Referral of proposed action

Project title: American River Hotel and Harbour

1 Summary of proposed action

1.1 **Short description**

The proposed 209 bed resort, commercial centre and harbour, will be located on Kangaroo Island (in South Australia) in the coastal settlement of American River. The project area is made up of two locations within the American River area (Hundred of Haines): a 33 ha site on the western edge of the American River settlement where the resort will be built, and coastal land between Buick Point wharf and the boat ramp to the south, where the proposed commercial centre and harbour development will be located.

1.2 **Latitude and longitude**

	Latitude			Longitude		
location point	degrees	minutes	seconds	degrees	minutes	seconds
Hotel Precinct						
Bounding Pt 1	-35	46	50.07	137	45	48.18
Bounding Pt 2	-35	46	51.27	137	46	05.44
Bounding Pt 3	-35	47	2.51	137	46	04.25
Bounding Pt 4	-35	47	07.23	137	45	51.38
Bounding Pt 5	-35	47	05.87	137	45	35.43
Bounding Pt 6	-35	46	54.15	137	45	36.86
Harbor Precinct						
Location	35	47	13.14	137	46	20.35

Maps and GIS data are included as Appendix 1.

1.3 **Locality and property description**

Hotel

The resort is planned for a 33 ha site on the western edge of the American River settlement, within the area zoned as Residential and Deferred Urban within the Kangaroo Island Development Plan. The subject land has been extensively used for the grazing of sheep. As such the land is predominantly cleared with scattered patches of native vegetation as well as revegetated areas consisting of both locally endemic and Australian native species. There is a small creek line on the western side and a drainage channel on the eastern side.

Harbour

The harbour site (marina and commercial centre) is located within the existing American River wharf precinct, between Buick Point wharf and the boat ramp to the south. The area is currently used by a variety of commercial and recreational boats. During low tide much of the area is exposed mudflats with coastal samphire and saltbushes abutting, and revegetation with local species behind the saltbush. The land is located within the Town Centre Zone of the Council Development Plan. This area is on the edge of the American River Wetland System (Pelican Lagoon) which is classified as a wetland of national significance.

1.4 **Size of the development footprint or work area**

Hotel site- 32 Hectares (of which 2.5 Hectares are developed)
Harbour site- 1.2 Hectares

1.5	**Street address of the site**	Hotel Precinct – Land south of Thomas Road, American River Habour- Land between existing wharf and boat ramp south of Tangara drive, American River

1.6 **Lot description**

Hotel- Section 84 Hundred of Haines (CT 5424/524)
Harbour- Allotments 100 & 103 in Deposited Plan 93295 (CT 6142/412) and Section 357 Hundred of Haines (CR 5759/875)

1.7 **Local Government Area and Council contact (if known)**

Andrew Boardman, Kangaroo Island CEO

1.8 **Time frame**

ESTIMATE- 12 month construction period commencing May 2017

1.9	**Alternatives to proposed action**	no	No
			Yes, you must also complete section 2.2
1.10	**Alternative time frames etc**	no	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	**State assessment**		No
		yes	Yes, you must also complete Section 2.5
1.12	**Component of larger action**	no	No
			Yes, you must also complete Section 2.7
1.13	**Related actions/proposals**	no	No
			Yes, provide details:
1.14	**Australian Government funding**	no	No
			Yes, provide details:
1.15	**Great Barrier Reef Marine Park**	no	No
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

The resort component is located in the American River 'hinterland' on a slope of the surrounding hills, at the edge of the township's urban area. The site is approximately 32 hectares in area and overlooks the township and Pelican Lagoon. The harbour site is located at Buick Point and overlooks American River, the mouth of Pelican Lagoon. The harbour component would be integrated with the existing wharf, boat ramp and existing buildings (especially the 'Boat Shed', a community based traditional boat building facility). The harbour site is separate to the resort site (circa 500m), but would be connected through paths.

The Resort complex is designed as a 'deconstructed hotel', comprising ten lodges. Tourist accommodation is provided by nine freestanding six-story slender buildings strategically located around the site to minimise impact on the environment. Each lodge would have two hotel rooms per floor to provide multiple views from each room (12 rooms per lodge, with a total capacity of 108 rooms), these rooms are located above shared ground floor facilities. A range of self-contained cottages (20 in total) and single bedroom cabins (20 in total) would also be provided around the site. The resort would have a maximum guest capacity of 416 guests.

The main lodge buildings would include a reception area, retail, restaurants, bars, conference facilities and pool (with associated roads and car parking).

Resort amenities include a health spa, fitness centre, kid's club, conservation and activity centre, KI speciality restaurant/cookery school, stables (for horse riding activities), library (including wine bar) and indigenous botanic gardens. The project will focus on niche tourists interested in horticulture, conservation, bird watching, and local food products. The resort proposes to have festivals, markets and conferences, which would be open to the community.

The various components of the resort would be spread around the site to provide a variety of views and experiences, all connected by a network of paths and access roads.

A staff Village, comprising resort maintenance facilities (i.e. stores, workshop and laundry on the ground floor) and staff accommodation (i.e. 100 rooms) and amenities on the first and second floors is also proposed. Additional infrastructure for water supply, electricity supply, telecommunications, stormwater management and waste management (effluent treatment is to occur off-site via Council's common effluent system) are included in the proposal.

The Harbour proposal includes 6 small shop units, a recreational marina (with up to 40 visiting berths), passenger ferry berth (including parking and marshalling areas), ticket office, hotel welcome facility, restaurant and bar. It is intended that a ferry service will travel between American River, Kangaroo Island and the mainland twice a day, subject to the required permits.

