Referral of proposed action

Project title: Ayers Rock Resort Golf Course Development

1 Summary of proposed action

NOTE: You must also attach a map/plan(s) showing the location and approximate boundaries of the area in which the project is to occur. Maps in A4 size are preferred. You must also attach a map(s)/plan(s) showing the location and boundaries of the project area in respect to any features identified in 3.1 & 3.2, as well as the extent of any freehold, leasehold or other tenure identified in 3.3(i).

1.1 **Short description**

Use 2 or 3 sentences to uniquely identify the proposed action and its location.

Voyages Indigenous Tourism Australia Pty Ltd, a wholly-owned subsidiary of the Indigenous Land Corporation (ILC), a statutory authority of the Australian Government, is proposing to construct an 18 hole, international-standard golf course at its Ayers Rock Resort property. The proposed site for the golf course is southwest of the township of Yulara, adjacent to Uluru-Kata Tjuta National Park. This proposed development will feature the use of sustainability measures for energy and water use, in addition to a low-impact development approach to protect and conserve biodiversity at the site. The project includes an Environmental Management Plan which addresses mitigation measures and will adopt best practice for similar facilities including principles of Audubon International. A copy of the Environmental Management Plan is attached to this referral.

1.2 **Latitude and longitude**

The following table of vertices outline the total extent of the broader project site (see Attachment 1). Refer to Attachment 2 for an estimated outline of the golf course extent (development footprint).
All vertices are provided as decimal degrees using the GDA94 geographic coordinate system.

Map point Index	Latitude (GDA94 DD)	Longitude (GDA94 DD)
1	-25.243228340	130.963831185
2	-25.243228340	130.970204460
3	-25.243878460	130.972221945
4	-25.243696050	130.972428435
5	-25.242397890	130.972362790
6	-25.242410740	130.972414710
7	-25.242940750	130.973555810
8	-25.243215390	130.974147850
9	-25.243461920	130.974411870
10	-25.243766349	130.974416543
11	-25.244472854	130.974427388
12	-25.244969992	130.974435020
13	-25.245280380	130.974439780
14	-25.245250570	130.976330180
15	-25.245250557	130.976676133
16	-25.245250418	130.980332894
17	-25.245856730	130.980583210
18	-25.246547170	130.980796890
19	-25.247251100	130.980946280
20	-25.247964920	130.981031310
21	-25.248681440	130.981049910

22	-25.249397960	130.981002970
23	-25.250107200	130.980890370
24	-25.250806500	130.980712130
25	-25.251563350	130.980483210
26	-25.252458370	130.980183030
27	-25.253337830	130.979832010
28	-25.254199020	130.979429080
29	-25.255039210	130.978977150
30	-25.255856590	130.978476180
31	-25.256648390	130.977929130
32	-25.257412820	130.977335980
33	-25.258148060	130.976698670
34	-25.258850460	130.976019130
35	-25.259519080	130.975300320
36	-25.261223090	130.973369290
37	-25.261815410	130.972752440
38	-25.262454790	130.972193950
39	-25.263134860	130.971697640
40	-25.263851950	130.971268470
41	-25.264599710	130.970908270
42	-25.265237520	130.970670390
43	-25.265237349	130.959290172
44	-25.247769353	130.959290172

1.3 **Locality and property description**

Provide a brief physical description of the property on which the proposed action will take place and the project location (eg. proximity to major towns, or for off-shore projects, shortest distance to mainland).

The proposed action will take place at Ayers Rock Resort (ARR), Yulara, NT. This property exists as several parcels, with a total area of 10,218 ha owned by Voyages Indigenous Tourism Australia Pty Ltd (Voyages), a wholly owned subsidiary of the Indigenous Land Corporation (ILC), a statutory authority of the Australian Government. ARR is operated by Voyages.

The property borders the Katiti Aboriginal Land Trust and Uluru-Kata Tjuta Aboriginal Land Trust, where the latter is managed by Parks Australia and Traditional Owners as a World Heritage Listed National Park.

The property includes five hotels with a total of 688 guest rooms, restaurants, visitor facilities, a staff accommodation village, recreation centre, sports ground, Ayers Rock (Connellan) Airport and other tourism-related infrastructure associated with ARR. The township has a population of approximately 1,200 people, of which about 700 are employed at ARR. Despite this infrastructure, the majority (91.02%) of the property supports undisturbed native vegetation typical of the broader region (see section 3.3).

The principal access road to Uluru-Kata Tjuta National Park (UKTNP) proceeds through the property to the township of Yulara, and onwards a further 3 km to the Park entry station at the northern side of UKTNP. Yulara is approximately 446 km on a sealed road from the major service town of Alice Springs (via the Stuart and Lasseter Highways).

The proposed action will take place to the southwest of Yulara, immediately south of the current water treatment plant (see Attachment 1). The total development footprint is estimated to be 142 ha (1.39% of ARR property), of which approximately 28.5 ha will be under irrigated turf (0.28% of the ARR property). The exact routing of the golf course has not been finalised and will be informed by the results of this assessment, specialist surveys and consultancy reports.

1.4	**Size of the development footprint or work area (hectares)**	The extent of the broader project site has been assigned an area of 429 ha (Attachment 1). However, the proposed golf course area (development footprint) is expected to be 142 ha (Attachment 2), of which approximately 28.5 ha will be under irrigated turf (tee areas, fairways, off-fairway playing areas and putting greens). An additional 1-3 ha is required for a maintenance facility (adjacent to the current water treatment plant site) and an access road. The exact location, design and routing of the course is yet to be confirmed and will incorporate requirements and/or recommendations established by this referral and the reports of specialist consultants in the areas of hydrology, soil, flora and fauna.
1.5	**Street address of the site**	Uluru Road, Yulara, NT.

1.6 **Lot description**

Describe the lot numbers and title description, if known.

LOT 252 on LTO94/017A (freehold).

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

If the project is subject to local government planning approval, provide the name of the relevant council contact officer.

The property is not located within a Local Government Area, and as a result, local government planning approval is not applicable to this proposed action.

1.8 **Time frame**

Specify the time frame in which the action will be taken including the estimated start date of construction/operation.

The indicative timeframe for the development process, including gaining approvals, design and construction is approximately 24-30 months from commencement. The major phases of the process are:

Item	Approximate duration	Indicative dates
Planning approvals	4 months	November 2012 – February 2013
Detailed design	3 months	March 2013 – June 2013
Construction	12 months	July 2013 – June 2014
Growing-in	4 months	(ongoing during construction)
Soft Opening	n/a	July 2014

Pending the outcome of this and other regulatory approval processes, the construction phase of the project is expected to commence in July 2013, with a soft opening around July 2014. The ILC and Voyages have conducted a preliminary assessment of the suitability of this project, and pending the outcome of this assessment, will select and appoint a course designer/architect and contractor by June 2013. The commencement of the project is subject to the approval of the boards of Voyages and the ILC.

1.9	**Alternatives to proposed action** Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?	Yes	If Yes, you must also complete section 2.2
1.10	**Alternative time frames etc** Does the proposed action include alternative time frames, locations or activities?	No	If 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**		

	Is the action subject to a state or territory environmental impact assessment?	Yes	If Yes, you must also complete Section 2.5
1.12	**Component of larger action** Is the proposed action a component of a larger action?	No	
1.13	**Related actions/proposals** Is the proposed action related to other actions or proposals in the region (if known)?	No	
1.14	**Australian Government funding** Has the person proposing to take the action received any Australian Government grant funding to undertake this project?	No	The construction and operation of the proposed action will be primarily funded by Voyages through the ARR cash flows. Voyages was established by the ILC in 2010 and is a wholly owned subsidiary. The acquisition of ARR by Voyages was funded by the ILC. The ILC was established in 1995 to assist Indigenous people acquire and manage land to provide economic, environmental, social and cultural benefits. The ILC purchased ARR in May 2011, in collaboration with Wana Unkunytja Pty Ltd representing local communities, to create large scale training and employment opportunities for Anangu communities and Indigenous people across Australia in the provision of tourism, hospitality and associated services. This acquisition represents an investment of over $300m by the Australian Government. The ILC has a goal of 50% of the total ARR workforce or 350 Indigenous people employed at the resort by 2018, including 100 Indigenous employees and 100 Indigenous trainees by the end of 2012-13,. To achieve these goals, a National Indigenous Training Academy (NITA) was established at ARR in October 2011, where Indigenous people from across Australia and locally are receiving training in areas including tourism and hospitality, retail, conservation and land management and sport and recreation. ARR is well on its way to achieving its employment goals. As at 30 September 2012, 169 Indigenous people were employed at ARR, including 61 trainees. Funding for employment and training projects at ARR was secured from the Department of Education, Employment and Workplace Relations (2011-12 to 2014-15) for conducting cultural awareness training for ARR staff ($35,000), trainee support ($1.55m), Indigenous employment support ($1.86m), an Indigenous procurement strategy ($150,000) and an Indigenous Engagement Team ($1.38m). Additionally, in early 2011 the Minister for Resources, Energy and Tourism The Hon Martin Ferguson AM MP announced a commitment of up to $1m under the TQUAL Strategic Tourism Investment Grants scheme for ARR. The project will fund the development and implementation of a business skills curriculum and related outreach activities at the ILC's National Indigenous Training Academy at ARR. This will expand the delivery of business skills training for Indigenous Australians through the Academy, optimise the capacity for local Indigenous people to provide quality Indigenous tourism product and supply a range of goods and services from Indigenous suppliers, and implement a quality of service framework for Indigenous suppliers and participating businesses. Recently the ILC has committed an additional $3.84m over two years to ARR for the "Real Jobs" program focussed specifically on employment of Anangu people in the communities surrounding ARR. The program will employ 35 people from Mutitjulu, Imanpa and Docker River and will provide he necessary training for Indigenous people transitioning from unemployment to employment, providing training including life and work skills required for employment at ARR and other businesses operating in the area.
1.15	**Great Barrier Reef Marine Park** Is the proposed action inside the Great Barrier Reef Marine Park?	No	

2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 Description of proposed action

This should be a detailed description outlining all activities and aspects of the proposed action and should reference figures and/or attachments, as appropriate.

Key features of the proposed action and a description of the construction methodology are presented below.

Key features

Construction Compound

- Approximate area of 2,500 m2
- Temporary buildings include site office, lunchroom and toilet facilities ("dongas")
- Crushed rock used for the base of the compound
- All structures and materials to be removed following decommission

Roadways

- Roads built to construction compound and clubhouse / car park, and other tracks built for use in the course construction

Services

- Power to be installed to maintenance facility, irrigation pump station and clubhouse
- Potable water to be installed to maintenance facility and clubhouse
- Sewerage systems to be supplied to maintenance facility and clubhouse
- Irrigation water to be connected to the pump station
- Power will be installed at a depth of 600mm and water to 400mm (separated but in the same trench)

Clubhouse

- Construction commences after golf course construction has commenced
- Clubhouse floor area = 400-500 m2
- Car parking area = 2,500 m2
- Vegetation removal kept to a minimum around clubhouse site and car park

Irrigation Pump Station

- Brick construction with sufficient ventilation and roller doors
- Area = 35 m2

Maintenance Facility

- Approximate area = 3,500 m2
- Lockable chemical and fertiliser storage area
- Provision required for machinery storage, cart storage, chemical storage, fertilizer storage, workshop (with hoist), offices, toilets, locker room, lunch room, and fuel.

Turf Nursery

- To be established as a practice fairway early in the construction; used for grass harvesting and sprigging for golf course turf
- Area = 30,000 m2

Methodology overview

Clearing and grubbing

- Golf course areas pegged and buffer zones and fencing created around significant vegetation
- Only tees, fairways and greens will be cleared – large amounts of low storey indigenous vegetation will be retained as roughs and incorporated into hazards

Earthworks

- No bulk earthworks required
- Golf course is shaped (graded) using small bobcats, excavators and dozers
- Work zones limited to fairway corridors to ensure minimal damage to vegetation

Irrigation

- Mainline pipes are installed to a depth of 800 mm using a small lateral excavation running from the mainline out to the sprinklers are mole ploughed (trenchless)
- Use of water efficient "valve in head" sprinklers to allow independent programming of each sprinkler head
- Preferred irrigation design will avoid any watering of indigenous vegetation

Path Installation

- Bobcat used for constructing paths
- Paths will be constructed using natural materials (e.g. rammed earth, not concrete) and will be carefully routed through indigenous vegetation to avoid any significant trees/shrubs
- Any vegetation removed from the path alignment is replanted around the course

Feature Shaping

- Final shaping of all golf course features in preparation for grassing, performed by small machinery (bunker rake) and hand tools

Amendments

- Fertilizers and other organic amendments added to the sand to assist with turf growth (spread and raked in with a bunker rake)

Grassing

- Greens hand seeded using a spreader and raked
- Fairways and roughs are sprigged using turf from the nursery and rolled into place
- Tees turfed or sprigged from the nursery
- Approximate area under grass:
    - Greens = 20,000 m^2 (2 ha)
    - Tees = 15,000 m^2 (1.5 ha)
    - Fairways = 200,000 m^2 (20 ha))
    - Roughs = 50,000 m^2 (5 ha)
    - **Total = 285,000 m^2 (28.5 ha)** (representing 0.28% of ARR property)

Grow-in

- Grow-in staged to correspond with the construction activities (generally takes 3-4 months per hole)
- Course fixtures installed

2.2 Alternatives to taking the proposed action

This should be a detailed description outlining any feasible alternatives to taking the proposed action (including not taking the action) that were considered but are not proposed (note, this is distinct from any *proposed* alternatives relating to location, time frames, or activities – see section 2.3).

