PUBLIC ENVIRONMENTAL REPORT
FOR
KANGAROO ISLAND GOLF RESORT
LOCATED AT
PENNINGTON BAY, KI.

Application
Further to *Sec. 46 (6a)* of the *Development Act 1993*

For:

- A Golf Course and associated practice facilities, clubhouse and dining facilities;
- Tourism accommodation and staff accommodation facilities;
- A maintenance compound and associated facilities including water storage;
- Residential development;
- Stormwater and sewerage infrastructure for the capture, treatment and re-use of recycled water; and
- Associated infrastructure in respect of water supply, electricity, telecommunications, stormwater, effluent disposal, roads and parking.

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Executive Summary

This Public Environmental Report (PER) is submitted under the Major Development provisions of the *SA Development Act 1993* (The Act) - *Sec. 46 (6a)* for the development of a premium golf/tourist facility. The designation of the proposed project assessment under the Major Development provisions is determined by the development proposals ability to meet two tests. Firstly the proposal must be considered of major economic, social and environmental importance. Secondly, the declaration must be considered appropriate or necessary for the proper assessment of the proposal.

In the first instance a review of the proposal and its implications has demonstrated that the criteria were met. In regards to the second test given the nature and complexity of the proposal it was deemed that the project would benefit from a whole - of government assessment. It was considered that unlike the expertise available to the various government agencies involved in the major development assessment process, the Kangaroo Island Council may not have the available expertise to manage such a wide ranging and complex environmental assessment.

In terms of its eventual status as a tourist destination, this project would sit beside similar interstate golf attractions such as Tasmania's Barnbougle Dunes and Cape Wickham links, and Queensland's Dent Island (Hamilton Island Golf Course) while similar New Zealand examples include Cape Kidnappers, Kauri Cliffs and Jack's Point.

This report responds to the requirements of the "Guidelines for the preparation of a Public Environmental Report (PER) for the Kangaroo Island Golf Course Resort Proposal" issued in July 2014. In response to these guidelines a range of consultants in various fields were engaged to review the diverse issues raised in response to the initial development proposal.

The PER identifies a range of key issues that have required address and are discussed in detail in this document which forms the PER. These key issues are summarised below.

Need for the Proposal

In the pertinent studies and ensuing planning strategies for South Australian tourism it is recognized that a range of sustainable tourism facilities, accommodation and products must be developed to suit a range of visitor budgets and experiences. One of South Australia's key unique attractions for international and interstate visitors is Kangaroo Island. It is expected that the Island, as a region, will continue to develop as a pre-eminently sustainable, nature-based tourism destination. However, there is also a need to provide opportunities in other tourism markets around the themes of outdoor adventure and leisure activities, the coast, niche food and wine products, heritage and culture. These markets should add depth to the Island's appeal as a visitor destination and encourage longer stays.

In this context the Island is recognized as affording a most suitable location for the creation of a unique golf destination aimed at attracting international, interstate and intrastate golfers. This is in line with an identified growing trend in golf tourism that sees a burgeoning market in golf at quite specific and isolated locations. Indeed, while golf clubs throughout Australasia are merely holding or decreasing their numbers the popularity of the game is presently growing. This growth is being absorbed by courses open to the public. There is also a growing trend in golf holidays where groups of players, partners and families travel to and stay at high quality golf resorts for a various periods of time (but generally two to 4 nights). This trend, especially in the southern hemisphere, is manifested by the growing popularity of such places as Sun City in South Africa, Cape Kidnappers and Jacks Point in New Zealand, and Barnbougle (Tasmania) and Dent Island (Queensland). These developments provide both challenging golf experiences set in unique, high-value scenic locations while taking advantage of the immediately surrounding tourist attractions, e.g., African native wildlife at Sun City, the Whitsundays at Dent Island, Queenstown and the Remarkables at Jacks Point, wineries and the northern Tasmanian beaches at Barnbougle. Kangaroo Island, with its international reputation and the proposed setting, presents a site that, with a combination of sensitive building design, a course layout responding to both the demands of championship golf and the physical attributes of the site amid surrounds that present spectacular scenery in a wildlife and indigenous-rich vegetation, will result in a facility that will fill an identifiable niche in the golf tourist market in this part of Australia.

There is currently a lack of high-end accommodation on the Island (apart from Southern Ocean Lodge recently voted as Australia's best hotel resort-2013) and the proposal will go to meet some of this latent demand thus making it more attractive for interstate and international visitors to prolong their stay.

The proposal will generate significant local employment opportunities. During construction phases it is expected that the site will engage up to 60 persons including course construction and erection of the buildings, maintenance facilities, dam excavation and landscaping. At full operation it is estimated that the overall complex will employ up to the full-time equivalent of 30 persons including hospitality, golf operations, housekeeping and hotel management, course maintenance and landscaping. On current estimates the overall course construction and building development is budgeted at $14,000,000.00 of which there is an identified direct local contribution of some $6,000,000.00 in labour accommodation, local materials, plant hire, travel, etc.

It is envisaged that the fully operational resort will accommodate approximately 22,000 visitor nights per annum with 20,000 round of golf played per annum. With an estimated daily spend (in current-day values) of $320.00-$340.00 this equates to annual revenue of approximately $7.1 m. This excludes direct golf spend and expenditure incurred in visiting other attractions on the Island which is certainly expected.

Planning and Environmental Legislation and Policies

The Guidelines sought responses to a wide range of adopted legislation and planning machinery dealing with ; development control, strategic planning, tourism strategy, the *Kangaroo Island Natural Resources Development Plan*, the South Australian Tourism Commission's 'Design Guidelines for Sustainable Tourism Development', statutory environment protection, the State's protocols, agreements and strategies in regard to climate change, statutory heritage and biological environment protection, and identification of legislative requirements for completion of the project.

Statutory Planning: The site is within two zones of the *Kangaroo Island Development Plan* comprising the *Primary Production Zone* and the *Coastal Conservation Zone*. In general terms the proposal is consistent with and meets the objectives and principles of development control that apply in these zones.
The 'Desired Character' of the *Coastal Conservation Zone* recognises the coastal landscape of the Island as being its most important landscape element.
The world-class championship golf course will build its reputation on the precise environmental assets the site offers. It is therefore vital that the proposal must ensure that the environmental assets, such as the high landscape and amenity value (including stands of vegetation, ocean and lagoon views), are protected and retained. These are the elements that will render the overall facility its fundamental worth. Furthermore, the proposal will take sound and proper land management initiatives to ensure the areas where the golf course meets the coast are protected through extensive planting and dune stabilization measures.

The bulk of the site is located in the *Primary Production Zone* and the proposal is considered consistent with the principle objective of supporting development that contributes to the desired character of the zone. The proposal is also consistent with the provision relating to tourist accommodation which affords opportunity for environmentally sensitive tourist development.

Strategic planning: The proposal is generally consistent with the Planning Strategy for Regional South Australia which highlights the South Australian Government's support of development in regional areas. The Strategy encourages development based upon land use that balances development and conservation through sound and responsive planning.

The Island's strategic planning is informed and guided by the *Kangaroo Island Futures Authority* (KIFA) which, in turn, is directed by three recently State-adopted documents; The Kangaroo Island Plan Addendum, Kangaroo Island Structure Plan and Sustainable Futures Development Plan Amendment (DPA) which provides the strategic directions for the Island's future economic and social sustainability. The proposed development is entirely consistent with these adopted strategies in that it utilises degraded pasture land in providing a much needed boost to the range of tourist accommodation aimed at the upper end of the tourist accommodation demand in a spectacular part of the Island (The Dudley Peninsula). It is also seen as maintaining a desired balance between supporting the Island's growth, competitiveness and productivity while protecting the Island's natural resources and incorporating high-quality design to ensure protection of the coastal landscapes.

The proposal is consistent with the *National Landscapes Experience Development Strategy for Kangaroo Island (2014)* which is a strategic tourism plan that aims to attract 'experience seekers' in greater numbers on the basis of increasing their stay and expenditure. The plan targets the reinforcement of the Island as a preferred tourism destination. The championship golf course set on spectacular surrounds affords opportunity for a memorable golf experience resulting in expectations of strong return business as well as advertising by word-of-mouth.

The *Kangaroo Island Natural Resources Management Plan (2009)* sets out the strategic directions for the next 10 years for natural resources management on Kangaroo Island. The NRM plan recognises that "*The Island's natural assets underpin the social wellbeing and economic prosperity of all of its inhabitants and their effective, long-term collaborative management is essential to ensuring a viable future for coming generations.*" In this regard the proposal is a well-designed, considered contributor to long term resource planning.

The South Australian Tourism Commission's *"Design Guidelines for Sustainable Tourism Development" (2007)* outlines a range of principles for sustainable tourism. The proposal is wholly consistent with these principles particularly in relation to the unique golf experience, upgrading the use of previously degraded land, diversification in the local economy and affording greater tourist accommodation range.

The proposal is assessed against the main provisions of the *Environment Protection Act 1993* and the proposal's operational and management systems are specifically designed to ensure compliance with the requirements of the Act.

The document *'Tackling Climate Change, SA's Greenhouse Strategy 2007-2020'* is South Australia's planned response to climate change.. It provides a framework for all of South Australia's greenhouse targets and commitments to be met in a comprehensive and coordinated way.
In aspects of its proposed construction and design the proposal, while basically relying on the provision of reticulated power from the existing SAPN power lines, adopts both the spirit and the implementation prompts of the State's planned response to climate change.

Environmental Issues

The site of the proposal is predominantly land that was previously used for low density cattle grazing. As abandoned improved pasture land it deteriorated with the growth of invasive weeds and shrubs while its indigenous vegetation made somewhat of a recovery. With its abandonment for grazing it was subsequently taken up as browsing land for a large mob of kangaroos along with a number of wallabies. In particular parts of the site kangaroo and wallaby grazing has resulted in sand dune creep from the coastline zone with accompanying destabilisation of the landforms. Both the livestock grazing and the later wildlife foraging do not appear to have being notably deleterious to the main tree stands.

Two separate surveys of flora and fauna were undertaken in 2014. The surveys provide a list of all species identified on site and the conservation status of these species. The survey reports also include information on any additional threatened fauna species considered as having the potential to occur within the project area, based on nearby records and habitat suitability.

Approximately 140 ha (64%) of the project area contains native vegetation. Eleven vegetation associations were recorded, with the dominant broad associations being tall shrubland, mallee woodland and low shrubland. The condition of the vegetation ranged from excellent to very poor, with the average condition being moderate. Vegetation associations dominated by *Eucalyptus rugosa* (Coastal White Mallee) are considered regionally rare.

One threatened vegetation species was recorded within the project area during the field survey: *Eucalyptus phenax* subsp. *compressa* (Kangaroo Island Mallee) which is rated rare in SA. The species was of scattered occurrence within identified Mallee vegetation.

A total of 14.14 ha containing native vegetation is within the proposed development footprint. Should all native vegetation within the proposed development footprint require clearance there will be an identified Significant Environmental Benefit (SEB) offset requirement which the site is capable of providing.

Three threatened fauna species were recorded in the project area including the Heath Goanna (*Varanus rosenbergi*), Common Brushtail Possum (*Trichosurus vulpecular*) and the Scarlet Robin (*Petroica boodang*). Other threatened fauna species are known along the coast, in close proximity to the project area include Hooded Plover (*Thinornis rubricollis*) which is now EPBC listed, Sooty Oystercatcher (*Haematopus fuliginosus*), and Osprey (*Pandion haliaetus*) which is regarded as endangered in SA. The latter bird is listed as having a nest approximately 2.0 km distant from the westernmost boundary of the subject site.

The following additional threatened fauna species are considered as having the potential to occur within the project area, based on nearby records and habitat suitability: Southern Brown Bandicoot (SA mainland and KI ssp.) (*Isoodon obesulus obesulus*) – which is nationally endangered; Southern Emu Wren (Kangaroo Island ssp.) (*Stipiturus malachurus halmaturinus*) and Shy Heath Wren (*Calamanthus (Hylacola) cautus*) – considered rare in SA; White-bellied Sea-Eagle (*Haliaeetus leucogaster*) – which according to the Commonwealth's EPBC Act is migratory and endangered in SA, as a possible flyover and Cattle Egret (*Ardea ibis*) – rare in SA, as a possible flyover. No nest sites have been located within close proximity of the site and there is minimal impact on these species.

In general, if vegetation clearance is minimised, the direct impact to the above species is considered to be negligible. Of concern is the potential indirect impact on coastal birds, in particular Osprey, White-bellied Sea-Eagle and shorebirds, associated with the increased human activity.

A major consideration for the project is the management of high kangaroo numbers and grazing pressure, which is likely to increase with the increased availability of feed and water under an irrigated golf course scenario.

A number of recommendations are made to ensure the increased human activity and proposed vegetation clearance minimises impact on both the flora and fauna noted on and near the site. These measures are to be incorporated into the Environmental Management Plan (EMP).

Economic & Social Issues

The long term economic viability of the project has been examined and on the basis of the projected figures for accommodation rates and golf rounds per annum. It is envisaged that the prime investment in the project will return a nett 7.5% per annum (at current day rates). This does not allow for revaluation and inflation 'creep' in base asset values. An identified key driver of both this current proposal and other major developments on the Island is visitor access to the Island and the cost of such travel.

Construction of both the course and the buildings will be carried out on a phased basis. Course construction will include certain specialists for fairway shaping and green making while bulk earthworks can be carried out by local labour and machinery hire. A turf nursery is to be established and this offers the chance for apprenticeship prospects for locally based candidates. The main clubhouse and lodges will include significant quantities of locally sources materials, e.g., the endemic white limestone.

The operational development will generally engage locally based staff. Exceptions to this may be the importation of the head hotel/clubhouse manager, the course superintendent and the golf manager. The talents and capabilities of these individuals will, in all likelihood, not be available on the Island. It is expected that a number of resort staff will reside at the site which is readily accessible to the township of Penneshaw, the settlement at American River and some 35 km from Kingscote. The revenue (visitor 'spend') will have an obvious 'multiplier effect' calculated at between 2.4 and 2.5.

The proposal will provide much needed high-end accommodation options on the eastern end of the Island, (i.e., the Dudley Peninsula). Set in an environment that takes in the spectacular coastal scenery which is typically Kangaroo Island the proposal will result in the creation of a highly viable tourism opportunity whilst offering a top calibre accommodation base from which to explore the attractions throughout the Island. In this regard it will significantly enhance the tourism opportunities of the Island.

The residential /clubhouse component of the resort will afford a significant marketing and selling opportunity for local produce, (including wine, lamb, honey, etc.) thus capitalising on the 'clean and green' image of the Island.

Cathers Road is presently a tourist destination due to the fact that it affords a vantage point for tourist buses to park and view the extensive mob of kangaroos and wallabies that currently browse the project area and environs. It is not envisaged that the proposal will have any conflict with adjoining primary production activities.

The proposed land division on the eastern most part of the site allows for the development of up to 40 individual units on a 'condominium' style layout. These lots are well removed from both the hotel/clubhouse and lodges and no interface issues are likely to arise.

Heritage

The heritage significance has been addressed. A specialist consultant was engaged to undertake a cultural heritage and risk assessment for the current project location. The cultural heritage assessment included a review of all relevant legislation as well as background research and searches of South Australian and Commonwealth heritage registers. The risk assessment involved an on-ground assessment by an archaeologist to assess the likelihood of works and proposed excavation activities encountering heritage items in the project area. It is noted that there is no listed European heritage identified in the current project location. Parts of the project area are identified as being of high to moderate risk of having Aboriginal archaeological sites because of empirical evidence on other parts of the Island. A number of recommendations are made some of which will be adopted in the golf course and building development, including consultation with the relevant Aboriginal parties.

Design Matters

An architectural firm with experience in Hotel/Clubhouse design was appointed to review the site in detail and formulate a design brief which was commensurate with the site's aspect and location. Appropriate site design is seen as critical in achieving the optimal design resolution on account of the various characteristics both on and off the site. Opportunities and constraints included;

- the need to design with the topography, (i.e. minimising cut and fill);
- ensuring the clubhouse location and layout offered the maximum 'visual impact in the arrival experience;
- minimisation of significant vegetation removal;
- major energy saving considerations consistent with the State's *'Principles of Good Design' 2004*;
- direct connection with the golf course;
- siting of the buildings below distant sight lines (Mt. Thisby to the west);
- consistency with the SA Tourist Commission's *"Design Guidelines for Sustainable Tourism development" (2007)* and facilitating logical vehicle access and car parking.

In response to these elementary considerations the design includes a number of features ensuring the spectacular views are retained while minimising visibility from off-site locations;

- existing topography is utilised allowing the main building to follow the shape of the land;
- dressed local limestone will integrate the main buildings into the existing landscape;
- the access roads to the main complex purposefully do not afford long views of the course, coast and sea with arrival at the clubhouse allowing the first uninhibited spectacular views of the golf course, coastal cliffs and seascapes to the west and south-west and Pelican Lagoon to the north-west.

Infrastructure

On account of the fundamental nature of the proposal as a golf course and associated resort accommodation water and power present the main challenges to the projects' feasibility. Specifically, a championship golf course requires the provision of regular and effective irrigation while the pumping of this irrigation and operation of the accommodation proposed requires power levels that are challenging both logistically and financially. In this regard a range of alternative sources was canvassed in depth. Subsequently a viable and cost effective proposal has been secured with both S.A. Water and S.A. Power to supply the two key resources to the project. Water will be harvested from the Middle River Dam during peak flows when surplus water would otherwise flow straight out to sea. Water will be taken per developer-paid infrastructure near Playford Hwy and Milk Track corner and transferred direct to site, some 35km to the east. Meanwhile, power will be sourced from the existing system with the addition of a developer-funded substation located on Hog Bay Rd some 4km from the subject site. Copies of these respective reports are included in Appendix G and H respectively. Power for hot water heating and lighting will be provided by on-site solar cells located in the maintenance/staff accommodation area in the north eastern part of the site. A diesel generator will provide backup power in the event of adverse weather conditions and/or temporary failure of the reticulated power supply.

Wastewater (including sewage) will be disposed of on-site through the use of '*Econocycle*' technology with treated waste water being used for planting irrigation.

A traffic consultant was engaged to review the traffic impacts of the development. The conclusions of the consultant's report was that the road system can safely accommodate the proposed traffic with appropriate modifications and that the proposal is not expected to adversely impact on the surrounding road network. A copy of the final traffic management report is included in Appendix K.

This document provides a detailed account of all environmental, social, economic and infrastructure issues related to the proposed development. Upon the adoption of many of the recommendations of the reportage the proponent is confident that minimal impact will be caused by the proposal while the tourist opportunities and community benefits will be significant.

Part A- Background

1.0 Introduction

Background to, and objectives of, the proposed development.

The golf industry is recognised as presently undergoing significant change in both the way it played and where it is played. In particular, a combination of the digital revolution, radical changes in recreation values, social and familial shifts in activities and economic challenges have resulted in dramatic changes to the golf industry and the game itself. Specifically, club memberships are declining, the average age of club memberships is increasing and as a result revenue streams of clubs are under increasing pressure. As against these adverse phenomena the popularity of weekend golf at various publically accessible golf courses is increasing. This is attributed to the social opportunity for golfing groups to travel, stay, and play and spend at purpose built golf destinations. These destinations invariably include accommodation to varying degrees of comfort and standard. In Eastern Australia examples of such golf resorts include; the very popular Barnbougle Dunes in Tasmania, 13th Beach/Barwon Heads, Torquay Sands, Yarrawonga, Cobram Barooga, Port Fairy in Victoria while NSW and Queensland include such destinations as Gold Coast hinterland, Noosa hinterland, Magenta Shores, Kooindah Waters, Bonville to name but a few. It is this tourist market that this initiative seeks to attract at Kangaroo Island.

It is also recognised that links style golf located in spectacular environs serviced by high class accommodation with multiple ancillary attractions is the formula that can make golf resorts enhance their attraction and reputation to include significant international patronage. Kangaroo Island already stands in the top five most recognised tourist destinations in Australia for International visitors. The physical attractions of the Island are well known and both Commonwealth and State tourist planning strategies all aim to promote and increase visitor and tourist numbers in the medium to long term.

In this context an opportunity is identified by Programmed Pty Ltd, to develop a classic links style championship golf course with high end accommodation and clubhouse set in a landscape that is the hallmark of Kangaroo Island. To this end Greg Norman Golf Design, the internationally renowned Australian golf legend, was appointed to layout the course at Pennington Bay site. At the same time a team of architects and landscape architects was engaged to provide a design and siting of buildings that would be sympathetic to and blend in with the predominant landscape.

Site selection was informed and determined by land suitable for links golf, the availability of the land, vehicular access, proximity to other key points on the Island, and its 'borrowed' landscape. A fly-over of the bulk of the coastal sites confirmed the appropriateness of the land at Pennington Bay.

The objectives of the proposal include;

1. The inclusion of the golf course in the world's top 100 golf destinations within 3 years of its opening.
2. Generation of 20,000 golf rounds per year within 3 years of opening.
3. To provide a golf resort that is commensurate with Programmed Pty Ltd's adopted motto – 'Zero Harm.
4. Provide high class accommodation in the eastern sector of the Island that invites prolonged visitor stays and is used as a base to explore and enjoy the main attractions of the Island.

Details of the proponent.

Programmed Group is a provider of staffing, maintenance and project services, directly employing more than 11,000 skilled and semi-skilled staff delivering a variety of specialist services (including painting, facility maintenance, grounds maintenance, marine maintenance, golf and race course maintenance to name but a few) to over 7,500 customers through an extensive network of over 110 locations in Australia, New Zealand, and Singapore with gross revenue of $1.5B in FY13. With the acquisition of Turnpoint in 2012, a medium sized company focused on golf course development and maintenance, Programmed expanded their interests into the golf and tourism industry.

Staging and timing of the proposal, including expected dates for construction and operation.

It is expected that the planning phase of the project will be completed in either the third or fourth quarter of 2015. Design and documentation is expected to commence shortly thereafter and ongoing up to mid-2016 with construction commencing towards the end of 2015 starting with the golf course and maintenance depot. It is hoped to commence the clubhouse and first stage accommodation around mid-2016 and it is expected to have the course ready for play towards the end of 2016.

Relevant legislative requirements and approval processes.

The overall approval process is via the declaration of the proposal as a major project and the accompanying approval mechanisms. There is a Native Vegetation Removal assessment which will be applied for under the Native Vegetation Act 1991, while various other components of the proposal will have direct reference to; *National Parks and Wildlife Act 1972, Natural Resources Management Act 2004, Aboriginal Heritage Act 1988 (SA), Native Title Act 1993), Commonwealth Environmental Protection and Biodiversity Conservation Act 1999, Environmental Protection Act 1993 (SA).*

Purpose and description of the PER process.

Under the provisions of the South Australian Development Act 1993 the Minister declared on 19th February 2014 that the proposal to be declared a Major Development. Upon formal lodgement of the Development Application in April 2014, the Development Assessment Commission (DAC) determined that the assessment of the proposal be subject to a Public Environmental Report (PER) process and issued guidelines accordingly in July 2014 .

The purpose of the PER is to determine the outcomes of the investigations on the issues identified in the DAC's guidelines. A copy of the guidelines is contained in appendix A.

The PER has been prepared by Programmed Pty Ltd in accordance with these guidelines and describes what the proponent proposes to do, what the social, economic and environmental effects will be and how the proponent (Programmed) plans to manage the project.

Under section 46 of the Development Act 1993, the Minister continues with the assessment process. The object of section 46 is to ensure that matters effecting the environment, the community or the economy to a significant extent are fully examined and are taken into account in the assessment of the proposal. Following the lodgement of the PER by the proponent (Programmed), the report is released for comment and a public meeting held to review the project. Upon receipt of submissions and matters raised by public and relevant bodies, the proponent (Programmed) will prepare a response document detailing measures which will be taken to deal with the various issues raised. The Minister will then prepare an Assessment Report which will be made available to council/s and the public. An application will then be made to the Governor for their decision making under section 48 of the Act.

2.0 Background to the Project

The specific objectives that the proposal is intended to meet, including market demand and environmental standards.

The proposal is intended to meet the following objectives;

1. The inclusion of the golf course in the world's top 100 golf destinations within 3 years of its opening.
2. Generation of 20,000 golf rounds per year within 3 years of opening.
3. Providing 22,000 visitor nights after three years of operation whilst making a significant contribution to the medium and long term planned tourist numbers to the Island.
4. Provide high class accommodation in the eastern sector of the Island that invites prolonged visit or stays and is used as a base to explore and enjoy the main attractions of the Island.
5. To provide a golf resort that is commensurate with Programmed Pty Ltd's adopted motto – 'Zero Harm' and is entirely eco-friendly.
6. Compliance with environmental standards as set out under the *Environmental Protection Act 1993.*
7. Minimal removal of native vegetation with the provision of extensive replanting and plant rehabilitation areas.
8. Effective management techniques of threatened EBPC species ensuring minimum risk during construction and operation.
9. Management of existing wildlife to ensure the site is capable of containing a sustainable ecological system whilst allowing a degree of interaction with visitors, in particular the current kangaroo mob.

Expected local, regional and state benefits and costs.

The building of the project will create a range of employment opportunities the bulk of which it is anticipated will be met from Island resources and labour. It is envisaged that up to 60 equivalent full time jobs will be engaged at the height of the projects construction while a base level of 25 will be working on the project at any one time.

Construction of both the course and the buildings will be carried out on a staged basis. Course construction will include certain specialists for fairway shaping and green making. It is expected that these specialists will be sourced from off-Island. Bulk earthworks can be carried out by local labour and machinery hire. A turf nursery is to be established and this offers the chance for apprenticeship prospects for locally based candidates. The main clubhouse and lodges will include significant quantities of locally sourced materials, (e.g. the endemic white limestone). Infrastructure construction will be provided by predominantly Island contractors while it is envisaged that the main clubhouse and lodges will be constructed by a locally based building contractors who in turn will engage local labour and sub-contractors.

The operating resort will, with exceptions, generally engage locally based staff. Specifically it may be necessary to employ specialist golf operation management including club manager, golf operations, golf professional and possibly hotel management specialists. Apart from these it is anticipated that the balance of the staff will be derived from the Island.

The proposal will provide much needed high-end accommodation options on the eastern end of the Island, (i.e. the Dudley Peninsula). Set in an environment that takes in the spectacular coastal scenery which is typically Kangaroo Island the proposal will result in the creation of a highly viable tourism opportunity whilst offering a top calibre accommodation base from which to explore the attractions throughout the Island. In this regard it will significantly enhance the tourism opportunities of the Island.

The proposal will see the construction of 200mm diameter pipeline from the tapping point at Playford Hwy and Milk Track corner. This will be of an (unquantifiable) benefit to land holders along the pipeline route on Hog Bay Road.

The regional benefits will include a significant increase in visitor numbers on the basis that new high end accommodation is to be provided at the site. It is envisaged that visitors to the site will invariably use the resort as a base for touring and exploring the many attractions the Island has to offer. This will also see a significant rise in the number of extended stays. This is particularly pertinent to those international and interstate visitors who, using Adelaide as their South Australian base, take exhausting day trips to and from the Island. The additional high-end accommodation offers the opportunity for these day trippers to stay overnight and longer.

State benefits include South Australia being embraced as one of Australasia's Premier tourist destinations while both the Island's and the State's produce will be actively promoted. More importantly this project will put South Australia and Kangaroo Island on the golfing map as an international golfing tourist destination much in the way that Barnbougle Dunes has done for Tasmania, Jacks Point has done for South Island New Zealand and Bandon Dunes has done for the state of Oregon, USA to name but a few examples of the impact that golf development has on a region.

A summary of environmental, economic and social arguments to support the proposal, including the consequences of not proceeding with the proposal.

The environmental benefits are;

1. An effective and productive use of a significantly degraded area of privately owned grazing land;
2. The rehabilitation and replanting of extensive areas of indigenous flora;
3. The management and control of a large kangaroo mob that is currently deleterious to the remnant indigenous vegetation.
4. The stabilisation of dune blow-out areas including those on the abutting crown land coastal reserve.
5. The removal of invasive proclaimed weeds.
6. The facilitation of visitors to enjoy the isolated nature of the development set amongst the Mallee vegetation with a dramatic coastal outlook.
7. Solar power augmentation of the existing power infrastructure.

8. Waste water recycling including grey water.

The economic benefits are;

1. Injection of $9.5M p.a. into the local economy.
2. Under a moderate growth scenario of the economic impact of tourism and agricultural growth (KIFA 2013) an increase of $9.5M represents 40% of projected growth regional product of the Island with an overall direct impact of 4.5% on Kangaroo Island's gross regional product.
3. The multiplier effect of 2.0 to 2.5 that will permeate the overall Island economy.
4. The overall development cost of some $14 million will contribute at least $6 million directly into Kangaroo Island economy through jobs, materials, transport, planning and consultancy.
5. The residential /clubhouse component of the resort will afford a significant marketing and selling opportunity for local produce (including wine, lamb, honey, etc.) thus capitalising on the 'clean and green' image of the Island.

The Social benefits are;

1. Employment for up to 60 people throughout the construction phase.
2. The proposal will see a new hub or focal point in an unpopulated area of the Island thus creating a tourist node.
3. This will increase the Island's skills base in relation to employment opportunities.

The consequences of not proceeding include;

1. A direct clash with the South Australian and Kangaroo Island tourist strategic planning initiatives.
2. A direct clash with the 'Kangaroo Island Structure Plan –*Unlocking Opportunities'.*
3. The land will continue to degrade with loss of indigenous vegetation and habitat from an over population by Kangaroos.
4. Loss of capital injection and employment opportunities to the Island.
5. Loss of infrastructure opportunities.

Part B- The Project

3.0 Description of the Proposal

3.1 The nature of the proposal and location

The development is intent on creating an environmentally sustainable, world class golf course that is centred on the stunning coastal vistas combined with the direct visual reference to the unique eastern landscapes of Kangaroo Island and its signature Tammar Wallabies and Western Grey Kangaroos.

The proposal is located on the south coast of the eastern part of Kangaroo Island and whilst being predominantly sited on degraded grazing land it also uses its abutting coastal zone for four of its proposed golf holes. In this regard the course will allow a golfing experience that takes the player to the 'edge' of spectacular coastal scenery whilst maintaining the key environmental assets of the location.

The development includes a major building (Clubhouse) that incorporates high-end quarters in a clubhouse environment. It also offers a range of other accommodation in close proximity to the clubhouse that includes small to medium condominium-style units with limited group tourist lodging. All building on site, apart from the residential lots where strict building footprint conditions are proposed, are architect-designed with a strong emphasis on constructing the development at one with the nature and topography of the site. The buildings will be set among the natural contours of the landscape while the site design also allows the buildings to take full advantage of the vistas available in the immediate and off-site environs.

The proposal for golf includes a significant demand for water which is to be supplied from Middle River Dam and piped to the site from a connection with the existing water supply pipeline. This water will be supplied on a seasonal basis when overflow conditions are present. Upon pumping to the site the water will be stored in a dam prior to its various applications.

The power requirements for the project will be met by upgrading the existing power supply infrastructure from Hog Bay Road by the provision of a new substation.

Road infrastructure where required will be upgraded to allow safe passage of vehicular traffic with minimum vegetation clearance.

It is important to note that on the advice of both environmental consultants, the proposed walking track along the coastline and atop the cliffs from the Eastern boundary to the Western boundary has been removed from the proposal due to the potential erosion and habitat destruction that could arise from its existence.

In summary the proposed development will consist of the following elements;

- Championship standard 18 hole golf course and associated practice facilities.
- Clubhouse including dining/pro-shop, bar/lounge & limited conference facilities.
- 70 Guest Accommodation Suites/Lodges (180 equivalent single beds)
- Staff accommodation (up to a maximum of 10 units);
- Upgrading of access road;
- Golf maintenance building;
- Renewable energy solutions;
- Landscaping and revegetation as off-sets for vegetation clearance.
- Consolidation of all existing titles and re-subdivision to allow the creation of 5 rural residential allotments from 6.5 Ha to 11.7 Ha, as well as the chief allotment of some 180 Ha for the explicit purposes of the golf resort and complex.
- 5 rural residential allotments to be zoned "community title" allowing flexibility for unit/villa development of up to 40 dwellings.
- A formed new access road from Cathers Road to the clubhouse and associated buildings.

3.2 Land Tenure and ownership details

The land for the proposal is comprised of;

1. The proposed golf resort will occupy a site comprising 6 existing Torrens Title allotments being Allotments 15 & 16 in D70358 and Allotments 6, 7 & 8 in D70357.
2. The proposed golf course will also utilize part of Pieces 500 & 501 in DP 71448 and Allotment 2 in DP 76540 which is subject to a Crown Land perpetual lease.
3. It is proposed to construct a portion (tees/small areas of fairways) of four of the golf holes on land that is part of the Crown Land in the Coastal Reserve. A leasehold arrangement of these areas is proposed to accommodate the incursion of the golf course into the Crown Land.

3.3 A project plan to outline objectives, constraints, key activity schedule and quality assurance

Objectives;

1. Creation of a popular and well patronised golf resort recognised around the world.
2. Creation of a sustainable development within the environmental, economic and social context of Kangaroo Island.

Constraints;

1. Approvals – in terms of timing, level and degree of scrutiny and cost of process.
2. Water – in terms of cost, quality, quantity and reliability of supply.
3. Power availability – in terms of cost, accessibility, reliability, and availability.
4. Kangaroo Management and control – in terms of population control and ongoing management.
5. Labour availability – in terms of skilled labour sourced locally v's mainland.
6. Transport linkages (airport, ferry and fare costs) – in terms of accessibility for tourists which are timely and cost effective.
7. Weather – in terms of reliability and frequency of 'non-play' days.

Key Activity Schedule;

1. Planning

   Initial meeting with Major Projects
   Preparation of Development Application.
   Receipt of Design Guidelines for the PER
   Engagement of Consultants
   Preparation & Lodgement of PER
   Preparation of response document
   Receipt of Development approval

2. Design & Documentation

   Consultation with authorities
   Engagement of engineers, architects, surveyors, planners, course designers etc.
   Design review and tendering of works

3. Construction
    - Water mainline infrastructure
    - Power substation infrastructure
    - Road works and associated infrastructure
    - Golf Course Irrigation Dam
    - Golf Course Maintenance Depot
    - Golf Course works
    - Clubhouse & Stage 1 accommodation
    - Villa Unit marketing & road infrastructure
    - Stage 2 & 3 accommodation (as per demand)

4. Post Construction
    - Golf course opening
    - Clubhouse & Resort opening

Quality assurance;

It is envisaged that the majority of work will be undertaken by approved and suitably qualified contractors each of which will be obliged to operate under and demonstrate compliance with their own adopted quality assurance systems.

The ISO 9000 group of standards expected to be applied includes:

1. ISO 9000 which serves to identify and define the fundamentals and vocabulary for a Business Management System (QMS);
2. ISO 9001 which specifies the requirements for a QMS where the capability to provide a product and or service that meets customer and regulatory mandates needs to be demonstrated;
3. ISO 9004 which provides valuable guidance on the application of ISO 9001 that directly contributes to enhanced customer satisfaction.
4. ISO 14000 which provides standards looking at managing environmental responsibilities through audits, communications, labelling and life cycle analysis as well as dealing with such issues as climate change.

