



### The Challenge of Detecting and Responding to Incidents, and Safely Managing Increasing Traffic Volume

Motorway traffic jams are an increasing problem for drivers and traffic management authorities alike. The increase in the volume of traffic in the UK, especially during peak hours, is now growing very fast. So fast that the infrastructure, designed decades ago, often has trouble handling the flow of traffic, if even the smallest incident occurs. Motorways and the major trunk roads provide the core transport links for both businesses and local populations. Keeping these routes open and flowing freely is vital.

For the traffic management authorities responsible for the smooth running of traffic and incident management with appropriate response, it is also a daunting challenge. Until now, technology for use in the highway environment has not been readily available. The challenges are many, including the need for reliable operation in a wide range of weather conditions, temperature and lighting levels. Incidents must be detected reliably and quickly, with a high degree of certainty. In addition any false detection level must be extremely low, so the system remains an effective and accurate tool for highway operations staff.

Rapid detection of stationary vehicles and pedestrians on major roads, including on motorways and inside tunnels, is vital for effective and safe management of the traffic network. Stationary vehicles, pedestrians and items of debris, if detected early, can be dealt with by alerting approaching drivers and initiating remedial action. In this way a small scale breakdown can be prevented from escalating into a major incident, which would involve many vehicles.

It is prohibitively expensive to widen an existing motorway this is why highway authorities are looking for ways to facilitate an extra lane by opening the hard shoulder for traffic during peak hours. However, since the hard shoulder was originally designed for broken down vehicles, and those which need to make an emergency stop, drivers have come to rely on it's availability for these purposes. In order to enable hard shoulder use for regular traffic, a monitoring system is required. It is especially important that operators are made aware of any stationary vehicle, pedestrians or significant debris prior to opening it for use as a running lane.

### Detect, Locate, Track and Report

The **ClearWay** Series for highways and tunnel solutions provides unrivalled detection rate and situation awareness. The system can detect pedestrians, slow moving or stopped vehicles and debris such as exhausts, bumpers or spare wheels, as well as vehicles that are reversing.

**ClearWay** can be deployed for wide area detection across the entire width of motorway lanes. A single sensor can scan hundreds of metres of road surface both with and against the traffic flow, to identify incidents on a lane by lane basis, with high accuracy. Single lanes, or the hard shoulder may be singled out, to alert operators to incidents whilst ignoring the normal traffic flow on adjacent lanes. The long detection range provides lower installation costs in terms of sensor numbers, to the benefit of the entire infrastructure.

The radar solution is generally unaffected by changing light conditions, fog or rain - which make the solution highly applicable for use on the road network, where other technologies can struggle with the changing weather or light conditions. In tunnels, large variations in lighting near the portals make no difference to the detection performance of radar, which is not reliant on background lighting. Furthermore, in a tunnel environment where smoke would obstruct camera images, radar continues to offer reliable incident detection.

Alarm generation is key to incident detection for these types of critical installations, and keeping the level of false alarms to a minimum is paramount. If false alarms become too numerous, network operators will not use the system, compromising the safety and efficiency of the road network. The **ClearWay** solution not only detects people and vehicles, it also pinpoints their lane and location along the carriageway within a 25cm resolution, and furthermore tracks their speed. Tracking a vehicle or person over a period of time, as they move along the road, allows high detection rates and extremely low false alarm rates to be maintained. From this track information it is possible to detect a single vehicle that drops below a set minimum speed threshold for longer than a pre-defined period of time. If this happens, an alarm is raised and sent via the interface to a third-party control system.

The **ClearWay** Series provides effective 24/7 early warning, which allows for earlier detection of incidents and provides more time for a response.

# ClearWay

## High Performance Incident Detection, for Motorways, Trunk Roads and Tunnels



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**ClearWay directs the camera**  
A PTZ camera can be directed towards the incident detected by the radar.

**Operators are alerted if an incident is detected**  
This can also be viewed from a remote location if required.

**ClearWay is effective in all weather and light conditions**  
The radar is unaffected by environmental conditions such as rain, snow, sunlight, smoke and fog.

**ClearWay can be mounted at an elevated position to help provide optimum coverage**  
Depending on the model, the radar is effective out to a maximum range of between 350-500 metres radius in each direction.

**Wildlife**  
Detection of small animals can be filtered out by the system so that they do not cause false alarms.

