Smart or ALR Motorways

Advancing Professional Rescue

Introduction >>>

SMART and ALR Motorways present unique hazards and risks for emergency responders, including:

- A lack of hard shoulder or periodic use of the hard shoulder as a ‘live’ lane, and
- Potential difficulties for emergency responders attending the scene of a given incident, who are travelling with the flow of traffic.

Due to their unique hazards and risks and before their availability for public use, motorways using SMART and ALR arrangements are each subject to deliberate and thorough liaison between the agencies that are likely to be required to respond to incidents in these areas.

The liaison aims to:

- Improve the tactical management of traffic to enable faster access,
- Encourage more operational co-operation between agencies, and
- Establish more information sharing between agencies.

The development of a SMART and ALR Motorway requires extensive renovation and creation of road infrastructure, including overhead gantries to facilitate signs and signals, and improved road surfaces especially relating to the intermediate hard shoulder. During this period, access to incidents on the existing motorway become even more challenging, with opportunities to access between junctions

limited and mechanisms to undertake ‘Reverse Access', which are explained later. It is vital therefore that liaison with construction and management organisations developing the SMART and ALR Motorways is robust, closely monitored for implementation and agreed arrangements/procedures are widely communicated to emergency responders. The first stage of this process of liaison is to agree on standard terminology amongst all partners, reflecting the Joint Emergency Services Interoperability Principles (JESIP); for example, concerning carriageways and slip roads identification:

- Main carriageways are identified by the letter’s ‘A’ or ‘B’.
- Carriageway ‘A' = Ascending junction numbers and away from the origin of the motorway.
- Carriageway ‘B' = Descending junction numbers and back to the origin of the motorway.

While slip roads off the main carriageways are generally identified by the letter’s ‘J’, ‘K’, ‘L’ or ‘M’:

- ‘J’ – Slip road off Carriageway A,
- ‘K’ – Slip road onto Carriageway A,
- ‘L’ – Slip road off Carriageway B, and
- ‘M’ – Slip road onto Carriageway B.

Standard lane referencing is used throughout ALR motorway sections. Within a four-lane section, lane one is closest to the nearside verge, and lane four is adjacent to the central reservation. Some small lengths of the hard shoulder have been maintained on certain sections of SMART motorways.

On SMART motorways, lanes are referred to as LBS 1, 2, 3 and 4. LBS stands for ‘Lane Below Signal’, so, for example, LBS1 is the dynamic hard shoulder. This method of identification prevents confusion when the hard shoulder is open or closed.

Note: The terminology agreed and used potentially differ from one motorway area to the next, to ensure that you familiarise yourself with local interpretations.

Responding to an Incident >>>

The response and management of an incident involving SMART and ALR Motorways have three core stages:

1) Discovery – The initial identification of a potential incident by a member of the public, an organisation or one of its staff members.
2) Verification – The clarification and confirmation of the location, extent and details of the incident as far as it is possible so that appropriate resources can be deployed. *
3) Incident Access and Initial Response – The determination of the most appropriate access route for the deployment of appropriate resources to make the scene safe for all, prevent, stabilise the situation and provide support for those involved. This may include the decision to close all or part of the carriageway.

*The way emergency responders Control Centres communicate during this period differs, given that Services have differing communications equipment and procedures. An example being the use of hailing and interoperability channels via emergency responder Control Centres and emergency responders communicating directly with the Highways England Regional Control Centre (RCC). It is essential that you familiarise yourself with your organisation's communication procedures and remain competent in the use of the associated equipment. Of importance at this stage is to highlight that emergency response in normal traffic flow ('With Flow') is always the initial and preferred approach to incidents involving SMART and ALR Motorways. This entails approaching the incident from the rear using the reported carriageway and in the same average direction of traffic flow.

Responding to an Incident – Discovery >>>

Discovery: Upon notification or detection of an incident occurring within an ALR area, the relevant Highways Agency will generally:

- Set a blanket 50 mile per hour speed restriction along the entire length of the affected link(s) (Junction to Junction) in conjunction with a motorway signal 'legend' appropriate to the nature of the reported incident (e.g. Incident, Accident, Obstruction, Debris, etc.).
- At the earliest opportunity, the Highways Agency Control Centre use Closed Circuit Television (CCTV) to verify the location and extent of the incident and disseminate this to other emergency responders via their respective Control Rooms. Note: CCTV cameras provide 100% coverage of ALR motorway sections of the network.
- Deploy Traffic Officers (TO) as appropriate.
- Confirm or arrange the attendance of other stakeholders as required.
- Adjust sign and signal to set as necessary to provide more accurate warning and instruction to road users of the incident and to control the flow of traffic, and
- Identify the most appropriate route and access point for all emergency responders and disseminate this to other emergency responders via their respective Control Rooms.

