FLOOD DEFENCE

Andel FloodAlert Bollard

Smart, real-time, local flood warning and water level monitoring system



Smart, real-time, local flood warning

Andel FloodAlert Bollard provides 24/7 water level monitoring, sending SMS and email alerts when pre-set thresholds are reached.

A cost-effective, low-carbon early warning system, designed for above and below-ground water level monitoring and flood risk management.

Made in Yorkshire Winner 2025 – Manufacturing Innovation Award.

Resilient and environmentally responsible

Constructed from 100% recycled post-industrial plastic waste, the bollard provides a robust, long-life solution that would otherwise contribute to landfill.

The robust bollard is resistant to vandalism, weather, UV, chemicals, temperature and moisture – delivering reliable performance in exposed locations.

Radar LoRaWAN® water level sensing

The bollard is fitted with a waterproof radar LoRaWAN® sensor, continually delivering accurate water level monitoring. The sensor is discreetly housed within the bollard, measuring water levels against an internal reference point to provide consistent, reliable data.

Data is sent wirelessly to the cloud-based FloodAlert Portal, accessible from any internet-enabled device, providing real-time and historic water level visibility.

Early warning, real-time insight

Installed at key locations, FloodAlert Bollards provide early warning of rising water levels, issuing SMS and email alerts when thresholds are breached to enable timely action.

The FloodAlert Portal supports multiple sensor units and users, providing a scalable view of flood risk across sites and wider areas.

Flexible LoRaWAN® connectivity

FloodAlert Bollard sensors can connect to:

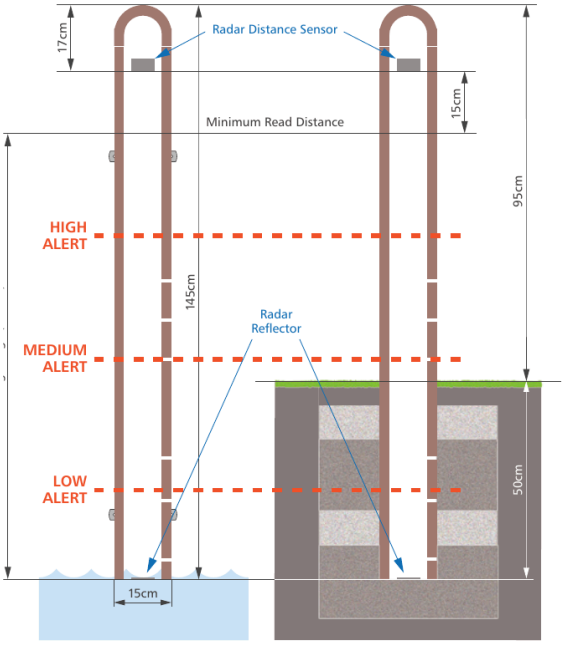
- Existing third-party LoRaWAN® networks
- Customer-owned LoRaWAN® infrastructure
- Dedicated gateways supplied and managed by Andel

Two installation options

As rising water enters the bollard through rows of holes, alert notifications are triggered when levels breach the three pre-set alarm thresholds.

Wall mounted for waterways — bollards are secured to existing permanent structures using three 5-inch pipe clips, suspended slightly above the river bed to prevent blockages. Water enters through a series of holes and flows over the radar reflector, where the sensor continuously monitors and records water levels. Any silt or debris naturally falls through the open base.

Buried for ground and surface water monitoring — bollards are buried to a depth of 500mm in porous drainage gravel and secured with concrete, allowing water to freely enter and drain. The bollard stands approximately one metre above ground level.



Wall-mounted and buried installations, showing the radar distance sensor, radar reflector and the three pre-set alert levels (low, medium, high). Alert levels are calibrated for each individual installation; the levels shown are examples only.

Alarm levels, email and SMS warnings

Following a survey, alarm levels are pre-set and calibrated for each installation. Each time an alarm level threshold is breached, users will receive email and SMS warnings of rising water levels.

Variable sampling

From rest mode, when the first threshold is breached, the sensor enters high-vigilance mode, increasing the frequency of readings. This continues until levels drop to 10cm below the low alert threshold.

Web portal and additional features

Accessible via any web browser, the portal provides real-time and historic water level data, along with battery status.

Optional environmental monitoring includes internal temperature, relative humidity and atmospheric pressure, measured through a breathable IP67 membrane.

Benefits at a glance

- Cost-effective, local flood warning system
- Tracks rising water levels using battery-powered, wireless LoRaWAN® radar sensors
- Easy to install and set up
- Radar reflector for accurate water level measurement
- Low maintenance — only requires yearly maintenance or attention after a substantial flood
- Sends text and email alerts for timely action to protect people and properties
- Real-time monitoring on a cloud-based portal
- Communicates with an unlimited number of FloodAlert Bollard sensor units
- 3 pre-set alert levels per sensor unit
- Communication via a low-power LoRaWAN® network
- Multiple bollards can provide an overview of local high-risk hotspots and capture data for future modelling
- Bollard constructed from 100% recycled post-consumer plastic with a 25mm wall thickness
- Sustainable, robust and reliable

Configurations

FloodAlert Standard Radar Bollard EL-R1.0.0
Item 1000000

FloodAlert Burried Radar Bollard EL - R1.0.0
Item 1000004

TECHNICAL INFORMATION

LORAWAN® SENSOR

Operating temperature: -20°C to +50°C (-4°F to +122°F)
Humidity range: 15% – 95% RH
Altitude range: <2km (<6,000ft) above sea level
Radio standard: Supports LoRaWAN® EU 868 MHz
Transmission rate: 5 min
Sampling rate: 5 min
Radar range: >15cm to 128cm
Radar resolution: ±5mm
Signal power: Up to +2dBi with external antenna
Output power: Up to +3dBi with external antenna
Gauge type: Radar
Radar signal diversion: 40°
Accuracy: ±5mm
Battery type: 1 × 3.6V Li-$SOCl_2$ size AA
Expected battery life: Typically one year from activation
Water ingress rating: IP67
Radar frequency: 57–64 GHz

BOLLARD CONSTRUCTION

Wall thickness: 25mm
Material: 100% recycled plastic