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Case Study

Solar airfield lighting system for non-certified aerodrome

Exmouth, Western Australia

PROJECT OVERVIEW	
Location:	Exmouth WA (Australia)
Date:	March 2013
Owner:	Shire of Exmouth
Site:	Exmouth Aerodrome
Product:	Solar-powered AV-70-HI self contained airfield lights + IWI Lighting Kit
Application:	Airfield lighting (runway taxiway and IWI) for non-certified aerodrome

BENEFITS

- Automatic dusk-til-dawn operation - no standby personnel required
- Solar LED lighting best value for money at 1/3 of the cost of mains power lighting installation
- Perfect for permanent or temporary applications
- Great emergency backup should mains powered lighting system be installed later
- > 40% cost saving using Avlite's rubber mounting tiles in favour of concrete pads
- Robust long-lasting, low maintenance fixtures

"Solar lighting standards have improved significantly in recent years to being robust in built form and output sustainable for all night operations with LED fittings. Avlite were exceedingly supportive with knowledge assistance and material assistance needs."

Jenny Kox, Executive Manager Aviation Services
Shire of Exmouth

Avlite's automated solar runway lighting solution significantly reduces operation costs, enhances airport efficiency and improves safety

Background

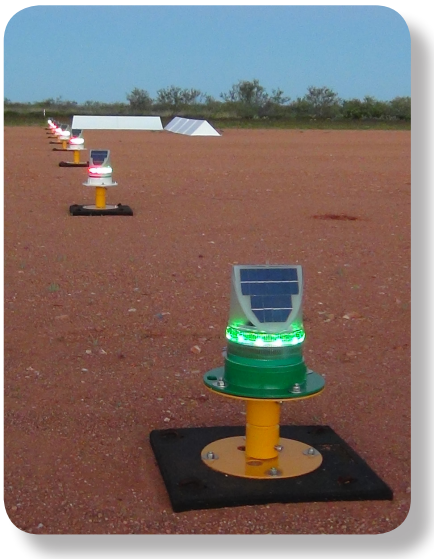
Exmouth Aerodrome is home to small (but expanding) general aviation commercial operators, micro-lights and a Bristow Helicopter maintenance and operations facility. It is located 13 km from Exmouth town site and is currently an aircraft landing area (ALA).

The aerodrome plays a role in the tourism sector and local primary industry, as the location of activities such as scenic flights over the Ningaloo Coast, whale watching flights and micro-light flights and training. It is also the location from where off-shore emergency aerial response is coordinated.

The requirement

After an immediate catastrophic failure of the 20+ year old lighting system which was deemed at assessment to be irreparable, an alternative lighting system for the runway, taxiway and illuminated wind indicator (IWI) at Exmouth Aerodrome was required.

Aerodrome operators requested the replacement lighting system be one that didn't require activation or operation by standby personnel. Learmonth Airport - the regular public transport (RPT) airport for Exmouth - was not seen as a viable alternative for many of the Exmouth Aerodrome operators and general aviation visitors due to approval restrictions and



night-time operational curfews imposed by the Department of Defence.

A review of available products saw solar LED lighting being the best value for money when compared with traditional mains-powered runway lighting. The solar lighting was also seen as providing further benefit as an emergency back-up should a mains-powered lighting system be required at a later date.

The total airfield lighting solution

Given that the runway is intended for use at night, the aerodrome required white, fixed, omnidirectional runway edge lights, red/green threshold lights and green omnidirectional runway end lights. The entire system is enabled for dusk-til-dawn operation — meaning, the lights automatically activate approximately 15 minutes prior to last light and deactivate around 15 minutes after first light — increasing airport efficiency and improving safety particularly in the event of an emergency situation or unscheduled landing.

Avlite's AV-70-HI light fixture was chosen for runway edge, runway end and threshhold lighting, along with blue taxiway lighting intended for the airport's southern taxiway. This particular model — the high intensity version of the popular AV-70 — is ideal for use in high sunlight areas that receive a minimum of 3.5 hours of sunlight per day.

A rugged and robust self-contained fixture, the AV-70-HI houses two high-performance solar modules mounted within the lens, maximising solar collection and providing reliable operation in a range of environmental conditions. It is the preferred choice of airport operators for solar powered runway and taxiway lighting throughout Australia.