Not taking the proposed action

The advantages of the project were considered against the potential environmental impacts of the proposed action, to determine the feasibility of *not* taking the proposed action. However, the significant employment and training outcomes that will be enabled by ARR and enhanced through the development of this project deemed this unacceptable to Voyages.

The proposed action sits within a greater training and employment program at ARR, where the Voyages aims to employ 100 Indigenous employees and 100 Indigenous trainees by the end of 2012-13, and 350 by end of 2018. The construction, growing-in and operational phases of the golf course represent a significant opportunity for Indigenous people to become trainees in this industry, employed as labourers, golf course shapers, landscapers, course wardens, caddies, mechanics, clubhouse staff (pro-shop and food and beverage), club managers and maintenance staff (e.g. greens-keepers).

The diversification of tourist facilities such as this will greatly assist Voyages in meeting the ambitious employment targets outlined above. The construction of a golf course forms part of a larger marketing strategy at ARR, to build the growth of the resort and extend the length of stay of visitors by opening new markets, including the conference/corporate meeting market. Growth of ARR will ensure Voyages' ability to deliver these employment and training benefits into the future.

Alternative sites

In an initial site assessment of the entire ARR property, four alternative sites were identified, but are not formally proposed in this referral (Attachment 2). Key features of the four considered sites are as follows:

Site one (preferred)
- South of Yulara
- Access via fire trail (existing road)
- Dunes up to 600 m wide
- Dunes hide the site from the Lasseter Highway
- Desert Oaks scattered throughout the site
- Good access to water and power from the treatment plant

Site two
- North of Yulara
- Some dense Mulga trees that would make access difficult without removal
- Dunes broader and smaller in height than site one
- Large amounts of Desert Oak

Site three
- East of site two
- Similar characteristics to site two, but with larger dunes
- May be possible to see and hear planes on the approach to the airport (and be more visible from aircraft landing and taking off)

Site four
- East of ARR with the Lasseter Highway to the North
- May detract from the Longitude 131 experience (5-star luxury hotel)

In summary, the preferred site (site one) was selected to:
a) minimise construction of access roads (with associated vegetation removal);
b) minimise disturbance relating to the installation of power and water infrastructure to the site,
c) proximity to the water treatment plant to minimize infrastructure requirements and maximise the feasibility of utilising recycled water; and
d) reduce the visibility of the site by road (Lasseter Highway) and air.

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

If you have identified that the proposed action includes alternative time frames, locations or activities (in section 1.10) you must complete this section. Describe any alternatives related to the physical location of the action, time frames within which the action is to be taken and alternative methods or activities for undertaking the action. For each alternative location, time frame or activity identified, you must also complete (where relevant) the details in sections 1.2-1.9, 2.4-2.7, 3.3 and 4. Please note, if the action that you propose to take is determined to be a controlled action, any alternative locations, time frames or activities that are identified here may be subject to environmental assessment and a decision on whether to approve the alternative.

None.

See section 2.2.

2.4 Context, planning framework and state/local government requirements

Explain the context in which the action is proposed, including any relevant planning framework at the state and/or local government level (e.g. within scope of a management plan, planning initiative or policy framework). Describe any Commonwealth or state legislation or policies under which approvals are required or will be considered against.

The ARR property is not located within a Local Government Area, and so the proposed action does not require local government planning approval.

The Northern Territory Planning Scheme requires a development permit to clear over one hectare of native vegetation on unzoned land. It is therefore anticipated that a permit application will be required for this project.

The ILC and Voyages have identified a requirement to gain clearance from the Aboriginal Areas Protection Authority, as it relates to sacred sites in the Northern Territory (under the *Northern Territory Aboriginal Sacred Sites Act). The* Application for Authority Certificate was approved on 21 may 2012 (ref: 089/99 2012/73; Doc: 2012/00762; C2012/075).

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

If you have identified that the proposed action will be or has been subject to a state or territory environmental impact statement (in section 1.11) you must complete this section. Describe any environmental assessment of the relevant impacts of the project that has been, is being, or will be carried out under state or territory legislation. Specify the type and nature of the assessment, the relevant legislation and the current status of any assessments or approvals. Where possible, provide contact details for the state/territory assessment contact officer.

Describe or summarise any public consultation undertaken, or to be undertaken, during the assessment. Attach copies of relevant assessment documentation and outcomes of public consultations (if available).

Our understanding is that, owing to bilateral agreements between the Commonwealth and the Northern Territory (Attachment 4), the submission of this referral under the EPBC Act will allow a joint assessment to satisfy both the EPBC Act and *Environmental Assessment Act 1982 (NT).* Voyages notes that conducting an Environmental Impact Statement or Public Environment Report under the *Environmental Assessment Act 1982 (NT)*, may be an assessment method determined by the Australian Government to assess this referral under the EPBC Act. If the Commonwealth determines that the bilateral agreement does not apply in this case and a separate referral is required to the Northern Territory Government to enable an environmental assessment under the Territory legislation, then Voyages will submit a separate referral to the Northern Territory Government.

2.6 Public consultation (including with Indigenous stakeholders)

Your referral must include a description of any public consultation that has been, or is being, undertaken. Where Indigenous stakeholders are likely to be affected by your proposed action, your referral should describe any consultations undertaken with Indigenous stakeholders. Identify the relevant stakeholders and the status of consultations at the time of the referral. Where appropriate include copies of documents recording the outcomes of any consultations.

A number of key stakeholders have taken a keen interest in the proposed action and Voyages recognises that appropriate communication and consultation is maintained throughout the project. Key stakeholders identified include:

- Local Indigenous communities, organisations and Ananngu traditional owners (including Mutitjulu Community and Wana Unkunytja Pty Ltd);
- Central Land Council (responsible for representing the interests of traditional owners in the region);
- Parks Australia (responsible for the joint management of UKTNP with Traditional Owners);

Project management staff from Voyages will be responsible for holding regular public consultation sessions at ARR, involving the above stakeholders and any other participants with an interest in the proposed action. A consultation meeting was held in Yulara on 31 January 2012, to inform stakeholders and interested residents on the proposed action and broader developments at ARR, such as the National Indigenous Training Academy, employment opportunities and conference facility renovations. Indigenous participants travelled from as far away as Kaltukatjara (Docker River) and Imampa. Voyages and ILC management hold regular community consultation meetings at the resort and in the surrounding Indigenous communities. Regular meetings are also held with representatives of UKTNP and other local stakeholders. Voyages will use these meetings to keep interested stakeholders appraised of developments on the project as they occur.

Additionally, the sacred sites review undertaken by the NT Aboriginal Areas Protection Authority included a formal consultation process with Traditional Owners. The AAPA issued an authority certificate for the development to proceed on the proposed site following these consultations.

2.7 A staged development or component of a larger project

If you have identified that the proposed action is a component of a larger action (in section 1.12) you must complete this section. Provide information about the larger action and details of any interdependency between the stages/components and the larger action. You may also provide justification as to why you believe it is reasonable for the referred action to be considered separately from the larger proposal (e.g. the referred action is 'stand-alone' and viable in its own right, there are separate responsibilities for component actions or approvals have been split in a similar way at the state or local government levels).

Not applicable.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The interactive map tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.

3.1 (a) World Heritage Properties

Address any impacts on the World Heritage values of any World Heritage property.

Description

The proposed action will occur on freehold land *adjacent* to the World Heritage Listed Uluru-Kata Tjuta National Park (also a National Heritage Listed place, see below).

The relevant World Heritage Criteria (Commonwealth of Australia 2007) for UKTNP are as follows:

(v) to be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture (or cultures), or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;

(vi) to be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance;

(vii) to contain superlative natural phenomena or areas of exceptional natural beauty and aesthetic importance; and

(ix) to be outstanding examples representing significant on-going ecological and biological processes in the evolution and development of terrestrial, fresh water, coastal and marine ecosystems and communities of plants and animals.

Nature and extent of likely impact
The proposed action is unlikely to have a significant impact on the cultural and natural integrity of the World Heritage values of UKTNP, as it will not result in any of the above values being lost, degraded or damaged, or notably altered, modified, obscured or diminished. Impacts of the action are site-specific, and will not create flow on effects to, or otherwise affect, neighbouring properties including UKTNP.

The golf course will be designed to enhance and maintain connectivity corridors for indigenous flora and fauna in order to ensure biodiversity values and key habitats within the site and adjacent to UKTNP are not impacted.

Heritage values associated with the site *An action is likely to have a significant impact on heritage values of a World Heritage property if there is a real chance or possibility that the action will:*	**Summary of relevance to this proposed action**
Values associated with geology or landscapes	
• damage, modify, alter or obscure important geological formations in a World Heritage property	See '*Wilderness, natural beauty, or rare or unique environment values*' below.
• damage, modify, alter or obscure landforms or landscape features, for example, by excavation or infilling of the land surface in a World Heritage property	Not applicable.
• modify, alter or inhibit landscape processes, for example, by accelerating or increasing susceptibility to erosion, or stabilising mobile landforms, such as sand dunes, in a World Heritage property	There is a small risk of accelerating and/or increasing the susceptibility of erosion within UKTNP, by virtue of the proposed action being located close to the Park boundary. The course extent outlined in Attachment 2 takes the potential course route to within 150 m of the northern boundary of UKTNP. The soil profile of the site consists of deep sands associated with sand dunes typical of the region, and are prone to severe erosion, even in areas of very small changes in elevation. The risk of erosion is enhanced when vegetation is removed and the soil profile is disturbed, such as during the construction of the fairway areas and cart paths. The majority of the golf course development will be concentrated on the low-elevation sand plain areas where there is a significantly lower risk of erosion. Where the development encroaches on dunes or erosion susceptible areas, construction methods will be modified to ensure erosion is minimised. Throughout the project careful erosion management procedures will be implemented in accordance with best industry practises including but not limited to retaining native vegetation wherever possible,. silt fencing and sediment collection areas. Regular monitoring of environmental impacts, including erosion, will be conducted during construction and regularly during the post-construction period. Adaptive management principles will apply as appropriate. Occasional large volumes of stormwater are generated by rainfall over the catchment. Stormwater can be managed by maintaining the existing land surface with minimal surface disturbance (minimal compaction to soils and minimal landscaping). The major drainage grade to the north and north-east should be maintained by sympathetic planning of the fairways (AGT 2012).
• divert, impound or channelise a river, wetland or other water body in a World Heritage property, and	Water requirements are currently estimated to be up to 2 ML / day in the summer months. Irrigation of the golf course presents a risk of modifying the hydrological regime at the site and within the broader area. A combination of recycled water and extracted water may affect the water table, creating impacts on the dynamics of woody

	vegetation (and dependant fauna). However, this does not relate to diverting, impounding or channelising a water body *in* a World Heritage property. Nonetheless, risk mitigation strategies for water extraction are outlined in section 4 below, and include the use of an experienced irrigation contractor to determine the most water efficient design of the course and the options for maximising the use of recycled water from the Resort.
• substantially increase concentrations of suspended sediment, nutrients, heavy metals, hydrocarbons, or other pollutants or substances in a river, wetland or water body in a World Heritage property.	Not relevant. There are no defined drainage lines or wetlands within the site. Groundwater is to be drawn from the Dune Plains Aquifer (DPA), A study conducted by Australian Groundwater Technologies (2012) for the current proposal GTA concluded that: *The sustainable yield of groundwater from the Dune Plains Aquifer (DPA), the major water supply source for Yulara, is poorly defined. The estimated total water demand (current user and anticipated development) is only some 1.2 % of the volume of groundwater in the DPA.* It is therefore concluded that there is unlikely to be a substantial increase in any water bodies within the World heritage property. As a requirement to keep the grassed areas healthy, the addition of standard lawn fertilisers and herbicides will be required on the golf course (tee areas, fairways and greens). Such fertilisation may alter the composition and dynamics of the surrounding native vegetation. Once established, the golf course will employ and train its ground staff (up to 7 positions) to industry standards and apply principles adopted from the Audubon Principles for Resource Management. The two golf course architects shortlisted for the project both have significant experience in designing and developing golf courses in environmentally sensitive locations. Through the involvement of these architects as well contacts with golf courses in Australia, Canada and North America that are established in or adjacent to National Parks and in desert environments, will be ongoing in order to share best practises. Staff will be trained to carefully apply fertilisers, pesticides and herbicides and monitor their impacts on native vegetation. Regular monitoring of the indigenous vegetation adjacent to the greens, tees and fairways will be undertaken to ensure any leakage of nutrients is identified early and remedial actions can be undertaken.
Biological or ecological values	
• reduce the diversity or modify the composition of plant and animal species in all or part of a World Heritage property	Modification of the landscape such as this proposed action has the potential to reduce the extent of suitable habitat for some plant and animal species that also reside in UKTNP.

