

**Name:** Max Enfield

**Personal Details:** Date of Birth: 15<sup>th</sup> March 1945  
Nationality: British, with permanent Australian residency  
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**Languages and Proficiency:** English – native tongue

**Professional Qualifications:** Bachelor of Science (Mathematics) *University of NSW*

**Industry Qualifications:** Australian Clean Energy Council - full accreditation:  
- Design and Installation of Remote Area Power Supply Systems.  
- Design and Supervision of Grid-connected Photovoltaic Systems

**Professional Affiliations:** International Solar Energy Society - Professional Member  
Institution of Engineers Australia - Affiliate Member  
Australian Computer Society - Member

**Industry Affiliations:** Australian Solar Council - Member  
Australian Clean Energy Council – Member Accredited Installer  
Reference Group (since Feb 2017)

**Countries Worked:** Australia, Pakistan, Fiji

**Summary of Skills:** Practicing renewable energy technologist, experienced in site and load assessment, specification, design, project management, installation supervision and ongoing customer support for remote area and renewable energy power supply installations. Have special interest in micro-hydro, although most experience has been with PV systems. Installations have included single dwellings, multiple dwellings, resorts, aboriginal communities and outstations, water pumping and community facilities.

**Professional Experience:**

- 2017                   **Aurukun, Far Nth. Qld. – Designer & Project Manager,**  
*PV/Diesel Hybrid Mini-grid Power Supply*  
 Designed, managed and supervised the installation of an AC-coupled mini-grid at the Blue lagoon Ranger Base for APN Cape York. The system included a 9.2kW roof mounted photovoltaic array & diesel generator backup.
- 2017                   **Norfolk Island, South Pacific. – Designer & Project Manager,**  
*PV/Diesel Hybrid Mini-grid Power Supply.*  
 Designed, managed and supervised the installation of an AC-coupled mini-grid for a private residence. The system included a 9.8kW roof mounted photovoltaic array.
- 2017                   **Norfolk Island, South Pacific - Designer & Project Manager,**  
*Remote Area Power Supply for Norfolk Island National Park*  
 Designed, managed and supervised the installation of a power supply for the Phillip Island Parks Hut as part of the recovery program for the critically endangered Norfolk Island Green Parrot. The system includes a 3.9kW DC-coupled ground mounted PV array and petrol generator backup.
- 2008 - 2017           **Nth. Qld. – Designer & Installation Manager,**  
*PV Grid Feed Systems, Private Residences & Small Commercial*  
 Designed and supervised the installation of 76 rooftop or ground mount grid feed photovoltaic systems with a total installed capacity of 222kW. 17 are upgrades, the remainder are complete new systems. PV arrays range in size from 1k to 10kW
- 1990 - 2017           **Nth. Qld. – Designer & Project Manager,**  
*DC-Coupled Stand-Alone Power Supplies - Private Residences*  
 Designed, managed and either installed or supervised the installation and/or upgrade of stand-alone power supplies numbering in the hundreds.
- Of these, excluding upgrades and projects mentioned elsewhere in this CV, 64 systems have been identified with PV arrays at least 0.5kW, or with an equivalent micro-hydro or wind power component. 59 systems had a PV array of between 0.5kW and 5kW, while 14 systems had a micro-hydro generator and 5 had one or more wind turbines.
- 38 of the systems had diesel or petrol generator backup, while 27 had only renewable inputs. Of those with a backup generator, 3 used a parallel configuration, 17 used the auto-switched configuration, 3 used a manual switched configuration and 15 used a series configuration.
- 1996 - 2016           **Nth. Qld. – Designer & Project Manager,**  
*Diesel/Battery Hybrid Power Supplies, Private Residences*  
 Designed, managed and either installed or supervised the installation of 12 diesel/battery hybrid power systems. All the systems included ground or roof mounted DC-coupled photovoltaic arrays of between 1k and 2.6kW and interactively coupled diesel generators. Additionally two of the installations included wind power as well as PV and another included wind and micro-hydro power as well as PV.

