

VOYAGES

# TJINTU SOLAR FIELD



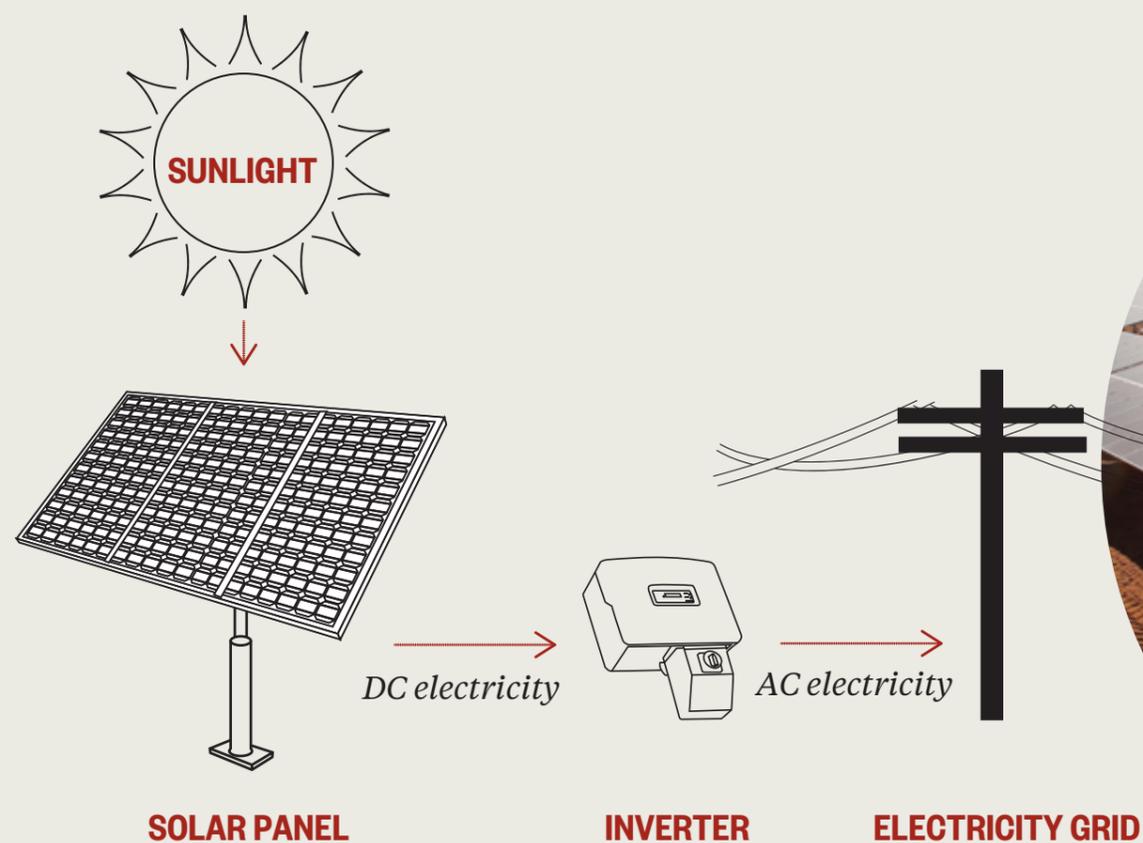
ABOVE  
Desert Gardens array

## *tjintu* MEANS 'SUN' IN LOCAL PITJANTJATJARA

The perfect name for a solar power field located in what is considered one of the world's best solar energy regions. The abundance of sunshine and ample availability of land make this the perfect

location for a solar energy plant to supplement Yulara and Ayers Rock Resort's current electricity supply. Tjintu is a photovoltaic (PV) system that is spread across five separate locations.

*The entire system consists of 5,770 high-efficiency mono-crystalline solar panels with a total installed capacity of 1.825MW. Each panel measures 1.6m x 1m, and is made of glass, aluminium and silicon solar cells.*



