



**LEADSUN**

EST. 2005

**ALWAYS DEPENDABLE**

# SMART Solar Lighting Capability Profile



Uncompromised Quality | Unrivalled Experience | Total Solutions

# LEADSUN

“We are Leadsun – Sustainably bringing the light of the day into the night for safer, more active communities”

## Public lighting, the old way

Public lighting is an essential part of life in our cities, making neighborhoods more accessible and ensuring communities are safer at night.

Until now, municipalities have had to rely on obsolete light sources and the electricity grid to power their public lights. Such an approach requires extensive underground cabling and can be cost-prohibitive, environmentally destructive and slow.

## Now there's a new way

In 2005, Leadsun had a vision to revolutionize the public lighting industry by combining four emerging technologies – solar Photo Voltaic (PV), LED light, lithium batteries and adaptive lighting controls – into one compact, modular solar lighting system that doesn't rely on the grid.

After extensive research, development, and testing, in 2008, Leadsun created and patented the world's first all-in-one solar light.

We've since gone on to distribute over 300,000 lighting systems across the world.

## Partnering with municipalities to design the future of public lighting

Our cities are rapidly being transformed with smart technologies, creating new opportunities and challenges.

As a trusted advisor, Leadsun partners with municipalities and organizations across the world to design tailored solar lighting solutions while guiding them on how best to apply these technologies for their site requirements and serviceability needs. We understand every public lighting application is different, and that fit-for-purpose, engineered systems are the ones that most positively impact the community.

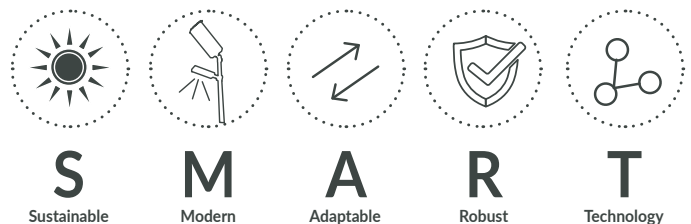
Rightly, the public have high expectations. It's essential to do things right, the first time, and deliver a chain of long-lasting positive effects for a community. When things 'just work', we help meet the values and aspirations of the communities we serve.

## Why Leadsun?

We are committed to providing quality solar lighting solutions that are fit-for-purpose and exceed best practice. We deliver solar lighting systems that are truly optimized to enhance and improve communities.

Leadsun offers total turn-key solutions that are guaranteed to last, and our agile local operations enable us to consistently achieve exceptional results for our clients.

**We have built a solid reputation for rapid response times, high quality, and value for money.**



The Leadsun brand represents a catalyst for change and confidence in the future. We are bringing SMART public lighting into American communities – easily, affordably and efficiently.



Leadsun Global



Leadsun Australia



Leadsun USA

# ABOUT LEADSUN

Committed to providing the most comprehensive, efficient and professional solutions and services to the American and surrounding markets.

Leadsun USA is the North American subsidiary of Leadsun Global, the pioneer in SMART solar lighting technology, and has locations in Florida and California.

We are on a mission to light up public spaces across the United States with SMART solar products that are friendly to the environment and of the highest quality. With 30+ patents - including the world's first all-in-one solar light and our ingenious dual lithium battery management system - Leadsun USA is dedicated to providing customers with the most intelligent, contemporary, and easy-to-install solar powered products.