Avlite's illuminated wind indicator (IWI) AV-09-4WL lighting kit, with an external sun-switch for automatic night activation, was also selected to be retrofitted to the existing windsock and pole assembly - enabling further cost savings for Exmouth Shire.

The installation

The aerodrome's heliport personnel assisted in the assembly of the lights whilst local contractors assisted in surveying the runway and taxiway for the 90m set-out of the lights, clearing areas for the new signal circle and Illuminated Wind Indicator (IWI) and installing the rods into the hard pindan earth to secure Avlite's rubber mounting tiles into position.

The lights were mounted on the rubber mounting tiles (in favour of traditional concrete pads) as they were a much more economical alternative, saving Exmouth Shire over 40% on installation costs alone. In fact, the entire airfield lighting solution was around a third of the cost of traditional hard-wired systems.

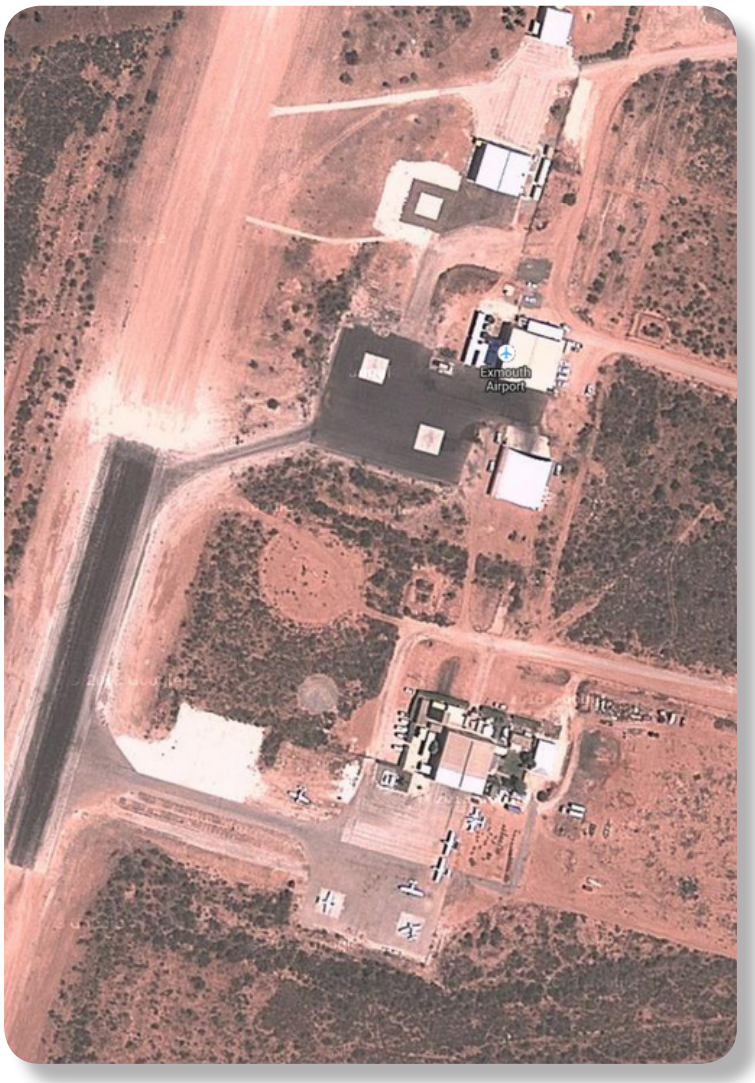
Exmouth Aerodrome was one of the joint winners of the 2013 Australian Airports Association Industry Award 'Non-certified Aerodrome of the Year' for its Solar Runway Lighting Project.

Exmouth Aerodrome predominantly services general aviation aircraft (commercial, sightseeing and recreational), micro-lights (sightseeing and recreational) and helicopter maintenance bases.

The aerodrome is classified an Aeroplane Landing Area (ALA).

There are three distinct operational areas at the Aerodrome - General Aviation, Helicopters and Commercial.

There is 1 main runway at Exmouth Aerodrome (Runway 02/20) and is a 1260m long and 30m wide unsealed gravel strip with a 211m central sealed section.



"For an aerodrome operator to provide an equivalent night-use runway standard for the RFDS and other fixed-base users at around one-third of the cost of a traditional mains power lighting installation, there has to be greater recognised merit for this (solar-powered) alternative, especially in a location like ours where it is sunny most days of the year."

Jenny Kox, Executive
Manager Aviation Services, Shire of Exmouth