3.4 Site layout plan

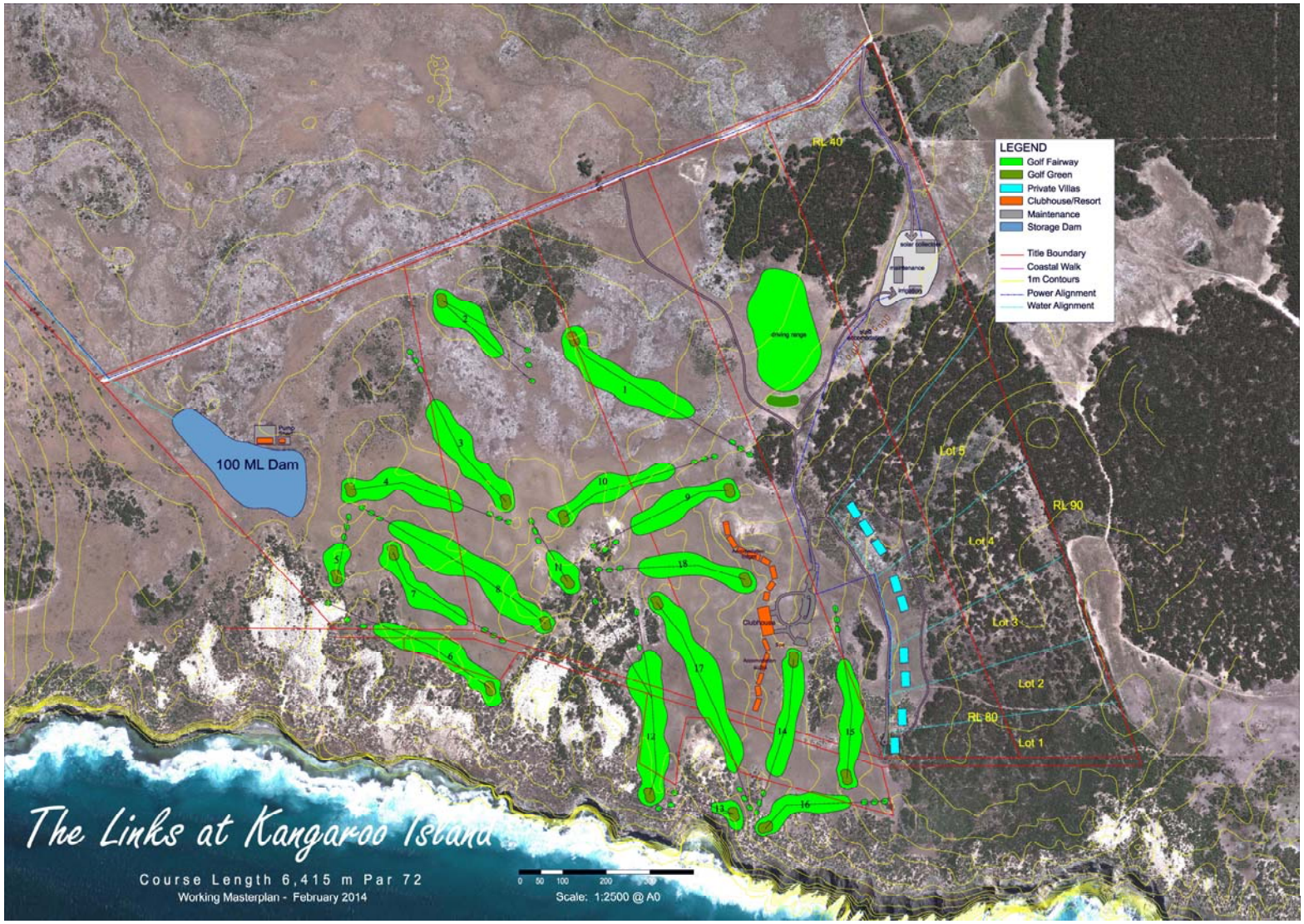

Figure 1 – Site Masterplan

3.5 The construction and commissioning timeframes

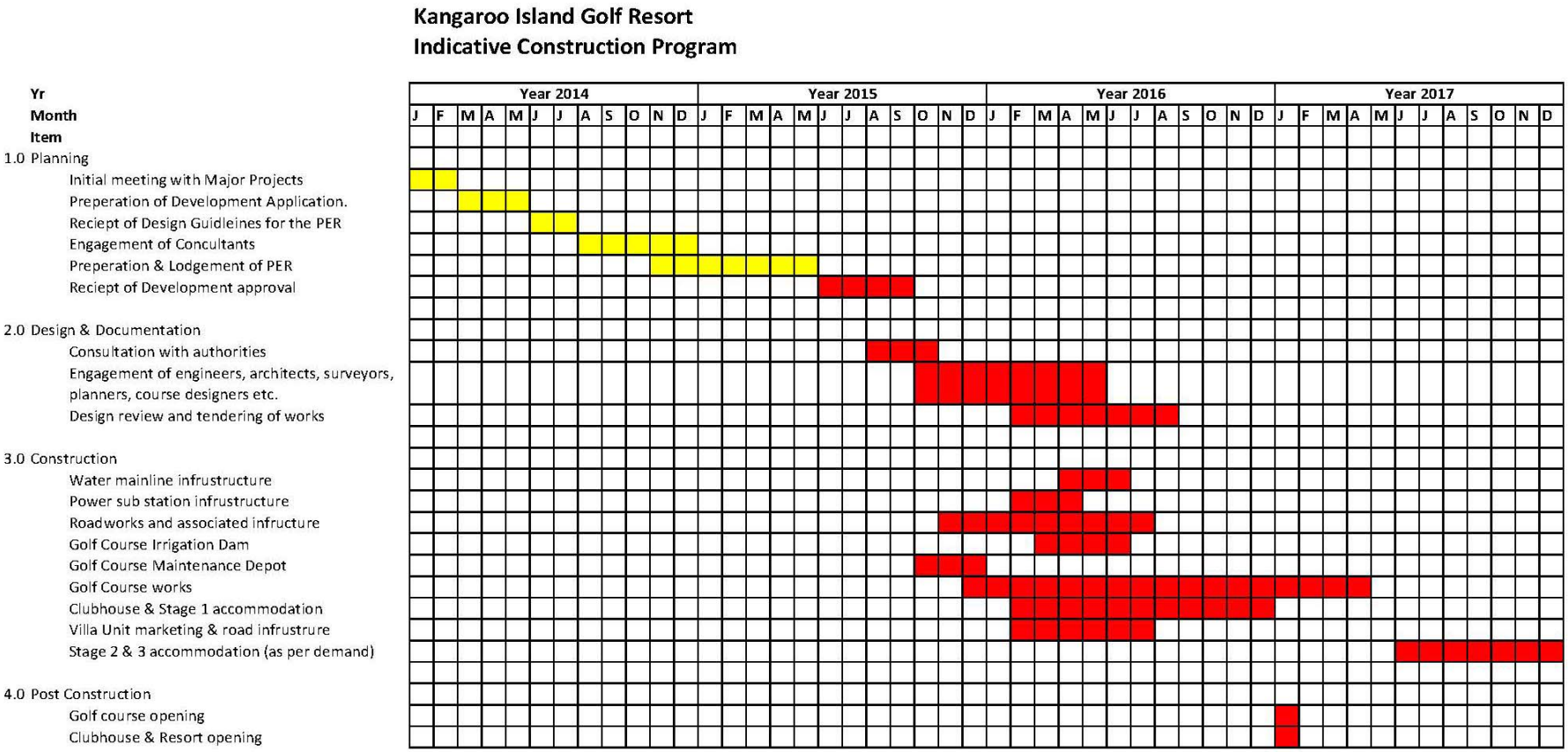

Figure 2 – Projected Project Timeframe

3.6 A description of the existing environment (including the immediate and broader location)

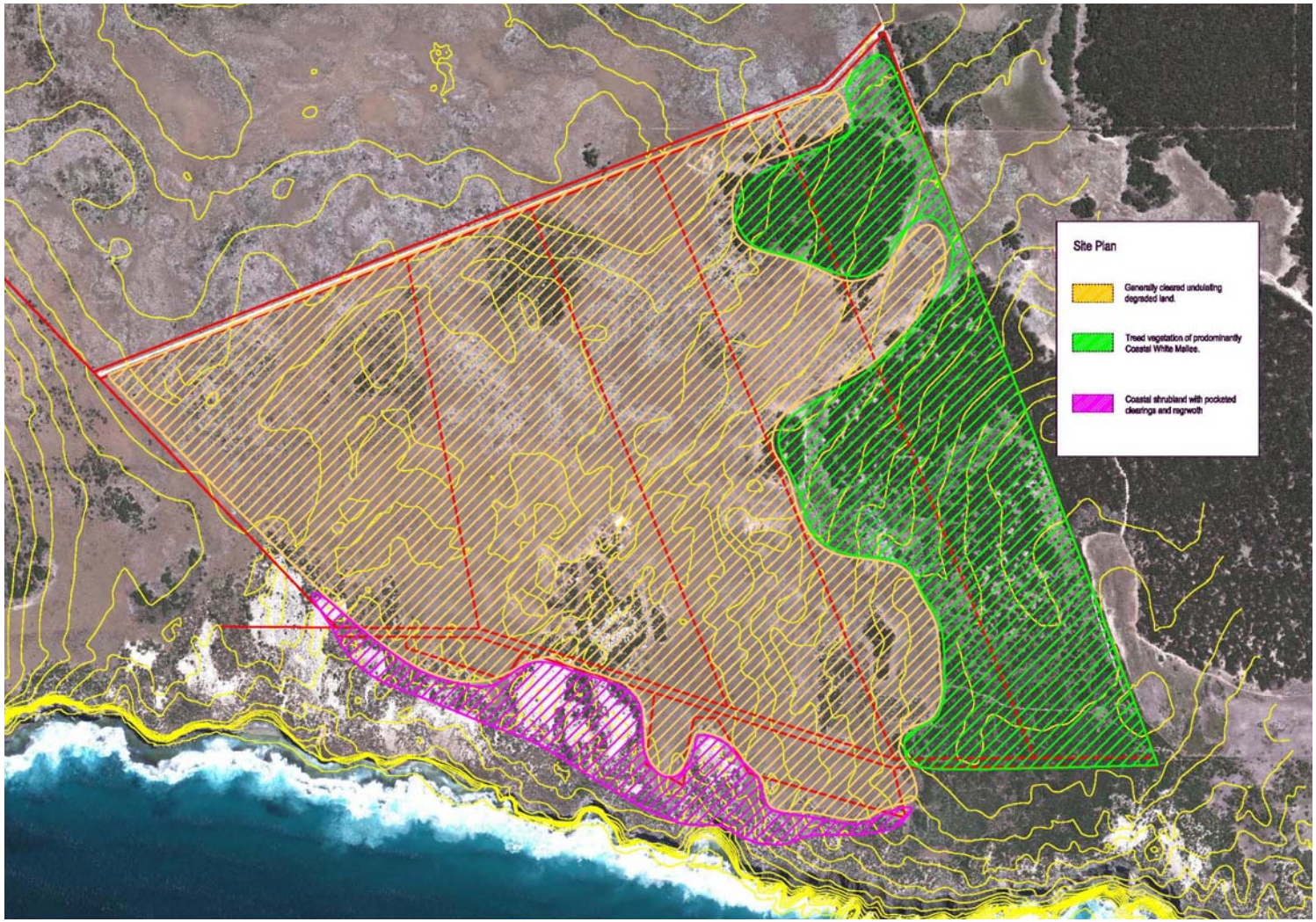

Figure 3 – Site Characteristic Plan

Site

The total area of the subject site is 220 Ha and is made up of 6 existing Torrens Title allotments.

The southern boundary of the site abuts the coastal reserve (Crown Land) for approximately 2.1km.

Topography

The total site is generally undulating and ranges from depressions with a low point of 20 RL to 98 RL at its high point.

The site may roughly be divided into three distinct physical segments as indicated on the above site map (Figure 3). These include:

1. A generally cleared area of undulating land marked by tracts of exposed limestone, degraded pasture land, sporadic clumps of low profile vegetation and limited areas of sand drift in close proximity to the coast. This segment occupies approx. 80% of the site.

2. A treed area of mainly Coastal White Mallee (*E.rugosa)* and sub storey generally in the northern and north-eastern corner of the total site. This area is relatively level and forms a visual barrier on the eastern side of the site. The woodland area is defined by a cleared area on its southern side. This treed area is also notable for its clearings where exposed and fractured limestone has a limited vegetation cover of low shrubs and grasses. This segment occupies approximately 17% of the total site.

3. The third segment is characterised and defined by coastal shrub land pockmarked by clearings which appeared to have been part of grazing trails. Much of the northern part of this shrub land is regrowth which occurred following the cessation of grazing. This segment includes a subtle ridgeline at RL. 80 to RL 91 that falls off relatively sharply in the south-eastern corner of the site.

Surrounding Land

To the east of the project area is a large expanse of intact native vegetation (see Map 1). A large proportion of the surrounding vegetation is formally protected, including Dudley Conservation Park (1,768 ha) approximately 2.5 km north-east of the project area.

To the north is undulating cleared grazing land.

To the west is a continuation of the land form of the subject site rising to a north-south running ridge. Further West lays Pennington Bay and Prospect Hill.

The southern boundary runs into coastal bushland and cliff areas that stand some 25-30 metres above the ocean shore.

Access to the site is via Davies Road and Simpsons Lane from Hogs Bay Road (the main road connection between Kingscote and Penneshaw). Hogs Bay Road is approximately 2.5 km from the site.

American River Wetland System, approximately 2 km north of the project area, is classified as a wetland of national importance. The Pelican Lagoon conservation park complex is approximately 1.5 km north of the project area.

Regional environmental setting

Kangaroo Island is the third largest Island in Australia covering approximately 4,500 km² located off the Fleurieu Peninsula in South Australia. Kangaroo Island has a resident population of approximately 4,200 people.

Due to the relative isolation, Kangaroo Island is free from rabbits and foxes and has a relatively low number of introduced plant species. This, along with being isolated from mainland Australia, has resulted in Kangaroo Island having a high level of endemic flora and fauna. Kangaroo Island remains covered with approximately 55% native vegetation.

Kangaroo Island supports a wide variety of habitats including mallee woodlands, shrubland, coastal dunes, cliff tops and wetlands. Forty-five endemic flora species and a number of endemic mammal and bird species occur on the Island. KI provides critical habitat to a range of important wetland and sea bird populations; migratory and non-migratory waders; and breeding sites for the Australian sea lion and the New Zealand fur seal.

Around 40% of the original vegetation on Kangaroo Island remains intact, with 55% conserved in reserves largely in the western and southern areas, plus around 10% managed for biodiversity conservation in private landholdings, private protected areas and roadsides.

3.7 Details of all buildings and structures associated with the proposed development

The buildings are designed as contemporary structures that both reflect the bush spirit of Kangaroo Island and the environmental context of the locality. The principle buildings are sited into three main groups.

Firstly, the clubhouse and accommodation lodges are sited on a sand dune towards the centre of the overall site and follow given contours. This lineal layout allows for orientation of all the buildings to take advantage of their direct visual link of the golf whilst enjoying the full vistas encompassing the dramatic coastal scenery of the Southern Ocean and Pelican Lagoon. Furthermore the siting allows the serpentine configuration to meld into its background scenery thus ensuring its limited, if any, visual prominence from offsite areas. The clubhouse will incorporate a restaurant and dining facility to cater for both in-house guests and day visitors. The pro shop, resort administration, plant room, conference facility, spike bar and lounges are all contained within the clubhouse. The resort also includes a spa set some 70m away from the clubhouse precinct and will be made available to resort guests. The clubhouse will be catered for by a car park that is located to the immediate east of the building mass and is sited in a lower lying piece of land adjacent to the clubhouse. The site in combination with extensive indigenous landscaping will ensure minimal visual impact on both clubhouse-lodge precinct and the more easterly villa development. The entry to the clubhouse and lodge reception area will be through a 'porte-cochere' at the rear of the building that upon entry allows spectacular panoramic views of the middle and distant vistas.

Secondly, the area 250m to the east of the resort precinct is allocated to a number of villa units (up to a maximum of 40). These units will be a 'condominium' style layout and are proposed on five new land divisions to be created on the eastern part of the overall site. These buildings are proposed in concept only as the final design would be up to the individual land owners. However, strict building guidelines will apply and ensure high standards of design are maintained and are commensurate with both the environmental setting and design theme adopted in the main clubhouse and lodges precinct. Guidelines will include reference to; cladding materials which are sympathetic with the surrounds; height limitations to 8m above existing ground levels; landscaping requirements; compliance with building footprints for each of the allotments; vegetation removal minimisation; site lines; orientation; fenestration amongst other requirements.

Thirdly, the site includes an area for maintenance and on site staff accommodation. This is located near the north eastern boundary of the site, in an extensive cleared area and surrounded by mature trees and shrubs. This area is entirely hidden from offsite areas and the golf precincts including the lodges and clubhouse. In addition to the maintenance compound and the staff facilities the area will house the sites PV solar cells. Access to this area will be via a separate track near the intersection of Davies and Cathers Road.

The need for clearance of native vegetation is to be minimised. Small areas which may be effected by construction adjacent to the buildings will be revegetated entirely with indigenous species to preserve the natural bushland setting in this part of the site.

A copy of the architectural layouts and buildings is contained in appendix H and Q.

Figure 4 – Artist's impression

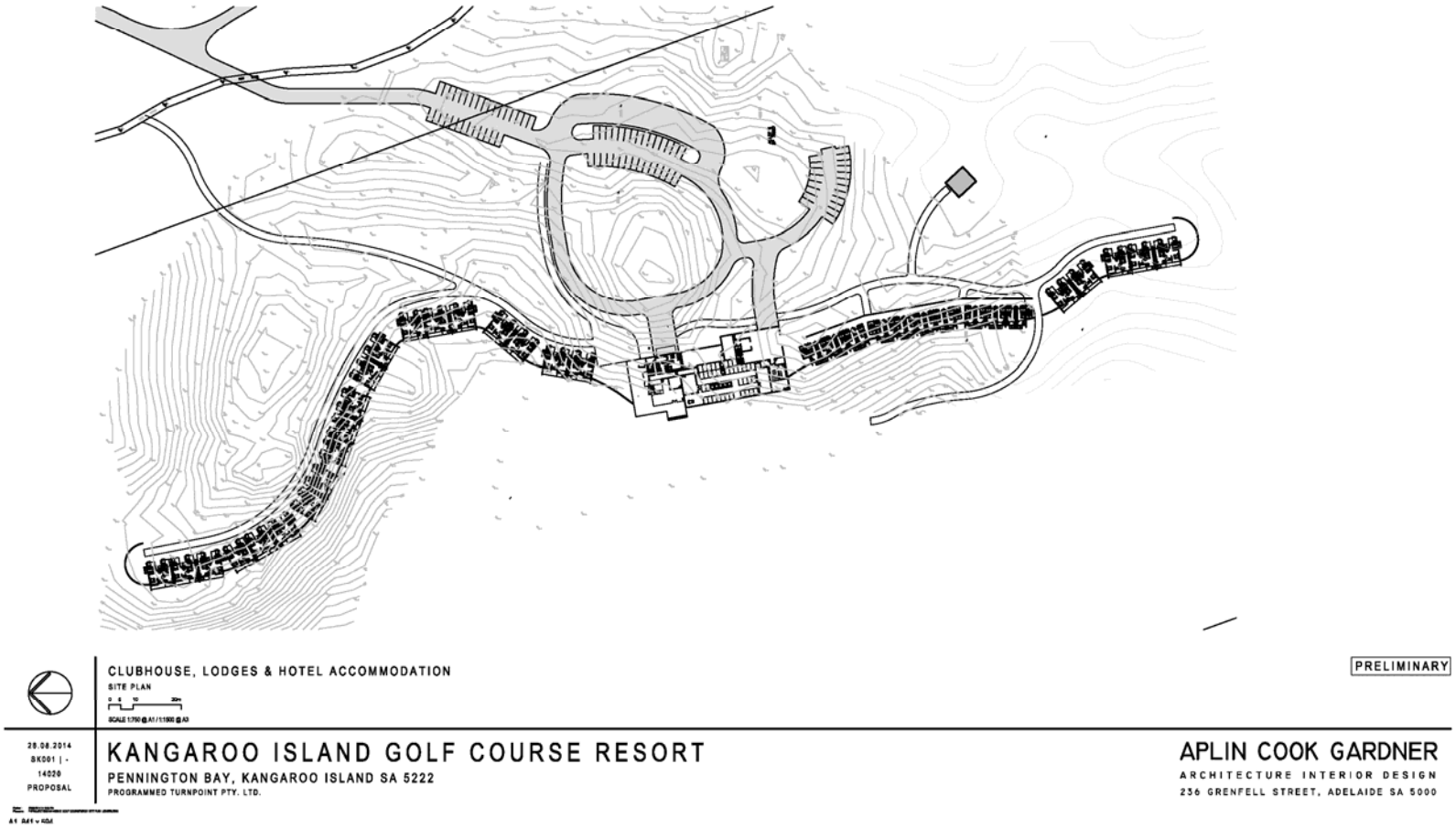

Figure 5 – Resort Site Plan

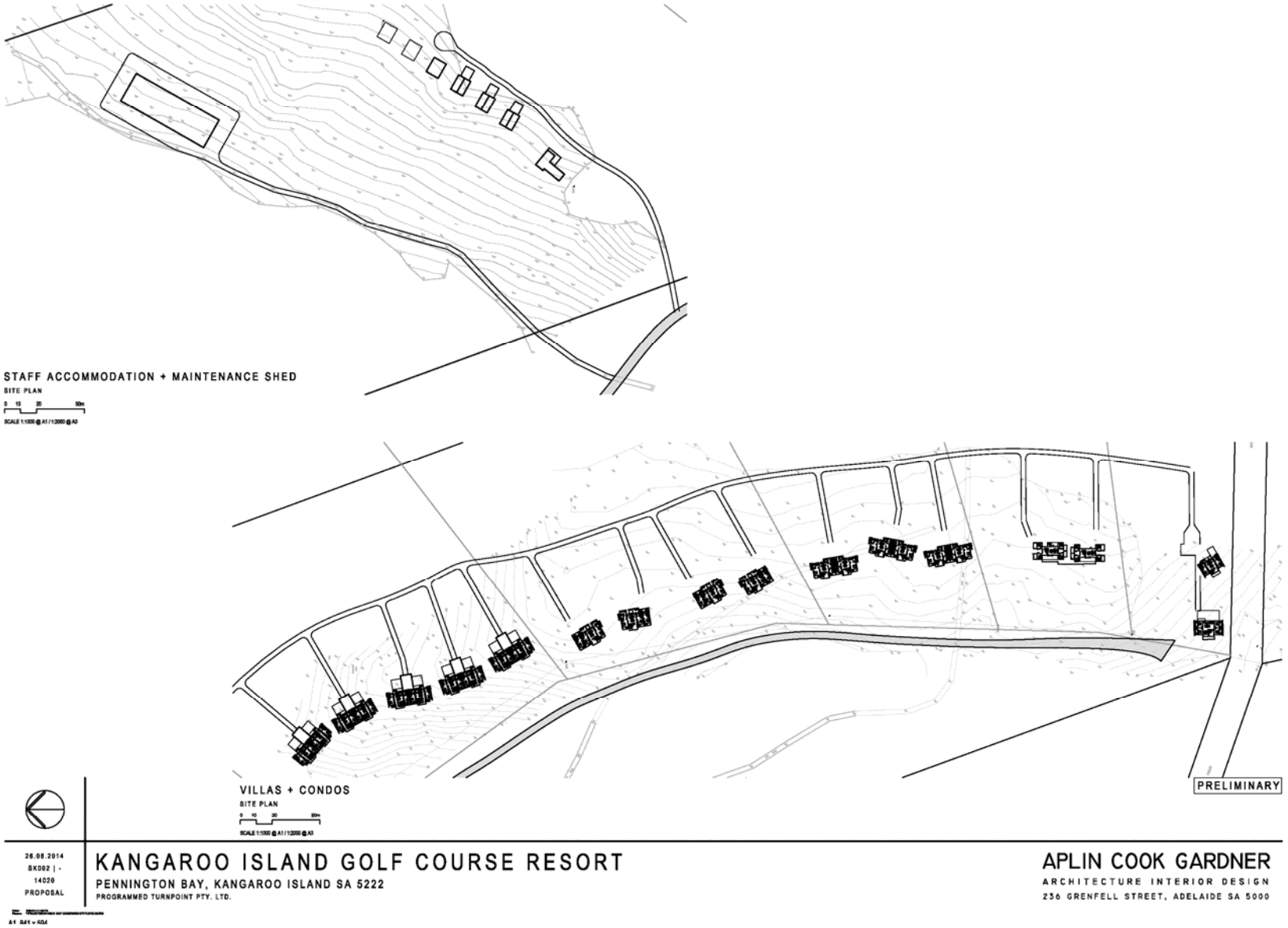

Figure 6– Villa Unit Site Plan

3.8 Other infrastructure requirements and availability

Water

The water supply is proposed to be made available from the Island's main water storage facility at Middle River Dam. It is proposed to tap into the existing Middle River – Kingscote supply line at the tapping point at the Playford Hwy - Milk Track corner and will generally follow the Hog Bay Road alignment and will have significant implications for property owners abutting Hog Bay Road. In this regard it is noted that Middle River Dam water that would otherwise overflow out to sea, is to be used to supply the project's irrigation dam and be sourced during the winter months. The form of this pipe will be a DN 200 PVC-O in accordance with SA Water specifications and guidelines and be buried within the Hog Bay Road curtilage.
Refer Figure X.

Hard Waste

The hard waste disposal requirements of the proposal may require an extension to Council's land waste disposal facilities. At this point it is envisaged that present capacities will be able to absorb the expected hard waste generated.

Power

Power will be supplied from a developer-funded substation near the intersection of Hog Bay Road and Unnamed Road. The substation will take the existing unusable power supply which currently runs along Hog Bay Road. From this substation, power infrastructure above and below ground will supply the base load power requirements to the project. The balance of the power requirements will be supplied through the provision of PV solar cells located within the maintenance precinct. Refer Figure X.

Access

Principal access to the site will be via Hog Bay Road and down Davies and Cathers Road. In this context it is proposed to upgrade Davies Road to a two lane gravel road where vehicles can safely pass each other. This may involve limited indigenous vegetation clearance which will be addressed as part of the general application of the NVR Act. Access through the site will be on made gravel surface roads in accordance with minimum council requirements.

Communications

The site is well served by existing Telstra Mobile Net infrastructure.

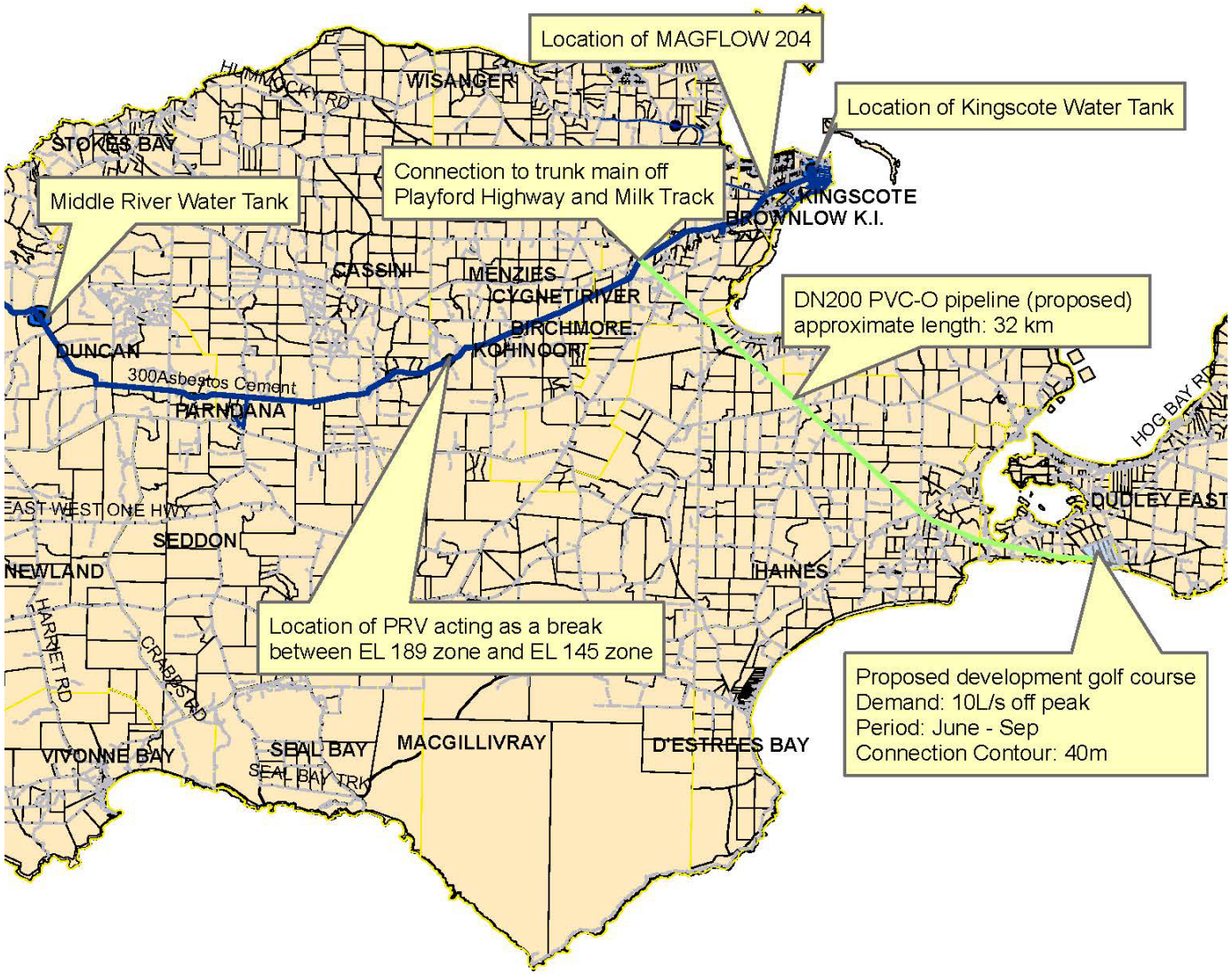

Figure 7 – South Australian Water Proposed Main Line Alignment

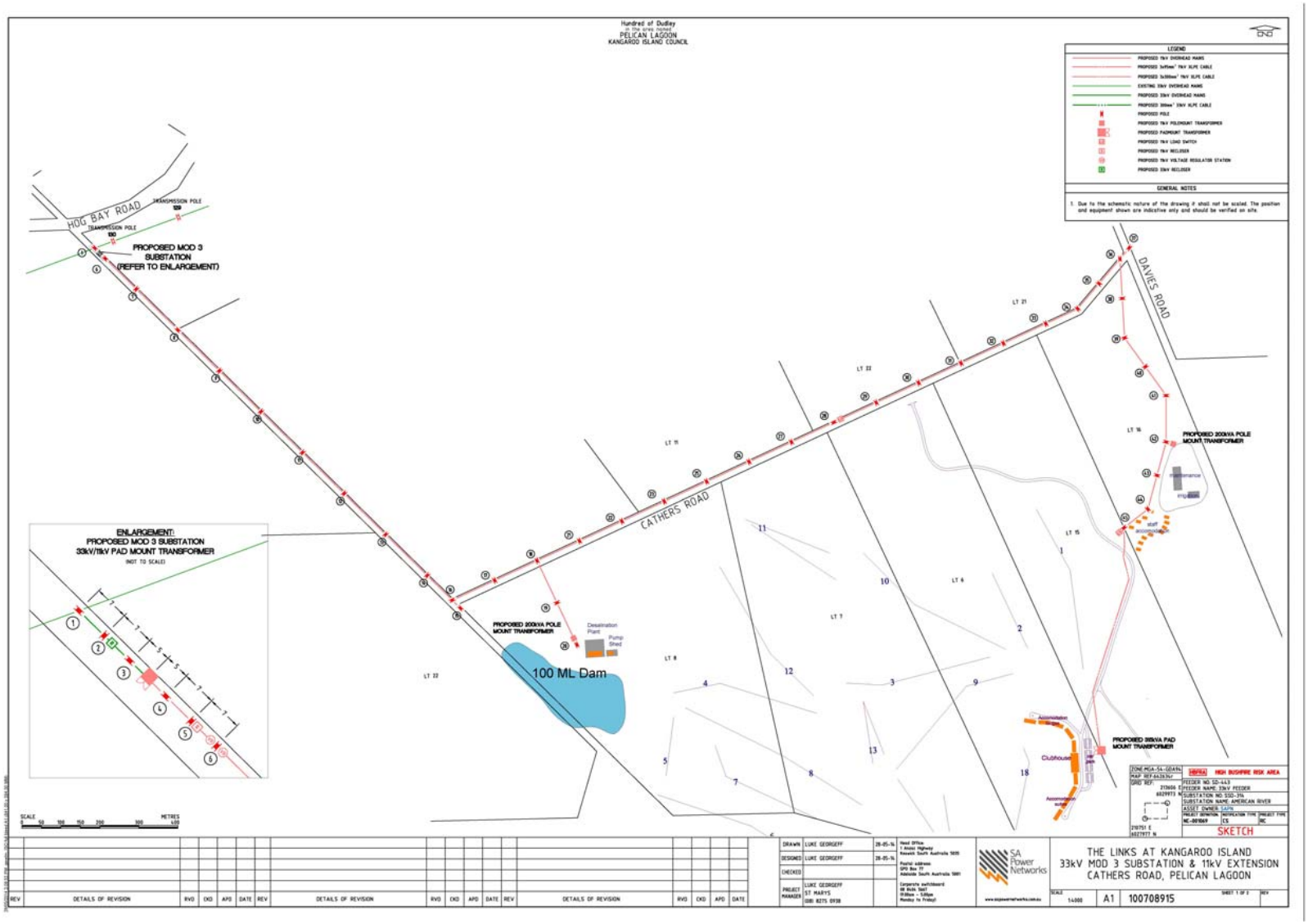

Figure 8 – South Australia Power Proposed Power Alignment

3.9 Details on the operation of the proposed development

Golf;

Golf will be played under two systems. Firstly, in-house guests with dedicated pre-booked tee times playing as part of an accommodation golf package. Secondly, pay-for-play guests with green fees payable upon check-in at the pro shop.

Accommodation;

Resort guests will have the options of either, full board and lodgings with golf included or stay-and-pay (bed and breakfast). A number of the lodges will have limited self-catering while the proposed condominium style accommodation will be entirely self-catering. The clubhouse restaurant will be open to the public. Other accommodation packages will include golf with lessons.

Course and Grounds Management;

Course management includes a maintenance regime carried out by dedicated maintenance crew based on site with a small turf nursery.
Landscape grounds maintenance will be carried out by dedicated staff on a staged regular basis.

Resort management;

Resort management will be carried out by full time employed staff with in house administration, food storage, laundry, food and beverage.

Transport;

Guests can be transported to and from the site to key points of entry to the Island. Island attraction tours will be made available to visitors by local tourist operators.

3.10 The relevant Development Plan zones

Under the Kangaroo Island Council Development Plan (Consolidated 20th Feb, 2014) the land is included in two zones; Primary Productions Zone (PPZ) and Coastal Conservation Zone (CCZ).

3.11 Management arrangements for the construction and operational phases

Construction

It is proposed to appoint a principle project manager who will be responsible for the engagement of two principal contractors to address the main building construction including the roads and the golf course construction which includes the irrigation and landscaping.
The building contract would include provision for nominated sub-contracting based on a lump sum and be in accordance with AS1400. All OHSE requirements would be included in quality assurance systems of the contractor and sub-contractors.

Building construction activities will be undertaken in a series of stages involving;

- Site clearing and Site establishment;
- Site excavation and preparation including Foundation establishment;
- Staff village and maintenance facility construction;
- Clubhouse and Lodge construction and Villa construction.

Golf Construction activities will be undertaken in four principle stages involving;

- Power and water infrastructure to the site including dam construction;
- Set-out and clearing;
- Bulk earthworks, shaping and irrigation;
- Grassing and landscaping.

Site management and protection will be addressed through the establishment of an environmental management plan (EMP). The EMP has been prepared and details the strategies and actions to be implemented to protect the existing environment during construction and operation activities of the project.

Operations

The overall operations of the development occur in three arenas;

- Golf course management and maintenance;
- Golf operations;
- Resort operations.

These three roles will be overseen by a Resort Manager responsible for co-ordination and effectiveness of the principle activities of the resort.

Part C- Environmental, Social and Economic Assessment

4.0 PLANNING AND ENVIRONMENTAL LEGISLATION AND POLICIES

4.1 Kangaroo Island Development Plan

Two aspects of planning are used to assess the development. These are the statutory objectives and policies of the Kangaroo Island Council Development Plan; and the Aims, Objectives and implementation initiatives of the strategic planning for the Island.

In assessing the merits or otherwise of the proposal the provisions of the Development Plan have been considered as they apply throughout the Kangaroo Island Council area and more specifically the two zones that affect the overall development.

Its structure is such that it outlines ***objectives*** for the particular uses and then sets out definitive ***principles of development control*** PDCs.

4.1.1 PRIMARY PRODUCTION ZONE

The intent of the zone is primarily to strengthen the role and value of primary production and a primary objective includes *"development that contributes to the desired character of the zone… However, the opportunity also exists to provide tourist accommodation and tourism activities within the zone where such development is designed to put people back in touch with the natural and rural environment, or would positively contribute to the Island's tourism experiences. It is expected that such development will cater primarily for the "get away" nature or adventure orientated market which is environmentally conscious, although other niche tourism development opportunities will also be considered where they strengthen the Island's tourism appeal".*

Objectives and Desired Character of the zone incorporates the following *"Development within the zone will retain native vegetation and protect existing ecosystems to ensure the heritage and environmental significance of Kangaroo Island can continue to underpin the Island's character and values. …The design and siting of tourist accommodation should ensure emphasis is given to raising consciousness and appreciation of natural surroundings and should be sited where is does not undermine the primary intent of the zone for primary production. Tourism development will be encouraged in areas that are of low capability for farming or horticulture."*

In this zone there is no inconsistency between the proposal and the zone with regard to 'Tourist Accommodation' apart from the possibility that there may be some exceeding of the height limit of 6.5 m above natural ground level. The location of the proposed development is on degraded, unused, and generally cleared pasture land with a low capability for farming or horticulture.

A range of accommodation is proposed and this will significantly augment the tourist facilities in the Dudley segment of the Island through the provision of a world-class golf experience and access to the many coastal walks available abutting the property.

4.1.2 COASTAL CONSERVATION ZONE

The zone defines the coastal areas of high landscape or conservation value and incorporates policy to ensure the preservation of the coastal landscape resource. The objectives of the zone are to enhance and conserve the natural features of the coast including visual amenity, landforms, fauna and flora; low intensity recreational uses with minimal impact on the coast; and development that contributes to the desired character of the zone. The desired character recognises that **"***... the coastal environment plays an important role in Kangaroo Island's economy and the tourist attraction provided by the coastal environment, coastal scenery and abundant wildlife is expected to see growth in visitor numbers that will need to be appropriately managed and catered for. The provision of facilities, including tourist accommodation and recreational facilities, may be established in the zone provided they are sited and designed in a manner that is subservient to the natural and coastal environment and adverse impact on natural features, landscapes, habitats and cultural assets is minimised…The preference is that tourism development, including any associated access driveways and ancillary structures, be located on cleared areas or areas where environmental improvements can be achieved. Development should be located away from fragile coastal environments and significant habitat or breeding grounds…*
The design and siting of tourist accommodation should ensure emphasis is given to raising consciousness and appreciation of the natural, rural, coastal and cultural surroundings."

The proposal includes the construction of a world-class championship golf course that will build its reputation on the precise environmental assets the site offers. By its very nature the proposal must ensure that the assets such as the high landscape and amenity value including stands of vegetation, shores, exposed cliffs, headlands, Islands and hill tops are protected and retained. These are the elements that will render the overall facility its fundamental worth. Furthermore, the proposal will maintain and enhance public access to the coastal areas whilst taking sound and proper land management initiatives to ensure the areas where the golf course meets the coast are protected through extensive planting and dune stabilization measures.

The proposal is consistent with the objectives of the zone because the proposal is relatively low intensity and environmental impacts on the coast will be minimal. The development, with its visually sensitive buildings, affords a good 'fit' with the existing landform and will maintain the character of the zone whilst a relatively small area of the overall proposal is within the Coastal Conservation Zone. The proposed building areas are well removed from the coastline (some 450m) while golf course construction will avoid cliff tops and sand dunes. Construction methods will ensure stabilization of any potential dune 'creep' through new grass and low shrub planting. The proposal includes a

consistent building design to ensure the main structures blend in to their immediate environs. This is particularly so with the assiduous siting of the clubhouse and its associated accommodation lodges which avoid the high points of the site and major incursions to the existing vegetation while being constructed of muted, natural earth colors and tones with low pitched roof lines.