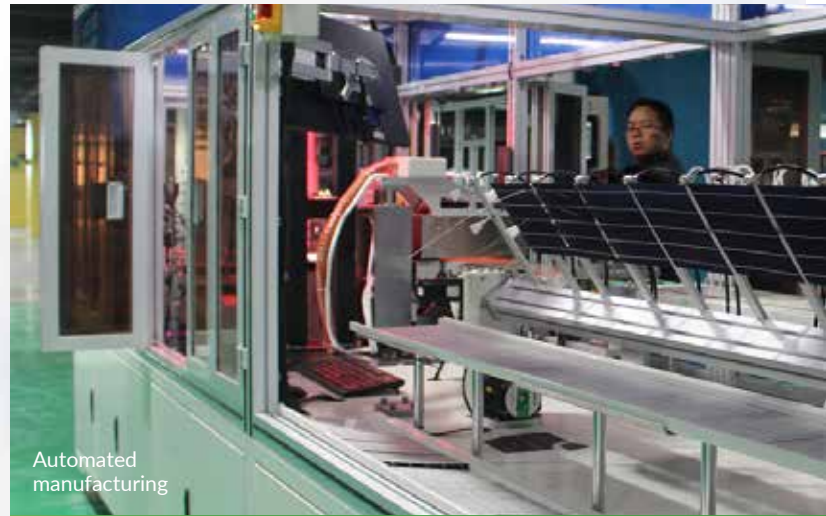
To ensure total control over product testing and quality, Leadsun develops and manufactures all its own solar products. We have attended major exhibitions including LightFair International – the world's largest annual architectural and commercial lighting trade show and conference, to share our latest solar lighting solutions with the world.

With superior production processes, industry leading technologies, and a quality engineering team, Leadsun USA is committed to providing the most comprehensive and efficient public lighting solutions to the North American market.





Dark-sky compliant shared pathway light with AE3 solar engine



Automated manufacturing



**The ISO 9001:2015 certified Quality Management System employed, ensures Leadsun maintains operational effectiveness and efficiency, consistent processes, and achieves ongoing compliance**

# QUALITY

Leadsun's commitment to delivering the highest level of quality, sustainability and customer satisfaction is reflected in our Quality and Environmental Management accreditations. Furthermore, our nationally accredited IES lighting files – through which we can realistically simulate how a lighting project will look for customers – verify the real-world effectiveness of our technologies' performance.

The ISO 9001:2015 certified Quality Management System employed, ensures Leadsun maintains operational effectiveness and efficiency, consistent processes, and achieves ongoing compliance with international statutory and regulatory requirements.



**CERTIFICATE OF QUALITY MANAGEMENT SYSTEM**

Certificate No.: 19820QL253SR05  
Unified Social Credit Code / Organization Code: 914404007783341243



Our ISO 14001:2015 certification sets out the benchmark for environmental compliance. It enables us to manage our environmental responsibilities; measuring and improving any immediate and long-term environmental impacts relating to our products, services, and processes.

Leadsun aims to exceed customer expectations through ongoing research and development plus continuous improvements to products, services and processes.

It's not just the quality of our products that we pride ourselves on, but also, it's setting the benchmark for the way grid-free solar lighting systems are designed and installed. All Leadsun delivered projects are set up with a Project Quality Plan (PQP), developed to ensure quality objectives are met in accordance with our customers' requirements and expectations.

Quality control through consistent monitoring is performed on all projects to ensure compliance with procedures and conformance to American Standards, codes and specifications.

# SMART SOLAR LIGHTING



## S

### Sustainable

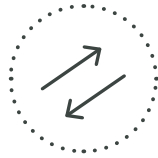
Environmentally friendly solutions that require no power from the grid



## M

### Modern

Slimline and aesthetically pleasing in all environments



## A

### Adaptable

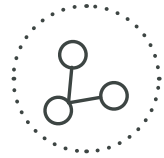
Can be installed where power is not available



