

AUTUMN 2019

# Shawhead junction

Latest technology keeps traffic moving



Part of the M8 M73 M74  
Motorway Improvements Project



**The use of smart technology installed as part of the M8 M73 M74 Motorway Improvements Project has improved journey times and is managing the flow of traffic through Shawhead junction.**

Not all of the technology in use is obvious to road users, or indeed can be seen, therefore this leaflet outlines the various technologies, how they work and the benefits they bring.

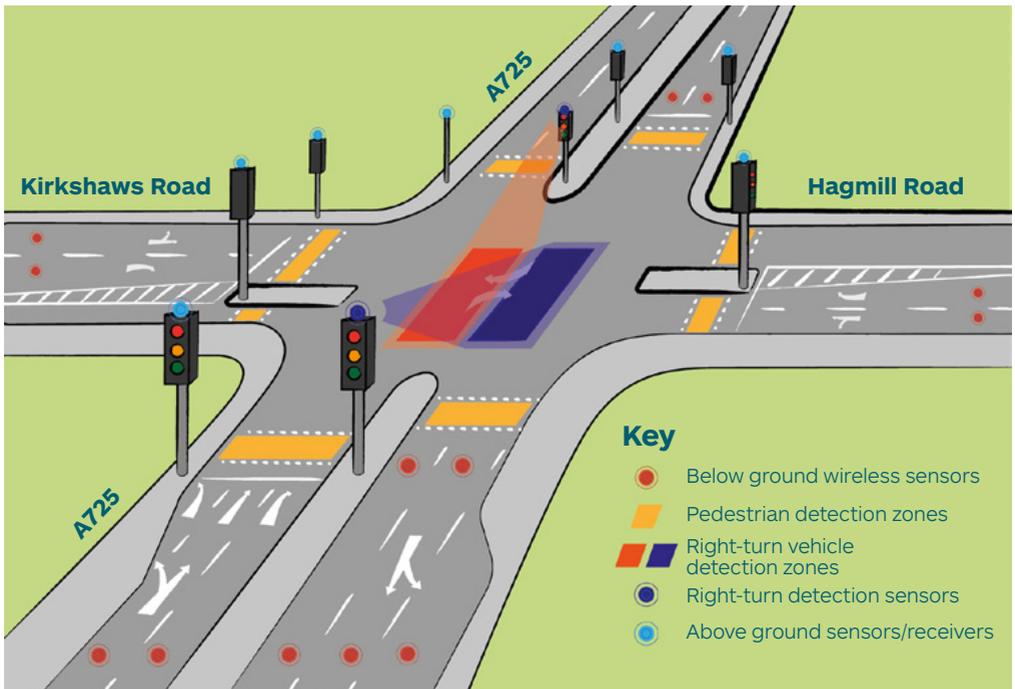
## The use of technology

Shawhead junction uses a variety of technology which monitors traffic in real time and feeds back information to a signal control unit. The signal control unit assesses the volume of traffic and adjusts the traffic signal timings to manage queuing on all approaches.

These real time adjustments, based on actual traffic flow, ensure the signal operation is optimised, maximising the number of vehicles travelling through the junction.

Each of the three junctions at Shawhead are equipped with a linked network of sensors and detectors that continuously monitor and provide feedback to the signal control unit.

The sensors and detectors take many different forms and are installed above and below ground on approach to and at each junction.



Artistic representation showing where some of the sensors and detector zones are located at the A725/Kirkshaws Road/Hagmill Road junction. (note: not to scale)

**Shawhead junction: Latest technology keeps traffic moving**

This technology provides the following benefits:

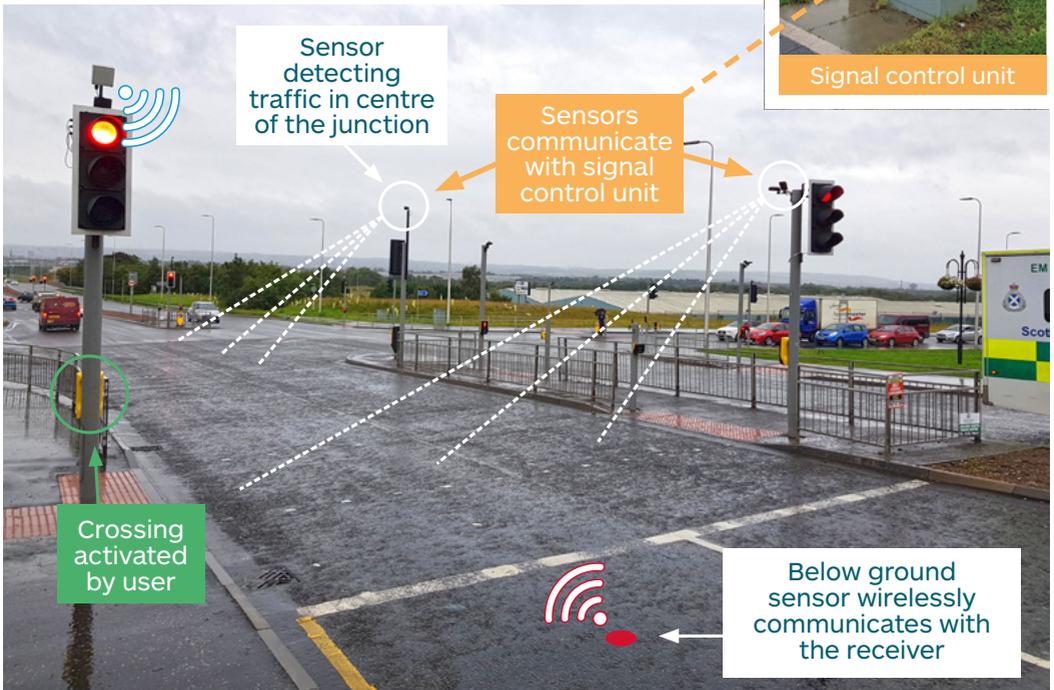
- Maximises the number of vehicles travelling through the junction
- Reduces queue lengths
- Provides more consistent journey times
- Provides safe signal phasing for both road users and pedestrians.

