ecology has stated in the Section 4.2.3 Methods (Fauna) of EBS Group (2014) *Kangaroo Island Golf Course Development Ecology and Heritage Assessment* that “Fauna survey was conducted in line with the EPBC Act survey guidelines (Commonwealth of Australia 2010; 2011)”.

Comment

The Department considers that the draft PER would benefit with further clarification on specific marine and aquatic communities that may be impacted by the proposal (especially invasive species and those listed under the EPBC Act).

Response

The EPBC Act Protected Matters Report undertaken on the 18 August 2015 identified the following marine matters of national environmental significance that may have relevance to the project area (Table 1).

Table 1. Matters of National Environmental Significance (marine).

Matters of National Environmental Significance	
Listed Marine Species	77
Whales and Other Cetaceans	12
Other Matters Protected by the EPBC Act	
Commonwealth Reserves Marine	None

The BDBSA fauna list (DEWNR 2014) identified nine nationally threatened fauna species that have records within 5 km of the site:

- Australian Fairy Tern (*Sternula nereis nereis*);
- Black-browed Albatross (*Thalassarche melanophris*);
- Blue Petrel (*Halobaena caerulea*);
- Eastern Curlew (*Numenius madagascariensis*);
- Northern Giant-Petrel (*Macronectes halli*);
- Shy Albatross (*Thalassarche cauta cauta*);
- Southern Giant Petrel (*Macronectes giganteus*);
- Yellow-nosed Albatross (*Thalassarche chlororhynchos*) and
- Leathery Turtle (*Dermochelys coriacea*).

A number of additional coastal or oceanic species listed under the EPBC Act as ‘marine’ were identified in the EPBC search as potentially occurring or having habitat potentially occurring within the

area. Their likelihood of occurring within the project area are summarised in Table 2. A number of marine species of state and regional significance were also included in Table 2. It should be noted that the majority of species received a 'possible' likelihood of occurrence within the project area based on the surrounding marine environment and that they may occur within that environment at any stage during the life of the project. EBS recommends that a marine assessment be undertaken by marine specialists, to determine the potential impact on these species listed in Table 2. (Refer to Appendix A)

Comment

The Department considers that the draft PER would benefit with the inclusion of a table detailing an assessment of the nature and extent of likely short term and long term relevant impacts, as well as whether the relevant impacts are likely to be significant, unknown, unpredictable or irreversible.

Response

This information can be included as a final impact assessment in the Vegetation Management Plan Document which will form part of the conditions approvals under the *Native Vegetation Act, 1991*. Once the layout design has been finalised and the vegetation clearance is calculated, a Vegetation Management Plan detailing the achievement and management of Significant Environmental Benefit areas will be developed. A risk assessment detailing the projected impacts to each matter of ecological significance, can then be developed with the appropriate mitigation measure and responsible person / agency.

Comment

The draft PER would benefit with the inclusion of details addressing the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.

Response

Can be incorporated into the risk assessment discussed as above.

Comment

The draft PER would benefit with the inclusion of a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.

Response

Can be incorporated into the risk assessment discussed as above.

Comment

The PER would benefit with the inclusion of details of the Programmed Turnpoint Pty. Ltd environmental policy and planning framework.

Response

Programmed Turnpoint Pty. Ltd develop environmental policy guidelines and procedures on a project by project basis, depending on the individual sites unique characteristics and requirements. Section 4.0 of this report addresses a broad framework outlining the type of approach that will be applied at Kangaroo Island. A copy of their EMP for their golf course development on King Island, Tasmania is included in Appendix B for information.

It is recommended that a condition of approval be drafted that requires the proponent to prepare an EMP to the satisfaction of the relevant authorities prior to construction commencing.

3.2 Department of Environment, Water and Natural Resources

Comment

As the proposal includes the edge of cliff aspect, the cliff erosion hazard might have implications for the golf course. Therefore it is recommended that the proponent give consideration to the following mitigation advice:

The risks associated with these cliffs can be mitigated by proper investigation and management of the area, including a detailed stability investigation and a rigorous ongoing inspection and management regime, and construction and maintenance of appropriate signage and fencing for the safety of the public and golfers. It is considered appropriate that the developer maintain such infrastructure as the presence of the golf course would restrict the public to the coastal reserve adjacent to the cliff, and focus a large number of golfers to this site as well.

Response

It is recommended that a condition of approval be drafted that requires the proponent to incorporate into the EMP strategies concerning cliff erosion and hazard management, including a

detailed stability investigation and rigorous ongoing inspection and management regimes, and construction and maintenance of appropriate signage and fencing for the safety of the public and golfers.

Comment

The sand drift hazard has been recognised by the proponent in the PER. This was previously identified by DEWNR as part of its Perpetual Lease Accelerated Freeholding project in 2005, and drove the decision to retain the conservation crown lease parcel.

Regarding the sand drift hazard, the schematic diagram by Roderick C Glen accompanying the PER depicts sand bunkers seaward of holes 12, 13 and 16 in areas which are at high risk of sand drift hazard; a hazard that is highly unpredictable and difficult to control once activated in this exposed environment. However the golf course layout plans (PER figure 1) only depicts infrastructure and golf fairways and greens.

While the proponent should implement, and it is anticipated that will likely support, introducing control measures to avoid sand drift across the golf course such as fencing to control access and sand drift fencing, with further details being provided in the project Environmental Management Plan, there is a high risk of reactivating active erosion of the site if the proponent is allowed to excavate to create sand bunkers in a sand drift hazard area. This risk is likely to increase if future climate change predictions from the Goyder Institute for Kangaroo Island, projecting drier and hotter conditions, transpire.

As such it is recommended that such activities within the sand drift hazard area should be avoided unless it can be demonstrated that the hazard can be appropriately managed.

Response

The schematic diagram prepared by Roderick C Glen in the PER is an artist's impression. It is not to be taken as a literal representation of the ultimate layout of the proposed golf course. The golf course layout plans should be referred to in terms of overall design intent. It is recommended that a condition of approval be drafted that requires the proponent to ensure that the final detailed design limits works within the sand drift hazard areas unless it can be demonstrated that the hazard can be appropriately managed, and that this be reflected in the EMP.

Comment

The PER indicated in 4.1.2 the proponent would allow access to the coastal zone, noting that retaining public access to the coastal reserve is a long-standing principle in the development of South Australia, and this would be recognised in any lease issued within this zone.

As development is proposed within the coastal reserve, but limited to the thirteenth fairway, the proponent would need to give consideration to management of the associated risk in areas where golfing activities would need to coexist with public access to the coastal reserve.

Response

Noted. This will be addressed in the final version of the EMP.

Comment

According to the EBS report, it is envisaged that walking tracks/tracks for golf buggies may be required between fairways. No allowance has been made for such tracks within the infrastructure layout provided by the client, hence this has not been factored into the clearance estimates.

Therefore the proponent needs to ensure if these activities involve clearance, the clearance is addressed in Native Vegetation Management Plan (NVMP) and SEB calculations.

Response

Noted. Once the layout design has been finalised and the vegetation clearance is calculated, a Vegetation Management Plan detailing the achievement and management of Significant Environmental Benefit areas will be developed. A risk assessment detailing the projected impacts to each matter of ecological significance, can then be developed with the appropriate mitigation measure and responsible person / agency.

Comment

In general, DEWNR supports the proponents taking on consultant recommendations which have reduced the impact to native vegetation within the site.

However, for DEWNR to provide informed comment on the adequacy of proposed measures to manage the planned impacts to native flora, it needs to assess the proposed NVMP as part of the PER review.

As this has not yet been provided, in addition to providing the NVMP, it should be noted that the proponent will need to provide more detailed information to the Native Vegetation Council (NVC) including:

- That required for the NVC to undertake a proper assessment of the effect of introduced weed species.
- Detailed information on any proposed significant environmental benefit (SEB)

DEWNR strongly advises the proponent to start discussions with the agency on what the NVC requires, including any on ground SEB offset proposals it might be considering, and that this is done before the Native Vegetation Management Plan is finalised, to determine if they meet NVC requirements

Response

As stated under previous commentary to the Department of the Environment, this information can be included as a final impact assessment in the Vegetation Management Plan Document which will form part of the conditions approvals under the *Native Vegetation Act, 1991*. Once the layout design has been finalised and the vegetation clearance is calculated, a Vegetation Management Plan detailing the achievement and management of Significant Environmental Benefit areas will be developed. A risk assessment detailing the projected impacts to each matter of ecological significance, can then be developed with the appropriate mitigation measure and responsible person / agency.

Comment

The draft PER has not included an assessment of clearance impacts associated with widening Davies Road or the construction of a water pipeline along Hog Bay Road.

In the EBS report the clearance on Davies Road is noted and a recommendation made that the proponent should survey for threatened plant species. This recommendation is supported for this and any clearance if this is required along Hogs Bay Road.

The details of clearance will need to be provided to the NVC and assessed prior to approval being given for these activities.

Response

Noted. Once detailed plans are determined for the above works this information can be included as a final impact assessment in the Vegetation Management Plan document as discussed in other responses above.

Comment

On page 87 five species were said to be recorded, however, only four are listed. Please identify the fifth species in the draft PER.

Response

There was only four mammal species that were recorded which is consistent with the results summarised in Appendix 4.

Public Comments

A number of submissions were received that thought the proposed outcomes with regards to flora, fauna and biodiversity were a positive benefit to the area, given that much of the site was heavily degraded from past uses. This broad support was often conditional on the basis that the proponent implement the environmental initiatives outlined in the draft PER.

A broad range of submissions were received that addressed a number of matters concerning flora and fauna. A number of these were summarised under consolidated headings and in many cases, were questions that were dealt with to the satisfaction of Government agencies in considering the draft PER.

In a number of cases some matters raised by members of the public have been addressed in this report in response to issues raised by various agencies. Some additional matters that were raised and summarised below, and are responded to accordingly.

- Threatened bird species – not adequately addressed in PER
- Risk of introducing Couch Grass to Coastal Zone and biosecurity risk of introducing Couch Grass associated with local farming.
- Biosecurity Risk of introducing soils to proposed Golf Course associated with the earth moving of rocky environment.
- Annual species (orchids) – not adequately addressed during spring
- Revegetation proposals and clearance of vegetation
- Revegetation with non-native species (ornamental planting)
- Kangaroo management
- Impact of helicopters

Response

Having 'personal knowledge' of birds within the area has not been documented with regard to location, date (time of the year) etc. Not every single KI resident can be consulted with regard to a bird list. The EBS survey was a snap shot in time and may not have recorded all potential bird species occurring within the local area. A DEWNR database search was also

obtained by EBS to determine potential species that may occur within 5km of the project area (Table 5 in Ecology and Heritage report). The Eastern Osprey is mentioned but is listed as 'known' in Table 5 and an individual was observed during the survey by EBS. Osprey or Eastern Osprey is known as *Pandion cristatus* / *Pandion haliaetus* (latter is listed as endangered in SA). The Shy Heathwren is referred to as *Hylacola catua* in the EBS report – this can be re-referenced as endemic KI subspecies *halmaturinus*, but it is referring to the same species and was identified by EBS as having preferred habitat within the project area.

The BDBSA was a data clip to 5km so not all species would have been detected (Appendix 1). Of the species (that were not covered in the report), the following may require further additional information, to determine their likelihood of occurrence in the project area and can be included in an addendum to the report:

- Elegant Parrot
- Beautiful Firetail
- Rock Parrot
- Bassian Thrush
- Western Whipbird
- Eastern Reef Egret

Threatened species section covered in more detail in EBS Ecology and Heritage Report. Additional species highlighted by others can be incorporated into Addendum. See Above.

The grass variety used for golfing greens is *Agrostis sp.* (Bent Grass). This is an annual grass which is known to be non-invasive and needs regular watering to survive. The height of cut of this turf prevents seed set and outside of irrigated areas, the grass will perish during summer. Grass varieties used for fairways and other playing surfaces in South Australia are almost exclusively hybrid dwarf turf grass couch cultivars such as 'Santa Ana'. This grass can be reproduced vegetatively from root stolons which are typically gained by scarification of existing stands for stolon collection or by intact sods cut and laid in-situ. The grass does not spread far from the fringes of the fairways due to competition from deeper rooted rough type grasses which shade the low growing couch. These rough areas are often species such as Wallaby Grass where intact areas exist or through the planting of commonly used pasture species such as perennial rye and hard fescue. The Native Vegetation Management Plan (NVMP), following final calculation of SEB and remaining field surveys after the final infrastructure layout is issued, will address ongoing management of species such as Couch. Ongoing management of introduced species will need to be to the satisfaction of the Native Vegetation Council.

Couch and soils will need to be sourced locally from the island to reduce the risks of outside contamination with agricultural pests and other diseases.

Spring survey will be conducted to adequately capture annual species such as orchids, and can be undertaken at the same time (Spring 2015) of the additional threatened species survey of Hogs Bay Road and clearance survey of Davies Road.

A comment was made that the PER states that “mostly (or a majority 51%) of native species will be used”. EBS Ecology has not addressed revegetation at this stage of the project and this figure was not recommended in the Ecology and Heritage Report. Restoration and revegetation will be addressed in the Native Vegetation Management Plan (NVMP) following final calculation of SEB and remaining field surveys after the final infrastructure layout is issued.

A further comment stated that the PER states that “Certain association will ‘generally’ not be cleared”. EBS Ecology did not make this statement in the Ecology and Heritage Report. The total proposed clearance will be addressed in the Native Vegetation Management Plan (NVMP) following final calculation of SEB and remaining field surveys after the final infrastructure layout is issued.

Restoration and revegetation will be addressed in the Native Vegetation Management Plan (NVMP) following final calculation of SEB and remaining field surveys after the final infrastructure layout is issued. Non-native species will not be included in any respiration/revegetation plan species lists recommended by EBS Ecology.

A kangaroo management plan will be developed as part of the final EMP that will ensure that management is done responsibly and sustainably. Final details of this plan will be determined in conjunction with local wildlife experts and can be dealt with as a condition of approval as part of the EMP.

The provisions for helicopter landings or a formal helipad are not part of the proposal.

4.0 Water and Hydrology

4.1 Department of Environment, Water and Natural Resources

Comment

The PER states, 'The proposal uses overflow water collected during the winter months when such overflow would otherwise be lost'. Please note that the water that 'spills' from the reservoir, currently supplies water that is relied upon by downstream aquatic environments and ultimately flows to the ocean, which can support important estuarine and marine ecosystem processes.

While the volume of proposed take under is relatively small compared to the average annual volume of water to spill over the reservoir, in order to provide an accurate picture of aquatic and marine environment interactions, consider rewording this statement to: 'The proposal uses overflow water collected during the winter months when such overflow would otherwise continue flowing downstream and into the marine environment via the Middle River estuary'.

Other references to water that flows to the marine environment should also be reworded similar to the above.

Response

Noted. It is recommended that a condition of approval be drafted that addresses this.

Comment

On page 54, the draft PER proposes the installation and monitoring of several groundwater wells. This will require a standard well construction permit from DEWNR.

It is recommended that three to four wells are installed to monitor potential changes to water level and quality (including nutrients and pesticides) at locations surrounding the site.

The north-eastern, north-western and southern central boundaries would provide suitable locations for groundwater monitoring

Response

Noted.

Comment

In relation to comments made on page 105, while it is recognised that the proponent intends to minimise water loss through “flow away”, the rationale provided that groundwater and subsequent marine effects (s 6.8 and 6.9.1) would not occur, as per the following, needs to be more clearly worded, as the presence of permeable soils would allow drainage of excess surface irrigation which would then have the potential to infiltrate to the water table.

Geological investigations have concluded that;

‘The absence of a confining layer of low porosity sediments and depth to groundwater indicates that any excess surface irrigation within the development site would be insufficient to infiltrate to the water table. Subsequently, there would be no local rise in groundwater levels or groundwater mounding inducing increased recharge to groundwater systems and discharge to receiving environments.’

Further, as the conclusion that the standing water level (SWL) is > 40 m is predicated on just two data points, both located around 1 km inland of the proposed development’s southern boundary (see hydro report, Appendix R), and as there is no indication of the variability in topography, this does not rule out the potential for SWL to be shallower in locations between these wells and the coast. Therefore the proponent’s assumption that contaminants (nutrients; pesticides; herbicides) are unlikely to reach the water table may be invalid. As such, a ground elevation survey might be useful to validate or otherwise the assumptions made.

Response

It is acknowledged that over the development site there are very few groundwater data points on which to extrapolate the depth (metres below ground level) to the water table and that the topography is undulating in nature. However, a dramatic localised hydrogeological anomaly would be required to produce a rise in the water table to within 10 metres of the surface in the development area. The existence of such an anomaly in the known geological conditions of the area is extremely unlikely. However, the presence of standing groundwater within 10 metres of the surface will be confirmed during the geotechnical surveys to be undertaken across the site as part of the preconstruction investigations to verify subsurface conditions for the establishment of the golf course, building foundations and other related infrastructure.

It is recommended that a condition of approval be drafted that requires the proponent to construct shallow (10 m) observation wells from which periodic sampling can be undertaken to verify water levels and water quality as per the attached map (refer to Appendix C).

Comment

There is no mention of the potential for winter flushing of accumulated salts, nutrients and pesticides which might be mobilised to the receiving environment (water table, ocean), and associated consequences to the receiving environment – around two thirds of annual rainfall (around 550 mm) falls between May and September and, as the proponent has highlighted, the soils are largely free-draining. This should be addressed in the PER.

Response

Refer to above response. A dramatic localised hydrogeological anomaly would be required to produce a rise in the water table to within 10 metres of the surface in the development area. The existence of such an anomaly in the known geological conditions of the area is extremely unlikely.

4.2 Environment Protection Authority

Comment

The proposed development must comply with the *Environment Protection (Water Quality) Policy 2003* and the *General Environmental Duty* (as described in section 25 of the *Environment Protection Act 1993*). Therefore, it needs to be designed to ensure that wastewater and stormwater can be managed to minimise off-site environmental impacts, including impacts on surface and/or groundwater resources and the marine environment.

The EPA recommends that an integrated water management strategy should be prepared which includes (but would not necessarily be limited to) the following information:

- a water balance that outlines the:
 - total water needs of all components of the development (golf course and facilities irrigation, tourism and staff accommodation, clubhouse facilities, residential development)
 - total wastewater generation from the development (based on wastewater volumes per day)
 - management of greywater generated from the development (if this is proposed to be collected separately from wastewater as indicated in the PER)
 - stormwater generated from the development
- details of projected wastewater volumes/day
- document the capacity of the proposed wastewater system (i.e. maximum number of people)

- details of proposed greywater collection, storage and use
- describe how the wastewater would be irrigated (i.e. subsurface irrigation, drippers, sprinkler etc.)
- details of proposed stormwater quality improvement including:
 - the basis on which the sizing of bio-retention swales and basins was determined
 - the location of bio-retention swales and basins
- the basis for determining the size of water, wastewater, greywater storage facilities/tanks
- details of anticipated quality improvements from bio-retention swales and basins a description, sizing and location of any other proposed stormwater quality treatment features
- include an irrigation management plan
- information regarding the potential impacts of the nutrient and chemical runoff from the day to day maintenance of the golf course to receiving waters, including groundwater and marine waters.

In addition, plans (drawn at a readable scale) should be provided showing the location of the following water/wastewater infrastructure:

- all proposed water related treatment and storage features, including water/wastewater/greywater collection and storage facilities
- any proposed stormwater infrastructure, including bio-retention swales and basins
- the direction of any stormwater flows over or leaving the site.

Response

It is recommended that a condition of approval be drafted that requires the proponent to incorporate the above recommendations as an integrated water management strategy into the final EMP.

Public Comments

A number of submissions were received that thought the proposed outcomes with regards to water usage and wastewater management were a positive benefit given what was outlined in the draft PER.

A number of submissions were received that addressed some matters concerning water and hydrology. A number of these were summarised under consolidated headings and in many cases, were questions that were dealt with to the satisfaction of Government agencies in considering the draft PER.

In a number of cases some matters raised by members of the public have been addressed in this report in response to issues raised by various agencies. Some additional matters that were raised and summarised below, and are responded to accordingly.