	golf course area (as habitat corridors between irrigated areas) and a conservation buffer zone to the south of the golf course. An Environmental Management Plan (EMP) has been prepared to guide the design, construction and maintenance phases of the proposed development. The EMP specifies management actions for each phase of the proposed development with the aim of maintaining ecological processes within the site. A copy of the EMP is attached to this referral.
Wilderness, natural beauty, or rare or unique environment values	
• involve construction of buildings, roads, or other structures, vegetation clearance, or other actions with substantial, long-term or permanent impacts on relevant values, and	In addition to an 18 hole, irrigated golf course (285,000 m^2) and turf nursery (30,000 m^2), the proposed action will involve the building of a construction compound (2500 m^2), access road, small clubhouse and car park (3000 m^2), pump station (35 m^2) and maintenance facility (3500 m^2). There is a low risk that the presence of an irrigated (i.e. visibly green) golf course adjacent to UKTNP could impact on the wilderness values or natural beauty of UKTNP and its notable landforms (Uluru and Kata Tjuta), when viewed from the main access road to UKTNP (Uluru Road) or from the air. For example, it may be possible to see the golf course from the air, in a line of sight between the observer and Uluru / Kata Tjuta, when commercial aircraft approach Yulara (Connellan) Airport at Yulara. Similarly, the golf course extent (Attachment 1) is expected to be within 100 m of the principal access road to UKTNP (Uluru Road and Lasseter Highway), however, it is unlikely to be seen from the road given a 100 m setback distance and a tall dune running parallel with the road. Built structures in the proposed action will be designed to 'blend in' to the surrounding landscape, similar to existing structures in the resort and in UKTNP with no structures significantly higher than the surrounding landscape. The risk is considered low given these measures to reduce these impacts. The development should be viewed as complementing existing ARR facilities at the property, which already includes several hotels, restaurants, sporting oval etc. in a township accommodating approximately 1000 people.
• introduce noise, odours, pollutants or other intrusive elements with substantial, long-term or permanent impacts on relevant values.	Whilst the proposed action will involve the use of standard lawn fertilisers and herbicides these chemicals will be managed according to industry best-practice standards and will be contained to the areas where they are applied. No materials will be used on the site of the proposed action that will substantially increase concentrations of suspended sediment, nutrients, heavy metals, hydrocarbons, or other pollutants or substances in a river, wetland or water body *in* UKTNP. Additionally, the proposed action is a low noise generating activity and will not create noise levels that impact on the wilderness values of the site.
Historic heritage values	
• permanently remove, destroy, damage or substantially alter the fabric of a World Heritage property	Not applicable.
• extend, renovate, refurbish or substantially alter a World Heritage property in a manner which is inconsistent with relevant values	Not applicable.
• permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a World Heritage property	Not applicable.
• involve activities in a World Heritage property with	Not applicable.

substantial and/or long-term impacts on its values	
• involve construction of buildings or other structures within, adjacent to, or within important sight lines of, a World Heritage property which are inconsistent with relevant values, and	See '*Wilderness, natural beauty, or rare or unique environment values*' above.
• make notable changes to the layout, spaces, form or species composition in a garden, landscape or setting	Not applicable.
Other cultural heritage values including Indigenous heritage values	
• restrict or inhibit the existing use of a World Heritage property as a cultural or ceremonial site causing its values to notably diminish over time	Not applicable.
• permanently diminish the cultural value of a World Heritage property for a community or group to which its values relate	Construction activities in the proposed action presents a small risk of damaging or disturbing cultural artefacts that have significance to the traditional owners of the broader region. Relevant risk mitigation strategies include a formal Application for Authority Certificate which has been approved by-the Aboriginal Areas Protection Authority.
• alter the setting of a World Heritage property in a manner which is inconsistent with relevant values	Not applicable.
• remove, damage, or substantially disturb cultural artefacts, or ceremonial objects, in a World Heritage property, and	Not applicable.
• permanently damage or obscure rock art or other cultural or ceremonial features with World Heritage values.	See '*permanently diminish the cultural value of a World Heritage property for a community or group to which its values relate*' above.

Source: *Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.*

3.1 (b) National Heritage Places

Address any impacts on the National Heritage values of any National Heritage place.

Description
As mentioned above in section 3.1 (a) above, the proposed action will occur on freehold land adjacent to the National Heritage Listed Uluru-Kata Tjuta National Park (also a World Heritage Listed place).

The relevant National Heritage criteria (Commonwealth of Australia 2007) for UKTNP are as follows:

(a) the place has outstanding heritage value to the nation because of the place's importance in the course, or pattern, of Australia's natural or cultural history;
(b) the place has outstanding heritage value to the nation because of the place's possession of uncommon, rare or endangered aspects of Australia's natural or cultural history;
(c) the place has outstanding heritage value to the nation because of the place's potential to yield information that will contribute to an understanding of Australia's natural or cultural history;
(d) the place has outstanding heritage value to the nation because of the place's importance in demonstrating the principal characteristics of:
    (i) a class of Australia's natural or cultural places; or
    (ii) a class of Australia's natural or cultural environments;
(e) the place has outstanding heritage value to the nation because of the place's importance in exhibiting particular aesthetic characteristics valued by a community or cultural group;
(g) the place has outstanding heritage value to the nation because of the place's strong or special association with a particular community or cultural group for social, cultural or spiritual reasons;
(i) the place has outstanding heritage value to the nation because of the place's importance as part of indigenous tradition.

Nature and extent of likely impact
The proposed action is unlikely to have a significant impact on the National Heritage values of UKTNP, as it will not result in any of the above values being lost, degraded or damaged, or notably altered, modified, obscured or diminished. For the most part, impacts of the proposed action are site-specific, and will not create flow on effects to, or otherwise affect, neighbouring properties. The opportunity to enhance visitors understanding of this World Heritage Site through onsite interpretation and education will assist the UKTNP in delivering on its mandate. The interpretation and education aspects will be developed in close consultation with Traditional Owners and UKTNP staff to ensure cultural and ecological integrity.

Heritage values associated with the site *An action is likely to have a significant impact on heritage values of a National Heritage property if there is a real chance or possibility that the action will:*	**Summary of relevance to this proposed action**
Values associated with geology or landscapes	
• damage, modify, alter or obscure important geological formations in a National Heritage place	See '*Wilderness, natural beauty, or rare or unique environment values*' below.
• damage, modify, alter or obscure landforms or landscape features, for example, by clearing, excavating or infilling the land surface in a National Heritage place	Not applicable.
• modify, alter or inhibit landscape processes, for example, by accelerating or increasing susceptibility to erosion, or stabilising mobile landforms, such as sand dunes in a National Heritage place	There is a small risk of accelerating and/or increasing the susceptibility of erosion within UKTNP, by virtue of the proposed action being located close to the Park boundary. The course extent outlined in Attachment 2 takes the potential course route to within 150 m of the northern boundary of UKTNP. The soil profile of the site consists of deep sands associated with sand dunes typical of the region, and are prone to severe erosion, even in areas of very small changes in elevation. The risk of erosion is enhanced when vegetation is removed and the soil profile is disturbed, such as during the construction of the fairway areas and cart paths. The majority of the golf course development will be concentrated on the low-elevation sand plain areas where there is a significantly lower risk of erosion. Where the development encroaches on dunes or erosion susceptible areas, construction methods will be modified to ensure erosion is minimised. Throughout the project careful erosion management procedures will be implemented in accordance with best industry practises including but not limited to retaining native vegetation wherever possible, silt fencing and sediment collection areas. Regular monitoring of environmental impacts, including erosion, will be conducted during construction and regularly during the post-construction period. Adaptive management principles will apply as appropriate. Occasional large volumes of stormwater are generated by rainfall over the catchment. Stormwater can be managed by maintaining the existing land surface with minimal surface disturbance (minimal compaction to soils and minimal landscaping). The major drainage grade to the north and north-east should be maintained by sympathetic planning of the fairways (AGT 2012).
• divert, impound or channelise a river, wetland or other water body in a National Heritage place, and	The need for water extraction (estimated to be up to 2 ML / day in the summer months) and irrigation of the golf course presents a risk of modifying the hydrological regime at the site and within the broader area. Water extraction of this nature could lower the water table, creating impacts on the dynamics of woody vegetation (and dependant fauna).

	However, this does not relate to diverting, impounding or channelising a water body *in* a World Heritage property. Nonetheless, risk mitigation strategies for water extraction are outlined in section 4 below, and include the use of an experienced irrigation contractor to determine the most water efficient design of the course and the options for using recycled water from the Resort. One of the key reasons for selection of the proposed site was its proximity to the existing water treatment plant which will make use of recycled water feasible.
• substantially increase concentrations of suspended sediment, nutrients, heavy metals, hydrocarbons, or other pollutants or substances in a river, wetland or water body in a National Heritage place; permanently damage or obscure rock art or other cultural or ceremonial features with World Heritage values.	As a requirement to keep the grassed areas healthy, the addition of standard lawn fertilisers and herbicides will be required on the golf course (tee areas, fairways and greens). Such fertilisation may alter the composition and dynamics of the surrounding native vegetation. Once established, the golf course will employ and train its ground staff (up to 7 positions) to industry standards and apply principles adopted from the Audubon Principles for Resource Management. The two golf course architects shortlisted for the project both have significant experience in designing and developing golf courses in environmentally sensitive locations. Through the involvement of these architects as well contacts with golf courses in Australia, Canada and North America that are established in or adjacent to National Parks and in desert environments, will be ongoing in order to share best practises. Staff will be trained to carefully apply fertilisers, pesticides and herbicides and monitor their impacts on native vegetation. Regular monitoring of the indigenous vegetation adjacent to the greens, tees and fairways will be undertaken to ensure any leakage of nutrients is identified early and remedial actions can be undertaken.
Biological and ecological values	
• modify or inhibit ecological processes in a National Heritage place	Modification of the landscape such as this proposed action may reduce the extent of suitable habitat for some plant and animal species that also reside in UKTNP. However, the development footprint of this proposed action is estimated at 142 ha (1.39% of ARR property) and does not a) include vegetation that is considered critical to the survival of any species, b) fragment or isolate important habitats, c) significantly prevent species migration between the ARR property and UKTNP, d) cause a long-term decline in rare, endemic or unique plant or animal populations or species in UKTNP, or e) fragment, isolate or substantially damage habitat for these rare, endemic or unique plant or animal populations. The proposed action will feature the retention of significant tracts of native vegetation within the golf course area (as habitat corridors between irrigated areas) and a conservation buffer zone to the south of the golf course creating ideal connectivity throughout. The ongoing monitoring program will lend itself to quickly identifying issues and allowing for adaptive management principles to be employed. An Environmental Management Plan (EMP) has been prepared to guide the design, construction and maintenance phases of the proposed development. The EMP specifies management actions for each phase of the proposed development with the aim of maintaining ecological processes within the site.
• reduce the diversity or modify the composition of plant and animal species in a National Heritage place	
• fragment or damage habitat important for the conservation of biological diversity in a National Heritage place	
• cause a long-term reduction in rare, endemic or unique plant or animal populations or species in a National Heritage place, and	
• fragment, isolate or substantially damage habitat for rare, endemic or unique animal populations or species in a National Heritage place.	

Wilderness, aesthetic, or other rare or unique environment values	
• involve construction of buildings, roads or other structures, vegetation clearance, or other actions with substantial and/or long-term impacts on relevant values, and	In addition to an 18 hole, irrigated golf course (285,000 m^2) and turf nursery (30,000 m^2), the proposed action will involve the building of a construction compound (2500 m^2), access road, clubhouse and car park (3000 m^2), pump station (35 m^2) and maintenance facility (3500 m^2). There is a small risk that the presence of an irrigated (i.e. visibly green) golf course adjacent to UKTNP could impact on the wilderness values or natural beauty of UKTNP and its notable landforms (Uluru and Kata Tjuta), when viewed from the main access road to UKTNP (Uluru Road) or from the air. For example, it may be possible to see the golf course from the air, in a line of sight between the observer and Uluru / Kata Tjuta, when commercial aircraft approach Yulara (Connellan) Airport at Yulara. Similarly, the golf course extent (Attachment 1) is expected to be within 100 m of the principal access road to UKTNP (Uluru Road and Lasseter Highway), however, it is unlikely to be seen from the road given a 100 m setback distance and a tall dune running parallel with the road. Like the Resort itself, built structures in the proposed action will 'blend in' to the surrounding landscape, with nothing significantly higher than the surrounding landscape. The risk is considered small given these measures to reduce these impacts. The development should be viewed as complimenting existing ARR facilities at the property, which already includes several hotels, restaurants, sporting oval etc. in a township accommodating approximately 1000 people. The length of the access road to the site from the Lasseter Highway will be minimised.
• introduce noise, odours, pollutants or other intrusive elements with substantial and/or long-term impacts on relevant values.	Whilst the proposed action will involve the use of standard lawn fertilisers and herbicides these chemicals will be managed according to industry best-practice standards and will be contained to the areas where they are applied. No materials will be used on the site of the proposed action that will substantially increase concentrations of suspended sediment, nutrients, heavy metals, hydrocarbons, or other pollutants or substances in a river, wetland or water body *in* UKTNP. Additionally, the proposed action is a low noise generating activity and will not create noise levels that impact on the wilderness values of the site.
Historic heritage values	
• permanently remove, destroy, damage or substantially alter the fabric of a National Heritage place in a manner which is inconsistent with relevant values	Not applicable.
• extend, renovate, refurbish or substantially alter a National Heritage place in a manner which is inconsistent with relevant values	Not applicable.
• permanently remove, destroy, damage or substantially disturb archaeological deposits or artefacts in a National Heritage place	Not applicable.
• involve activities in a National Heritage place with substantial and/or long-term impacts on its values	Not applicable.
• involve the construction of buildings or other structures within, adjacent to, or within important sight lines of, a National Heritage place which are inconsistent with relevant values, and	See '*Wilderness, aesthetic, or other rare or unique environment values*' above.

