

FLOOD DEFENCE

# FloodAlert



*'FloodAlert is the ideal early warning system for single and multiple properties at the risk of flooding.'*

**Perfect for ground water, surface water and watercourse flood events not covered by the Environment Agency flood warning service.**

- Cost-effective, real-time local flood alert.
- Easy to install and set up.
- Robust and reliable system.
- Three alert levels, tailored to each installation.
- Sends SMS and email alerts for timely action to protect your property.
- Live monitoring on a cloud-based portal.



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### FloodAlert Sensor

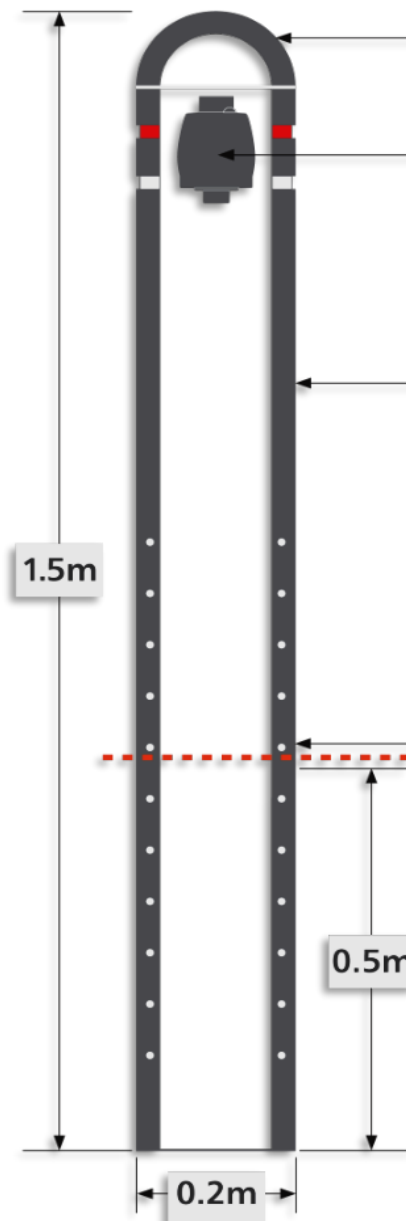
FloodAlert Ultrasonic LoRaWAN® Sensor is a battery operated water level sensor with integrated LoRaWAN® radio module.

CE Conformance and RoHS Compliant.  
24/7 monitoring with up to 15km range.  
Battery-powered up to 10 years.



### Gateway

Users will be supplied with LoRaWAN® gateway hardware and software as part of the network, receiving data from FloodAlert posts and transferring the data to the cloud-based monitoring software and alerts to designated users. Indoor and outdoor options are available, specifications vary depending on installation.



### Easy installation and set-up

Removable cap for maintenance such as servicing the sensor on requirement , no routine maintenance is required.

The sensor monitors water levels above and below ground 24/7, continually monitoring any rise or fall.

The post is constructed from robust, 100% recycled post-industrial plastic waste with 30mm thick walls. Rows of holes allow water to enter the post for the sensor to monitor the water levels.

Three specified/tailored alert levels are set, based on the individual site requirement. These alarm levels trigger the email or SMS notifications to designated users as well as data to the cloud-based portal.

The bottom third of the post is buried between 0.5m and 3.5m below ground level in gravel filled post holes, allowing groundwater to enter the post. (This depth may vary, dependant on site requirements)