- Concerns over periods of extended minimal rainfall/drought
- Concerns that properties adjoining the proposed water pipeline from Middle River Dam will have to make a contribution to its construction

Response

Typically a golf course would occupy approximately 20-25Ha of irrigated grassed playing areas including fairways, greens and tees. Of this total irrigated area the fairway takes up a majority and could be as much as 90%. This leaves approximately only 2.0-2.5Ha of irrigated areas being taken up by the greens and tees. In the case of drought conditions, water use would be immediately scaled back on the fairways with only the tees and greens being the priority for watering. If a standard 5mm was applied to tees and greens only each night during the peak irrigation season for 5 months this would equate to 18.75 ML over this period. The holding dam proposed on site will hold approximately 100 ML. If fairways were not irrigated for an extended period of time, we would still have enough water, allowing for evaporation and system losses to irrigate these areas for over 5 years.

This methodology is adopted throughout the country during times of drought on many golf courses and was common place in Melbourne many years ago when water restrictions were employed across the state. It was quickly accepted by the golfing community that the fairway conditions would be significantly reduced for the period of the drought. Greens and tees however would remain at a suitable standard. When the irrigation cycle resumes to normal operating conditions, the nature of the fairway couch surfaces are such that they can be easily re-established in a relatively short space of time.

The cost of the pipeline to be constructed from the Middle River Dam will be borne entirely by the proponent. This project will be designed and constructed to meet SA Water requirements and has the potential to service other parts of the island if SA Water chooses to pursue these options. Landowners adjoining the proposed pipeline route will not be required to make a contribution to its construction.

5.0 Environmental Management Plan

5.1 Department of Environment, Water and Natural Resources

Agency Comment

The EMP requires a review as there is some content which is inappropriate for the project i.e. Section 7 contaminated waste material, and to ensure other matters which have not been covered are i.e. management of coastal dune disturbance, management of irrigation activities.

Response

The Preliminary EMP provided as part of the Draft PER was a high level generic document. This will be refined as part of the detailed design development and will cover such matters as:

- Project definition and area
- Environmental Assessments
- Scope and Objectives of Environmental Management Plan
- Legislative and Policy Instruments
- Implementation of Environmental Management Plan
- Design Principles and Philosophy
- Adaptive Management
- Responsibilities
- Site Access
- Contractor Facilities
- Occupational Health & Safety
- EMP Review
- Documentation and Record-Keeping
- Management of Landform Erosion
- Noise
- Wastewater
- Groundwater
- Stormwater
- Plant (Machinery) and Chemical/Fertilisers
- Storage and Handling of Dangerous Substances
- Waste Management
- Contamination and Remediation procedures
- Fire Protection Management
- Cultural Heritage Values
- Threatened Flora
- Vegetation

- Revegetation
- Weeds
- Fauna
- Pest Species
- Management of Pesticides
- Marine Environment
- Access to Coastal Reserve

It is recommended that a condition of approval be drafted that requires the proponent to prepare an Environmental Management Plan prior to construction commencing that addresses the above matters and other matters as deemed appropriate by DEWNR and other responsible agencies.

Agency Comment

Regarding statements made under 3.2 regarding access to Crown land, the *Crown Land Management Act 2009* and all requirements relevant to the proposal should be reflected in the PER.

In particular, that the proponent will need to seek tenure over the Conservation Lease as follows:

- Make application to the Department of Environment, Water and Natural Resources to purchase or lease the land to which the Conservation Lease is attached.
- Seek approval of the Minister for Sustainability, Environment and Conservation to undertake proposed activities contrary to the Conservation Lease.

Response

It is recommended that a condition of approval be drafted that requires the proponent to make application to the Department of Environment, Water and Natural Resources to purchase or lease the land to which the Conservation Lease is attached, and seek approval of the Minister for Sustainability, Environment and Conservation to undertake proposed activities contrary to the Conservation Lease, prior to construction commencing.

Agency Comment

The EMP references the *Environment Protection (Prescribed Waste) Regulations 1987* and the *Environment Protection (Transport) Regulations 1987*. These references should be updated to reference the *Environment Protection (Waste to Resources) Policy 2010*.

Section 7.4 of the EMP should be updated to replace *Environment Protection (Prescribed Waste) Regulations 1987* and *Environment Protection (Transport) Regulations 1987* with the *Environment Protection (Waste to Resources) Policy 2010*.

Response

It is recommended that a condition of approval be drafted that requires the proponent to ensure that the final EMP provides up-to-date references as outlined above.

Agency Comment

The provided EMP and the distances to the nearest sensitive receptors reduces the air quality risks to an acceptable level from an EPA perspective.

The applicant must still ensure that all reasonable and practicable measures are undertaken to manage dust during the construction phase in order to comply with the General Environmental Duty, as required by section 25 of the Environment Protection Act 1993.

Response

It is recommended that a condition of approval be drafted that requires the proponent to ensure that the final EMP includes provisions to ensure that all reasonable and practicable measures are undertaken to manage dust during the construction phase in order to comply with the General Environmental Duty, as required by section 25 of the Environment Protection Act 1993.

Agency Comment

The PER does not adequately confirm the presence or absence of any potentially noise affected premises (i.e. sensitive receivers) 200 metres from the proposed maintenance compound. Nonetheless, the building in question appears from aerial photography to either not be a dwelling or to be one which is infrequently accessed due to its apparent remoteness and the apparent lack of well-made access tracks/driveways to the building. However, as the majority of the activities associated with the proposed development are not likely to have a significant noise impact (e.g. golf course) and most of the potentially noise-generating activities / infrastructure are centrally located on the site, off-site noise impacts on noise sensitive human receivers are unlikely.

The EMP should be updated to confirm the presence or absence of any potentially noise-affected premises, and, if any are identified, ensure that noise impacts are managed to meet the requirements of the *Environment Protection (Noise) Policy 2007*.

The EMP states that “no specific statutory controls exist for noise from construction sites”. However, noise from construction sites is subject to the mandatory provisions of Part 6, Division 1 of the *Environment Protection (Noise) Policy 2007*. Clause 23 of the *Environment Protection (Noise) Policy 2007* requires any construction activities resulting in an adverse impact on amenity to be undertaken only between the hours of 7:00am to 7:00pm Monday to Saturday. A construction activity is

considered to result in an adverse impact on amenity if noise from the activity exceeds either 45dB(A) L_{Aeq} for continuous noise sources, or 60dB(A) L_{Amax} for short-term noise impacts.

The 'suggested measures' contained in Section 5 of the EMP should therefore be amended to reflect the proponent's legislative requirements as per the *Environment Protection (Noise) Policy 2007*.

The final EMP should incorporate the following in relation to noise:

- Clause 23 of the *Environment Protection (Noise) Policy 2007* requires any construction activities resulting in an adverse impact on amenity to be undertaken only between the hours of 7:00am to 7:00pm Monday to Saturday. A construction activity is considered to result in an adverse impact on amenity if noise from the activity exceeds either 45dB(A) L_{Aeq} for continuous noise sources, or 60dB(A) L_{Amax} for short-term noise impacts.

Where any construction occurs near existing residences, the proponent must ensure that appropriate notification of affected residents is undertaken prior to any construction works occurring. This notification must include contact details for a responsible person/s able to be contacted 24 hours per day during the construction period.

Response

It is recommended that a condition of approval be drafted that requires the proponent to ensure that the final EMP confirms the presence or absence of any potentially noise-affected premises, and, if any are identified, ensure that noise impacts are managed to meet the requirements of the *Environment Protection (Noise) Policy 2007*.

It is recommended that a condition of approval be drafted that requires that as per Clause 23 of the *Environment Protection (Noise) Policy 2007*, any construction activities resulting in an adverse impact on amenity to be undertaken only between the hours of 7:00am to 7:00pm Monday to Saturday. A construction activity is considered to result in an adverse impact on amenity if noise from the activity exceeds either 45dB(A) L_{Aeq} for continuous noise sources, or 60dB(A) L_{Amax} for short-term noise impacts. Where any construction occurs near existing residences, the proponent must ensure that appropriate notification of affected residents is undertaken prior to any construction works occurring. This notification must include contact details for a responsible person/s able to be contacted 24 hours per day during the construction period.

5.2 Environment Protection Authority

Agency Comment

The EPA acknowledges that Appendix O contains many appropriate objectives and management measures to minimise potential adverse environmental impacts associated with construction activities and some ongoing operations. However, the Environmental Management Plan, as drafted, is very generic and requires more specific detail and commitment to certain actions/measures on the site of the proposed development.

The EMP should be a dynamic plan that adapts to varying site conditions and the construction activities being undertaken at a given point in time. It should include responsibilities, inspection, review and assessment, and will also need to be modified should controls prove to be ineffective.

To ensure that construction is undertaken in accordance with relevant environment protection policies/codes of practice, and that the General Environmental Duty required by section 25 of the *Environment Protection Act 1993* is being met, it is important that the final EMP (including any changes/additions noted above in relation to noise, air quality, site contamination and waste discussed above) is implemented during the construction phase.

Response

The Preliminary EMP provided as part of the Draft PER was a high level generic document. This will be refined as part of the detailed design development as outlined in the response to DEWNR above.

It is recommended that a condition of approval be drafted that requires the proponent to ensure that the General Environmental Duty required by section 25 of the *Environment Protection Act 1993* is reflected in the final EMP.

Public Comments

A number of submissions were received that addressed some matters concerning areas to be covered under the proposed EMP. A number of these were summarised under consolidated headings and in many cases, were questions that were dealt with to the satisfaction of Government agencies in considering the draft PER.

In a number of cases some matters raised by members of the public have been addressed in this report in response to issues raised by various agencies. Some additional matters that were raised and summarised below, and are responded to accordingly.

- Availability of power
- bushfire management

Response

In providing their advice to the proponent contained within the draft PER, SA Power Networks have not raised any concerns in providing sufficient power to the proposed development.

Bushfire management and bushfire safety protection measures will form part of the final EMP for the proposed development. This can be dealt with as a condition of approval. It should be noted that controlled burning could be used as part of native vegetation management/regeneration in conjunction with the approval of relevant authorities.

6.0 Site Conditions and Waste Management

6.1 Department of Environment, Water and Natural Resources

Agency Comments

The PER states that the site was historically used for broad acre grazing. Broad acre activities can have localized activities such as animal dips and waste burial areas which are considered to represent agricultural activities with a higher risk of pollution. It is therefore recommended that preliminary site investigations are undertaken by a site contamination consultant in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 to identify whether a potentially contaminating activity has occurred in areas proposed for residential development and other forms of built development on the proposed development site.

It is also suggested that there should be an additional section added to the PER and/or EMP which outlines that further assessment and remediation may be necessary if a potentially contaminating activity is identified during the preliminary site investigations, as follows:

Residential areas

If the preliminary site investigations identify a potentially contaminating activity in proposed residential areas, a site contamination auditor should be engaged to determine that the residential portion of the site is suitable for the proposed sensitive use. It should be noted that this does not apply to the short term tourist accommodation component of the application, as this is not considered to be a sensitive land use.

(The EPA acknowledges that the portion of the site where residential development is proposed is unlikely to have been used for potentially contaminating activities such as sheep dips or animal burial given its rocky nature. However, if these activities had occurred on the site there is also flexibility available in terms of the final location for residential development due to the size of the overall site. Therefore, the preliminary site investigations (and any subsequent site investigations) are not considered to be fundamental to the suitability of the site for the proposed development and could be dealt with via a reserved matter or condition).

Other areas

If the preliminary site investigations identify a potentially contaminating activity a site contamination consultant should be engaged to prepare an environmental assessment report that has been prepared in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and provides a statement in relation to the existence of site contamination at the site in accordance with section 103ZA of the *Environment Protection Act 1993*.

If a potentially contaminating activity (i.e. waste disposal) is discovered during the construction process, appropriate assessment and remediation will be necessary to ensure the land is suitable for

the proposed use/s. Therefore, it is suggested that the EMP is amended to ensure that it references the potential need for a remediation management plan to be prepared in accordance with the guidance outlined in the 'EPA Guidelines for Environmental management of onsite remediation, March 2006' to cover such a scenario.

Response

It is recommended that a condition of approval be drafted that requires the proponent to ensure that prior to major site works and construction commencing that preliminary site investigations are undertaken by a site contamination consultant in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 to identify whether a potentially contaminating activity has occurred in areas proposed for residential development and other forms of built development on the proposed development site.

If the preliminary site investigations identify a potentially contaminating activity a site contamination consultant should be engaged to prepare an environmental assessment report that has been prepared in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 and provides a statement in relation to the existence of site contamination at the site in accordance with section 103ZA of the *Environment Protection Act 1993*.

Public Comments

A number of submissions were received that thought the proposed outcomes with regards to site remediation waste management were a positive benefit given what was outlined in the draft PER.

Some submissions addressed matters concerning waste management and site conditions. A number of these were summarised under consolidated headings and were questions that were dealt with to the satisfaction of Government agencies in considering the draft PER.

In a number of cases some matters raised by members of the public have been addressed in this report in response to issues raised by various agencies. Some questions were raised over the impact of errant golf balls on the surrounding environment.

Response

Programmed Turnpoint has had extensive experience in managing golf courses in similar environments around Australia. In many cases local community groups, school groups (including those interested in the biodiversity characteristics of the surrounding environment), are invited in to the course environs on a managed basis. This has included instigating a program of golf ball recovery out of sensitive environmental areas which are managed in terms of traffic movements during the course of normal golf play. A similar program is envisaged by the proponents as part of this proposal.

7.0 Heritage

7.1 Department of State Development – Aboriginal Affairs and Reconciliation

Agency Comment

The Department notes that the current level of assessment is preliminary and that a robust assessment of the on ground aboriginal heritage is yet to be completed and that relevant aboriginal groups have yet to be consulted. In light of this it is recommended that a specific condition for planning approval be that a call for Heritage Management plan is developed as a matter of urgency and before any ground disturbing works begin. This plan should be developed in consultation with aboriginal groups and should include a protocol for the event of the discovery of any aboriginal sites, objects and/or remains.

Public Comments

A submission was received from the Ramindjeri Heritage Association Inc. which outlines their expressed sovereign rights over the land is affected by the proposal and their desire to have a heritage management agreement established prior to commencement of any works on site. They have also expressed a desire to work cooperatively with the proponents and support the maintenance of all the cultural expectations of the Ramindjeri Nation.

Some additional commentary was made by other respondents concerning the fact that there is no skeletal material recorded on the SA Museum Database of Human Biology, for Kangaroo Island and that there are flaws and omissions in the reporting. It has been noted that the area proposed for development is well known for its archaeological values and needs to be recognised as such by a professional survey rather than the 'ramble' survey.

Response

The cultural heritage and site assessment is preliminary and was prepared as the first step in the assessment and future planning and management of the site. The report by EBS was written with the clear understanding that further work would be required, including a site visit/survey with the Aboriginal community.

EBS understands that the term 'ramble' survey may be confusing. Instead of 'ramble' survey – it should have read "site inspection". The river cobble and Rockhole were not recorded as a cultural heritage item and there is no indication of use although they do represent examples of traditional resources used by Aboriginal people and may indicate that this landscape contains cultural heritage risks. EBS believes this could have been better expressed in the desktop assessment. There is no

requirement to record these objects under s.20 of the AHA unless they can be determined to be cultural heritage. The location of these sites was recorded to facilitate navigation to these locations with stakeholders during survey and/or community consultation. Consultants should be careful about making statements about the significance of finds in the landscape and their relationship with adjacent sites – especially when there is NO direct evidence for a connection between the two.

The South Australian Aboriginal Heritage Act 1988 does not mandate a need for a proponent to undertake a cultural heritage survey. However, EBS Heritage has recommended that the proponent consult with the relevant Aboriginal community to minimise cultural heritage risk of damage, disturbing or interfering with cultural heritage sites. EBS understands that these works will be completed in due course and has presented the proponent with a number of ways to manage heritage risk in this instance.

EBS has included a definition of 'high' 'moderate' and 'low' risk in section 7.5 of the report "Cultural Heritage Risk Assessment". The accompanying maps indicates areas of 'high' and 'moderate' risk. Any areas of "low" risk were areas where bedrock was exposed and deposits modified by modern land use as observed during the site inspection-therefore indicating a lower (although not impossible) likelihood of cultural heritage being encountered during any ground works at these locations.

The desktop provides the proponent with recommendations for the future management of cultural heritage risk on the site. It gives the proponent a variety of options which are acceptable under the SA AHA 1988, including survey, consultation, monitoring or at a very bare minimum the implementation of a site discovery procedure. It would be inappropriate to present detailed monitoring recommendations and a site discovery procedure in the desktop assessment with no input from the Aboriginal community representatives.

With regards to questions asked of "what might happen to any discoveries, how they will be addressed on site, will there be secure storage facilities" etc. will be addressed in a Cultural Heritage Management Plan which will be prepared in consultation with the relevant Aboriginal representatives. It would be inappropriate to discuss these details in a desktop assessment without input from the Aboriginal community.

Anthropological and Archaeological consultation will be undertaken as part of the on ground works in association with the relevant Aboriginal representatives. The report does discuss obligations pursuant to the AHA 1988. It is the role of the proponent, not the consultant to determine how potential risks will be managed. The desktop assessment provides the proponent with a number of potential ways to manage cultural heritage risk while also advocating additional work would be beneficial.

Consultation with the relevant Aboriginal communities has already commenced following on from the initial desktop assessment. A meeting was held with representatives of the Ramindjeri people on the island on Thursday, 6 August 2015. EBS have provided a summary of this meeting and a recommended framework to form the basis of a Heritage Management Agreement going forward. (Refer to Appendix D).

It is recommended that a condition of approval be drafted that requires the proponent to finalise a Cultural Heritage Management Plan with the Ramindjeri people prior to any construction commencing on site.

8.0 Traffic and Access

8.1 Department of Planning Transport and Infrastructure

Agency Comment

DPTI has sought clarification on utilisation of Safe Intersection Sight Distance (SIST) as opposed to Safe Stopping Distance (SSD) with regards to assessment of need for potential upgrade to the Hog Bay Road / Davies Road intersection.

Response

A meeting was held between the proponent and representatives of DPTI transport Department to seek clarification on methods of assessment for the intersection. The proponent's consultant, Infra Plan has responded to this and recommended the following condition of approval.

"The junction with Hog Bay Road and Davies Road will be assessed in accordance with Austroads 'Guide to Road Design Part 4A: Unsignalised and Signalised Intersections' to determine required intersection upgrades. Please note that lighting may also need to be considered as part of this junction assessment. All costs associated with works as a direct impact of, and attributable to the development, (including design, construction and departmental project management costs) would be required to be borne by the Developer."

Public Comments

A small number of comments were received regarding concerns around the ability of the Hog Bay Road/Davies Road intersection being able to handle the increased traffic resulting from the proposed development. Some additional comments were made concerning other localised road upgrades associated with the development proposal and who pays.

Response

The response received from DPTI in addition to that outlined above supports the assumptions made regarding traffic generation, traffic volume assumptions etc associated with the development. With regards to any other localised public road upgrades these will be done to the necessary standards and under the approval of the local Council. All costs associated with these localised upgrades will be borne by the proponent.

9.0 Economic Issues

9.1 SA Tourism Commission

Agency Comment

The SATC provided a response highlighting that the project would have a substantial positive impact on Kangaroo Island overall. This submission noted that the PER did not include any financial projections beyond those outlined in the report and that any project failure would have a negative impact on the island economy.

Response

On the back of the Cape Wickham project in Tasmania (King Island) and their past involvement in the building of other courses (Magenta Shores and Kooindah Waters in NSW, The Links at Port Douglas, and Hamilton Island Golf Course in Queensland), Programed Turnpoint undertook their due diligence investigations on a “destination” style course on Kangaroo Island.

With nearly 200,000 visitors per year already visiting the island the potential golfer numbers will be easily attainable to make the project a financial success. With prospects of growing this number to nearly 400,000 visitors within the next few years and the potential for an airport upgrade to make interstate travel even easier, the demand for golf on a world class links such as this will only enhance the financial viability further.

Like other golfing destinations around the world, it is not just the golf that attracts the visitors with wine and food tours playing an increasing role when deciding the final destination of the next golfing tour. Kangaroo Island above all other tourist destinations around Australia, can provide such an offering based on the already well recognised brand that is “Kangaroo Island”.

Many visitors, like they do at many of the other clubs Programed Turnpoint have been involved in over the years, will come and stay at the Kangaroo Island Golf Resort for the amenity and not necessarily just for the golf. It is envisaged a large percentage of guests will in fact be non-golfers who will come to enjoy the other offerings such as day spa’s, formal dining, conference facility or just as a base to stay for a few days while traveling the island.