• make notable changes to the layout, spaces, form or species composition of a garden, landscape or setting of a National Heritage place in a manner which is inconsistent with relevant values.	Not applicable.
Other cultural heritage values	
• restrict or inhibit the continuing use of a National Heritage place as a cultural or ceremonial site causing its values to notably diminish over time	Not applicable.
• permanently diminish the cultural value of a National Heritage place for a community or group to which its National Heritage values relate	See '*Indigenous heritage values*' below.
• destroy or damage cultural or ceremonial, artefacts, features, or objects in a National Heritage place, and	Not applicable.
• notably diminish the value of a National Heritage place in demonstrating creative or technical achievement.	Not applicable.
Indigenous heritage values	
• restrict or inhibit the continuing use of a National Heritage place as a cultural or ceremonial site causing its values to notably diminish over time	Not applicable.
• permanently diminish the cultural value of a National Heritage place for an Indigenous group to which its National Heritage values relate	Construction activities present a small risk of damaging or disturbing cultural artefacts at the site of the proposed action that have significance to the traditional owners of the broader region. Relevant risk mitigation strategies include an Authority Certificate provided by the Aboriginal Areas Protection Authority. During construction there will be ongoing communication with traditional owners in order to ensure cultural values are protected.
• alter the setting of a National Heritage place in a manner which is inconsistent with relevant values	Not applicable.
• remove, destroy, damage or substantially disturb archaeological deposits or cultural artefacts in a National Heritage place	Not applicable.
• destroy, damage or permanently obscure rock art or other cultural or ceremonial, artefacts, features, or objects in a National Heritage place	Not applicable.
• notably diminish the value of a National Heritage place in demonstrating creative or technical achievement	Not applicable.
• permanently remove, destroy, damage or substantially alter Indigenous built structures in a National Heritage place, and	Not applicable.
• involve activities in a National Heritage place with substantial and/or long-term impacts on the values of the place.	Not applicable.

Source: *Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.*

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Address any impacts on the ecological character of any Ramsar wetlands.

Description

There are no wetlands of International Importance (Ramsar wetlands) in the region of the proposed action.

Nature and extent of likely impact

Not applicable.

3.1 (d) Listed threatened species and ecological communities

Address any impacts on the members of any listened threatened species (except a conservation dependent species) or any threatened ecological community, or their habitat.

Listed threatened species

The following listed threatened species may be impacted by the project:

Listed threatened species	Common name	Type	Status	Type of Presence
*Dasycercus cristicauda**	Mulgara	Mammal	Vulnerable	Species or species habitat likely to occur within area
Notoryctes typhlops	Southern Marsupial Mole; Yitjarritjarri; Itjaritjari	Mammal	Endangered	Species or species habitat likely to occur within area
Petrogale lateralis MacDonnell Ranges race	Warru; Black-footed Rock-wallaby (MacDonnell Ranges race)	Mammal	Vulnerable	Species or species habitat may occur within area
Sminthopsis psammophila	Sandhill Dunnart	Mammal	Endangered	Species or species habitat known to occur within area
Liopholis kintorei	Great Desert Skink, Tjakura, Warrarna, Mulyamiji	Reptile	Vulnerable	Species or species habitat may occur within area

Source: *EPBC Act Protected Matters Search Report (02/02/2012).*

**See the attached Flora and Fauna assessment for a full description of the taxonomic classification and listing of this species. To avoid further confusion the species will continue to be referred to as the Crest-tailed Mulgara D. cristicauda in this document.*

Crest-tailed Mulgara

The status of Crest-tailed Mulgara *Dasycercus cristicauda* is unknown within the study area.

Taxonomic classification within the *Dasycercus* genus has been problematic. Historically up to four species were recognised, one of which *D. cristicauda* is recognised within the region. However, recent taxonomic re-classification has split this species in two: Crest-tailed Mulgara *D. cristicauda* (listed as Vulnerable under the Act) and Brush-tailed Mulgara *Dasycercus blythi* (not listed as a threatened species under the Act) (Woolley 2005, 2006).

Both species have previously been reported in UKTNP and around the Yulara region (Pavey *et al*. 2006), however Paltridge (2011) has only recorded Brush-tailed Mulgara in traps within the study area and has not recorded Crest-tailed Mulgara. Nevertheless, suitable habitat for Crest-tailed Mulgara is present within the study area so its presence within the site cannot be discounted.

Mulgaras occur in a range of vegetation types, particularly mature hummock grasslands in association with *Triodia basedowii* and *Triodia pungens* (Masters *et al*. 2003).

Mulgaras have declined across their range but the reasons for the decline are not well understood. Environmental degradation is likely to be a contributing factor, including the impact of altered fire regimes, grazing, introduced herbivores and introduced predators (Pavey *et al.* 2006).

Management priorities in the Northern Territory, provided in Pavey *et al*. (2006) are:

i. to better safeguard existing populations by ensuring that large areas of mature spinifex are not subjected to extensive wildfires.

ii. to continue regular monitoring of the relatively large population(s) in UKTNP/Yulara borefields.
iii. to better resolve the status and distribution of the two mulgara species.
iv. to prevent harmful disturbances within lateritic areas in the north of the range.

While there may be some local impact on the distribution of the species within the study area it is considered that, due to the wide distribution of the species within the arid zone of Australia, that the proposed action is unlikely to have a significant impact on the species or its long-term viability.

Southern Marsupial Mole
Southern Marsupial Mole *Notoryctes typhlops* is considered to be present within the study area (Biosis Research 2012).

Southern Marsupial Mole is a blind, fossorial marsupial widely distributed throughout the sandy desert regions of inland Australia, including UKTNP (Benshemesh and Johnson 2003; Cronin 1991; Strahan 1998). As part of a National Recovery Plan, monitoring sites have been established in UKTNP and several other locations around Yulara (Pavey 2006a). Surveys have also been undertaken in various locations on the Anangu Pitjantjatjara Yankunytjatjara Lands and at Mt Willoughby, Andado and Deep Well (Benshemesh 2004). Southern Marsupial Mole appears to prefer deep, loose sands associated with sandy plains and sandy river flats, and avoids tunnelling through hard or loamy substrates which can restrict the movement of animals (Benshemesh 2004).

Threats to the species may include predation by foxes, feral cats and dingoes (Benshemesh 2004; Paltridge 1998). As with the Mulgara, habitat modification resulting from altered fire regimes and grazing may also impact on Southern Marsupial Mole. Railways, pipelines and large roads may limit migration of the species (Benshemesh 2004). As the species burrows through the sand, soil compaction by livestock or vehicles may impact on survival by providing a barrier to underground tunnelling.

Recovery objectives recommended by Benshemesh (2004) include:
i. Resolve the taxonomy issues between the different populations of marsupial moles and determine appropriate management units.
ii. Describe the distribution and provide indices of the abundance of the distinct lineages of marsupial moles.
iii. Determine population trends of the distinct lineages of marsupial moles.
iv. Provide preliminary information on the threat of fire, introduced predators such as foxes and cats, and grazing.
v. Describe activity pattern and ranging behaviour.
vi. Coordinate and manage the recovery process.

It is possible that there could be a local impact on the distribution of the species within the study area however it is considered that, due to the wide distribution of the species within the arid zone of Australia, that the proposed action is unlikely to have a significant impact on the species or its long-term viability.

Great Desert Skink
Great Desert Skink *Liopholis kintorei* is considered to be present within the study area as one burrow system with associated latrine site has been located (Biosis Research 2012).

Great Desert Skink is a large burrowing lizard with seven isolated populations in central Australia and Western Australia, including a population of < 500 individuals in UKTNP and a population of < 350 individuals in the Yulara borefields area (McAlpin 2001; Pavey 2006d). In UKTNP, the species has a clumped distribution, that is, concentrations of burrows in areas of a few hectares separated by uninhabited, seemingly suitable habitat (McAlpin 1997). Pavey (2006d) referred to the Uluru population (and Tanami population, 2250 individuals) as a 'global stronghold' for the species.

The species generally occurs on red sandplains and ridges where vegetation consists of hummock grasslands with scattered trees and shrubs such as *Hakea* spp. and *Grevillea* spp. (Cogger *et al.* 1993, McAlpin 2001). The species appears to prefer heterogeneous vegetation (different stand ages), areas that have been burnt recently (in the last 3-15 years) and where there is at least 50% bare ground (McAlpin 1998). The species is communal, with complex burrow systems to 1 m depth and 10 m in diameter in these environments (Pavey 2006d).

Threatening processes relevant to the Great Desert Skink may include predation by foxes and feral cats, altered fire regimes (particularly the increase in wildfires) and burrow destruction by rabbits (Pavey 2006d). The Yulara borefield population is considered to be under threat from increasing tourism development (McAlpin 2001). Tourism infrastructure has occasionally been (inadvertently) sited close to active Great Desert Skink burrows resulting in burrow abandonment and mortality on roads (McAlpin 2001).

The Recovery Plan for the species outlines the following management actions:
i. To assess causal factors in the recent decline or local extinction of the species in particular locations, and to determine critical habitat.
ii. To manage by 2010 the population in UKTNP to maintain or improve population levels (as measured by number of active burrows) against initial baseline figure derived from five seasons of monitoring.
iii. To improve community knowledge of the species and to improve community involvement in its recovery

management.

iv. *To determine the best fire regime that leads to sustained or increased populations of Great Desert Skink.*
v. *To reduce number, extent and impact of severe wildfires over the next decade.*
vi. *To implement feral predator control programs that result in sustained reductions in feral predator populations in UKTNP over the next 10 years* (McAlpin 2001).

In addition, the Recovery Plan lists the following actions that may negatively impact on the population viability and recovery of the species:

i. *Siting of roads, tracks or built infrastructure within 5 km of known populations of the Great Desert Skink.*
ii. *Mining activities sited within 5 km of active burrows of the Great Desert Skink.*
iii. *Spinifex harvest activities or other vegetation clearance carried out within 1 km of active burrows of the Great Desert Skink* (McAlpin 2001).

The species is known to have a strong-hold to the south-west of the study area.n. As such the proposed action could potentially have an impact on the species. However, the habitat corridors being maintained and enhanced within the site and the buffer to UKTNP may reduce this impact.
Targeted searches may be undertaken in accordance with the survey guidelines for Australia's threatened reptiles (DSEWPaC 2011b) to confirm the full distribution of the species within the study area. All sites confirmed as supporting burrow systems will be managed in accordance with the Environmental Management Plan which has been prepared for the study area. These confirmed sites may provided additional opportunities to interpret and educate visitors on desert fauna. All interpretation will be in consultation with UKTNP.

Black-footed Rock-wallaby
The Black-footed Rock-wallaby *Petrogale lateralis* (MacDonnell Ranges race) does not occur within the study area and the proposed development is unlikely to have any impact on the numbers or distribution of the species (Biosis research 2012)..

The Black-footed Rock-wallaby is a medium sized macropod, with a distribution centred in the MacDonnell Ranges, preferring rocky outcrops and steep rocky slopes (Pavey 2006b; Muhic *et al.* 2012). There are several known locations of the Black-footed Rock-wallaby around the region of the proposed action, although it has not been recorded within the UKTNP since 1970 and may no longer be present in the Park (Pavey 2006b; NRETAS 2012). Whilst these populations may have declined or become locally extinct over the southern part of its range, the species otherwise retains a similar distribution to what it did at the time of European settlement, and populations have remained stable or increased over the last 20 years (Gibson 2000).

Threats include predation by foxes, cats and wedge-tailed eagles, and habitat degradation by cattle grazing (Pavey 2006b).

Management priorities in the NT are to:

i. *Continue to monitor key populations of the species both on and off the park.*
ii. *Protect key populations by carrying out fox and feral cat control where populations appeared threatened by predation*.

Sandhill Dunnart
Sandhill Dunnart *Sminthopsis psammophila* is unlikely to occur within the study area and the proposed development is unlikely to have any impact on the numbers or distribution of the species.

Sandhill Dunnart is a medium-sized carnivorous marsupial. Although it was first collected near Lake Amadeus in 1894, it has not been seen in the Northern Territory since this sighting (Pavey 2006c). As such, the species is regarded in the Northern Territory as 'data deficient' (Pavey 2006c). Based on the species' distribution elsewhere, its habitat is expected to be sand hills covered by spinifex hummocks and Desert Oak (Pavey 2006c).

