



SCOTTISH EXECUTIVE

FABER MAUNSELL

USE OF INTELLIGENT ROAD STUDS FOR NETWORK MONITORING/HAZARD WARNING

EXECUTIVE SUMMARY



Project co-funded by the European Commission (DG TREN)
MIP 2001-2006

Executive Summary

This study has investigated the functionality of Intelligent Road Studs (IRS) and considered how these could be implemented within the Scottish Trunk Road Network, under the umbrella of the EU co-funded project, STREETWISE. The study has involved production of a number of technical reports aimed at furthering the Scottish Executive's comprehension of the functionality and operational requirements of IRS systems. These technical reports aimed to:

- Investigate the various functionalities of IRS and define their operational limitations with respect to network monitoring, incident detection and hazard warning requirements;
- Establish the operational requirements of IRS in the context of power, communications and installation requirements;
- Examine previous IRS applications and potential future applications to establish suitable systems and manufacturers; and
- Examine how and where a trial IRS application could be installed on the Scottish Trunk Road network.

The investigation focused on identifying the most cost effective and efficient system which could be integrated into and enhance the existing network. Current available IRS functionalities included enhanced lane delineation (of up to ten times that of existing road studs), traffic monitoring (count/speed/ classification), incident detection, weather monitoring, hazard warning and potentially journey time monitoring functionalities.

Once a suitable trial IRS system had been identified, a supplementary trial site report was produced which identified and discussed site related issues. In particular how a trial system could be installed on a section of the Scottish Trunk Road Network. This study aimed to:

- Identify operational requirements and confirm methods of operation;
- Identify Installation requirements and estimate system installation costs; and
- Identify potential trial sites.

This study concluded, recommending that the potential system should utilise fixed power and communications infrastructure.

Following investigations, it was established that only one IRS manufacturer (Astucia (UK) Ltd) was able to provide a total system with the full functionality required by the trial system. Therefore it was recommended that the trial system be procured through a single source tender.

A trial will enable a controlled assessment of IRS to be made. Factors, which were considered during the investigation of potential trial sites, included:

- Utilisation and safety of route;
- Availability of power and communications infrastructure;
- Method of operation; and
- Site access.

The IRS Site Report identified three types of site that could be considered for installation of a trial IRS application. These were:

- Motorway with NADICS power + communications infrastructure;
- Motorway with basic, non-NADICS power and communications infrastructure; and
- Motorway/non-Motorway with no existing power or communications infrastructure.

A number of potential sites were identified and discussed. A final report was produced providing recommendations on a trial system, site location, costs and how it could be integrated into NADICS. When considering the costs involved in providing new power and communications infrastructure, the report suggested that the trial should be located on a site with existing infrastructure of adequate quality. It was thus concluded, based on network knowledge and subsequent site visit, that the M8 between Junctions 4 and 6 could make the most suitable trial site.

The potential for future integration with NADICS was also considered at this stage. To facilitate remote data monitoring and/or control, it was confirmed that with software and hardware adaptation, the IRS processor could be linked to a NADICS Multi Purpose Controller (MPC) enabling external interface with NADICS. The level of control will depend on whether the system is for passive monitoring or active access.

To tie-in with budget allocations, it was suggested that a 3km system may be installed on the westbound M8 between junctions 5 and 6. However, it was recommended that before progressing with such an installation, Strathclyde Police, AMEY (South East) and Serco should be consulted. To progress with such an installation may require assistance from AMEY and Serco.

In conclusion, this study has confirmed that Intelligent Road Studs can provide a flexible alternative to traditional static loop based detection systems, affording network monitoring, incident detection and hazard warning functionalities as well as increasing the safety and efficiency of the section of road network where installed. Such installations would therefore not only provide an increased service to the network user, but also help toward the European Union target of 80% coverage for monitoring equipment on the TERN network.

It is intended that the project shall now progress to the next stage – procuring, installing and evaluating a trial IRS application. Initially, FaberMaunsell will produce an outline Functional Specification to facilitate discussions with Astucia prior to procurement. If these discussions are satisfactory, procurement will proceed (with production and issue of conditions of contract and specification documentation) as a Turnkey project.