Public Comments

A significant number of submissions noted that the proposed development will encourage a “different type of tourist” to the island and that this was seen as a significant positive in terms of providing sustainable, economic and social benefits to the island’s population and economy. This

includes submissions received by local business leadership groups such as The Shearing Shed Group and Business Kangaroo Island.

Some submissions raised concerns as to the justification for building “another golf course” based on a perception that many golf courses are struggling in terms of financial management and membership.

Response

Golf tourism and more specifically golf destinations are becoming the new frontier in golf course developments as discerning golfers look for unique destinations to play spectacular courses around the globe. Courses such as Barnbougle Dunes in Tasmania have received world-wide acclaim due to its unique offering to the travelling golfer who is seeking something different from the traditional parkland style courses dished up in the metropolitan areas around the country. At Barnbougle Dunes, golfers get to experience ‘golf on the edge’ of Bass Strait amongst the dramatic sand dunes of the North-East coast of Tasmania. Questioned early on by many as to its economic sustainability, it has quickly become a must play on many golfers hit list here and overseas and has been so successful a second course and increased accommodation offerings have added since its inception only 12 years ago.

Of more recent times, other golfing destinations in remote locations include Hamilton Island Golf Course on Dent Island in Queensland while Kauri Cliffs, Cape Kidnappers and Jacks Point in New Zealand have also put themselves on the must see golfing destinations list of the travelling golfer. All of these courses have a couple of things in common – they are not your typical metropolitan parkland style golf course and perhaps more importantly they all occur on the edge of a lake, sea, ravine or dramatic landscape.

This should not be a huge surprise given that many of the world’s great golf courses occur in similar locations and afford similar views to that which is proposed at Kangaroo Island. Courses such as Pebble Beach (no.14), Cypress Point (no.2), Whistling Straights (2015 US PGA) and Chambers Bay (2015 US Open) in America and courses such as Royal County Down (no.3), Royal Dornoch (no.12), St Andrews (no.4) in Scotland and Ireland are easily recognisable and are must plays for travelling golfers around the world.

Programmed Turnpoint have recently been involved in the Cape Wickham Golf Course on King Island off the north coast of Tasmania and is due to open towards the end of 2015. The course is already receiving critical acclaim and is scheduled to debut in the top 100 courses around the world when it opens. This course, like the one proposed at Kangaroo Island has the ‘wow’ factor which is synonymous with the great courses of the world.

10.0 Architecture/Built Form

Public comments

A number of submissions noted that the proposed architecture for the resort/clubhouse facilities was of a quality and standard that is lacking on the island and that the proposed development would go a long way in raising the benchmark in terms of tourist accommodation of this calibre. It was noted in a number of submissions that this type of accommodation was sadly lacking on the island at present. Many people noted positively that the use of local building materials, trades people etc. was also a positive in terms of recognising the unique characteristics of the island and providing positive local employment opportunities (as noted previously). Some submissions raised concern that the architecture indicated in the submission was not in keeping with coastal character of the island and there was also concern expressed over the appearance of the buildings from a distance.

Response

As outlined the proposed design and siting of buildings has been done in such a way to minimise their visual impact to the surrounding area. The main clubhouse/resort buildings are proposed to be located at a level where their roof line will not be visible above the horizon line when viewed from the West. Proposed accommodation on the 5 allotments to the east of the site has been sited away from the adjoining bushland. Furthermore, materials and finishes to be selected will be in keeping with the character of the area. Preliminary discussions have already commenced regarding the sourcing of local stone to be used in feature elements of buildings, along with the use of local tradespeople.

Appendix A

EBS Ecology - Additional Advice

Chris Branford
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Thursday, 3 September 2015

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Re: Kangaroo Island Golf Course additional advice

Dear Chris,

EBS Ecology have provided a response in regard to the following comments made by the Department, in relation to the *Public Environmental Report for Kangaroo Island Golf Resort (2015)* and in addition, broadly addressed Marine Matters of National Environmental Significance.

Department Comments	EBS Ecology Response
<p>The Department considers that the draft PER would benefit with elaboration of the surveys, for instance “no EPBC Act listed flora and fauna species were surveyed on site during two ecological surveys conducted in spring 2014”; and ‘an active nest for the EPBC Act listed migratory Eastern Osprey (<i>Pandion cristatus</i>) is located approximately 1.6 km from the proposal site”.</p>	<p>There is greater elaboration in the EBS Ecology report regarding the fauna and flora survey. Some targeting of threatened species was undertaken during the spring 2014 survey and recorded in the EBS Ecology report – “In addition, targeted bird survey was undertaken, focusing on key habitats for threatened bird species identified as potentially occurring in the area. The coastal fringe was surveyed to identify: nesting sites e.g. for Osprey and foraging behaviour e.g. for White-bellied Sea-eagle and observations of seabirds e.g. Tern, Albatross and Giant Petrels etc that may utilise the area.” It has been recorded that Osprey are known to occur and has a potential nesting site nearby (east of site).</p>
<p>The Department considers that the draft PER would benefit by explicitly stating that the fauna surveys conducted by the two consultants met the requirements of the EPBC Act survey guidelines (perhaps within section 4.6, pages 60-61).</p>	<p>EBS Ecology has stated in the Section 4.2.3 Methods (Fauna) of EBS Group (2014) <i>Kangaroo Island Golf Course Development Ecology and Heritage Assessment</i> that “Fauna survey was conducted in line with the EPBC Act survey guidelines (Commonwealth of Australia 2010; 2011)”.</p>

Department Comments	EBS Ecology Response
The Department considers that the draft PER would benefit with the inclusion of a table detailing an assessment of the nature and extent of likely short term and long term relevant impacts, as well as whether the relevant impacts are likely to be significant, unknown, unpredictable or irreversible.	This information can be included as a final impact assessment in the Vegetation Management Plan Document which will form part of the conditions approvals under the <i>Native Vegetation Act, 1991</i> . Once the layout design has been finalised and the vegetation clearance is calculated, a Vegetation Management Plan detailing the achievement and management of Significant Environmental Benefit areas will be developed. A risk assessment detailing the projected impacts to each matter of ecological significance, can then be developed with the appropriate mitigation measure and responsible person / agency.
The draft PER would benefit with the inclusion of details addressing the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	Can be incorporated into the risk assessment discussed as above.
The draft PER would benefit with the inclusion of a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.	Can be incorporated into the risk assessment discussed as above.

Marine matters of national environmental significance

The EPBC Act Protected Matters Report undertaken on the 18 August 2015 identified the following marine matters of national environmental significance that may have relevance to the project area (Table 1).

Table 1. Matters of National Environmental Significance (marine).

Matters of National Environmental Significance	
Listed Marine Species	77
Whales and Other Cetaceans	12
Other Matters Protected by the EPBC Act	
Commonwealth Reserves Marine	None

The BDBSA fauna list (DEWNR 2014) identified nine nationally threatened fauna species that have records within 5 km of the site:

- Australian Fairy Tern (*Sternula nereis nereis*);
- Black-browed Albatross (*Thalassarche melanophris*);

- Blue Petrel (*Halobaena caerulea*);
- Eastern Curlew (*Numenius madagascariensis*);
- Northern Giant-Petrel (*Macronectes halli*);
- Shy Albatross (*Thalassarche cauta cauta*);
- Southern Giant Petrel (*Macronectes giganteus*);
- Yellow-nosed Albatross (*Thalassarche chlororhynchos*) and
- Leathery Turtle (*Dermochelys coriacea*).

A number of additional coastal or oceanic species listed under the EPBC Act as 'marine' were identified in the EPBC search as potentially occurring or having habitat potentially occurring within the area. Their likelihood of occurring within the project area are summarised in Table 2. A number of marine species of state and regional significance were also included in Table 2. It should be noted that the majority of species received a 'possible' likelihood of occurrence within the project area based on the surrounding marine environment and that they may occur within that environment at any stage during the life of the project. EBS recommends that a marine assessment be undertaken by marine specialists, to determine the potential impact on these species listed in Table 2.

Table 2. Threatened and migratory fauna species potentially occurring within the project area.

Scientific name	Common name	Conservation status			Most recent sighting (BDBSA)	Habitat	Likelihood of occurrence within project area
		Aus	SA	KI			
Birds							
<i>Actitis hypoleucos</i>	Common Sandpiper		R	CR	2005	Coastal	Possible fly-over
<i>Apus pacificus</i>	Fork-tailed Swift	Ma, Mi		RA		Inland plains, foothills or coastal	Possible fly-over
<i>Arenaria interpres</i>	Ruddy Turnstone	Ma, Mi(W)	R	EN	2000	Intertidal	Possible fly-over
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Ma, Mi(W)		VU	1984	Intertidal	Possible fly-over
<i>Calidris alba</i>	Sanderling		R	RA	1987	Intertidal	Possible fly-over
<i>Calidris canutus</i>	Red Knot			EN		Intertidal	Possible fly-over
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE		EN		Intertidal	Possible fly-over
<i>Calidris ruficollis</i>	Red-necked Stint	Ma, Mi(W)		RA	2001	Intertidal	Possible fly-over
<i>Catharacta skua</i>	Great Skua		V			Coastal, Intertidal	Possible fly-over
<i>Cereopsis novaehollandiae</i>	Cape Barren Goose		R	RA	2012	Coastal, Intertidal	Possible fly-over
<i>Charadrius bicinctus</i>	Double-banded Plover			EN		Coastal, Intertidal	Possible fly-over
<i>Charadrius leschenaultii</i>	Greater Sand Plover		R		1984	Coastal, Intertidal	Possible fly-over
<i>Charadrius ruficapillus</i>	Red-capped Plover			LC		Coastal, Intertidal	Possible fly-over
<i>Cladorhynchus leucocephalus</i>	Banded Stilt		V	NT	2005	Intertidal	Possible fly-over
<i>Diomedea epomophora epomophora</i> / <i>Diomedea epomophora (sensu stricto)</i>	Southern Royal Albatross	VU, Ma, Mi	V			Oceanic	Unlikely (mostly offshore)
<i>Diomedea epomophora sanfordi</i> / <i>Diomedea sanfordi</i>	Northern Royal Albatross	EN, Ma, Mi	E			Oceanic	Unlikely (mostly offshore)
<i>Diomedea exulans (sensu lato)</i>	Wandering Albatross	VU, Ma, Mi	V			Oceanic	Unlikely
<i>Diomedea exulans antipodensis</i> / <i>Diomedea antipodensis</i>	Antipodean Albatross	VU, Ma, Mi				Oceanic	Unlikely (mostly offshore)
<i>Diomedea exulans exulans</i> / <i>Diomedea dabbenena</i>	Tristan Albatross	EN, Ma, Mi				Oceanic	Unlikely (mostly offshore)
<i>Egretta garzetta</i>	Little Egret		R	RA	2012	Intertidal	Possible fly-over
<i>Egretta sacra</i>	Eastern Reef Egret		R	RA	2012	Intertidal	Possible fly-over
<i>Falco peregrinus</i>	Peregrine Falcon		R	VU	2004	Coastal or inland cliffs or open woodland	Possible Fly-over
<i>Gallinago hardwickii</i>	Latham's Snipe	Ma, Mi(W)	R	CR	1984	Coastal	Possible – fly over

Scientific name	Common name	Conservation status			Most recent sighting (BDBSA)	Habitat	Likelihood of occurrence within project area
		Aus	SA	KI			
<i>Haematopus fuliginosus</i>	Sooty Oystercatcher		R	RA	2012	Intertidal	Known
<i>Haematopus longirostris</i>	(Australian) Pied Oystercatcher		R	RA	2013	Intertidal	Possible – fly over
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Ma, Mi(T)	E	CR	1998	Coastal	Possible – fly over
<i>Halobaena caerulea</i>	Blue Petrel	VU			1984	Oceanic	Unlikely (mostly offshore)
<i>Himantopus leucocephalus</i>	White-headed Stilt					Intertidal	Possible – fly over
<i>Larus novaehollandiae</i>	Silver Gull					Coastal, Intertidal	Known
<i>Larus pacificus</i>	Pacific Gull			VU		Coastal, Intertidal	Known
<i>Limosa lapponica</i>	Bar-tailed Godwit		R	CR	2012	Intertidal	Possible – fly over
<i>Limosa limosa</i>	Black-tailed Godwit		R		1967	Intertidal	Possible – fly over
<i>Macronectes giganteus</i>	Southern Giant Petrel	EN, Ma, Mi	V		1992	Oceanic	Unlikely (mostly offshore)
<i>Macronectes halli</i>	Northern Giant-Petrel	VU, Ma, Mi			1982	Oceanic	Unlikely (mostly offshore)
<i>Merops ornatus</i>	Rainbow Bee-eater	Ma, Mi(T)		VU		Woodland, open forest, grassland, scrubland, coastal fringe	Unlikely
<i>Numenius madagascariensis</i>	Eastern Curlew	CE, Mi, Ma	V	CR	2012	Coastal, Intertidal	Possible – fly over
<i>Numenius phaeopus</i>	Whimbrel		R	CR	2012	Coastal, Intertidal	Possible – fly over
<i>Pandion haliaetus</i>	Osprey	Ma	E	CR	2004	Coastal	Known
<i>Phalacrocorax fuscescens</i>	Black-faced Cormorant			LC		Coastal	Possible – fly over
<i>Phoebastria palpebrata</i>	Light-mantled Albatross		V		1900	Oceanic	Unlikely (mostly offshore)
<i>Pluvialis fulva</i>	Pacific Golden Plover		R	CR	1987	Coastal	Possible – fly over
<i>Pterodroma mollis</i>	Soft-plumaged Petrel	VU				Oceanic	Unlikely (mostly offshore)
<i>Puffinus carneipes</i>	Flesh-footed Shearwater	Ma, Mi	R			Oceanic	Unlikely (mostly offshore)
<i>Recurvirostra novaehollandiae</i>	Red-necked Avocet					Freshwater swamps, claypans, dams & salt works	Unlikely
<i>Sterna hirundo</i>	Common Tern		R		2003	Intertidal, Neritic	Possible – fly over
<i>Sternula nereis nereis</i>	Australian Fairy Tern	VU	E		2011	Intertidal, Neritic	Possible – fly over
<i>Thalassarche cauta cauta</i> / <i>Thalassarche cauta (sensu stricto)</i>	Shy Albatross	VU, Ma, Mi	V		1990	Oceanic	Unlikely (mostly offshore)

Scientific name	Common name	Conservation status			Most recent sighting (BDBSA)	Habitat	Likelihood of occurrence within project area
		Aus	SA	KI			
<i>Thalassarche cauta steadi</i> / <i>Thalassarche steadi</i>	White-capped Albatross	VU, Ma, Mi	ssp.			Oceanic	Unlikely (mostly offshore)
<i>Thalassarche chlororhynchos</i>	Yellow-nosed Albatross	VU (for ssp. carteri)	E		1982	Oceanic	Unlikely (mostly offshore)
<i>Thalassarche melanophris</i>	Black-browed Albatross	VU, Mi	ssp		1982	Oceanic	Unlikely (mostly offshore)
<i>Thalassarche melanophris impavida</i> / <i>Thalassarche impavida</i>	Campbell Albatross	VU, Ma, Mi	V			Oceanic	Unlikely (mostly offshore)
<i>Thinornis rubricollis</i>	Hooded Plover	Ma	V	EN	2012	Oceanic	Possible – fly over
<i>Tringa brevipes</i>	Grey-tailed Tattler		R	CR	2005	Intertidal	Possible – fly over
Mammals							
<i>Arctocephalus forsteri</i>	New Zealand Fur-seal			LC		Intertidal, Neritic	Possible
<i>Arctocephalus pusillus</i>	Australian Fur-seal	Ma	R	RA		Intertidal, Neritic	Possible
<i>Balaenoptera acutorostrata</i>	Minke Whale		R			Neritic, Oceanic	Possible
<i>Balaenoptera edeni</i>	Bryde's Whale		R			Neritic, Oceanic	Possible
<i>Balaenoptera musculus</i>	Blue Whale	EN	E			Neritic, Oceanic	Possible
<i>Caperea marginata</i>	Pygmy Right Whale		R		1983	Neritic, Oceanic	Possible
<i>Delphinus delphis</i>	Common Dolphin					Neritic	Known
<i>Eubalaena australis</i>	Southern Right Whale	EN	V			Neritic, Oceanic	Possible
<i>Globicephala macrorhynchus</i>	Short-finned Pilot Whale		R		1974	Neritic, Oceanic	Unlikely
<i>Grampus griseus</i>	Risso's Dolphin		R			Neritic	Possible
<i>Lagenorhynchus obscurus</i>	Dusky Dolphin					Neritic	Possible
<i>Megaptera novaeangliae</i>	Humpback Whale	VU	V			Neritic, Oceanic	Possible
<i>Mesoplodon grayi</i>	Gray's Beaked Whale		R		1983	Neritic, Oceanic	Possible
<i>Neophoca cinerea</i>	Australian Sea-lion	VU, Ma	V	VU		Intertidal, Neritic	Known
<i>Orcinus orca</i>	Killer Whale / Orca					Neritic, Oceanic	Possible
<i>Physeter macrocephalus</i>	Sperm Whale		R		1987	Neritic	Possible
<i>Tursiops aduncus</i>	Indian Ocean Bottlenose Dolphin					Neritic	Possible
<i>Tursiops truncatus s. str.</i>	Bottlenose Dolphin					Neritic	Possible
Reptiles							

Scientific name	Common name	Conservation status			Most recent sighting (BDBSA)	Habitat	Likelihood of occurrence within project area
		Aus	SA	KI			
<i>Caretta caretta</i>	Loggerhead Turtle	EN, Ma, Mi(Ma)	E			Neritic, Oceanic	Possible
<i>Chelonia mydas</i>	Green Turtle	VU, Ma, Mi(Ma)	V			Neritic, Oceanic	Possible
<i>Dermochelys coriacea</i>	Leatherback Turtle	EN, Ma, Mi(Ma)	V		1994	Neritic, Oceanic	Possible
Fish							
<i>Campichthys galei</i>	Gale's Pipefish					Neritic	Possible
<i>Campichthys tryoni</i>	Tryon's Pipefish					Neritic	Possible
<i>Carcharodon carcharias</i>	Great White Shark	VU				Neritic, Oceanic	Possible
<i>Filicampus tigris</i>	Tiger Pipefish					Neritic	Possible
<i>Heraldia nocturna</i>	Upside-down Pipefish					Neritic	Possible
<i>Hippocampus abdominalis</i>	Big-belly Seahorse					Neritic	Possible
<i>Hippocampus breviceps</i>	Short-head Seahorse					Neritic	Possible
<i>Histiogamphelus cristatus</i>	Rhino Pipefish					Neritic	Possible
<i>Hypselognathus horridus</i>	Shaggy Pipefish, Prickly Pipefish					Neritic	Possible
<i>Hypselognathus rostratus</i>	Knifesnout Pipefish					Neritic	Possible
<i>Idiotropiscis australe</i>	Southern Pygmy Pipehorse					Neritic	Possible
<i>Kaupus costatus</i>	Deepbody Pipefish					Neritic	Possible
<i>Lamna nasus</i>	Porbeagle / Mackerel Shark					Neritic, Oceanic	Possible
<i>Leptoichthys fistularius</i>	Brushtail Pipefish					Neritic	Possible
<i>Lissocampus caudalis</i>	Australian Smooth Pipefish					Neritic	Possible
<i>Lissocampus runa</i>	Javelin Pipefish					Neritic	Possible
<i>Maroubra perserrata</i>	Sawtooth Pipefish					Neritic	Possible
<i>Notiocampus ruber</i>	Red Pipefish					Neritic	Possible
<i>Phycodurus eques</i>	Leafy Seadragon					Neritic	Possible
<i>Phyllopteryx taeniolatus</i>	Common Seadragon, Weedy Seadragon					Neritic	Possible
<i>Pugnaso curtirostris</i>	Pugnose Pipefish					Neritic	Possible

Scientific name	Common name	Conservation status			Most recent sighting (BDBSA)	Habitat	Likelihood of occurrence within project area
		Aus	SA	KI			
<i>Solegnathus robustus</i>	Robust Pipehorse					Neritic	Possible
<i>Stigmatopora argus</i>	Spotted Pipefish, Gulf Pipefish					Neritic	Possible
<i>Stigmatopora nigra</i>	Widebody Pipefish					Neritic	Possible
<i>Stipecampus cristatus</i>	Ringback Pipefish					Neritic	Possible
<i>Urocampus carinirostris</i>	Hairy Pipefish					Neritic	Possible
<i>Vanacampus margaritifer</i>	Mother-of-pearl Pipefish					Neritic	Possible
<i>Vanacampus phillipi</i>	Port Phillip Pipefish					Neritic	Possible
<i>Vanacampus poecilolaemus</i>	Longsnout Pipefish					Neritic	Possible
<i>Vanacampus vercoi</i>	Verco's Pipefish					Neritic	Possible

Source of Information

1. EPBC Act Protected Matters Report (DOE 2014a) – no buffer applied to project area.
2. Biological Database of South Australia data extract (DEWNR 2014a) - 5 km buffer applied to project area.