Notwithstanding its probable localised extinction from the Yulara region, potential threats include predation by foxes and cats, and altered fire regimes (Pavey 2006c).

Recovery actions outlined in Churchill (2001) are listed as:

i. Preventing further clearance of suitable habitat on Eyre Peninsula.
ii. Conduct a biological survey of Eyre Peninsula.
iii. Conduct further surveys of the Great Victoria Desert.
iv. Conduct a detailed survey of the known Eyre Peninsula populations.
v. Study the species in captivity to examine reproductive biology.
vi. Conduct experimental burns in suitable habitat to promote the growth of spinifex on Eyre Peninsula.
vii. Encourage the use of deep pitfall traps in small mammal surveys in central Australia and the northern regions of the Great Victoria Desert.
viii. Implement monitoring programs for the key populations.

Other EPBC list species
In addition to the above listed threatened species returned by Protected Matters Search Tool other EPBC listed species

identified by NRETAS (2012) as potentially occurring within the study area include:

- Princess Parrot *Polytelis alexandrae* – Vulnerable
- Fawn Hopping-mouse *Notomys cervinus* – Vulnerable
- Mala (*Lagorchestes hirsutus* – Extinct in the Wild

Princess Parrot may occur within the study area from time to time but it is unlikely that the development would have any impact on the numbers or distribution of the species (Biosis Research 2012).

Both Fawn Hopping-mouse and Mala are considered unlikely to occur within the study area and the proposed development is unlikely to have any impact on the numbers or distribution of the species.

Listed ecological communities

There are no listed threatened ecological communities within, or in close proximity to, the site.

Nature and extent of likely impact
The following significant impact criteria relate to the endangered species: Southern Marsupial Mole.

Significant impact criteria *An action is likely to have a significant impact on an endangered (or critically endangered) species if there is a real chance or possibility that it will:*	**Summary of relevance to this proposed action**
• lead to a long-term decrease in the size of a population	Southern Marsupial Mole is considered present in the study area and the proposed action will occur in habitat suitable for the species. The proposed action may result in an impact on the habitat for the species through vegetation clearing and modification, fire exclusion and infrastructure development (e.g. road and golf cart pathway construction). These activities may inhibit tunnelling/migration and reduce food availability, potentially leading to a decrease in the size of the population. However, these impacts are unlikely to result in a long-term decrease in the size of the population.
• reduce the area of occupancy of the species	The proposed action will potentially result in the loss of habitat suitable for the species. The action will have a development footprint of 142 ha, which will reduce the area of occupancy of the species if they are unable to coexist with the level of disturbance expected by the action. Potential threats to the ability of the Southern Marsupial Mole to remain resident in the study area include fire exclusion, infrastructure development and soil compaction. Altered fire regimes may reduce food availability for the species, whereas infrastructure development and its associated soil compaction may restrict underground tunnelling. A range of mitigation strategies are specified in the EMP including the retention of fauna habitat linkages within the development and between the adjacent National Park and the wider local area. The modification to native vegetation and design of any structures such as paths, edging, foundations and structures that may effect the movement of animals in and through the study area will be considered in the design phase.
• fragment an existing population into two or more populations	The proposed action is unlikely to fragment existing populations as habitat linkages will be maintained through the study area.
• adversely affect habitat critical to the survival of a species	The proposed action is likely to impact on a small area of the known habitat for the species and is unlikely to have an adverse affect on habitat critical to its survival.
• disrupt the breeding cycle of a population	Very little is known about the breeding cycle of the Southern Marsupial Mole. However, management actions within the EMP ensure habitat connectivity through the study area is maintained. Therefore the proposed action is unlikely to disrupt the breeding cycle of the population.
• modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action involves habitat modification including the clearing of indigenous vegetation. The small area of the proposed development in relation to the know distribution of the species indicated that is considered unlikely to lead to a species decline.
• result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	The turf species selected for the golf course will be a sterile cultivar that is approved for sale and use in Australia and commonly planted on other golf courses. It is not expected to be invasive and become established outside the course

	extent where initially planted (the total area under irrigated turf for the proposed action is approximately 28.5 ha). The disturbance of the study area has the potential to increase the occurrence of invasive species, in particular Buffel Grass *Cenchrus ciliaris* and European Rabbits *Oryctolagus cuniculus.* The EMP specifies pest plant and animal control measures that will ensure that invasive species will not encroach on the habitat of threatened species. A copy of the EMP is attached to this referral.
• introduce disease that may cause the species to decline, or	The proposed action is unlikely to lead to the introduction of diseases that may cause a decline to the species.
• interfere with the recovery of the species.	The proposed action will not substantially interfere with the recovery of these species. The specific methodology to be employed is not inconsistent with the recovery actions outlined for the Southern Marsupial Mole (Benshemesh 2004)

Source: *Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.*

The following significant impact criteria relate to the two vulnerable listed species: Crest-tailed Mulgara and Great Desert Skink.

Significant impact criteria *An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:*	**Summary of relevance to this proposed action**
• lead to a long-term decrease in the size of an important population of a species	This criterion has relevance to both the Crest-tailed Mulgara and Great Desert Skink. The Great Desert Skink is considered to be present within the site and the Crest-tailed Mulgara may be present. The proposed action will occur in suitable habitat of both species (hummock grasslands in association with *Triodia basedowii* and *Triodia pungens*). The Yulara borefields area (surrounding the site of the proposed action) is considered to be a stronghold of the Great Desert Skink population (along with another population in the Tanami desert), and is estimated at < 350 individuals. Notably, McAlpin (2001) states that tourism infrastructure has occasionally been (inadvertently) sited close to active Great Desert Skink burrows, resulting in burrow abandonment and mortality from vehicle traffic. These activities may inhibit tunnelling/burrowing behaviour, and reduce food availability, potentially leading to a long-term decrease in the size of the populations of both species. The presence of the Crest-tailed Mulgara has not been confirmed in the study area. The proposed action may result in long-term impacts on the both species habitat through vegetation clearing and other habitat modification, fire exclusion and infrastructure development. A range of mitigation strategies are specified in the EMP including the retention of fauna habitat linkages within the development and between the adjacent National Park and the wider local area and the continued use of ecological burning within the site. Targeted surveys of the listed threatened species will occur before construction, and any management recommendations incorporated into design, planning and construction activities.

• reduce the area of occupancy of an important population	The Crest-tailed Mulgara may be present within the study area. The closely related species *D. blythi* has been confirmed from the study area. The proposed action will occur in the Yulara borefields area, which represents an 'important population' of the Great Desert Skink (along with six other populations throughout central Australia). The proposed action may result in the loss of habitat suitable for both species. The action will have a development footprint of 142 ha, which will reduce the area of occupancy of both species if they are unable to coexist with the level of anthropogenic disturbance expected by the action. Potential threats to the ability of each species to remain resident in the study area include fire exclusion, infrastructure development and soil compaction. A range of mitigation strategies are specified in the EMP including the retention of fauna habitat linkages within the development and between the adjacent National Park and the wider local area and the continued use of ecological burning within the site.
• fragment an existing important population into two or more populations	The proposed action is unlikely to fragment existing populations as habitat linkages will be maintained through the study area.
• adversely affect habitat critical to the survival of a species	This criterion has relevance to the Great Desert Skink. See '*reduce the area of occupancy of an important population*' above. The study area provides habitat for the species. However the site contains extensive areas suitable habitat that is unlikely to be affected by the development.
• disrupt the breeding cycle of an important population	Very little is known about the breeding cycle of theses species. However, management actions within the EMP ensure habitat connectivity through the study area is maintained. Therefore the proposed action is unlikely to disrupt their breeding cycles.
• modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action involves habitat modification including the clearing of indigenous vegetation. The small area of the proposed development in relation to the known distribution of Crest-tailed Mulgara indicates that it is unlikely to lead to a species decline. It is considered unlikely that a decline to the Great Desert Skink species would occur. A range of mitigation strategies are specified in the EMP including the retention of fauna habitat linkages within the development and between the adjacent National Park and the wider local area and the continued use of ecological burning within the site.
• result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The turf species selected for the golf course will be a sterile cultivar that is approved for sale and use in Australia and commonly planted on other golf courses. It is not expected to be invasive and become established outside the course extent where initially planted (the total area under irrigated turf for the proposed action is approximately 28.5 ha). The disturbance of the study area has the potential to increase the occurrence of invasive species, in particular Buffel Grass *Cenchrus ciliaris* and European Rabbits *Oryctolagus cuniculus.* The EMP will specify a program of pest plant and animal control measures that will ensure that invasive species will not encroach on the habitat of threatened species.
• introduce disease that may cause the species to decline, or	The proposed action is unlikely to lead to the introduction of diseases that may cause a decline to either species.

• interfere substantially with the recovery of the species.	The proposed action will not substantially interfere with the recovery of these species. The specific methodology to be employed is not inconsistent with the recovery actions outlined for the Great Desert Skink (McAlpin 2001), or management priorities outlined by the NT Government for the Mulgara.

Source: *Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.*

3.1 (e) Listed migratory species

Address any impacts on the members of any listed migratory species, or their habitat.

Description

The following five birds are listed migratory species of the project area (source: EPBC Act Protected Matters Report, 02/02/2012).

Listed migratory species	Common name	Type	Type of Presence
Apus pacificus	Fork-tailed Swift	Migratory marine bird	Species or species habitat may occur within area
Ardea alba	Great Egret; White Egret	Migratory marine bird; migratory wetlands species	Species or species habitat may occur within area
Merops ornatus	Rainbow Bee-eater	Migratory terrestrial species	Species or species habitat may occur within area
Charadrius veredus	Oriental plover; Oriental Dotterel	Migratory wetlands species	Species or species habitat may occur within area
Glareola maldivarum	Oriental Pratincole	Migratory wetlands species	Species or species habitat may occur within area

Source: *EPBC Act Protected Matters Search Report (02/02/2012).*

Whilst the EPBC Act Protected Matters Search Tool has identified five migratory bird species, none have important habitats or ecologically significant population in the UKTNP region. Whilst some of these species may occur periodically in the region, the ecosystem is generally unsuitable given the sparse and ephemeral nature of surface water (Rooke 2003). This is particularly the case for the three migratory wetland species, which are largely concentrated in north-western Australia and the Top End of the Northern Territory.

The Fork-tailed Swift *Apus pacificus* is a non-breeding visitor to all states and territories of Australia, with isolated records in the Northern Territory including the Tanami Desert, the Barkly Tablelands, Hay River and around Alice Springs (Higgins 1999). Consistent with the species' widespread distribution, suitable habitat is varied but does include arid grasslands and sandplains with spinifex (Higgins 1999). Migration occurs southward, with individuals generally present in South Australia during December-March (Higgins 1999). Potential threats to the species in Australia may include habitat destruction and predation by feral animals, however, these are considered to be negligible (Birdlife International 2009).

Eastern Great Egret *Ardea alba* are widespread in Australia, with major breeding sites in the Top End of the Northern Territory, southwest Queensland, north eastern South Australia, Darling Riverine Plains of New South Wales and the Riverina (Victoria). Non-breeding birds have been recorded across much of Australia, with the exception of the driest regions of central and western deserts (Marchant and Higgins 1990; McKilligan 2005). Consistent with this distribution, the species has been recorded in a wide range of habitats, particularly wetlands such as lakes, swamps, reservoirs, sewage treatment ponds and salt lakes (Kushlan and Hancock 2005; Marchant and Higgins 1990; Martinez-Vilalta and Motis 1992). Breeding occurs in spring and summer in southern Australia, and between summer and autumn in northern Australia. The main threat to the species is likely to be the alteration of existing wetland habitats and the extraction of water from rivers in areas considered to be important habitat (Kushlan and Hancock 2005).

Rainbow Bee-eater *Merops ornatus* occurs across most of the Australian mainland, but is thinly distributed in the most arid regions of central Australia, which includes the current site (Barrett *et al*. 2003; Blakers *et al.* 1984; Higgins 1999). The species has a large and widely distributed population and is not considered to be globally threatened (Higgins 1999). Movement patterns are complex, with populations that breed in southern Australia moving to northern Australia for the winter (Caruthers 1975; Higgins 1999), being resident between February and October (Emison *et al.* 1987; Lane 1963; Morris *et al.* 1981; Saunders and Ingram 1995; Serventy 1948; Serventry and Whittell 1976; Terrill and Rix 1950). Threats to the species in Australia include the cane toad (*Bufo marinus*) and vehicles (Vestjens 1973).

Oriental Plover *Charadrius veredus* is a non-breeding visitor to Australia, occurring in both coastal and inland areas, mostly in

northern Australia. Most records are from the northwestern coast between Exmouth Gulf and Derby, however, the species is also known to occur on the blacksoil plains of northern Western Australia, the Northern Territory and northwestern Queensland. Of the species' inland habitats, they usually occur in arid and semi-arid grasslands (Boekel 1980; Carruthers 1966; Close 1982; Flether 1980; Pedler 1982; Storr 1980) or recently burnt open areas (Boekel 1980; Chatto 2003; Crawford 1972; Garnett 1986; Storr 1977). However, the closest internationally significant site to the proposed action is at Lake Sylvester, approximately 1000 km away. Some individuals may fly south across the continent, which would occur between October and March (Marchant and Higgins 1993; Branson and Minton 1996). Threats to the species in Australia could include being struck by vehicles or aircraft (van Tets *et al*. 1969; Marchant and Higgins 1993).

