Clevertronics

SIMPLIFYING
EMERGENCY LIGHTING AND EXITS
for Hydropower Plants

Clevertronics

Does your Hydropower plant comply to the regulatory requirements for emergency lighting?

In Australia and New Zealand, regulatory requirements for emergency lighting are defined by several standards and building codes. These requirements ensure the safety of building occupants by providing adequate lighting during power failures or other emergencies.

Why is Emergency Lighting Essential?

Emergency lighting, including exit and emergency luminaires, ensures that occupants can safely exit a building when the normal lighting fails due to power loss or other emergency events. Each luminaire is equipped with a battery and must provide light for at least 90 minutes after a power outage.

Where is Emergency Lighting Required?

The National Construction Code (NCC) in Australia and the New Zealand Building Codes F6 & F8 specify the classes of buildings and areas where emergency lighting is required. In general, any government or commercial building occupied by employees, customers, or the public, as well as common areas of multi-residential buildings, must have emergency lighting.

Where Are Emergency Lights Installed?

Exit signs must be clearly visible and illuminated at all times. They should be placed above exit doors, at the top of staircases, and at any directional changes to guide occupants along the “egress path” to a final exit or evacuation point.

Emergency lights should be installed at regular intervals to illuminate the egress paths. The specific placement of these lights depends on the type of light fitting, building shape, and ceiling height.

Key Regulations to Follow

To ensure a safe environment and avoid significant penalties, it is crucial to meet the minimum legal requirements outlined by the standards:

- ✓ **Battery Duration**: Emergency lights must operate for at least 90 minutes on battery power
- ✓ **Regular Testing**: Exit lights must be tested every six months to ensure they are functioning correctly
- ✓ **Annual Maintenance**: Emergency lights need to be cleaned annually to maintain optimal visual performance
- ✓ **Charging Confirmation**: A status LED indicator is required to verify that the light is charged and operating correctly
- ✓ **Brightness & Coverage Requirements**:
  - Floor areas must maintain a minimum light level of 0.2 lux
  - Isolated darker areas require a minimum light level of 1.0 lux
- ✓ **Record Keeping**: Record and document all test results, defects, and maintenance in a logbook

Simplified Emergency Lighting Solutions for **Hydropower Plants**

Recognising the intricacies of hydropower plants, from complex machinery to rugged terrains and strict regulations, underscores the crucial role of reliable emergency lighting systems. In such environments, where safety is paramount and conditions can be harsh, Clevertronics offers tailored solutions. These are designed to simplify compliance with emergency lighting standards and reduce maintenance requirements, ensuring operational efficiency and personnel safety.

Clevertronics **Product Range**

Available in standard (IP20) and adverse location (>IP65) fittings

Exits

Dynamic Exits

Emergency Lights

Battens

Circulars & Bulkheads

Partners in **Compliance**

Clevertronics has extensive experience providing reliable emergency lighting solution with partners in **hydropower** and similar **harsh** or **underground environments**

snowy hydro

genesis

Rangipo Power Station NZ

sunwater

Burdekin Falls Dam

Melbourne Water

Wonthaggi Desalination Plant

acciona

MacIntyre Wind Farm

MELBOURNE METRO RAIL

WEST GATE TUNNEL PROJECT

wilmar

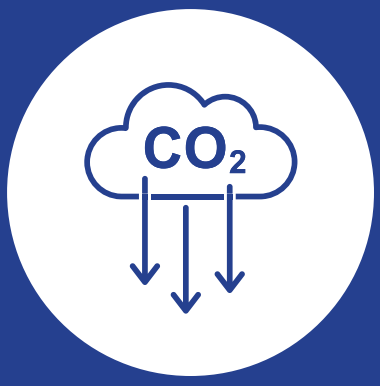
We understand your environment and our products are **built and designed for these conditions**

DURABILITY

Our high impact and ingress rated products designed to endure harsh conditions of hydropower plants – such as exposure to water and moisture

LONG SERVICE LIFE

Our long-life lithium batteries are designed to minimise maintenance intervals and ensure consistent operation



SUSTAINABILITY

Our highly efficient products are designed to reduce energy consumption and minimise carbon footprint

The **right emergency lighting solution** for your needs

Zoneworks Hive & L10 Lithium Nanophosphate

Together, Clevertronics Zoneworks Hive & L10 Lithium Nanphosphate products, deliver the ultimate cost-effective solution for Hydropower plants.