More information (including plans of each building) can be found in Appendix 2 – 'The Proposal'

2.2 Alternatives to taking the proposed action

N/A

2.3 Alternative locations, time frames or activities that form part of the referred action

N/A

2.4 Context, planning framework and state/local government requirements

On 20 August 2015, the Minister for Planning made a declaration in The South Australian Government Gazette that the proposal be assessed as a Major Development pursuant to Section 46 of the Development Act 1993 (the Act).

Section 46 of the Act ensures that matters affecting the environment, the community or the economy to a significant extent, are fully examined and taken into account in the assessment of this proposal.

The major development process has six steps:

- The Development Assessment Commission sets the level of assessment (Environmental Impact Assessment, Public Environmental Report or Development Report) and provides guidelines.
- Proponent prepares an Assessment Document (in this case a Public Environmental Report).
- Public and agency consultation on the Assessment Document for a period of four to six weeks depending on the level of assessment.
- Responding to public comment on an Assessment Document.
- Assessing the proposal and releasing the Assessment Report.
- Decision.

The Development Assessment Commission (Commission) has determined that the proposal will be subject to the processes of a Public Environmental Report (PER), as set out in Section 46C of the Act.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

As part of the state major development process we are carrying out a full 'Public Environmental Review.' Lee Webb of DPTI SA is the case officer for the State on this project.

As part of the PER submission there are a number of guidelines that must be met.

See Appendix 3 - 'PER guidelines'

2.6 Public consultation (including with Indigenous stakeholders)

The Design team PARTI have undertaken extensive local public consultation informally with local stakeholder groups including;

- The American River Progress association
- The Shed community sports club
- 'Rebuild the Independence' community project based at the American River Wharf
- KI Shellfish (Local Oyster Farm and shop)

A formal 6 week public consultation process is to be undertaken by DPTI as a part of the Major Development assessment process. During this time the project team will liaise with DPTI to conduct a 2 day drop-in information session in the American River Town hall. This will be in addition to the one day session to be arranged and conducted by DPTI staff.

2.7 A staged development or component of a larger project

N/A. This is a discreet proposal that requires all aspects to be viable.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties
N/A

3.1 (b) National Heritage Places
N/A

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)
N/A

3.1 (d) Listed threatened species and ecological communities

Specialist members of the Project Team have undertaken extensive desktop research and field surveys to identify the presence of any listed threatened species or ecological communities in and around the subject sites.

The desktop studies, including the EPBC Protected Matters Online Search Report, identified the following matters of national environmental significance within a 5 km radius of the proposed development site and potentially having relevance for the project.

Listed ecological communities- 2

Nationally important wetland- 1

Listed threatened fauna species- 36

Threatened migratory terrestrial species- 4

Migratory wetland species- 15

Listed migratory species- 45

Listed marine species- 79

Whales and other cetaceans- 12

Copies of the full reports are included within the appendix which detail the potential threatened species and communities, including *'American River Resort and Harbour Proposal: Fauna assessment PER Terrestrial Fauna'* March 2016, Pip Masters and Richard Southgate, Envisage Environmental Services (Appendix 4) and *'American River Harbour Marine Ecological Survey and Assessment'* by David Wiltshire and James Brook, SEA Pty Ltd (Appendix 5).

In regards to the species that have been identified within the field research as either being present or potentially within the surrounding area the following information has been drawn from the specialist reports.

Hotel site

1. The Short-beaked Echidna (*Tachyglossus aculeatus multiaculeatus*) is listed as endangered under the EPBC Act.

Diggings of the echidna are common on the resort site and a scat was found in the small grove of *Allocasuarina verticillata* in the middle of the site.

2. The South Australian Glossy Black-Cockatoo (*Calyptorhynchus lathami halmaturinus*) listed as endangered under the EPBC Act.

Two individuals were observed roosting in a tree on the eastern side of the resort development. Two feeding sites were found in groves of *Allocasuarina* (plus two other sites were identified as part of the vegetation survey Haby and Rowley 2016), with three collared nesting trees on the eastern side of the site.

3. Kangaroo Island Narrow-leafed Mallee Woodland

In the north east of the site there is a Kangaroo Island Narrow-leafed Mallee (Eucalyptus cneorifolia) Woodland which is listed as a Critically Endangered ecological community under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act).

Harbour site

1. Marine Species

Forty eight listed threatened or listed migratory species were identified as potentially occurring near the study area (see Appendix B of Appendix 5). These included:

- 9 threatened (endangered or vulnerable) marine species, which comprised mainly whales and turtles;
- 28 nationally listed marine species, which included two seal species, and 26 species of Syngnathid (seahorses and pipefish);
- 12 species of whale or dolphin; and
- 9 migratory marine species.

The nationally threatened species included the Southern Right Whale *Eubalaena australis*, Humpback Whale *Megaptera novaeangliae*, Blue Whale *Balaeniptera musculus,* Australian Sea-lion *Neophoca cinerea*, Great White Shark *Carcharodon carcharias*, Loggerhead Turtle *Caretta caretta*, Leatherback Turtle *Dermochelys coriacea*, *Green* Turtle *Chelonia mydas* and Hawksbill Turtle *Eretmochelys imbricate.*

In addition to the nationally listed species, state listed marine species potentially occurring in the area include the cetaceans Pygmy Right Whale *Caperea marginata*, Pygmy Sperm Whale *Kogia breviceps*, Dusky Dolphin *Lagenorhynchus obscurus* and Strap-toothed Whale *Mesoplodon layardii*, and the seagrass *Zostera mucronata*, all of which are listed as rare.