Oriental Pratincole *Glareola maldivarum* , a tern-like shorebird, is a non-breeding visitor to Australia, with major populations along the coastal regions of northwestern Australia and inland areas of WA and NT, north of 20°S (Blakers *et al*. 1984; Barrett *et al.* 2003). Inland populations often occur near terrestrial wetlands (lakes) and artificial wetlands such as reservoirs and sewage treatment plants (Boekel 1980; Garnett 1986; Jaensch 1985, 2004; Liddy 1959; Lloyd and Lloyd 1991; Smith 1963). Two nationally important sites have been identified in the Northern Territory (Lake Woods and Lake Sylvester) both of which are a considerable distance (approximately 1000 km) from the current site The site of the proposed action is not located near any significant water courses or artificial reservoirs within the region, with the exception of a small water treatment plant immediately adjacent to the site. Like the Oriental Plover, threats to the species in Australia include being struck by vehicles or aircraft (Klapste 1977; van Tets *et al*. 1969).

Nature and extent of likely impact
The following significant impact criteria relate to the five listed migratory bird species listed above.

Significant impact criteria *An action is likely to have a significant impact on a listed migratory species if there is a real chance or possibility that it will:*	**Summary of relevance to this proposed action**
• substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	The proposed action is not located in a significant or important habitat for any of the migratory species listed above. Whilst some of these species may occur periodically at the site, they would normally occupy habitats with large, permanent water sources such as Lake Woods and Lake Sylvester, approximately 1000 km to the north.
• result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or	The proposed action is not likely to result in an invasive species that is harmful to the migratory species.
• seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	The proposed action is not likely to seriously disrupt the lifecycle of an ecologically significant proportion of the population of any of the migratory species listed above.

Source: *Matters of National Environmental Significance, Significant Impact Guidelines 1.1, Environment Protection and Biodiversity Conservation Act 1999.*

3.1 (f) Commonwealth marine area

(If the action is <u>in</u> the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description
The proposed action will not take place or in or adjacent to the Commonwealth marine area.

Nature and extent of likely impact
Address any impacts on any part of the environment in the Commonwealth marine area.

Not applicable.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land).

The proposed action will take place on commonwealth land. See section 3.2 (d).

Description
See section 3.2 (d).

If the action will affect Commonwealth land also describe the more general environment. The Policy Statement titled *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* provides further details on the type of information needed. If applicable, identify any potential impacts from actions taken outside the Australian jurisdiction on the environment in a Commonwealth Heritage Place overseas.

3.1 (h) The Great Barrier Reef Marine Park

Description
The proposed action is not located in or adjacent to the Great Barrier Reef Marine Park.

Nature and extent of likely impact
Not applicable.

Address any impacts on any part of the environment of the Great Barrier Reef Marine Park.

Note: If your action occurs in the Great Barrier Reef Marine Park you may also require permission under the *Great Barrier Reef Marine Park Act 1975* (GBRMP Act). If so, section 37AB of the GBRMP Act provides that your referral under the EPBC Act is deemed to be an application under the GBRMP Act and Regulations for necessary permissions and a single integrated process will generally apply. Further information is available at www.gbrmpa.gov.au

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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:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

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	
	If yes, nature & extent of likely impact on the whole environment		
3.2 (b)	**Is the proposed action to be taken *by the Commonwealth or a Commonwealth agency?***	Yes	The proposed action will be undertaken by Voyages Indigenous Tourism Australia Pty Ltd, a wholly-owned subsidiary of the Indigenous Land Corporation (a Commonwealth statutory authority).
	If yes, nature & extent of likely impact on the whole environment		

A more complete analysis is provided below.

Refer to section 2 for a description of the proposed action, and section 4 for a description of the measures to reduce or avoid impacts on the environment. Section 3 describes how the proposed action will impact upon the heritage values and environment of UKTNP (Commonwealth land), immediately adjacent to the site of the action.

A flora and fauna assessment was undertaken by Biosis Research (2012) and hydrological assessment was undertaken by Australian Groundwater Technologies (2012) specifically in relation to the proposed development. The full reports are appended to this document and summaries relevant to the referral are provided below.

Soil and topography

The study area consists of red earths and clayey sands in the sandplain areas between the dunes and deep homogenous red quaternary aeolian siliceous sands on the dunes (Biosis Research 2012). Land Systems of the Southern Part of the Northern Territory classify the soil in the study area as 'Desert Dune fields' (B32), which are described as:

> *Dune fields of parallel linear dunes, reticulate dunes and/or irregular dunes: chief soils are the red siliceous sands of the dunes which have stable flanks and partially mobile crests* (ASRIS 2006).

The flat to undulating inter-dune areas are relatively stable whereas the elevated dunes are more susceptible to erosion, particularly where the protective vegetation is less continuous.

Digital elevation modelling of the study area indicates the lowest inter-dunal points in the landscape are 502 m above sea level and the highest dunes are 524 m above sea level.

It is considered that the low relief within the study area, low surface impact of the proposed development, the retention of native vegetation across the majority of the study area and the requirement for revegetation on impacted areas means that the potential for increased erosion is minimised and unlikely to be a significant issue.

Water resources

The study area overlies the Dune Plains Aquifer (DPA) (Australian Groundwater Technologies 2012). Accessions to the water-table occur via runoff recharge from sand hills / dunes and The Sedimentaries. There is a huge storage of marginally potable to brackish groundwater that is large in proportion to throughflow, recharge and usage. The sustainable yield of the DPA is not known; coarse, conservative estimates of its throughflow are 200 ML/year and its storage volume, 90,000 ML. There are no known water holes in the study area.

The hydrological characteristics of the site were assessed by Australian Ground water Technologies (2012) for this proposal and the conclusions reached are:

- Occasional large volumes of stormwater are generated by rainfall over the catchment. Stormwater can be managed by maintaining the existing land surface with minimal surface disturbance (minimal compaction to soils and minimal landscaping). The major drainage grade to the north and north-east should be maintained by sympathetic planning of the fairways.
- The sustainable yield of groundwater from the Dune Plains Aquifer (DPA), the major water supply source for Yulara, is poorly defined. The estimated total water demand (current user and anticipated development) is only some 1.2 % of the volume of groundwater in the DPA. ,
- The use of the native groundwater from the DPA for irrigation is problematic in terms of soil salinisation and may impact the natural ecosystem. It is recommended that a blend of treated wastewater and groundwater be used (approximately 67%/33%, respectively) to achieve an irrigation application quality of less than 1000 mg/L total dissolved salts (TDS). A TDS concentration threshold of less than 1000 mg/L is not likely to be detrimental to the wider environment provided careful landscape and drainage design is implemented.
- The area around the site has been subject to man-made alteration that has modified natural drainage patterns and it is considered that any additional intervention as a result of the golf course, if carefully planned, will not influence the wider natural drainage.

Therefore it is concluded that the proposed development is unlikely to have a significant impact on the water resources, including drinking water, within the study area or the region.

The EMP has incorporated the findings of the hydrological study and provides management actions to ensure the ecological values of the site are maintained.

Pollutants, chemicals, and toxic substances

The proposed action will not substantially reduce local air or water quality, nor increase atmospheric concentrations of gases which will contribute to the greenhouse effect or ozone damage (by generating smoke, fumes, chemicals, nutrients, or other pollutants). However, the operation of the golf course will rely upon the use of fertilisers, herbicides and other chemicals to manage the non-native grass at the site. A

yearly program lists the type and quantity of these products.

Native vegetation

The study area provides a diverse range of habitats for indigenous flora. NVIS classifies the entire study area as Mapping Unit 93: '*Triodia basedowii* (Hard Spinifex) hummock grassland with *Allocasuarina decaisneana* (Desert Oak) open – woodland between dunes'. A description of this mapping unit is provided by Wilson et al. (1990) as:

> *The upper layer is dominated by* Allocasuarina decaisneana *(100%) which generally occurs as scattered trees or as distinct groves at the base of sand dunes. Structure ranges from open-woodland to low open-woodland. There is generally a tall sparse-shrubland mid layer characterised by* Acacia *spp. such as* A. ligulata *(40%) and* A. dictyophleba *(30%), although this layer can be virtually absent on some sites. The ground layer is typically a hummock grassland, most commonly dominated by* Triodia basedowii *(72%) and less often by* Triodia pungens *(18%) or* Plectrachne schinzii *(9%).*

Within the study area, the vegetation consists of a series of narrow, linear dunes dissecting large inter-dunal sandplains dominated by spinifex *Triodia* spp. with emergent Desert Oak *Allocasuarina decaisneana*. Patches of Mulga *Acacia aneura* shrublands are also present in the lowest portions of the inter-dunal sandplains. These three vegetation types are further described below.

Sandplains (referred to as 'pila' by the local Anangu people) (Unit 93 Land System)

The majority of the study area consists of inter-dunal sandplains of hummock grasslands dominated by Hard Spinifex *Triodia basedowii* with scattered emergent Honey Grevillea *Grevillea eriostachya* and other common species such as Fireweed *Rulingia loxophylla*, Porcupine Grass *Triodia irritans* and Soft Spinifex *Triodia schinzii*. Broad-leaved Parakeelya *Calandrinia balonensis*, a succulent herbaceous species, was abundant across the sandplain areas at the time of survey and is generally restricted to post-rainfall periods. Desert Oak is a sandplain species that occurs as isolated emergent trees in some areas through to more dense mixed-aged woodland areas. A few isolated patches of Blue Mallee *Eucalyptus gamophylla* were also recorded on the sandplains which corresponds with Mapping Unit 93 (Wilson et al 1990).

Mulga shrublands (referred to as 'puti' by the local Anangu people) (Unit 93 Land System)

Mulga shrublands dominated by Mulga in association with scattered Colony Wattle *Acacia murrayana* and Witchetty Bush *Acacia kempeana* occur on shallow, clay-rich sandy soils in the lowest points in the landscape. Bunched Kerosene Grass *Aristida contorta* and Naked Woollybutt *Eragrostis eriopoda* are common grasses in the ground layer. Much of the Mulga shrublands have been relatively recently burnt (within the last 10 years) and both seedling and resprouting shrubs were observed amongst the burnt remains of the older shrubs. Large unburnt areas of this vegetation type occur beyond the western and south-eastern boundaries of the study area.

Dunes (referred to as 'tali' by the local Anangu people) (Desert Dunefield Land System)

The deep red unconsolidated sands characteristic of the dunes support a variety of vegetation ranging from relatively dense shrublands on the more stable dunes to scattered herbaceous species on the more mobile and eroding dunes. A number of flora species are restricted to the dunes and do not extend into the surrounding sandplain areas. Species restricted to the dunes within the study area include larger shrub species such as Camel Poison Bush *Gyrostemon ramulosus*, Rattlepod Grevillea *Grevillea stenobotrya*, Newcastelia *Newcastelia spodiotricha* and smaller herbaceous species such as Sand Lily *Corynotheca micrantha*, Parrot Pea *Crotalaria cunninghamii*, Desert Rattlepod *Crotalaria eremaea*, Tangled Mulla Mulla *Ptilotus latifolius*, Sand Hibiscus *Alyogyne pinoniana* and Cattle Bush *Trichodesma zeylanicum*. Occasional emergent Desert Bloodwood *Corymbia terminalis* were also recorded in these areas.

The proposed development is likely to impact on 142 ha of native vegetation within the study area.

The whole environment is unlikely to be adversely impacted by the proposed development because:

- the proposal would impact approximately 0.0006% of the Desert Dunefield Land system, in which it is situated, in the Northern Territory
- the proposal would impact approximately 0.002% of the native vegetation Mapping Unit 93 (*Triodia basedowii* (Hard Spinifex) hummock grassland with *Allocasuarina decaisneana* (Desert Oak) open – woodland between dunes'), in which it is situated, in the Northern Territory.

Weeds

The study area is dominated by indigenous flora species and three weed species were recorded in the current survey: Buffel Grass *Cenchrus ciliaris*, Boneseed *Conyza bonariensis* and Deadly Nightshade *Solanum nigrum*. Each of these species currently occur as isolated individuals scattered across the study area.

Buffel Grass is a deep rooted perennial that is a significant environmental weed in the semi-arid and arid environments of Western Australia, Northern Territory, South Australia, Queensland and New South Wales (Friedel et al 2006). It is not a declared weed under the Northern Territory Weeds Management Act 2001

and has been planted by some pastoralists to improve livestock production in arid areas. However, the Uluru-Kata Tjuta National Park Management Plan 2010-2012 (Director of National Park, 2010) identifies Buffel Grass as the most threatening weed in the Park. It states that the following regarding the species:

> *Buffel grass is recognised as being capable of affecting ecosystem-level function. It out-competes native plant species and as a result removes suitable habitat for many native animals. Buffel Grass also alters natural surface hydrology and chokes drainage lines, exacerbating erosion. Landscapes dominated by Buffel Grass can also burn more frequently and at higher intensity than uninvaded vegetation.*

The Management Plan also acknowledges that Park staff, Anangu, and Conservation Volunteers Australia have invested considerable effort in removing it from particularly sensitive areas and despite these efforts have observed an increase in its abundance within the Park (Director of National Parks 2010).