## R

### Robust

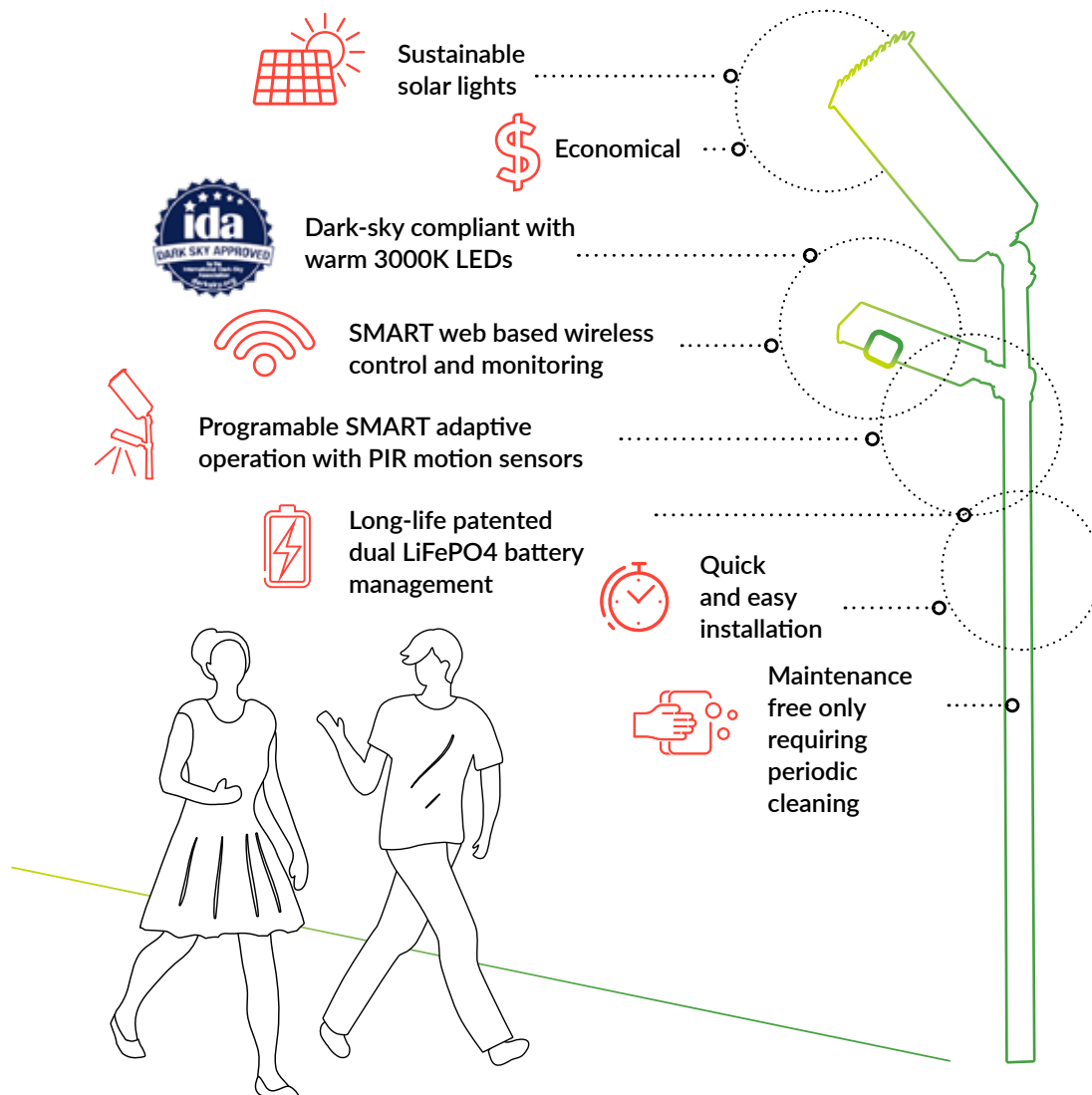
Advanced battery technology with dependable performance



## T

### Technology

Disruptive innovation that challenges the status quo



# CORE CAPABILITIES

## 1. Pre-sales consultancy that ensures fit-for-purpose and successful outcomes

Our sales principles are devoted to providing informative and unbiased advice with unparalleled service and support to ensure we provide a fit-for-purpose solution that keeps things simple, and within the customer's budget. As a further value add-on, for all Leadsun design & construct projects, our experienced solutions specialist will survey the site to check the environment and identify any potential issues such as shading from trees or structures, and provide a pre-sales survey checklist as part of our sales process.