Twenty one of the listed species have only been recorded around Kangaroo Island on rare occasions. These include the Blue Whale, the Killer Whale and the Loggerhead Turtle.

Twenty two of the listed species are highly mobile and will therefore be able to move from the area of impact to adjacent unaffected habitat. These include the threatened Humpback Whale, Southern Right Whale, Australian Sea-lion, Great White Shark, Green Turtle and Hawksbill Turtle.

There is potential for impact upon large marine species from the operation of the proposed ferry, including potential animal strike during the crossing of Backstairs Passage and movement up Gulf St Vincent to Wirrina Cove. Given the limited number of ferry movements per day (two in either direction) and the low number of whales within the operational area of the ferry the potential for animal strike is considered to be low, and in any case unlikely to result in a significant impact upon any one species. It is understood that historically whale species travel around the southern side of Kangaroo Island during their annual migration along the southern coastline and are not commonly seen within the Gulf or Backstairs Passage. The seasonal presence of whales within the area will allow the crew and captain of the ferry to be vigilant during this period with whale sightings and movements within the area tracked by the crew.

The sessile or less mobile species include 25 species of Syngnathid (seahorses and pipefish). Syngnathids generally occur within relatively low energy seagrass environments such as American River and Pelican Lagoon. The Tiger Pipefish *Filicampus tigris* is an exception in that it inhabits sandy/muddy substrates rather than seagrass habitat (Baker 2008).

During the marine survey the pipefish *Stigmatopora* sp. (most likely *S. argus*, *S. narinosa* or *S. nigra*) was found using a sweep net on a number of occasions in the eelgrass habitat along the channel edge adjacent to the proposed harbour.

2. Wading bird species

Of the 15 migratory wetland species which were identified as possibly utilising the American River wetland system seven are known to occupy the area and three of these were observed.

The listed threatened species utilizing this area include:

White-bellied sea-eagle (Haliaeetus leucogaster) – listed as endangered under the NPW Act.

Curlew sandpiper Calidris ferruginea – listed as critically endangered under the EPBC Act

Eastern Curlew Numenius madagascariensis– listed as critically endangered under the EPBC Act

Australian Fairy Tern Sternula nereis nereis– listed as Vulnerable under the EPBC Act

Hooded Plover Thinornis rubricollis rubricollis– listed as Vulnerable under the EPBC Act

Banded stilt Cladorhynchus leucocephalas– listed as Vulnerable under the NPW Act

Osprey Pandion crisitatus haliaetus– listed as Endangered under the NPW Act

Other bird species observed on the wetland which are regarded as rare at a state level include the Little Egret, Australia Pied Oystercatcher and Sooty Oystercatcher. Other species not observed but likely to be in the area include the Bush Stone-curlew, Cape Barren Goose, and the Whimbrel.

The threatened Subtropical and Temperate Coastal Saltmarsh ecological community (vulnerable under the EPBC Act) is within the American River Wetland System.

3.1 (e) Listed migratory species

This is covered above and in specialist reports in Appendices 4 & 5

3.1 (f) Commonwealth marine area

N/A

3.1 (g) Commonwealth land

N/A

3.1 (h) The Great Barrier Reef Marine Park
N/A

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development
N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the whole environment if your project:
- will be taken in a Commonwealth marine area;

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:
- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	**Is the proposed action a nuclear action?**	no	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		
	n/a		

3.2 (b)	**Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?**	no	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment		
	n/a		

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	no	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))		

3.2 (d)	**Is the proposed action to be taken on Commonwealth land?**	No	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))		

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	No	No
			Yes (provide details below)
	If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))		

3.3 Other important features of the environment

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

3.3 (a) Flora and fauna

Hotel site

The land comprises of primarily cleared farmland with some native vegetation and small portions of planted vegetation. The property consists of poor quality native vegetation, based on BushRAT assessment, consisting of an Allocasuarina verticillata forest in the centre of the property, many large Eucalyptus cladocalyx with hollows, remnant mallee vegetation and some planted vegetation including Allocasuarina verticillata.

Fauna of national significance have been mentioned in 3.1 and more detail can be found in the Appendix 4. Other significant fauna include The Heath Goanna (*Varanus rosenbergi*) – listed as vulnerable under the NPW Act and the Scarlet Robin (*Petroica boodang campbelli*) – listed as vulnerable under the NPW Act.

Harbour Site

The land based Flora is not significant on this site as it is on land that is not planted.

The impact on seagrass communities is discussed in Section 5 below and more information can be found in the Appendix 5.

3.3 (b) Hydrology, including water flows

Please see Appendix 6 (Stormwater Concept, FMA Engineers) covering Hydrogeology and storm water concepts.

To summarise the site grades to two main sub-catchments and surface flows are diverted towards the south via two watercourses. The more major creek is on the western side of the site. A minor, seasonal creek runs occasionally on the eastern side of the site.

3.3 (c) Soil and Vegetation characteristics

Hotel site

The geology in the area forms part of the Kantmantoo Trough which is considered to be typically Sandstone. The geology indicates the presence of residual soils which typically are sandy silty soils with some low plasticity clays. These soil types typically have a moderate to high permeability this would be confirmed with further geotechnical testing.

Harbour Site

There is a risk of some acid sulphate soils in the excavated harbour site.

During excavation of the marina basin acid sulphate soils may be encountered and exposed to air, which would result in the oxidation of iron sulphides and the production of acid. The acid, in turn, can result in the mobilisation of heavy metals that are normally adsorbed onto particulates.