While the occurrence of Buffel Grass and the other weeds is currently low there is potential for them to rapidly spread within the study area if it is subject to significant disturbance. The spread of Buffel Grass and other introduced species could displace native flora species and significantly impact on the ecology of the study area. As a result strategies for control and eradication of Buffel Grass and other weed species are a priority for the management of the site. Control measures are provided in the EMP.

Native fauna

The site provides habitat for a variety of different fauna, many of which are uniquely associated with inland Australia. Indigenous fauna associated with different vegetation types are further described below.

Sandplains (referred to as 'pila' by the local Anangu people)
Birds typical of the sandplains include Inland Thornbill *Acanthiza apicalis*, Crested Bellbird *Oreoica gutturalis*, Singing Honeyeater *Lichenostomus virescens* and Grey-fronted Honeyeater *Lichenostomus plumulus*. Termite mounds are common across the sandplains and provide one of the food resources for the EPBC listed Great Desert Skink *Liopholis kintorei*. Desert Oak woodlands that occur on the sandplains provide important habitat for birds such as Zebra Finch *Taeniopygia guttata*, Southern Whiteface *Aphelocephala leucopsis* and Banded Whiteface *Aphelocephala nigricincta*.

Mulga shrublands (referred to as 'puti' by the local Anangu people)
Mulga shrublands provide perching and foraging opportunities for a range of open-country bird species such as Australian Magpie *Gymnorhina tibicen*, Brown Falcon *Falco berigora*, Black-shouldered Kite *Elanus axillaris* and the nocturnal Southern Boobook *Ninox novaeseelandiae*.

Dunes (referred to as 'tali' by the local Anangu people)
The dunes provide important habitat for a range of fauna species, particularly small passerine birds such as Variegated Fairy-wren *Malurus lamberti* and Striated Grass-wren *Amytornis striatus*. A variety of ground dwelling mammals are also likely to inhabit the dunes, particularly where large hummocks of Soft Spinifex *Triodia pungens* occur (Plate 5). Spinfex Hopping Mouse *Notomys alexis* were recorded in these areas during the current assessment and evidence of the EPBC listed Southern Marsupial Mole *Notoryctes typhlops* was also recorded.

There will be a loss of habitat for fauna as a result of the proposed action. However, due to the relatively small losses in relation to the overall distribution and quantum of habitat available within the arid region it is considered that the impacts are likely to be low.

Wildlife corridors will be maintained through the study area which will connect with surrounding habitat areas so impacts on fauna movement within the site and between the site and surrounding areas will be minimal and impacts low.

Potential impacts on significant fauna species have been addressed in Section 3.1.

Pest animals

Five introduced fauna species were observed in the study area: European Rabbit *Oryctolagus cuniculus*, Red Fox *Vulpes vulpes*, Cat *Felis catus*, Dog *Canis lupus familiaris* and Camel *Camelus dromedaries* (Biosis Research 2012). The proposed action may result in minor increases in the abundance and distribution of pest species however the construction of facilities and the management of waste will be undertaken in a way that minimises potential increases in pest animals and therefore reduces potential impacts by these species.. Strategies for control and eradication of pest animals are provided in the EMP.

Bushfires

Fire management in the study area is currently undertaken by the Northern Territory Fire and rescue Service in the Yulara township. Each year prescribed burning is undertaken around the edge of the township in older vegetation to reduce the wildfire risk to the town. It is also understood that Aboriginal people maintained a

mosaic of different fuel ages to ensure ongoing access to food across the region (DSEWPaC 2004).

Detailed records of the fire history of the study area were not available however the vegetation patterns within the study area indicates that it supports large areas of vegetation that has been recently burnt (within the last 10 years) and smaller areas of vegetation that has not been burnt for longer periods.

Fire will be managed within the study area in conjunction with surrounding land managers and a program of ecological burning, as outlined in the EMP, will be instituted. .

It is unlikely that there would be any additional adverse impacts from bushfires as a result of the proposed development.

People and communities

The proposed action will take place at ARR, Yulara, NT. This property exists as several parcels, with a total area of 10,218 ha owned by Voyages, a wholly owned subsidiary of the ILC. ARR includes five hotels with a total of 688 guest rooms, restaurants, visitor facilities, a staff accommodation village, recreation centre, sports ground, Ayers Rock (Connellan) Airport and other tourism-related infrastructure associated with Yulara. The township has a population of approximately 1,200 people, of which about 700 are employed at ARR.

As outlined above, the ILC has established the National Indigenous Training Academy based at ARR to create employment and training opportunities for Indigenous Australians. The resort already employees some 169 Indigenous staff including 61 trainees and has a target of 350 Indigenous staff by 2018. The resort employs a significant number of people from the surrounding Indigenous communities including nearby Mutitjulu.

Other community benefits generated by ARR include:

- showcasing best-practice Indigenous tourism to national and international visitors;
- opportunities for genuine Indigenous tourism experiences;
- providing accredited training, leading to sustainable mainstream employment, for Indigenous people (for those who complete the training, there is a guarantee of a job opportunity);
- creating a skilled Indigenous workforce to meet the needs of ARR and the tourism and hospitality industry, generating pride and positive role models in many Indigenous communities; and
- maximising the use and supply of Indigenous tourism products and services.

Development of the proposed golf course is a major strategic initiative of Voyages to increase visitation and average length of stay at the resort by targeting new market segments and growing existing business. The project will create around 22 jobs directly within the golf course operation and potentially many more throughout the resort to service an increase in the number of visitors to the resort. Many of these jobs will be suitable for local Indigenous people as well as Indigenous people from throughout Australia.

The proposed golf course development will not affect air or water quality for people residing at Yulara. It will not affect the supply of drinking water. Due to the location of the site and the nature of the activities during both construction and operation, there will be no noise pollution impacting residents.

Heritage values and places at Yulara

Note that heritage values and places are discussed in section 3.1 above as the proposed action relates to the adjacent UKTNP.

Summary

The environment within the site is likely to be impacted through:

- the removal of areas of native vegetation;
- the reduction of habitat for native species, some of which are Listed species;
- the potential for invasion by pest plants and animals;
- an increase in the number of visitors.

However, the whole environment is unlikely to be adversely impacted by the proposed development because:

- only a very small percentage of the vegetation types extant within the northern Territory will be impacted by the development;
- habitat corridors within the site and between the site and surrounding land will be enhanced and maintained;
- pest plant and animal species will be controlled and eradicated where possible;

- adaptive management principles will be applied as other threatening processes emerge and will be managed in accordance with an approved EMP.

It is concluded that the proposed action is expected to have a low impact on the whole environment.

The potential impacts as a result of the proposed development will be reduced through the application of the Environmental Management Plan (EMP) outlined in detail in section 4.

3.2 (c)	**Is the proposed action to be taken in a Commonwealth marine area?**	No	

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*?**	Yes	

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

The proposed action will take place at Ayres Rock Resort, Yulara, NT. This is a freehold property owned by the Indigenous Land Corporation, a statutory authority of the Australian Government.

Refer to Section 3.2 (b) above, which describes the 'nature and extent of likely impact on the whole environment' (by a commonwealth agency).

3.2 (e)	**Is the proposed action to be taken in the Great Barrier Reef Marine Park?**	No	

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). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

See section 3.2(b).

3.3 (b) Hydrology, including water flows

Mean monthly open pan evaporation exceeds rainfall in all months of the year; and on an annual basis by more than four-fold. Occasional major rainfall events can yield enormous volumes of runoff (for a 3.5 mm/hour intensity rainfall event, consistent with maximum daily rainfalls, the catchment could produce of the order of 300ML/hr), and are important, hydrologically and ecologically, in recharging aquifers and for sustaining ecosystems. Any disruptions to overland flow can result in adverse effects to the soils and vegetation. There are no known water holes in the study area.

Within the study area centripetal drainage is evident resulting from a reticulate (star-shaped) dune formation that dominates its central northern sector. The catchment encompassing the study area drains an area of 294 km2 made up of inter-dunal drainages, flood-outs and minor ephemeral creeks emanating from the southern edge of The Sedimentaries. The flood-outs of the sand plains to the west of the study area capture and concentrate nutrients and are biologically productive. Here mulga (*Acacia aneura*) groves form in "run-on" zones where sheet-water flow infiltrates from adjacent run-off areas. They may function as important refugia for flora and fauna including rare and endangered fauna.
The catchment to the south of the proposed development can be considered to be unmodified apart from the major sealed road (to Kata Tjuta) that bisects it, whilst the northern part of the catchment has been greatly modified by the development of Yulara. Stormwater 'cut-off' drains of the road network impede natural run-off and have dislocated the run-on zones.

The hydrological characteristics of the site were assessed by Australian Ground water Technologies (2012) for this proposal and the conclusions reached are:

- Occasional large volumes of stormwater are generated by rainfall over the catchment. Stormwater can be managed by maintaining the existing land surface with minimal surface disturbance (minimal compaction to soils and minimal landscaping). The major drainage grade to the north and north-east should be maintained by sympathetic planning of the fairways.
- The sustainable yield of groundwater from the Dune Plains Aquifer (DPA), the major water supply source for Yulara, is poorly defined. The estimated total water demand (current user and anticipated development) is only some 1.2 % of the volume of groundwater in the DPA. ,
- The use of the native groundwater from the DPA for irrigation is problematic in terms of soil salinisation and may impact the natural ecosystem. It is recommended that a blend of treated wastewater and groundwater be used (approximately 67%/33%, respectively) to achieve an irrigation application quality of less than 1000 mg/L total

dissolved salts (TDS). A TDS concentration threshold of less than 1000 mg/L is not likely to be detrimental to the wider environment provided careful landscape and drainage design is implemented.

- The area around the site has been subject to man-made alteration that has modified natural drainage patterns and it is considered that any additional intervention as a result of the golf course, if carefully planned, will not influence the wider natural drainage.

The EMP has incorporated the findings of the hydrological study and provides management actions to ensure the ecological values of the site are maintained.

3.3 (c) Soil and Vegetation characteristics
See section 3.2 (b).

3.3 (d) Outstanding natural features

Uluru is approximately 12 km south-east of the study area and Kata Tjuta is approximately 27 km to the west. Both are clearly visible from most parts of the study area.

3.3 (e) Remnant native vegetation
The entire study area consists of remnant vegetation except for two unsealed tracks (one in the south-western corner and one in the north-western corner) and a small cleared area used for the 'Sounds of Silence' dining experience in the north-west of the study area. This remnant vegetation is described in section 3.2(b).

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

There is a lack of any broad topographic gradient across the study area although, locally, areas between dunes and swales may lead to topography changes of up to 22 m in local relief.

3.3 (g) Current state of the environment
Include information about the extent of erosion, whether the area is infested with weeds or feral animals and whether the area is covered by native vegetation or crops.

The remnant vegetation that covers nearly all of the study area provides high quality habitat for indigenous flora and fauna and is currently in good condition. Rainfall records indicate that periods of heavy rain have recently occurred (for example 76.4 mm was recorded on 1 March 2012 at the nearby Yulara airport weather station) and this has lead to healthy vegetation growth and an abundance of faunal activity (particularly mammals).

The quality of habitat is further improved by the fire-driven mosaic of vegetation structure and species composition observed across the study area. In the more recently burnt areas relatively short lived species as Chocolate Cassia *Senna pleurocarpa*, Tangled Burr Daisy *Calotis erinacea* and Desert Poplar *Codonocarpus cotinifolius* were recorded.

Areas that have escaped fire for longer periods of time can be identified where the fire sensitive and less flammable Thryptomene *Aluta maisonneuvei* forms relatively dense, bright green low shrubland areas that are generally restricted to fire shadow areas behind sand dunes.

Very few weeds were recorded (see section 3.2b) and erosion is restricted to some naturally mobile dune areas.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values
The property on which the proposed action will take place is not a Commonwealth Heritage Place. However, this property is adjacent to UKTNP, which is a Commonwealth Heritage Place (and also a World Heritage Place and National Heritage Place).

3.3 (i) Indigenous heritage values

Uluru - Kata Tjuta National Park is an internationally recognised cultural landscape that is spiritually and culturally significant to Anangu people (DSEWPaC 2004).

Anangu describe the importance of their country as:

> *There is powerful Aboriginal Law in this place. There are important songs and stories we hear from our elders, and we must protect and support this important law. There are sacred things here, and this sacred Law is very important. Government Law is written on paper. Anangu carry our Law in our heads and in our souls* (DSEWPaC 2004).

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

Describe any other key features of the environment affected by, or in proximity to the proposed action (for example, any national parks, conservation reserves, wetlands of national significance etc).