4.1.2 TOURISM & The Kangaroo Island Structure Plan

Apart from the zones other key provisions of the KICDP provides direct reference to specific strategic settings including Economic Activity in particular Tourism. In this regard the KICDP states "*A range of sustainable tourism facilities, accommodation and products must be developed to suit a range of visitor budgets and experiences. However, tourism development must also consider the impact of increasing numbers on the natural environment so as not to diminish the very reason that attracts so many visitors to the Island in the first instance…It is expected that the Island will continue to develop as a pre-eminent sustainable, nature-based tourism destination, but there is also a need to provide opportunities in other tourism markets around the themes of outdoor adventure and leisure activities, the coast, niche food and wine products, heritage and culture. These markets should add depth to the Island's appeal as a visitor destination and encourage longer stays"* .In this context the proposal is consistent with the KICDP insofar as it allows an increase in tourist accommodation and choice, it capitalises on its immediate and surrounding environment while it will enhance degraded farmland and introduce distinct rehabilitation initiatives.

The Kangaroo Island Structure Plan provides a more detailed framework for implementing a sustainable economic future based on tourism and agricultural growth, balanced with protection of the Island's natural resources. The document is particularly relevant insofar as its part focus on tourism and environment underpins the most recent amendment to the statutory KICDP with its specific emphasis on tourism development and recognition of the importance of the coastal areas and environment protection. Specifically, the Structure Plan provides the framework for increasing economic growth of the tourism sector of Kangaroo Island by: "*encouraging tourists to stay longer-through the establishment of new tourist accommodation…and by providing tourists with more things to do…*" In this regard the proposal is will add to the leisure options for visitors while adding to the range and quantity of tourist accommodation.

In summary, there is significant consistency with the proposal's fundamental nature and both statutory and strategic provisions of the Kangaroo Island Planning Scheme and that scheme's underpinning documents, the Kangaroo Island Structure Plan.

4.2 National Landscapes Experience Development Strategy for Kangaroo Island (2014) and the Brand for Kangaroo Island

Australia's National Landscapes Program

Australia's National Landscapes program is a unique tourism and conservation partnership managed by Tourism Australia and Parks Australia. The program provides a framework to consider tourism infrastructure, conservation and marketing in a united way, encouraging collaboration and partnerships. It brings together the tourism industry

and conservation sectors to improve environmental, social and economic outcomes for each landscape. Kangaroo Island is a cornerstone in South Australia's tourism mix and is one of the 16 identified National Landscapes for Tourism Australia. The program provides a strategic approach to destination development.

Kangaroo Island joins other key Australian destinations such as Kakadu, Great Ocean Road, the Red Centre, Australian Alps, Flinders Range and the Kimberley, amongst others.

For each landscape a ***Brand and Experience*** Development Strategy is developed to ensure directions taken by the destination are sustainable and enhance the reasons why people visit the region. As a direct result of the Island's inclusion in the national tourist profile the Kangaroo Island National Landscape Strategic Tourism Plan (KINLSTP) builds on the work that was previously carried out in the KI Strategic Tourism Plan in 2006. It is divided into three (3) parts. These include:

- the Market Position for KI;
- the analysis of 'Experience Developments'; and
- the Strategic Tourism Action Pl which address 6 important areas being:
    1. Access;
    2. Infrastructure;
    3. Product and experience development;
    4. Marketing;
    5. Business skills and workforce development;
    6. Destination management.

The proposal is reviewed in the context of these considerations.

Market Position for Kangaroo Island

Vision and Values

Kangaroo Island is currently regarded as 'transformational' with its brand equity being 'natural'. The core attributes are 'Wild, rugged, coastal'; Benefits are 'Kangaroo Island is good for the soul – you'll feel removed, recharged, replenished', and its role is 'to refresh your spirit and make you feel alive again'."

Response

The proposal is entirely consistent with the stated Vision and Values for Kangaroo Island and its tourism development.

The principle basis for establishing a world-class golf facility and residential component at the location is to provide not only golf in a quite isolated, scenic and natural setting but also to afford a high-end level of accommodation from which golfers and other guests can both explore the Island as a whole (by car or escorted bus touring) while having direct access to spectacular coastal walking tracks for which the Island is renowned.

The proposal is unique on the Island and aims specifically to capitalise on golfers, either individually or in groups, from both Australia and internationally, whose desire is to play or high quality golf courses located in situations marked by dramatic scenery and ambience. The combination of on and off-site wildlife, coastal scenery, the remoteness, challenging golf in an exposed links-style environment and being on an accessible part of Kangaroo Island is regarded as being highly attractive to this particular golf market. This is typified by similar golf complexes that have been relatively recently developed throughout Australasia including Barnbougle in Northern Tasmania, Cape Kidnappers and Kauri Cliffs on the North Island of New Zealand and, more recently, Cape Wickham on King Island, Bass Strait. The business model for such developments has been imported from the long-established and proven golf tourist market of the United Kingdom and Ireland where areas on these Island's coastlines afford golf in wild, natural and open conditions whilst the ancillary drawcards include direct experience of specific local cultures, e.g., the Maori heritage associated with the Bay of Island (Kauri Cliffs, NZ), Galway Oyster Festival (Connemara, Ireland), cool region wines in Northern Tasmania (Barnbougle), etc.

The proposal plans to create high quality lodge and 'condominium' style accommodation. Apart from targeting and identified need for such accommodation on Kangaroo Island there is, through this initiative, a positive strategy to retain visitors for longer than is currently the case. This is particularly so with reference to international visitors who, for the most-part, are limited to either a bus day-trip from Adelaide or a one or two day stay allowing restricted access to the full range of tourist attractions on the Island. In particular, the larger condominium style accommodation units are proposed to specifically cater for family groups where one or two members may have a golf interest while the other family members can use the facility as a base to enjoy both the immediate off-site attractions, e.g., wildlife and coastal walks, and the wider, more distant tourist drawcards of the Island.

In summary, the location of the proposal, with its high class accommodation and golf facilities, provides a distinct addition to the range of attractions on the Island while being fundamentally consistent with the brand equity of 'Wild, Rugged, and Coastal'.

Experience Developments

The Experience Seeker Target Market

The aim of experience development for Kangaroo Island is to:

- *build on Tourism Australia's positioning work for the Kangaroo Island National Landscape*
- *shift from traditional tourism marketing and development to focus on visitor experiences and creating powerful positive memories (emotional benefits)*
- *identify hero experiences that are must-do, world-class experiences*
- *align experiences with the wants and needs of core target markets*
- *identify current gaps in the hero experience offering to provide guidance on future development priorities*
- *define a set of catalytic projects suitable to be showcased in an investment prospectus."*

"access to new and significantly enhanced existing experiences—are critical for industry growth. While changes to either of these will improve the visitor experience, improvements in both, plus the enabling factors, would help to create long-term, sustainable and significant improvements to the visitor experience. The experience themes and hero experiences could be strengthened to drive higher satisfaction ratings, more word-of-mouth referrals and effective social web recommendations by focusing on:

- *Improving the capacity to do things on the Island — currently there is a limited range and availability of activities that will keep visitors in the landscape for longer. Also, increasing length of stay, encouraging active engagement with the location as well as diversifying the target market appeal.*
- *Ensuring environmental and social sustainability is maintained and improved (as these underpin the core attractions)."*

Response

The proposal is targeted at a broad mix of South Australian, national and international tourists. The accommodation component is aimed wholly at providing the opportunity to 'stay longer' on the Island while enjoying high quality resort services (principally golf) and dining.

The location allows enjoyment of activities secondary to golf but entirely consistent with the brand of Kangaroo Island including coastal walks, wildlife experiences in a remote area yet accessible by road.

The Greg Norman designed golf course works with the available topography allows maximum utilisation stunning coastal views to the South West and North West. The course is designed on the basis of a classic links layout where the elements play a key role in determining both the degree of difficulty and the overall golf experience. It is singularly designed to take maximum advantage of both the topography and the available views while providing for a wide range of golf expertise. The course is planned to be a serious contender for entry into the world's top 100 courses with two years of opening. This will ensure both its worldwide publicity and its attraction for overseas golfers that carry a profile consistent with that identified the ideal 'experience seeker'. This will guarantee its viability in the world golf tourism market.

The location currently hosts a large mob of kangaroos that roam the extensive open areas of the property and surrounds. Indeed, the ready presence and high visibility of this herd is such that Cathers Road is a regular stop off for tourist buses travelling from Penneshaw ferry terminal to and from the western parts of the Island allowing the tourists to see, close hand, a vast number of the animals. It is envisaged that this herd will remain and add to the ambience and attraction of the new golf complex.

There is no comparable golf facility on the Island and the proposal both identifies a gap in the 'hero experience' of golfing in a wild, natural, exposed environment and a significant tourist asset that may be showcased in the Island's tourist portfolio.

The proposal introduces a new visitor experience by the introduction of a world class links style golf course complimented by a variety of high quality accommodation offering a new tourist node in a lesser used part of the Island. The golfing experience is enhanced by immediate access to ancillary attractions intrinsic to Kangaroo Island while the calibre of the accommodation and range of activities on offer invite the visitor to stay longer.

The proposal is an additional diverse activity providing for an identified significant and specific market (golf tourism).

The proposal ensures that environmental and social sustainability of the area and the Island are maintained and improved.

All these elements of the proposal are consistent with the aspirations of the KINLSIP.

Conclusion

The proposal is entirely consistent with the National Landscapes Experience Development Strategy and will deliver an 'extraordinary' tourist development.

4.3 Kangaroo Island Natural Resources Management Plan

The recently promulgated NRM plan recognises that "*The Island's natural assets underpin the social wellbeing an*d economic prosperity of all of *its inhabitants* and their effective, long-term *collaborative mana*gement is essential to ensuring *a viable future for coming generations.*"

Broad Objectives

The NRM includes a number of broad objectives against which the proposal is assayed.

1. Consider ways of improving landscape condition and connectedness;

The proposal includes a limited amount of vegetation clearing for the purposes of golf course construction, access provision and condominium/villa development. Animal habitat will be enhanced through the planting program as per the recommendations of the proposal's vegetation study while on site water will assist in minimizing animal stress during drought periods.

2. Consider ways of increasing the capacity of the community and the environment to adapt to the challenges of climate change;

The proposal, in the context of land management, involves a far greater intensity of input and attention because of the maintenance requirements of the course itself and the proposed planting schemes that are vital to the project's success. Indeed a significant component of the annual running cost is allocated to course and surrounds maintenance and ongoing landscaping. In this scenario it is contended that the capability of the land to adapt to and manage for change in the climate is appreciably improved than would otherwise be the case.

3. Refine water use limits based on new KI specific data;

The water supply is being sourced from the Middle River Dam and provided by South Australian Water (SAW). The supply is based on that amount of annual requirements for the new golf course (approx. 100 ML.) SAW can supply this volume with no detriment to the existing supply because of increased water harvesting capability.
Refer appendix G.

4. Promote sustainable use of resources;

The principle resource being utilised is land. This land is currently degraded pasture and is gradually returning to its natural, albeit heavily modified, state. The initiative of the golf course allows the re-use of the site in an ongoing productive and sustainable manner. It sees a major revegetation program instituted and the protection of existing native vegetation and maintenance of the golf playing areas. A major marketing tool of the project is its goodness of 'fit' with the 'Clean and Green' image of Kangaroo Island. This is heavily predicated on the active promotion of the sustainable use of the required resources.

Further to the day to day running of the golf course environs, the resort itself will take advantage of stormwater and wastewater harvesting which will be collected and used as water sources for flushing toilets and supplementing irrigation water to the golf course and landscape surrounds.

The use of solar photovoltaic cells will be implemented to supplement power requirements of the project while limestone harvested from site will be utilised in the buildings and in road construction.

5. Take into account information that is being generated by the CSIRO on regional climate change forecasts and the anticipated impacts of these on different plants, animals and ecosystems.

The proposal is bound by the defining recommendations of its ecological and biodiversity reports. This will ensure consistency with the anticipated impacts of regional climate change on the site's ecosystems.

Strategic Directions

The Plan also includes a range of strategic directions and initiatives against which the proposal is assessed.

These include:

Healthy and resilient natural resources.

• Reduce the spread and impact of land degradation;	The site of the proposal is currently predominantly comprised of degraded pasture land, areas of indigenous trees and shrubs, exposed calcerite formations and a limited number of sandy wastes particularly towards the coastal zone. The construction of the golf course will result in remedial measures integrated into numerous areas of the site resulting in stabilisation of the ground conditions, reinstatement of indigenous native vegetation, and the reduction of dune blow-out risk.
• Protect soil health and productivity;	The introduction of regularly maintained extensive golf playing areas and new plantings will result in a consistent maintenance of soil health and productivity while there will be a stabilization of soil acidification.
• Better protect and manage aquatic environments;	There are no aquatic environments on the site.
• Promote water management that protects aquatic environments;	There are no aquatic environments on the site and irrigation management will be controlled in such a way so as to mitigate against any impacts on the groundwater environment. The soil types on site are primarily free draining sands overlaying sandstone and limestone formations which reduce the occurrence of groundwater mounding. Records on site indicate the shallow standing water levels are in excess of 40m below ground level.
• Promote land and water management to maintain good water quality;	There are no existing watercourses on site. Proposed waste water and sewerage treatment methods will ensure no point source pollution.
• Maintain good biosecurity and pest plant and animal management;	The golf course maintenance program is specifically aimed at controlling weeds while pest control is managed to ensure the retention of functioning, resilient ecosystems. Pathogens are controlled through highly manipulated fertilizer control in accordance with the appropriate Australian Standards while the planting program will ensure the risk of soil erosion is minimized.
• Identify and if possible restore more natural disturbance regimes;	The protection of the bulk of indigenous and native vegetation stands in combination with the proposed extensive planting of associated plant species on presently degraded land will afford a significant increase in viable, functioning natural communities and ecosystems. As part of the revegetation strategy of the site, fire will be considered an essential tool to its effectiveness where it is

	appropriate to do so.
• Protect and where necessary restore key habitats, communities and populations	The golf course design and proposed golf clubhouse, lodges and residential component includes extensive replanting using indigenous species. The investigation work carried out on the site has identified plant communities that will require preservation and protection resulting in functioning, resilient ecosystems in a non-degraded state.
• Manage native vegetation on a landscape scale;	The overall initiatives intrinsic to the proposal will result in an on-going effective management program of the existing native vegetation while providing wide areas of replanting on currently degraded land. This will result in maintenance of habitat for the existing natural populations, both animal and plant. Linking current stands of mature vegetation areas will be a priority in the revegetation management plan strategy.
• Identify and implement 'no regrets' actions to manage climate change impacts;	The initiatives inherent to the proposal will result in increased landscape resilience in a non-degraded state and durable, viable ecosystems.

A capable, committed and connected community contributing to natural resources management (NRM).

Promote the relevance of NRM to all our community;	The ongoing viability of the golf/residential complex is highly dependent on retention of the natural resources of the site. Therefore it is intrinsic to the management of the facility that NRM is promoted.
Promote increased agreement of the community on its visions for NRM;	The proponents are committed to working in conjunction with community, the tourist industry and agencies to establish adherence to common environmental and natural resource management goals.
Build on-and off-Island networks to assist in NRM activities;	Part of the marketing strategy for the new facility will be focused wholly on NRM with a strong and abiding commitment to participating in NRM.
Provide increased opportunities and reward for involvement in NRM; Continuously improve the efficiency and effectiveness of investments in NRM;	It is essential that the project actively participates in NRM.
Assist in skills development and training;	The course maintenance staff operating handbook and quality assurance measures will ensure a positive outcome in this regard.
Improve natural resources information and its accessibility;	A principle marketing point for the resort/facility will be creating an awareness for both the visitor and potential guest of the location of the resort in its natural context to the extent of heralding the 'ecotourism' nature of the experience.
Promote adaptive management through testing and learning;	The proposal is committed to NRM and adaptive management is fundamental increasing knowledge and awareness of the ecosystems that are central to NRM.

Natural resources supporting a strong and resilient economy.

Promote infrastructure that minimizes impacts on natural resources;	The infrastructure proposed to support the facility is thoroughly planned with minimal impact on the Island's natural resources.
Encourage an ecologically sustainable tourism industry;	The proposal is consistent with the target of creating well managed tourism and recreational activities that is based on the natural beauty of the site while enhancing an existing degraded tract of land.
Support ecologically sustainable recreation management;	High quality golf is a recognized recreational activity while contributing a legitimate tourist attraction in the proposed location. Its success will be dependent on effective management of a sustainable environment for therein will lie its fundamental attraction.
Improve bio-security and pest/weed management for primary industries;	The proposed use cannot be classified as a primary industry however effective protection of its ecosystems is vital to its ongoing viability.
Support natural resources planning activities that contribute to ecologically sustainable development;	See previous comments on the necessity of the proposal to ensure ecologically sustainable development.
Promote consistency between NRM and Development Plans;	The proposal, as a Development Plan, is consistent with NRM.
Assist with managing broad-scale land use change and land use conflicts;	The proposal will see a degraded area of grazing land being used for a combination of a restored natural ecosystem and a sustainable recreation resource based primarily on the existing topography and landscape.
Develop the capacity of primary industries to adapt to climate change;	The proposal is basically a natural resource based tourist industry that is ecologically sustainable.

CONCLUSION

The proposal is generally consistent with the strategic aims of the Natural Resources Management Plan for Kangaroo Island

4.4 South Australian Tourism Commission 'Design Guidelines for Sustainable Tourism Development' (2007).

The proposal's consistency with South Australian Tourist Commission "Design guidelines for Sustainable Tourism development" 2007
Sustainable Tourism is defined by the World Tourism Organisation as *"Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities."*

Principles of Sustainable Tourism are enunciated in the following:
Principles of Sustainable Tourism, Sustainable Tourism Package, Prepared by the Tourism Policy and Planning Group (SATC) for the SATC

The 12 principles, based on the triple bottom line are intended to guide South Australia's Tourism Strategy. These are:

Being different from other competing destinations (achieved by basing development and marketing on the attributes and strengths of the destination);	The proposal is located in a somewhat remote part of Kangaroo Island that present spectacular coastal scenery, that offers a true links-style golf layout in an environment rich in wildlife and indigenous vegetation. Accommodation is provided to attract stays longer than single overnight and will afford a quite viable base for visitors to explore and enjoy the other major attractions on the Island.
Achieving authenticity by being genuinely relevant to the history, industry, culture, lifestyle and natural resources of the district;	The proposal responds in a highly considered way to the principle natural resources of the area being the wild scenery, the vegetation and the wildlife.
Reflecting community values by representing the past, present and future aspirations of the local community in a living and dynamic way (achieved by listening to and responding to the community);	The proposal is located on predominantly degraded, low level productive pasture land which was previously used for low density cattle grazing. The Island's tourist plan aspires to provide additional tourist attractions while public advertisement of the proposal in the community affords some marked support for the initiative.
Understanding and targeting the market (broad market trends and the needs of specific market segments) by developing specialised products based on the inherent attributes of an area;	Golf tourism is a growing if relatively small component of the overall interstate and international tourist travel markets. The asset must possess specific attributes to enjoy regular and numerous attendance and attractions. These include a sense of remoteness, unique scenery, challenging climatic conditions and high quality accommodation with a difficult yet rewarding golf course. These elements combine to leave the visitor with a strong and memorable golf experience. The model for such a facility is tried and proven in Australasia, e.g., Barnbougle, Tasmania, Dent Island, Queensland, Kauri Cliffs and Cape Kidnappers in New Zealand amongst others.
Enhancing the experience for travellers by providing them with something they cannot experience at home (achieved by 'bundling' attributes to enhance the appeal of a place and the likelihood of visitation);	Kangaroo Island is unique and indeed, trades on this specific aspect. The proposal aims to capitalise on the KI 'brand' by affording the opportunity for a great golf experience at a location that allows access to the other major attractions of the Island.

Adding value to existing area attributes to realise a richer tourism experience and diversify the local economy (achieved by including accommodation, sales outlets, conference facilities and dining in association with established industries);	A full range of facilities is proposed to be provided in the overall complex. These facilities will include a range of accommodation levels, a pro shop, in house restaurant and limited conference facilities.
Respecting natural and cultural venues which forms the basis of sustainable tourism development and importantly respects ecological processes;	The proposal's layout and design includes retention of much of the existing indigenous vegetation with extensive off-set planting to cover limited areas of removal. The existing kangaroo population is seen as a singularly attractive part of the course while other wildlife is regarded as adding to the appeal of the location. The nature of the existing landform and the type of golf proposed means minimal bulk earthworks in the formation of the course with the natural attributes of the site being taken full advantage of.
Achieving conservation outcomes through developing mutually beneficial partnerships between tourism and conservation;	The major attraction of the proposal lies in its intrinsic relationship with its location and siting. Conservation of these characteristics is regarded as vital for the on-going success of the project.
Having good 'content' ('telling the story') by interpreting (presenting and explaining) natural, social, historic and ecological features;	A major component of the facility lies in its location and site context. Its ability to 'fit' into the site is vital and explanation of this context will be a significant component of the facility.
Achieving excellence and innovation in design by respecting the resource, reflecting community values, being able to 'tell the story' and achieving good conservation outcomes;	The proposal will see a significant improvement in the ecological/conservation outcomes for the site and surrounds.
Providing mutual benefits to visitors and hosts by promoting economic and community development for the benefits of both the host community and visitor;	The proposal will generate extensive employment opportunities both directly and indirectly while offering development of specific trades and professions, e.g. golf course superintending and hotel management.
Building local capacity by integrating tourism businesses with the local communities they operate within.	A key element of the Island in its tourism context is accommodation. The proposal addresses this dearth by offering a range of accommodation units for various sized travelling groups.

4.5 Environment Protection Act 1993 and associated policies and guidelines

The Environment Protection Act 1993 is an Act to provide for the protection of the environment, amongst other things.
In respect to the proposal the pertinent components of the Act may include:

The pertinent
Water Quality Policy
Waste to Resources Policy

The site is located outside on an EPA designated Water Protection Area. The closest areas so designated are Middle River and North West River.

Water is the key component to the successful operation of the golf course and extensive planning and works are being undertaken to ensure its availability. It is proposed to construct a 100 ML on-site dam that will store water harvested from the Middle River dam during its overflow period in the winter months. The predominant use of this water will be for course irrigation. Potable water for use by visitors and staff of the golf resort and clubhouse will be mainly sourced from treated rainwater collected from the roof tops of the various buildings. In this scenario all water both available from the site and imported to the site will be used for specific purposes. These include:

- Potable water for drinking, cooking, domestic use, etc.
- Untreated harvested rainwater used for toilet flushing, machinery cleaning, etc.
- Irrigation water for course maintenance. The efficiency of this application will be aided by the use of soil moisture monitoring equipment with the latest irrigation systems ensuring greater control and flexibility over irrigation applications.
- Treated wastewater, in full compliance with specified restrictions, used for introduced landscape planting irrigation.

Fertilisers

The production of healthy turf grass sward requires nutrient input from fertilisers. The development of a sound nutrient management plan as part of the ongoing maintenance of the golf course is required to ensure the supply of nutrients to the turf meets turf prerequisites while minimising any environmental impacts. As part of the course management regular testing of the nutrient status of soil is to be carried out. Data on the quantities of essential elements for plant growth in the soil is used to determine the exact quantities and types of ameliorants and fertilisers required. In this regard soil and leaf testing are critical tools for monitoring and matching turf grass requirements with fertiliser inputs

The Waste to Resources Policy 2010 is a tool for South Australian industry and government to better manage waste through its requirements for suitable waste from metropolitan Adelaide to be subject to resource recovery processes and prohibiting the disposal of certain waste to landfill.

In response to this policy it is noted that the policy is pertinent only to metropolitan Adelaide. Despite this it will be adopted procedures for the resort to recycle as far as possible all waste.

A Waste Management Plan is to be established that will:

- Assess the wastes being generated;
- Determine current disposal costs;
- Identify options for waste management which are economically and environmentally suitable; and
- Include a component of staff education so that all are aware of waste minimisation.

Further, the recycling initiatives will include:

- Scrap metals and batteries to metal recycling yards;
- Glass through the local council or recycling centre;
- Cardboard or paper through the local council or contractor;

Motor oil and hydraulic fluid to be treated via a WaterStax system or similar to be reused on course. The site is located outside on an EPA designated Water Protection Area. The closest areas so designated are Middle River and North West River.

Water is the key component to the successful operation of the golf course and extensive planning and works are being undertaken to ensure its availability. It is proposed to construct a 100 ML on-site dam that will store water harvested from the Middle River Dam during its overflow period in the winter months. The predominant use of this water will be for golf course irrigation. In addition to rain water collection tanks located to collect rain water runoff from the buildings, the water supply to the storage dam will include a separate closed tank for the purpose of storage of water for the potable supply. As a result of long detention times in the transfer pipeline the water will most likely lose its chlorine residual and be classed as non-potable. As a result additional treatment will occur on site to return the water to potable standard prior to distribution to the buildings and facilities. Programd will, with support and advice from SA Water, develop a re-treatment process to comply with Australian Drinking Water Guidelines in accordance with Department of Health requirements.

In this scenario all water both available from the site and imported to the site will be used for specific purposes. These include:

- Potable water for drinking, cooking, domestic use, etc.
- Untreated harvested rainwater used for toilet flushing, machinery cleaning, etc.
- Irrigation water for course maintenance. The efficiency of this application will be aided by the use of soil moisture monitoring equipment with the latest irrigation systems ensuring greater control and flexibility over irrigation applications.
- Treated wastewater, in full compliance with specified restrictions, used for introduced landscape planting irrigation.

Pesticide Management

An Integrated Pest Management (IPM) system is to be employed as part of golf maintenance operations. This system utilises a range of techniques to manage a particular pest problem rather than using a 'quick fix' solution. IPM involves having a detailed level of understanding the life cycles of pests, and finding means to control pests which are successful, of low hazard, effective and use a range of control techniques.

Pesticides are to be used at recommended rates and intervals to avoid excessive application with the practice of pesticide rotation being adopted. This technique involves the use of pesticides from different activity groups to control a particular pest thereby minimising any potential resistance build up amongst the population.

Groundwater

The use of groundwater available on-site for irrigation has been investigated and proven to be inadequate.
Groundwater height and water quality are to be monitored by the installation of test wells. These will allow the resort operators to monitor changes to groundwater levels, salinity and possible pollutant contamination.

The management of the golf course has the potential to impact the groundwater. For example excessive irrigation can increase the recharge to the groundwater system. Rising water tables can then impact the golf course and surrounding land. Leaching from turf surfaces can transport pollutants to groundwater. As part of management policy pesticides to be used are to be selected for low leaching potential and reducing irrigation after pesticides are applied will reduce the risk of such contamination occurring. Fertilisers targeted to match turf requirements will decrease the risk of leaching of excess nutrients.

Irrigation Management

A. Water Supply & Storage: Potential Water Supply Options:

- The primary source will be from the Middle River Dam taken from the tapping point near Milk Track and the Playford Hwy which has been treated to potable standard.
- Optional use of recycled Water from the development. Water would be treated to allow its re-use. Whist the amount of recycled water will not be significant it can be distributed via the golf irrigation system or used for irrigation of any ornamental planting around the development.

Water Quantity:

- A Table of projected usage and storage movement is provided as part of this synopsis.
- Projected requirements are based on average climatic conditions. The project has secured 150ML p.a. for its total water requirements through SA Water.

Storage:

- Water sourced from the Middle River Dam will be stored directly into the onsite 100ML storage dam. A separate take off tapping point will be installed prior to the water entering the storage dam and directed into a sealed tank/s. This tank, once further treatment has taken place, will provide potable water to the resort.

B. Design Statement:

System Equipment and Design would be based on the following parameters:- Equipment:

1. Sprinkler selections and spacing shall be selected to ensure a high degree of Distribution Uniformity (DU) to avoid unnecessary over or under watered areas.

2. In general Valve-in-head sprinklers individually controlled to enable optimum control and water management. Some smaller tees may have smaller radius sprinklers operated by a control valve (or valves).

3. All sprinklers and or control valves shall be pressure regulated to prevent sprinkler operating pressure variations.

4. The operation of the system shall be carried out by a Central Computer in conjunction with Field Decoders (a completely low voltage system).

5. Watering schedules shall be governed by an onsite Weather Station that shall govern and adjust the pre-set sprinkler operating times in accordance with Daily Evapotranspiration Rates, (ET) calculated by the Weather Station, wind speed & direction.

6. The control system shall have the capability to provide repeat cycles with soak times between repeats to avoid run off and puddling as well as reactive programs to respond to wind speed & direction, rainfall and other factors.

7. Radio hand held units for manual operation shall also be included.

8. Moisture sensors located across the site can monitor areas which are receiving too much irrigation for whatever reason. Automatic adjustments made at the controller can then regulate the irrigation times in these areas as required to minimise overwatering.

C. Design Concept

1. Minimum of four sprinklers positions per green with a dual set of sprinklers to address the different water requirements of green surfaces to green surrounds.

2. A combination of single, double or multiple rows of sprinklers across fairways to address fairway shapes

3. Tees shall have full or part circle sprinklers spraying onto the tee deck and tee batters. Again part circle sprinklers will be used where necessary to prevent overspray into existing flora or residential areas.

4. Tee to fairway carries to be irrigated where practical.

5. All sprinklers to be mounted on "0-Ring" sealed swing joint risers.

6. All mainline pipework to be rigid PVC to a minimum of class "12" Rubber Ring Jointed and installed predominantly in out of play areas (e.g. fairway roughs). Lateral pipework to be either PVC or polyethylene.

7. If recycled water is to be utilised then all pipework to be lilac pipe or have lilac stripe and to be marked as per the Australian Standard.

8. Isolation valves placed at all major mainline intersections and to isolate each hole. All fairways, greens and tees laterals shall have their own isolation valves.

9. Air valves at appropriate high points.

10. All valves shall be housed in valve boxes.

11. All watering shall be designed to be carried out from 9.00 PM to 5:00 AM to take advantage of off peak power and completion before early players

12. One Quick Coupling Valves at each green and tee complex as well as at selected locations along each fairway edge.

All equipment selected to be suitable for use with re-cycled water.

If recycled water is to be used then all works shall be designed, installed and operated to conform to the National Guidelines for use of Re-cycled Water.

- The Pump Station
- Multiple pumps and motors selected to satisfy the water requirement.
- Capacity to satisfy peak season demand being applied in off peak operating times.
- "Demand Driven" from zero to total station capacity.

Pump Station response is automatic according to field demand and will make use of Variable Speed Technology to call on only the number of pumps required to satisfy the field demand

D. Power Supply:

The Pump Station will require a 415 volt 3-phase supply to provide enough energy to operate the full capacity of the Pump Station (to be designed by the project engineers).

The control system will require 220/240 volt supply for the central and weather station.

E. Installation:

The installation of the system will be progressively and best starting at the Pump Station and moving away to enable progressive operation of the system in accordance with the course staging and construction program.

In general mainline pipework shall be run on fairway edges to minimise surface disturbance, in particular with the larger pipes.

F. Management:

As previously mentioned a Weather Station shall be incorporated into the control system that will automatically adjust the present daily watering times to match the Daily Evapotranspiration Rates for the site. Off peak night time watering will not only affords the most economical energy costs, but applies water at optimum times to combat wind and evaporation effects. This prevents over watering by supplying only what the turf needs.
Programs will respond to the onsite weather station as well as field sensors that will conform to any EMP requirements for the golf course.
Above all else, the irrigation strategy is to water the plant not the soil.

Additionally the software program has the following features:-

- Cycle and soak features that ensure run off does not occur.
- Soil type, slope & location within the site enables specific adjustments to watering schedules and operating times.
- Individual station control provides the most accurate scheduling capability.
- Re-active programs (e.g. to wind speed & direction) as well as pump station failure.
- Water Budgeting allows quick global adjustments of all watering times.
- Daily printouts of watering programs, faults and history.
- Pump Monitoring.

The Waste to Resources Policy 2010 is a tool for South Australian industry and government to better manage waste through its requirements for suitable waste from metropolitan Adelaide to be subject to resource recovery processes and prohibiting the disposal of certain waste to landfill.

In response to this policy it is noted that the policy is pertinent only to metropolitan Adelaide. Despite this it will be adopted procedures for the resort to recycle as far as possible all waste.

A Waste Management Plan is to be established that will:

- Assess the wastes being generated;
- Determine current disposal costs;
- Identify options for waste management which are economically and environmentally suitable; and
- Include a component of staff education so that all are aware of waste minimisation.

Further, the recycling initiatives will include:

- Scrap metals and batteries to metal recycling yards;
- Glass through the local council or recycling centre;
- Cardboard or paper through the local council or contractor ;
- Motor oil and hydraulic fluid to be treated via a WaterStax system or similar to be reused on course.

4.6 EPBC Act policies, guidelines or plans

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to all Australian territory and waters. Under the Act, actions that are likely to have a significant impact upon defined matters of national environmental significance are subject to an assessment and approval process. A person or company proposing to take an action that may have a significant impact on a matter of national environmental significance must refer that action to the Federal Minister for the Environment.

The EPBC Act is triggered when an action:

- Is taken anywhere in Australia and has, or is likely to have a significant impact on a matter of national environmental significance; or
- Is taken on Commonwealth land or in a Commonwealth marine area and has, or is likely to have a significant impact on the environment; or
- Is taken outside Commonwealth land or marine areas and has, or is likely to have a significant impact on the environment or Commonwealth land or waters; or
- Is taken by the Commonwealth and has, or is likely to have a significant impact on the environment.

The EPBC Act prescribes eight matters;

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

Under the EPBC Act a company proposing an action that may have a significant impact on a matter of national environmental significance must provide a Referral that will help the Commonwealth decide whether the proposal requires assessment and approval. The Commonwealth Environment Minister will consider the Referral and is required to decide within 20 business days whether the action requires approval.

A referral for this project was prepared and submitted to the Commonwealth in April 2014 (EPBC Reference No 2014/7201) and was made available for public viewing on the Department's website on 8th May 2014. The Commonwealth has agreed to assess this proposal in line with the South Australian Major Projects developments process (i.e., through the Public Environment Report document).

Subsequently two Flora and Fauna surveys have been carried out and in the course of these surveys specific attention was paid to those species listed under the EPBC Act that may be affected by the proposal.

Both surveys concluded that there would be no inconsistency between the proposal and the EPBC Act's policies and guidelines on the basis that certain design factors were included as part of the report's recommendations.

In early December 2014 officers from the Commonwealth Department of the Environment inspected the site.

Conclusion

There is no inconsistency between the proposal and the requirements of the EPBC.

4.7 'Tackling Climate Change, SA's Greenhouse Strategy 2007 – 2020'

This document is South Australia's planned response to climate change. It provides a framework for all of South Australia's greenhouse targets and commitments to be met in a comprehensive and coordinated way.

It adopts a strategy that takes three avenues to the future:

- reducing greenhouse emissions
- adapting to climate change
- innovating in markets, technologies, institutions and the way we live.

In the context of this framework the proposal is principally based around the provision of a championship golf course. The fundamental nature of this land use is dependent on three main elements; appropriate land; water availability for turf establishment and maintenance; and power for both the effective dispersal of the irrigation and operation of the golf resort.

Land

The site is generally open degraded ex-grazing land that is populated by mobs of kangaroos and Tammar wallabies. It has a range of indigenous vegetation, however, the predominant vegetation is pasture grass and exotic weeds.

Water

The main water source is from Middle River dam which is the principle source of potable water for the Island. The proposal uses overflow water collected during the winter months when such overflow would otherwise be lost. The water will be transported via new pipeline to the property and stored on site in a dam from where it will be dispersed per an irrigation system. The secondary source of potable water will be from rainwater collected from roof tops on site.

Power

The major determinant of the main demand sources for power are the base load needs of the irrigation pumping system and the clubhouse. The total power requirements (minimum 455kVA) were considered unable to be met from renewable energy sources on-site, ie wind power and solar energy.
It was therefore imperative that two other main sources were investigated. These included;

- extension of existing power lines from Hogs Bay Road at Pelican Lagoon to the site; and
- the use of multiple diesel generators automated to come on line with demand.

The use of diesel powered generators was ultimately discounted on the basis of long term operational costs.

After extensive negotiations with South Australia Power Networks (SAPN) the decision was made to opt for the connection to the existing grid with various modifications to meet the project's base load needs.

To this effect it is proposed to provide a three phase service with a total maximum capacity of 400 volt, 688 ampere (475 kVA) from the existing 33 kVA line near Hog Bay Road and Davies Road, Pelican Lagoon.

Solar cells are to be installed on site to supplement and reduce reliance on the main power source as proposed by reticulation. This system will cater for all hot water and lighting requirements of the development. This form of renewable energy will be capable of producing 80 KVA. In order to minimise visual intrusion on the landscape through reflection and reflected glare these panels are proposed to be located in the vicinity of the maintenance precinct which is sited in the treed area and visually concealed from off-site viewing.

Wind power, as a source of renewable energy, was investigated, however, wind turbine generators were considered inappropriate for a number of reasons including the impact on visual landscape, the need for associated infrastructure and the relatively high cost.

LPG gas will be supplied to the kitchen area of the main clubhouse/dining area and the kitchens of the lodge accommodation.

Built design

The proposal includes extensive buildings and while the design response to the set guidelines are comprehensively covered at a later stage of this overall report (Sec 5.6) the following broad principles are to be incorporated in building design to ensure ongoing sustainability and energy saving:

- High levels of insulation;
- Use of high performance glass and large overhangs where required for energy efficiency;
- Passive solar heating, day-lighting and natural cooling from cross ventilation;
- Solar hot water heating;
- A photovoltaic farm in the Maintenance area (ref above) located on the ground for easy maintenance;
- Minimisation of water use with low maintenance landscaping using indigenous species;
- Recycling of waste;
- Reuse of grey water for irrigation;
- Use of roof water for lavatory flushing and irrigation;
- Use of low emissivity building materials;
- Siting of buildings on previously cleared ex grazing land;
- Use of low maintenance building materials;
- Retention of road and hard surfaces runoff through appropriate erosion controls and channelling to site low point;
- Maximisation of utilisation of low embodied building materials;
- Use of local materials including field limestone for walls;
- Use of timber from certified sources;
- Minimum use of pressure treated timber;
- Use of high efficiency heating and cooling equipment, lights, appliances and water fixtures;

Conclusion

The proposal, while basically relying on the provision of reticulated power from the existing SAPN power lines adopts both the spirit and the implementation prompts of the State's planned response to climate change.