- 1990 - 2014      **various pumping sites – Designer & Project Manager,**  
*PV Water Pumping, For Horticulturalists, Hobby Farmers, Pool Pumping  
 And Domestic Users*  
 Designed, managed and either installed or supervised the installation of numerous small solar powered water pumping installations, with pumped heads to 50m and flows up to 20,000 litres/day. Projects include a small system for the nursery on Phillip Island, within the Norfolk Island National Park.
- 2014              **Ipswich. Qld. – Designer & Project Manager,**  
*Grid Support System, Veterinary Surgery*  
 Designed, managed and supervised the installation of a grid support power supply, to ensure continuity of power for refrigeration and other essential equipment in the event of grid failure.
- 2013              **Goodna, Brisbane, Qld – Designer & Installation Manager,**  
*PV/Hybrid Mini-grid Power Supply, Goodna Technology Park, LC  
 Engineering Pty Ltd.*  
 Designed and supervised installation of an AC mini-grid as a demonstration project, including a 2.8kW roof mounted photovoltaic array.
- 2012              **Kalpowa, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply Kalpowa Aboriginal Community, Bushlight  
 Program*  
 Responsible for tender preparation, procurement and on-site supervision of a new solar power system as part of the Bushlight Program. This included the installation of an 8.1kW ground mount PV array and electrical fit-out of associated dwellings and community facilities.
- 2012              **Yourka , Nth. Qld. – Designer & Project Manager,**  
*PV Diesel/Battery Hybrid Power Supply, Yourka Reserve, Australian Bush  
 Heritage*  
 Designed, managed and supervised installation of diesel battery hybrid power supply. Including a 3.2kW roof mounted photovoltaic array.
- 2010              **Coen, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Moojeba Aboriginal Outstation, Bushlight  
 Program*  
 Responsible for tender preparation, procurement and installation management of an upgrade to this facility. The upgrade included installation of a 2.7kW ground mount PV array and electrical fit-out of associated dwellings and community facilities.
- 2009              **Herberton, Nth. Qld. – Designer & Project Manager,**  
*Grid Support PV System, Private Residence*  
 Designed, managed and supervised the installation of a grid support power supply, including a 1.1kW roof mounted photovoltaic array
- 2009              **Albany Island, Nth. Qld. – Designer & Project Manager,**  
*PV/Diesel Hybrid Mini-grid Power Supply at Albany Island Fishing Resort,  
 IWTS Investments Pty. Ltd.*  
 Designed, managed and supervised the installation of an AC mini-grid to service a 14 bed resort and associated facilities. The rated output is 29kW, including a 7.3kW ground mounted photovoltaic array.

- 2008 - 2010      **Malanda, Nth. Qld. – Micro-Hydro Consultant,**  
*PV/Micro-Hydro Power Supply, Private Residences*  
Responsible for the assessment, specification, design and integration of the micro-hydro component of a stand-alone power supply. The hydro generation component included two turbines delivering 1.8kW to two separate dwellings, associated controls, a 90m penstock and over 500m of transmission line
- 2008              **Pakistan. – Technical Consultant,**  
*Off Grid Rural Electrification Program, AccessGlobal Pakistan (Pvt) Ltd.*  
Working from Islamabad, wrote the technical proposal for the provision of up to 2,500 small solar home systems to be installed in Southern Balochistan.
- 2007              **Coen, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Silver Plains Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 9.4kW stand-alone community photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2007              **Coen, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Puntimu Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 5.7kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2007              **Taveuni, Fiji - Designer & Technical Consultant,**  
*Pool Pumping, Nakia Resort & Dive*  
Provided design and technical support for a solar powered pool pumping system at the resort.
- 2006              **Kowanyama, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Scrubby Bore Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 5.4kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2006              **Kowanyama, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Fish Hole Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 2.7kW stand-alone photovoltaic power supply and electrical fit-out of associated dwellings and community facilities.
- 2005              **Mornington Island, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Lametha Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 4.2kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.

- 2005            **Mornington Island, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Gubbangurru Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 4.4kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2005            **Mornington Island, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Gunbah Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation management of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2004            **Mornington Island, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Birri Williams Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation supervision of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2004            **Mornington Island, Nth. Qld. – Project Manager,**  
*Remote Area Power Supply at Gunun Woonun Aboriginal Outstation, Bushlight Program*  
Responsible for tender preparation, procurement and installation supervision of a 2.9kW stand-alone photovoltaic power supply and electrical fit-out of associated dwelling.
- 2003            **Herberton, Nth. Qld. – Designer & Technical Consultant,**  
*Pool Pumping & Chlorination, Private Community*  
Provided design and technical support for a solar powered pumping and chlorination system for a 150m<sup>3</sup> swimming pool, including a 1.3kW roof mounted photovoltaic array
- 2002            **Cairns, Nth. Qld. – Designer & Project Manager,**  
*Grid Support PV System, “Sunbird House”, Edge Hill, Cairns*  
Designed and supervised the installation of a grid support power supply, including a 3.8kW roof mounted photovoltaic array for an award winning home showcasing environmentally friendly technologies
- 1994            **Mossman, Nth. Qld. – Designer & Project Manager,**  
*Micro-Hydro System, Qld. National Parks & Wildlife Service*  
Designed and installed a micro-hydro system for the amenities block at the visitor area of the Mossman Gorge National Park. The power generated was used principally to run the mini sewerage treatment plant at the site.
- 1992            **Japoonvale, Nth. Qld. – Micro-Hydro Consultant,**  
*PV/Micro-Hydro Power Supply, Private Residences*  
Responsible for the assessment, specification and design a micro-hydro system that supplied power to two dwellings. Each dwelling also had a small PV system to supplement the micro-hydro input. The hydro generator included twin coupled Banki-crossflow turbines, associated controls and 300m of transmission line.