Conservation status

Aus: Australia (Environment Protection and Biodiversity Conservation Act 1999). SA: South Australia (National Parks and Wildlife Act 1972). **Conservation Codes:** CE: Critically Endangered. EN/E: Endangered. VU/V: Vulnerable. R: Rare. ssp.: the conservation status applies at the sub-species level. Mi: listed as migratory under the EPBC Act. Ma: listed as marine under the EPBC Act. * listed as Migratory under a different scientific name on the EPBC Act.

Regional status for Kangaroo Island is sourced from Gillam and Urban (2013). **Regional status:** RE: Regionally Extinct. CR: Critically Endangered. EN: Endangered. VU: Vulnerable. RA: Rare. NT: Near Threatened. LC: Least Concern. DD: Data Deficient. NE: Not Evaluated. **Regional Population:** --: Definite Decline. -: Probable Decline. 0: Stable/No Change. +: Probable Increase. ++: Definite Increase. DD: Data Deficient.

Note: Exclusively marine species have not been included in this assessment.

Zones

Coastal: Beach and Dunes.

Intertidal: Also known as the foreshore, is the area that is above water at low tide and under water at high tide.

Neritic: The shallow part of the ocean above the drop-off of the continental shelf, up to 200m in depth.

Oceanic: The region of the open sea beyond the edge of the continental shelf, where the depth is greater than 200 metres.

Additional species of conservation interest

A 2013 marine study was undertaken by the South Australian Conservation Research Divers (SACReD) to learn more about the distribution and habitats of rarely recorded, endemic and other marine species of conservation concern, at sites along the reefs of northern and north-eastern Kangaroo Island. Table 3 lists those species of conservation interest highlighted by the report. Some of these included additional species, which are listed in South Australia by the Conservation Council as "In Peril". They are also known to occur on reefs of Kangaroo Island and may include: Southern Blue Morwong (Queen Snapper), Long-snouted Boarfish, Leafy Seadragon and Weedy Seadragon, as well as three species of Wobbegong shark. In addition to reef habitats, areas such as the legislatively protected Pelican Lagoon provide important habitat for a number of uncommonly recorded fish species, including live-bearing fishes such as Spotted Snake-blenny (*Ophiclinops pardalis*) (Baker et al, 2015).

Table 3. Marine fishes of conservation interest which were recorded during the Kangaroo Island survey in March and April 2013 (Baker et al, 2015).

Scientific name	Common name	Conservation status			Habitat	Likelihood of occurrence within project area
		Aus	SA	KI		
<i>Othos dentex</i>	Harlequin Fish				Neritic	Possible
<i>Achoerodus gouldii</i>	Western Blue Groper				Neritic	Possible
<i>Austrolabrus maculatus</i>	Blackspotted Wrasse				Neritic	Possible
<i>Bodianus frenchii</i>	Foxfish				Neritic	Possible
<i>Dotalabrus aurantiacus</i>	Castelnau's Wrasse				Neritic	Possible
<i>Eupetrichthys angustipes</i>	Snakeskin Wrasse				Neritic	Possible
<i>Notolabrus fucicola</i>	Purple Wrasse				Neritic	Possible
<i>Notolabrus parilus</i>	Brownspotted Wrasse				Neritic	Possible
<i>Notolabrus tetricus</i>	Bluethroat Wrasse				Neritic	Possible
<i>Ophthalmolepis lineolata</i>	Southern Maori Wrasse				Neritic	Possible
<i>Pictilabrus laticlavius</i>	Senator Wrasse				Neritic	Possible
<i>Pseudolabrus rubicundus</i>	Rosy Wrasse				Neritic	Possible
<i>Phycodurus eques</i>	Leafy Seadragon				Neritic	Possible
<i>Phyllopteryx taeniolatus</i>	Weedy Seadragon				Neritic	Possible
<i>Vincentia badia</i>	Scarlet Cardinalfish				Neritic	Possible
<i>Trinorfolkia cristata</i>	Crested Threefin				Neritic	Possible
<i>Ophiclinops pardalis</i>	Spotted Snake-blenny				Neritic	Possible
<i>Dermatopsis multiradiatus</i>	Slender Blindfish				Neritic	Possible
<i>Peronedys anguillaris</i>	Eel Snake Blenny				Neritic	Possible
<i>Aetapcus maculatus</i>	Warty Prowfish				Neritic	Possible
<i>Pataecus fronto</i>	Red Indianfish				Neritic	Possible
<i>Neopataecus waterhousii</i>	Whiskered Prowfish				Neritic	Possible

Scientific name	Common name	Conservation status			Habitat	Likelihood of occurrence within project area
		Aus	SA	KI		
<i>Phyllophryne scorteia</i>	White-spotted Anglerfish				Neritic	Possible

Source of Information

Baker, J.L., Crawford, H., Baade, L., Muirhead, D., Manna, J., and Velzeboer, R. (2015) *Marine Species of Conservation Interest on Northern Kangaroo Island - Results of 2013 Field Work*.

During the same study, marine invertebrates were also sampled. It is believed that the marine invertebrate fauna of Kangaroo Island is likely to be rich, given the diversity of habitats around the island (Baker 2004), and despite previous survey efforts, little is known of the current distribution and local abundance of many apparently uncommon or rare marine invertebrates, including a number of SA endemic species (Baker et al, 2015).

Marine Parks

The Southern Kangaroo Island Marine Park (HPZ-1) is situated to the south west of the project area toward Cape Gantheaume Wilderness Area between D'Estrees Bay and the western end of Seal Bay Conservation Park (Figure 1). The coastline directly in front of the project area does not fall within a coastal marine park zone. Point Reynolds (situated in the top right hand corner of Figure 1, is approximately 10km west along the coastline from the project area.

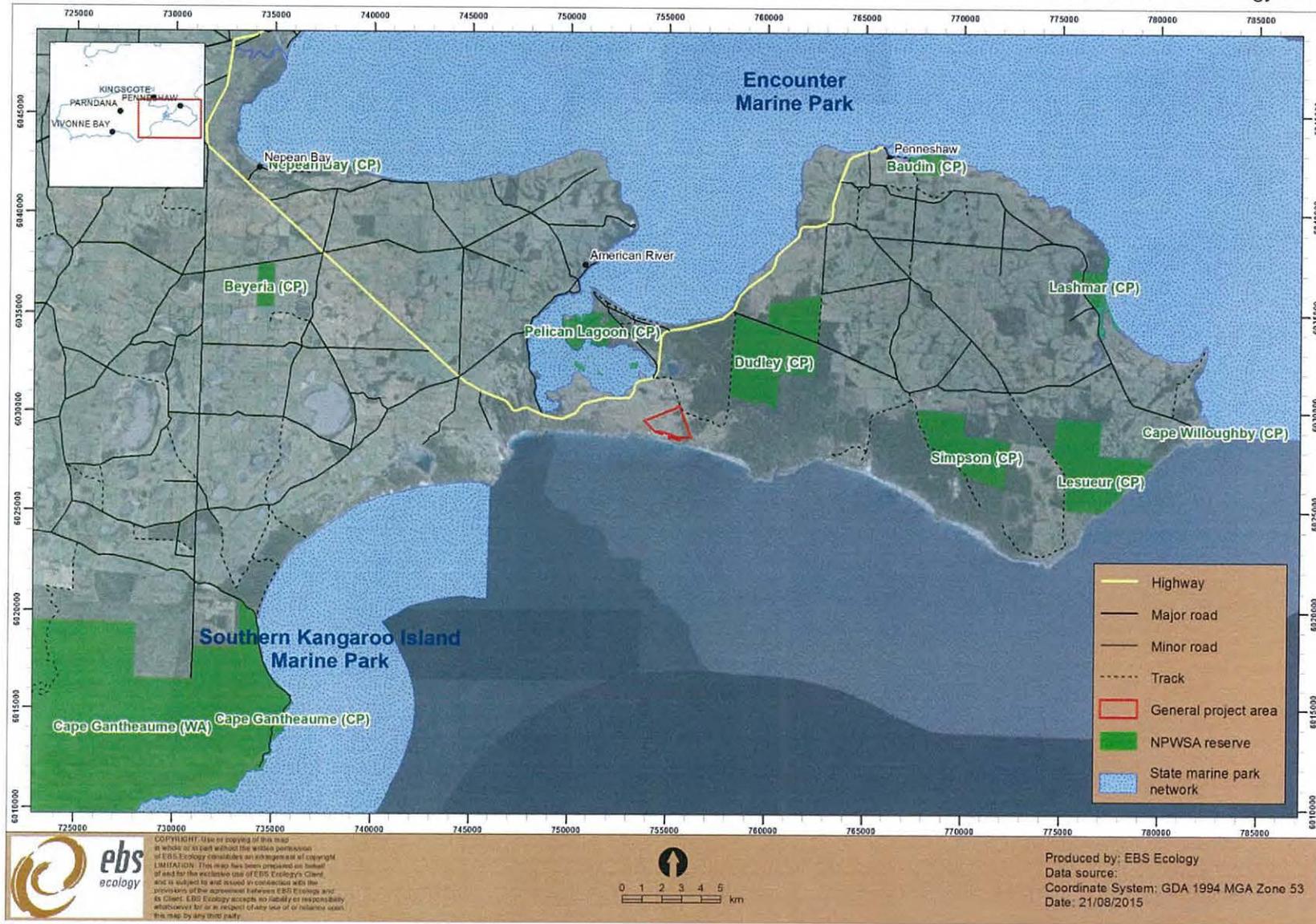


Figure 1. Marine Park 17 – Southern Kangaroo Island

REFERENCES

- Baker, J.L. (2004) *Towards a System of Ecologically Representative Marine Protected Areas in South Australian Marine Bioregions - Technical Report*. Report (Parts 1 - 4) for Coast and Marine Conservation Branch, Department for Environment and Heritage, South Australia. 1250p.
- Baker, J.L., Crawford, H., Baade, L., Muirhead, D., Manna, J., and Velzeboer, R. (2015) *Marine Species of Conservation Interest on Northern Kangaroo Island - Results of 2013 Field Work*. Report for: Kangaroo Island NRM Board Coast and Marine Program, and S.A. Department for Environment, Water & Natural Resources, February 2015 update of September 2013 report

Please contact me if you wish to discuss,

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Tonia Brown', with a small flourish at the end.

Tonia Brown

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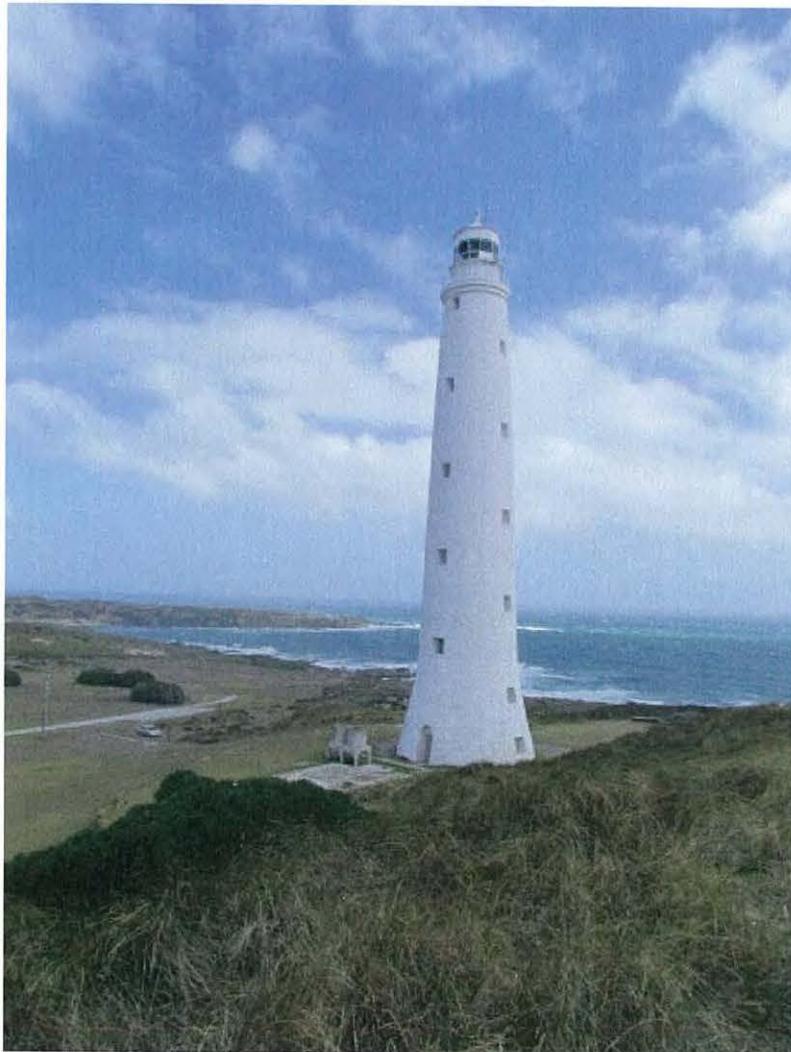
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Appendix B

Environmental Management Plan – King Island

ENVIRONMENTAL MANAGEMENT PLAN

**PROPOSED NEW 18 HOLE GOLF COURSE
KING ISLAND GOLF LINKS
CAPE FAREWELL (CAPE WICKHAM), KING ISLAND,
TASMANIA**



**Prepared for Lighthouse Properties Australia Pty Ltd
June 2013 by Environmental Consulting Options
Tasmania**

CITATION

Lighthouse Properties Australia Pty Ltd (2013). *Environmental Management Plan, Proposed New 18 Hole Golf Course, King Island Golf Links, Cape Farewell (Cape Wickham), King Island, Tasmania*. Prepared for Lighthouse Properties Australia Pty Ltd by Environmental Consulting Options Tasmania.

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EXECUTIVE SUMMARY

This Environmental Management Plan (EMP) for the proposed new 18-hole golf course to be known as the "King Island Golf Links" relates to the construction, operation and maintenance phases of the project on Crown and private titles and addresses the environmental elements identified in the Reserve Activity Assessment (RAA 2600 Cape Wickham Golf Course – CW CA/YRB CA) for the project.

The EMP describes a set of policies aimed to provide best management of all construction and environmental elements of the project. The EMP outlines mechanisms by which the policies will be accomplished. It also sets specific criteria by which the degree of achievement of the policies can be measured. The EMP proposes a process of measuring this performance through a monitoring programme. All elements and their corresponding protective actions are set in the context of the existing conditions and how those conditions are to be modified to accommodate the proposed new land use and its accompanying landscape plan.

Adoption of and adherence to the EMP will ensure that the environmental impact of the change of land use from former grazing and coastal Crown and private land to golf course will be minimised as much as practicable for those elements specifically addressed.

1. INTRODUCTION

1.1 Preamble

Lighthouse Properties Australia Pty Ltd will construct an 18-hole golf course, clubhouse facilities and 60 accommodation units on a 385 acre parcel of land to the south of the Cape Wickham lighthouse on King Island, Tasmania. The project is to be known as the "King Island Golf Links".

The site is on private property and Crown land. Various approvals for the project are required under Tasmanian legislation. This Environmental Management Plan (EMP) relates to the whole project area (both private and leased Crown tenures) and is applicable to all phases of the project (including construction, operation and maintenance of the golf course and associated facilities and infrastructure).

Reserve Activity Assessments (RAAs) are required for proposed developments on reserved Crown land in Tasmania. An RAA was prepared by Lighthouse Properties Australia Pty Ltd for the use of the Crown land at Cape Farewell for the purpose of a golf course and associated facilities. The Tasmanian Parks & Wildlife Service (PWS) issued provisional consent for the project on 21 December 2012 subject to specific conditions. These conditions included the production of a Construction Environmental Management Plan (herein termed under the more general concept of a broader Environmental Management Plan (EMP) for the whole site) for approval by the responsible authority (PWS), to address various environmental values.

Other approvals required include a Development Application to King Island Council under the *King Island Planning Scheme 1995*. Other environmental approvals are noted throughout the EMP as relevant to each section.

1.2 Project area

The project area is to be located on two parcels of private property to the south of the Cape Wickham Lighthouse, and on coastal Crown land (Figures 1 & 2).

A crucial part of the project is an agreement to lease Crown land from the Tasmanian Government, facilitated through PWS. This involves a 50-year lease on the coastal reserve south of the lighthouse centred on Cape Farewell and Victoria Cove. There will be no physical buildings on the Crown land, but PWS has agreed to selected areas being used for golf holes. This land is judged by experts as ideal for golf in a world context and the proponent is grateful to PWS because without their support the project will not proceed.

The Crown land titles cover part of the Cape Wickham Conservation Area, unallocated Crown Land and Public Reserve over Crown land (to be Yellow Rock Beach Conservation Area).



Figure 1. General location plan showing access (from DA) –see Figure 3 for location of internal road access

[Legend: black bold lines around dark green= private title boundaries; aqua line = existing public road]

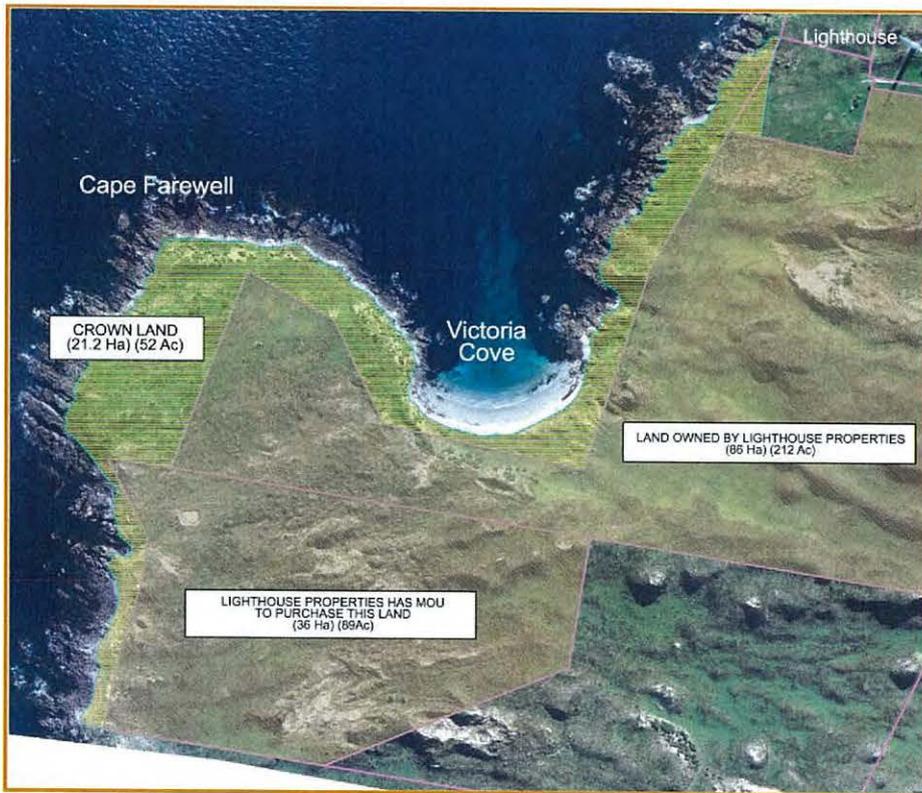


Figure 2. Location plan showing titles (from RAA)

[Legend: pink lines = title boundaries; light brown = private titles; lined yellow = Crown titles]



Figure 3. Indicative design of the golf course and associated elements

[legend: pink lines = title boundaries; medium green = golf hole; dark green = tee; light green = green; yellow line = roads; orange dotted line = path; note that elements are indicative only and subject to change]

1.3 Project design

The design elements of the project are outlined in a master plan (Figure 3) for the site and are not repeated herein, except as relevant to specific sections of the EMP.

1.4 Environmental assessments

The project area has been extensively assessed with respect to environmental values, with specific assessments and reports produced for the Crown land and private property elements of the project area. The findings of these reports were summarised in the RAA and formed the basis for the components of this EMP.