# FloodAlert LoRaWAN® Gateway



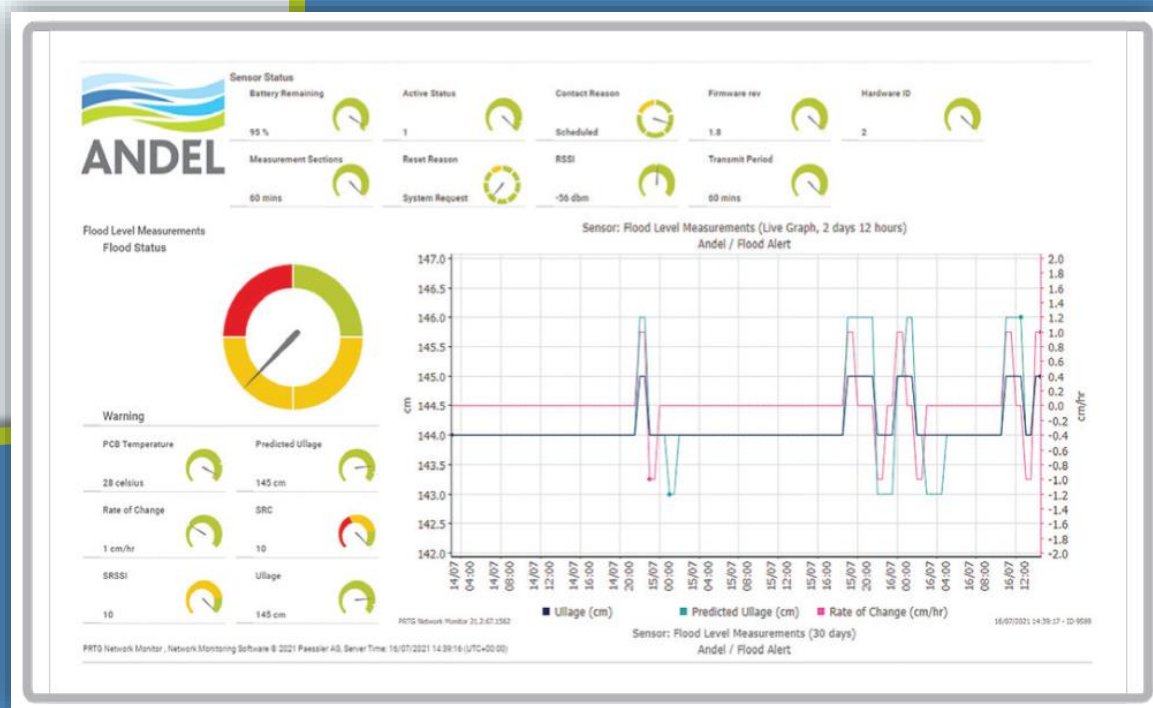
## LoRaWAN® Gateway for the Andel FloodAlert network

- **Function in the Andel FloodAlert network:** the LoRaWAN® gateway relays messages between end-devices/sensors and the central network server.
- **Robust:** the gateway comes in a carrier grade casing (IP67) for industrial and outdoor use with mounting kit for easy deployment.
- **Reliable:** the gateway comes with a 4G Worldwide module with 3G/2G fallback and Ethernet (RJ45) Backhaul connectivity. A machine to machine SIM card is installed that selects the best network and secures a constant connectivity.
- **Long Range:** the gateway comes with fully integrated and internal antennas (GPS, 4G, LoRa) with optional external LoRa antenna to reach up to 15+ km.
- **Low Power Consumption:** the gateway is supplied with an Elexon Charge Code that facilitates the integration with unmetered power supply such as essential public infrastructure.
- **Secure:** the gateway relies on a hardware secure core for extra protection.

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## Web Portal



**Bespoke solution:** a big advantage to the Andel Flood Alert system is that it is flexible and can be tailored to customer needs. It is not pre-built, but it is using proven technology which significantly reduces development time.

**Data organisation:** the Andel Flood Alert Web Portal helps to organise the data into an understandable structure. Being able to move visualisations around gives the user the ability to group relevant data sources together and create a viewing order for that data. Size and colour also provide an effective visual emphasis. Specific portals for groups of users, means that only relevant data is presented in a meaningful way.

**Data visualisation:** the monitoring framework can take readings from any sensor at different time frequencies and measure the battery health of each sensor. The information, threats/warnings can be shown on the web-based dashboard that can be accessed from any mobile device. Results are presented with a green, amber & red layout with level data shown, and percentage full/actual height compared to expected values.