4.8 State and Commonwealth legislation and initiatives relating to conservation or protection of the biological environment and heritage items

The legislation pertinent to the site development includes:

- *Kangaroo Island Development Plan*
- *Environment Protection Act 1993*
- *Native Vegetation Act 1991 – Permit required for native vegetation removal*
- *Environment Protection and Biodiversity Conservation Act 1999*
- *National Parks and Wildlife Act 1972*
- *Natural Resources Management Act 2004*
- *Aboriginal Heritage Act 1988 (SA)*

The proposal is generally consistent with the *Kangaroo Island Development Plan* as outlined above (Sec. 4.1).
The proposal will comply with the requirements of State's *Environment Protection Act 1993* and under the State's *Native Vegetation Act 1991* a specific permit is to be applied for native vegetation removal with extensive areas of the site to be rehabilitated in compensation and off-set for removed indigenous vegetation. The proposal's general compliance with Commonwealth's *EPBC Act 1999* is outlined above (Sec 4.6).
The State's *National Parks and Wildlife Act 1972* allows for the establishment and maintenance of a system of reserves, as well as the protection of rare and endangered species of flora and fauna. The Act identifies and protects certain species, as well as providing offences for the damage of flora and fauna.
The *Natural Resources Management Act 2004* addresses the framework for natural resources management while aiming to look over the environment to ensure there is a balance between caring for land, water, plants and animals and the needs of farmers and landowners. This legislation incorporates animal and plant control which will enable and facilitate integrated and sustainable natural resource management, whilst engaging the community in the development and implementation of animal and plant control programs.

The proposal will be consistent with the pertinent State and Commonwealth legislation with regard to *EPBC* compliance and the *Native Vegetation Act* 1991. Subject to the proposal meeting the requirements of the *Native Vegetation Act 1991* and the Native Vegetation Council the proposal will have a very minimal impact on native vegetation.

The *South Australian Aboriginal Heritage Act 1988* does not mandate a need for an Aboriginal heritage survey and there is no legislative requirement to conduct a cultural heritage survey at the current project location. However, the *AHA 1988* does provide a legal obligation for the construction of the proposed golf course to not 'damage, disturb or interfere' with an 'aboriginal site' whether this site is recorded or not. A survey has been conducted by expert consultants and this topic is more fully addressed in Sec. 13 of this report.

5.0 NEED FOR THE PROPOSAL

5.1 Justification of the proposal

This segment addresses justification of the proposal from an environmental, economic (especially market demand), social and sustainability perspective, including the reasons for its proposed location, scale and staging.

The justification of the proposal is based around three major considerations, each of which are elaborated upon. These include:

- The consistency of the proposal with both the State tourism planning strategies and the policy content contained within the Kangaroo Island Sustainable Futures Development Plan Amendment (DPA);
- The significant contribution that the proposal will make to the Island's future tourism prospects; and
- The identified rising demand for golf-destination tourism.

State and Regional Tourism Plans

The *South Australian Tourism Plan 2020* notes that in the year to December 2013, 5.6 million overnight visitors spent $5.1 billion in South Australia across 18,000 tourism businesses, directly employing 31,000 South Australians This plan also notes that the regional areas, where 23% of the State's population lives, accounts for 44% of the total State tourism expenditure thus underlining the importance of tourism to the State's regional economies and specifically employment at a local level. The plan for State tourism growth aims for a target of $8.0 billion by December 2020 and requires share gains for all sectors of the South Australian tourism industry.

In the context of this plan the proposal will make a significant contribution to the targeted tourism growth rate. In its implementation strategies the *South Australian Tourism Commission* (SATC) has developed *Destination Action Plans* (*DAP*s) to focus and prioritise the projects to achieve the targets and while directly linked to the 2020 SA

Strategic Plan the DAPs are primarily focused on projects that can be delivered in the next 3 years. In the case of Kangaroo Island it is noted that the Island's tourism growth over the past 10 years of 32% increased visitation has been mainly driven by the international and interstate market. Among other things the DAP for the Island aims squarely at the market for high yield visitors and the development of interstate and international markets. In these respects the proposal is an ideal 'fit' as it specifically will target international and, to a lesser extent, interstate visitors. It is noted that the DAP highlights the need to address the logistical barriers of a Kangaroo Island holiday to maximize conversion of high appeal: Ease and cost of access.

The proposal is unswervingly consistent with the findings of the moderate growth scenarios of the *Kangaroo Island Futures Authority'*s latest report '*Economic Impact of Agriculture and Tourism' (2014)*. This KIFA report identifies the critical role tourism, which contributes 25 per cent of the Kangaroo Island's Gross Regional Product (GRP), plays in the economy of the Island. A key component of this report includes the recognition of the need for the development of new tourism experience and accommodation with an upgrade of utilities (power and water). The proposal, with its provisions of championship, links-style golf with extensive lodge and condominium accommodation options matches this criterion and will significantly contribute to the growth of the role of tourism in the local economy.

The Island is heavily dependent on its natural resources and tourist development is, in turn, wholly reliant on the most effective management and protection of the Island's natural assets. It is expected that the Island, as a region, will continue to develop as a pre-eminent sustainable, nature-based tourism destination.
In this context the protection and preservation of the environment that characterizes the site and its surrounds is vital for the success of the project. The existing topography and natural features of the site will be minimally shaped as the proposed course layout will generally follow the existing contours. There will be minimal vegetation clearance and extensive new planting to provide both planting offset and stabilization of possible erosion-prone land where the course nears the coast. The planting program along with the provision of irrigated areas will afford a more amenable habitat to many of the extant mammal species thus ensuring retention of this attractive element of the site. A kangaroo management program is to be instituted through the introduction of specific planting to ensure a degree of control of the existing herd and at the same time allowing this herd to be a distinct component of the overall complex.
The design and siting of the buildings associated with the complex are such as to minimize any offsite visual impact. This is particularly so in respect of the potential views from the coastal walk along Pennington Bay and the view back to the site from the viewing platform atop Mt Thisby some 8 km to the immediate west.

Contribution of the proposal to the Island's future tourism prospects

The proposal will make a significant contribution to the Island's future tourism prospects through the addition of high quality tourist lodging options in an otherwise under-serviced part of the Island (the Dudley Peninsula) and the supplementing of the specific attractions that the Island offers

Demand for golf destinations and golf tourism

While links-style golf allows the most common perception of golf in the British Isles in Australasia, as a form of golf course layout, it is markedly uncommon. In his book *"Classic Golf Links of great Britain and Ireland"* Donald Steel writes *"There is a joyous sense of space and freedom about most seaside links, a feeling of escape that makes you glad to be alive. Only a handful of golfers play purely to meet the game's essential competitive challenge. The vast majority do so for reasons of health, exercise, exploitation and the sheer enjoyment of the beauty in which they find themselves."* It is the rarity of such courses in Australia and New Zealand that creates an identified demand to play them. Aligned with this situation are two other observations in the evolving golfing industry that make the proposal intrinsically attractive. Firstly, there is the growing phenomenon of golf tourism where groups of golfers, large and small, travel varying distances to a range of golfing destinations for short to medium term stays. Recent examples of this include Barnbougle in Tasmania, the championship courses of the Murray River at Yarrawonga, Cobram, Barooga, etc., and the Mornington Peninsula courses in Victoria. Second, there is a growing market for the developing 'experience' golf on a golf destination basis where visitors enjoy both the characteristics of the course itself and the unique offerings of the surrounds, including spectacular scenery (such as Kauri Cliffs at Bay of Islands, NZ), local food and produce, and environmental conditions, e.g., Cape Wickham on King Island, Tasmania.

At present there is no demand for the golf course resort because there is no similar facility on the Island.

Predicted demand for the resort is based around similar development concepts throughout Australasia and the notable rise in golf-based tourism on a world-wise basis. It is estimated that a total of 20,000 golf rounds will be played per annum upon establishment of the course and facilities. It is envisaged that the accommodation that is part of the overall resort will cater for individual's not actually playing golf who will use the resort as a base for touring the various other attractions of the Island. In this regard it is estimated that the resort will provide for 22,000 visitor nights per year.

5.2 Local and State benefits of the proposal

There are a number of areas where the proposal will be of tangible benefit to both the Island and the State. These include vitally needed quality tourist accommodation, the provision of a new tourist attraction on a State and local level, a strong economic rationale, a sustainable resort within the ambit of the State's tourist design guidelines, and a site selection that is eminently suitable for both the primary and secondary purposes of the development. These are outlined in greater detail hereunder.

New accommodation and other local benefits.

The proposal will result in the creation of up to 70 Guest Accommodation Suites/Lodges (180 equivalent single beds) of three to four star accommodation standard while the condominium style dwellings will provide up to 40 units capable of being rented privately. These additional rooms are specifically identified as being required in the DPA for the Island and will afford a further base where visitors can stay at least a night and from which they may explore the Island..
The proposal will provide an opportunity to experience links golf in a spectacular environment. This is consistent with the aim of attracting tourists with a demand for different experiences (aside from the straight-out golf enthusiast).

The championship golf course sited in its classic Kangaroo Island environs will provide an additional attraction for marketing the overall Island.

The provision of the additional accommodation on the site will be readily accessible from both the current ferry services at Penneshaw and the airport at Kingscote. In strict visitor accommodation terms it will afford a new and distinct tourist 'node' in a part of the Island where no such facility exists. Viewed solely as a tourist lodging asset it will make a significant contribution to the Island's demand for quality accommodation and is envisaged as providing a new base for visitors to the Island to make various expeditions to the recognized tourist attractions on a daily basis. This will also see a significant rise in the number of extended stays. This is particularly pertinent to those international and interstate visitors who, using Adelaide as their South Australian base, take exhausting day trips to and from the Island. The additional high-end accommodation offers the opportunity for these day trippers to stay overnight and longer.
This is aside from the specific lure of the golf as a separate magnet. Indeed, it is expected that a relatively small percentage of visitors to the complex will use the accommodation and facilities wholly for golf. In its physical setting and using the design skills of Greg Norman Golf Design with the attributes of a site eminently suitable for link–style golf there is every expectation that the course will enter the world's top 100 golf courses within three years of its introduction. This designation will both raise the profile of Kangaroo Island with interstate and international visitors and also provide a strategic project for the State tourism industry with the resort offering a rival to other similar projects in Australasia.

Construction of both the course and the buildings will be carried out on a phased basis. Course construction will include certain specialists for fairway shaping and green making while bulk earthworks can be carried out by local labour and machinery hire. A turf nursery is to be established and this offers the chance for apprenticeship prospects for locally based candidates. The main clubhouse and lodges will include significant quantities of locally sources materials, e.g., the endemic white limestone.

The operational resort will, with exceptions, generally engage locally based staff.

The proposal will see the construction of 200mm diameter pipeline from the tapping point at Playford Hwy and Milk Track corner. This will be of an (unquantifiable) benefit to land holders along the pipeline route on Hog Bay Road.

State benefits include South Australia being embraced as one of Australasia's Premier tourist destinations while both the Island's and the State's produce will be actively promoted (eg, wine, honey, meat produce, cheese).

Aesthetically the proposal will result in extensive areas of regularly maintained indigenous planting as well as the introduced swards that are part of the golf course. Golf courses by their very nature are acknowledged as increasing the bio diversity opportunities and indeed, in an urban situation, are regarded in many quarters as the lungs of the city.

Economic rationale

From an economic and social perspective the following statistics and facets are intrinsic elements of the proposal:

- The overall course construction and building development is budgeted at $14,000,000.00 of which there is an identified direct local contribution of some $6,000,000.00 in labour accommodation, local materials, plant hire, travel, etc.

- The fully operational resort is planned to accommodate approximately 22,000 visitor nights per annum with 20,000 round of golf played per annum. This figures are expected to increase by up to 25% with the advent of airport and ferry upgrades.

- The average cost of golf per round will be $125.00 (current day values). The average spend per visitor including accommodation, but excluding golf, is envisaged to be $320.00-$350.00 per day.

- It is anticipated that the operational resort will employ up to 50 persons. Jobs will range from clubhouse and hotel staff, course maintenance, restaurant and kitchen staff, lodge and condominium servicing, golf and course superintending, golf pro shop, general gardening and planting, and building maintenance. In particular there will be opportunities for apprenticeships in the turf maintenance and hotel management areas of the resort.

- Course construction will be carried out by a mix of local and 'imported' skills. Bulk earthworks, where required, will be carried out by local contractors. Course shaping will be partially carried out local and 'imported' labour and machinery. Landscaping, materials, plant material and planting will be locally sourced. Irrigation will generally be sourced off-Island. Green and tee construction will generally be conducted by skilled personnel living temporarily on site.

- It is envisaged that building construction will be carried out by a mix of imported and local labour with consultancy (architecture, engineering, landscape architecture, etc.) generally sourced from the Mainland (Adelaide). Building materials will be resourced from a range of locales including the Island where available.

- The proposal is consistent with the adopted plans and strategies of the local Futures Authority, and the State and Commonwealth tourist planning bodies.

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Sustainability

The proposal is sustainable for the following reasons:

- The South Australian Tourism Commission has an adopted Design Guidelines document that describes the key considerations in developing a tourist facility in a sustainable manner (these are addressed in detail above at Sec. 4.4). The Design Guidelines outline a number of actions in site planning that have been used in the design of buildings proposed. Further, all of the buildings proposed are fully responsive to the State's adopted Principles of Good Design 2004 with a range of initiatives being employed to ensure low energy usage and most effective utilization of natural resources.

- Water supply will be provided by a combination of harvested roof water from the proposed buildings and the construction of a new main water connection from Middle River dam by way of a take-off new Kingscote Airport. Water is to flow from the Middle Creek dam during the winter months when the dam overflows and this overflow would otherwise spill to the open sea. This water is to be stored on-site in a significant (100 Megalitre) dam and applied for both course irrigation and potable water after treatment.

- Power is to be principally supplied via a new connection to the existing Hog Bay Road transmission line that runs from the mainland to Kingscote and beyond. This power is to be augmented by extensive solar collection on site. Tanked gas will provide for kitchen and in-lodge cooking needs.

- Sewage and waste water treatment is addressed by using an '*Econocycle'* system which uses a natural, chemical free process to treat sewage and wastewater, converting it to clean irrigation water which will be used to irrigate new planting to be installed away from the clubhouse and lodge precinct.. The system is compact, hardy and reliable, requiring only one service a year. It is highly cost efficient and has the lowest energy consumption of any unit on the market. The system also has powerful odor-absorbing capacity and guarantees no odors.

Site Selection

Site selection was governed by a number of factors including:

- Land considered suitable for links golf, i.e., generally open, gently undulating, excellent close range, middle range and long distant off-site views, an immediate visual connection to the ocean, prevailing winds, ability to retain the predominantly rural character of the landscape, rainfall, minimal clearing of indigenous vegetation, sandy soils, amongst other things.
- The availability of the land. The site was for sale.
- Access by vehicle.
- Proximity of ingress/egress points to the Island.
- Ability of the site to allow appropriate building sites that will be relatively unobtrusive, visually capable of blending into the landscape because of topography and hidden from distant viewpoints while taking advantage of spectacular coastal scenery.

It is to be noted that the search for an appropriate site included an over-fly of the bulk of the Island's coastline. No other site offered the selection criteria.

Scale and Staging

The proposal includes an 18 hole golf course and practice facilities. The scale and size of the proposed complex is mainly dictated by planned usage rates and visitor attendances on an overnight stay basis. The accommodation provisions are planned on the ultimately fully operational resort and expected golfing rounds played.

The location of the proposal, on an Island, in its State and international context, is relatively isolated. It is therefore to be fundamentally seen as a destination golf resort, i.e., visitors will go there to play and stay but with a strong emphasis on ancillary activities, including Island touring, dining, wildlife viewing, walking, etc., being highly inviting additional options.

The overall building plan of the proposal is purposefully designed to allow staging. This is evident in the proposed groupings of the lodge units directly accessible to the clubhouse. Furthermore, the proposal includes separate residential accommodation on 5 lots towards the eastern part of the site. These lots have provision for the development of condominium-style dwellings that will be developed on a perceived 'as needs' basis while offering a different, more group/family-attractive accommodation option.

5.3 Consequences of not proceeding with the proposal

Both the South Australian strategic planning initiatives and the Kangaroo Island development strategies address, head on, the importance of the tourism sector in the economic growth of the Island. Recent investigations show that existing current trends in the tourism sector are falling short of identified growth targets without further intervention and a common purpose being embraced by the Island residents.

The 'Kangaroo Island Structure Plan –Unlocking Opportunities' includes the a vision for the Island that sees tourism building on Kangaroo Island's reputation as a unique tourist destination by identifying and expanding new tourism opportunities for the region. The proposal is wholly consistent with that vision and not proceeding with it runs against that adopted vision.

Should the proposal not go ahead it is difficult to envisage any alternative use other than low intensity grazing being pursued. Whilst being intrinsically attractive as a physical tract of land with its spectacular scenery, wildlife and strong sense of being entrenched in a natural, isolated environment the site needs a singular stimulus to warrant its development with tourist accommodation. That stimulus is identified as championship level, links golf and the opportunities arising from golf tourism.

In short, without a development like the Kangaroo Island Golf resort the predominant existing day trip numbers are likely to continue while there is limited appropriate levels of accommodation to meet the needs of 'high end' international and interstate visitors. In turn, the flow-on beneficial effects and economic multiplier investment spend arising from such development will not be available to the local community.

6.0 ENVIRONMENTAL ISSUES

6.1 General

Kangaroo Island's spectacular scenery, unique history and prolific wildlife are features that make the Island one of Australia's most popular international tourist destinations. The Island's landscapes support a diverse range of bio-regions and environmental systems. The Island contains some of the state's most intact ecosystems and provides habitat for the largest number of endemic species in any region of the state. The Island supports a large number of biodiversity assets, including a number of state and nationally threatened plants and animals, many of which are found nowhere else in the world. Of the remaining native vegetation, 64 per cent is conserved either in government reserves or under vegetation heritage agreements and almost 30 per cent of the Island is part of the parks reserve system, which is managed by the Department of Environment, Water and Natural Resources. Much of the eastern part of the Island has been cleared for agriculture and many of the unique plant communities in this area are under threat.

The project area is 217.24 Ha and located on the southern side of the Dudley Peninsula on the eastern part of the Island. Most of the project area is comprised of cleared farmland with scattered patches of native vegetation. Areas of mallee woodland and shrubland remain throughout the area, particularly on the eastern side of the site. To the east of the project site is a large expanse of intact native vegetation. A large proportion of the surrounding vegetation is formally protected, including Dudley Conservation Park (1,768 ha) approximately 2.5 km north-east of the project area and a number of Heritage Agreements under the *Native Vegetation Act 1991*, the nearest being less than 1 km east of the project area (HA 1131). Directly south of the project area are coastal dunes and rugged coastal cliffs. The project site, on account of its history and cattle grazing and its current high population of grazing kangaroos and wallabies, is in a degraded state. In particular, the coastal dunes, limestone, and calcrete formations associated with the heathland/shrubland communities are significantly prejudiced by invasive weed infestation.

6.2 Relevant Legislation

EPBC Act policies, guidelines or plans

The *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) applies to all Australian territory and waters. Under the Act, actions that are likely to have a significant impact upon defined matters of national environmental significance are subject to an assessment and approval process. A person or company

proposing to take an action that may have a significant impact on a matter of national environmental significance must refer that action to the Federal Minister for the Environment.

The EPBC Act is triggered when an action:

- Is taken anywhere in Australia and has, or is likely to have a significant impact on a matter of national environmental significance; or
- Is taken on Commonwealth land or in a Commonwealth marine area and has, or is likely to have a significant impact on the environment; or
- Is taken outside Commonwealth land or marine areas and has, or is likely to have a significant impact on the environment or Commonwealth land or waters; or
- Is taken by the Commonwealth and has, or is likely to have a significant impact on the environment.

The EPBC Act prescribes eight matters;

- world heritage properties
- national heritage places
- wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)
- nationally threatened species and ecological communities
- migratory species
- Commonwealth marine areas
- the Great Barrier Reef Marine Park
- nuclear actions (including uranium mining)
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act Significant Impact Guidelines provide overarching guidance on determining whether an action is likely to have a significant impact on a matter of national environmental significance. In terms of nationally threatened species, the guidelines define an action as likely to have a significant impact if there is a real chance or possibility that it will:

- lead to a long term decrease in the population
- reduce the area of occupancy of the species
- fragment an existing population

- adversely affect critical habitat
- disrupt breeding cycles
- modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in the establishment of invasive species that are harmful to the species
- introduce disease that may cause the species to decline
- interfere with the recovery of the species.

Under the EPBC Act a company proposing an action that may have a significant impact on a matter of national environmental significance must provide a Referral that will help the Commonwealth decide whether the proposal requires assessment and approval. The Commonwealth Environment Minister will consider the Referral and is required to decide within 20 business days whether the action requires approval.

A referral for this project was prepared and submitted to the Commonwealth in April 2014 (EPBC Reference No 2014/7201) and was made available for public viewing on the Department's website on 8th May 2014. In early December 2014 officers from the Commonwealth Department of the Environment inspected the site.

The Commonwealth has agreed to assess this proposal in line with the South Australian Major Projects developments process (i.e., through the Public Environment Report document).

Subsequently two Flora and Fauna surveys have been carried out and in the course of these surveys specific attention was paid to those species listed under the EPBC Act that may be affected by the proposal.

Both surveys concluded that there would be no inconsistency between the proposal and the EPBC Act's policies and guidelines on the basis that certain design factors were included as part of the report's recommendations.

Native Vegetation Act 1991

In South Australia native vegetation is protected by the Native Vegetation Act 1991 (NV Act) and the associated Native Vegetation Regulations 2003. Regulations are exemptions to the Act. They provide a mechanism (if certain criteria are met) to clear native vegetation without a formal clearance application or associated fee.

The Act establishes the Native Vegetation Council (NVC) – an independent body appointed by the Governor of South Australia. The NVC is responsible for making decisions about a wide range of matters concerning native vegetation in South Australia, including whether to approve native vegetation clearance via some of the Regulations.

In some cases, in order to take advantage of an exemption under a regulation, the proponent/landholder must offset the clearance by providing an environmental gain, called a Significant Environmental Benefit (SEB). There is also a requirement for a Management Plan describing how the clearance will be conducted to minimise impacts and how the SEB offset will be managed into the future. The Management Plan must be endorsed by the NVC.

Under *Regulation 5(1)(c) Development subject to Section 48 of the Development Act*, Native vegetation may be cleared for a development that is given 'Major Project Status' under the Development Act 1993. The NVC is provided opportunity to make comment to the Minister administering the Development Act. A SEB offset and Management Plan are required, as described above.
The landowner may achieve the SEB offset by works on the property, such as managing existing remnant native vegetation, restoring degraded native vegetation or revegetating cleared areas. Alternatively, the proponent may make a payment to the NVC through the Native Vegetation Fund, with the funds enabling similar works elsewhere within the same region of the State.

National Parks and Wildlife Act 1972

Vascular plants and vertebrate animals (e.g. mammals, birds, reptiles and amphibians) are protected in South Australia under the threatened species schedules of the *National Parks and Wildlife Act 1972* (NPW Act): Schedule 7 (endangered species), Schedule 8 (vulnerable species) and Schedule 9 (rare species). The criteria used to define threatened species in South Australia are generally based on categories and definitions from the IUCN Red List Categories and Criteria.

The current schedules do not include non-vascular plants, fish, insects, butterflies, spiders, scorpions and other invertebrates, fungi and other life forms which do not have a current legal conservation status in South Australia.

South Australian freshwater and marine fish, some marine invertebrates and crustaceans are protected under the *Fisheries Management Act 2007*. Some of these species have been identified as threatened and recommended for listing under the NPW Act but currently do not have a legal conservation status.

Under the NPW Act, persons must not:

- take a native plant on a reserve, wilderness protection area, wilderness protection zone, land reserved for public purposes, a forest reserve or any other Crown land.
- take a native plant of a prescribed species on private land.
- take a native plant on private land without the consent of the owner (such plants may also be covered by the *Native Vegetation Act 1991*).
- take a protected animal or the eggs of a protected animal without approval.
- keep protected animals unless authorised to do so.
- use poison to kill a protected animal without approval.

Natural Resources Management Act 2004

Under the *Natural Resources Management Act 2004* (NRM Act), landholders have a legal responsibility to manage declared pest plants and animals and prevent land and water degradation.

Key components under the Act include the establishment of regional Natural Resource Management (NRM) Boards and development of regional NRM Plans; the ability to control water use through prescription, allocations and restrictions; requirement to control pest plants and animals, and activities that might result in land degradation.

A 'duty of care' is a fundamental component of this Act, i.e. ensuring one's environmental and civil obligation by taking reasonable steps to prevent land and water degradation. Persons can be prosecuted if they are considered negligent in meeting their obligations.

The Natural Resource Management Plan is of relevance to this project and it incorporates animal and plant control while will enable and facilitate integrated and sustainable natural resource management. It will also engage the community in the development and implementation of animal and plant control programs.

6.3 Flora & Fauna Survey methodology

All flora species observed were recorded, including the locations of any threatened flora species (if present) and significant weed infestations. Species nomenclature used in this report follows that used in the Biological Database of South Australia (BDBSA) as at November 2014.

Ecological assessment has been carried out by two specialist consultants (*EBS* and *Botanical Enigmerase*). The survey methodology for flora and fauna included:

EBS Methodology

Desktop assessment - Flora and fauna

A review of relevant literature, data and aerial imagery was undertaken for the project site and the immediate surrounds. Information was obtained from the following databases:

- EPBC Protected Matters Online Search Tool
- Bird Atlas
- Atlas of Living Australia
- Nature maps (DEWNR online mapping), and
- Biological Database of South Australia.

The information was used to identify:

- biological surveys previously undertaken in the area
- flora and fauna species known to occur in the area
- conservation significant flora and fauna species likely to occur in the area
- vegetation communities in the area
- key habitat requirements for conservation significant species
- important fauna habitat characteristics.

Field survey

A combined ecology/heritage field survey was conducted from the 11th to the 14th of November 2014. Field investigations focused on ground-truthing and supplementing the data collected during the desktop assessment. The ecology survey also focused on providing a comprehensive site assessment to meet the legislative and supplied Public Environmental Report (PER) guideline requirements, while the heritage field survey focused on the risk assessment and assessing the requirements for a cultural heritage survey.

Vegetation associations and condition

Data was collected as per the requirements of the *Native Vegetation Act 1991*. Vegetation associations were mapped and native vegetation patches were assigned a condition rating based on the Native Vegetation Council Significant Environmental Benefit (SEB) criteria, adapted from Stokes et al. (1998) and

DWLBC (2005) (see Error! Reference source not found.). The condition ratings reflect the quality of the vegetation and the level of disturbance. The extent of impact of the development on the native vegetation was assessed.

Condition	SEB ratio	% indigenous cover	Overstorey condition description	Understorey condition description	Indicators	NVC Interim Policy (1.2.11)
Very Poor	0:1	<10%	No overstorey stratum remaining.	Complete destruction of indigenous understorey* (by grazing &/or introduced plants).	Vegetation structure no longer intact (e.g. removal of one or more vegetation strata). Scope for regeneration, but not to a state approaching good condition without intensive management. Dominated by very aggressive weeds. Partial or extensive clearing (> 50% of area). Evidence of heavy grazing (tracks, browse lines, species changes, complete depletion of soil surface crust).	Where proposed clearance is considered to be minor and of limited biodiversity impact, e.g. lopping of overhanging limbs only or minor clearance of shrubs in areas otherwise considered as highly disturbed.
	1:1	10-19%	Scattered trees in poor health and/or representing an immature stand.	Almost complete destruction of indigenous understorey* (by grazing &/or introduced plants) - reduced to scattered clumps and individual plants.		Where proposed clearance is in areas dominated by introduced species, the area of native vegetation is largely reduced to scattered trees, indigenous understorey reduced to scattered clumps and individual plants.
	2:1	20-29%	Scattered trees either immature in good health or mature in poor/moderate health. Alternatively, the dominant overstorey stratum is largely intact and is an immature stand (or regrowth), and is generally in poor health.			
Poor	3:1	30-39%	Dominant overstorey stratum is largely intact and is a moderately healthy mature stand.	Heavy loss of native plant species (by grazing &/or introduced plants). The understorey* consists predominately of alien species, although a small number of natives persist.	Vegetation structure substantially altered (e.g. one or more vegetation strata depleted). Retains basic vegetation structure or the ability to regenerate it. Very obvious signs of long-term or severe disturbance. Weed dominated with some very aggressive weeds. Partial clearing (10 – 50% of area). Evidence of moderate grazing (tracks, browse lines, soil surface crust extensively broken).	Where the proposed clearance is of mostly intact overstorey vegetation but there is still considerable weed infestation amongst the understorey flora.
	4:1	40-49%	Dominant overstorey stratum is largely intact and is a healthy mature stand with high wildlife habitat value (e.g. hollows).			

Condition	SEB ratio	% indigenous cover	Overstorey condition description	Understorey condition description	Indicators	NVC Interim Policy (1.2.11)
Moderate	5:1	50-59%	Dominant overstorey stratum is largely intact – any condition+	Moderate loss of native understorey diversity. Weed-free areas small. Substantial invasion of aliens resulting in significant competition, but native understorey* persists; for example, may be a low proportion of native species and a high native cover, or a high proportion of native species and low native cover.	Vegetation structure altered (e.g. one or more vegetation strata depleted). Most seed sources available to regenerate original structure. Obvious signs of disturbance (e.g. tracks, bare ground). Minor clearing (<10% of area). Considerable weed infestation with some aggressive weeds. Evidence of some grazing (tracks, soil surface crust patchy).	Where the proposed clearance is of mostly intact overstorey vegetation with moderate but not severe weed infestation amongst the understorey flora. Clearance is not seriously at variance with the Principles.
	6:1	60-69%	Dominant overstorey stratum is largely intact – any condition+	Moderate but not severe weed infestation amongst the understorey flora.		
Good	7:1	70-79%	Original overstorey stratum is still dominant and intact – any condition+	Understorey only slightly modified. High proportion of native species and native cover in the understorey*; reasonable representation of probable pre-European vegetation.	Vegetation structure intact (e.g. all strata intact). Disturbance minor, only affecting individual species. Only non-aggressive weeds present. Some litter build-up.	Where the proposed clearance is of mostly intact overstorey and understorey vegetation, weed infestation is moderate to low, but the original vegetation is still dominant. Clearance is assessed by the NVC to be at variance with the Principles.
	8:1	80-89%	Original overstorey stratum is still dominant and intact – any condition+	Understorey only slightly modified. High proportion of native species and native cover in the understorey*; reasonable representation of probable pre-European vegetation.		
Excellent	9:1	> 89%	Original vegetation is still dominant and intact. Overstorey individuals in good condition and represent a mature stand.	Diverse vegetation with very little weed infestation.Understorey largely undisturbed, minimal loss of plant species diversity. Very little or no sign of alien vegetation in the understorey*; resembles probable pre-European condition.	All strata intact and botanical composition close to original. Little or no signs of disturbance. Little or no weed infestation. Soil surface crust intact. Substantial litter cover.	Where the proposed clearance is of diverse vegetation with very little weed infestation. Clearance is assessed by the NVC to be seriously at variance with the Principles.
	10:1		Original vegetation is still dominant and intact. Overstorey individuals in good condition and represent a mature stand, with high habitat value (e.g. hollows).			

Figure 9 - Assessment criteria for the condition of vegetation communities. (Prepared by EBS - Appendix L)

* Or all strata if the upper and lower strata are difficult to distinguish.
+ Ratio assessment will largely depend upon condition of understorey associated with an intact overstorey stratum.
Adapted from *Guide to Roadside Vegetation Survey Methodology for South Australia* (Stokes et al. 1998) and *Guidelines for a Native Vegetation Significant Environmental Benefit Policy* (DWLBC 2005).

Botanical Enigmerase methodology

The second survey conducted by BE Consultants included the following methodology :

The vegetation on the property of the proposed Kangaroo Island Golf Course Resort was surveyed during October 2014 in accordance with the methodology outlined in *Heard and Channon 1997*. Ten 30m x 30m quadrats were located on the property. The quadrats are located near proposed native vegetation clearance and in different vegetation communities, including cleared land, Figure 2.

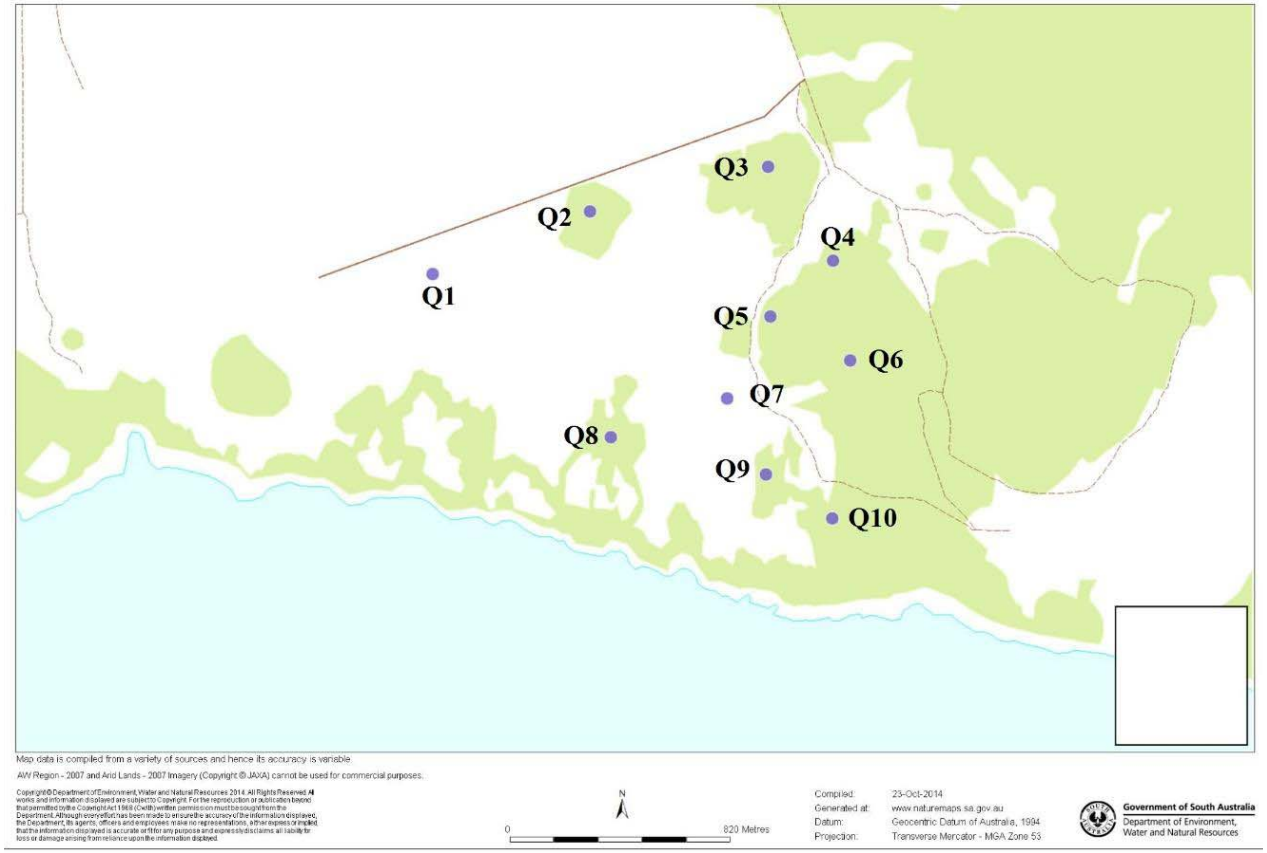

Figure 10- Vegetation Survey Quadrat Locations (Prepared by BE - Appendix K)

Additionally each quadrat was also surveyed using the "BushRat" methodology developed by the Native Vegetation Council to assist in assessing native vegetation clearance applications, (*Native Vegetation and Biodiversity Management Unit 2013*).

The vegetation surveys undertaken on the site as a result cover all habitats, are easily duplicable to enable future monitoring to assess change and assist in determining requirements for native vegetation clearance.

6.4 Existing Conditions - Flora

It was found that in general, the native vegetation within the project area was degraded and lacked understorey cover and diversity due to heavy grazing pressure. Some of the vegetation patches on the eastern boundary of the project area were in good condition with an intact understorey stratum. Areas in good condition were generally those with surface limestone.

The assessments identified a number of plant associations (11in total) on the project site. The predominant plant association and occupying the greatest area of the overall site was one borne of the site's history of use as grazing land. This area was comprised mainly of exotic grasses and weeds including Oats, Hare's Tail Grass, African Boxthorn, Lincoln Weed and patches of Onion Weed. This area (plant association) occupies the generally cleared areas of the site and also includes scattered natives to a very limited extent. The predominant area is rated as very poor overall and consultants have assigned a *Significant Environmental Benefit (SEB)* accordingly.

The site has obviously not been burnt for a long time and this is on account of its history as grazing land. With the cessation of this grazing some years ago and the subsequent degradation of fences and other barriers significant numbers of kangaroo and wallaby currently utilise the site for browsing. The combination of exotic weed invasion and relatively high levels of kangaroo and wallaby browsing has affected the ability of the understorey of many of the indigenous plant associations to prosper.

Sixty-two flora species were recorded within the project area, including sixteen introduced species. One conservation rated species was recorded:

- Kangaroo Island Mallee *(Eucalyptus phenax* ssp. *compressa*) - rare in SA.

The most significant weed issues present were African Boxthorn *(Lycium ferocissimum*), Lincoln Weed *(Diplotaxis tenuifolia*) and Onion Weed *(Asphodelus fistulosus*). Active control works were evident for African Boxthorn, with the plants lefts insitu in large piles.

The over browsing by the kangaroo population on the site is potentially reducing the diversity of the vegetation communities. An analysis of the fire history of the property based on *Nature Maps* data indicates there is no recorded fire on the property (there is a recorded nearby fire in 1954). This may also suggest the vegetation communities are senescent.