Responding to an Incident – Verification >>>

Verification: The primary objective during verification is to ascertain that sufficient details are gathered about an incident, to enable the most appropriate deployment of the resources of each emergency responder to be made. This information may be attained by Control Centres caller questioning a member of the public, another partner or a member of their organisation's staff. This includes:

- The location of an incident, specifying which carriageway and between which junctions as a minimum requirement and providing marker posts where possible.
- If the incident is between slip roads,
- If the incident is on an entry slip or exit slip,
- The type of incident,

- The extent/size of the incident,
- If an RTC, the vehicle type(s), the number involved and the nature of the collision.
- The number of casualties,
- If any casualties are trapped,
- If any responder is already on-scene and,
- Any identified hazards.

The initial emergency responder 'in attendance' should utilise the mnemonic METHANE to structure and deliver their initial information:

- M = Is this a Major Incident?
- Exact Location.
- Type of Emergency.
- Hazards, Present and Potential.
- Access/Egress Routes.
- Number and Types of Casualties.
- Emergency Services Present and required.

Responding to an Incident – Incident Access and Initial Response >>>

Incident access is typically by one of the following options and must be considered in this order:

- 'With Flow Access' – With the normal flow of traffic on the affected carriageway.
- 'Reverse Access' (Standard or Dynamic) – Against the normal flow of traffic on the affected carriageway by accessing the carriageway via the next available point after (Downstream of) the incident. This may be an emergency turnaround/access point or the next junction and can be any of the following two methods:
- Standard Reverse Access – Operational Commander in place at the head of the incident (Forward Control Point (FCP)).
- Dynamic Reverse Access – No Operational Commander in place! Access is made from a point after (Downstream of) the incident following a Dynamic Risk Assessment (DRA).

An example of 'Reverse Access' could be where the severity of the incident has resulted in a complete natural closure of the given SMART/ALR Motorway, severely impacting upon the ability emergency responders to access the incident with the flow of traffic, which has ceased in a significant traffic jam.

'With Flow Access' >>>

To assist 'With Flow Access' the Highways Agency RCC sets 'Red X' lane closure signals to provide emergency responders with an access lane to the incident scene. To encourage compliance the 'Red X's' are generally supplemented by the 'legend'/signage "Lane Closed for Incident Access". The access lane is established well in advance of the incident and can be set back as far as the previous junction, or beyond, where necessary.

Note: while more than one lane may be closed at the incident scene, only one lane is closed for incident access.

'Reverse Access' >>>

To utilise 'Reverse Access' the following minimum criteria are required:

- An Operational Commander from FRS, Police or the Highways Agency has control of the head of the scene, the FCP, and by physical presence prevents traffic flowing past the scene, supported by Highways Agency RCC closing the carriageway with signage and signals.

- The Highways Agency RCC confirms that there are no vehicles after (Downstream of) the incident scene, up to the chosen access point (On an ALR Motorway this can be by through the Highways Agency RCC using CCTV, a line of sight or by the vehicles in attendance).

Note: To establish an operational commander at the incident, Police and FRSs may consider attending via the opposite non-affected carriageway using their Standard Operating Procedure (SOP) for stopping in a 'live' carriageway.

This should only be used in extreme circumstances to access the head of the incident, e.g. known life risk, or to prevent a catastrophic escalation of events. Each emergency service must advise the Highways Agency RCC if their resources are to be deployed from the non-affected carriageway. The Highways Agency RCC then uses signage and signals to support access to the incident from the non-affected carriageway as directed by each emergency service.

Note: Highways England TOs are prohibited from accessing incidents from the non-affected carriageway.

Police >>>

In an incident in which the Police Service is involved, whether Police Officers are present on site or not, the Police Service power to close a carriageway or road can be passed to other persons, including members of other emergency services or organisations. This is therefore likely to be the most commonly used legal power to close a road when responding to incidents and collisions on any highway. FRS and TOs may also close roads and direct traffic using their powers under separate legislation. The powers can be briefly summarised as follows:

Section 67 Road Traffic Regulation Act 1984;

This Act/Section allows the Police Service, or any persons acting under Police Service instructions, to close a carriageway or road as a consequence of extraordinary (i.e. unforeseen and unplanned) circumstances, maintaining the closure for up to 7 days.

Section 6 Traffic Management Act 2004;

This Act/Section allows TOs when engaged in the regulation of traffic, to stop and direct vehicles, or to make vehicles proceed in, or keep to, a particular line of traffic.