**Data analytics:** raw data is simply numbers, until we present and act upon this raw data stream, meaning we can perform calculations, apply logic and if appropriate combine data sources that interact to form meaningful data such as trend analysis, diagnostic analysis, and predictive failure analysis.

**Operation:** the FloodAlert IoT network is controlled by a management software for optimal performance and security. The management software is linked to an agentless monitoring framework that includes; 200 predefined metrics/sensors, notifications and reports, as well as a web-based dashboard. The dashboard can easily integrate external data sets and can be branded according to the clients need.

**Data security and storage:** Best practice data security is applied at every stage of the data pipeline from data ingestion to data consumption. All information is hosted on a independent server for improved performance and security.

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## Below Ground Monitoring

### Sewer and Attenuation Tank Monitoring:

#### *LoRaWAN® Ultrasonic level sensor*

- Monitoring for pipe and tank water levels
- Adjustable mounting options
- Measures levels at a distance of up to 5-meters
- Measures ambient temperature, humidity and atmospheric pressure
- Detects acceleration
- Battery-powered up to 10 years  
(Depending on configurations and environment)
- Up to 15km range

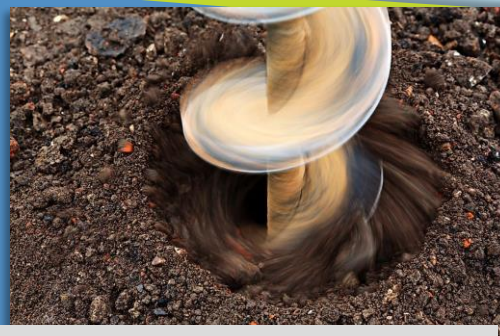
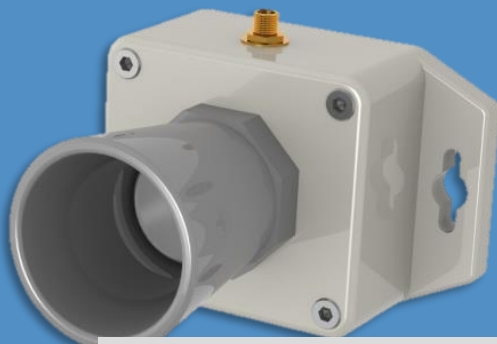
### Ground Water Monitoring:

#### *FloodAlert for Ground Water Monitoring*

- Measures ground water levels up to 4-meter depth
- In a robust bollard from 100% recycled post-industrial plastic waste with 30mm thick walls.
- Battery-powered up to 10 years
- Up to 15km range

#### *LoRaWAN® Submersible water sensor*

- Measures borehole water levels up to 200-metre depth
- Corrosion resistant stainless steel probe
- Wireless range of up to 10km (depending on environment)
- Battery-powered up to 10 years
- Suitable for pole, wall or DIN Rail Mounting



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## NFM monitoring and Alert - Catchment Level

**Flood monitoring and alerts at a catchment level**  
*(monitoring different flood variables to provide a deep insight)*

**MAP Rain:** for rainfall and flood forecast data and monitoring analytics.

**LoRaWAN® Rain Gauge:** for real-time ground rainfall data.

**Andel FloodAlert:** monitoring tributary water levels at three different points.

**LoRaWAN® Soil Moisture:** for ground saturation monitoring in different locations.

**Andel FloodAlert Web Portal:** visualising sensor location, green-amber-red alerts, level data and rain forecasts in one web-based portal.

**Andel Flood Alerts:** sending out SMS and e-mail alerts to local council flood officer for high water levels and blocked trash screen.

**Community Engagement:** using the information to sensitise and inform local residents, business and schools affected by flood risk.

**LoRaWAN® Gateway:** A single gateway connects to all devices and communicates all data to the central network server.