A total of 11 plant associations were identified and these, whilst being more fully discussed in the pertinent appendices and in figure 11 below, include the following:

Association 1- Exotic Grassland +/- *Orthrosanthus multiflorus* +/- *Vittadinia australasica* var. *australasica*

The cleared and exotic dominated areas are widespread throughout the project area, and associated with those areas behind the coastal dunes which are not characterised by surface limestone. Amongst the most dominant weeds, Oats *(Avena barbata*), Hare's Tail Grass *(Lagurus ovata*) and Lincoln Weed *(Diplotaxis tenuifolia*), scattered African Boxthorn *(Lycium ferocissimum*) are prominent and patches of Onion Weed *(Asphodelus fistulosus*). Scattered natives persist throughout the association, including Morning Flag *(Orthrosanthus multiflorus*) and Sticky New Holland Daisy *(Vittadinia australasica var. australasica*). Small occurrences of Biddy Biddy *(Acaena novae-zelandiae*) and Ruby Saltbush *(Enchylaena tomentosa*) were also recorded and it is likely that additional scattered natives are also persisting throughout, however the vegetation is considered very poor overall with an assigned SEB ratio of 0:1.

Association 2 - *Leucopogon parviflorus*/ *Olearia axillaris* tall shrubland

This vegetation association dominates the coastal dunes which extend into the project area. The shrubland is dominated by Coast Beard-heath *(Leucopogon parviflorus*) and Coast Daisy-bush *(Olearia axillaris*) with other prominent native species such as Coast Spear-grass *(Austrostipa stipoides*), Old Man's Beard *(Clematis microphylla*), Knobby Club-rush *(Ficinia nodosa*), Bower Spinach *(Tetragonia implexicoma*), Coast Bonefruit *(Threlkeldia diffusa*) and Prickly Ground-berry *(Acrotriche patula*) throughout. Historically this area appears to have been heavily infested with African Boxthorn *(Lycium ferocissimum)*, which are now mounted up in regular piles along the back of the dunes in the cleared land. The infestation was probably spreading from the adjacent cleared areas into the dunes and scattered Boxthorn still persists throughout the dune shrubland community. The other most persistent weed species include Hare's Tail Grass (*Lagurus ovata*) and Lincoln Weed *(Diplotaxis tenuifolia*). Condition was therefore assessed as moderate with the overstorey intact, but with a reasonable level of understorey degradation due to weed invasion.

Association 3 – *Eucalyptus diversifolia* mallee over +/- *Melaleuca lanceolata*

Three areas were found to be dominated by this association. The small area on the north-eastern side of the project area contains a more mature stand, but is associated with limestone soils, in comparison to the two patches closer to the coast which contain sandy soils. The dominant overstorey is considered an intact stratum over a sometimes patchy understorey of Coast Beard-heath *(Leucopogon parviflorus*), Morning Flag *(Orthrosanthus multiflorus*), Common Eutaxia *(Eutaxia microphylla*), Coastal Wattle *(Acacia longifolia ssp. sophorae*), Scented Groundsel *(Senecio odoratus*), Prickly Ground-berry *(Acrotriche patula*) and Slender Honey-myrtle *(Melaleuca gibbosa*). These patches are in reasonable condition, particularly those associated with the sandy coastal soil directly behind the dunes which are in good condition, despite high levels of kangaroo and wallaby grazing throughout.

Association 4 – *Eucalyptus oleosa* / *Eucalyptus gracilis* / *Eucalyptus rugosa* mallee

A single centrally located patch was dominated by this mallee community associated with prominent surface limestone. The overstorey is intact however the only evidence of understorey vegetation is restricted to the edges of the patch. The most prominent species include Coast Beard-heath *(Leucopogon parviflorus*), Morning Flag *(Orthrosanthus*

multiflorus), Scented Groundsel *(Senecio odoratus*) Old Man's Beard *(Clematis microphylla*), Prickly Ground-berry *(Acrotriche patula*), Heath Spear-grass *(Austrostipa exilis*) and Sticky New Holland Daisy *(Vittadinia australasica var. australasica*).
The interior contains very few scattered individuals. This is probably due to high levels of grazing and surface litter, which are both suppressing seedling recruitment. The condition is therefore assessed as poor.

Association 5 - *Eucalyptus rugosa* / *Eucalyptus gracilis* / *Eucalyptus oleosa* +/- *Eucalyptus phenax* subsp. *compressa* +/- *Eucalyptus albopurpurea* mallee

This association dominates two large patches to the east of the project area. Both areas are characterised by surface limestone and sparse understorey vegetation. The patches are separated by approximately 100 m clearance, but are very similar in structure and species composition; however the more northern patch has significantly less understorey structure. They both possess an intact overstorey but the only evidence of understorey vegetation in the northern patch is mainly restricted to the edges of the patch. The overstorey includes patches of the state rare Kangaroo Island Mallee (*Eucalyptus phenax* ssp. *compressa*), the regionally vulnerable Yorrell *(Eucalyptus gracilis*) and the regionally rare Red Mallee *(Eucalyptus oleosa* ssp. *Ampliata*). The most prominent understorey species include Coast Beard-heath *(Leucopogon parviflorus*), Prickly Ground-berry *(Acrotriche patula*), Old Man's Beard *(Clematis microphylla*), Sea-berry Saltbush *(Rhagodia candolleana* ssp. *candolleana*), Scented Groundsel *(Senecio odoratus*), Morning Flag *(Orthrosanthus multiflorus*), Heath Spear-grass *(Austrostipa exilis*) and Sticky New Holland Daisy *(Vittadinia australasica* var*. australasica*). A number of weed species are scattered mainly around the edges, including African Boxthorn *(Lycium ferocissimum*), Lincoln Weed *(Diplotaxis tenuifolia*) and Onion Weed *(Asphodelus fistulosus*).

Association 6 - *Melaleuca lanceolata* tall shrubland over *Acacia paradoxa* / *Acrotriche patula* / *Acacia triquetra* / *Beyeria lechenaultii*

This community was observed in small patches of higher ground amongst the low very open shrublands in the central areas of the project area. The small pockets are also characterised by surface limestone, but differed from neighbouring areas by the presence of Dryland Teatree *(Melaleuca lanceolata*) as the dominant overstorey and a denser mid and understorey stratum.

A number of weed species were detected also, including the more prominent Oats *(Avena barbata*) and Hare's Tail Grass *(Lagurus ovata*), with the odd Onion Weed *(Asphodelus fistulosus*) and African Boxthorn *(Lycium ferocissimum*) scattered throughout. The overall condition of these patches ranged from moderate to good, with the variation generated by level of weed invasion and diversity of understorey.

Association 7 - *Acrotriche patula* / *Orthrosanthus multiflorus* very open shrubland

This association encompasses the open limestone dominated plains behind the coastal dune system. All examples are fairly degraded with obvious high levels of kangaroo and wallaby grazing and high levels of weed dominance. The condition rating assigned to this community is therefore poor.

Association 8 - *Acacia paradoxa* / *Acrotriche patula* / *Leucopogon parviflorus* tall shrubland

This community is similar to Association 6 where many common species are consistent however the dominant overstorey species differ. Like Association 6, it also occupies higher elevations than the neighbouring low very open shrublands in the central areas of the project area. The limestone dominated landscape is also an important influence on the vegetation.

Association 9 - *Eucalyptus gracilis* mallee over *Acrotriche patula*

A small patch of mallee eucalypt associated with an area of higher elevation located at the north-western end of the project area. This association was moderately degraded with much of the understorey absent, which is most probably the result of overgrazing by kangaroos.

Association 10 - *Leucopogon parviflorus* / *Lasiopetalum discolor* tall shrubland

This small patch of coastal heath was recorded from the south-eastern corner of the project area. The shrubland is in good condition with a reasonable diversity of species and low incidence of weeds.

Association 11 - *Eucalyptus rugosa* +/- *Eucalyptus albopurpurea* mallee over *Melaleuca lanceolata*

This association dominates large area in the south-eastern section of the project area. The eucalypt mallee community is characterised by sandy limestone soils and dominated by Kingscote Mallee *(Eucalyptus rugosa*) with scattered occurrences of Purple-flowered Mallee *(Eucalyptus albopurpurea*).

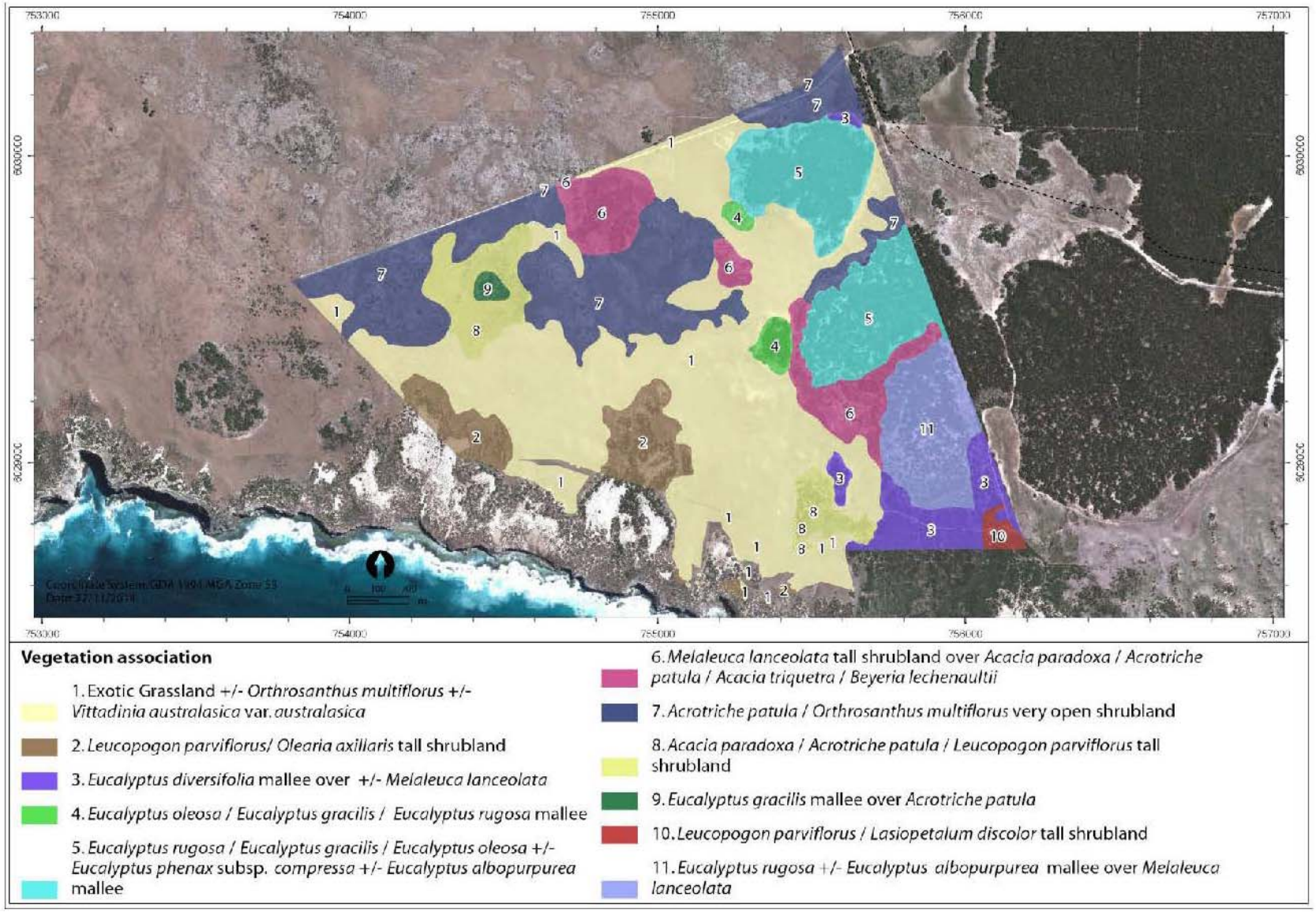

Figure 11- Vegetation Associations (Prepared by EBS – Appendix L)

6.5 Existing Conditions - Fauna

With regard to the investigations of the site fauna a total of twenty-three bird species were observed. This includes species observed in close proximity to the project area. Three of the species are rated as threatened in SA (NPW Act):

Birds

Twenty-three bird species were observed. This includes species observed in close proximity to the project area. Three of the species are rated as threatened in SA (NPW Act):

- Osprey (*Pandion haliaetus*) – endangered in SA. One bird was observed flying low over the coastline.
- Scarlet Robin (*Petroica boodang*) - The sub-species of Scarlet Robin on Kangaroo Island is considered an intermediate between the Mount Lofty Ranges sub-species (rated rare in SA), the Eyre Peninsula sub-species (rated vulnerable in SA) and the as yet unnamed subspecies on Yorke Peninsula. For the purpose of this report, the precautionary approach has been taken and the species has been considered as threatened. One bird was observed at Point Count site 6, in mallee vegetation.
- Sooty Oystercatcher (*Haematopus fuliginosus*) – rare in SA. Two birds were opportunistically observed on the beach directly south of the project area.

Mammals

Five mammal species were recorded:

- Western Grey Kangaroo (*Macropus fuliginosus*) - observed in high abundance (estimated approximately 400 individuals) across the project area.
- Tammar Wallaby (*Macropus eugenii decres*) - three individuals observed directly north of the project area in roadside vegetation.
- Short-beaked Echidna (*Tachyglossus aculeatus*) - diggings and scats observed.
- Common Brushtail Possum (*Trichosurus vulpecular*) – rare in SA. Scats observed.

Other small mammal species are likely to be present however targeted survey was not undertaken.

Reptiles

Three individuals of the state vulnerable Heath Goanna (*Varanus rosenbergi*) were observed. Other reptile species are likely to be present however targeted survey was not undertaken.

Of the conservation-significant fauna, five species are known to occur within or in close proximity to the project area: Common Brushtail Possum, Heath Goanna, Hooded Plover, Osprey, Scarlet Robin and Sooty Oystercatcher. Three species were determined as likely to have potential habitat and or potentially occur on site, being the Shy Heathwren, Southern Emu-wren and the White-bellied Sea-eagle. Three species were determined as possibly occurring on site: Cattle and Great Egrets, and the Southern Brown Bandicoot.

6.6 Principle biodiversity issues

6.6.1 Vegetation clearance and offsets

The proposal will result in a significant new land use on the subject property and accordingly will have a limited impact on approximately 20% of the total property and proposed coastal lease areas. The proposal is also regarded as an opportunity to provide far greater land management of the overall site and thereby flora rehabilitation prospects and kangaroo /wallaby grazing. The design and layout of the proposed golf course, the buildings, access routes and infrastructure layout is deliberately sited for the most part on the degraded grazing areas with an emphasis of generally avoiding large areas of native vegetation and reducing potential land disturbance. It is to be noted that much of the open, degraded pasture areas have 'spotted' native vegetation including numerous species, in twos and threes, of Prickly Ground Berry *(Acrotriche patula*) and Morning Flag *(Orthrosanthus multiflorus*). While some of these areas are regarded as having relatively low retention values a central biodiversity issue is the proposed vegetation clearance and offsets that are proposed. It is also noted that suppression of weed species throughout many of the remnants in conjunction with reduction in grazing pressure will likely encourage natural regeneration of native understorey species. However a number of the mallee patches, where natural regeneration is currently being suppressed by high levels of grazing by macropods, will require revegetation to restore degraded understories. Any revegetation undertaken will need to be adequately protected from grazing animals to promote seedling survival in the longer term.

Both assessment reports from the ecological consultants made quite specific recommendations regarding mitigation and minimisation of vegetation clearance as well as compensation required for the loss of native vegetation and habitat. Upon receipt of these recommendations a number of amendments were made to the overall master plan of the project site. These included:

- The proposed entrance road way be relocated along existing tracks rather than through the native vegetation resulting in a realignment of golf fairways.
- Reconfigure the private allotments (1-5) so that the "Private Villas" can all be located on cleared land which will result in less distance between each villa. Of particular concern is the two villas proposed on Lot 1 as this is possibly the most diverse native vegetation on the property.

- Relocation of the proposed driving range which was initially planned for siting in Plant Association 3 – *Eucalyptus diversifolia* mallee over +/- *Melaleuca lanceolata*.
- Some minor adjustments of other fairways to reduce the incidental clearance proposed.

There appears to be an inconsistency between the amounts of indigenous vegetation clearance required between the two ecological consultants. In this regard BE consultants point to a total area of 0.8 Ha to be cleared at a SEB of approximately 4:1. This would require the replanting of a total area of 3.2Ha. On the other hand EBS consultants have identified a total area of 14.14 Ha in a combination of SEB ratios. The distinct differences in the amount of clearance required and accordingly the variations in SEB required appears to be rooted in the differing methodologies adopted by the two consultants. In this instance Programmed has elected to adopt the greater of the SEB offset requirement of 70.01 Ha or $67,527 payment to the Native Vegetation Fund.

Proposed revegetation works include:

- Allowing natural regeneration of remnant native vegetation and providing active revegetation (where suitable, and based on vegetation mapping for the area) in degraded areas.
- Where possible, revegetation will aim to expand vegetation patches and re-establish connections (or lessen the distance) between patches.
- Active revegetation of understory within Mallee habitats.
- Revegetation within Mallee patches where the understorey is lacking.
- Revegetation within the better condition shrubland associations where cover/diversity is lacking
- Revegetation buffers around existing quality vegetation patches
- Weed control, focusing on the better quality vegetation patches
- Weed control and restoration within the adjacent coastal dunes.

At this point a landscape/revegetation plan has not been detailed. Such preparation is regarded as premature on the basis that this plan is highly dependent upon the detailed design of the golf course, including access routing, hazards, tee locations and areas, fairways and greens, and in some instances view shaping. Furthermore, access roads, car park layout and detailed building design will also dictate the locations of revegetation and additional landscaping. However, it is noted that the BE assessment report is quite definitive on four aspects of future plant management on the site. These are:

- The rehabilitation of the native vegetation on the property will require active management of the kangaroo population to be successful. The report notes that the kangaroo population however, is high in the area generally, not just the property. Therefore culling of the population on the property will not

achieve the desired outcome. The establishment of the golf course, with extensive areas of fairways and greens, and permanent water will also attract kangaroos to the site. The exclusion of kangaroos to areas, or all, of the property will be required to enable the native vegetation to rehabilitate and increase biodiversity.

- Following the reduction in the kangaroo population it will be possible to introduce active native vegetation rehabilitation programs such as the introduction of fire and/or direct revegetation programs.

- Trial plantings of Sticky New Holland Daisy *(Vittadinia australasica var. australasica),* should be undertaken in conjunction with other native plants to determine if this is a successful form of rehabilitation. This initiative is taken on the basis that as the number of *Vittadinia* increases the population of kangaroo's decreases. The Sticky New Holland Daisy will be an integral plant element in the proposed revegetation program.

- Develop an integrated introduced plant and native vegetation rehabilitation program that controls, and where possible eradicates introduced (especially proclaimed) plants; prevents the escape of golf course grasses and revegetates landscaped areas with locally indigenous plant species.

In areas of the coastal dune shrublands, mallee patches and shrublands the management of vegetation will need to incorporate weed management of woody and herbaceous exotics throughout these areas, in particular, African Boxthorn *(Lycium ferocissimum*), Lincoln Weed *(Diplotaxis tenuifolia*) and Onion Weed *(Asphodelus fistulosus*). Grassy exotics such as Oats *(Avena barbata*) and Hare's Tail Grass *(Lagurus ovata*) will be more difficult to control and caution will need to be exercised when controlling amongst native plants, particularly the small herbaceous species and native grasses. Weed management programs will need to include suitable follow up activities to effectively manage exotics throughout the project area.

Vegetation association	SEB ratio^	Total Estimated Clearance (ha))	Management fee ($)	Land Value per ha ($)^	Required SEB (ha)	SEB payment into NV Fund ($)
1	0:1	30.92131799	-	-	-	-
1	1:1	1.4558792	800	803	1.4558792	2333.774358
2	5:1	1.958361051	800	803	9.791805255	9429.50846
3	5:1	0.0239339	800	803	0.1196695	115.2417285
3	8:1	0.01399137	800	803	0.11193096	101.0736569
3	9:1	0.2552932	800	803	2.2976388	2049.238516
4	4:1	0.09188441	800	803	0.36753764	368.6402529
5	5:1	0.30859574	800	803	2.46876592	2229.295626
5	8:1	0.683898718	800	803	5.471189744	4940.484339
6	6:1	0.0386593	800	803	0.2319558	217.1879474
6	7:1	2.887417557	800	803	20.2119229	18540.10814
7	3:1	4.442502377	800	803	13.32750713	14255.99013
7	4:1	0.3154365	800	803	1.261746	1265.531238
8	6:1	0.211562923	800	803	1.269377538	1188.560501
8	8:1	1.45237029	800	803	11.61896232	10491.92297
Grand Total		45.06 (14.14 is native vegetation)			70.01	67526.56

^ based on the condition of the vegetation and land values at the time of the assessment. Land values last updated 2009.

Figure 12 - Native vegetation clearance and SEB calculations for the proposed development footprint. (Prepared by EBS appendix L)

A number of proposals are incorporated in both ecological assessment reports in relation to the requirements of the Native Vegetation Act 1991. In part a number of these recommendations have, upon receipt of the reports, been adopted in changes to the concept plan as initially proposed. These relate to the golf course layout, the access routing and the separate lot building footprints.

In particular the following are included in EMP or have been adopted in subsequent amendments to the site master plan.

- Development of an integrated introduced plant control and native vegetation rehabilitation program that controls, and where possible eradicates introduced (especially proclaimed) plants, prevents the escape of golf course grasses and re-vegetates landscaped areas with locally indigenous plant species.

- An active kangaroo management program needs to be developed and implemented to manage the population, enable vegetation and landscape rehabilitation and to manage introduced plant species.

- Modifications to road access ways, allotment alignments, relocation of “Driving Range” and minor fairway adjustments to reduce native vegetation clearance.

- A “spray-buffer” surround be established around the areas planted with golf course grass to prevent creeping into the native vegetation.

- Allowing natural regeneration of remnant native vegetation and provide active revegetation (where suitable, and based on vegetation mapping for the area) in degraded areas.

The direct removal of habitat associated with the proposed clearance of vegetation will have a local impact on resident fauna species, but this impact is considered to be insignificant at the population level. Some fauna species may benefit or be attracted to the area due to an increase in green feed and available water associated with the development.

The advent of the proposal will overall enhance the habitat for fauna species to grow and prosper.

6.6.2 Kangaroo numbers

Western Grey Kangaroos (*Macropus fuliginosus*) were recorded in high numbers and Tammar Wallabies are also reported to occur in high numbers. The advent of irrigated green feed per the golf course and access to a permanent water source will increase grazing pressures. Management of kangaroos will therefore be a necessity to successfully restore native vegetation and achieve SEB offsets on site, as well as a reality to maintain a golf course to the desired international standard. A Kangaroo Management Plan will therefore be developed in conjunction with DEWNR and surrounding landholders, identifying the management aims, control strategies to be adopted and any potential issues. Management options may include:

- Monitoring of kangaroo numbers
- Fencing (e.g. around the golf course perimeter; around native vegetation patches to be restored or around revegetation areas)
- Culling to reduce total population size.

6.6.3 Substrate, hydrological impacts and surface drainage

Much of the site is covered by surface limestone. It is envisaged that mechanical removal may be required to develop the golf course greens where these outcrops occur. This will need to be done in a sensitive manner with consideration of potential heritage issues and stockpiled where there will be no impact on native vegetation. Golf construction in the coastal dunes system will include significant erosion mitigation initiatives including extensive grass and tussock planting to ensure ongoing dune stability.

There is little to no surface drainage across the site due to the poorly consolidated fine to coarse fossiliferous calcareous sands which are estimated to be in excess of 40m in depth and are in areas overlaid by calcrete formations. It is highly unlikely therefore that in the event of any overwatering taking place that this will have any detrimental impact on the ground water system.

6.6.4 Conservation of significant flora

Kangaroo Island Mallee *(Eucalyptus phenax* ssp. *compressa*) is endemic to SA. It has a restricted distribution, occurring in scattered locations on north-eastern Kangaroo Island and the southern Fleurieu Peninsula (DEH 2008). This species had a scattered and patchy distribution within one of the vegetation associations recorded on site (Vegetation Association 5). Clearance of this association will generally be avoided to prevent impact on this species.

6.6.5 Conservation of significant fauna

Of possible conservation-listed fauna six species of significant fauna are known to occur within or in close proximity to the project area:

- Common Brushtail Possum;
- Heath Goanna;
- Hooded Plover;
- Osprey;
- Scarlet Robin and ;
- Sooty Oystercatcher.

Three species were determined as likely to have potential habitat and or potentially occur on site, being:

- Shy Heathwren;
- Southern Emu-wren and the;
- White-bellied Sea-eagle.

Three species were determined as possibly occurring on site:

- Cattle and Great Egrets, and the;
- Southern Brown Bandicoot.

Occurring on site:

The Common Brushtail Possum, listed as rare under the *NPW Ac.t* is an adaptable species and is unlikely to be negatively impacted by the proposed development. In contrast, there may be an issue with possums impacting on revegetation efforts as well as possums being attracted to visitor areas and alternative food sources.

Heath Goanna, listed as vulnerable under the *NPW Act*, are found in heath, open forest, sand dune, coastal and woodland habitats. Individuals require large areas of habitat and termite mounds for nesting purposes. They feed on road kill, birds, eggs, small mammals, invertebrates and other reptiles. An increase in road traffic associated with the development could result in an increase in Heath Goanna road deaths, which could have a significant impact on the local population. It is recommended that any road kill

should be reported to the KI Natural Resources Centre (KINRMB 2014). Speed limit restrictions should be enforced and road kill removed from the roadside to reduce the potential for impact on this species.

Hooded Plover, listed as vulnerable under the *NPW Act*, occur mainly on sandy ocean beaches, with most found around the tideline. The total population in SA is estimated at 540 birds (Natt and Weston 1995), with 220 birds counted on Kangaroo Island in 2012 (Gillam and Urban 2013). Hooded Plover generally prefer beaches backed by dunes rather than by cliffs. Breeding is carried out on ocean beaches; nests are a depression in the sand usually in association with dry seaweed and located above average high tide levels up into the primary dunes. The nesting season extends from August to February. Given the vulnerablility of nest sites and the potential for disturbance to shorebirds, it is recommended that human access along the coastline is minimised. Pets (e.g. dogs and cats) should be prohibited from the golf course site.

The Osprey, listed as endangered under the *NPW Act*, typically occurs within coastal waters and estuaries. Osprey are common around rocky shorelines, Island and reefs and breed autumn to spring typically on a high coastal headland, cliff top or offshore Island. Although high rock stacks were not observed along the coastal fringe of the project area, a known Osprey nest has been recorded east of the site. A single Osprey was observed flying low along the coastal fringe directly adjacent to the project area. The breeding population in South Australia was estimated at 52 pairs in 2005. Breeding sites on Kangaroo Island are considered vulnerable to human disturbance. The main threat to the Osprey is considered to be loss, degradation or alteration of habitat for urban or tourism development. Ospreys typically shy away from human contact and can be easily flushed if disturbed around either the nest and/or during foraging behavior. The noise and activity during construction, and human activity during operation of the golf site could result in this sensitive species no longer utilising the general area and abandoning nearby nesting locations. Protecting breeding habitat by establishing buffer zones around both active and non-active nest sites will aid in minimising impact to this species. It is therefore recommended that a buffer of 1000 m be adopted around known Osprey nests during sensitive breeding times. If the species is found to utilise the immediate area around the golf course (e.g. for nesting or foraging), then further management measures may be necessary.

The Scarlet Robin, listed as vulnerable under the *NPW Act,* on Kangaroo Island is intermediate between the two subspecies: *Petroica boodang boodang* (South-East SA, Mount Lofty Ranges, Southern Flinders Ranges) classified as state Rare and *Petroica boodang campbelli* (Eyre Peninsula) classified as state Vulnerable, and that on the southern tip of Yorke Peninsula which has not yet been identified to subspecies level. In this case, the precautionary principle is adopted with the population of Scarlet Robin on Kangaroo Island defined as being the one with the most significant conservation rating of vulnerable. Direct impact on this species may be caused by the removal of suitable habitat; impact should be minimised in the way of limiting the removal of potential habitat for this species (which is represented by Association 4: *Eucalyptus oleosa* / *Eucalyptus gracilis* / *Eucalyptus rugosa* mallee.

The Sooty Oystercatcher, listed as rare under the *NPW Act*, is strictly coastal, typically found within 50 m of the coastline. It prefers rocky shores but can also be observed on coral reefs or sandy beaches near mudflats. The Sooty Oystercatcher breeds in colonies generally on the ground amongst pebbles or shells on rocky shores or cliffs. Given the sensitive nature of the Sooty Oystercatcher, it is recommended that disturbance along the coastline (which abuts the project area), is minimised.

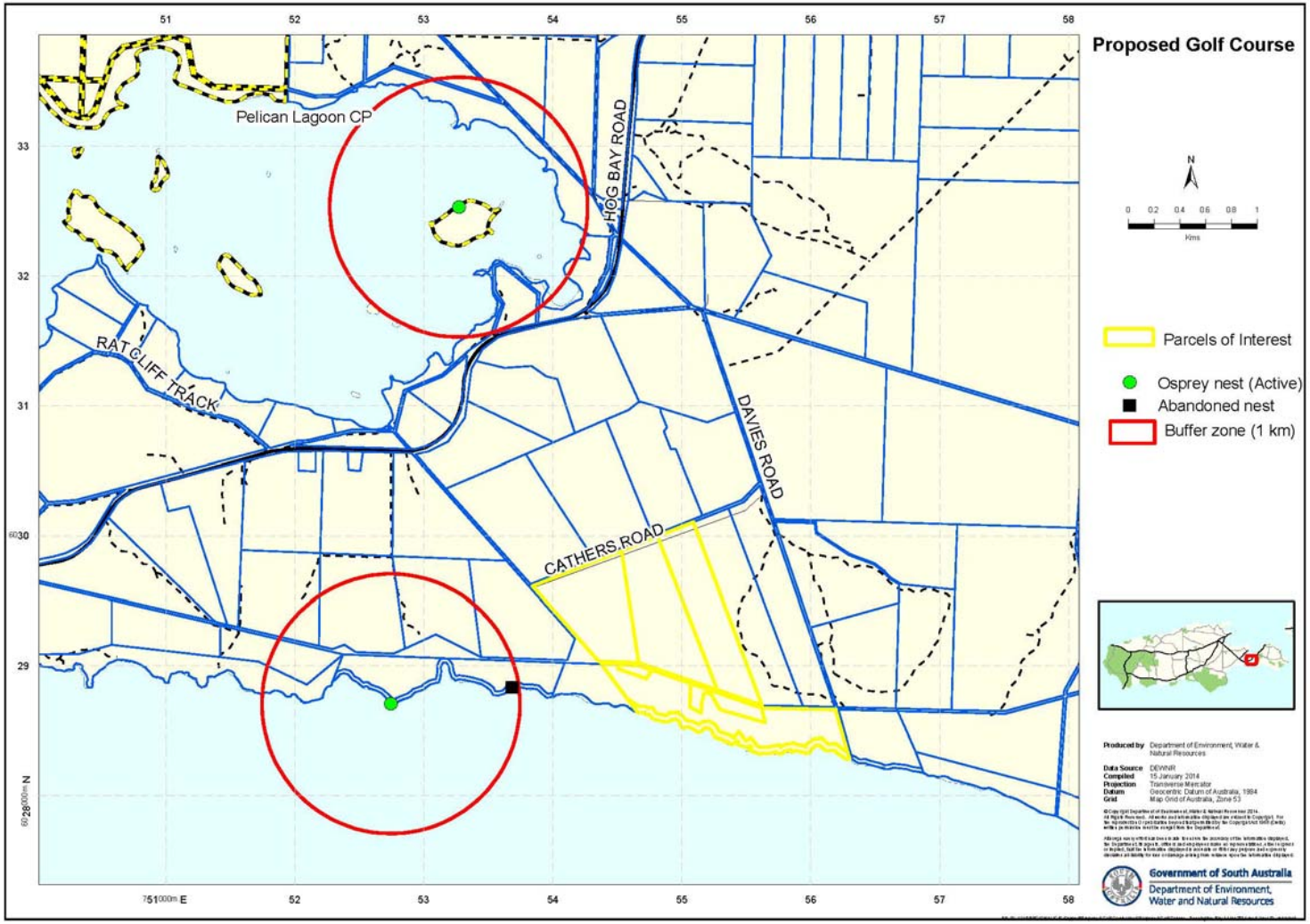

Figure 13– Location of active and non-active Osprey nests

Suitable habitat and or likely to occur on site

Whilst no individuals were recorded within the project area, there was suitable habitat identified for three particular bird species that have suitable habitat and are considered likely to occur on-site. These include:

Shy Heathwren (*Hylacola catua*) – listed as rare under the *NPW Ac*t prefer mallee and coastal thickets with dense low cover; grass tussocks on sandplains. Pairs typically forage on the ground among low vegetation and debris. Direct impact on this species may be caused by the removal of suitable habitat (i.e. Association 11). The current development footprint does not impact on this association. If the species is present the suitability of the habitat could be indirectly impacted by the presence of human activity. Visitors should be discouraged from walking into intact vegetation patches.

Southern Emu-wren (Kangaroo Island spp.) (*Stipiturus malachurus halmaturinus*) – listed as rare under the *NPW Act*. Suitable habitat was identified for this species located within the plant Association *Leucopogon parviflorus*/ *Olearia axillaris* tall shrubland. This species typically favors dense, low cover, damp heaths, sedges, sand-dune and sand-plain heaths. Direct impact on this species may be caused by the removal of suitable habitat and impact should be minimised in the way of limiting the removal of potential habitat for this species.

White-bellied Sea-eagle (*Haliaeetus leucogaster*) – listed as endangered under the *NPW Act* / marine and migratory under the *EPBC Act.*
On Kangaroo Island, the population of White-bellied Sea-Eagles have been monitored from 1985 to 1995, and then again in 2005. An average of seventeen territories have been located, which represents approximately 30% of the South Australian breeding population (Dennis and Baxter 2006).
The White-bellied Sea-Eagle generally foraged over in-shore coastal waters (Marchant & Higgins 1993; Smith 1985) however have also been recorded foraging over open terrestrial habitats such as grasslands (Marchant & Higgins 1993; Sedgwick 1978).

White-bellied Sea-eagle have suffered a significant population decline, predominantly attributed to human related disturbance causing nest failure. In SA, White-bellied Sea-eagle generally nest on exposed coastal cliffs/ cliff ledges with little or no screening and where disturbance invariably occurs above the nest. Guard-roosts are situated within line-of-sight of a nest, up to 800 m away from the nest (Dennis et al. 2011). The breeding period is typically May through to September. Dennis (2011) found that the level of disturbance significantly affected fledging outcomes on Kangaroo Island.
The coastal zone adjoining the project area is suitable foraging and breeding habitat for White-bellied Sea-Eagles and they have historically been known to nest on the coastal cliffs. There were no signs of breeding identified along the coastline during the survey. This species could fly-over the project area between foraging and nesting locations.

Impact to this species is likely to be in the way of noise disturbance during the construction of the proposed golf course and increased human activity along the coast line. Should White-bellied Sea-Eagles be found to utilise the area, a buffer zone should be adopted to minimise disturbance and the effects of human activity on breeding outcomes. Dennis et al. (2011) recommends a buffer zone of at least 2 km around active nests. A general buffer zone around the coast is recommended given the number of coastal bird

species sensitive to disturbance. Vehicle and visitor access around the coast should be limited and restricted to defined locations. Walking tracks should be designed away from the coast line edge. Additional management measures may be necessary if the species is found to utilise the immediate area.

Recommendations are also made in respect of possible controlled burning of areas of the site to encourage plant regeneration and enhancement of mammal habitat as well as kangaroo and wallaby control methodologies to be incorporated into long-term property management plans.

Possibly occurring on site

Both Egret species were determined having the potential to occur but would most likely be fly-over species and would not be negatively impacted by the development.

The Cattle Egret is found in grasslands, woodlands and wetlands, and has a preference for moist areas with tall grass, or shallow open wetlands, and the margins of wetlands. It also uses pastures and croplands, especially where drainage is poor. They are partially migratory, moving during winter.

The Great Egret is partially migratory, with northern hemisphere birds moving south from areas with cold winters. They prefer shallow water, particularly when flowing, but may be seen on any watered area, including damp grasslands. The Great Egret has been reported in a wide range of wetland habitats. (Kushlan & Hancock 2005). Great Egrets can be seen alone or in small flocks, often with other egret species, and roost at night in groups.

The provision of water and irrigated areas for the golf course could create conditions favourable for these species.

The direct removal of habitat associated with the proposed clearance of vegetation will have a local impact on resident fauna species, but this impact is considered to be insignificant at the population level. Some fauna species may benefit or be attracted to the area due to an increase in green feed and available water associated with the development.

The advent of the proposal will overall enhance the habitat for fauna species to grow and prosper.

6.6.6 Proposed Buffer Zones

The following buffer zones are proposed in regard to fauna protection during the construction and operational phases of the development:

- Implement a buffer zone of at least 1 km between construction zones and known active Osprey nests, and discourage general activity within 1 km of known nests during sensitive breeding times. The nearest known active Osprey nest is 5km to the west of the site.
- Implement a buffer zone of at least 2 km between construction zones and active White-bellied Sea Eagle nests. There are no known active Sea Eagle nests in the proximity of the project.
- Implement a buffer zone of at least 200 m between construction zones and the coast during the breeding season of coastal raptors, to prevent disturbance. There are no known active nests of the Coastal Raptors in the proximity of the poject.

6.6.7 Rehabilitation of rare and threatened flora and fauna species

There are no plant species identified on the project site that are listed as uncommon or threatened under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). One conservation rated species listed under the South Australia National Parks and Wildlife Act 1972 (SANPW Act) was recorded:

- Kangaroo Island Mallee *(Eucalyptus phenax* ssp. *compressa*) also identified as *Eucalyptus cneorofolia*–classified as rare in SA.