## HOW DOES A SOLAR PHOTOVOLTAIC SYSTEM WORK?

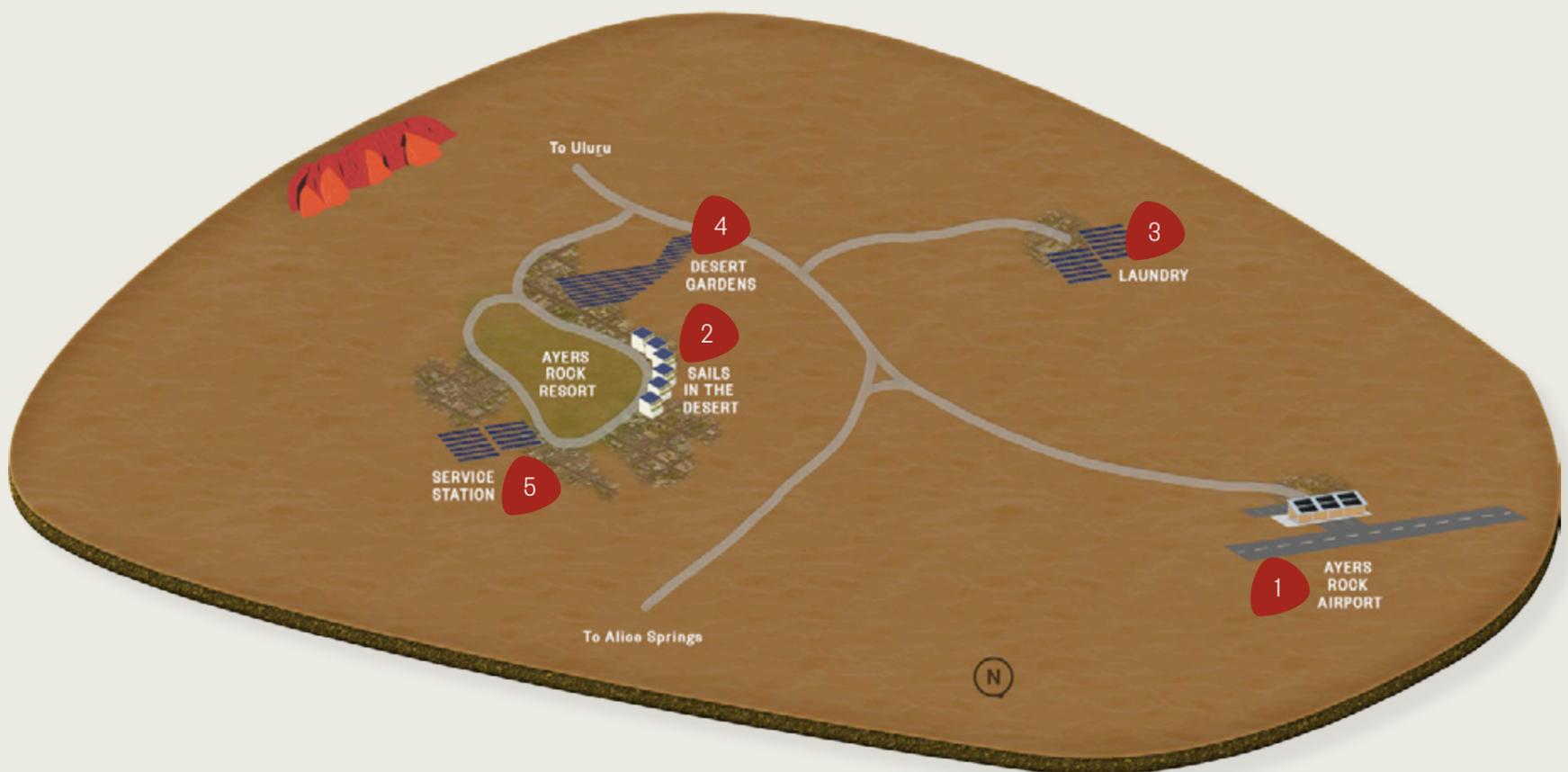
Solar panels convert the energy in sunlight from solar energy (radiant light and heat) to electrical energy by using materials that produce an electric current when exposed to sunlight; this type of material is called photovoltaic or PV. The PV panels (also called modules) you see at Tjintu are made up of individual solar cells composed of mono-crystalline silicon wafers. These wafers have electrical contacts for the electricity to flow through located on the back

surface to increase efficiency. These solar panels have an efficiency of about 20% which means that 20% of the available solar energy that falls on the panel is converted into electricity. When sunlight hits the PV panels, electricity flows from the panel through cabling to a central location where an inverter converts the electricity from Direct Current (DC) to Alternating Current (AC). The electricity is then supplied into the local electricity network.

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## *locations*



1

### **AYERS ROCK AIRPORT**

The solar array on the roof of the airport terminal building provides power to the airport's operations. The modules on the airport terminal roof are designed to have special antireflective coatings and black frames to minimise glare for aircrafts using the airport.

2

### **SAILS IN THE DESERT**

Solar panels have been installed on the roof of the western wing of Voyages' flagship hotel, Sails in the Desert. The hotel's roof previously hosted solar hot water panels, which can still be seen on old aerial photographs. The solar hot water panels were installed in the 1980s but decommissioned prior to 2000.

3

### **GILES STREET LAUNDRY**

A ground mounted solar array installed in the Giles Street 'industrial area' situated to the north west of the Resort is mostly used to power the industrial laundry that services the Resort.