DEWNR spatial data on acid sulphate soils in South Australia indicate the following risks for American River:

- Supratidal samphire area: "Potential acid sulphate soils in subsoil below 20 cm (up to 1 metre thick) - intertidal. Moderate risk."
- Inlet/Bay: "Marine soils - subtidal and intertidal marine (Potential ASS may be present; ASS neutralised by tides and carbonates). No or very low risk."
- Channel: "Potential acid sulphate soils underlying tidal streams, not extensive laterally. Moderate risk."

The presence of acid sulphate soils within the basin will be investigated by a drilling program prior to construction commencing. Should they be encountered, an 'Acid Sulphate Soils Management Plan' will be produced prior to construction commencing.

3.3 (d) Outstanding natural features

The proposed harbour is surrounded by the nationally important American River Wetland System, which includes all of Pelican Lagoon, Island Beach and the American River foreshore. The lagoon functions as a Sanctuary Zone within the Encounter Marine Park.

3.3 (e) Remnant native vegetation

Remnant vegetation or bushland can be defined as those patches of native trees, shrubs and grasses still left however the majority of the hotel site was previously grazed by sheep. It is an area of predominantly cleared land with patches of native vegetation as well as revegetated areas consisting of both local native and Australian native species.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

Hotel site

Internally, the site grades to two main sub-catchments and surface flows are diverted towards the south via two watercourses. The hotel site is considered relatively steep and has typical grades 8 - 10%. The two existing perennial watercourses traversing the site show signs of scour and degradation and there are two dam storages located within the site.

The Harbour

The wharf and bitumen hardstand area is generally at about 2.0m AHD. The boat ramp hardstand area is around 1.7m AHD. The intertidal mud flats between the boat ramp and wharf are at 0 to -0.5m AHD typically. The seabed at the southern end of the wharf area is at -1.0 to -4.0m AHD. The seabed at the eastern face of the wharf is at about -4.0m to -5m AHD.

More information can be found in Appendices 6 (Stormwater Concept, FMA Engineers) for the Hotel site and Appendices 7 (Magryn, Coastal Engineering report) for the Harbour site.

3.3 (g) Current state of the environment

Hotel site

As discussed the current state of the hotel site is degraded after years of grazing. Although there are small and important pockets of native vegetation that will be preserved.

Plant variety is not uniform across the site. The forested areas of the site contain a much higher variety of fauna - both endemic and introduced. Where as the cleared parts of the site contain very little variety. In general the native species found across the site are in very poor condition; this is primarily due to previous clearing of the site and the later introduction of alien weeds. The Bridal Creeper (Asparagus asparagoides), African Boxthorn (Lycium ferocissimum), African olive (Olea europaea subspecies cuspidate) are all introduced weeds that are found across the site.

Adjacent land holdings have a much wider variety of native plant species and they could be used as a template for a balanced reintroduction. There are many native plant species that would add value to the site - not only to its ecology but also adding visual variety and colour across the seasons.

For more information see Appendix 8 (Native Vegetation Assessment, Botanical Enigmerase) and Appendix 9 (Site Book, PARTI)

The Harbour

The Wharf Area is generally degraded after years of use as an industrial site. Many old cray boats were taken out of the water by the wharf and anti-fouled and the town dump was located less than 100m to the south for years. Today the wharf area has been replanted with some native shrubs.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

N/A

3.3 (i) Indigenous heritage values

There are no records of Aboriginal sites or objects at either site with no finds recorded during a pedestrian survey across the proposed hotel site. Furthermore there is a very low probability of Aboriginal sites or objects, including burials, to be found during earth moving.

Please refer to Appendix 10 (Preliminary Archaeological and Cultural Heritage Investigation, Keryn Walshe PhD) for more information.

3.3 (j) Other important or unique values of the environment

N/A

3.3 (k) Tenure of the action area (eg freehold, leasehold)

Hotel site

The Hotel precinct is a single freehold land parcel.

The Harbour

The Harbour proposal would be on land leased from the South Australia Department for Transport and Infrastructure (DPTI) and the Kangaroo Island Council.

3.3 (l) Existing land/marine uses of area

Hotel site

The Land is still used for grazing.

The Harbour

The boat wharf/ boat ramps are functioning for recreational and commercial vessels. A recently erected boatshed is housing a community project 'Rebuild the Independence' and accompanying Café. This will be integrated into the harbour proposal.

3.3 (m) Any proposed land/marine uses of area

Hotel site

A Golf course was built here about 15 years ago, but it hasn't been used for more than 5 years.

The Harbour

This area has been designated the American River 'Town Centre Zone' in the Kangaroo Island Council Development Plan. Commercial proposals have been drawn up as part of this feasibility.

4 Environmental outcomes

The following highlights the likely outcomes of the proposed development on matters of national significance relating to fauna on the proposed resort development and the commercial centre/harbour site.. It is adapted from Appendices 4 (American River Resort and Harbour Proposal: Fauna assessment PER Terrestrial Fauna: March 2016, Pip Masters and Richard Southgate, Envisage Environmental Services.) and Appendices 5 (American River Harbour Marine Ecological Survey and Assessment' by David Wiltshire and James Brook, SEA Pty Ltd for more details)

Hotel Site

Osprey and the White-bellied Sea-eagle

The site of the resort is within the settlement of American River and as such the development is unlikely to create additional significant disturbance to species such as Osprey and the White-bellied Sea-eagle.

Glossy Black- Cockatoo

The site is mostly cleared farm land on the western side used for grazing, with bushland on the eastern side of the property. Areas with mature sugar gum, and patches of original and revegetated Drooping Sheoak (Allocasuarina verticillata) provide feeding and breeding habitat for the Glossy Black-Cockatoo.