Section 44 Fire and Rescue Service Act 2004;

This Act/Section allows an employee of an FRS to do anything he/she reasonably believes to be necessary, including closing a highway or regulating traffic, in the event of an RTC or fire, to extinguish the fire, protecting life or property, or rescuing people.
Once the 'Reverse Access' minimum criteria have been confirmed by the Operational Commander and Highways Agency RCC, the 'Reverse Access' procedure is adopted. The affected carriageway essentially becomes a two-way road. Therefore, it is imperative that all responders adhere to the following prescribed procedures. Confirmation of the decision to implement 'Reverse Access' must be communicated to all emergency responder Control Centers. It is the responsibility of each Control Centre to inform its on-road resources that "Reverse Access is being made", and that they may enter the motorway network via the on-slip (As preference), off-slip or another dedicated access point, depending on the ability of emergency service resources attending the incident and the physical layout of the access point. The access point and level of access must be communicated to all organisations. Never assume, always ask for verbal confirmation of "Reverse Access is being made".

- The carriageway closure implemented by the Operational Commander is supported by 'Red X' and signage/signals upstream of the incident which indicate closure of all lanes.
- The 'Reverse Access' approach is supported by signage/signals on the affected carriageway after (Downstream of) the incident scene by closing all lanes except lane one, which remains open in the correct direction with a speed restriction of 20 miles per hour, the 'legend' "ONCOMING VEHICLE" is also displayed.
- The Highways Agency RCC assign an operator to deal exclusively with all issues relating to 'Reverse Access' until its conclusion. The operator uses CCTV to continually monitor all activities and developments which are conveyed to all working partners.
- A marshalling area should be established a minimum of 100m from the scene; emergency vehicles should park in the approach lane, allowing enough room for vehicles to turn and exit the carriageway. Only vehicles directly involved in rescue/medical treatment should progress past this point.

Note: It is important to remember that the dynamics surrounding of an incident can change and this may necessitate a change to any previously agreed access arrangements.

Emergency vehicles usually enter the motorway on the wrong lane of the on-slip road and turn right across the motorway to enter lane 4, or outermost lane. On reaching the end of the on-slip responders should treat the access point as a “give way” and only enter the carriageway once satisfied that it is safe to do so. At some locations or in extenuating circumstances, it may be preferable to use the off-slip to gain access to the carriageway. However, the standard procedure is to use non-slip access.

Dynamic ‘Reverse Access’ >>>

Where one or more of the minimum criteria for implementing ‘Reverse Access’ are not met, in such an extreme circumstance, e.g. known life risk, or to prevent a catastrophic escalation of the event, emergency services may, upon their DRA and based upon their own SOPs, enter the carriageway to access the scene.

Note: TOs won't implement dynamic 'Reverse Access’.

An emergency responder contemplating a decision to implement Dynamic ‘Reverse Access’ must:

- Ensure the decision is based upon the latest information and that an Operational Commander cannot make the head of the incident, FCP, within a time that is reasonably practicable.
- Speak to the Highways Agency RCC to gather information from CCTV regarding vehicle movements and the incident scene, e.g. to confirm no motorcyclists filtering through traffic.
- That the Highways England RCC has set signage/signals, where available, to support access.
- Open communication is maintained to the Highways Agency RCC in case a vehicle movement, or another such danger is observed, and warning can be given directly to the emergency responder making the Dynamic ‘Reverse Access’.

The earlier mentioned limitations in which emergency responders and Control Centres communicate during this period impact upon a given emergency responder's ability to undertake Dynamic ‘Reverse Access'. Therefore, it is vital that organisations consider all available options to enable streamlined and direct communications. This ensures that such a practice can be an option in extreme circumstances. A message must be passed to all emergency responder Control Centres stating that “Dynamic ‘Reverse Access’ is being made”. Access should be in the outermost lane to be consistent with the Standard ‘Reverse Access’ procedure and the signals sent by the Highways Agency RCC. Access in a controlled manner using appropriate speed for the conditions and environment. All available warning lights and sirens are to be used. Having accessed the head of the scene; it is then vital that the scene is sealed to enable Standard ‘Reverse Access’ to be safely implemented and communicated to emergency responder Control Centres.

Summary >>>

- So, in summary, SMART and ALR Motorways present unique hazards and risks to emergency responders.
- Liaison with partners is critical during the development, use and response to SMART and ALR Motorways.
- There are three core stages of dealing with an incident on or near a SMART and ALR Motorways:
    1) Discovery,
    2) Verification, and
    3) Incident Access and Initial Response.
- Communication between emergency responders and Control Centres, particularly the Highways Agency RCC is vital, to the speed and safety of the incident response. Use consistent terminology and formats.
- Emergency response in normal traffic flow (‘With Flow’) is always the initial and preferred approach to incidents involving SMART and ALR Motorways.
- Emergency responders have the ‘power' to stop traffic during their activities.
- ‘Reverse Access’ has two methods, Standard and Dynamic.
- Dynamic ‘Reverse Access’ and Access via non-affected carriageway must only be used in extreme circumstances!