4

### **DESERT GARDENS**

The largest array is situated between the Lasseter Highway and the Resort Town Square, located on the other side of a sand dune next to Desert Gardens Hotel, making up approx. 58% of the total system and covering approx. 2 hectares. The array is strategically placed in close proximity to the Resort's central plant room.

5

### **SERVICE STATION**

This array is situated adjacent to the Service Station on the eastern side of the Resort Ring Road, and takes up approx. 1/3 hectare. Power generated by this array supplies the Service Station and is the only array likely to generate 'excess' power, which can be fed back into the town's electricity grid, resulting in a 'credit' to Voyages.

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ABOVE  
Service Station array

## benefits

The town of Yulara which includes Ayers Rock Resort is currently reliant on electricity generated by burning of fossil fuels (compressed natural gas) delivered daily via road train from Alice Springs, approximately 450 kilometres from the Resort. The abundance of sunshine and ample availability of land make it the perfect location for the establishment of a medium scale solar energy plant

to supplement the town's current electricity supply. The entire photovoltaic (PV) system at Tjintu will produce around 15% of the Resort's average needs, equivalent to the energy consumption of around 150 average Australian households. At its peak during the 'sunniest' part of the day the system will be capable of generating up to 30% of the Resort's peak energy use.

### INTEGRATION OF THE SOLAR PV SYSTEM INTO THE YULARA ELECTRICITY GRID WILL RESULT IN VARIOUS BENEFITS TO AYERS ROCK RESORT AND THE ENVIRONMENT INCLUDING:

- 1 Providing a platform to improve the long term sustainability of the Resort's energy supply.
- 2 Ensuring more predictable future costs of running Ayers Rock Resort, thereby reducing the Resort's exposure to energy price volatility.
- 3 Decreasing carbon emissions.
- 4 Reducing pollution.

*tjintu*  
DEMONSTRATES VOYAGES' COMMITMENT TO SUSTAINABILITY THROUGH EFFICIENTLY USING RESOURCES SUCH AS THE SUN RATHER THAN FOSSIL FUELS, MINIMISING WASTE AND POLLUTION

*on a broader scale*  
KNOWLEDGE GENERATED FROM THE PROJECT WILL BE SHARED WITH THE AUSTRALIAN RENEWABLE ENERGY AGENCY (ARENA) TO BENEFIT THE AUSTRALIAN RENEWABLE ENERGY INDUSTRY

### tjintu system snapshot

	DESERT GARDENS	GILES STREET LAUNDRY	SERVICE STATION	AYERS ROCK AIRPORT	SAILS IN THE DESERT	TOTAL SYSTEM
<b>Installation type</b>	Ground mount	Ground mount	Ground mount	Roof mount	Roof mount	
<b>System rated capacity</b>	1,058 kW	328 kW	227 kW	106 kW	107 kW	1,825 kW
<b>Module type</b>	Jinko JKM315PP	Jinko	Jinko	Sunpower	Jinko	
<b>Number of modules</b>	3,360	1,040	720	324	326	5,770
<b>Number of inverters</b>	42	13	9	5	5	74
<b>Site area</b>	2 hectares	1 hectare	0.3 hectare			

FOR LIVE SYSTEM OUTPUT DATA VISIT: [DKASOLARCENTRE.COM.AU/LOCATIONS/YULARA](http://DKASOLARCENTRE.COM.AU/LOCATIONS/YULARA)

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## *impact on the environment & cultural sites*

While the economic and environmental benefits are overwhelmingly positive, the construction of the solar plant required the clearing of a small area of existing scrub, approximately 2.5 hectares in total. In order to keep the clearing of vegetation to a minimum, three of the five arrays are located either on building roofs, or on land that was cleared previously.

The potential impact upon threatened native flora and fauna species was investigated and no evidence of any threatened species was found in the development areas. The proposed clearing of vegetation would have no significant impact upon any threatened species of flora or fauna.



### **DESPITE THE LOW-RISK NATURE OF THE PROJECT, VOYAGES IS TAKING VARIOUS MEASURES TO FURTHER MITIGATE POTENTIAL DAMAGE TO THE NATURAL ENVIRONMENT INCLUDING:**