The primary environmental assessments relevant to this EMP are:

- Latitude 42 Environmental Consultants Pty Ltd. (2012). *Flora and Fauna Assessment of the Coastal Reserve Area of the Proposed Cape Wickham*

Golf Course Development, King Island, Tasmania. Prepared for Lighthouse Properties Pty Ltd by Latitude 42 (Barry Baker & Sheryl Hamilton, August 2012);

- Latitude 42 Environmental Consultants Pty Ltd. (2012). *Flora and Fauna Assessment of the Private Land Area of the Proposed Cape Wickham Golf Course Development, King Island, Tasmania*. Prepared for Lighthouse Properties Pty Ltd by Latitude 42 (Barry Baker & Sheryl Hamilton, August 2012);
- Latitude 42 Environmental Consultants Pty Ltd. (2012). *Flora Values of Report [sic] of Coastal Reserve, Cape Wickham, King Island*. Prepared for Lighthouse Properties Pty Ltd by Latitude 42 (Andrew Welling, December 2012);
- Cultural Heritage Management Australia (2012). *European Heritage Assessment of a Proposed Golf Course Development at Cape Wickham, King Island, Tasmania*. Report prepared for Lighthouse Properties Pty Ltd by Stuart Huys (22 August 2012);
- Cultural Heritage Management Australia (2012). *Aboriginal Heritage Assessment of a Proposed Golf Course Development at Cape Wickham, King Island, Tasmania*. Report prepared for Lighthouse Properties Pty Ltd by Stuart Huys (5 August 2012);
- Richard Chamberlain Golf Design Pty Ltd (2013). *King Island Golf Course Development, Cape Wickham – King Island, Tasmania: Planning Report* (draft Development Application to King Island Council);
- Reserve Activity Assessment (RAA) (2013). *RAA 2600 Cape Wickham Golf Course – CW CA/YRB CA*;
- King Island Golf Links, King Island, Tasmania (2013). *Master Plan* (Feb. 2013);
- Department of Primary Industries, Parks, Water & Environment (DPIPWE) (2013). *Natural Values Atlas Database Report Number 57363 ECOtas_CapeFarewell_KingIsland*, dated 15 March 2013;
- site assessment of the Crown land (and contextually the surrounding private land) by Mark Wapstra (ecologist, Environmental Consulting Options Tasmania) on 12-13 March 2013, primarily to facilitate preparation of this EMP and associated planning approval documents.

The findings of these reports are only summarised in this EMP for the purposes of the successful implementation of the EMP – readers are referred to the list of documents for greater detail.

2. SCOPE OF CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

2.1 Legislative and policy instruments

The RAA summarised the relevant legislative and policy instruments applicable to the Crown land aspects of the project. Many of these are also applicable to

the private land aspects of the project. Other instruments may also be directly or indirectly applicable to non-environmental components of the project.

- *Tasmanian National Parks and Reserves Management Act 2002*

Through the RAA, EMP, lease arrangement and some specific conditioned authorities, the project will be compliant with this Act. This EMP is critical to meeting the objectives of the Act, specifically in relation to the extent of the reserve to be disturbed and the destruction of burrows of the short-tailed shearwater. The specific mitigation, offset and monitoring elements identified in this CEMP are intended to meet the intent of this Act.

- *Tasmanian Crown Lands Act 2002*

As above.

- *Tasmanian Nature Conservation Act 2002*

Through the associated *Wildlife (General) Regulations 2010*, an authority to disturb burrows of the short-tailed shearwater will be required. The issuing of a permit and the permit conditions will be closely linked to the provisions of the management of the species and its habitat included in this EMP. The (conditional) permits will authorise the taking of wildlife products (shearwater burrows) and to disturb wildlife (through the translocation of shearwaters).

- *Tasmanian Threatened Species Protection Act 1995*

A permit to "take" threatened flora or fauna listed on schedules of this Act is required where such species will be "knowingly" disturbed. The provisions of the Act do not relate specifically to potential habitat of threatened species.

In relation to the project, therefore, the only relevant value present based on surveys undertaken to date, that may require a permit to "disturb" is the presence of *Poa halmaturina* (dune tussockgrass) and *Cynoglossum australe* (coast houndstongue).

Poa halmaturina is locally frequent and widespread on private property on grass-covered dunes but only sparsely distributed through the coastal reserve areas. The survey of December 2012 reported "significant populations...amongst the regenerating cleared land with most occurring on private land adjacent to the coastal reserve" and that the species "typically occurs in areas which contain exposed rock and bare sand...". The most recent survey failed to detect any patches of the grass within the coastal reserve in areas nominally designated as within the most likely disturbance footprint.

Cynoglossum australe is locally abundant (but by no means widespread) on the private property portion of the project area.

It is recommended that a permit be applied for that relates to the whole project, irrespective of tenure, which allows for the disturbance to patches of both species. While the works will have a short-term impact on the species, the impact is likely to be temporary as it is clear that both species colonise heavily disturbed sites (e.g. heavily grazed areas, windblown eroding areas, patches of bare ground near shearwater burrows, on dune tracks, etc.). It is unlikely that the proposed works will lead to a long-term reduction in the extent and abundance of the species on the site. In fact, it is more likely that the species will colonise disturbed patches of bare ground and become

more abundant. The proposed revegetation works provide an excellent opportunity to utilise *Poa halmaturina* for landscaping and rehabilitation projects as it is a low-growing patch-forming tussock-habited species ideally suited to such uses.

The conditions of the permit will need to be incorporated into the final version of this EMP, if the conditions require specific management actions (unlikely at this stage due to the disturbance ecology of the species). Staff and contractors working on site must refer to the conditions on the permits to ensure compliance. Contact Andrew Purchase at Lighthouse Properties for a copy of the current permits and their conditions.

- Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

Potential foraging habitat for the migratory orange-bellied parrot (*Neophema chrysogaster*) is present in the coastal reserve but no significant impact on the species or its habitat is anticipated as a consequence of the construction works and subsequent use of the golf course. A referral under the Act is not considered warranted. Note that the EMP includes provisions to enhance the extent and condition of potential foraging habitat but that these provisions do not form part of the consideration of the significance of the impact.

The project will result in the destruction/disturbance of burrows of the short-tailed shearwater (*Ardenna tenuirostris*), listed as a migratory species under the Act. The EMP forms a critical component of the approval of the project by the Tasmanian government, specifically in relation to the mitigation, offset and monitoring provisions related to the shearwater. The RAA clearly indicates that referral under the Act is the responsibility of the proponent and that the proponent believes the proposal is unlikely to be considered as significant.

- Tasmanian *Historical Cultural Heritage Act 1995*

The project will be compliant with this Act with no specific actions required.

- Tasmanian *Land Use Planning and Approvals Act 1995*

The project is discretionary under the *King Island Planning Scheme 1995*. The project has been approved in principle but endorsement of this EMP confirming State government approval of the inclusion of the Crown land component of the project area is critical to the project proceeding.

- Tasmanian *State Coastal Policy 1996*

The intent and provisions of this policy are tested through the development application process under the *King Island Planning Scheme 1995*.

- *National Recovery Plan for the Orange-bellied Parrot (Neophema chrysogaster)*

The orange-bellied parrot may occasionally use the coastal reserve (potential foraging habitat during migration periods). Based on the limited disturbance to the coastal reserve, and specifically the areas of vegetation dominated by the prime foraging source (e.g. *Sarcocornia* spp.), negligible disturbance to the current status of the potential habitat for the species is anticipated. The project provides opportunities for enhancing the quality and extent of potential foraging habitat through the removal of weeds and replacement

with native species, especially those favoured as a foraging resource (see later sections of the EMP).

- *King Island Biodiversity Management Plan 2012-2022*

The proposed development is consistent with the provisions of this recovery plan in that the key ecological values (e.g. 'Coastal Complex on King Island' (TASVEG code SCK) vegetation community; threatened flora and potential habitat of threatened fauna) will be protected/managed through the application of this EMP and associated permits.

- *Tasmanian Reserve Management Code of Practice 2003*

This policy applies to lands under the *National Parks and Reserve Management Act 2002* and the section of public reserve under the *Crown Lands Act 1976*. There are several relevant sections of the policy document that are applicable to the site. This EMP and associated permits address the intent of the reserve code of practice through the assessment and reporting process, consultation and development of management plans and application of a mitigation/offset strategy for key environmental values (see later sections of the EMP).

2.2 Scope of EMP

This Environmental Management Plan (EMP) relates to the whole project area (both private and leased Crown tenures) and is applicable to all phases of the project (including construction, operation and maintenance of the golf course and associated facilities and infrastructure).

Specifically, this EMP addresses all environmental matters related to the Crown land coastal reserve raised in the RAA, including the following:

- threatened fauna
- protected wildlife and their products;
- threatened vegetation communities;
- threatened flora;
- weeds;
- disease;
- pests;
- erosion control and rehabilitation;
- Aboriginal heritage values; and
- recreational values (existing uses and public access).

In addition to addressing matters of environmental significance raised in the RAA, this EMP also addresses other matters, including:

- management of disturbance to natural features, including native vegetation;
- methods of rehabilitating and enhancing degraded habitats;

- measures to control noise, dust and water runoff, including sediment control during construction;
- maintenance of groundwater quality;
- storage and handling of dangerous substances (such as construction waste, including recycling of all materials generated during construction);
- waste minimisation and disposal; and
- fire protection and management.

This EMP also provides guidance on the following activities and project elements:

- administration of the project, including designation of responsible parties;
- communication procedures to assign responsibilities and reporting;
- contingency and emergency response procedures
- community training/workshops on environmental management;
- hours during which construction activity will take place;
- location of where buildings and building materials will be stored during construction;
- monitoring program and due diligence checklist for EMP and legislation compliance.

2.3 Objectives of EMP

The broad objectives of this EMP are to:

- provide evidence of practical and achievable plans for the management of the project to ensure that environmental requirements are complied with by producing a comprehensive framework for control and monitoring of both construction and operational impacts; and
- provide the community and the responsible authority with evidence of the project being undertaken and the golf course being operated in an environmentally acceptable manner.

The more specific objectives of this EMP are to:

- identify the key environmental issues that may be affected by the project;
- provide a set of management actions to manage the identified values at all stages of construction and operation of the golf course and associated facilities and infrastructure; and
- provide a set of monitoring and reporting protocols against which to measure the completion and efficacy of management actions.

3. IMPLEMENTATION OF EMP

3.1 Context

The proposed King Island Golf Links development comprises the following components:

- an 18-hole golf course;
- a maintenance facility including pumped and irrigation storage dam;
- clubhouse;
- 60 eco-style accommodation units;
- car-parking and access;
- associated clearing, earthworks and landscaping;
- entry road

The site will be accessed off Cape Wickham Road (existing public road).

The basic philosophy of the project is minimal interference with the existing landforms.

From an overall landscape perspective, the land when completed will not be too different from that presently existing, and will retain a Scottish Coastal Links character with existing vegetation retained on all non-golf areas.

A significant amount of remnant vegetation has been conserved and incorporated into the landscape design.

Landscaping and revegetation planting for the development will incorporate indigenous species of local provenance.

Soils are generally highly permeable and there are no formal drainage lines on the land.

3.2 Design principles and philosophy

In the preparation of the EMP it is recognised that a set of existing conditions will be modified to a greater or lesser extent in the creation of the golf course and associated facilities.

A set of fundamental design principles have been adopted with these being complemented and given credence by the landscape concepts prepared by DeVries Golf Course Design. The landscape concepts indicate the overall project design intent and guide this subsequent detailed landscape design. The landform and golf course have been used as the basis for the overall landscape structure.

Links golf is something quite different from what has become the 'norm' in golf course design. It has its origin in the Old Course at St Andrews, Scotland. The inspiration for 'links golf' is the phenomenon known as 'links land', the original land upon which golf was played. Found in abundance along the British coastline, it is by definition a link between arable land and the sea.

DeVries Golf Design stated design philosophy in relation to a respect for traditional golf, for land and for the environment, fits comfortably with the concept of links golf. It is intended to apply to this project the principles learned from the team's collective involvement in links golf.

As demonstrated by the Master Plan the layout works with the land, while taking advantage of the natural features of the site, thereby requiring minimal earthworks and minimal clearing of remnant vegetation.

Golf course design today requires the creation of an optimum playing surface. Once established, given best management practices, courses should thrive on minimum irrigation, fewer fertilisers and low cost maintenance practices, yet cope with the rigours of everyday play, in order to be environmentally and economically sustainable.

The subject site is ideally suited to the development of this style of golf course, with its coastal environment similar to that upon which golf began in Britain over 550 years ago. The configuration, orientation and topography of the site affords panoramic views of the coastline from the highest vantage point, an ideal feature for a project of this nature.

The deep sandy soil provides very good drainage and together with a moderate climate, provides excellent conditions for the production and maintenance of turf and indeed, the playing of golf on a year round basis.

Positive benefit will be achieved by providing a sustainable use for a large tract of coastal land (previously marginal farmland), while still maintaining much of the rural character. The site will be further enhanced by the rehabilitation of the natural vegetation including a diversity of species to maintain and enhance wildlife habitat.

3.3 Adaptive management

The EMP is prepared in the context of the concept of "adaptive management" aiming to adopt and achieve world's best practice in all aspects of environmental management from the production of the EMP, its implementation, monitoring of actions and adopting altered management regimes in response to changing conditions.

3.4 Responsibilities

3.4.1 General

King Island Golf Links (the Club) will address the design recommendations of the broader EMP in the detailed design phase of the project, and significant environmental management actions will be defined in the contract documents for the main construction contractor.

The Club will ensure that the actions required under this EMP and permits are implemented. The Club will ensure that all involved parties are aware of the

requirements of this EMP and permits and that its effectiveness is regularly monitored.

3.4.2 Specific

There are several distinct phases of the implementation of this EMP. Consequently, implementation and management of the EMP is the responsibility of certain parties at various stages of the project, which are described below

Pre-construction

The following activities are to take place prior to the commencement of construction works on site:

- water harvesting & quality testing

Horizontal ground water bores will be excavated to a depth of 3.5-5 m. Water samples and flow rates are to be taken in the following locations (refer Figure 4). The samples are to be tested for the following minimum parameters:

- suspended solids;
- colour and turbidity;
- BOD₅/*E. coli*
- pH;
- sodium;
- other parameters as required.

Water sampling is to be undertaken throughout the duration of the project to ensure that no decrease in water quality is experienced. The recommended testing interval is one test at each of the above locations every three (3) months during the construction phase of the project.

The responsible party for the water testing is Turnpoint Pty Ltd.

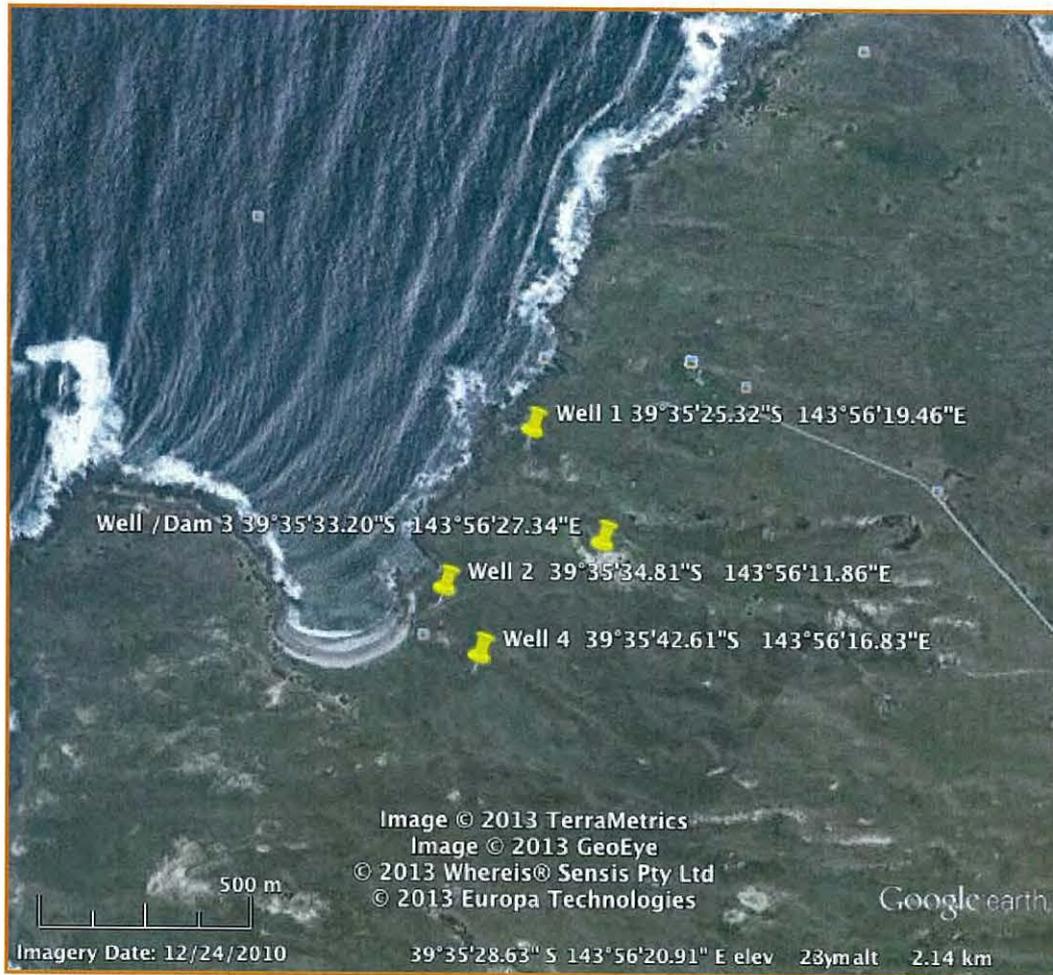


Figure 4. Location of wells for water testing

[legend: yellow GoogleEarth "pins" = well sites]

- vegetation marking

Vegetation proposed for retention is to be protected by ensuring that construction works do not extend outside the designed areas (refer to Figure 8 for indicative disturbance plan across the entire site).

The Golf Course Architect, or nominated representative, will nominate all works areas prior to commencement of on-site earthworks.

- demarcation of site boundaries

A boundary fence will be erected around the entire property, in accordance with local government authority specifications (refer Figure 5).



Figure 5. Location of boundary fences

[legend: bold orange dotted line = location of proposed boundary fences; medium green = golf hole; dark green = tee; light green = green; yellow line = roads]

The boundary fence will be clearly identifiable and prohibit pedestrian and vehicle access to the construction site during construction works. The fence will be constructed as low as possible to meet the council and course needs. Fencing in the areas shown on Figure 12 will be constructed of non-barbed materials and have reflective metal tags (approx 150 x 75mm) placed on the top wire at regular intervals of no less than 1m apart to help prevent bird strikes. Otherwise bunting flags (ie. red or orange triangle flags strung out on a line) are appropriate and can be easily removed outside the shearwater breeding season. The fence will be inspected and the tags replaced as needed prior to September each year. The sanctuary areas are not to be fenced but demarcated by other methods.

Note that users will not be prevented from accessing the coastal reserve post-construction and that only limited areas may be restricted during short periods of construction (public safety).

The responsible party for demarcation of boundaries is Turnpoint Pty Ltd.

The responsible party for construction of boundary fences is Turnpoint Pty Ltd.

- minimisation of erosion by irrigation supply

A minimum of 4 to 8 horizontal ground bores will be constructed to provide sufficient water for turf grass establishment and erosion control during the earthworks phase. A 17 megalitre dam will be constructed at the nominated location (refer Figure 6). The irrigation pump station will be installed at the dam location to ensure sufficient volumes of water are available prior to any earthworks commencing.

The responsible party for dam design is Turnpoint Pty Ltd.

The responsible party for dam construction is Turnpoint Pty Ltd.

The responsible party for ground bore installation is Turnpoint Pty Ltd.