Prior to a threatened species recovery program being implemented, the Glossy Black-Cockatoo population size was estimated at approximately 200 birds. This number was thought to be declining due to habitat loss, possums preying on eggs and nestlings, and competition from honey bees at nest sites. Since the program commenced, numbers of Glossy Black-Cockatoos on the island have steadily increased to over 350 individuals. The American River sub-population consists of 26 adult birds that produced 5 juveniles in 2014 (Berris and Barth 2015). Three nest trees occur on the site in habitat identified as critical breeding habitat.

In-line with the design teams vision for a conservation focused tourist offer the Sugar Gums in the area will be protected considering the many decades that are needed for a tree to produce suitable nesting hollows. The revegetated Drooping Sheoak area currently used as a food source will be maintained as feeding sites for the birds. This should fit well with the resorts objectives to focus on promoting conservation tourism, and strengthening populations of threatened local birdlife. With an informed management strategy which maximizes habitat and minimizes disturbance, and dove-tails with the objectives and activities of the Glossy Black-Cockatoo Recovery Program, the disturbance of the resort should not be significant in the long-term. The development stage has potential to cause disturbance and as such consideration will be given to avoiding the breeding season for structures in close proximity to the nesting sites.

The design team has been cautious to position buildings and infrastructure in such a way that there is no significant loss of feeding and nesting habitat.

Short-beaked Echidna

Wide spread signs of the endangered Short-beaked Echidna have been found on the property. This species is threatened by habitat fragmentation, road kill, feral pigs, electric fences and cats predating on young (Woinarski et al. 2014).

Disturbance during the construction and operational phase of the proposed development could impact on both the Short-beaked Echidna local population if individuals are harmed, harassed or disturbed. Their distribution and abundance on the site will be enhanced with appropriate re-vegetation using native species. Traffic speed and behaviour of construction workers, staff and visitors will be managed to ensure the foraging and nesting activities of the species are not adversely affected. Cat control on the proposed development site would improve the survival of these and a number of other native species.

We expect any disruption to the population of the Echidas during construction to be more than balanced by improvements in habitat creation and management of the site going forward. The creation and preservation of habitat for threatened species will be offered to guests as part of the tourism activities provided on-site..

Southern Brown Bandicoot

No diggings or sign of the Southern Brown Bandicoot were observed during the survey but the species has been recorded in past years within 500 m of the site (Jones et al. 2010, DEWNR BDBSA database). Individuals may use or move through the vegetation on the eastern boundary of the project site, which is physically connected to larger, more intact native vegetation patches. Impact from the proposed development is not considered significant considering the

proximity to existing settlement, habitat removal will be limited where possible, and the proposed extensive re-vegetation using appropriate local native plant species on the site will increase habitat suitability. Patchy low dense heath or grass and shrub cover is required by the species for nesting and protection from predators (Paull 1993) and this is proposed extensively within the landscape plan for the site.

Kangaroo-Island Narrow-leafed Mallee Woodland
The property contains a small portion of degraded Kangaroo-Island Narrow-leafed Mallee Woodland. As with all trees on this degraded site the design team has endeavored to retain almost all of them. Buildings and infrastructure have been placed so this can be achieved. As the proposals are worked up in greater detail any removal of trees will be carefully offset (covered in the next section) but the firm principle is to avoid any removal of habitat where possible and to improve the quality of habitat through appropriate and extensive re-vegetation.

Harbour-wetland area
The proposed harbour development on the mouth of the American River Wetland System has a relatively small development footprint. With regard to marine species, forty eight listed threatened species, listed migratory species and listed marine species potentially occur in the study area. Of these, twenty one of the listed species have only been recorded around Kangaroo Island on rare occasions, none is considered to have limited alternative habitat in the study area, and twenty two are highly mobile and will therefore be able to move from the area of impact to adjacent unaffected habitat.

It is considered that none of these species is at credible risk from the proposed development.

The one exception is the listed pipefish Stigmatopora sp. (most likely S. argus, S. narinosa or S. nigra), which was found in eelgrass at the development site during the marine survey and is therefore at credible risk of being impacted during excavation.

There is, however, an abundance of similar eelgrass habitat in American River that is likely to support a similar density of pipefish. It should also be noted that pipefish are not listed as rare. The loss of a very small amount of pipefish habitat and potentially some pipefish during construction will have a negligible effect upon their overall population in the American River area.

Seagrass
The excavation of the marina basin (approximately 100 m x 100 m) will result in the direct loss of about 1 ha of intertidal flat that supports mainly the seagrasses Heterozostera nigricaulis and Halophila australis and associated invertebrate communities consisting mainly of gastropods, isopods and a diverse and abundant infauna (the community living in the sediment). Each of these species and communities is common in both a local and regional scale. The ecological significance of the loss of this intertidal habitat, and in particular the seagrass communities, will be minor as there is a vast amount of similar habitat within American River and Pelican Lagoon, and elsewhere in Spencer Gulf and Gulf St Vincent.

Minor secondary impacts on seagrass communities located adjacent to the development site may result from sedimentation and increased turbidity during construction. The State listed seagrass Zostera mucronata, recorded as occurring in American River, may also be affected by siltation and increased turbidity during construction. The impacts on adjacent seagrass communities, however, will be relatively minor as measures will be taken to ensure that ongoing sediment releases during construction will be minimal.

Adjacent seagrass communities may suffer minor stress, but recovery after construction is likely to be rapid.

Similarly, with the recommended excavation mitigation measures in place, it is very unlikely that construction will result in increased turbidity and siltation within the Sanctuary Zone of Encounter Marine Park, which is over 1 km from the construction site.