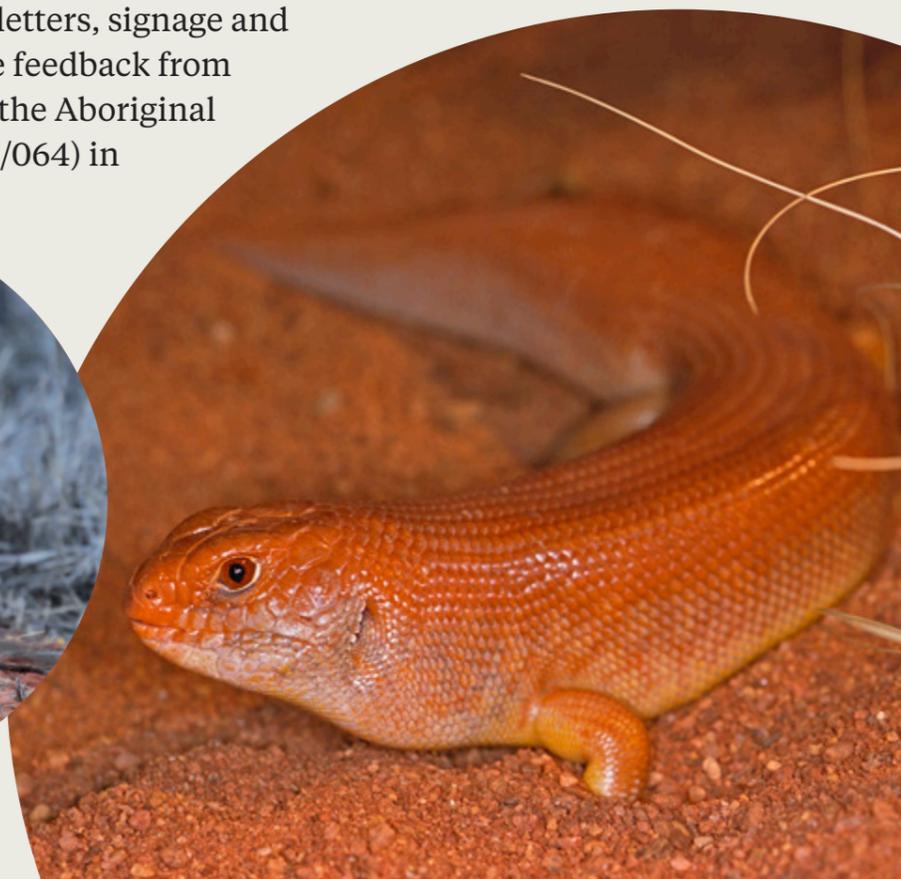
- 1** Implementation and expansion of the Resort's Weed Management Plan.
- 2** Development and implementation of an Erosion and Sediment Control Plan.
- 3** Creation of native vegetation buffers immediately surrounding the arrays.
- 4** Ongoing field surveys to monitor the presence of threatened species in surrounding areas and implementation of management action plans.

Prior to the commencement of the project Voyages engaged in detailed consultations with the local community to receive their feedback and endorsement for the project. This included public forums, distribution of newsletters, signage and one-on-one briefings with a range of individual stakeholders. The feedback from the local community was overwhelmingly positive. Additionally, the Aboriginal Areas Protection Authority issued an Authority Certificate (C2015/064) in respect of the proposed sites, confirming that no sacred Aboriginal sites are impacted.

**ABOVE RIGHT**  
*Black-breasted Buzzard*

**RIGHT**  
*Southern Marsupial Mole*  
Credit: Parks Australia

**FAR RIGHT**  
*Great Desert Skink*  
Credit: Mark Cohen  
Wild About Australia



VOYAGES  
**TJINTU**  
**SOLAR**  
**FIELD**



ABOVE  
 Ayers Rock Airport array

BELOW  
 Desert Gardens array

*partners*

Voyages Indigenous Tourism Australia initiated the project and is the primary user of the electricity generated. Voyages engaged CAT Projects, an Alice Springs based Indigenous owned company with expertise in remote renewable solutions, as the lead consultant on the project.

CAT Projects and Voyages prepared an initial design and ran a tender in 2014 to select a company to build, own and maintain the system.

Epuron Solar Pty Ltd, the successful tenderer, created a subsidiary Yulara Solar Pty Ltd, to build, own and maintain the system. Yulara Solar is Voyages' main contracting partner for the project. As the owner of the system, Yulara Solar will lease the system to Voyages for approximately 20 years, with Voyages having direct access to the energy it generates.

Yulara Solar's tendering partner, Complete Power Solutions Pty Ltd, is the principal contractor responsible for constructing the plant. Yulara Solar is also largely responsible for arranging the finance to fund the project, most of which is provided by the Clean Energy Finance Corporation (an agency of the Commonwealth government).

Voyages and Yulara Solar have each contributed additional money to fund development and construction of the plant. Under Regional Australia's Renewables funding initiative, the Australian Renewable Energy Industry (ARENA) is providing \$450,000 funding to Voyages, to analyse and share the learning and expertise gained from the project with the energy industry. This will cover a substantial portion of the development costs for Tjintu.

CAT Projects continues to work with Voyages to develop long term strategies for sustainable energy supply.