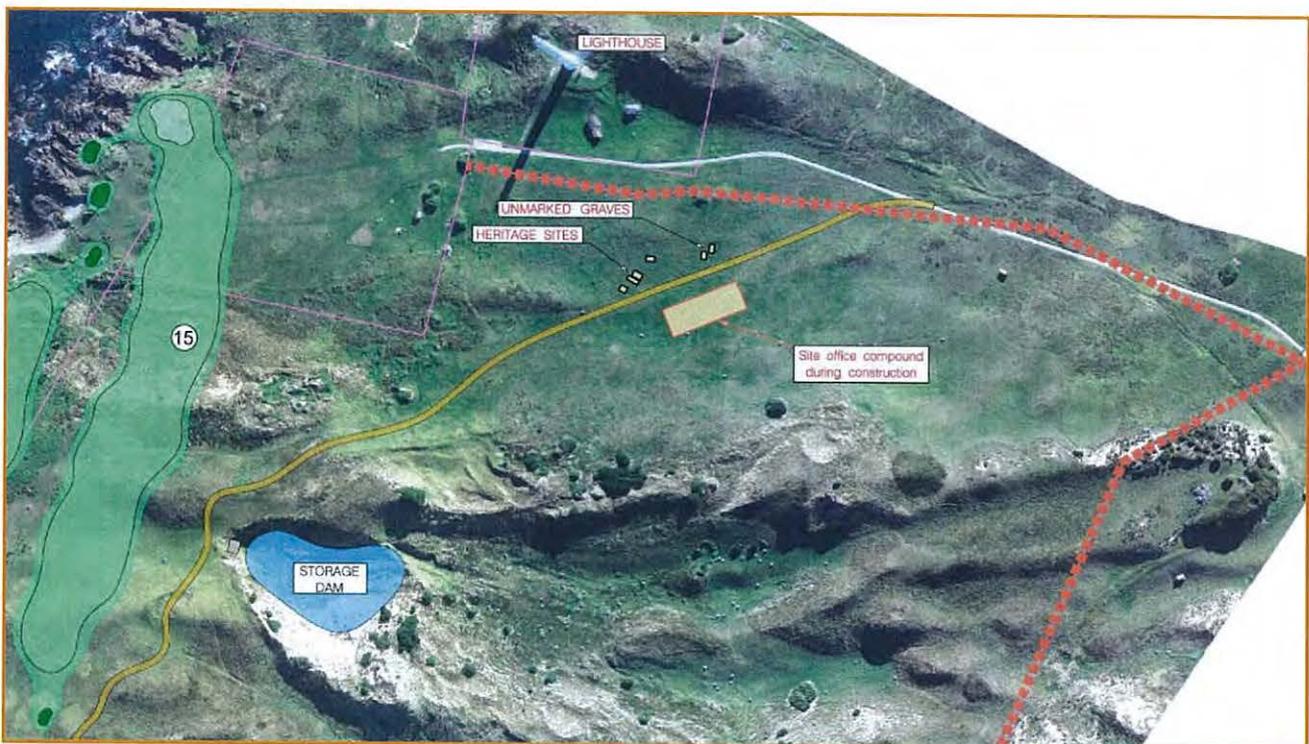


Figure 6. Location of proposed dam and access road

[legend: pink line = title boundaries; bold orange dotted line = location of proposed boundary fences; medium green = golf hole; dark green = tee; light green = green; yellow line = internal road; white line = existing public road; light blue polygon = storage dam]

- management of flora and fauna values

Prior to any earthworks commencing a "Shearwater Expert" will be engaged to advise the development team on matters relating to shearwater management. The Shearwater Expert will be endorsed by DPIPWE prior to their engagement. The expert will be engaged to prepare any relevant documents and protocols as may be required under permits. The expert will also be used to train, and assess the competency of, Club staff in handling, relocation and ongoing monitoring activities, under guidance/endorsement from DPIPWE. Staff members trained specifically by the Shearwater Expert will be titled as "Shearwater Supervisor(s)".

Staff and contractors working on site must refer to the conditions on the permits to ensure compliance. Contact Andrew Purchase at Lighthouse Properties for a copy of the current permits and their conditions.

The proposed level of pre-construction surveys undertaken by the Shearwater Supervisor is:

- transects designed to target the mapped high, medium and low density areas of the colony where the burrows intersect the main golf course areas (i.e. holes);
- the specific locations and lengths of the transects will be determined by the expert, but will include, as a guideline, the following locations: 50 m along hole 3 (high), 120 m along hole 1 (high), 50 m along hole 2 (high, medium, low), 100 m along hole 5 (high, medium, low), 50 m along hole 6 (medium, low), 100 m across holes 16 and 17 (medium/low), and 100 m along hole 4 (medium, low);
- transects will be assessed during the day using a recognised technique (e.g. hand-searching and/or camera-probe);
- all burrows along the 2 m transects will be searched in order to determine occupancy status;
- other evidence of burrow occupation by shearwaters will be assessed (e.g. scratchings, droppings, etc.);
- the surveys will be undertaken in the last week of April and continue on a 3-day frequency until burrow occupation is recorded as negative;
- the Shearwater Supervisor will keep field notes that record occupancy. The results of all pre-construction survey transects will be recorded in a form approved by DPIPWE and these results provided to DPIPWE.

Earthworks will not commence within 50m of any area supporting occupied burrows until the Shearwater Supervisor has reported a negative burrow occupancy status.

A fence will be constructed around the entire site boundary to ensure risk of entry of vertebrate fauna species (with the exception of birds) to the site during construction works is minimised. The fence will be constructed as low as possible to meet the council and course needs. It will be constructed of non-barbed materials and have reflective tags placed on it to help prevent bird strikes. Note that complete exclusion of species such as wallabies is not practical as they utilise the unfenced coastal verge – the fence is intended to minimise the risk of a large influx of wallabies to construction areas, especially during works.

The construction of the Shearwater Sanctuary will commence in June and be completed by no later than September (see main section of EMP on management of fauna values). In the event that birds on re-entering the site attempt to locate to previous nesting site a removal protocol will be implemented (see main section of EMP on management of fauna values).

The responsible party for engaging a shearwater expert is Turnpoint Pty Ltd.

The responsible party for demarcating the shearwater sanctuary area is Turnpoint Pty Ltd.

Construction

There will be two principal contractors involved with the course's construction. These will be the successful tenderers on the course itself, and the maintenance facility and the clubhouse.

These contractors and appointed sub-contractors working on the site shall ensure that all construction activities comply with the policies and procedures identified in the EMP and permits. The EMP and permit conditions will be incorporated into the contract documents and the contractors will be required by the contracts to conform to the environmental requirements set out in the EMP and permits that relate to the construction period. The performance of the contractors, and the sub-contractors in relation to the EMP will be reviewed regularly during the construction phase of the project by the Club-appointed Construction/Project Manager.

3.5 Site access

Contractor access to the site will be via Cape Wickham Road (public road).

Internal site access will be via the existing road easement as per site plan (refer Figure 6).

A new temporary access road will be constructed to access the western boundary of the project (refer Figure 6a).

Access to individual works areas will not require additional track construction. Machinery and vehicles will utilise existing informal routes through dune swales and over dune rises created during the grazing history of the property and coastal reserve area.

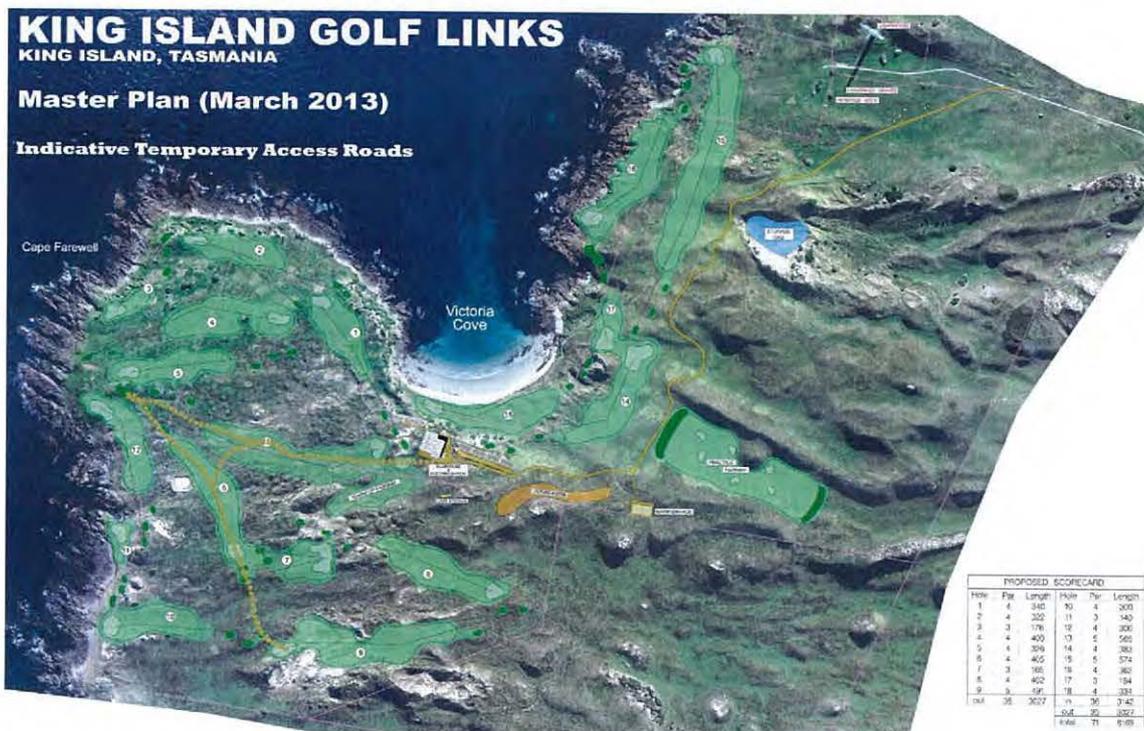


Figure 6a. Likely location of Temporary Access Roads

[legend: solid bronze line = main access road; dotted bronze line = indicative route of temporary access roads.]

3.6 Contractor facilities

The principal earthmoving/civil/golf course contractor will utilise temporary buildings for site office use.

Staff toilets will be Portaloo or equivalent serviced by an external contractor.

One fuel tank may be deployed on the site remote from any watercourse or ecologically fragile area and will be located in a bunded area having a bunded volume of not less than the volume of the tank.

Only routine maintenance will be carried out on-site.

Rubbish and litter will be removed off site as it accumulates and will be disposed of at a recognised municipal facility.

Other contractors and sub-contractors that are undertaking the construction of infrastructure will be required to adhere to the principles outlined above and their site offices and compounds will progressively move through the site to keep pace with phased construction.

3.7 Occupational health and safety (OH&S)

All contractors will operate within the Turnpoint Pty Ltd Occupational Health & Safety Policy and will appoint properly qualified representatives as required by the Act.

Contractors shall be required to prepare a quality plan including system elements covering the management of OH&S, which shall encompass the requirements of the Act, and shall provide for prompt notification to the Superintendent of any accident or injury occurring at the site.

Contractors will be required to co-operate with others, and co-ordinate with other parties, to ensure that relevant safety issues are reviewed and implemented.

Contractors and their agents shall, so far as is practically possible, provide and maintain for employees and its agents or the agents of the Principal and the Superintendent, a work site environment that is safe and without risk to health.

Contractors will be required to prepare a site safety plan to be submitted to the Superintendent prior to the commencement of works. The site safety plan shall include OH&S procedures relating to plant safety, worker safety and public safety that shall be instituted as a minimum requirement under this contract.

3.8 EMP review

The implementation of the EMP is intended as an adaptive management planning tool. The EMP shall be reviewed annually by the Club to ensure that all management actions have been implemented by the relevant parties.

The annual review process will identify where the EMP can be modified to improve the management outcomes or achieve outcomes in a more efficient manner.

The review will include checking changes to policy elements and permit conditions under which the EMP was originally prepared to ensure that the EMP maintains relevance.

After the Club has completed each annual review and report, these will be provided to DPIPWE and if deemed necessary by DPIPWE a meeting held to discuss.

3.9 Documentation and record-keeping

All environment-related communications, including reports, minutes of meetings, records of non-conformance, corrective actions and site inspections will be kept at the Turnpoint Pty Ltd construction site office, and upon completion of all construction works, shall be held at the Club's offices so that they are readily retrievable.

A copy of the annual report against management actions (where relevant to Crown land or values covered under Acts, policies and permits administered by the Crown) will be supplied to the Tasmania Parks & Wildlife Service, and DPIPWE where applicable for their commentary and records.

The Club is committed to maintaining a close working relationship with relevant authorities including DPIPWE, PWS and King Island Council. Where an authority requests a greater degree of input into review and documentation protocols, the Club will facilitate any such meetings and discussions in a timely manner. The Club will facilitate access to the grounds and Crown lease area to interested parties, at each party's expense.

4. ENVIRONMENTAL MANAGEMENT PLAN

4.1 Structure

This section of the EMP is composed of a number of elements, each with an overall associated management objective, mechanism(s) for implementation, performance criteria, monitoring programs, and reporting mechanisms.

Element: This is the environmental issue identified in the RAA (or other planning documents) that requires specific management under the implementation of the EMP.

Objective: This is a statement of the guiding principle that applies to the element.

Implementation: These are the specific actions by which the objective will be achieved.

Performance criteria: These are the criteria by which the success of the implementation of the actions will be measured against.

Monitoring and reporting: This is the process of measuring actual performance, or how well the policy has been achieved, including the format, timing and responsibility for reporting and auditing of the monitoring results.

4.2 Element: Management of land forms and erosion

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- minimise soil erosion and exposure of new areas of bare ground;
- minimise transportation of eroded soil by air and water; and
- improve the long-term condition of landforms, especially where active erosion is occurring.

Implementation

Design and construction of the golf course uses a minimalist approach and will involve a minimum of earthmoving. Fairways will generally follow the existing landform and retain the subtleties of the existing contouring, with only minor reshaping of green and tee sites, and bunkering.

All machinery and vehicles used on-site will be managed in accordance with standard guidelines regarding regular washdown.

Any earthmoving that is required will be localised to minimise movement of soil from one part of the site to another.

Construction will use no imported soil.

Use will be made of the irrigation system to keep the exposed areas damp to avoid wind erosion until vegetation or other means of control are established.

It is proposed to adopt a technique used successfully on Turnpoint Pty Ltd recently completed projects in similar conditions on Victoria's Mornington Peninsula, whereby the fairways are not cultivated, but are sprayed to remove unwanted weeds, then closely mown followed by irrigation installation and planting directly into the undisturbed ground. This reduces the potential for erosion and maintains the subtle contours of the existing landform. Only after irrigation has been established will earthworks (as necessary) be conducted.

Construction will be undertaken using a combination of medium-sized tracked dozers, bob cats and excavators, with skilled operators experienced at working in sensitive environments. Where construction is to occur near particularly sensitive vegetation areas, the smallest machinery practical would be used.

Stockpiling of soil will be located so as not to have a detrimental effect on sensitive vegetation or rookeries.

Proper construction practices will be implemented to minimise contaminated and sediment laden run-off.

The site will be progressively cleaned up and care taken to ensure weeds are not spread to sensitive vegetation areas.

A cover of plants and/or mulch is to be maintained on all exposed areas during construction to minimise erosion risk. Standard practices to control soil movement developed for construction sites are to be used. In the instance of bunker construction, stabilisation of bunker edges is to be achieved by the placement of turf on a phased basis during construction. In areas of exposed topsoil with slopes greater than 1:5 jute matting and or hydromulching is to be used to ensure retention of the exposed soils prior to the areas being turfed or revegetated.

Performance criteria

- During the construction period the construction methods used will result in minimum erosion risk.
- Cut and fill will be balanced.
- Planting programs will be initiated as soon as contour shaping and bulk earthworks are complete.

Monitoring

The construction phase of the course will be the time when the site is most susceptible to soil erosion. Regular observation and recording of soil movement during this period is essential particularly when ripping, bulk earthworks and contour shaping is in progress.

4.3 Element: Noise

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure that noise associated with the construction and operation of the development does not cause nuisance to neighbouring residential properties and other land uses.

Implementation

Construction

Hours of operation 0700-1800 Mon-Fri and 0700-1300 Saturdays.

Any work on Sundays will require permission from local authorities.

Maintenance shed hours

September to May 0600 to Sunset.

June to August 0600 to 1800.

Clubhouse hours

Sunday to Thursday 0700 to 2300.

Friday & Saturday 0700 - 0100 (1am).

Notification of local residents for other times or excessive noise.

Fixed plant shall be designed and installed to comply with regulations.

The maintenance shed and pump shed will be suitably noise insulated in accordance with guidelines provided by Tasmanian EPA.

Regular equipment maintenance to ensure adequate noise suppression.

An external PA system will not be installed on the site.

Deliveries to the site will be scheduled so as to minimise disruption to local amenity and traffic.

Performance criteria

- Noise emitted from the site at all times will not exceed the requirements of the authorities.
- Machinery noise will be limited to that allowed by current environmental guidelines.

Monitoring

An assessment of the maintenance shed and pump shed will be conducted by a qualified acoustic consultant to certify the insulation and design is appropriate and to the satisfaction of the authorities.

Other monitoring of noise-related issues will be in response to complaints.

4.4 Element: Groundwater

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure minimal impacts on soils and groundwater.

Implementation

Irrigation application rates will be controlled so that the field capacity is not exceeded during irrigation.

All hardpan areas will be precluded from irrigation.

Existing bore water system to be ongoing as the irrigation water supply. Any future reclaimed water usage will comply with EPA requirements.

General surface water drainage is not required due to the existing conditions of deep extensive sand subsurface material quickly absorbing excess rainfall and preventing water pooling on the site. Stormwater from the maintenance shed, club house and accommodation will be collected and discharged to storage tanks.

Sewage from the clubhouse and maintenance facility will be provided by adequate septic system. Other waste to be directed to a drainage system into cleaning pits and/or a water cleaning system for removal of contaminants.

Performance criteria

- The achievement of zero surface run-off from the development site.

Monitoring

Groundwater will be regularly monitored and management practices modified if negative impacts are identified as a result of course irrigation.

Water levels in the monitoring bores are to be read monthly and samples collected annually for analysis.

Soil moisture will be monitored by the golf course superintendent to determine frequency of irrigation.

Samples of fairway topsoils and subsoils will be collected annually from each fairway for analysis.

A single sample of wastewater should be analysed to comply with requirements. All reporting results will be made available to the relevant authorities.

4.5 Element: Plant (machinery) and chemical/fertilisers

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure residual water used to wash down golf course management equipment meets Australian EPA standards; and
- ensure nutrient management includes controlled and documented use of phosphorous fertilisers.

Implementation

To minimise the risk of environmental pollution from the washdown, a bay is to be provided at a suitable location on the site.

Recycle batteries and metal with scrap metal dealers.

Used oils to be recycled through the local council and service stations.

Vegetative refuse (turfgrass clippings, scarifyings, tree and shrub trimmings) to be chipped and/or composted for mulch.

Choose fertilisers with a low heavy metal content to reduce the risk of pollution and any future contaminated soil problems. Investigate and trial conditioning products that offer slow nutrient release, a range of trace elements and encourage an active and diverse soil biology.

Match timing and quantity of fertiliser applications to soil type and expected uptake rate by the grass.

Maintain up-to date fertiliser application and associated records.

Apply appropriate irrigation to ensure that fertilisers do not run-off or leach.

Dispose of used fertiliser bags in a way to minimise the risk of possible water pollution.

Performance criteria

- Maintenance of high quality playing arena for golf that is sustained and enhanced by a limited program of chemical application with and by machinery that is serviced and supported in facilities comprised of a self-contained pollution-free system.

Monitoring

Monitor plant nutrient status through regular soil and/or leaf tissue analysis. Annual comprehensive soil nutrient analysis with bi-annual soil testing for pH and electrical conductivity are a minimum for all fertilised areas.

An established regular surface and groundwater monitoring regime will be in place to ensure compliance with Australian EPA guidelines.

4.6 Element: Storage and handling of dangerous substances

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure appropriate management of dangerous/hazardous substances on-site to avoid pollution of the environment or harm to persons.

Implementation

Storage areas during construction restricted to a designated (an) area.

All storage and handling of fuels and chemicals to be done in accordance with EPA guidelines and Australian Standards.

Storage will be in an appropriate enclosure with concrete floor and bund and within the maintenance facility long term.

Transport will be as per relevant codes and practices and licensed persons.

Bins and receptacles will be maintained clean and tidy.

Quantities of chemicals and fuels stored on site will be kept to a minimum and only approved chemicals to be used on site. Chemicals will be entered into a site Chemical Register and relevant Material Safety Data Sheets will be kept on site.

Staff to be appropriately trained, safety clothing worn and emergency equipment maintained on site at all times.

An Emergency Response Plan will be prepared by the golf course management for handling and storage of chemicals.

Performance criteria

- Spillages prevented during handling.
- Storage within designated areas.
- Proper disposal of waste.
- Monitor all containment structures.