Turbidity levels in American River will be closely monitored during the initial stages of excavation to ensure that the impact mitigation measures were effective in minimising the release of sediments from the construction site to the absolute minimum. Should turbidity levels be found to be unacceptably high (e.g. a visible sediment plume extending more than 200 m from the construction site), construction will cease until the silt release is controlled.

Removal of seagrass during construction will require the loss to be offset as all native vegetation in South Australia (including seagrass) is protected under the provisions of the

Native Vegetation Act 1991. Clearance of native vegetation is prohibited unless approved by the Native Vegetation Council (NVC). In most circumstances the NVC will approve the clearance of a small amount of native vegetation subject to the production of an acceptable management plan that describes a significant environmental benefit (SEB) to offset the vegetation loss.

Sanctuary Zone

Sediment release and fallout during construction has the potential to adversely affect the environmental values within the Sanctuary Zone of Encounter Marine Park, the most significant of which are the sponge and seagrass communities.

However, as discussed in Section 5.2, measures will be taken to ensure that sediment release to the estuary during construction is minimal.

The sponge and seagrass communities within the Sanctuary Zone are over 1km from the development site, and therefore unlikely to be affected by the small amount of sediment that may be released into the estuary during construction.

Additional control measures will immediately be implemented if monitoring reveals that sediment release guidelines were being exceeded.

5 Measures to avoid or reduce impacts

Reflecting the early nature of this proposal all environmental outcomes and measures to avoid or reduce impacts are preliminary suggestions. Most measures have been suggested by expert advisors (whose reports are Appendices and have been referenced throughout this referral) none of the suggestions have been 'fully researched' and most are dependent on third party agreement/ support and will be further developed through the Major Development Assessment process with input from state agencies.

That said, they accurately reflect the intentions of the design team to create a conservation focused resort and an ecologically improved marine park/township at American River.

To date we have had extensive discussion with EPA, DEWNR and local community groups and we commit to continuing this throughout the planning, construction and operation of this proposal.

Our Case Officer at DPTI, Lee Webb, has a background as an Environmental Officer and as such we have been well informed from the early stages as to our responsibilities.

Hotel Site

Short-beaked Echidna:
We will limit clearing of echidna habitat, particularly in the eastern part of the site and will improve and enhance the habitat across the site as part of our landscape strategy.

We will put in restrictions on people accessing the areas of echidna habitat in the construction phase and managing set down areas etc so they don't encroach into these areas.

We will commit to environmental management and clearing out the weeds to improve the habitat as an ongoing concern.

Black Glossy Cockatoo:
There will be no removal of mature sugar gums and we will protect the current nesting trees and feed trees.

We will stay 100m away from the nesting sites during the breeding season (February to October) during construction. Access near these sites will be managed once the hotel is open. The hotel buildings that create non-domestic noise (such as large groups or amplified noise) have been placed away from these sites already. We will work with the recovery team at KI Natural Resources in Kingscote who can advise if the birds chose to nest there on a particular year as they don't necessarily nest there every year.

We will protect them from their predators and enhance their habitat through planting food and nesting trees in other areas where there is no development (more information in Appendices 11 – Landscape concept plan, by Botanical Engmerase). American River more widely is threatening the habitat just through clearing of food trees from domestic development in contrast we clear no food trees and will maximize habitat by adding in food and nest trees.

The recovery team would assist with this as they do yearly re-vegetation and have a formula of what to plant at what density for successful habitat.

The current plan has been designed to minimize the loss of existing vegetation. On the 80Ha site, just 0.11Ha of existing vegetation is proposed to be removed or significantly pruned. (0.13% of the site area.)This can be seen on page 17 of Appendices 8.

The construction process has been designed for minimal disturbance and expediency. All building elements will be prefabricated off-site and 'put together' on-site. This will vastly minimize heavy machinery and 'dirty/dusty' construction. It will also keep the onsite numbers in the construction workforce lower than in typical construction.

As there are circa 10 medium sized lodges; construction can be staggered to avoid building near the delicate habitat in the breading seasons. Any construction close to the eastern boundary will be done in the spring and summer so there will be less chance of disturbance.

These birds are fairly tolerant of human disturbance i.e domestic houses are common close to the nest sites in American River. During construction however we will reassess the reaction of any nesting birds on a weekly basis.

As stated we will promote the Black Glossy Cockatoo's to guests and manage the movement of people across the site so they can see them but not disturb them, either on the hotel site and on adjoining sites.

Harbour Site

The construction of the wharf facility does not change any coastal dynamics, and involves very little dredging. The construction of the marina involves dredging the intertidal mud flats, and installation of hard engineered edge treatments around the shoreline. However, this is only in a relatively small area of less than 100m by 100m adjacent the main channel. It is expected that construction of this will have no effects on the dynamics of the overall system, and involves the loss of only a small area of intertidal mud flat.

There is currently no net movement of sand along the western shore of the main channel, as this is currently presented as a series of closed cells, defined by the boat ramp and the Wharf. The proposed development will not change this structure, and will not impact or change sand movement in the area.

The inclusion of the harbour basin, which is in the same location as the existing intertidal flats, will not change the hydrodynamics of the main channel, or the volume of water entering and leaving Pelican Lagoon.

Typically construction by dredging of a marina basin may affect the water quality surrounding it however this is being controlled and managed by undertaking the excavation of the basin in the dry- behind a bund wall and using a sediment curtain. Excavated sediment will be taken away for off-site disposal, with details to be confirmed with relevant agencies during the Major Development Assessment process.

The placement and removal of the bund wall may affect quality and turbidity of water in the main channel but this will be closely monitored and controlled. The sediment curtain is likely to alleviate this risk.