This species is noted as occurring in the identified Plant Association 5. (Refer appendix L). This association includes *Eucalyptus rugosa / Eucalyptus gracilis / Eucalyptus oleosa +/- Eucalyptus phenax subsp. compressa +/- Eucalyptus albopurpurea mallee.*

The EBS ecological assessment describes this association as dominating "*…two large patches to the east of the project area. Both areas are characterised by surface limestone and sparse understory vegetation. The patches are separated by approximately 100 m clearance, but are very similar in structure and species composition; however the more northern patch has significantly less understory structure. They both possess an intact overstory but the only evidence of understory vegetation in the northern patch is mainly restricted to the edges of the patch. The overstorey includes patches of the state rare Eucalyptus phenax ssp. compressa (Kangaroo Island Mallee), the regionally vulnerable Eucalyptus gracilis (Yorrell) and the regionally rare Eucalyptus oleosa ssp. Ampliata (Red Mallee).*

The BE vegetation surveys of its quadrats identified 35 native plant species, Table 2. Of these species none are rated as nationally threatened or state listed. Two, *Eucalyptus gracilis* and *Eucalyptus oleosa ssp. ampliata,* are rated as regionally significant by *Gillum 2014*.

The only rated species observed on the property are tree species which maybe as a consequence of the high browsing pressure from kangaroos.

It is clear that the primary initiatives required to establish plant recovery and rehabilitation include management of the local of kangaroo/wallaby populations and possibly a controlled burn of large areas of the project site. Aligned with these proposals is an extensive planting program that would be part of both the golf course landscaping and the meeting of any requirements of the Native Vegetation Council Policy in providing for clearance off-sets required based on the condition of the native vegetation to be cleared and whether or not there may be threatened species present.

Access to the property is along Davies Road from Hog Bay Road. Parts of this road are narrow and overgrown with native vegetation. The native vegetation will require clearance in accordance with the Kangaroo Island Council Roadside Vegetation Management Plan to enable construction and operational vehicles to access the site.

6.6.8 Noise and light pollution

Light and noise associated with construction may have short-term impacts on fauna utilisation of the area. The nocturnal species present will adapt to noise and light associated with the golf course operations.

As noted by the environmental consultants the Tammar Wallaby and Common Brushtail Possum were noted during surveys as being mostly active at night and stayed within the native vegetation.

The development is proposed to occur outside the areas habited by the majority of nocturnal animals and as a result the impact will be extremely minimal.

It is not envisaged that light emitting from the development will have minimal impact of the nocturnal fauna.

6.6.9 Weeds, feral animals and plant pathogens

Weeds

The most significant weed issues present were African Boxthorn *(Lycium ferocissimum*), Bridal Creeper *Asparagus asparagoides f. asparagoides,* Lincoln Weed *(Diplotaxis tenuifolia*) and Onion Weed *(Asphodelus fistulosus*). Active control works have been undertaken for African Boxthorn, with the plants left in-situ in large piles prior to burning.

It is noted that much of the project site including all plant associations, has to a greater or lesser extent weed invasion. This is due to previous grazing regimes and clearance for cattle and the current high level grazing by the herd of kangaroos/wallabies. The vegetation survey of the quadrats by BE consultants identified 18 introduced plant species within the quadrats of which 3 are proclaimed. It was generally noted that many of the weed species were located in areas frequently occupied by kangaroos.

The introduced weed species, particularly the proclaimed species, will outcompete indigenous plant and in the instances of Bridal Creeper *Asparagus asparagoides f. asparagoides* African Boxthorn *Lycium ferocissimum* and Lincoln Weed *Diplotaxis tenuifolia* can have a highly destructive effect on the opportunities for any existing indigenous small plants and shrubs to regenerate.

The advent of land development of the project site in the form of a golf course, practice facilities, buildings, access and infrastructure will introduce a significant level of land use and land management that does not presently exist. In this regard three standout effects of increased human habitation of the development include:

- Active weed control. The success of the development will be heavily dependent on the consistent presentation of a championship-level golf course. This, in turn, is reliant on an environmental management plan (EMP) that includes initiatives to ensure effective maintenance of the golf course and its surrounds. In particular there is an emphasis on control of invasive weed species, especially those listed as proclaimed which presently infest parts of the project site to the detriment of indigenous plant species. It is also noted that recommendations incorporated in the ecological assessment reports for controlling fairway grass spread will be adopted in the EMP.

- Kangaroo management and control. Much of the degradation in evidence on the site is due to heavy grazing by numerous kangaroos and wallabies. An adopted EMP, of necessity, includes measures to control kangaroo numbers on the site. It is noted that the introduction of irrigation and new grasses for fairways, tees and greens will attract a greater number of the mammals to the site to the detriment of the quality of the course and surrounds. Initiatives to counter this attraction and reduce current numbers are therefore seen as essential components of any EMP.

- Proposed landscaping of the golf course and surrounds will comprise of extensive indigenous planting which will assist in the suppression of weed invasion.

Feral Animals

There was one feral cat (*Felis domestica*) recorded during the BE survey.

Pathogens

Phytophthora is a parasitic fungus that lives in the soil and attacks the roots of plants. Although there are many different species, cinnamomi is the most frequently associated with dying vegetation. In South Australia, dieback caused by Phytophthora has been found in a number of sites that are within high rainfall areas, including Kangaroo Island (TSA 2000).

There is no record or sign of Phytophthora occurring on the site, however Kangaroo Island is classified as a high risk area and as such its control is detailed further in the EMP (refer Appendix N).

6.6.10 Road related fauna death and bird strike

The primary fauna species likely to be impacted upon along the roads leading to and within the proposed Kangaroo Island Golf Course Resort road network is the kangaroos.

The implementation of speed limit restrictions (day and night) and the limiting of vehicle activity at night will mitigate against fauna road kill.

It was noted in BE's report that birds strike windows for three reasons;

1. Birds see a reflection of the trees, sky and landscape but do not see the window;
2. Lights attract the birds at night; and
3. Birds see their reflection, attacking it during breeding season.

With these considerations in mind the following building design initiatives are included;

- Windows design slightly so they are slightly tilted downwards, slightly off vertical. The window as a result will reflect the ground and not the landscape.
- Install double-hung windows, which have the screen on the outside of the glass.
- Detailed window design to minimise the full see through attributes of the building.

6.6.11 Fauna management and golf course activity

The project views the presence of native fauna as a vital component of the development. This is because a significant number of international guests are expected to visit the site and these visitors will inevitably expect to find the eponymous kangaroos on site. Indeed, the kangaroos and wallabies in particular are envisaged to be a hallmark of the site.

However, it is recognised that the current kangaroo/wallaby population and the proposed golf course are conflicting. This is because the likely damage of such present numbers would cause to the playing surfaces, revegetation programs, and visitor safety and amenity.

It is acknowledged that the number of kangaroos and tammar wallabies and associated grazing pressure is only likely to increase under an irrigated scenario where kangaroos have access to green feed and a permanent water source.

Both environmental consultants have acknowledged that the management of kangaroos will be a necessity to successfully restore native vegetation and achieve SEB offsets on site, as well as a reality to maintain a golf course to the desired international standard. A Kangaroo Management Plan should be developed in conjunction with DEWNR and surrounding landholders.

6.6.12 Fauna access around and through the project

A predominant biodiversity measure to be undertaken is a kangaroo management program. This will invariably include fencing of perimeter area to deliberately limit kangaroo and wallaby numbers on the property. This initiative will possibly result in a significant increase in kangaroo numbers on abutting properties and roads.

However the introduction of extensive revegetation works in combination with an overall property management plan including a rigorous golf course maintenance regime will provide fauna linkages throughout the site. This will invariably attract feral animals however, these will be controlled as part of the ongoing operational management plan of the site.

6.7 Coastal Environment

The project site, on account of its history and cattle grazing and its current high population of grazing kangaroos and wallabies, is in a degraded state. In particular, the coastal dunes, limestone, and calcrete formations associated with the heathland shrubland communities are significantly prejudiced by invasive weed infestation.

Apart from the advent of the golf course on its own, two principle initiatives will act to substantially arrest this degradation while rehabilitating extensive areas in all three formations.
These are the;

1. Implementation of a kangaroo management plan
2. Extensive revegetation works, particularly in the coastal dune areas where proclaimed weeds are to be removed and their soil stabilisation capabilities replaced with pioneer plants including shrubs, grasses and groundcovers.

The golf course is to be constructed on these land formations. The proposed links golf course is fundamentally comprised of couch grassed fairways and tees, bent grass greens, a limited number of constructed hazards, natural hazards (e.g. sandy wastes), and abutting rough landscape zones. Each of these elements comprising the overall golf course require maintenance to a greater or lesser degree. This maintenance and the plant material afford significant stabilising and rehabilitation opportunities to previously extensive areas of degraded land.

The physical integrity of the golf course is dependent upon the stabilised coastal environs where golfers experience a combination of the proximity of the savage sea shore and the dramatic landscape of the cliffs, exposure to the raw elements, with a strong sense of isolation.

This ability to play golf “on the edge” is seen as a fundamental attraction of the project. The initiatives to be taken to ensure the ongoing viability of the coastal golf holes include extensive measures to stabilise and remediate sand drift within the dune system. In short, sand drift is incompatible with the planned execution of the golf holes within the coastal dune areas.

On account of the elevated location of the coastal golf holes in relation to the sea shore, it is not envisaged that any expected rise in sea level will have an impact on the project.

Following recommendations of both environmental consultants, the coastal walk proposal is removed from the overall proposal.

6.8 Marine Environment

The site is made up of two distinct formations; The Bridgewater formation and the Saint Kilda Formation. Both formations consist of quaternary sands and are often interspersed due to the nature of wind driven deposition. The Bridgewater formation generally comprises poorly consolidated yellow pinkish-brown fine to coarse fossiliferous calcareous sand that may be locally capped by calcrete. The Saint Kilda formation consists of undifferentiated marine sediment that is calcareous, fossiliferous sand and mud of intertidal sand flats, beaches and tidal marshes.

The subregion is predominantly formed from windblown quaternary age sediments and the surface topography is generally undulating with jumbled dunes and long dunes fronts in areas of deep sand. Shallow stony soils on calcrete deep sands dominate these land types and these are loamy and calcareous throughout and as a result there is little or no surface drainage.

> 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.'*

The combination of the existing geology, the surficial dunes of deep sand and the strict irrigation and fertilising regimes proposed will ensure that the risk of nutrient leakage per drainage to the marine environment will be at a minimum.

The proposal includes on site waste water treatment resulting in a class of water discharge entirely suitable for irrigation of golf landscaped areas. It is such irrigation which is planned to meet the transpiration requirements of the plant mass in these irrigation areas. This ensures minimal if any contamination of ground water.

Water for golf course irrigation is predominantly from on-site dam water filled from the Middle River Dam. As such it holds a high class of classification and is not seen as any source of contaminants.

The production of a healthy turf grass sward, essential to a championship golf course, will require nutrient inputs from fertilisers. A sound nutrient management plan is required in this instance to ensure the supply of nutrients to the turf meets turf requirements while minimising any environmental impacts. At the project site slow release and controlled release fertilisers are to be incorporated into the fertiliser management plan (as described above at Sec 4.5). These fertilisers will decrease the risk of ground water contamination when compared to soluble based fertilisers. Furthermore, the testing of the nutrient levels of the soil profile will be adopted as part of the course management plan. Data on the essential elements of plant growth in the soil is used to determine the exact quantities and ameliorants which are required for optimum results. In this regard soil and leaf testing is undertaken regularly to ensure the plant is maximising its inputs.

It is proposed to implement the latest in irrigation technology whereby advanced systems will be employed to distribute and monitor water usage across the site. In particular the irrigation distribution will be applied only to meet the transpiration requirements of the plant thereby limiting the amount of water reaching the underlying groundwater table.

The combination of the existing geology (see above), targeted irrigation and appropriate fertiliser application with soil and leaf tissue testing will result in minimal if any groundwater contamination.

The golf course will require from time to time the application of herbicides, pesticides, fungicides and fertilisers to ensure ongoing healthy grass growth and the optimal playing surfaces at all times of the year. The application of these chemicals are predominantly surficial and are strictly applied in accordance with industry best practice. On account of its coastal location, chemical application will be at a minimum and hold a high degree of rain and irrigation fastness thereby improvising it targeted effectiveness.

6.9 Geology and Soils

6.9.1 Geology

In the vicinity of the development area, both the Quaternary sediments of the Bridgewater Formation and the Saint Kilda Formation have both been identified from drill hole logs from ground surface to a depth of greater than 40 m. None of the drill hole logs have indicated complete intersection of these formations by identifying a deeper unit (Alcoe and Berens, 2012) hence the total depth of these formations in the area is unknown.

The Bridgewater and Saint Kilda Formations consist of Quaternary sands and are often interspersed due to the nature of wind driven deposition. The Bridgewater Formation generally comprises poorly consolidated yellow pinkish-brown fine to coarse fossiliferous calcareous sand that may be locally capped by calcrete. The Saint Kilda Formation consists of undifferentiated marine sediment that is calcareous, fossiliferous sand and mud of intertidal sand flats, beaches and tidal marshes.

The Bridgewater Formation has been logged on site in an abandoned drill hole as calcareous sand and variably consolidated sandstone with fragments of limestone. The lithological log gives an indication of the stratigraphy to be encountered in drilling investigations (Refer Appendix R).

The surface drainage patterns follow the site contours with the low point of the site being located in north–west corner of the site at the termination of Cathers Road. An off-site ridge running North-East to South-West some 700m to the North of Cathers Road prevents any surface drainage from the project site to Pelican Lagoon and the marine environment in that vicinity.

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.'

It is emphasised that water and its availability is the 'linchpin' to the project. The water for the project is accordingly regarded as precious and limited. After extensive and detailed research the decision is taken to meet the water requirements of the project primarily through piping from the Middle River dam. The arrangement for such water acquisition is both limited and expensive on account of distance and the 'window' of time during which water can be supplied. Each and all of these factors accentuate value of the saved water. In light of this situation it is considered imperative that the application of the water resource to both irrigation and domestic use is carefully managed. This is especially so in respect to irrigation of the golf course where the latest apparatus for the most precise application with minimal wastage (flow away) will be utilised. In short water leakage to sub surface drainage will be at a minimum due to the irrigation regime and its precision.

6.9.2 Erosion and soils

The areas in and around the southern boundaries of the project site are mainly comprised of dunes which consist of calcite outcrops. A combination of the prevailing winds and kangaroo grazing have rendered this part of the site marginally unstable and leaves the area subject to potential sand drift and blow outs. It is imperative for the physical integrity of the golf course in these areas that erosion processes are controlled. Such controls include indigenous shrubs, grasses and groundcovers plantings and kangaroo management. In certain instances it will be necessary to fence off replanted areas of the site where erosion sensitive areas are considered moderate or high. The construction of the golf course, accompanying landscaping and its subsequent ongoing maintenance regime will result in a substantial reduction in the occurrence of sand drift and blow outs.

Calcrete, also called Hardpan a calcium-rich duricrust, is a hardened layer in or on a soil. It is formed on calcareous materials as a result of climatic fluctuations in arid and semiarid regions. Calcite is dissolved in groundwater and, under drying conditions, is precipitated as the water evaporates at the surface.

Calcrete outcrops may cause problems for cultivation on account of an impermeable calcrete layer prevents water from draining properly, which can keep roots from getting enough oxygen. Salts can also build up in the soil due to the lack of drainage. Both of these situations are detrimental to plant growth. In addition, the impermeable nature of calcrete outcrops prevents plant roots from penetrating the bed, which limits the supply of nutrients, water, and space so they cannot develop normally. Finally, calcrete outcrops can also cause the surrounding soil to be basic. The basic soil, along with calcium carbonate from the calcrete, can prevent plants from getting enough nutrients, especially iron. An iron deficiency makes the youngest leaves turn yellow. Soil saturation above the caliche bed can make the condition worse.

In the context of the golf course layout, the existence of these outcrops is seen, in a number of instances, as an opportunity to introduce a "natural" hazard into the golf design. These will be an intrinsic part of the golf course and contribute significantly to the overall character. In the instances where they are retained, they will be left untouched. In other instances where they may intrude upon planned grassed fairway, the areas of calcrete outcrops will be hoed and blended with topsoil and subsequently planted.

6.10 Groundwater and Site Contamination

A hydrological report has been prepared providing a summary of the local hydrology of the site to inform drilling investigations in the supply of likely available water sources for the proposal. (Ref Appendix R). The scope of work in this report includes:
The scope of work input to this report is:

- research and collation of available hydrogeological literature;
- a review of drillhole data; and
- the production of maps with relevant data.

The report found that in general the groundwater resources across Kangaroo Island are limited in both quantity and quality with good quality groundwater available only in short supplies. The project site is no exception. In regard to ground water it is found that;

"The south coast has the thickest cover of the Bridgewater Formation, logged near Flour Cask Bay, and good quality groundwater may be found where higher recharge occurs. It is unlikely that this will be located within the development site as the lowest salinity groundwater occurs in the southwest where that highest rainfall occurs and drillhole data does support this...Throughout Kangaroo Island water wells predominantly have yields of less than 1 L/s, which will not accommodate the needs of high volume use. Supplies suitable to meet the demands of golf course irrigation and the related facilities will need to target brackish aquifers with higher yields of over 3 to 5 L/s and a bore field with a balancing storage will likely be required to meet desalination and distribution flow rates."

Drilling investigations will be required to confirm groundwater suitability and variability across the site in terms of salinity and yield for consideration as a desalination water supply option.

The report is quite specific in relation to groundwater available on site in so far as it states "Groundwater data, presented on Figure 1, shows drillholes in the site vicinity intersecting high salinity water at 12,000 to 17,000 mg/L to a depth of 40 to 60m. Yields are either undefined or very low with the deepest bore yielding less than 0.5 L/s…Relatively good quality groundwater of 1,000 to 3,000 mg/L has been found at shallow depth, with no yields recorded, approximately 3 km north of the site. These wells most likely access alluvium of limited groundwater supply and suitable for stock watering rather than larger water requirements."

This latter site was visited with the aim of establishing water yield. Discussion with the owners revealed that the yield was less than adequate to meet the demands of the project, whilst its longevity was determined to be highly problematic. In short, the groundwater was found to be highly saline and in extremely limited quantities which very low rates of yield. There was no evidence on any contaminating factors in past or current use of the land leading to groundwater contamination.

In view of the known history of the site and its use for broad acre grazing and its subsequent retirement from active agriculture some 20 years ago, there is no evidence of contamination sources and therefore a preliminary site investigation conducted by a site contamination consultant in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999, was not undertaken.

6.11 Sustainability and Climate Change

6.11.1 Power

The proposal, in its conception, planning and design is wholly shaped with specific objectives and strategies aimed at reduction of greenhouse gas emissions.

The proposal is principally based around the provision of a championship golf course. The fundamental nature of this land use is dependent on three main elements; appropriate land; water availability for turf establishment and maintenance; and power for both the effective dispersal of the irrigation and operation of the golf resort.

The major determinant of the main demand sources for power are the base load needs of the irrigation pumping system and the clubhouse. The total power requirements (minimum 455kVA) were considered unable to be met from the principle renewable energy sources on-site, i.e. wind power and solar energy.

It was therefore imperative that two other main sources were investigated. These include;

- extension of existing power lines from Hogs Bay Road at Pelican Lagoon to the site; and
- the use of multiple diesel generators automated to come on line with demand.

The use of diesel powered generators was ultimately discounted on the basis of long term operational costs. However a generator will be included in the overall site infrastructure as a back up to sudden power loss from the elected power sources.

After extensive negotiations with South Australia Power Networks (SAPN) the decision was made to opt for the connection to the existing grid with various modifications to meet the project's base load needs.

To this effect it is proposed to provide a three phase service with a total maximum capacity of 400 volt, 688 ampere (475 kVA) from the existing 33 kVA line near Hog Bay Road and Davies Road, Pelican Lagoon. The main application of this power source will be in the operation of the irrigation pumps and the base load power requirements of the Clubhouse/Lodges and residential buildings on the eastern allotments.

In addition to this resource a number of alternative renewable power sources were investigated. Wind turbine generators were considered inappropriate for a number of reasons including the impact on visual landscape, the need for associated infrastructure and the relatively high cost, and concern about bird kill.

With regard to solar power, solar cells are to be installed on site to supplement and reduce reliance on the main power source as proposed by SAPN reticulation. This system will cater for all hot water and lighting requirements of the development. In order to minimise visual intrusion on the landscape through reflection and reflected glare these panels are proposed to be located in the vicinity of the maintenance precinct which is sited in the timbered area and hidden from off-site viewing.

LPG gas will be supplied to the kitchen area of the main clubhouse/dining area.

The proposal will therefore incorporate 4 principle sources of energy being;

- A three phase service with a total maximum capacity of 400 volt, 688 ampere (475 kVA) from the existing 33 kVA line near Hog Bay Road and Davies Road, Pelican Lagoon. The main application of this power source will be in the operation of the irrigation pumps and base load for the clubhouse, lodges, maintenance precinct and residential allotments.
- The powering requirements of lighting and hot water in the resort precinct along with domestic appliances including golf cart recharging facilities will be met by photovoltaic cells located in the maintenance precinct.
- LPG gas will be supplied to the kitchen area of the main clubhouse/dining area.
- A diesel generator is proposed on site to meet short falls in energy supplies as and when required.

The proposal includes extensive buildings and while the design response to the set guidelines are comprehensively covered at a later stage of this overall report (Sec 5.6) the following broad principles are to be incorporated in building design to ensure ongoing sustainability and energy saving:

- High levels of insulation;
- Use of high performance glass and large overhangs where required for energy efficiency;
- Passive solar heating, day-lighting and natural cooling from cross ventilation;
- Solar hot water heating;

- A photovoltaic farm in the Maintenance area (ref above) located on the ground for easy maintenance;
- Minimisation of water use with low maintenance landscaping using indigenous species;
- Recycling of waste;
- Reuse of grey water for irrigation;
- Use of roof water for lavatory flushing and irrigation;
- Use of low emissivity building materials;
- Siting of buildings on previously cleared ex grazing land;
- Use of low maintenance building materials;
- Retention of road and hard surfaces runoff through appropriate erosion controls and channelling to site low point;
- Maximisation of utilisation of low embodied building materials;
- Use of local materials including field limestone for walls;
- Use of timber from certified sources;
- Minimum use of pressure treated timber;
- Use of high efficiency heating and cooling equipment, lights, appliances and water fixtures;

The proposal, while basically relying on the provision of reticulated power from the existing SAPN power lines adopts both the spirit and the implementation prompts of the State's planned response to climate change.

6.11.2 Water

Water is provided from two sources. These are:

Water will be harvested from the Middle River Dam during peak flows when surplus water would otherwise flow straight out to sea. Water will be taken per developer-paid infrastructure near Playford Hwy – Milk Track corner and transferred direct to site, some 35km to the south.

Potable water for use by visitors and staff of the golf resort and clubhouse will be mainly sourced from treated rainwater collected from the roof tops of the various buildings. In this scenario all water both available from the site and imported to the site will be used for specific purposes. These include:

- Potable water for drinking, cooking, domestic use, etc.
- Untreated harvested rainwater used for toilet flushing, machinery cleaning, etc.
- Irrigation water for course maintenance. The efficiency of this application will be aided by the use of soil moisture monitoring equipment with the latest irrigation systems ensuring greater control and flexibility over irrigation applications.
- Treated wastewater, in full compliance with specified restrictions, used for introduced landscape planting irrigation.

6.11.3 Sustainable building initiatives

The proposal includes extensive buildings and while the design response to the set guidelines are comprehensively covered at a later stage of this overall report (Sec 5.6) the following broad principles are to be incorporated in building design to ensure ongoing sustainability and energy saving:

- High levels of insulation;
- Use of high performance glass and large overhangs where required for energy efficiency;
- Passive solar heating, day-lighting and natural cooling from cross ventilation;
- Solar hot water heating;
- A photovoltaic farm in the Maintenance area (ref above) located on the ground for easy maintenance;
- Minimisation of water use with low maintenance landscaping using indigenous species;
- Recycling of waste;
- Reuse of grey water for irrigation;
- Use of roof water for lavatory flushing and irrigation;
- Use of low emissivity building materials;
- Siting of buildings on previously cleared ex grazing land;
- Use of low maintenance building materials;
- Retention of road and hard surfaces runoff through appropriate erosion controls and channelling to site low point;
- Maximisation of utilisation of low embodied building materials;
- Use of local materials including field limestone for walls;

- Use of timber from certified sources;
- Minimum use of pressure treated timber;
- Use of high efficiency heating and cooling equipment, lights, appliances and water fixtures;

6.11.4 Waste and material management

A Waste Management Plan is to be established that will:

- Assess the wastes being generated;
- Determine current disposal costs;
- Identify options for waste management which are economically and environmentally suitable; and
- Include a component of staff education so that all are aware of waste minimisation.

Further, the recycling initiatives will include:

- Scrap metals and batteries to metal recycling yards;
- Glass through the local council or recycling centre;
- Cardboard or paper through the local council or contractor ;
- Motor oil and hydraulic fluid to be treated via a WaterStax system or similar to be reused on course.

The materials used for the built form will be sourced from the Island itself and the mainland. In particular, significant quantities of the in-situ limestone, which is to be quarried and milled on site, will be used for the purpose of lower wall and feature cladding on both the clubhouse and lodges. Where possible all other building materials will be resourced from local suppliers on the Island.

6.11.5 Environmental management initiatives for long term sustainability

The proposed development is planned to be an eco-friendly initiative. To ensure that such a claim (upon which the resort will be heavily marketed to its interstate and international clients) holds substance a range of management plans and strategies are to be incorporated to ensure long term sustainability of the resort. These include the most effective application and monitoring programs in course maintenance; the active promotion of power saving and carbon footprint minimisation to both staff and guests; an ongoing revegetation program as part of a carbon offset; and the promotion of walking and passive recreation. Local food and produce will be promoted to reduce the environmental costs associated with transport and shipping apart from emphasising "the Kangaroo Island" brand.

7.0 ECONOMIC ISSUES

7.1 Economic analysis and benefits

From an economic perspective the following statistics are basic budgeting elements of the proposal:

- Golf course construction and building development: est. $14 million.
- Local contribution: est. $6 million.
- Full operational accommodation rate: est. 22,000* visitor nights p.a.
- Golf usage: est. 20,000* rounds p.a.

* These figures are expected to increase by up to 25% with the advent of airport and ferry upgrades.

- Average cost of golf per round est. $125.00 (current day values).
- Average spend per visitor including accommodation, but excluding golf, is envisaged to be $320.00-$350.00 per day.
- On site employment est. up to 60 persons.
- Total annual revenue est. $9.5M
- Total annual costs est. $8.4M

The long term economic viability of the project has been examined and on the basis of the projected figures for accommodation rates and golf rounds per annum it is envisaged that the prime investment in the project will return a nett 7.5% per annum (at current day rates). This does not allow for revaluation and inflation 'creep' in base asset values. An identified key driver of both this current proposal and other major developments on the Island is visitor access to the Island and the cost of such travel.

The operational development will generally engage locally based staff as the Island will provide a steady recruitment source. This will have the effect of minimising the high turnover rates experienced by many tourist developments. Island residents will be employed and trained as appropriate. Furthermore, there will be an inevitable flow-on effect to the Island in total. These positive economic effects will be experienced in goods and services where for example, local transport will be required, maintenance supplies and services and food and beverages will be directly supplied from the Island and sold on site to visitors.

The exception to this may be the importation of the head hotel/clubhouse manager, the course superintendent and the golf manager. The talents and capabilities of these individuals will, in all likelihood, not be available on the Island. On-site accommodation for resort staff is provided as part of the development proposal. It is expected that a majority of resort staff will reside off-site generally in the townships of Penneshaw, Kingscote and the settlement at American River all within some 35 km from the site.

The revenue (visitor 'spend') will have an obvious overall 'multiplier effect' calculated at between 2.0 and 2.5 based upon analysis of specific industry contributions as derived from "*THE ECONOMIC IMPACTS AND BENEFITS OF TOURISM IN AUSTRALIA - A GENERAL EQUILIBRIUM APPROACH". (Refer appendix L)*

The proposal will provide much needed high-end accommodation options on the eastern end of the Island, (i.e. the Dudley Peninsula). Set in an environment that typifies the spectacular coastal scenery that is iconically Kangaroo Island the proposal will result in the creation of a highly viable tourism opportunity whilst offering a top calibre accommodation base from which to explore the attractions throughout the Island. In this regard it will invariably be of significant enhancement to the tourism opportunities of the Island.

It is an adopted strategy by KIFA in its tourism planning to attract greater overnight stays. The proposed accommodation provision of the resort will go in some way to meeting an identified demand for high end accommodation. This is particularly relevant to the current situation to international and interstate 'day trip' visitors from the mainland partly on the basis of a lack of upper end accommodation. The proposal is identified as having the strong likelihood of converting 'day trippers' to extending their visits to more than one night.

7.2 Tourism and investment opportunities

The principle basis for establishing a world-class golf facility and residential component at the location is to provide not only golf in a quite isolated, scenic and natural setting but also to afford a high-end level of accommodation from which golfers and other guests can both explore the Island as a whole (by car or escorted bus touring) while having direct access to spectacular coastal walking tracks for which the Island is renowned.

The proposal is unique on the Island and aims specifically to capitalise on golfers, either individually or in groups, from both Australia and internationally, whose desire is to play or high quality golf courses located in situations marked by dramatic scenery and ambience. The combination of on and off-site wildlife, coastal scenery, the remoteness, challenging golf in an exposed links-style environment and being on an accessible part of Kangaroo Island is regarded as being highly attractive to this particular golf market. This is typified by similar golf complexes that have been relatively recently developed throughout Australasia including Barnbougle in Northern Tasmania, Cape Kidnappers and Kauri Cliffs on the North Island of New Zealand and, more recently, Cape Wickham on King Island, Bass Strait. The business model for such developments has been imported from the long-established and proven golf tourist market of the United Kingdom and Ireland where areas on these Island's coastlines afford golf in wild, natural and open conditions whilst the ancillary drawcards include direct experience of specific local cultures, e.g., the Maori heritage associated with the Bay of Island (Kauri Cliffs, NZ), Galway Oyster Festival (Connemara, Ireland), cool region wines in Northern Tasmania (Barnbougle), etc.

The proposal plans to create high quality lodge and 'condominium' style accommodation. Apart from targeting and identified need for such accommodation on Kangaroo Island there is, through this initiative, a positive strategy to retain visitors for longer than is currently the case. This is particularly so with reference to international visitors who, for the most-part, are limited to either a bus day-trip from Adelaide or a one or two day stay allowing restricted access to the full range of tourist attractions on the Island. In particular, the larger condominium style accommodation units are proposed to specifically cater for family groups where one or two members may have a golf interest while the other family members can use the facility as a base to enjoy both the immediate off-site attractions, (e.g. wildlife and coastal walks, and the wider, more distant tourist drawcards of the Island).

In summary, the location of the proposal, with its high class accommodation and golf facilities, provides a distinct addition to the range of attractions on the Island while being fundamentally consistent with the brand equity of 'Wild, Rugged, and Coastal'.

The front up investment in the proposal is estimated to be $14M. This in itself is regarded as a major singular investment in the Islands tourist development. The proposals status as a Major Project by the State Government recognises the significance of this investment. As previously mentioned, the multiplier effect of such direct investment is estimated between 2.0 and 2.5.

The advent of the planned est. 22,000 visitor nights per annum will have substantial beneficial effect on the provision of small local business that will provide goods and services to meet the demands of the onset of this new Island patronage. For example, local beekeepers would be expected to provide the honey to meet a new demand and sales volume of the Island's unique produce could be legitimately expected to leap. A similar situation will prevail for other Island micro businesses.

The increase of visitor numbers to the Island facilitated by the proposal will have two major economic effects on the Island. These are seen as a heightened demand for improved access to the Island. (e.g. the proposed airport upgrade and new ferry). The current services and their schedules would be unlikely to service the new demand. Therefore it is confidently anticipated that both these initiatives will be undertaken resulting in the ground being laid in the creation of circumstances most favourable for the high growth scenarios in the KIFA strategic tourist plan which see a growth scenario for tourism of 7.9% p.a. and 86% over an eight year period with the doubling of visitor expenditure.

Secondly, the proposal will provide another tourist precinct to the Island. Being sited on the Dudley Peninsula on the eastern part of the Island the operation of the facility will add to the attraction of the Penneshaw, American River and Kingscote tourist precinct. This will have inevitable spin offs to the local suppliers of goods and services in the area.

7.3 Mitigation strategies in case of project failure

In the event of the project ceasing during the course construction, the following exit strategies would apply;

- Inventory is to be taken of all work carried out, work completed, work in progress and tasks to be done to carry out to completion.
- Vegetation clearance is to be halted immediately with notation made of new plantings and offsets audited for NRV requirements including any potential cash payment as obligated contribution.
- Stabilisation measures to be carried out to all exposed areas of the site which would otherwise be threatened by erosion. This is to be completed prior to site evacuation.
- Remove critical golf course infrastructure items such as irrigation pump stations and control systems.
- Demobilisation of construction compound and associated infrastructure including power and water connections.
- Remove and cease all kangaroo management control measures.

8.0 SOCIAL ISSUES

8.1 Employment opportunities

The proposal will generate significant local employment opportunities. During construction phases it is expected that the site will engage up to 60 persons including course construction and erection of the buildings, maintenance facilities, dam excavation and landscaping. At full operation it is estimated that the overall complex will employ up to the full-time equivalent of 30 persons including hospitality, golf operations, housekeeping and hotel management, course maintenance and landscaping. The facility's development will be relying on the local community to supply both skilled and unskilled labour to meet the labour demands of the project.

8.2 Tourism opportunities

The proposal will create an impact on the existing tourism and recreation services including opportunities. The existing services to be impacted include:

1. Travel to and from the Island. The introduction of some 22,000 visitor nights per annum at the resort represents a significant and telling impact on proposed tourist growth scenarios and the present ferry and air transport schedules may not be able to accommodate this increase.

2. The introduction of some additional visitor nights represents a direct injection of some $9.5 million into the Kangaroo Island economy per annum. The KI gross regional product was estimated to be $217 million in 2011/12 (source *Econosearch - Economic Impact of Agriculture and Tourism – 2013*) with tourism representing some $45.0 million or 25% of contribution to the Island's GRP. In 2011/12 figures the advent of the resort therefore alone represents an increase of some 21% to the overall tourism contribution to GRP. It is to be noted that this is without the multiplier effect of 2.0 to 2.5 that will permeate the overall Island economy.

3. The additional visitors will also increase demand for a range of tourist services including hire cars, personal drivers and guides outside of the resort, dining facilities in both the major settlements and chief tourist attractions, local produce including local wines, foodstuffs, Island souvenirs, fishing and wildlife excursions, amongst other services.

In summary, the resort will be a new tourist node generating a need for a wide range of tourist ancillary services that will inevitably open up opportunities for increasing tourist services particularly in the eastern part of the Island.

8.3 Likely impacts on surrounding land use and amenity

There is no conflict envisaged with adjoining primary production activities for the following reasons:

- Golf will be the principle broad acre land use and it is adequately buffered from abutting properties so that no impact or effect will be caused by the activity.
- The built component and its concomitant human activity will be far removed from abutting properties so that any potential conflict will surrounding primary production activities will be minimal.
- Surrounding land is used for low intensity grazing, indigenous bushland and coastal precincts. Each and all of these activities will have no conflict with the proposed uses on the project site.
- There will be an increase in traffic on Davies Road due to visitor and staff vehicular movements in private cars and buses. This will have some impact on residents of Davies Road.

The golf and lodge accommodation is located at a central position of the overall site. As such this component is situated at a middle site elevation that offers extensive on and off-site vistas and is sited to be directly abutting and physically connected to the golf course.

The proposed land division of 5 new lots is located at a higher site elevation between 200 and 400 metres to the east of the clubhouse/lodge accommodation precinct. Each of these new lots has a building footprint included to ensure effective dwelling siting in minimise potential indigenous vegetation clearance and to ensure the buildings are erected below distant off-site view lines. It is proposed to include specific covenants on the new titles that will directly control building height and cladding materials.

In summary, there are no envisaged interfaces problems between the land division and the surrounding land.

This is not applicable as there will be no foreseen sensitive receiver's resident on site during construction and operation.

8.3 Likely impacts on heritage sites

DSD-AAR Register Search

The consultant *EBS- Heritage* have prepared a heritage report for the project site. The consultant reported that a Department of State Development (DSD)- Aboriginal Affairs and Reconciliation (AAR) Register search from the central archive of the was conducted on the 2nd of November 2014 for a 5 km area around the proposed project area. The Central Archive is a record of previously recorded heritage sites in South Australia and permits existing recorded sites from being identified within new project areas. There were no registered sites within the current project area and one reported site just outside the survey area in the south-western sand dunes (ref appendix L). It is noted that the absence of sites in the project area does not indicate that there is no possibility of sites through this area. The Central Archive is maintained by Aboriginal Affairs and Reconciliation (AAR) and includes the Register of Aboriginal Sites and Objects.

Australian Heritage Database

The Australian Heritage Places Inventory includes details of South Australia's local heritage and State heritage places, as well as State heritage areas and Commonwealth, National and World heritage places. This register was searched on the 25th of November 2014 and yielded no results.

South Australian Heritage Places Database

The South Australian Heritage Places Database includes details about South Australia's local and State heritage places. There are over 100 listings for Kangaroo Island on this register although none are within or in close proximity to the current project area.

The consultant EBS Heritage, in light of the *South Australian Aboriginal Heritage Act 1988* which provides a legal obligation for the construction of the proposed golf course to not 'damage, disturb or interfere' with an 'aboriginal site' whether this site is recorded or not, and resulting from the desktop and site inspection, has made a number of recommendations in its report some of which will be acted upon.

European Heritage

There is no listed European heritage identified in the current project location.

9.0 DESIGN MATTERS

9.1 Built form

There are four areas on the site where buildings are proposed to be erected. These include;

- The club pavilion/lodges built area located some 400m from the sea and cliff edge in the centre of the site. This complex includes a small building housing a spa located some 70 m to the south east of the clubhouse.
- The maintenance facilities and staff accommodation.
- The residential buildings on 5 separate lots.
- A small shed adjacent to the proposed dam for water filtration.

The club pavilion will be the hub of the site and will be served by the main access/approach road, a car park and direct connection to the golf course. The building is located on the west side of a knoll for long views to the golf course to the west, the sea to the south and Pelican Lagoon to the north. The accommodation lodges and suites, in the form of 'wings', will extend out from both the north and south extremes of this building and generally follow the contours in a slightly serpentine manner. The eastern side of the club pavilion will include the porte-cochere, at the building's upper level, allowing visitors to experience a pronounced sense of arrival through enjoying the spectacular views to the west, north and south for the first time.