Monitoring

Inspect the site, storage areas and control structures on a frequent basis to ensure that the dangerous/hazardous substances are being stored, handled and disposed of in an appropriate manner.

Inspect for ground contamination and if necessary undertake soil sampling and analysis of the contractors' work area.

4.7 Element: Waste

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure solid waste production during all stages of development, including litter, is minimised and disposed of, on and off site, in a responsible manner.

Implementation

All solid wastes will be placed in appropriately designed storage areas and/or disposed of on an as-required basis to certified disposal facilities. Putrescible waste storage and disposal will conform with EPA regulations and local government (King Island Council) waste storage policies.

A high standard of house-keeping maintained both during construction and operation.

Secured bins for construction workers and staff to be placed at locations where they consume food. These bins will not be accessible to native or introduced fauna.

Wastes will be placed for collection or recycling at designated sites.

Re-use or recycling opportunities will be investigated and adopted where possible.

Surplus materials and used oils to be collected and recycled on site or delivered to recyclers

Prior to commencement of the maintenance shed operations, a Trade Waste Agreement or other appropriate consent will be entered into with South East Water.

Performance criteria

- Site remains tidy and well maintained.
- Overloaded waste to designated areas.
- Disposal of waste to designated areas.
- Proper waste disposal.

Monitoring

Undertake regular visual site inspections to ensure that solid wastes are being stored in the appropriate areas and disposed of at an appropriate time frame so that solid waste storage areas are not being overloaded.

The contractor will monitor the lifecycle of waste generated on-site to ensure all wastes are being disposed of properly.

The Construction Contractor will visually inspect and clean up the site of all litter daily during construction and on a set basis following the completion of construction.

4.8 Element: Fire protection and management

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure that appropriate measures are taken to minimise the threat from fire to persons, property and the environment.

The course layout compartmentalises the site into distinct areas and if a fire were to start within the course there are relatively small areas of vulnerable grassland/bushland between the irrigated fairways, therefore making the fire risk manageable.

Implementation

Ensure an OH&S Officer is appointed, and all staff inducted in safety matters and fire emergency response.

The fairway will provide easy access for vehicles.

Fairways will form corridors of irrigated turf acting as fire breaks.

The irrigation system can be used for fire-fighting purposes.

Quick coupling valves can be tapped as required for emergency fire-fighting.

Maintenance tracks also provide fire and emergency access throughout the site.

Course equipment to include a water tanker and a spray unit with a tank capable of use for fire-fighting purposes and vehicles will carry knapsack pumps.

Fuels, oils and chemicals to be stored within designated areas during construction and during the operational phase within the maintenance shed.

Construction and course maintenance vehicles to be maintained and refuelled in designated area and maintenance shed except in emergencies.

Storage, refuelling, maintenance and operation of machinery will be undertaken to standards that eliminate the potential for heat and sparks to start fires. Refuelling areas will be attended whilst refuelling is in progress.

Areas of vegetation abutting neighbouring properties will be managed to maintain a minimum fire fuel condition during fire danger period.

Performance criteria

- A Fire Management Plan will be prepared in conjunction with local authorities.

Monitoring

Conduct regular inspections to ensure that all fire-fighting equipment is serviceable.

Conduct visual inspections of the site and control structures (e.g. silt and oil separators, bunding, level of fuel build-up in vegetated areas) to ensure that the performance requirements are met and to identify any non-conformance.

Conduct visual inspections of maintenance tracks to ensure they are kept clear and serviceable.

4.9 Element: Cultural heritage values (European heritage)

No specific values have been identified from the project site. No special management actions are required.

4.10 Element: Cultural heritage values (Aboriginal heritage)

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure protection of all identified cultural sites.

Implementation

Potentially sensitive sites will be identified prior to construction works and appropriately flagged to protect from inadvertent disturbance.

Where disturbance to a site is unavoidable, a permit will be required – no works will commence that may disturb such a site until all appropriate permits are obtained.

If potentially significant cultural material is found during construction works, the site supervisor will be notified immediately and works will cease within 50 m of the potential site until it has been assessed by a suitably qualified person and appropriate advice provided.

Performance criteria

- No significant site is disturbed during construction works.

Monitoring

Monitoring will be undertaken during all periods of site disturbance.

4.11 Element: Flora values (threatened flora)

A permit under Section 51 of the Tasmanian *Threatened Species Protection Act 1995* has been applied for to disturb populations of *Poa halmaturina* (dune tussockgrass) and *Cynoglossum australe* (coast houndstongue). Based on the population characteristics and the disturbance-tolerance of the species, no special management actions are recommended, however disturbance and clearance will be minimised as much as practicable.

4.12 Element: Flora values (vegetation)

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- minimise clearance and disturbance of native vegetation to that required to create the design golf course features (refer Figure 8).

Indicative golf course routing

This indicative disturbance plan (Figure 8) reflects the preliminary design of the King Island Links Golf Course. It provides an indicative display of the following:

1. likely areas to remain entirely undisturbed (shaded blue);

2. likely golf course holes (shaded green);
3. areas that may or may not be disturbed during the construction phase, but which will revert to (or remain) native/natural vegetation post-construction (unshaded); and
4. Shearwater Sanctuaries (shaded orange).

It is important to stress that the golf course routing as shown is a 'best endeavours' routing. No newly completed golf course is identical to its preliminary design. There are always unanticipated impediments that occur (e.g. a stony outcrop hidden by vegetation) or a new concept for a golf hole that differs from the original intention. This golf course has the potential to be one of the world's greatest, and to achieve this there will need to be a degree of flexibility with regards the approved golf plan. The precise FINAL design of the golf course is impossible to complete at this stage, as during construction subtle design changes and adjustments will occur. If any significant changes are required this will be discussed with DPIPWE.

What does this indicative design mean in practice?

As stated above, change to the preliminary design is inevitable but we expect the changes to be minor. Even if holes were reversed or swapped with other holes, the net effect of any alterations would be that the area of land disturbed during construction remains the same. Further, regardless of the final finished golf course design no additional shearwater burrows will be destroyed because of changes made to this plan.



Figure 8. Indicative golf course plan with areas to be disturbed and undisturbed during and after construction works

[legend: shaded blue zones = areas likely to remain entirely undisturbed by golf course construction, shaded green zones = likely golf holes, shaded orange zones = Shearwater sanctuaries]

Implementation

Existing indigenous remnant vegetation is to be adequately protected during the golf course construction period. This shall be achieved by adherence to the following procedures and requirements during the construction period:

- vegetation removal will be kept to the minimum area of clearance required to achieve the design outcomes of the golf course;
- in this period the contractor will be given clear site instructions to ensure adequate fencing is installed and that all earthworks or ground modification is restricted to areas not so fenced (protection zones);
- protection shall be of sufficient height and construction so as to adequately prevent inadvertent access by vehicles or persons into protected areas during the construction contract period;
- the protective device shall be constantly maintained throughout the duration of the contract;
- where any excavation is required in the vicinity of vegetation to be retained, care shall be taken to minimise disruption to the root zone and acceptable arboricultural techniques shall be employed to remove/prune roots;
- where isolated vegetation is to be protected, the areas within tree drip lines shall be kept free of all plant, material and debris; material shall not be leaned against trunks.

Performance criteria

- Clearing has been restricted to the indicated areas, which includes golf holes, tracks, clubhouse zone and associated facilities (refer to Figure 8).
- Vegetation proposed for retention has been protected and retained undisturbed.

Monitoring

Monitoring will be undertaken to ensure construction works have been restricted to the indicated areas. Where works have extended beyond the indicated area a report will be made indicating the extent and nature of disturbance and a plan produced to rehabilitate the disturbed vegetation.

4.13 Element: Flora values (re-vegetation)

Objective

Re-vegetation of disturbed areas is a core component of the overall project. The long-term objective for the site is to:

- enhance the biodiversity values through the gradual removal of weeds, protection of areas of erosion and gradual re-vegetation of disturbed sites with native species.

Implementation

The re-vegetation of disturbed sites must be recognised as a long-term objective.

An on-site nursery will be established to propagate locally native species for use in re-vegetation programs.

Suitable propagation material will be collected (under appropriate permits) from the local area for re-use in re-vegetation and landscaping.

All collection of plant propagation material shall only be done by persons who have a permit to collect native flora, or where such collection is permitted (e.g. outside Crown reserves, not involving threatened flora).

Planting of up to 250,000 'cell' and 'tube stock' indigenous plants will be utilised in the initial landscaping of the new golf course.

Run-off from higher nutrient areas such as tees & greens will be directed away from areas of remnant vegetation.

While the 'rough' areas of the golf course are to initially include the existing pasture grasses, the long term planting plans for these areas will include extensive use of indigenous grasses and shrubs of local provenance. The profile of this planting will maintain the open character of the overall golf design and landscape.

Additional re-vegetation works will be undertaken related to the establishment of the Shearwater Sanctuary (see separate section of EMP) and weed management works (see next section).

4.14 Element: Flora values (weeds)

Objective

The context of this EMP is important to defining short- and longer-term objectives in relation to management of weeds. The current distribution of woody weeds in some places is critical to maintaining a low risk of further soil erosion and for the protection of shearwater burrows, such that immediate removal is not recommended. In addition, the long history of land use for cattle grazing and 4WD access to Victoria Cove means that the subject land is already significantly disturbed. The proposed golf course and associated facilities provides an opportunity to enhance the ecological condition and viability of the site.

In the short-term (construction phase and immediate post-construction period), the management objectives are to:

- ensure that construction activities do not exacerbate the current extent and abundance of environmental weeds (principally boxthorn, *Lycium ferocissimum*, and sea spurge, *Euphorbia paralias*); and
- that removal of vegetation for the construction of the permanent features of the golf course result in an overall reduction in the extent and abundance of environmental weeds.

In the longer-term (post-construction phase and operational/maintenance phases), the management objectives are to:

- progressively reduce the extent and abundance of environmental weeds (principally boxthorn, *Lycium ferocissimum*, and sea spurge, *Euphorbia paralias*, but also winged thistle, *Carduus* spp.); and
- undertake operations that do not result in new infestations of environmental weeds within the project area.

Implementation

The distribution of environmental weeds has been mapped (refer to Figure 9). This map will be used to guide management actions (locations and target species) and monitor efficacy and implementation of actions (through updating of the map).

Where weeds are present in sites subject to vegetation clearing, all vegetation debris is to be disposed of to minimise the risk of further infestations. This may involve burial and/or burning on-site (subject to local government and Tasmanian Fire Service guidelines) and/or off-site disposal at a recognised municipal facility.

No vegetation debris is to be left on-site in areas outside the vegetation clearing zones.

Additional management actions are detailed below. At this stage, some of these actions should be considered as indicative as site conditions may constrain some works.

Sea spurge

- An annual sea spurge removal program will be implemented, involving a minimum of 2 person-days every 6 months, where two people will physically hand-pull sea spurge plants from the site.
- Sea spurge removal will focus on the coastal reserve area, with progressive eradication across the remainder of the project site.
- Sea spurge removal will only take place outside the shearwater breeding season, or outside shearwater burrow areas during the breeding season.
- Sea spurge will be managed in accordance with DPIPWE guidelines – in relation to the project site, hand-pulling of individuals is considered the most practical option.
- Sea spurge will be disposed of off-site by bagging and transport to a municipal refuse facility (or allowed to decompose on site in a constructed compost facility). No potentially weed-contaminated material (e.g. chippings, mulches, compost) will be used in future landscaping works.
- Every two years, the distribution and abundance of sea spurge will be documented, and the updated map used to guide future 6-monthly eradication activities.
- Where sea spurge is removed and greater than 5 m² of bare sand created, within 1-week of removal, the bare area will be revegetated with nursery-grown locally indigenous species.

African boxthorn

- In many places, African boxthorn is providing important soil erosion and shearwater burrow protection services. Immediate wholesale removal is not considered a sensible approach.
- Every 6 months, outside the shearwater breeding season, a minimum of 10 "old-growth" African boxthorn individuals will be removed from the coastal reserve and disposed of appropriately off-site. The removal sites will be documented (this activity will continue until no such individuals remain within the project area).
- Where an "old-growth" boxthorn is removed, the exposed area of bare soil will be revegetated within 1 week of removal using nursery-grown locally indigenous species.
- Where shearwater burrows are present beneath the "old-growth" boxthorn, every effort will be made to avoid damage during weed removal and subsequent revegetation activities. If disturbance is required it will need to be authorised in the annual disturbance permit.
- Every 6 months, small (e.g. < 1 m tall) boxthorn individuals will be removed, with an emphasis on the coastal reserve areas that are not associated with shearwater burrows (this is mainly to target the individuals along the rocky foreshore that may act as continual propagules for the rest of the site). Note that the number of individuals is not specified – rather it is intended that the Club utilise its resources to maximise effort to minimise the need for years of ongoing control.
- Boxthorn will be managed in accordance with DPIWPE guidelines – in relation to the project site, cutting and pasting (with the recommended herbicide) is likely to be the most practical method (and will minimise the risk of herbicide contamination of soils and non-target species).
- Every two years, the distribution and abundance of boxthorn will be documented, and the updated map used to guide future 6-monthly eradication activities.

Winged thistle

- Outside the shearwater breeding season, or within the shearwater breeding season but outside the identified colony sites, patches of winged thistle will be treated according to DPIWPE guidelines every 6-months.
- Every two years, the distribution and abundance of winged thistle will be documented, and the updated map used to guide future 6-monthly eradication activities.

Other declared species

- Infestations of other declared weed species within the project area will be treated as they are detected, according to DPIWPE guidelines.
- Any such infestations will be noted on the updated map.

Re-vegetation after weed control

Re-vegetation will be required in some areas subject to weed control, to minimise the risk of new infestations of competitive weeds becoming established, and to minimise the risk of erosion of exposed areas of bare soil.

The following general guidelines will be applied to any re-vegetation works associated with weed management:

- only locally native indigenous plant species will be used;
- the on-site nursery personnel will determine the appropriate species to use at any particular site by assessing the adjacent areas and selecting species already present;
- in the immediate coastal fringe (between the bare rocks and the more exposed grass-covered dunes), where appropriate, species' selection will include succulent ground covers and shrubs potentially important as a foraging resource for the orange-bellied parrot;
- re-planted sites will be monitored by nursery personnel every 6 months – where greater than 20% of individuals have died or are suspected to die within the coming 6 months (based on a subjective health assessment), replacement plants will be planted (this may involve different species with a greater anticipated degree of success, and may occur at a later date, subject to seasonal and site conditions, to maximise the chance of establishment and growth);
- records will be kept of the species utilised in different aspects of re-vegetation.

General

- All road, tracks and building sites (including all forms of structure from accommodation units, maintenance sheds, water tanks, pump stations, etc.) will be assessed on a two-yearly basis for the presence of environmental weeds, which will be documented.
- All fairways, greens and tees will be assessed on a two-yearly basis for the presence of environmental weeds, which will be documented.
- Where weed infestations are detected, eradication/control according to DPIPWE guidelines will be undertaken within 7 days of detection.
- Golf course maintenance staff will be trained in the identification of environmental weeds most likely to be present on the site such that the opportunity to detect and eradicate infestations early in their establishment is maximised.
- All weed control activities will be undertaken by appropriately qualified personnel.

Performance criteria – short-term (immediate post-construction)

- African boxthorn, *Lycium ferocissimum*, and sea spurge, *Euphorbia paralias*, are no longer present within the vegetation clearance zones.

Performance criteria – longer-term (operation and maintenance)

- The extent and abundance of African boxthorn, *Lycium ferocissimum*, and sea spurge, *Euphorbia paralias*, is progressively reduced, especially in the coastal reserve.
- The extent and abundance of winged thistle, *Carduus* spp., is progressively reduced.
- New infestations of environmental weeds are infrequent and treated rapidly.
- Treated areas are progressively re-vegetated with locally native plant species.

Monitoring

Monitoring of establishment of environmental weeds within the vegetation clearance zones will be undertaken every month (for 12 months) following completion of the initial phase of clearance and at regular intervals thereafter.

Any detected weeds will be treated within 7 days of detection according to the DPIPWE guidelines for the species.

Other monitoring (including treated sites and success of re-vegetation) will be in accordance with the guidelines described under the section on implementation.

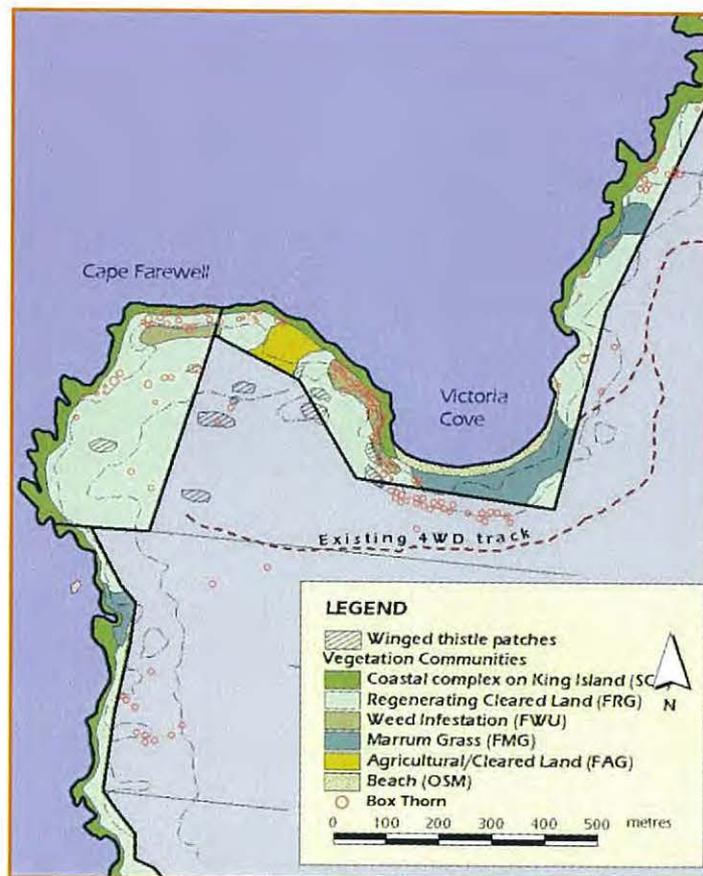


Figure 9. Distribution of weeds

4.15 Element: Fauna values (vertebrate pest species)

Objective

The context of this EMP is important to defining the current objectives in relation to management of pest species. In relation to the project, vertebrate pest species are defined to include any species that cause ongoing environmental harm over and above existing levels. As such, the species include cattle, which currently have access but the project may exacerbate the damage they cause to areas such as the coastal reserve by "re-directing" their grazing activities. Rabbits and wallabies are present but are not expected to create any additional environmental harm. Feral cats are known from the area but the extent of the problem (e.g. numbers, how many shearwaters they take, etc.) is not known. Provided that waste (e.g. scraps) are managed appropriately (see separate section of EMP), the feral cat population is not expected to increase as a result of the project. Dogs are not present but will need to be controlled as part of the project.

The long-term objective for the site is to:

- enhance the biodiversity values through the removal and/or control of vertebrate pest species.

Implementation

Stock (cattle)

- Stock will be entirely removed from the project area (this has already been undertaken).
- Stock will continue to be excluded from entering the project area, including the coastal reserve and shearwater colony areas (as a minimum) through maintenance of fences and stock surveys.

Feral cats

- A feral cat trapping program will be undertaken, in consultation with PWS and the King Island Council.
- The ongoing presence of feral cats will be monitored during the course of construction, operation and maintenance activities and sightings reported to management for consideration of action.
- The Club will inform PWS and King Island Council of the number of feral cat sightings at the time of annual reporting, and appropriate actions will be discussed between all relevant parties.

Wallabies

- Over-grazing by wallabies may pose a risk to re-vegetation programs and maintenance of golf course tees, fairways and greens.
- Wallabies will be principally controlled through provision of wallaby-proof fencing around the boundary of the site. Note, however, that it is unlikely that the erection of the fence will trap a level of individuals likely to cause environmental harm (e.g. over-grazing) or damage to the golf course such that an immediate management strategy will be needed.

- Where wallaby numbers increase to levels where management issues are identified, consultation with DPIPW and PWS will determine the most appropriate course of action.

Dogs

- No dogs will be permitted to enter the coastal reserve at any time.
- The facility will implement a no dogs policy for all areas or a no dogs off lead policy.
- No dogs will be permitted on playing areas at any time.
- No dogs (on- or off-lead) will be permitted in the shearwater sanctuaries at any time.