It is not expected that the proposed facility construction or operation will have any impact on fish passage to and from the lagoon.

There is no proposal to include any of the following in the overall development:

- Vessel refueling services
- Vessel sewage pump out facility
- Hazardous chemical storage facility

These facilities are to be accessed at Kingscote, Penneshaw or on the mainland.

Dredging of the marina at American River will result in the loss of some seagrass. Under the Native Vegetation Act 1991 seagrass is protected under the Act and its clearance requires approval by the Native Vegetation Council (NVC). Should approval be given, the NVC will require the proponent to off-set the loss by proposing a strategy that will result in a significant environmental benefit (SEB).

There appear to be a number of good opportunities within American River, Pelican Lagoon and Nepean Bay to off-set the seagrass loss.

For example, Kinloch et al. (2007) has reported that the seagrass beds in Pelican Lagoon are exhibiting signs of poor health that are likely to be associated with rural run-off carrying high nutrient loads from fertilizer use on agricultural crops and animal and human waste.

Similarly, in Nepean Bay (Western Cove) substantial seagrass loss has occurred as a result of agricultural run-off delivering high nutrient and sediment loads to Western Cove via the Cygnet River (e.g. Gaylard 2005). The 'Catchment to Coast Project' has been developed by Natural Resources Kangaroo Island (DEWNR) to arrest the decline and promote the regeneration of seagrass beds in Western Cove by reducing soil erosion and fertilizer runoff. The Project has developed a model of the Cygnet River catchment that predicts nutrient and sediment loads in its tributaries. The model identifies sites and priorities for on-ground works. Existing partners in the Project include land owners, recreational and commercial fishers, community groups, the EPA and SARDI Aquatic Sciences.

Appropriate off-set strategies may therefore be to reduce nutrient inputs to the marine environment by either:

- making a financial contribution to the 'Catchment to Coast Project';
- supporting a similar catchment plan for Pelican Lagoon; or
- promoting treated waste water reuse within the American River township.

Excavation of the marina basin will result in the loss of this eelgrass habitat and the potential loss of some pipefish. Although pipefish have limited mobility, some are likely to have the ability to move a short distance away from the area of direct impact during construction. Furthermore, there is an abundance of similar eelgrass habitat in American River that is likely to support a similar density of pipefish. The loss of a very small amount of pipefish habitat and potentially some pipefish during construction will have a negligible effect upon the overall population or viability of pipefish in the American River area.

The assessment has shown there to be no reasonable or foreseeable possibility that construction of the harbour at American River will fragment or decrease the size of populations of any of the listed species, affect critical habitat or disrupt breeding cycles.

It is concluded therefore that the EPBC Act listed marine species will be at no credible risk from the construction of the harbour at American River.

(For more extensive investigation please refer to Appendices 5 Section: 5.2 – 'American River Harbour Marine Ecological Survey and Assessment' by David Wiltshire and James Brook, SEA Pty Ltd for more details)

Marine pests

Development of marinas and harbours have the potential to promote the spread of marine pests via vessels arriving from infested areas.

A number of exotic marine organisms have been introduced to ports around South Australia on the hulls of boats and ships, via the disposal of ballast water, and via aquarium releases (Shepherd et al. 2008). The most important species are the European fan worm Sabella spalanzanii,invasive seaweeds Caulerpa taxifolia and C. racemosa, the European shore crab Carcinus maenas, the New Zealand greenlip mussel Perna canaliculus, the ascidian Ciona intestinalis, the bryozoans Zoobotryon verticillatum and Bugula flabellata and the toxic dinoflagellates Gymnodinium spp. and Alexandrium spp. (Shepherd et al. 2008).

Some of these species form extremely dense colonies on the seafloor or hard substrates and can displace native species. They can also damage aquaculture production by fouling infrastructure, reducing water circulation, competing for food and lowering growth rates (e.g. in oyster culture).

Marine pests have also been identified as a potential serious threat to the Sanctuary Zone of the Encounter Marine Park (Kinloch et al. 2009).

The European fan worm, in particular, is known to occur at Wirrina, where the American River ferry will likely operate from (Wiltshire et al. 2010).

BiosecuritySA will be consulted to determine the most appropriate operating procedures for the ferry to minimize the risk of introducing marine pests to American River. These procedures are likely to include a hull inspection prior to the commencement of operations, and defouling the hull at regular intervals using appropriate techniques. A marine pest management plan will be produced in consultation with BiosecuritySA prior to the commencement of ferry operations.

Many boats already visit American River but the harbour proposal would make visiting boats more frequent to the Marine Park. This could bring a greater threat of pests but with the correct management is likely to lower the chance of a problem. A protected harbour is a far easier place to inspect and treat potential problems than the open River.

With this in mind a biosecurity plan will cover cleanliness of boat hulls in association with expertise from NR KI. We will develop a response plan in association with NRKI as they have found boats in the river area before that have needed to be treated for pests.

6 Conclusion on the likelihood of significant impacts

6.1 Do you THINK your proposed action is a controlled action?

X	No, complete section 6.2
	Yes, complete section 6.3

6.2 Proposed action IS NOT a controlled action.

The main tenants of the development are to improve and promote the rare and varied ecologies of the immediate hotel site, the harbour and the wider American River Wetlands. Ecotourism, Bird watching, Nature Protection and sustainable primary food production are all commercial assets to the Hotel and support its long term viability.

For this reason we are undertaking all the necessary precautions to protect these ecologies and will continue to do so as the project progresses. This commitment holds for both the construction phase (with its potential to be more disruptive) and the operation of the Hotel and Harbour centre once built.