## 2. Dedicated research and development for new products, product improvements and customized solutions

With over 30 patents, including the world's first all-in-one solar light and our ingenious Dual Lithium Battery management systems, Leadsun is continually striving to provide our customers with the most intelligent, contemporary and easy-to-install solar powered products. An ongoing focus and commitment to technical innovation and quality makes us stand out from our competitors. With unrivaled attention to detail and a commitment to sustainability, we work to the highest standards demanded from our customers, the environment and the community.



### 3. Lighting design in compliance with ANSI C136 Roadway Lighting Standards

The design, planning and analysis of roadway, street and area lighting is a complicated process requiring significant training. From LED luminaires and lighting spillages, to pole height requirements and industry compliance standards, good **solar street lighting** design relies on an in-depth understanding of numerous influencing factors.

Leadsun's team of lighting designers are experts in this complex field and use the latest lighting software models to produce simulated light levels of each project. Additionally, Leadsun applies best-practice and provides Dark-sky certified lighting designs wherever possible. This means our lights only illuminate downwards, onto the target areas, avoiding upward spill and glare light that causes light pollution to the surrounding neighbourhood.



### 4. Accurate battery performance calculations to ensure battery autonomy and longevity

Leadsun has been able to use its experience from 1000s of real-world applications to create a software tool that accurately calculates expected battery performance over 30 days, based on a range of critical data such as the size and efficiency of the PV solar module, LED power output, lighting compliance lux levels required and battery capacity.

Importantly, Leadsun calculates the solar lighting system performance based upon the local area's historical solar irradiance history for the middle of winter – which is the most demanding period and precisely when the lights need to reliably work.



**Leadsun calculates the solar lighting system performance based upon the local area's historical solar irradiance history for the middle of winter.**

| System Performance Calculations                  |                                     |            |            |
|--------------------------------------------------|-------------------------------------|------------|------------|
| LED Qty                                          | <<<< LED quantity                   | 1          | 1          |
| LED W                                            | <<<< LED selection                  | 10         | 30         |
| Hardware Config. Wires                           |                                     | 2          | 2          |
| ON level                                         | <<<< Light output program selection | 100%       | 80%        |
| PIR ON Level                                     | <<<< Light output program selection | 100%       | 80%        |
| PIR OFF Level                                    | <<<< Light output program selection | 22%        | 18%        |
| PIR minutes                                      | <<<< PIR On-time                    | 0.5        | 0.5        |
| PIR hits per night                               | <<<< LED Operations                 | 100        | 100        |
| PIR on time, minutes                             |                                     | 50         | 50         |
| ON Hr                                            | <<<< Light output program selection | 5          | 5          |
| PIR Hr                                           | <<<< Light output program selection | 9          | 9          |
| PIR ON Hr                                        |                                     | 0.8        | 0.8        |
| PIR OFF Hr                                       |                                     | 8.2        | 8.2        |
| Total Active Hr                                  |                                     | 14.0       | 14.0       |
| ON Wh                                            |                                     | 58         | 138        |
| PIR ON Wh                                        |                                     | 9          | 22         |
| PIR OFF Wh                                       |                                     | 22         | 51         |
| OFF Wh                                           |                                     | 0          | 0          |
| Gateway Wh                                       | <<<< Gateway = 7 Wh                 | 0          | 0          |
| Aux equip Wh for 24 hours                        |                                     | 0          | 0          |
| Aux equip Wh for 24 hours                        |                                     | 0          | 0          |
| <b>Total Wh</b>                                  |                                     | <b>89</b>  | <b>211</b> |
| PV model selection                               |                                     |            |            |
| Battery capacity (Wh)                            | <<<<< Battery selection             | 308        | 820        |
| Battery capacity Losses                          |                                     | 0.90       | 0.90       |
| Battery Capacity Usable (Wh)                     |                                     | 277        | 738        |
| <b>System Autonomy (d)</b>                       | <b>Autonomy - days</b>              | <b>3.1</b> | <b>3.5</b> |
|                                                  |                                     | 60N        | 150T       |
| Rated Solar Panel Power (Pmp) (W)                | <<<<< PV selection                  | 60         | 150        |
| Solar Panel Power Losses                         |                                     | 0.88       | 0.88       |
| Effective Solar Panel Power (W)                  |                                     | 53         | 132        |
| Location                                         | Winter exposure operational - days  | NA         | NA         |
|                                                  |                                     | Melb       | Melb       |
| Solar Gain WINTER - (h)                          | <<<< Solar exposure                 | 1.7        | 1.7        |
| Daily usable collection - Winter (Wh)            | Daily collection                    | <b>90</b>  | <b>224</b> |
| Daily collection surplus (deficit) - winter (Wh) | Daily deficit                       | <b>0</b>   | <b>13</b>  |