The maintenance and staff accommodation facilities are sited towards the eastern side of the property located some 200m from the eastern boundary and generally edged with mature stands of mallee trees and medium shrubs. It is invisible from the main access road as well as the Davies Road/Cathars Road approach to the site. The siting for the staff accommodation is in open grassland abutting the tree line and affords long views towards Pelican Lagoon/American River to the north west. The maintenance shed will house machinery, cleaning and maintenance area, supplies and office while the staff buildings will provide comfortable, single storey, self contained cabin accommodation.

The lodges and suites are housed in separate groups of 4 and 6 units following the existing contours and principally oriented towards the west, south west and north west. The units will include 2-3 rooms comprising two bedrooms and living area including kitchen and balconies. Access will be via a 3m path for pedestrian and golf carts. The general form and architecture will follow that of the club pavilion building with limestone facing on the lower 'half storey' matching the limestone cladding materials of the ground floor storey of the main building.

The residential accommodation is located on five lots to the eastern part of the site and these lots are located on topography at a greater elevation than the club lodge precinct thus offering views to the west over the latter' buildings. Design controls and building footprints within the lots are considered crucial to achieve the optimal design and siting outcomes. Two critical considerations in this regard include the relationship of the buildings with the indigenous vegetation (and minimising its loss), and building height and

appearance from distant, off-site locations. The building envelopes will be included on any title to issue and ensure that the rooflines will be below the ridgeline so that the buildings may blend into their background. Access will be by a single road and footpaths with indirect connection with the main access route on the principle site.

The design of all buildings, with the exception of the maintenance shed and the dam –side hut, will be subject to design guidelines and "Principles of Good Design".. These include design criteria in the context of key site considerations, sustainable design principles and visual impact of the buildings both on and off-site. These design elements, criteria and considerations are outlined in Appendix H.

9.1.1 Site Layout

Site layout is critical in ensuring that the proposal 'fits' the site and its surrounding environment. In this regard a range of siting principles are adopted that include; setbacks from roads sea; lodges, hotels, along contour lines, below ridge lines of knolls and in saddles between them;
club Pavilion set into hill; residential accommodation along contours against a backdrop of existing mallee trees; car park in swale, screened with landscaping; maintenance area screened by trees; and staff accommodation set against a backdrop of trees, well off the access road.

9.1.2 Landscape & Access

Building, roads and carparks are to be integrated into the landscape and a landscape master plan to be prepared will include the retention of the natural landscape where possible with no fences and a focus on the provision of extensive plant association in proposed planting plans. Access roads should ideally achieve the following; a strong sense of continuous 'arrival' where the site environment reveals itself with one's progression into the site culminating in the 'denouement' of the spectacular views presented at the club pavilion. This is afforded by a single access approach off Cathars Road with secondary access to the maintenance/staff accommodation area and the residential lots. A more detailed address of the landscape planning and principles is provided below.

A comprehensive landscape plan has not been prepared for the project site on the basis that only a conceptual layout proposed for the golf course has been completed to date. Once a definitive golf design is finalised a landscape plan will be prepared that will include extensive indigenous plantings.

The landscaping proposed will meet four principle objectives:

- Stabilisation of opened and uncovered topsoil;
- Reinforcement of native vegetation with accompanying invasive weed control.
- Provision of indigenous planting to meet vegetation clearance offsets; and

- Enhancement of the natural appeal of the site to exaggerate the visitor experience consistent with the 'Design Guidelines for Sustainable Development'. In certain instance additional planting will be used to define both tee and fairway areas whilst ensuring fairway separation.

Final landscaping treatments will be sympathetic to the developments coastal location while plant materials will be comprise mostly from a selection of locally occurring indigenous shrubs, grasses and groundcovers in line with that of highly successful landscape developments located in similar environments such as The National Golf Club in Cape Schanck, Victoria. (Refer Figure 15.)

The residential allotments located on the upper areas to the eastern part of the site will include building covenants on new title to ensure minimal native vegetation clearance; adequate separation between buildings within specific building footprints; and height limitations to minimise any visual impact both on and off-site. Cladding materials are also included in the architectural design guidelines to ensure a muted visual effect that will see the buildings blend into their backdrop of indigenous vegetation.

The buildings on the new land division will be located between 12 and 16 metres above the proposed clubhouse and linear lodges. The distance between the building envelopes on the new lots and the lodge/clubhouse accommodation will vary between 150m and 300 metres. With relatively low profile planting to the immediate west of the new buildings on the new land division combined with the element of distance there will be minimal visual impact on the clubhouse/lodge precinct. The careful placement of low profile mass shrub planting will also allow extensive middle and long distance views to the new buildings whilst partially screening the building mass located to the west and lower down on the site.

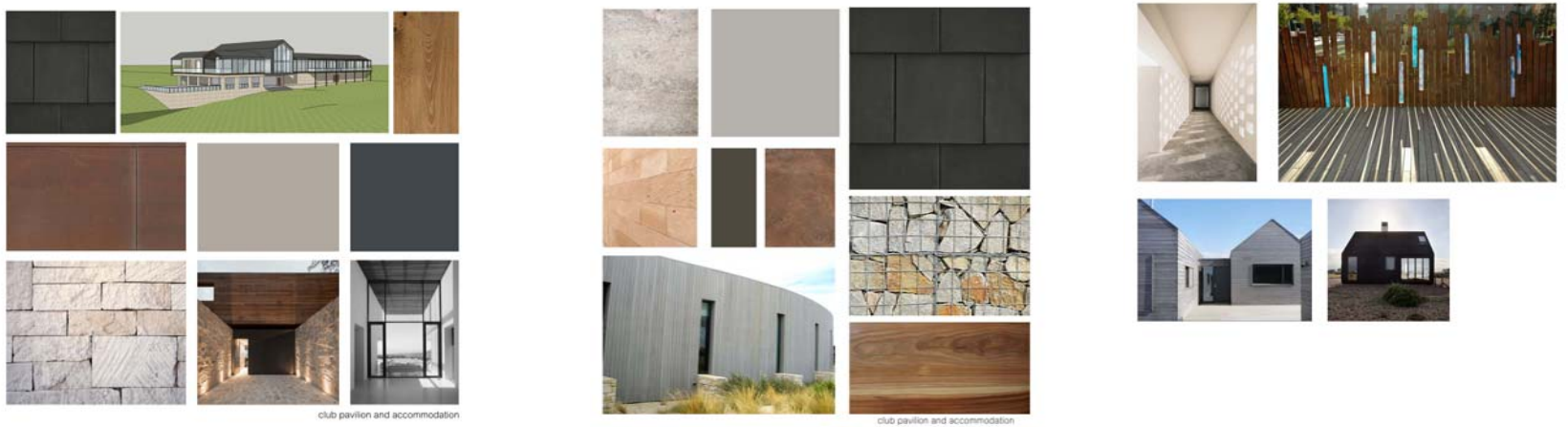

Figure 14– Architectural Material Images (Prepared by Aplin Cook and Gardner – Appendix H)

Figure 15– Landscape treatment of clubhouse and resort

9.2 Visual effects

The clubhouse site is located some 2.6km to the south of Hog Bay Road and is obscured from view due to the existence of a large ridgeline which runs east-west and is approximately 1km to the south of Hog Bay Road. Mt Thisby lies some 7.5km to the west of the proposed Clubhouse and accommodation lodges. View sheds from here towards the clubhouse precinct are obscured by many pronounced sand ridges which conceal a significant amount of the site. The siting of the clubhouse and accommodation lodges is such that it will be built into the ridge so as not to extend above the vegetated ridge line behind. Combined with strategic plantings of predominantly indigenous vegetation the clubhouse will in effect disappear into the landscape.

The maintenance compound is located in the northeast corner of the site and is set between large copses of remnant vegetation and is totally obscured from view. The smaller villa units located behind the clubhouse precinct will have as part of their strict building guidelines limitations in their building heights above natural ground so as to not extend above the heavily vegetated ridge lines which lie behind to the east. Careful siting of these villa units has been undertaken by the consultant architects who are very experienced in coastal architecture and have located these well below the remnant vegetation on site. Not only does this siting significantly reduce the amount of vegetation removal, but by locating the units well below the ridge line, the villas will have minimal impact on view sheds from the west.

Figure 16 – Visual impact from Mt Thisby

The entry to the project from Hog Bay Road which lies to the north, will remain relatively untouched in regards to landscape treatment. Road works sufficient enough only to adhere to the local design and safety requirements will be undertaken as the rustic rural landscape experience that is quintessential Kangaroo Island forms a significant theme of the project and is to be maintained.

Built form across the site will be sensitively located to ensure building heights do not extend beyond the ridge lines. A comprehensive landscape plan will be formulated for each of the buildings to ensure consistency across the site and be comprised predominantly of indigenous trees, shrubs, grass and groundcovers which occur naturally on site.

It is intrinsic to the success of the overall development that the landscape be an extension of what limited remnant vegetation already exists on the site and apart from playing a part in disguising the built form elements on the site, it will play a significant role throughout the golf course in linking the eastern and western boundaries of the site.

The provision of both power and water to the site will be via Hog Bay Road and then via an existing, already cleared unnamed road reserve running down the western boundary of the site. It is the intention to run power above ground from the intersection of Hog Bay Road and Unnamed Road heading south along the western boundary of the site to the Cathers Road intersection. From here the power will continue to run above ground up to the intersection of Davis Road and Cathers Road. Power will continues to run above ground from here to the maintenance compound after which it will then underground so as not to minimise the impact on the remnant vegetation to the clubhouse precinct and villa units.

Water will similarly follow the power alignment down the unnamed road and discharge into the irrigation storage dam located in the north western part of the site.

10.0 INFRASTRUCTURE

10.1 General

The site is currently without any available infrastructure. The following initiatives are proposed to meet the infrastructure requirements:

Gas: - Storage tanks for holding on-site LNG are to be provided in close proximity to the clubhouse/lodge accommodation precinct. Gas is proposed to be used specifically for in-house kitchen use and will be periodically recharged from LNG transport to the site.

Electricity: - connection to the existing grid with various modifications to meet the project's base load needs. It is proposed to provide a three phase service with a total maximum capacity of 400 volt, 688 ampere (475 kVA) from the existing 33 kVA line near Hog Bay Road and Davies Road, Pelican Lagoon. The main application of this power source will be in the operation of the irrigation pumps and the power requirements of the Clubhouse/Lodges and residential buildings on the eastern allotments.

Solar cells are to be installed on site to supplement and reduce reliance on the main power source as proposed by reticulation. This system will cater for all hot water and lighting requirements of the development.

Sewerage: - This will be treated and disposed of on-site through the use of '*Econocycle*' technology described more fully in 5.7.7.

Stormwater management: - Careful site design is to be used to ensure ground surface stormwater is channelled to supplement landscape irrigation in the vicinity of the clubhouse/lodge precinct.

Waste management: - Requirements for waste will be met through on-site collection, assembling waste at a specific point on-site, transport to a council operated collection point and disposal by council either on the Island or on the mainland.

Communication systems: - It is planned that the building precincts of the site will be fitted with telecommunication technology to match the most recent advances in electronic telecommunications.

Power Supply

Discussions with South Australia Power Networks have resulted in an offer to provide a developer funded substation near the intersection of Hog Bay Road and Unnamed Road. The substation is proposed to transform the power taken off the grid from Hogs Bay Road and affording the power supply to the site through a combination of above and below ground infrastructure.

The provision of the developer paid substation will have benefits to the community in the immediate region through the provision of additional power supply which would otherwise not be available. The substation will be designed in such a way so as to allow it to be expanded if the demand is warranted.

Water Supply

The water supply line from the tapping point at the Playford Hwy -Milk Tack corner will generally follow the Hog Bay Road alignment. In this regard it is noted that Middle River Dam water that would otherwise overflow and go out to sea, is to be used to supply the project's irrigation dam during the winter months. Furthermore, the environmental flows vital to the ecological systems that thrive downstream of the Middle River dam will not be prejudiced by the proposed take-off of water during the Winter period. The supply line running along Hog Bay Road will offer numerous opportunities to nearby land owners to tap into the water pipe during periods outside the overflow and purchase water allocations at the nominated SA Water rate. The form of this pipe will be a 200mm diameter pipe in accordance with SA Water specifications and guidelines. This initiative is outlined in more detail below Sec. 10.2.

Hard waste disposal

The waste disposal requirements of the proposal may require an extension to Council's land waste disposal facilities. At this point it is envisaged that present capacities will be able to absorb the expected waste generated.

Firefighting

Water storage will be available for firefighting purposes around the golf course via the irrigation system and around the resort buildings per roof rainwater collection tanks. The water will be pumped to ground sprinklers in the vegetation around the resort buildings and to roof-mounted sprinklers with hose reels located strategically around the grounds. The residential lots will be required to dedicate an on-site water storage available for firefighting purposes and such storage will be met from roof water collection.

As the site is well served by the Telstra Mobile Phone network it is envisaged that golf players will be able to directly communicate with emergency services in the event of emergencies arising on the course.

Hog Bay Road is the main east-west highway that provides access to the Dudley Peninsula south of Pelican Lagoon and links to Penneshaw 16km to the east and Kingscote 38km to the north-west. The main access to the site from Hog Bay Road is via Davies Road which is a 2.3km heavily vegetated single lane unsealed road which intersects Cathers Road. It is proposed to widen this road to provide two lanes and such widening and additional road construction will result in limited vegetation reduction abutting the existing road. This intersection represents the north-east corner of the site. Cathers road traverses the northern boundary of the site and is a double lane unsealed road of 1.9km in length. Emergency vehicles can access the site via Davies and Cathers Roads and in extreme circumstances may be able to use the unnamed road on the western

boundary of the site allowing access direct to Hog Bay Road. Emergency access to the residential lots is via the proposed made road and a 3m wide made track on their eastern side. It is noted that the existing planting in this eastern part of the site has a number of areas that are open and grassed allowing for relatively easy vehicle movement. The future of such open areas is uncertain as they are partially a result of extensive kangaroo grazing and a kangaroo management plan may drastically alter this situation.

A dominant theme of the overall resort will be the eco friendliness of the facility. In this regard a Smart Energy Management System linked to a Property Management System that controls power supply and usage in occupied/unoccupied accommodation lodges and various areas of the clubhouse/guest areas and staff quarters will be installed and energy saving lighting and appliances will be used wherever practicable.

The power and water infrastructure installation will be undertaken using best practice design and construction. This is particularly so in regard to the installation of South Australia Water who will design the water connection between the site and the take-off point near the intersection of Playford Hwy and Milk track while South Australia Power Network (SAPN), which will be engaged to install the power connection from Hog Bay Road as described above, will provide all works in accordance with the appropriate latest Australia standards as well as adopted best practice design and construction standards.

Solar PV cell panels are to be installed in the maintenance/staff quarters area. Maximum power generation from this source is expected to be 80 Kw per day. In order to increase efficiency it is proposed to use photovoltaic modules equipped with a moveable mounting and a control system allowing the modules to precisely follow the course of the sun. Using an algorithm based on astronomical data the solar panels track the sun in line with not only the time of day but also the time of year and the precise geographic location of the photovoltaic installation. As a result of this initiative the panel's energy yield is more than 35% efficient than fixed systems. The proposed system is similar to that located at Kingscote Airport and installed by the Shire of Kangaroo Island.

It is not expected that the Kangaroo Island community will benefit from flow-on effects of the power SAPN installation other than the generation of employment opportunities during its construction phase. The exception to this may be the individual use of the proposed developer paid substation for local properties.

The water supply installation will have ancillary benefits for landholders on and close to Hog Bay Road, including American River residents, who would have a limited opportunity to tap into and purchase water during those times when the golf course is not collecting its requirements during the winter months. This would obviously be subject to the approval of the controlling water authority. There will also be employment benefits and opportunities during the line's construction and on-going maintenance.

10.2 Water

Extensive consultation with South Australia Water has been undertaken and agreement has been reached in so far as a memorandum of understanding has been reached to supply the site with 150ML of off-peak water supply during the months of mid-May to mid-October. This is subject the Middle River Dam overflowing during this period and adequate environmental flows are maintained downstream.

It is not part of this development proposal to extract any ground water.

In consultation with SA Water the design and specification will be such that future users will be able to access this water from the pipeline without any undue implications on the golf development. SA Water pre-approved contractors will be commissioned to undertake the pipeline works in accordance with the applicable conditions and specifications.

Ground water investigations were undertaken across the site and within the local area to determine if there would be sufficient water resources available for the development. It was quickly ascertained that what limited supplies there were, they would not necessarily be in sufficient amounts to sustain the development in the long run, not to mention the impacts it may have on the existing ground water resources for the local users. Investigations into desalination were also quickly dismissed once the environmental impacts and power requirements were evaluated.

Since the development is accessing water which would otherwise flow out to sea, there will be no negative impact on current users in the district. Furthermore, with the supply and delivery of the developer funded mainline infrastructure to the site, many potential users will have access to a water resource not currently available. The provision of this pipeline passes American River Road which leads to the small township of American River some 8 km west and could potentially provide a significant resource for future growth.

Water to the site is primarily supplied from two sources; roof collection of rainwater; and water supplied to and stored in the on-site dam. Apart from these main sources there is rainfall to the areas of the site not built upon and in the context of the scarcity of water on-site a range of techniques are proposed to ensure the most efficient use of rainwater run-off.

It is noted that Water Sensitive Urban Design (WSUD) is mainly concerned with urban situations while the project site is located in a relatively isolated rural setting with little or no reference to an urban locale. Nonetheless there are a number of its principles and objectives and techniques which may be pertinent to the proposal. These include:

Principles

- Conserving water resources through reuse and system efficiency;

- Integrating stormwater treatment into the landscape so that it offers multiple beneficial uses such as water quality treatment, wildlife habitat, recreation and open public space;
- Reducing peak flows and runoff from hardstands in the environment simultaneously providing for infiltration and groundwater recharge;
- Integrating water into the landscape to enhance social, visual, cultural and ecological values;

Objectives

- Reducing potable water demand through demand and supply side water management;

- Incorporating the use of water efficient appliances and fittings;
- Adopting a fit-for-purpose approach to the use of potential alternative sources of water such as rainwater;
- Minimising wastewater generation and treatment of wastewater to a standard suitable for effluent reuse and/or release to receiving waters;
- Treating stormwater to meet water quality objectives for reuse and/or discharge by capturing sediments, pollution and nutrients through the retention and slow release of stormwater;
- Improving waterway health through restoring or preserving the natural hydrological regime of catchments through treatment and reuse technologies;

Techniques

- The use of water-efficient appliances to reduce potable water use;
- Greywater reuse as an alternate source of water to conserve potable supplies;
- Detention, rather than rapid conveyance, of stormwater;
- Reuse, storage and infiltration of stormwater, instead of drainage system augmentation;
- Use of vegetation for stormwater filtering purposes;
- Water efficient landscaping to reduce potable water consumption;
- Protection of water-related environmental, recreational and cultural values by minimising the ecological footprint of a project associated with providing supply, wastewater and stormwater services;

Specifically:

Wastewater is proposed to be treated using the 'Econocycle' wastewater and sewage treatment system. This system will effectively treat wastewater to a level of purity where it may be safely applied as irrigation to landscaped areas particularly in replanted sectors of the site.

Grey-water is to be collected, stored and used for toilet flushing and firefighting purposes.

Roof-water is to be collected, stored in tanks, filtered and receive UV treatment to provide potable water. This potable water will supplement treated water available from the on-site storage dam.

Stormwater from hardstand areas will be managed to effect a treatment and application for site irrigation purposes. Two bio retention systems are to be used retain and afford some treatment of the stormwater arising from hardstand areas (including balconies, patios, pathways to and from the lodges and clubhouse, clubhouse terraces, roads and car parks. These will involve treatment by vegetation prior to filtration of sediment and other solids through prescribed media. Vegetation provides biological uptake of nitrogen, phosphorus and other soluble or fine particulate contaminants. These systems comprise bio retention swales (also referred to as grassed swales and drainage channels) and bio retention basins.

Bio retention swales, are placed within the base of a swale that is generally located off the shoulder of the constructed made roads. They provide both stormwater treatment and conveyance functions. A limited number of bio retention systems will be installed in part of these swales. The runoff water usually goes through a fine media filter and proceeds downwards where it is collected via a perforated pipe leading to dispersion fields mainly comprised of replanted and/or plant rehabilitation areas. Vegetation growing in the filter media will prevent erosion and the bio retention swales are suited for a wide range of soil conditions including the soils presented on the project site. The number of these swales will be limited due to the intention of constructing the roads on a slight camber each way and the soil, for the most part, is free draining. The roads will be formed by providing a compact rubble base over the existing surface of sand and limestone. Crushed compacted limestone will stabilise the surface. The car parks will constructed of similar materials.

Bio-retention basins provide similar flow control and water quality treatment functions to bio-retention swales but will not have a conveyance function. It is proposed to use these as adjuncts to the car parking areas. The basins will provide extended detention of stormwater to maximise runoff treatment during small to medium flow events. A wide range of vegetation can be used within a bio-retention basin, allowing them to be well integrated into the surrounding landscape design. Vegetation species that are endemic to the site will be used despite the fact that it is generally preferable to use species that tolerate periodic inundations.

The proposal is to build a 200mm transfer line from the transfer station near Milk Track and Playford Highway south to the site some 35km away. This water will be discharged into a 100+ ML storage Dam on site which will store the water for use during the peak irrigation time of year from November to March.

The water supply to the storage dam will include a separate closed tank for the purpose of storage of water for the potable supply. As a result of long detention times in the transfer pipeline the water will most likely lose its chlorine residual and be classed as non-potable. As a result additional treatment will occur on site to return the water to potable standard prior to distribution to the buildings and facilities. Programmed will, with support and advice from SA Water, develop a re-treatment process to comply with Australian Drinking Water Guidelines in accordance with the Department of Health requirements.

Water evaporation from the proposed storage dam may be a problem particularly during the warmer months while wind generated evaporation is regarded as a year-round issue. Various measures to control this loss are currently being investigated with the optimal approach currently seen as the provision of a surficial polyethylene membrane (floating cover) resulting in an evaporation mitigation rate of approximately 90%. It is stressed that evaporation is presently a developing technology and that at the time of dam construction and filling with water the most overall beneficial technique will be employed to ensure minimal loss.

Wastewater

A number of options are being considered for the treatment of wastewater on site with the Econocycle treatment system being the preferred method of processing at this stage of the development. Subject to further approval during detail design, the overall treatment system will collect wastewater from all areas of the development and will be treated in a series of localised, compact, state of the art wastewater treatment package units with all effluent (treated to Class B standards as per SA Reclaimed Water Guidelines, 1999) directed to the various holding tanks located around the site for irrigation purposes.

The wastewater unit works on the combined principles of primary setting plus aerobic and tertiary treatment. As can be seen in the diagram below all wastewater and effluent enters the tank through the inlet shown on the left hand side of the tank. This settles into the septic zone.

Towards the top of the baffle wall which separates the septic and aeration compartments, there is an outlet which enables the effluent to trickle into the aeration treatment zone. From here the effluent is filtered over a mass of growth media plates. The growth media acts as a bacteria breeding ground which provides a very important and proficient function of the wastewater unit. The growth media enables the sewerage to break down.

Once the organic impurities have been absorbed within the aerobic culture of microorganisms, the water passes to the clarification zone. At this stage the water has been recycled into clean, clear, odourless water. The clarification zone is the secondary sedimentation process.

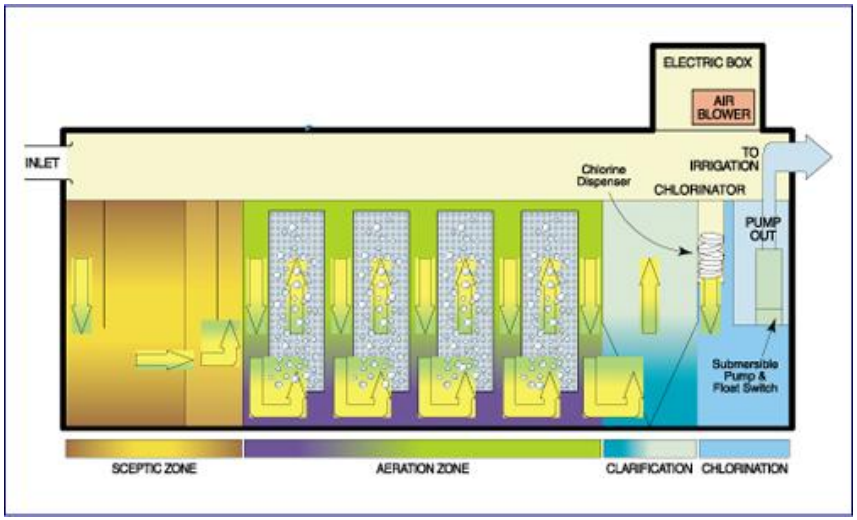

Figure 17 – Wastewater Econocycle treatment system

Before the water is released from the tank it is circulated through the chlorinator, which as its name suggests is a chlorine based chamber that acts as a final back-up and safeguard to catch and kill any residual contaminants that may have escaped through the aeration and clarification process.

The free residual chlorine concentrations are greater than 0.2 mg/L, and less than 2.0 mg/L. This is special graded chlorine so that when pumped into the garden any residual chlorine breaks down rapidly and allows for excellent plant growth. Chlorine tablets are replenished at quarterly service intervals, and are the only chemical used in the process. The added advantage of the system is that it can come in separate units with capacities ranging from 10 person systems to 45 person systems and are readily connected to expand the overall capacity of the system making it ideal for a staged development such as this.

It is estimated that the average daily peak consumption of potable water will be in the range of 50,000 lts/day while the use of a grey water system may reduce this by approximately 25,000 lts/day. It is the intention to recycle this treated water through a grey water based system for the flushing of toilets, laundry functions and the irrigation of the facility's landscape grounds. Based upon the requirements of AS 1547 the required area for irrigation of 25,000 litres per day of wastewater is 5100 m2. This area is readily afforded by landscaped areas in the vicinity of the car park area and the supplementary planting to the immediate south of the main complex. There will be separate treatment systems installed to cater for both the maintenance/staff accommodation areas and the residential lots on the initial basis of 20 person units. Treated wastewater from both systems will be used to provide irrigation around both the staff quarters and the open space appurtenant to the residential lot development. Surplus water from the systems will be directed into the golf course irrigation storage dam from where it will be used to irrigate the golf course.

The proposed system has many benefits including;

- Minimisation of potential risk associated with raw sewage being stored and pumped in the vicinity of the accommodation lodges.
- Low cost wastewater pressure collection system is achieved though the distribution via small polyethylene pipe which is laid relatively cheaply and without the restraints of topography as would be the case in a gravity based system.
- Problems with the system can be easily isolated given the nature of the modular units.
- Each unit typically has a large buffer storage built in to mitigate against any system failure.
- The system generally only requires periodic maintenance, 2 -3 times per year.
- Low greenhouse gas emissions and embodied energy costs.
- Easy and economical distribution of stored reuse water to the immediate vicinity.

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It is calculated by SA Water that the current storage capability of the Middle River Dam is approximately 540ML. During the wet season when the Middle River Dam overflows, only a very small percentage (less than 10%) is actually captured. The remainder of this water flows down the catchment and eventually out to sea. It is the intention to capture a portion of this water during the time that it overflows the weir. This typically occurs around from mid-May to mid-October. Anecdotal evidence suggests that the weir in a normal year continues to overflow as late as November. The development therefore will have no negative impact on the existing water resources of the Island.

The current water supply from the Middle River Dam is chlorinated and transferred to the township of Kingscote and other users in the region. A tapping point near the Playford Hwy and Milk Track will be the point whereby an additional pipeline will be installed. Due to the pressure in the system, the 35km journey south can be gravity fed at approximately 11 l/s to the site thereby significantly reducing power costs with the provision of pumping infrastructure.

Water will then be stored in the dam located on site which will be sufficiently large enough to capture the annual irrigation requirement of the development during that overflow recharge period.

10.3 Power

South Australia Power Networks are the responsible authority for providing power to the Island and as such have been consulted in relation to providing the necessary power requirements of the development. The existing supply of power is along Hog Bay Road and is a 33 kV line located at the intersection of Hog Bay Road and Unnamed Road. It is proposed by SA Power to install a developer funded sub-station and telecommunications tower at this location, i.e., the intersection of Hog Bay Road and the unnamed road. (see SA Power plan) .From this modular substation, an 11kV overhead power line will be provided down Unnamed Road for 1.3km to Cathers Road. At this point the 11kV power line will continue eastwards along Cathers Road with a 200kVA pole mounted transformer located at the pump shed and maintenance shed locations.

Although Davies Road, which is heavily treed with Mallee Scrub vegetation, provides a shorter distance to the Clubhouse precinct and would present a cheaper alternative, the decision has been made to utilise the unnamed road easement. There is no vegetation clearance required for the provision of this overhead power line infrastructure up to the maintenance shed via this route and it will keep intact a significant amount of high quality Mallee Scrub.

Furthermore, to minimise the impact on the Mallee vegetation within the development, an underground power supply from the maintenance compound to the clubhouse precinct will be provided and a 315kVA pad mounted transformer will be located to supply the clubhouse, accommodation lodges and villa unit allotments. There will be a marginal visual impact from the proposed power line construction along Hog Bay Road and in the immediate vicinity of the take point at hog Bay Road and the unnamed road.

During initial investigations it was highlighted that the Island would be unlikely to receive a mainland power line upgrade and as such would need to rely on existing supply lines and/or renewable energy sources. It was pointed out that during the summer months when air conditioners are running at their maximum, the Island experiences the occasional black out.

Investigations into wind and solar were evaluated for their efficiency and practicality on the site. Although feasible, wind turbines were quickly ruled out due to the effects on fauna and the impact on view sheds from neighbouring lands. The use of latest technology photovoltaic cells was considered an important element of the project and the location of an 80 kW per diem system has been located in the maintenance precinct out of view.

Further investigations by SAPN, revealed that the system would have enough capacity to service the development but only if another sub-station was commissioned nearby to transform what would otherwise be unusable power. This substation is capable of being expanded to service other users if required.

In the event of a power fault or blackout, diesel generators will automatically come on line to provide the necessary power back up required to run the development.

10.4 Access

During the construction phase of the project, it is expected that machinery will be limited to operating between the hours of 6:30am and 6:30pm Monday through to Saturday. It is not proposed to have the site open for construction on Sundays unless special circumstances make it necessary to do so. It is the conclusion of the traffic management consultant that the estimated peak usage of up to 26 vehicular trips per hour during these times are not expected to adversely impact traffic movement on Hog Bay Road. Furthermore, the full time construction workforce will result in negligible trip generation during the construction phase of the project. With a reliance on a number of local trades to facilitate the construction of the project, the reliance on the Sealink ferry will be significantly reduced thereby minimising the number of freight movements to and from the site.

The traffic management consultant, Infra Plan have concluded that during the operational phase of the project, it is estimated that the proposed facility will generate during weekdays;

- Up to 14 vehicular trips during morning peak hour
- Up to 17 vehicular trips during afternoon peak hour (or 1 every 3 min) and is this considered low.
- 170 daily trips.

During Weekends;

- Up to 26 vehicular trips during peak hour (or 1 every 2 min)
- 260 daily trips.

It was the considered opinion of the traffic consultant that no major reworks were required on the existing road networks. However, it should be noted that this was a desktop study and it is anticipated that during the detail design phase of the project, some minor modifications will be required to Davies Road to eliminate bad sight lines and improve localised road grades.

It is not the intention to provide a turning lane from Hog Bay Road as highlighted by the consultant's report, however discussions will be had with council regarding the road infrastructure requirements of the overall development including the Hog Bay Road – Davies Road intersection.

As noted in the traffic consultant report no major upgrade in road works are proposed. It is the intrinsic nature of the proposed development to keep the rustic feel of the entry experience down Davies Road. Apart from some minor regarding works to improve drainage flows and some minor earthworks to improve site lines, it is not the intention to fully seal this road. Further discussions with council will be had to formulate a suitable design response that is in keeping with the local area.

The main access to the site is via Davies Road which intersects with Hog Bay Road and runs south to the subject site to its north eastern boundary. This unsealed road is heavily vegetated and therefore would be unlikely to be used in times a fire. An alternate route via Cathers Road which runs along the sites northern boundary, is located in the far north-western part of the site and utilises the existing Unnamed Road easement which runs north to Hog Bay Road. Although presently unformed, this easement will be utilised to provide water and power services to the site and as such will necessitate its formation for maintenance vehicles. Once formed this access track will provide a much needed alternate emergency access/egress point to the facility. The use levels on this route will be minimal so as not to provide any negative impact on local road safety.

The provision for a Helipad, although not part of this proposal, can be easily provided for in emergency situations through the use of the golf course environs and in particular the many tees located throughout the course with the driving range in particular playing a key location point in emergency access/egress.

The proposal has provided for 80 on-site parking spaces and is deemed by the traffic consultant to be sufficient for this facility. In the event that additional car spaces are required, sufficient land provision is available to meet these demands.

The majority of guests have been considered to be interstate and overseas visitors and thus will be arriving by plane with a low reliance on private cars. The vast majority of these guests therefore will be transported to the site via shuttle buses, the parking of which is deemed sufficient to park up to 6 buses.

It is the considered opinion of the traffic consultant that sufficient sight distance (in excess of 210m) is deemed to be available at the junction of Davies Road with Hog Bay Road. Furthermore, based on this information and the minimal vehicular traffic generated by the development, the traffic consultant has determined that no turn lanes are warranted from Hog Bay Road.

Infrastructure upgrades relating to lighting and signage at Davies Road/Hog Bay Road junction, pavement treatments and stormwater/drainage works from Hog Bay Road to the golf course will be assessed during detailed design of the upgrade works to this area and will be in accordance with state and local guidelines, regulations and specifications as required.

Although not part of this formal development application, consideration was given to the provision of a walking trail along the southern coastline which linked the existing walking trail near the eastern boundary to that of the western trail. However, it is the strong recommendation from the environmental consultants, that no pedestrian or vehicular access be permitted along the southern coastline on the count that this would adversely affect local fauna habitat.

Although not opposed to the provision of such a linking trail, the proposal has eliminated it from the current development application and will discuss this at a later date in consultation with council and local groups.

Apart from facility guests and staff, there is no provision to allow public access into the Crown leasehold land. Patrons as they arrive will check in via the hotel lobby or pro shop located in the clubhouse and as such will be guided by the signage and formed pathways to the various locations around the facility. Access into the Crown leasehold land will be afforded only to the golf patrons and maintenance staff who will be playing and maintaining 3 greens (6th, 12th and 16th) and 3 sets of tees (13th, 14th and 17th). Access to and from these areas will be confined to the pathways provided or the maintained turf areas of the tees, fairways and greens.

A comprehensive environmental and landscape implementation strategy in consultation with DEWNAR will be formulated to enhance and maintain those parts of the Coastal leasehold land being utilised. This will include but not limited to;

- the seed collection and propagation of locally occurring plant material suitable for revegetation works
- provision of tree/plant guards to protect against vermin
- detailed weed management programs to control the emergence and eradication of noxious weeds
- signage and erection appropriate fencing to prevent access to sensitive parts of the site which may be subject to further erosion and deterioration

The golf course playing surfaces will be clearly defined by the extent of the finely maintained turf on account of the irrigation provided to these areas. The limits of the golf course will be further defined by the provision of "out of Bounds" (OOB) pegs which take the form of small wooden stakes (50mm x 50mm) which stand approximately 1m out of the ground and are painted white with the top 100mm painted black. The location of these stakes, generally spaced 25-50m apart, indicate to the golfer the area in which their respective golf ball is in play or out. In the event that the ball is out of play, i.e. the other side of the pegs, the golfer is deemed to have lost their ball and must play another one from where they played their last shot. This ensures that golfers are not traversing large areas of native vegetation looking for their golf balls.

Other vegetated areas around the golf course can be similarly treated in order to protect their integrity and biodiversity.

There are no plans to provide formal boundary fencing along these alignments, rather maintain and enhance the natural vegetated landscape.

10.5 Tenure

A comprehensive environmental and landscape implementation strategy in consultation with council and NVR will be formulated to enhance and maintain those parts of the Coastal leasehold land being utilised. This will include but not limited to;

- the seed collection and propagation of locally occurring plant material suitable for revegetation works
- provision of tree/plant guards to protect against vermin
- detailed weed management programs to control the emergence and eradication of noxious weeds
- signage and erection appropriate fencing to prevent access to sensitive parts of the site which may be subject to further erosion and deterioration

11.0 CONSTRUCTION AND OPERATION

11.1 Construction plan and staging

A detailed EMP is contained in appendix O which highlights and sets outs various risks which need to be assessed before, during and after the construction phase of works. The various items which are detailed further include;

- Pre-construction planning and design including environmental and risk assessments;
- Environmental Management Plan including best practice documents and segment environmental control plan;
- Land Disturbance including erosion measures, management of contaminated stormwater, de-watering work sites, dust control, management of stockpiles and batters, working in waterways and floodplains;
- Noise and Vibration including operating hours, vehicles and equipment, traffic, noise abatement and vibration;
- Waste minimisation;
- Contaminated material and wastes including solid inert wastes, putrescible wastes, low level contaminated soil and prescribed wastes;
- Other environmental issues including emergency procedures, air quality, litter, storage of chemicals and fuel, road cleaning, protecting infrastructure;
- Inspections, monitoring and audits.

Specific reference to each component of works will be covered off in detail following a thorough review of the EMP with council and other responsible authorities.

It is anticipated that once the development approval is given by the Governor (estimated to be around June/July 2015), the works will immediately commence on securing the detail design and documentation of the water infrastructure pipeline from the Middle River Dam together with the upgrading of the Power infrastructure along Hog Bay Road.

It is anticipated that these works could take up to 9 months to complete before the tendering of these works could be sought.

It is likely that the construction of the 35km water pipeline will take in the order of 60 to 75 work days to complete and given the timing of these works it is hoped that the water supply should come on line around June 2016.

Once water and power are connected to the site, golf course finishing works can be accelerated with an estimated completion around December 2016. In concert with the golf course construction, the resort clubhouse and stage 1 accommodation (consisting of a combination of lodges and suites) could conceivably commence around January 2016 following the detail design and documentation of the building. It would be hoped that the clubhouse could be delivered within a 12 month time frame from the commencement of construction.