- Designed for 12+ year maintenance free operation
- 10-year warranty including batteries
- World's most advanced emergency lighting system
- Reduction in energy costs and carbon footprint
- Tested to AS/NZS 2293.3
- Incremental fitting upgrade as existing fittings fail
- Lifetime Technical Support

LTS LIFETIME TECHNICAL SUPPORT

* Please check out our website for more details on our LTS program https://clevertronics.co.uk/lifetime-technical-support

L10 LITHIUM NANOPHOSPHATE®
OPTIMUM
NOTHING ELSE COMPETES WITH NANOPHOSPHATE®

L10 Lithium Nanophosphate range has completely revolutionized the global emergency lighting market by improving the maintenance free service life of emergency lighting from 4 years to 12+ years.

L10 ensures a compliant emergency lighting solution without the maintenance cost burden and high carbon footprint of others. Reduce your emergency lighting costs by 80% with L10 Nanophosphate, it's that simple.

ZONEWORKS® HIVE

Zoneworks Hive is the world's most advanced emergency lighting system with over 2,500 sites installed across the UK, Australia and New Zealand.

Zoneworks Hive simplifies the system backbone installation and maintenance to only a single RF controller required for every 1000 fittings. Dynamic Self-Managed meshing allows scalability to 10's of thousands of fittings simple, faster and more reliable.

- Remote or on-site testing and monitoring
- Web-based interface and reporting includes maintenance log and full test results
- Complimentary Lifetime Technical Support

Outcomes of a **world-class compliant emergency lighting solution** in your Hydropower Plants

EMERGENCY & STANDARD LIGHTS

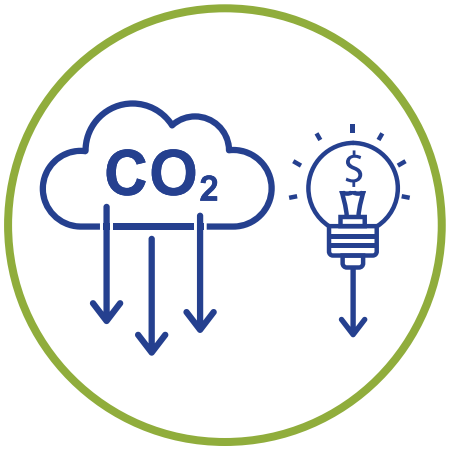
A complete and compliant standard and emergency lighting system, including battens, exits, and emergency lights, designed in line with the latest standards as per AS/NZS 2293.3 + AS/NZS 60598.10

SIMPLIFICATION

A testing and monitoring system that automatically initiates the required 6- monthly function and annual discharge tests, which can be programmed at times which are least disruptive to residents

PEACE OF MIND

12-year maintenance-free exit and emergency lights with a 10-year warranty to reduce the need for ongoing maintenance and replacements



ENERGY & CARBON REDUCTION

A reduced energy and carbon footprint from low energy LED lights and long-life Lithium Nanophosphate© battery technology

SAFETY & COMPLIANCE

Peace of mind knowing your Residential Aged Care has addressed the legal requirements for a safe and compliant emergency lighting system

Case Study
Snowy River Hydroscheme

ZONEWORKS® HIVE

Clevertronics recently demonstrated the resilience and effectiveness of the Zoneworks Hive system in one of the most challenging environments: the Snowy Mountains Hydro Scheme, specifically the Tumut 1 underground power station. This facility, built in the 1950s and 60s, presented a unique testing ground with its complex structure and high electromagnetic interference from operating hydro generators.

The Test Environment

The Tumut 1 power station operates 360 meters underground, a setting characterised by non-existent internet coverage and significant electromagnetic fields generated by four active hydro generators. These generators, crucial for supplying power to the national grid at 33,000 volts, created an ideal scenario to test the Hive system's ability to maintain a robust RF network under extreme conditions.

Implementation and Results

Clevertronics engineers strategically placed Zoneworks Hive fittings at key locations throughout the power station and tested for their ability to communicate with the main controller located in the Control Room. Even in the most challenging spot, the lowest level behind Turbine 4, the system successfully integrated into the mesh network. This confirmed Hive's capability to establish a reliable RF network despite the harsh conditions.