# UNIQUE OFFERINGS

## 1. Dark-sky Certified

Leadsun is the world's first solar lighting manufacturer that has a fully certified International Dark-sky Association (IDA) approved LED light fixture. We promote environmentally responsible outdoor lighting to minimise the light pollution often caused by traditional street lighting present throughout our cities.

Our range of smart public lighting solutions all come fitted with an LED fixture that has a 3000K low glare colour temperature (other colour temperatures available), along with ultra-sharp cut-off optics that significantly reduce lighting glare both to the rear and front aspects of the streetlight. This eliminates upwards spill light and minimizes the effects of sky-glow or night-time light pollution.



## 2. EDGE – Wireless control, monitoring and asset tracking

Our EDGE Wireless Control System enables us to provide easy, low-cost monitoring and management of our wireless connected SMART solar street lighting systems, including of battery and solar panel information, lighting control, operation monitoring and status.

Key features include:

- Long-range LoRaWAN bi-directional technology
- Cellular gateway communication between connected lights and cloud-based EDGE management system
- Remotely configure the operation of each light
- Real-time performance of battery and solar charging
- Web-based access from anywhere, anytime with secure login credentials



EDGE tabulated view



EDGE map view

### 3. Proven to last

Since incorporation in 2008, Leadsun Australia has worked with over 100 Australian local governments and installed thousands of solar lighting systems. Testament to the unrivalled quality of Leadsun's technology, as of 2021, our earlier systems that feature 1st Generation lithium battery

technology are still performing well without requiring any maintenance. Hence our claim to be Australia's most trusted solar lighting supplier and underpinning our brand promise – **Always Dependable.**



### 4. Municipal Grade 10-Year Battery Performance Warranty

**Always Dependable** - At the heart of every Leadsun SMART solar lighting system are the ingenious Lithium LiFePO4 batteries featuring Leadsun's patented advanced battery management system. They have much greater charging efficiency and also provide double the lifespan compared to traditional solar lighting batteries.

While the majority of commercial solar lighting manufacturers struggle with providing 3-year warranties, Leadsun is proud to provide a market-leading battery performance warranty of up to 10-years for municipalities that partner with Leadsun for their public lighting projects. For all other applications, Leadsun is still able to provide a best-in-class 5 year warranty that unconditionally covers the entire system's performance and assures the equipment is free from defects.

Rather than a limited pro-rata type warranty that only provides partial cost protection, Leadsun guarantees that its batteries' performance will maintain at least 80% usable capacity at the end of the warranty period, providing it is used within its operating parameters.

Speak to Leadsun about how we can provide a comprehensive warranty that helps protect municipalities and facility owners that need reliable lighting 365 nights a year – without interruption!



**Leadsun guarantees that its batteries' performance will maintain at least 80% usable capacity at the end of the warranty period, providing it is used within its operating parameters.**



## 5. Fast turnaround with stock on hand

Leadsun manufactures all its own equipment, is in complete control of the production process and has rolling inventory to fulfill at least 90 days of forecasted orders. Our financial management systems and commitments from all supply partners enable Leadsun Australia to create lean lead times for projects requiring fast turnaround times – sometimes, in just a few days.