As the project has developed our many expert consultants have worked closely with DPTI and the EPA to alleviate potential environmental risks and will continue to do so as the project develops with more resolution. The Public Environment Review (PER) being undertaken for the Major Development Assessment process will continue to develop these commitments into strategies prior to any proposed action being undertaken.

For these reasons we are confident (and fully committed to ensure) that our proposed action will support and improve the listed and threatened species through increasing habitats, active management and investment.

6.3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

	Matters likely to be impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
	Listed threatened species and communities (sections 18 and 18A)
	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

7 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** The developer taking the action has developed projects of this scale (and larger) before. The most pertinent to this scheme is West Sands in Phuket, which has won many Environmental Awards for Design and Sustainability. **Provide details** In 2008 West Sands won the Green Development Award at the Thailand Property Awards for the second consecutive year. Property Report asked Sir Terry to explain West Sand's green credentials. "It's a step in the right direction, rather than being the last word in eco-resorts… From a water point of view, West Sands is a sustainable development. We use our own on-site water. We recycle all rain and waste water. We also have our own sewage treatment plant on-site, that will provide water for use in our organic gardens. Our water management is a strong feature, particularly with so much landscaping in the resort." "Another area we have focused on is the air-conditioning. We have used special E-Glass, which is very expensive and has provided a number of design challenges, but it has come together very well and it is very efficient in terms of insulation and therefore reduces the load on air-conditioning. We also have solar panels on-site, which we can probably increase even further. The solar runs the hot water system." "There is more to do and more can be done.""	x	
7.2	**Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?** **If yes, provide details**		x
7.3	**If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?** **If yes, provide details of environmental policy and planning framework**	N/A	
7.4	**Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?** **Provide name of proposal and EPBC reference number (if known)**		x

8 Information sources and attachments

(For the information provided above)

8.1 References

Appendix 1.	Maps and GIS data sets - complied *by PARTI*
Appendix 2.	The Proposal - concept design strategy *by PARTI*
Appendix 3.	GUIDELINES For the preparation of a PUBLIC ENVIRONMENT REPORT - Tourist Resort and Commercial Harbour American River, Kangaroo Island' *By the Development Assessment Commission*
Appendix 4.	American River Resort and Harbour Proposal: Fauna assessment PER Terrestrial Fauna: March 2016, *Pip Masters and Richard Southgate, Envisage Environmental Services.*
Appendix 5.	American River Harbour Marine Ecological Survey and Assessment *by David Wiltshire and James Brook, SEA Pty Ltd*
Appendix 6.	American River proposals Stormwater Concept, *FMA engineers*
Appendix 7.	Coastal Engineering Report for proposed Marina and Ferry Terminal American River, Kangaroo Island – *By Magryn Costal Engineers*
Appendix 8.	Native Vegetation Assessment A.River resort, *By Botanical Enigmerase*
Appendix 9.	Site Book, *by PARTI*
Appendix 10.	Preliminary Archaeological and Cultural Heritage Investigation, by *Keryn Walshe PhD*
Appendix 11.	Landscape concept plan, *by Botanical Enigmerase*

8.2 Reliability and date of information

- All information in section 3 was from reports by expert consultants, all reports are Appendices;
- The reports where all commissioned in 2016 with field work done in this year;
- As much as possible the experts analysis was cross referenced with the knowledge of other consultants;
- Currently there is no reason to question the accuracy of any information. Although more resolution on certain areas must by collected.

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	tick	APPENDIX 1.1-1.3
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	tick	APPENDIX 1.4_SANCTURY ZONE
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	TICK	Appendix 3
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if		

available (section 2.6)		
copies of any flora and fauna investigations and surveys (section 3)	Tick	Appendix 4,5,8
technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	Tick	Appendix 6,7
report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	Tick	Appendix 10

9 Contacts, signatures and declarations

Project title:

9.1 Person proposing to take action

1. Name and Title:	Mr Paul Mercer
2. Organisation (if Ce applicable):	City & Central Consulting Pty Ltd
3. EPBC Referral Number (if known):	Not known
4: ACN / ABN (if applicable):	83112883342
5. Postal address	53a Harris Road, Vale Park, Adelaide 5081
6. Telephone:	
7. Email:	pvmercer@gmail.com
8. Name of proposed proponent (if not the same person at item 1 above and if applicable): 9. ACN/ABN of proposed proponent (if not the same person named at item 1 above):	

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE

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

□ an individual; OR

□ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR

□ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth)).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

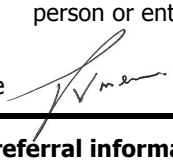
I would like to apply for a waiver of full or partial fees under Schedule 1,

□ not applicable.

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

Declaration

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

Signature  Date 03.05.16

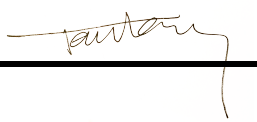
9.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name	Tom Leahy (+ Damien Dawson, see below)
Title	Director
Organisation	PARTI (architecture and Design services company)
ACN / ABN (if applicable)	
Postal address	48 St Pauls Crescent, London, UK, NW19TN
Telephone	+44 (0) 7595044168
Email	Tom.leahy@network.rca.ac.uk

Declaration

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

Signature  Date 03.05.16

Note:

We thought it pertinent to alert the DoE to the contact of our planning consultant in Adelaide SA; Damien Dawson (damian@planningchambers.com.au)(0408227493) advised the proponent on preparing the EPBC referral, including meetings with DPTI SA. He is happy to be contacted directly if further information or details are required.

Attachment A

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
    - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
    - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (http://creativecommons.org/licenses/by/3.0/au/)