What is the Rottnest Island Water Renewable Energy Nexus Project?
The water energy nexus project continues Rottnest Island’s moves towards a sustainable future by increasing the amount of renewable energy used to create electricity on the Island, and by better integrating the availability of renewable energy with electricity demand.

The Rottnest Island Authority (RIA) will be working with Hydro Tasmania to deliver the project.

For the past 10 years, the Island’s wind turbine has generated around 30% of the Island’s electricity needs, saving around 1100 tonnes of fossil fuels annually. A grant from the Commonwealth Government through the Australian Renewable Energy Agency (ARENA) has made possible the construction of a 600kW solar farm, with associated control systems, energy efficiency improvements, and technologies to better manage demand, including by using excess renewable energy to power the Island’s water desalination plant.

Why is the project significant?
A new 600 kW solar farm will greatly increase the amount of renewable energy generation on the Island. Renewable energy is expected to increase from 30% of the power supply to 45%, which is a significant proportion and will deliver cost savings and emissions reductions through lowered consumption of diesel fuel.

The construction of the solar farm will be accompanied by advanced control systems, energy efficiency improvements and demand management technologies as the first stage in a longer-term renewable energy road map for a sustainable power system on the Island.

A particularly innovative part of the project is the exploration of the ‘nexus’ between renewable energy and water, by timing the large energy demands of the Island’s water desalination plant to make the best use of abundant or excess renewable energy. Rottnest Island is an ideal place for Hydro Tasmania to showcase this cutting-edge integration of renewable energy sources with cost-effective water production that will have potential to benefit off-grid power systems and islands throughout the world.

What will the project deliver?
As well as the new solar farm, control systems, energy efficiency study and demand-management, the project will include construction of an education and interpretation centre. This centre will provide a focal point for sharing information with the Island’s visitors about the energy system and sustainability issues. Construction of the centre is expected to be completed in 2016.

Will excess energy be stored?
The project will not include energy storage in the form of batteries, but will make the most effective use of renewable energy when it is abundant by using it to produce clean water from the Island’s desalination plant. The stored treated water will act as a kind of ‘energy sink’. Connecting effective
use of excess renewable energy with the production of potable water from desalination is what we call the ‘water energy nexus’.

How important is sustainability to Rottnest Island?
Rottnest Island is internationally recognised as a must-visit, eco-friendly tourism destination. Sustainability is a key part of its long-term vision. Increasing renewable energy from the current 30% to the envisaged 45% will significantly reduce the use of fossil fuels to generate the Island’s power, lowering the Island’s eco-footprint and ensuring a more sustainable energy future.

How does the project fit in with the current Rottnest Island Management Plan (RIMP 2014–19)?
By adding new solar generation to increase renewable energy to 45% of the Island’s power system, the project supports the publicly endorsed RIMP 2014-19 which states that the RIA will ‘pursue the adoption of renewable energy sources’. The longer term vision of the RIA is to increase renewable energies to 65% over a 20-year period.

Why not just build another wind turbine?
The existing 600 kW wind turbine was installed in 2005 and produces around 30% of the Island’s energy needs. It generated 1540 MWh in 2014-15, saving around 340 000 litres of diesel fuel. Adding solar energy complements the wind power, diversifying the renewable sources and increasing the overall availability of renewable energy through the year. The project will integrate both sources of renewable energy to minimise the need for diesel generation.

How will the project benefit Western Australia?
Western Australia will benefit from the project through the consolidation of Rottnest Island’s reputation as a leading eco-tourism destination. It will also benefit from the sizeable cost savings and emissions reductions due to reduced need for diesel fuel.

Projects such as Rottnest Island’s water energy nexus and Carnegie Wave Energy’s system on Garden Island showcase how WA is contributing to the nation’s energy sustainability.

How will visitors and the community learn from the project?
Round-the-clock information about the energy sources and energy usage on the Island will be available from networked smart displays in the Visitor Centre and at other prominent locations including the new education and interpretation centre. Various educational and interpretation tools are planned; including developing a smartphone app.

How will this project be funded?
The Rottnest Island Water Renewable Energy Nexus Project is an initiative of Hydro Tasmania, which will deliver the project in partnership with the RIA. It has been developed with the assistance of the Australian Government’s Australian Renewable Energy Agency (ARENA), which is funding Hydro Tasmania with a grant of around $4 million. The RIA will contribute $2 million as part of its capital works program.

How long will the project take?
The project will progress against a set of agreed milestones from October 2015 to April 2017. The solar farm itself is expected to be commissioned in 2016.