## 6. Maintenance-friendly (plug-and-play modules)

Leadsun's equipment is built to last and is essentially maintenance free, only requiring periodic cleaning of the optics and solar panels.

Our design process is underpinned by our values of reliability and simplicity. As such, all critical components and modules within our solar lighting equipment – including battery modules, LED modules, controllers, cables and passive infrared sensors (PIR) – are designed to include plug-and-play IP67 wiring looms, thereby enabling parts to be easily interchanged.



|                                                                                                |                  |                                                                        |         |                                                                |              |                      |
|------------------------------------------------------------------------------------------------|------------------|------------------------------------------------------------------------|---------|----------------------------------------------------------------|--------------|----------------------|
| <div>7.5miles of<br/>Street Lighting</div> <div>Copyright Leadsun Australia Pty Ltd 2022</div> |                  | <div>GRID<br/>LIGHTING</div> <div>ACOR Rudds Consultants Pty Ltd</div> |         | <div>LEADSUN<br/>EST. 2005</div> <div>SOLAR<br/>LIGHTING</div> |              |                      |
|                                                                                                | <div></div> TIME | US\$                                                                   | COST    | <div></div> TIME                                               | US\$         | COST                 |
| PRODUCT & INSTALLATION                                                                         | <div></div>      |                                                                        | 507,657 |                                                                |              | 400,734              |
| PLANNING & SPECIFICATION                                                                       | <div></div>      | 3 Weeks                                                                |         | 1 Week                                                         |              | Complimentary        |
| NEW ELECTRICITY SUPPLY                                                                         | <div></div>      | 4 Weeks                                                                |         | Not required                                                   |              |                      |
| UNDERGROUND WIRING                                                                             | <div></div>      | 6 Weeks                                                                |         | Not required                                                   |              |                      |
| LIGHTING INSTALLATION                                                                          | <div></div>      | 4 Weeks                                                                |         | 4 Weeks                                                        |              |                      |
| TOTAL TIME & COST                                                                              | <div></div>      | 17 Weeks                                                               | 507,657 | 5 Weeks                                                        |              | 400,734              |
| SAVINGS                                                                                        |                  | <div>X</div>                                                           |         |                                                                | <div>✓</div> | 106,923<br>(-21.06%) |
| OPEX 20 YEARS                                                                                  |                  |                                                                        |         |                                                                |              |                      |
| HARDWARE MAINTENANCE & REPAIR                                                                  | <div></div>      |                                                                        | 184,757 |                                                                |              | 216,807              |
| ENERGY                                                                                         | <div></div>      |                                                                        | 18,178  |                                                                |              | N/A                  |
| TOTAL OPEX                                                                                     |                  |                                                                        | 202,935 |                                                                |              | 216,807              |
| SAVINGS                                                                                        |                  | <div>✓</div>                                                           |         |                                                                | <div>X</div> | -13.872<br>(6.84%)   |
| TOTAL 20 YEAR COST                                                                             |                  |                                                                        | 710,593 |                                                                |              | 617,514              |
| SAVINGS                                                                                        |                  | <div>X</div>                                                           |         |                                                                | <div>✓</div> | 93,051<br>(-13.09%)  |

# KEY PROJECTS & APPLICATIONS

## Epperson Estates

### Leadsun help build the most advanced and first smart connected city in the USA

Leadsun is proud to exclusively partner with 'Streetleaf' (a Florida based street lighting company) in powering over 4000 of their SMART solar lighting systems - that have so far been deployed in many residential communities. One of those projects is the Epperson Estate in Tampa Bay, Florida - home to 5000 residents. After nearly 2 years of testing over a dozen different solar street lighting manufacturers, Metro Development Group chose Leadsun's SMART solar lights to illuminate the streets of one of the largest technologically advanced property developments in the United States. With over 1,000 lights already installed throughout the Epperson Estate and other nearby sites, it's expected that over 10,000 Leadsun solar streetlights will be deployed over the next few years.