Conclusion

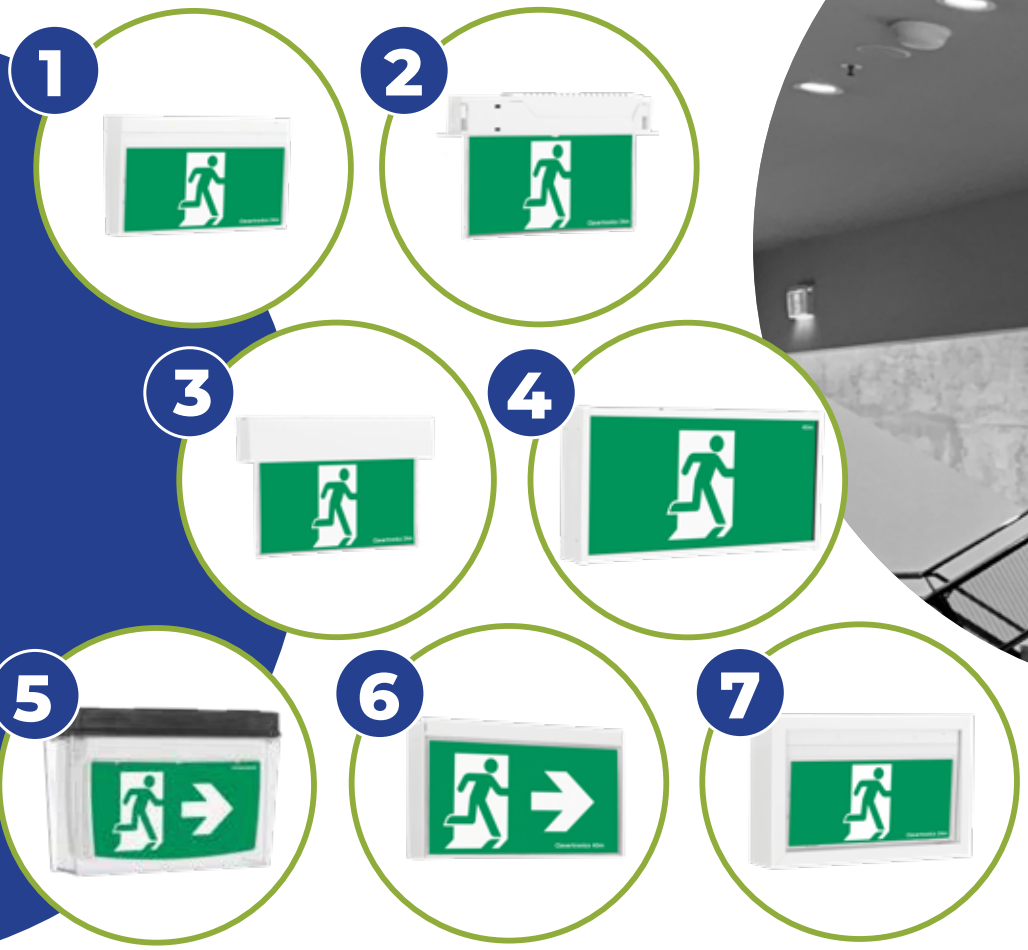
The Zoneworks Hive system proved its mettle by thriving in the high-interference, underground environment of the Snowy Mountains Hydro Scheme. The successful communication of all fittings, despite the presence of strong magnetic fields and lack of internet access, highlighted the system's robustness. This demonstration affirmed that Zoneworks Hive is the optimal solution for industrial sites with similar harsh conditions, ensuring reliable emergency lighting and reduced maintenance costs for virtually unmanned facilities.

Clevertronics
Emergency Lights

Product	Description	IP Rating	IK Rating	ZW Hive
1 **Lifelight Pro Recessed**	Recessed mounted, lithium powered LED emergency	IP20	-	✓
2 **Lifelight Pro Recessed Splashproof**	Splash resistant, recessed mounted, lithium powered LED emergency light	IP44	-	✓
3 **Lifelight Pro Recessed Weatherproof**	Weatherproof, recessed mounted, lithium powered LED emergency light	IP65*	IK10*	✓
4 **Lifelight Pro Surface Mount**	Surface mounted, lithium powered LED emergency	IP20	-	✓
5 **Lifelight Pro Surface Mount Weatherproof**	Weatherproof, surface mounted, lithium powered LED emergency light	IP65	-	✓
6 **Supalite**	LED emergency flood light with dual swivel heads	IP20	-	✓
7 **Supalite Weatherproof**	Waetherproof LED emergency flood light with dual swivel heads	IP65	-	✓