Desert Oak *Allocasuarina decaisneana* (referred to as 'kurkara' by the local Anangu people) is a characteristic species across much of the sandplains within the study area and the surrounding landscape. Young trees grow in the shape reminiscent of a 'totem pole' with foliage distributed along the trunk. As the trees age the trunk foliage reduces and large boughs develop into the more usual 'tree' shape. It is not listed as threatened under state or federal legislation however the Anangu have a strong affiliation with the species:

> *For Anangu, the Uluru-Kata Tjuta landscape was formed by TJUKURITJA (ancestral beings) as they travelled across the country… Anangu know that TJUKURITJA are found in red sand plains and desert oaks as well as in the waterholes and the animals which live there* (DSEWPaC 2004).

The Anangu used the wood from Desert Oak as a 'firestick' (DSEWPAC 2004) mostly likely because of the dense, slow burning properties of the wood. It is also believed that indigenous people searched hollows in large old Desert Oak trees as a source of water (Bayly 1999).

ARR landscaping staff take care to ensure minimal disturbance to this species within the resort area at the request of the local Anangu (Danny Dries pers. comm.). Development within the study area should consider the distribution and the local significance of the Desert Oaks with the aim of retaining as many of the existing trees as possible. Where choices are to be made, preference should be given to retaining large old branching trees.

3.3 (k) Tenure of the action area (e.g. freehold, leasehold)

The property where the proposed action will take place is freehold.

3.3 (l) Existing land/marine uses of area

The property borders the Katiti Aboriginal Land Trust and Uluru-Kata Tjuta Aboriginal Land Trust (UKTNP). Both properties are used for traditional cultural purposes, and UKTNP is jointly managed by Parks Australia and Traditional Owners as a National Park, hosting approximately 273,000 visitors in 2011.

The property relating to the proposed action is used as an international hotel and tourism operation. Infrastructure on the property includes resort hotel accommodation, restaurants, visitor facilities, shopping village, Yulara (Connellan) Airport, a staff accommodation village, recreation centre, sports ground and other tourism-related infrastructure. This infrastructure occupies approximately 918.2 ha (in 157 separate parcels), which is approximately 8.98% of the entire ARR property (10,218 ha in total). The undeveloped areas of the property are not used for any tourism-related purpose and area, but contain remnant vegetation representative of the region.

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

The proposed action described in this referral is to construct and operate an international standard, 18 hole golf course. The extent of the golf course area (development footprint) is expected to be 142 ha (of which 28.5 ha is under turf grass).

The area surrounding the course is proposed to be used as a conservation buffer surrounding the course, including a substantial buffer between the golf course and UKTNP. This buffer will be at least 150 m wide, and represents approximately 66.9% (287 ha) of the extent of the broader project site (429 ha; Attachments 1 and 2).

The proposed action will not alter the land tenure, zoning or fundamental use of the property.

4 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:
- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

Provide information about the level of commitment by the person proposing to take the action to implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:
- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

More general commitments (eg preparation of management plans or monitoring) and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

Environmental Management Plan

The potential impacts as a result of the proposed development will be reduced through:
- the minimisation of the area to be directly impacted;
- the use of local materials for the construction of paths, bunkers and other course infrastructure;
- maintenance and enhancing of wildlife corridors with the site and between the site and adjacent lands;
- avoiding or minimising impacts on listed fauna species;
- control and eradication of weeds and pest animals;
- maintenance of an ecological fire burning regime;
- restricting vehicle access to defined tracks;
- interpretation of the cultural and ecological values of the site to visitors
- highly trained grounds staff who maintain a communication network with golf courses in similar environments .

An EMP has been developed for the maintenance and enhancement of the ecological values of the retained vegetation within the site. The EMP addresses all of the above issues and provides a range of actions to be undertaken at the design, construction and maintenance phases of the proposed development. The EMP includes data gathering and audit of the management actions as an integral component to ensure compliance.

Wilderness values

A visibly green golf course adjacent to UKTNP could impact on the wilderness value, natural beauty and aesthetic importance of the World Heritage Area. However, the location of the preferred site was also selected to ensure minimal exposure from Park access roads, aircraft approaches or ARR. The golf course will be positioned in the existing dune swales, being hidden from the main access road to the Park (Uluru Road and Lasseter Highway). The site is well hidden from the access road, by virtue of a tall dune parallel with the road, and a 100 m setback distance between the road and golf course. As is the case for existing structures at ARR, no built structures in the proposed action will be significantly

higher than the surrounding dunes. The position of the preferred site was also selected in consideration of visibility from the aircraft approaches and Resort. The site is as far away as possible from the airport approaches to the north of the Resort, and is not in a line of sight between resort facilities and Uluru.

Low-impact development approach
The golf course will be routed following the natural contours of the dunes and bulk (major) earthworks are not required. Key elements of the construction methodology are outlined in section 2.1 of this referral. The area surrounding the course is proposed to be used as a conservation buffer surrounding the course, including the area between the course and the northern boundary of UKTNP.

Water efficiency
The proposed development will use and promote best-practice sustainability measures for energy and water use, in addition to a low-impact development approach to protect and conserve biodiversity at the site and surrounding area. A hydrological study has been undertaken in relation to the proposed development and appropriate measures in relation to water use have been incorporated in the EMP.

Energy efficiency
Energy efficient design principles will be utilised in the design of all built structures in the proposed development to minimise consumption of energy. Design development will include the evaluation of appropriate solar technologies to supplement the existing supply of power to ARR from NT Power & Water Authority.

Conservation buffer
Vegetation at the site of the proposed action is representative of the broader region and relatively intact. Approximately 66.9% (287 ha) of the extent of the broader project site (429 ha) will be retained as a conservation buffer surrounding the site (at least 150 m wide), including between the site and the northern boundary of UKTNP. Voyages will consider the use of this buffer zone in the training and development of staff and rangers where required, undertaking conservation activities such as fire management and weed control. This buffer will, to the greatest extent possible, separate the impacts of the proposed action from UKTNP and attempts to offset any impacts of reduced habitat availability for the listed threatened species identified in section 3.

Environmental management and reporting
The performance of Voyages, in relation to these environmental management procedures, will be reported in the ILC's Annual Report. This Report also includes a description of broader environmental activities and progress towards targets relating to ecologically sustainable development. The ARR project team will be required to report to the Voyages and ILC Boards on compliance with the EMP.

5 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (i.e. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

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

Yes	Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

5.3 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)
X	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)
X	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
X	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.

The proposed action has relevance sections 18 and 18A, where the site contains native vegetation considered suitable habitat for listed threatened species in the region. Furthermore, the broader site area known as the Yulara borefields is also known to support significant populations of three listed threatened species: the Mulgara (*D. cristicauda*), Southern Marsupial Mole (*S. psammophila*) and Great Desert Skink (*L. kintorei*), where the latter is considered to have a globally significant population in the area. These species spend all or part of their life in subterranean burrows, and their presence may not always be immediately apparent during the construction and operational phases of the proposed action. Infrastructure development (e.g. clubhouse, cart pathways and grassed areas) may reduce habitat availability, reduce the availability of prey items and restrict migration patterns for these species. The need to protect the site from fire may alter the fire regime of the immediate area, potentially reducing the habitat suitability of the site for these listed threatened species.

The proposed action will be initiated by a Commonwealth agency (Indigenous Land Corporation) on Commonwealth-owned land, therefore having relevance to sections 26, 27A and 28. The proposed action may result in impacts on the whole of the environment, particularly impacts relating to water extraction and irrigation, chemical use (e.g. fertilisers and herbicides), and the clearing of remnant native vegetation (approximately 30 ha).

6 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
6.1	**Does the party taking the action have a satisfactory record of responsible environmental management?** **Provide details** Voyages is bound by the ILC's governing legislation, the Aboriginal and Torres Strait Islander Act 2005, that requires the ILC and its subsidiaries to give priority to pursuing sound land and environmental management practices. As such, properties held by the ILC are required to have an Environment and Heritage Management Plan that address responsibilities under relevant state and commonwealth legislation, outline strategies to manage natural and cultural heritage values, and describe actions required to mitigate potential environmental impacts for the specific land use activities. The ILC and its subsidiaries contribute to a number of projects on Indigenous-held land each year with a specific focus on environment and heritage, and the principles of ecologically sustainable development. In 2010, the ILC submitted a referral to the then Department of Water, Environment, Heritage and the Arts, to manage the environmental impacts relating to the construction of a visitor and training centre at Mossman Gorge, Queensland (see details below). Construction of the facility met with all required conditions set by the Department of Environment, Water, Heritage and the Arts being followed.	Yes	
6.2	**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**		No
6.3	**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** Voyages environmental policy and planning fits within the ILC's broader environment and heritage policy framework. At a broad level, the National Indigenous Land Strategy (NILS) 2007-2012 is the ILC's key policy document. It describes priorities and strategies set by the Board, program structures, and key principles and policies that frame these programs. It addresses environmental issues on Indigenous-held land, to maintain a balance between sustainable economic development and biodiversity conservation. All properties held by the ILC and its subsidiaries are required to have an Environment and Heritage Management Plan that address responsibilities under relevant state and commonwealth legislation, outline strategies to manage natural and cultural heritage values, and describe actions required to mitigate potential environmental impacts for the specific land use activities. The golf course development will be included in the Environment and Heritage Management Plan for ARR, including the details of this proposed action. Specialist input will be obtained from consultants and the golf course architect/designer where required.	Yes	

6.4	**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?** No, however a referral was made by the ILC for another property, Mossman Gorge Visitor Centre QLD, now operated by Voyages (see reference below). **Provide name of proposal and EPBC reference number (if known)** 2010/5320 Indigenous Land Corporation /Tourism and recreation/2 km from Mossman Gorge Section of Daintree National Park/QLD/Mossman Gorge Visitor & Training Centre (MGVTC).	No

7 Information sources and attachments

(For the information provided above)

- List the references used in preparing the referral.
- Highlight documents that are available to the public, including web references if relevant.

7.1 References

Journal articles and books

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EPBC Act resources
EPBC Act Protected Matters Search Report (obtained on 02/02/2012; point coordinate -25.2437 130.9709; 10 km buffer).

7.2 Reliability and date of information

For information in section 3 specify:
- source of the information;
- how recent the information is;
- how the reliability of the information was tested; and
- any uncertainties in the information.

Information relating to migratory and listed threatened species in section 3 was obtained primarily from SEWPaC's Species Profile and Threats database, however, primary sources have been referenced in this referral. The references include peer-reviewed journal articles and books, in addition to recovery management plans. Whilst this information should be considered accurate and relevant, it is important to note that the ecology of the listed threatened species (and to a lesser extent, listed migratory species) is poorly known. There are very few studies of the species-environment interactions, dietary requirements, breeding behaviour, distribution and population dynamics for these species. Section 3.3 (*Other important features of the environment*) was completed following surveys and research by qualified consultants in 2012. Any uncertainties about data are outlined in the EMP.

7.3 Attachments

Indicate the documents you have attached. All attachments must be less than two megabytes (2mb) so they can be published on the Department's website. Attachments larger than two megabytes (2mb) may delay the processing of your referral.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Location Map (Attachment A)
	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)	✓	Site Map and Ecological Features (Attachment B)
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	✓	Authority Certificate issued by the Aboriginal Areas Protection Authority (Attachment C)
	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)	✓	Flora & Fauna Study completed by Biosis (Attachment D)
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	Environmental Management Plan prepared by Biosis (Attachment E) Hydrological Study completed by AGT (Attachment F)
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

8 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action[1].

Project title: Ayers Rock Golf Course Development

8.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

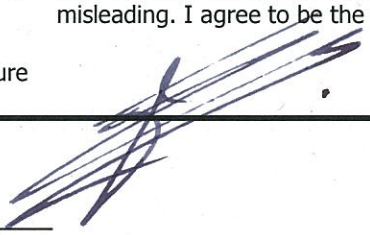
- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act[2], this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.

If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action[3].

Name	Mr Koos Klein
Title	Managing Director
Organisation	Voyages Indigenous Tourism Australia Pty Ltd
ACN / ABN (if applicable)	82 146 482 591
Postal address	GPO Box 3589, SYDNEY NSW 2001
Telephone	02 8296 8000
Email	koos.klein@voyages.com.au
Declaration	I declare that the information contained in this form is, to my knowledge, true and not misleading. I agree to be the proponent for this action.
Signature	 Date 26/10/12

[1] *If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Business Entry Point (1800 803 772) to obtain an alternative contacts, signatures and declarations page.*

[2] *If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A,* EPBC Act*). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.*

[3] *If a person other than the person proposing to take action is to be nominated as the proponent, please contact the Referrals Business Entry Point (1800 803 772) to obtain an alternative contacts, signatures and declarations page.*

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

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

Name	Andrew Williams
Title	Executive General Manager Finance
Organisation	Voyages Indigenous Tourism Australia Pty Ltd
ACN / ABN (if applicable)	82 146 482 591
Postal address	PO Box 3589 Sydney NSW 2001
Telephone	02 8296 8000
Email	andrew.williams@voyages.com.au

Declaration

Signature  Date 26/10/12

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ❑ Completed all required sections of the referral form?
- ❑ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ❑ Provided a map showing the location and approximate boundaries of the project area?
- ❑ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ❑ Provided complete contact details and signed the form?
- ❑ Provided copies of any documents referenced in the referral form?
- ❑ Ensured that all attachments are less than two megabytes (2mb)?
- ❑ Sent the referral to the Department (electronic and hard copy preferred)?