#### Leadsun SMART solar lights - the perfect fit

This unique master-planned estate in Tampa Bay, Florida is the first SMART connected city in the United States. With an infrastructure built on an extremely fast internet, it is positioned to be one of the most advanced cities of the 21st Century. With an advanced battery management system and wireless remote lighting control, Leadsun's SMART solar street lights were the perfect fit for this technologically advanced project.

#### Future-proofed

After extensive research & development in Melbourne, Australia - Leadsun designed an entirely grid-free solution that included adaptive sensors, wireless asset management and control. This new solar street lighting technology has full wireless connectivity capabilities, DARK SKY compliance, and is future-proofed to power smart city devices such CCTV, public Wi-Fi access points, and more.



## Built to withstand extreme weather conditions

Due to Florida sitting within the hurricane corridor, another challenge faced for this project are the extreme weather conditions that could influence the autonomy of the energy systems. With this in mind, Leadsun made an exhaustive analysis of the grid-free solution and tailored a robust lighting system that was built to withstand the extreme weather without compromising the aesthetics or technology of the product.

## Leadsun Products Used

|                        |                                                                      |
|------------------------|----------------------------------------------------------------------|
| Lighting application   | Residential Streets                                                  |
| Number of lights       | 1,000+                                                               |
| Solar module series    | AE3                                                                  |
| Solar size             | 80W                                                                  |
| LED output programming | 30W LED dusk till dawn with passive infrared (PIR) adaptive lighting |
| Pole footing type      | Direct burial                                                        |
| Pole type              | Fixed, non-lowerable                                                 |



"Is this the way of the future? I would say the future is here today. If folks are not going down the path of looking at having off-grid SMART solar street lights I think they are behind by two or three years. This is what our planet needs and it's phenomenal technology"

Kartik Goyani  
Metro Development Group Operations VP



## Arcade Creek Park



### Leadsun illuminate leisure abundant park

Nestled between Arcade Creek and Verde Cruz Creek, this 12-acre park is the perfect place to enjoy nature. Thanks to Leadsun SMART solar lights, you can now bask in the elements well into the evenings, while still feeling safe and welcome.



### No electrical infrastructure

As a former farm, donated decades ago to its park district, Arcade Creek Park had no access to any electrical infrastructure. As the city grew around it, as did the use of the park's many facilities.

Grid powered lighting was not a financially viable option and would disrupt existing water lines. Leadsun solar lights were the perfect solution, both cost-effective and easy to install, avoiding the hassle of extensive trenching or cabling.

### Leadsun Products Used

|                      |                      |
|----------------------|----------------------|
| Lighting application | Recreational Reserve |
| Number of lights     | 23                   |
| Solar module series  | AE3 & AE6            |
| Solar size           | 70W & 180W           |
| Pole footing type    | EZYFoot              |
| Pole type            | EZYPole              |



# PATH



Throsby Park, City of Newcastle, NSW



Gardiner's Creek Trail, Boroondara, Victoria



Banjo Patterson Reserve, Lynbrook, Victoria



Encourage active transport,  
allow more time for exercise and  
foster positive neighborhood  
connections with Leadsun  
SMART solar path lighting.

# AREA



Enchanted Hills Park, City of Perris



Invite sustainable ambience & righteous opulence into your area with Leadsun's SMART solar area lighting.

Berwick Skate Park, Victoria



Arcade Creek Park, California

# STREET



Epperson Estate Florida, USA



Middle Arm Road,  
Goulburn Mulwaree Council



Merton Street, Altona, Victoria



Merton Street, Altona, Victoria

Designed for local roads, this sustainable solution is ideal for increasing safety on poorly lit streets and intersections.

# PARKING LOT

Angliss Reserve, Yarraville, Victoria



The safe and sustainable lighting solution for community parking lots of all sizes.

# TEMPORARY

National Tennis Centre Melbourne





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