** Lamp head only*

Clevertronics **Exits**



	Product	Description	IP Rating	IK Rating	ZW Hive
1	**Cleverfit Pro (24m)**	Slimline exit with slide connect steel bracket for easy install. Suits both wall or ceiling mount	IP20	-	✔
2	**Ultrablade Pro Recessed (24m)**	Ceiling recessed mounted, low profile, blade style exit, designed for architectural requirements	IP20	-	✔
3	**Ultrablade Pro Surface Mount (24m)**	Surface mounted, low profile, blade style exit, designed for architectural requirements	IP20	-	✔
4	**Jumbo (40m)**	Designed for 40m viewing distance with 250mm high pictograph	IP20	IK08	✔
5	**Weatherproof (24m)**	Robust and weatherproof exit designed for wall or ceiling mount applications	IP66/67	IK10	✔
6	**Weatherproof (40m)**	Robust and weatherproof exit designed for wall or ceiling mount applications requiring 40m viewing distance	IP66	IK09	✔
7	**Vandal Exit (& Housing)**	Vandal resistant with IK12 impact rating, enclosed in powder coated steel enclosure	IP20	IK10	✔

Clevertronics **Dynamic Exits**

	Product	Description	IP Rating	IK Rating	ZW Hive
1	**CleverEvac Dynamic Green**	Displays Illuminated green arrow, when activate, to enhance exit path	IP66/67	-	✓
2	**CleverEvac Dynamic Green Blade**	Blade style exit, displays Illuminated green arrow, when activate, to enhance exit path	IP20	-	✓
3	**CleverEvac Dynamic Red X**	Displays red cross when activated to alter those evacuating to seek alternative exit. Also has Dynamic Green function	IP66/67	-	✓
4	**CleverEvac Dynamic Red X Blade**	Blade style exit, displays red cross when activated to alter those evacuating to seek alternative exit. Also has Dynamic Green function	IP20	-	✓
5	**CleverEvac SoundEscape**	Broadcast audible location sounds such as 'Exit Here'. Available with Dynamic Green & Dynamic Red	IP20	-	✓

CleverEVAC is a system and suite of dynamic and adaptive EXIT signs that provide increased visibility, audible cues, and negative enforcement options. Dynamic mode is triggered either by a 24VDC or voltage free open/close signal from the fire detection or other building safety system.

Clevertronics
Circulars & Bulkheads

1 2

3 4

5 6

Product	Description	IP Rating	IK Rating	ZW Hive
1 **Argonaut Wall**	Marine-grade die-cast aluminum housing, equipped with a daylight sensor	IP65	IK10	✓
2 **Argonaut Wall Emergency**	Lithium powered emergency, marine-grade die-cast aluminum housing, equipped with a daylight sensor	IP65	IK10	✓
3 **Argonaut Square**	Die cast aluminum body and polycarbonate diffuser	IP65	IK10	✓
4 **Argonaut Square Emergency**	Lithium powered emergency, die cast aluminum body and polycarbonate diffuser	IP65	IK10	✓
5 **Bunkalite**	Powder-coated steel body and white opal polycarbonate diffuser	IP65	IK10	✓
6 **Bunkalite Emergency**	Lithium powered, powder-coated steel body and white opal polycarbonate diffuser	IP65	IK10	✓

Clevertronics **Battens**

	Product	Description	IP Rating	IK Rating	ZW Hive
1	**Argonaut Plus**	High efficacy, switchable colour and dual output	IP65	IK08	✓
2	**Argonaut Plus Emergency**	Lithium powered emergency, high efficacy, switchable colour and dual output	IP65	IK08	✓
3	**Argonaut Vandal**	Die-cast aluminium body, impact resistant polycarbonate diffuser, suitable where higher levels of impact protection is required	IP66/67	IK11	✓
4	**Argonaut Vandal Emergency**	Lithium power emergency, suitable where higher levels of impact protection is required	IP66/67	IK11	✓
5	**Argonaut Green**	Green Safety Light used to identify the location of emergency shower and face/eye wash equipment	IP65	IK08	✓

Clevertronics Battens, Circulars, & Bulkheads are available in both emergency and standard lighting configurations

Conversions & Specials

There are always projects that need a customised solution to achieve compliance. Our team of product and system engineers have designed and produced many emergency and exit luminaires for these types of applications.

Compliance

Critical applications like industrial plants, tunnels, and hazardous areas always require an engineered solution to match the environment and design of the evacuation plan. This is where the Clevertronics team can apply their experience in design and know-how to create the exit and emergency lighting outcome that is required to meet the prescribed standard.

Bringing it all together

Our state-of-the-art engineering and testing capabilities allow us to take bespoke designs and prototypes and test them consistently throughout the process to ensure a timely outcome. Each luminaire undertakes thermal, humidity and electrostatic discharge testing as well as photometric analysis before sending them to external laboratories for official certification.

Notes

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