Subject to demand, the second and or third stage of the resort accommodation will take effect and is hoped that this will immediately follow the completion of stage 1.

At the first available opportunity following the power and water connectivity the allotments for private villa unit developments will be placed on the market for sale and expressions of interest. It is anticipated that this would occur in early-mid 2016. It is expected that the build out of these allotments would take place over a 5 to 6 year time frame for the majority of the lots.

11.2 Extent and scope of works

The nature of Links Golf is reflected in its dramatic use and occupation of the natural terrain and landscape. This is quintessential to the links experience and often results in unique land forms that would not be experience in courses created by the hand of man. To this end the skill of the architect is to lay out a course which respects this natural land formation without its manipulation through the use of heavy vehicles and the like. The site is gifted with vast areas of natural sand dunes and valleys in which golf holes readily appear. As such the amount of earthworks will be insignificant and be limited to the levelling of greens and tees and in most cases will involve not much more than 0.5m +or- from the existing levels.

The most significant earthworks will be associated with the construction of the clubhouse and accommodation lodges. It is the intention to partly bury the built form into the large sand ridge which addresses the golf course and the Great Southern Ocean to the south-west. By burying the buildings in this way, they will appear to be less imposing and most importantly sit well below the natural vegetated ridge lines which lay beyond to the east.

Additional earthworks will be involved in the construction the main entry and feeder roads which will utilise wherever possible existing pathways and tracks. This will mitigate against the need for additional vegetation clearance.

11.3 Transport, storage and disposal of materials

The construction of the dam will be a significant source of limestone road base and as such will be utilised across the site in various forms from road construction, cart path construction, landscape paths in and around the development etc. If deemed appropriate and feasible in its quantity and application, limestone blockwork from the excavated sites of the dam and clubhouse precinct suitable for the building construction will be investigated.

Wherever possible, local building materials will be sourced from the Island and include timber, plaster, roofing materials, glazing supplies and the like. In the event the supplies are not available from the Island, materials will be sourced from the mainland and transported to the site via the Sealink ferry.

The buildings and site works have been designed so that the built form is set into the landscape rather than perched on top of it. In order to achieve this there will be a requirement for excavations in and around the buildings. This material, if not lost in the immediate landscape surrounds can be easily utilised in the golf course environs without any need for disposing the material off site.

Construction waste will be predominately in the form of lightweight materials and will be disposed of off-site at approved waste collection facilities.

An environmental management plan (EMP) has been prepared (refer. Annex O) and details the strategies and actions to be implemented to protect the existing environment during construction and operation including issues surrounding the transport and storage of chemicals.

11.4 Noise control measures

Construction activities;
Possible noise impact arising from the project site will be at its most significant during golf course building construction. The main mitigating factors to any such impact will be the size of the subject site, the attenuating effect of distances and wind. Strictly controlled hours of operation will also limit the impact of construction noise to neighbouring properties.

Noise sources during this phase include earth moving machinery, irrigation pumps, power tools, vehicle noise including trucks and other large vehicles, and general vehicular traffic. The range of noise includes the sharp intermittent use of power tools to the somewhat ambient noise levels introduced by the continually operating machinery such earthmoving equipment.

On account of site size and prevailing winds the offsite noise impacts from construction equipment will be minimal.

Operation activities;
Possible sources of noise impact arising from the project site during its operation include irrigation, mowers and maintenance machinery, service vehicles, general vehicular traffic and domestic activities.

Overall the operation of the facility will provide a low level of noise impact on the environment in the context of main activity areas, site topography, vegetation and prevailing winds. Further the project will operate under the State EPA guidelines and adopt strictly controlled hours of operation to also limit the impact of noise to neighbouring properties.

11.5 Erosion control measures

As part of the EMP (refer Appendix O)), one of the first tasks will be to identify areas around the site which are subject to erosion and areas which may be prone to erosion during the construction phase of works. These areas, some of which have already been identified by the environmental consultant, through a variety of measures will be isolated and treated accordingly in order to protect them from further degradation.

As part of the EMP (refer Appendix O), work practices are to be examined and assessed in accordance with the likely environmental effects that such practices may have throughout the construction and operation phases of the project. In combination with the EMP, strict Safe Operating Procedures (SOP's) will be employed on all equipment and operations carried out on the site. This is to not only mitigate against environmental impacts but also to ensure worker safety is maintained.

While provision for staff accommodation is provided on site for construction workers in the first instance, it is anticipated that some of the workers may choose to rent properties in and around the townships of Kingscote and Penneshaw. Following the construction phase of the project, the onsite accommodation can be utilised by operations staff on either the golf course or the resort as and when required. The purpose of these accommodation units is to provide a backup accommodation option for those workers who like to be on the site throughout the job or for those who are staying for only a short time as the case may be.

In the event that the accommodation units are not required post construction, they can be easily dismantled and taken off site.

11.6 Management Plans

As part of the EMP (refer Appendix O), ongoing monitoring of the golf course and the resort environs will be carried out on a regular basis with the aim of minimising environmental impacts. Areas under consideration are listed in the EMP and include;

Apart from areal control and culling measures in regard to the existing kangaroo and wallaby mob there are no encumbrances or similar mechanisms proposed to be initiated to control and manage activities on adjoining land. The site is currently unfenced and open to free kangaroo access from abutting properties. Despite any plans to install peripheral fencing it is expected that effective kangaroo control and management will be achieved by culling to control numbers and the use of specific planting to reduce the attraction of the site. Such control measures would require to be carried out in co-operation with owners of adjoining properties including crown land.

12.0 RISK AND HAZARD MANAGEMENT

12.1 Public safety mechanisms

A combination of passive and active bushfire management strategies are proposed within this report to comply and where possible exceed statutory requirements and minimise the risk to life and property without the need for large scale vegetation clearance.

Passive Measures;

Due to the careful siting of the clubhouse and accommodation lodges away from the existing remnant vegetation the provision of a 20 meter band of modified vegetation can be easily maintained. This is further enhanced by the provision of a suitably sized car park and access road in the clubhouse and accommodation lodge precinct thereby acting as a fire reduced zone and further reduces the fire intensity risks in and around the clubhouse precinct.

Most of the vegetation between the clubhouse and accommodation precinct and the coast is existing low dense vegetation up to 1.5m in height and is effectively wind pruned by the southerly high winds.

The villa units which are located in the open areas to the east of the clubhouse, nonetheless are in close proximity of the larger story remnant vegetation bordering the eastern boundary. In the event of a fire, there is access provision to the east and west of these units via a single lane asphalt road which leads directly to the clubhouse precinct.

Vegetation around these villa units will be carefully selected and maintained to ensure they do not provide a potential fire hazard.

All buildings will be constructed to follow the principles of Australian Standards AS3959-1999, Level 3 Construction, as recommended for Extreme Fire Risk.
This will include:

- Non-flammable materials for all external surfaces;
- All glazing toughened, with openings protected by stainless steel mesh;
- Any underfloor spaces sealed with vents covered with stainless steel mesh;
- Foil under all roofing and roof spaces sealed;
- Provision for a designated room within the clubhouse to be designed to a higher standard of fire resistance to provide a designated safe refuge;

In the event of a fire, it is proposed staff and guests would remain in the main clubhouse area as the fire approached and then proceed to the specific refuge area when directed by trained staff.

Active Measures;

Butterfly sprinklers, raised above the height of the vegetation, spaced to ensure complete coverage and located within 10 m of all buildings will provide water resources capable of suppressing fire. These sprinklers will saturate the vegetation immediately adjacent to the buildings thereby increasing the low level humidity which has the effect of raising the radiant heat above buildings with the introduction of winds.

Roof mounted sprinklers will be located above gutters and near roof ridgelines to limit spark and ember attack and reduce radiant heat impact.

A number of suitable located hose reels will be located around the clubhouse and accommodation precinct and the maintenance compound to provide additional firefighting infrastructure to control spot fire and ember attack prior to and after the front passes.

All sprinklers and hose reels will be served by a continuous main line controlled by a pump with back up diesel powered generators. A minimum supply of 150,000 litres will be maintained at all times to supply this system with water being stored in a combination of the main irrigation dam and storage takes in and around the clubhouse precinct.

12.2 Fire and evacuation management systems

Due to the dense vegetation of Davies Road, the biggest risk to life will be in the evacuation of the site via this road. The main clubhouse building will be designed as a safe refuge within which staff and guests can be safely accommodated without the need for additional assistance.

The irrigated golf course complete with back up diesel generators could provide an adequate alternate refuge if trained staff considered it appropriate.
Strategies to minimise vegetation clearance and modification for fire control purposes include;

- No clearance along property boundaries or existing access tracks for fuel break purposes for reasons stated above.
- Vegetation clearance to the extent necessary to accommodate the building footprints and associated works such as driveways and vehicle movement areas.
- Vegetation modification will be undertaken where applicable within a 20m band of major buildings and maintained to a height on no less than 300mm which is considered sufficient to reduce fuel build-up but not eliminate the species.
- Revegetation of scalded areas following fires within the 20m band of the main buildings.

Firefighting foams are composed principally of surfactants and act by increasing water efficiency in a fire fighting situation. In discussions with the CFS firefighting foams have been included as a component of the fire management strategies and controls to be adopted on this project.

To mitigate against any potential environmental effect on the native vegetation in the use of firefighting foams, the project will adopt the following measures;

- Foams will only be deployed in emergency situations and will not be used on site for prescribed or controlled burning operations;
- Only short term retardants such as foam, will be used only as and when required on site.
- Foam use will be limited in areas directly adjacent to buildings.

A 100+ML irrigation storage Dam will be located on site and will be supplemented by storage tanks in and around the clubhouse and accommodation precinct.

This water source will be transported via underground main line pipes through the golf course and around the clubhouse precinct via the irrigation pumps complete with back up diesel generator.

With the strategy of the development being sustainable and not requiring outside assistance, training of staff in bushfire safety and building protection assumes a high priority. Staff will undertake training courses appropriate to the fire risk and to the South Australian CFS standards required for the complex and the environment. This would be reinforced by a program of equipment testing and fire drills for all staff on a regular basis.

Although a commercial helipad is not provided for within the development proposal, the golf course provides an ideal area in which to land a helicopter in the case of emergencies which is within close proximity of the clubhouse precinct.

Staff must have the ability to respond promptly and appropriately to any medical emergency situation. With this in mind the following strategies will be implemented as part of the ongoing operation of the facility;

- Staff call 000 which is connected to SA Ambulance Service in Adelaide
- First response group (KI Ambulance) is notified and concurrently dispatched from Penneshaw and a backup from Kingscote. An Adelaide based ambulance backup helicopter and treatment team is (Rescue Five 1) is placed on standby.
- The first response group concentrates on assessment and communication and if applicable the need for additional resources such as the medivac helicopter or royal flying doctor service from Kingscote.
- If patient is required to be transferred to Kingscote hospital, they may be transferred to the backup ambulance en-route.

To ensure readiness and effective emergency response on site the following will also be implemented on site;

- Key resort personnel to be first aid trained;
- Resort to hold a Royal Flying Doctor Service medial kit, oxygen, and if applicable a small defibrillator, stretcher and supplies for trauma and pain relief.

12.3 Pollution and contamination mitigation measures

The project will formulate a comprehensive Environmental Management Plan (EMP) to the satisfaction of EPA and council which will include in it a detailed section on the containment, storage and use of fuels and chemicals in and around the site. A copy of the current EMP is contained in appendix O of this report.

Although it may be necessary to store fuels and chemicals on project sites, this inevitably creates an environmental risk. Spills can severely pollute waterways and land.

Reducing the quantities of chemicals and fuel stored on-site to minimum practicable levels is desirable. Infrequently used chemicals should be ordered just before they are needed. It may be possible to use a mini-tanker to refuel vehicles, instead of relying on a central fuelling point.

There are several approaches that can be taken to reduce the risk of fuel spills. Steps include designing storage units to prevent vehicles or fork-lifts puncturing tanks, fitting automatic cut-offs to fuel dispensers, and making units vandal resistant.

Installing bunds will prevent spilt fuel escaping and causing environmental damage. Bunds should be designed and installed in accordance with EPA guidelines.

Key design issues addressed in the guidelines are height of bund walls, construction material, vehicular access, and stormwater management. Roofed bunds are strongly preferred.

Should a spill occur, then it is necessary to have a contingency plan in place to deal with the clean-up. It should consider issues such as cleaning up spilled material on the site, containing and cleaning up spills which have entered waterways, disposal or reuse of recovered residues, and contacting key company and government agency personnel to advise them of the emergency.

12.4 Weed and pathogen control measures

Phytophthora is a parasitic fungus that lives in the soil and attacks the roots of plants. Although there are many different species, cinnamomi is the most frequently associated with dying vegetation. In South Australia, dieback caused by Phytophthora has been found in a number of sites that are within high rainfall areas, including Kangaroo Island (TSA 2000).

One of the major agents responsible for its distribution is through human activity and more precisely through the use of heavy earthmoving machinery and equipment while transport and moving soil, plant matter and water. There is no known method of eradicating Phytophthora once it has become established in an area and therefore control methods and effective management is critical to its containment.

There is no record or sign of Phytophthora occurring on the site, however Kangaroo Island is classified as a high risk area and as such its control is detailed in the EMP (refer Appendix N).

The EMP (refer Appendix N) under section 4.1 – Erosion control, lists measures which will be undertaken during construction and ongoing operations to mitigate against erosion. Measures will include the following;

- Keep land clearance to a minimum.
- Avoid wherever possible clearing areas of highly erodible soils and steep slopes which are prone to water and wind erosion.
- Revegetate and mulch progressively as each section of works is completed. The interval between clearing and revegetation should be kept to an absolute minimum.
- Coordinate work schedules, if more than one contractor is working on a site, so that there are no delays in construction activities resulting in disturbed land remaining unstabilised.
- Program construction activities so that the area of exposed soil is minimised during times of the year when the potential for erosion is high, for example during summer when intense rainstorms are common.
- Stabilise the site and install and maintain erosion controls so that they remain effective during any pause in construction. This is particularly important if a project stops during the wetter months.
- Keep vehicles to well-defined haul roads.
- Keep haul roads off sloping terrain wherever practical.
- Designed the slope of a cut to minimise the angle of incline.
- Cultivating the cut surface will increase infiltration of rainfall and decrease the velocity of water across the slope during rain and therefore reduce erosion.

13.0 ABORIGINAL HERITAGE AND NATIVE TITLE

13.1 Aboriginal heritage

EBS Heritage was engaged to undertake a cultural heritage and risk assessment for the current project location. The cultural heritage assessment includes a review of all relevant legislation as well as background research and searches of South Australian and Commonwealth heritage registers. The risk assessment involved an on-ground assessment by an archaeologist to assess the likelihood of works and proposed excavation activities encountering heritage items in the project area. A copy of the assessment is included at Appendix J.

Specifically, the measures included:

- A review of relevant literature, previous reports and register searches was undertaken for the project site and the immediate surrounds. This information was used to compile a risk assessment for the project area which is outlined in detail in EBS-Heritage's report and classifies the project site into areas of 'high' 'moderate' and 'low' likelihood to contain heritage items.

Information was obtained from the following searches:

- Central Archive and Register of Aboriginal Sites and Objects maintained by the Department of State Development, Aboriginal Affairs and Reconciliation (DSD-AAR).
- South Australian Museum Database
- Australian Heritage Inventory
- South Australian Library
- South Australian Archives

A combined ecology/heritage field survey was conducted from the 11th to the 14th of November 2014. Field investigations focused on ground-truthing and supplementing the data collected during the desktop assessment. The heritage field survey focused on the risk assessment and assessing the requirements for a cultural heritage survey.

The South Australian Aboriginal Heritage Act 1988 does not mandate a need for an Aboriginal heritage survey and there is no legislative requirement to conduct a cultural heritage survey at the current project location. However, the AHA 1988 does provide a legal obligation for the construction of the proposed golf course to not 'damage, disturb or interfere' with an 'aboriginal site' whether this site is recorded or not. In light of this and resulting from the desktop survey, site inspection and recommendations by Heritage Consultant EBS-Heritage, it is proposed to adopt an approach that fosters consultation with the relevant Aboriginal groups while implementing a site discovery procedure for all earthmoving works as well as a site induction to ensure all project members are aware of the nature of objects that may be found.

At this point no direct consultation has been conducted with the relevant Aboriginal parties, i.e., the Ramindjeri people. These were amongst some of the first Aboriginal people in South Australia to come into regular contact with European settlers with Kangaroo Island based sealers raiding Ramindjeri lands for women in the early 19th century.

The following procedure is to be followed in the event of any potential Aboriginal site identified during construction.

1. Do not remove anything from the area. Continue activities away from the area.
2. Inform Construction Project Manager (CPM) of site discovery.
3. Construction Project Manager informs Department of State Development and Division for Aboriginal Affairs and Reconciliation (DAARE) to confirm whether the site is an Aboriginal site.
4. If the site is confirmed not to be an Aboriginal site works may continue at the location.
5. If the site is confirmed as an Aboriginal site the CPM is to liaise with DAAER to determine the appropriate management approach.
6. If the site cannot be avoided during construction activities the proponent (Programmed Pty Ltd) may need to apply to DAARE for Section 23 authorisation to damage, disturb or interfere with the Aboriginal site.
7. If the site can be avoided during construction activities then works may continue at the location with management measures implemented to avoid damage to site.

Aboriginal Heritage Act 1988 (SA)

The South Australian Aboriginal Heritage Act (AHA) is administered by the Department of State Development, Aboriginal Affairs and Reconciliation Division. Any Aboriginal site, object or remains whether previously recorded or not, is covered under the blanket protection of this Act. The AHA provides the following definition of an Aboriginal site in Section 3:

"Aboriginal site" means an area of lands;

a) That is of significance to Aboriginal tradition or;

b) That is of significance according to Aboriginal archaeology, anthropology or history.

It is an offence under section 23 of the AHA to damage, disturb, or interfere with an Aboriginal site, objects or remains unless written authorisation from the Minister for Aboriginal Affairs and Reconciliation has been obtained. Penalties for an offence under this section are up to $10,000 or six months imprisonment in the case of an individual and $50,000 in the case of a corporate body.

The project area may contain Aboriginal sites, objects or remains covered by this Act. There is no legal requirement under the AHA to undertake an Aboriginal cultural heritage survey and most surveys are undertaken as a risk management/due diligence strategy to ensure no project delays are encountered during the construction phase.

At this point no direct consultation has been conducted with the Aboriginal people during the preparation of the assessment document.

13.2 Native title

Under the Native Title Act 1993, the National Native Title Tribunal (NNTT) is responsible for maintaining three public registers; the National Native Title Register, the Register of Native Title Claims and the Register of Indigenous Land Use Agreements. These registers hold records of native title determinations, applications and Indigenous land use agreements made under the Native Title Act 1993.

The project site comprises, for the most part, private freehold land and as suc, Native Title is therefore extinguished over the private freehold land component of the project area. The proposed golf course proposes use of parts of the crown land in the coastal reserve. In this regard the current project area is within the claimed native title lands of the Ramindjeri (SC2010/003) and under the Native Title Act, consultation will occur between the Programmed Pty Ltd and the Ramindjeri representatives if any land subject to Native Title is to be affected.

At this point it is understood that there are no Native Title Claims over Kangaroo Island.

List of Appendices

List of Figures

Appendix A
PER Guidelines

	Guidelines	Reference in PER
5.1	Planning and Environment Legislation and Policies	4.0
5.1.1	Describe the proposal's consistency with and/or variance from the Kangaroo Island Development Plan and Planning Strategy (including the Kangaroo Island Structure Plan).	4.1
5.1.2	Describe the proposal's consistency with the 'National Landscapes Experience Development Strategy for Kangaroo Island' (2014) and the 'Brand for Kangaroo Island'(especially to demonstrate that the proposal would deliver an 'extraordinary' tourism development.	4.2
5.1.3	Describe the proposal's consistency with the Kangaroo Island Natural Resources Management Plan.	4.3
5.1.4	Describe the proposal's consistency with the South Australian Tourism Commission 'Design Guidelines for Sustainable Tourism Development' (2007).	4.4
5.1.5	Describe the relevant requirements of the *Environment Protection Act 1993* and associated policies and guidelines, and how these would be complied with	4.5
5.1.6	Describe any relevant EPBC Act policies, guidelines or plans, and how these would be complied with and/or demonstrate that the implementation for the proposal will not be inconsistent with any relevant EPBC Act or plans.	4.6
5.1.7	Consider relevant protocols, agreements and strategies including: 'Tackling Climate Change, SA's Greenhouse Strategy 2007 – 2020', the *Climate Change and Greenhouse Emissions Reduction Act 2007* and the *National Greenhouse and Energy Reporting Act 2007*.	4.7
5.1.8	Describe the proposal's consistency with State and Commonwealth legislation and initiatives relating to conservation or protection of the biological environment and heritage items.	4.8
5.1.9	Consider any other relevant plans or studies that relate to the area.	n/a
5.1.10	Identify legislative requirements and the range of approvals needed to complete the proposed development.	4.0
5.1.11	Describe any changes that may need to be made to the Development Plan policies for the site (especially for the residential component).	n/a
5.2	NEED FOR THE PROPOSAL	5.0
5.2.1	Justify the rationale for the proposal from an environmental, economic (especially market demand), social and sustainability perspective, including the reasons for its proposed location, scale and staging.	5.1
5.2.2	Justify the selection of the proposed location from an environmental and economic perspective in comparison with alternative sites on Kangaroo Island	5.1
5.2.3	Outline current and predicted demand for the facility.	5.1
5.2.4	Outline the expected local, regional and state benefits and costs, including those that cannot be adequately described in monetary or physical terms (such as effects on aesthetic amenity).	5.2
5.2.5	Assess the "do nothing" option (i.e. the consequences of not proceeding with the proposal).	5.3

5.3	ENVIRONMENTAL ISSUES	6.0
5.3.1	Describe the impact of past and current land management practices on the environmental values of the site, especially any environmental problems or degrading factors that may need to be addressed.	6.0, 6.1
5.3.2	Quantify and detail the extent, condition and significance of native vegetation (individual species and communities) that currently exist on site (or affected by off-site infrastructure requirements) and would be preserved and, if appropriate, rehabilitated.	6.3, 6.4
5.3.3	Quantify and detail the extent, condition and significance of native vegetation (individual species and communities) that may need to be cleared or disturbed during construction (including ancillary clearing for the proposed development of residential allotments, walking trails, areas required for bushfire safety and all infrastructure, such as the water supply pipeline and power transmission line).	6.3, 6.4
5.3.4	Describe the ability of communities or individual species (especially those listed as uncommon or threatened under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the South Australian *National Parks and Wildlife Act 1972*) to recover, regenerate or be rehabilitated.	6.2, 6.4, 6.6.7
5.3.5	Identify measures to minimise and mitigate vegetation clearance (including incorporating remnant stands in the layout design) and to compensate for the loss of native vegetation and habitat.	6.6.1
5.3.6	Outline proposed revegetation works (including the location, densities and types of locally indigenous species to be planted) and how this relates to existing native vegetation.	6.6.1
5.3.7	Describe the effect of introduced weed species and increased human habitation on native vegetation, before and after construction, including species that may originate from the golf course, landscaped areas or gardens.	6.8, 6.6.9
5.3.8	Describe measures to deliver significant environmental benefit to the existing native vegetation, whether intact stratum or scattered patches/trees, as required by the *Native Vegetation Act 1991*.	6.6.1
5.3.9	Quantify and detail the abundance, condition and significance of native fauna populations that currently exist or may depend on habitat on site or along the routes of infrastructure for the proposal.	6.5
5.3.10	Describe direct and indirect impacts to fauna associated with the proposal, the extent of expected fauna and/or habitat loss or disturbance during the construction and operation phases (both on and around site) and the ability of communities and individual species to recover, especially for resident or migratory shore birds and threatened or significant species (including those listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* and the South Australian *National Parks and Wildlife Act 1972*).	6.6.5
5.3.11	Detail appropriate buffer distances that would be required for the construction and operational phases between the proposed development (including coastal access points) and threatened species, especially feeding areas, nesting sites and roosting sites.	6.6.6
5.3.12	Outline the effect of light and noise pollution on nocturnal animals.	6.6.8
5.3.13	Outline the risk of road-related fauna death and injury (including from construction vehicles) and the risk of bird strike associated with any large glass windows.	6.6.10

5.3.14	Provide information on the expected levels of noise (and where relevant vibration) associated with the construction and operation of the facility, identifying all potential sources, and describe the extent to which emissions can be reduced and contained to acceptable levels to minimise effects upon the wider locality (especially native fauna populations that occur on and around the site).	11.4
5.3.15	Outline how native fauna that is likely to interact with the golf course development (such as kangaroos, wallabies and possums) and how this would be managed.	6.6.11
5.3.16	If wind turbines are to be used, describe the potential impacts on native fauna.	n/a
5.3.17	Identify impact avoidance, minimisation and mitigation measures and their effectiveness, including measures to minimise access roads and subsidiary tracks acting as fauna barriers or as a corridor for feral animals.	6.6.12
5.3.18	Describe how the proposal will not be inconsistent with any relevant EPBC Act, Threat, Abatement Plans and/or Recovery Plans.	6.6.4, 6.6.5
5.3.19	Describe the effect of the proposed development on coastal dunes, limestone and calcrete formations of the site (and associated heathland shrubland communities) and outline management and rehabilitation measures for these areas.	6.7
5.3.20	Describe measures to be adopted for the remediation of sand drift, should it occur within the dune system as a direct result of the development.	6.7
5.3.21	Identify the impact of coastal erosion due to expected sea level rise of 0.3 metre to 2050 and 1.0 metre to 2100.	6.7
5.3.22	Detail how the proposed coastal walking trail would avoid impacts on sensitive coastal landforms of the area and associated flora, fauna and habitat (especially for the Eastern Osprey, listed as Endangered under the *National Parks and Wildlife Act 1972*, and the Hooded Plover, listed as Vulnerable under the Act).	n/a
5.3.23	Describe the ongoing management requirements of the coastal walk.	n/a
5.3.24	Describe the existing marine and aquatic communities (especially invasive species and species listed under the Environment Protection and Biodiversity Conservation Act 1999) potentially impacted by the project, including those associated with Pelican Lagoon.	6.8
5.3.25	Describe the direct and indirect impacts (including potential discharges from the development, such as contaminated groundwater or surface water resulting from golf course irrigation) on marine/aquatic communities and the proposed measures to mitigate impacts.	6.8
5.3.26	Describe the hydrogeology of the site in relation to soil types, geology and surface drainage patterns, including any drainage to Pelican Lagoon and the marine environment.	6.9.1
5.3.27	Outline the interaction between erosion processes and the proposed development (especially sand drift and 'blow-outs').	6.9.2
5.3.28	Describe how any calcrete outcrops would be impacted by construction of the golf course layout.	6.9.2
5.3.29	Describe the known existing groundwater and land related environmental conditions, including possible site contamination.	6.10
5.3.30	Undertake a preliminary site investigation, conducted by a site contamination consultant in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999*, to identify whether a potentially contaminating land use has occurred on the proposed site. If the existence of potential site contamination is identified, appropriate assessment and remediation strategies must be undertaken to ensure the land is suitable for the proposed uses.	6.10

5.3.31	Detail the measures to be taken to manage and monitor any groundwater resources.	4.5, 6.8, 6.10
5.3.32	Detail the potential impacts on the underlying groundwater from nutrients and chemicals leaching from the golf course.	4.5, 6.8
5.3.33	Identify impact avoidance, minimisation and mitigation measures and their effectiveness.	6.10
5.3.34	Outline the principles to be followed to demonstrate that the development would be environmentally sustainable.	6.11, 6.11.1, 6.11.2
5.3.35	Describe the measures associated with orientating all of the built components for the best possible energy efficiency, having regard to alternative or renewable energy sources, sustainable design and low emission design measures.	6.11.3
5.3.36	Outline waste management strategies for residential uses and commercial facilities (including measures to deter scavenging by native or feral species) and the potential for incorporating recycling and resource recovery.	6.11.4
5.3.37	Outline measures to minimise or reduce materials and resources used during the construction and operational phases, including the use of on-site (or local) and recycled materials.	6.11.4
5.3.38	Describe the arrangements to control and manage activities, particularly to ensure that the proposed development is environmentally sustainable in the long-term.	6.11.5
5.3.39	Describe implications of climate change with respect to the proposal and measures to minimise, reduce and ameliorate greenhouse gas emissions, particularly the use of alternative or renewable energy sources and off-sets.	6.11.1
5.4	ECONOMIC ISSUES	7.0
5.4.1	Provide a full economic analysis of the proposal, including the long term economic viability of the project.	7.1
5.4.2	Detail the potential economic benefits and costs of the development to the Kangaroo Island economy and the State economy (such as employment and investment opportunities), including the “multiplier effect”.	7.1
5.4.3	Outline the opportunity for tourism and investment on Kangaroo Island to be enhanced as a result of the proposal.	7.2
5.4.4	Outline the potential for the project to attract and enhance the business operations of other allied industries and commercial ventures.	7.2
5.4.5	Describe strategies to manage the site, should the project fail during the period between the commencement of earthworks and final completion of the golf course.	7.3
5.5	SOCIAL ISSUES	8.0
5.5.1	Detail the likely size and composition of the construction workforce and employees required during operation, particularly information on employment opportunities for the local community.	8.1
5.5.2	Outline the impact on existing tourism and recreation services and facilities (including opportunities).	8.2
5.5.3	Describe any potential conflict with adjoining primary production activities, including measures to ameliorate any such conflict.	8.3

5.5.4	Describe the proximity and relationship with the proposed land division and likely future dwellings on those sites. Detail any interface issues (such as noise) likely to arise between the land division and the surrounding land (including the golf course) and proposed mitigation strategies.	8.3
5.5.5	Describe the impact of noise emissions and vibration on existing sensitive receivers (if any) or sensitive receivers to be introduced as part of the proposed development (especially potential new residents) during construction and operation. Detail strategies to minimise any potential impacts to an acceptable level.	8.3
5.5.6	Identify the impact on the heritage significance of any known heritage places on or adjacent the site, including National, State or local heritage places entered on the South Australian Heritage Register, or identified after consultation with the Heritage Branch of the Department for Environment, Water and Natural Resources.	8.4
5.6	DESIGN MATTERS	9.0
5.6.1	Describe the rationale and design intent for the major elements of the proposed development (including reference to the *Principles of Good Design* (2014), prepared by the Office for Design + Architecture SA) and measures to mitigate their visual impact.	9.1
5.6.2	Provide design guidelines for the proposed residential component.	9.1
5.6.3	Provide conceptual plans for all components of the proposal (including building envelopes, cross-sections and three dimensional representations) that show the scale, style, context and overall form of the development.	9.1
5.6.4	Provide details of construction materials to be used for all buildings and structures (including colours and finishes).	9.1
5.6.5	Detail the extent of any landscaping or screen plantings, especially the use of locally indigenous plant species suited to local conditions.	9.1
5.6.6	Describe the visual effect of the proposed development on scenic quality in this locality when viewed from important viewing points, including from surrounding land (especially from Mount Thisby and the Hog Bay Road) and the sea.	9.2
5.6.7	Describe the effect on visual amenity and landscape quality, especially the effects of the built form of buildings and structures (including the access road, earthworks, water and power supply infrastructure) and the impact on the coastal environment.	9.2
5.7	INFRASTRUCTURE	10
5.7.1	Outline the requirements for and likely location of infrastructure for gas, electricity, sewerage, stormwater management, waste management and communications systems.	10.1
5.7.2	Detail the extent to which the facility would generate the need for upgraded infrastructure beyond the site boundaries, especially any broader impacts for the kangaroo Island community (including strategic implications for Council or utility providers).	10.1
5.7.3	Detail emergency services arrangements.	10.1
5.7.4	Outline opportunities to incorporate best practice infrastructure design, especially for community benefits.	10.1
5.7.5	Describe the provision of an adequate water supply for the proposed development (both potable and non-potable), including information on the quality of water required, treatment, storage and use.	10.2
5.7.6	Describe any proposal to extract groundwater at the site.	n/a

5.7.7	Describe the impacts of developing a wastewater treatment system, especially the expected volume to be treated, disposal method and how it would be managed to maximise reuse/recycling (including storage requirements). Outline how the treatment system elements would be installed, if it is a phased development. If the disposal method involves irrigation to the golf course or any other areas of land, a draft Irrigation Management Plan should be prepared.	10.2
5.7.8	Describe stormwater and grey water management strategies to maximise recycling (including recycled water storage requirements) and the potential impact on groundwater resources, surface water resources and the marine and coastal environment (including Pelican Lagoon). In particular, with regard to golf course, runoff and the transport of nutrients and chemicals used in the day to day maintenance of the course.	10.2
5.7.9	Outline the strategies for wastewater and stormwater management for the residential component of the proposed development (including treatment, storage and reuse).	10.2
5.7.10	Describe the impact of the development on existing water resources, including the need for a water supply pipeline to the site. Details regarding the proposed location of infrastructure (including storage on site), distance from the supply source and procedural/administrative requirements for establishing infrastructure outside of the site.	10.2
5.7.11	Describe the impact of the development on current users of water resources in the district, including irrigated primary production.	10.2
5.7.12	Describe the integrated water management strategy, especially Water Sensitive Urban Design (WSUD) measures (including ways in which water use would be minimised), and the use and management of alternative water sources (i.e. wastewater, grey water and stormwater).	10.2
5.7.13	Outline the measures proposed to manage and treat stormwater runoff from hard surfaces which are not being used for harvesting water supply, especially access roads and carparks.	10.2
5.7.14	Describe the provision of an adequate power supply for the development, including potential impacts associated with a transmission line corridor to the site.	10.3
5.7.15	Outline the implications of connecting to the power grid for the existing infrastructure and current users.	10.3
5.7.16	Identify ways in which power use can be minimised or supplemented, especially using alternative energy sources (such as wind turbines) and energy efficiency measures.	10.3
5.7.17	Outline the level of traffic generation and vehicle movements to and from the site, especially details of vehicle types and distribution (including the hours that vehicles would access the site) during the construction period and operational phase.	10.4
5.7.18	Outline and analyse the impacts on local and other roads (including their junctions), especially the safety and adequacy of the Hog Bay Road / Davies Road junction.	10.4
5.7.19	Outline the need for and the implications of any upgrading of road infrastructure.	10.4
5.7.20	Identify alternative access arrangements for emergency services.	10.4

5.7.21	Detail the proposed access and on-site car parking arrangements, including information about road width and associated drainage measures and maintenance requirements.	10.4
5.7.22	Describe any proposed coastal access (including the maintenance of current public access and the potential future enhancement of access) and the measures to avoid or minimise impacts.	10.4
5.7.23	Describe what plans would be put in place to control public access from the Crown leasehold land.	10.4
5.7.24	Describe what processes and approvals would be undertaken to reconcile encroachments on the Crown leasehold land dedicated for conservation purposes.	10.5
5.7.25	Detail the measures to be taken to define the golf course from the Crown leasehold land.	10.4
5.8	CONSTRUCTION AND OPERATION	11.0
5.8.1	For each component, provide a site construction plan and outline strategies to minimise effects on the local environment.	11.1
5.8.2	Outline the staging and timing of construction (including the time of year works are likely to occur).	11.1
5.8.3	Describe the level of cut and fill required (including for access and infrastructure requirements) and the effect on the natural topography of the site.	11.2
5.8.4	Where possible, identify the source and origin of construction materials for buildings and infrastructure (such as road making) and the opportunity for the use of on-site (or local) and recycled materials.	11.3
5.8.5	Describe the measures proposed for the disposal of excavated material and construction waste.	11.3
5.8.6	Provide information about the transport and storage of any construction materials to minimise effects on the local environment.	11.3
5.8.7	Identify measures to stabilise disturbed areas and areas susceptible to soil erosion.	11.5
5.8.8	Detail measures for the implementation of environmentally acceptable work practices.	11.5
5.8.9	Provide information about the potential accommodation arrangements for the construction workers and employees.	11.5
5.8.10	Detail the proposed monitoring of impacts during and after construction, including reporting and auditing measures.	11.6
5.8.11	Detail what will be included in an environmental management and monitoring plan, for both construction and operational activities for all components of the development.	11.6
5.8.12	Detail the encumbrances or similar mechanisms to control and manage activities on adjoining land.	11.6
5.8.13	Detail long-term management agreements for operation of the development, including the ownership of land and infrastructure.	n/a
5.9	RISK AND HAZARD MANAGEMENT	12.0
5.9.1	Describe strategies for ensuring public safety during construction and operation.	12.1
5.9.2	Detail fire management processes and measures to reduce bushfire risk, especially those which minimise vegetation clearance and land disturbance.	12.2
5.9.3	Detail the availability of water for fire-fighting purposes.	12.2
5.9.4	Describe strategies for emergency evacuation during medical emergencies and/or bushfire risk.	12.2

5.9.5	Describe procedures to prevent, minimise and manage pollution spills or sewage leaks (especially given the porous substrate and proximity to the coast and Pelican Lagoon). Outline measures for the bunding of hazardous materials storage areas.	12.3
5.9.6	Describe management strategies to prevent the introduction of weed species and pathogens during construction and operation (especially *Phytophthora cinnamomi*), including strategies to manage or avoid creating mosquito breeding habitats.	12.4
5.9.7	Describe strategies for the control of wind and water erosion during construction and operation.	12.4
5.10	ABORIGINAL HERITAGE AND NATIVE TITLE	13.0
5.10.1	Describe the measures taken to identify and record any Aboriginal sites, objects or remains, including consultation details with relevant Aboriginal parties.	13.1
5.10.2	Detail plans for the possible discovery of Aboriginal ancestral remains and any Aboriginal sites or objects of archaeological, anthropological or historical significance under the *Aboriginal Heritage Act 1988*.	13.1
5.10.3	Detail any other measures to ensure compliance with the *Aboriginal Heritage Act 1988*.	13.1
5.10.4	Detail consultation undertaken with the Aboriginal people during the preparation and development of the assessment document.	13.1
5.10.5	Identify any Native Title issues in respect of the requirements of the *Native Title Act 1993* (Commonwealth) and the *Native Title Act 1994* (South Australia).	13.2
5.10.6	Describe the impact on the appropriate Native Title Claimants and the consequent impact on the potential ongoing enjoyment of native title rights (if any) by native title holders.	13.2