Performance criteria

- Stock are no longer present within the project area.
- The abundance of feral cats is rare.
- Vertebrate pest species are managed in accordance with expert advice and relevant permit requirements after consultation with the relevant agency.

Monitoring

Conduct a two-yearly survey of the whole site to document the levels of vertebrate wildlife, especially pest species, to inform ongoing management.

The form of the survey will be determined prior to the survey, in consultation with relevant experts to maximise the use of resources and utility of findings.

4.16 Element: Fauna values (shearwaters)

Objective

In the short-term (construction phase and immediate post-construction period), the management objectives are to:

- minimise disturbance to shearwater burrows by restricting earthworks and vegetation clearing to the areas indicated in the indicative golf course disturbance plan and to minimise impacts within the works area (Figure 8);
- minimise the long-term impact on the local population of shearwaters by creating new potential breeding areas (shearwater sanctuary areas); and
- balance facility requirements with the ecology of the shearwater through monitoring attempts to re-use parts of the golf course for burrows and implementing a translocation plan where necessary.

In the longer-term (post-construction phase and operational/maintenance phases), the management objective is to:

- minimise the long-term impact on the local population of shearwaters by maintaining the new potential breeding areas.

Implementation

Permit

Any disturbance to individual shearwaters or burrows of shearwaters will be undertaken by appropriately trained or DPIWPE-endorsed personnel under permit.

Any conditions of the permit to disturb individual shearwaters or burrows of shearwaters will be adhered at all stages of construction, operation and maintenance of the golf course.

Personnel

Only Shearwater Supervisors will be permitted to undertake survey, monitoring or handling of shearwaters.

Training

In recognition that it is likely to be cost-prohibitive to engage a "Shearwater Expert" full-time, the Club will select appropriate staff to be trained and assessed as competent as "Shearwater Supervisor(s)" by an expert to undertake the actions. The selection of the "Shearwater Expert" will be undertaken in consultation with DPIWPE. The Club will request from DPIWPE a list of suitably qualified individuals/companies and/or suggest its own experts (and demonstrate their expertise to the satisfaction of DPIWPE) to undertake the actions listed below and other actions required to obtain necessary permits and conditioned in permits issued.

Once trained to the satisfaction of the expert, the name(s) of the Shearwater Supervisor(s) will be provided to DPIWPE for adding to the permit.

The proposed level of pre-construction surveys undertaken by the Shearwater Supervisor is:

- transects designed to target the mapped high, medium and low density areas of the colony where the burrows intersect the main golf course areas (i.e. holes);
- the specific locations and lengths of the transects will be determined by the expert, but will include, as a guideline, the following locations: 50 m along hole 3 (high), 120 m along hole 1 (high), 50 m along hole 2 (high, medium, low), 100 m along hole 5 (high, medium, low), 50 m along hole 6 (medium, low), 100 m across holes 16 and 17 (medium/low), and 100 m along hole 4 (medium, low);
- transects will be assessed during the day using a recognised technique (e.g. hand-searching and/or camera-probe);
- all burrows along the 2 m transects will be searched in order to determine occupancy status;
- other evidence of burrow occupation by shearwaters will be assessed (e.g. scratchings, droppings, etc.);

- the surveys will be undertaken in the last week of April and continue on a 3-day frequency until burrow occupation is recorded as negative;
- the Shearwater Supervisor will keep field notes that record occupancy

Construction phase

Earthworks will not commence within 50m of any area supporting burrows until the Supervisor has reported a negative burrow occupancy status.

Earthworks and vegetation removal will be restricted to that required to establish the golf course and facilities as per the design plan (see section 4.12 Vegetation, refer also Figure 8).

No major construction works or bulk earth moving will be undertaken within 50m of the colonies during the breeding period or when birds are present. Minor works associated with construction will continue in disturbed areas as part of the ongoing task of planting and the preparation of golf holes. These minor works are essential to prevent unnecessary erosion. Minor works could include activities such as irrigation installation, fertiliser application (with no fertiliser spread into burrows), weed spraying (with no spray drift impacting on burrows) and low level equipment activity such as top dressing, grassing, fine shaping and mowing. If any major construction works that may affect burrows are required after August, these will be kept to a minimum and a permit extension or new permit will be applied for. Daily evening observations of shearwater activity will commence in September.

Shearwater Sanctuary areas

Figure 10 indicates the nominal areas designated as future potential colony areas for displaced breeding birds. These areas will total no less than 8.9Ha in area.

The construction of the Shearwater Sanctuary will commence in May and be completed by no later than September.

The Shearwater Sanctuary comprises three areas (Figure 10): northern (headland), southern (along southern boundary fence), and central (between holes 6, 10, 11 and 12).

The southern and central areas do not require any specific construction works. These will be left undisturbed (some re-vegetation will be undertaken in the longer term). The northern area will require active construction works to create a potentially suitable substrate for burrowing. The substrate in this area comprises relatively shallow surface rock (limestone) and thin sandy soil, generally currently unsuitable for burrow formation (low density burrows only at present).

The surface rock material will be "mined" and utilised elsewhere within the project area to surface roads. Soil/sand removed from elsewhere within the project area (private land titles only) will be shifted to the northern sanctuary area. No off-site soil/sand will be needed.

The objective is to create a minimum average potential burrowing depth of at least 60 cm across the northern sanctuary area.

Re-vegetation of the northern sanctuary area will be undertaken as soon as construction works have ceased. Where environmental weeds are detected, these will be eradicated (see section 4.14 for weed management guidelines). Indigenous plantings, of advanced stock where possible, will be used to re-vegetate the northern sanctuary area with low-growing tussocks (species of *Poa*), herbs (e.g. *Lepidium foliosum*) and shrubs (e.g. *Rhagodia candolleana*) to minimise the risk of soil erosion, to provide protection to the colony and to provide structure to the soil.

In addition to ongoing monitoring by the Shearwater Expert and/or Supervisors, it is understood that DPIPWE may wish to review or monitor the Shearwater Sanctuary's periodically. It is also understood that DPIPWE staff will be allowed on site at all times, provided they observe all appropriate OH&S considerations.

Management of returning birds

Shearwaters have a strong natural instinct to return to previous nesting/burrow sites, and the young born at those sites do the same. As such returning shearwaters may attempt to reconstruct burrows that have been displaced or construct burrows in the main golf course site i.e. on tees, fairways, greens or walking trails between holes. In an effort to discourage birds from digging into prepared golfing areas, covers (either bird proof chicken wire or plastic bird proof mesh) will be placed on the affected areas and used as physical deterrents to prevent birds from reconstructing their burrows. It is possible that some birds may manage to dig back into golf related areas, but the Shearwater Expert advises this will be minimal with the use of bird proof mesh.

The handling, housing and translocation of returning Shearwater birds to Cape Wickham and Cape Farewell will be undertaken by appropriately trained or DPIWPE-endorsed personnel, under conditions imposed upon a DPIPWE permit to disturb wildlife under the *Nature Conservation Act 2002*.

Other management issues

Lighthouse Properties notes that concerns have been raised about the possibility of shearwater attraction to lighting on buildings at the site. In recognition of these concerns, Lighthouse Properties will avoid the use of floodlights while birds are present in or around the colony. All lighting on external walls of the clubhouse and other buildings will be directed to point below horizontal. Only low level, downward pointing external lighting (approx. maximum height of 1 metre) will be used along paths and car parking areas. All outdoor lighting will be kept as muted as possible, within the constraints of reasonable WH&S requirements for staff and guests. DPIPWE staff will be advised of any WH&S meetings that are scheduled to discuss possible changes to above lighting, that may result in impacts on shearwaters, to provide comment. Any bird strikes into lit windows to be monitored and recorded. Mitigation measures will have to be put into place if monitoring indicates an issue. Mitigation measures could be lower level lighting and use of blinds to reduce light levels on the exterior of the buildings.

The illumination of the main buildings will be constrained by the operating hours of the facility (see section 4.3).

To minimise disturbance to shearwaters during the breeding season, the use of the golf course will be strictly controlled to ensure that all users are restricted to walkways, tees, fairways, roughs and greens, where such features are adjacent to burrows.

A policy of ball management will be implemented such that retrieval of balls from areas supporting burrows will be actively and firmly discouraged. At the end of the breeding season, a suitably trained staff member may enter the areas and retrieve lost balls.

No spraying of herbicides/pesticides in the vicinity of burrows will be permitted during the period when birds are present.

Performance criteria

- The construction works in the immediate vicinity of shearwater zones are completed during the period of shearwater absence.
- The Shearwater Sanctuary is established prior to the return of shearwaters in the September following the construction phase.
- A program of management of displaced birds is implemented.

Monitoring

A monitoring program (Course Marshall) will be implemented to ascertain damage to burrows by course users 'breaking the rules' and retrieving balls from sensitive areas. Where damage is reported, procedures will be modified to minimise further events of a similar nature.

Monitoring of the site to ascertain muttonbirding activities will also be undertaken. Currently Cape Wickham is an open rookery and DPIPW will need to formally close the rookery for muttonbirding to be deemed illegal.

Other monitoring will be in accordance with the guidelines described under the section on implementation.

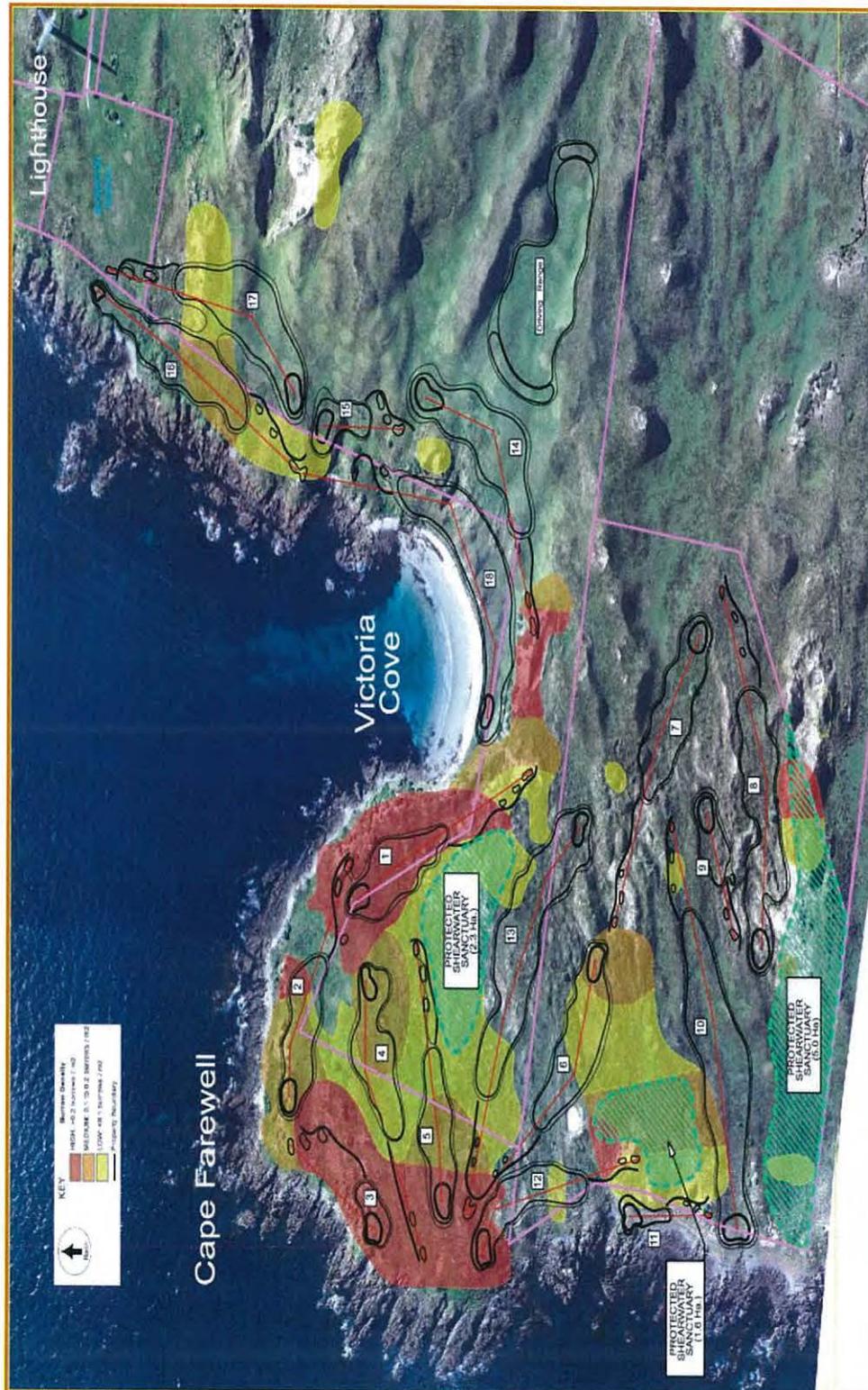


Figure 10. Location of proposed shearwater sanctuary areas

[legend: pink line = title boundaries; black lines = holes; red, brown, yellow shading = shearwater burrow density zones - high, medium and low, respectively; green hatched polygons = proposed shearwater sanctuary areas]

4.17 Element: Management of pesticides

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- utilise turf types and encourage wildlife habitat with native grasses and shrubs to ensure that minimal application of pesticides is required for the on-going health of both course proper and rough areas;
- to only use chemicals and fertilisers registered for use on turf at any time during construction and on-going maintenance (The Australian Turf Grass Institute publication "Disease Insect and Weed Control in Turf" lists these chemicals).

Implementation

Correct storage facilities for pesticides must be provided. The Australian Standard AS 2507-The storage and handling of pesticides, should be used as an initial reference.

Pesticide group rotation is to be practised to reduce the possibility of pest resistance or the development of pesticide enhanced biodegradation.

Ensure club has the appropriate equipment and properly trained staff to use pesticide applications according to product specifications and regulation requirements.

Where possible utilise an Integrated Pest Management (IPM) system to manage a particular pest problem. This involves having a detailed understanding of the life cycles of pests, and finding means to control them using a range of low hazard effective techniques.

Ensure pesticide application is made at recommended rates and intervals.

Ensure signage system and withholding periods are applied rigorously.

Establish a record keeping system that includes inventories, application records, accident reporting.

Establishment and maintenance of a high quality turfgrass playing surface.

Develop damage threshold levels that can be tolerated by golfers and where control will be possible, to determine when a pesticide application is required.

Restriction of pesticide applications to turfed areas is to minimise impact of native vegetation in non-playing areas.

Performance criteria

- Implement and manage ISO140001 Integrated Pesticide Management Policy.

Monitoring

Regular inspections of wildlife habitats may indicate if toxic effects on wildlife are occurring.

4.18 Element: Public access to coastal reserve

Objective

The objective at all stages of the construction works and subsequent operation of the golf course is to:

- ensure continued public access to the coastal reserve.

Implementation

At all times during construction the heritage walking trail, or a deviation of the trail (well sign-posted), will remain open and accessible to visitors.

Construction works will be signed to ensure safety of pedestrians and to explain to pedestrians the continued free access to the coastal reserve.

In the longer term, the following actions will be implemented:

- the walking path from Cape Wickham lighthouse to Victoria Cove will be re-built using locally sourced materials that provide a stable, safe and visually pleasing pedestrian surface (refer Figure 11 for route), Local PWS staff will be consulted regarding the location of the walking path, understanding that due consideration be given to the OH&S risks associated with errant golf balls ;



Figure 11. Location of Cape Wickham-Victoria Cove coastal reserve walking trail

[note: dotted orange line indicates likely coastal reserve walking trail; this trail line is indicative only and subject to change]

- where weeds occur within 5 m of the new walking track, these are to be treated within 3-6 months of the track completion (see weed management plan for further details);
- the old route of the walking trail will be revegetated with nursery-grown locally indigenous species;
- any areas of active erosion, or where weeds are removed from within 5 m of the walking trail edge, will be revegetated with nursery-grown locally indigenous species.

Performance criteria

- No member of the public is restricted access to the coastal reserve during construction, except at limited sites for limited periods (as small and short as possible) to address safety risks.
- No member of the public is restricted access to the coastal reserve after construction.
- During and after construction signage will advise pedestrians of safety risks and to exercise due care, including from errant golf balls following the opening of the golf course.
- Access to the coastal reserve is enhanced in the long-term.



Figure 12. Location of fencing that requires flash tags or bunting flags

[legend: yellow dotted line = fence where flash tags or bunting flags will be placed at regular intervals (approx 1m apart) to prevent bird strikes]

Appendix C

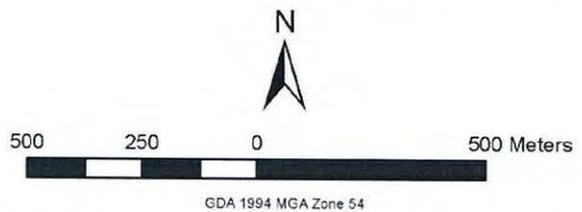
Observation Wells





Legend

- Investigation drilling sites
- Development site



**The Links at Kangaroo Island
Investigation drilling sites**

Data Source: Google Earth imagery

okolina
water resources planning & project development

Figure 6

Appendix D

Heritage Management Agreement Framework





August 14, 2015

Chris Branford
Branford Planning and Design
PO Box 337
Goodwood SA 5034

RE: Kangaroo Island Golf Course- Ramindjeri Community Consultation

Dear Chris,

Following on from the EBS Heritage preliminary Cultural Heritage Desktop Assessment completed in late 2014, we thank you for the opportunity to continue the community consultation component for this project. On Thursday the 6th of August, we met on Kangaroo Island and meet with Ramindjeri representatives Karno and Christine Walker to discuss the Kangaroo Island Golf Course Development. EBS Heritage has prepared this letter as a summary of the days' consultation and also to outline some of the points discussed throughout the day. Present at the meeting were: Justin Trott (Programmed Turnpoint), Alex McKenzie (Major Projects DPTI), Chris Branford (Branford Planning and Design), myself (Guadalupe Cincunegui, Cultural Heritage Manager at EBS Heritage) and Karno and Christine Walker of the Ramindjeri Heritage Association.

This meeting was the first as part of an ongoing community consultation and was held in Kingscote, where the scope of the project, desktop assessment and current state of work was discussed with Ramindjeri Representatives. This was followed by a site inspection before returning back to Kingscote. I believe the meeting went well, with positive reactions from all participants. This letter is to outline the results of this consultation and to provide ideas for future planning and actions. Ramindjeri representatives agreed that this is the beginning of a longer consultation process and they expressed a desire to work proactively with the proponent (Programmed Turnpoint) to implement a Heritage Management Agreement for construction, future outlook and use of the project area.

In addition to the site inspection, Karno Walker invited us to visit Pelican Bay Conservation Park and the home of Dr Peggy Rismiller and Mike McKelvey. Conservation and ecological aspects of the project were discussed at this location, with Karno requesting that any future works include Peggy and Mike's input as the

“white elders” of the Ramindjeri community; The Black and White man working together story is important to the Ramindjeri people.

The following outlines some of the points discussed throughout the day for an optimal heritage management agreement between Programmed Turnpoint and Ramindjeri, and provides a guide for some of the heritage concerns that could be managed within such an agreement:

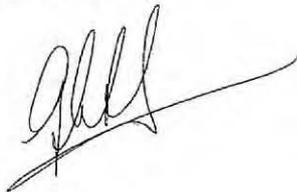
- Cultural heritage survey/detailed site inspection and further ongoing consultation with Ramindjeri;
- Refining “risk assessment” based on future geotechnical assessments and proposed management of earthworks in each area accordingly;
- Cultural Heritage Monitoring Agreement;
- Site discovery procedures, including associated salvage that may be required and storage (keeping place) for any items identified during earthworks;
- Future planning, restoration works (signage, tourism, conservation) and
- Payment rates (monitoring, consultation etc.) any additional training requirements.

Ramindjeri representatives present on the day were very clear in expressing their desire for DSD-AAR and other Aboriginal groups, who claim influence over the Kangaroo Island area, to not be involved in the community consultation.

EBS Heritage recommends that the above brief framework form the basis of a Heritage Management Agreement, going forward. EBS Heritage looks forward to providing further assistance at the appropriate time, once the project gains approval through the State Governments Major Projects process.

Please do not hesitate to contact me if you would like to discuss this further.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Guadalupe", with a long horizontal flourish extending to the right.

Guadalupe Cincunegui
Cultural Heritage Manager