## Wireless technology

The use of wireless technology, shown in the image below, allows the numerous below ground sensors to communicate with receivers (usually located on top of the traffic signal heads) and the signal control unit.

The use of wireless technology:

- Reduces the need for cabling and ducting in the road
- Avoids conflict with underground services
- Reduces disruption to road users
- Is easier to maintain.



Communication between signal sensors/detectors and signal control unit

## Above ground detection

Above ground sensors detect when a vehicle is present. These types of sensors are often located on top of signal heads as illustrated within the diagram on page 3.

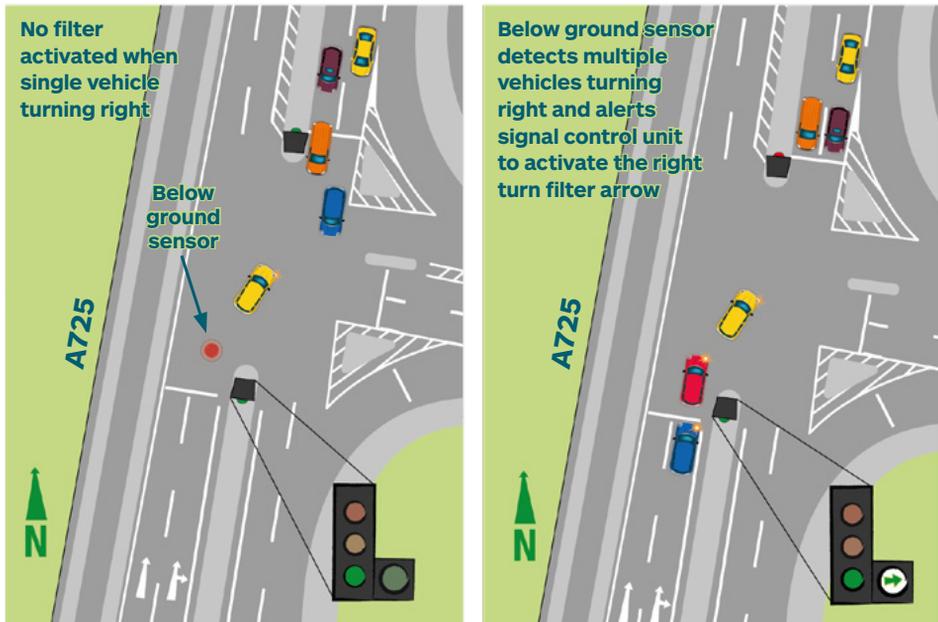
This information is fed back to the signal control unit allowing it to adjust the signal timings to accommodate traffic demand. These sensors are used at the A725/Kirkshaws Road/Hagmill Road junction to ensure that vehicles turning right from the A725 into Hagmill Road or Kirkshaws Road have sufficient time to clear the centre of the junction before the next signal phase starts.

These types of sensors are also used to detect Non-Motorised Users (NMUs), such as pedestrians, crossing the road. This allows NMUs time to reach the footpath prior to the signals changing, improving safety at the pedestrian crossing points.

## Below ground detection

Sensors are also located within the road surface to detect if a vehicle is present. This is used to monitor queue lengths on approach to the junctions and activate filter lane signals.

An example of this at Shawhead is the right turn movement from the A725 northbound to the A8 eastbound on-slip road, as illustrated in the diagrams below. A sensor is located below the surface of the carriageway which alerts the signal control unit when a queue of traffic is waiting to turn right, activating the right turn filter. The right turn filter arrow does not activate when only one vehicle is waiting, giving priority to other traffic flows with greater demand.



## Making your journey more reliable

### Flexible and efficient system

Sensors are used to adjust how the signals operate in real time and offer more flexibility than traditional fixed signal timings. This is useful at Shawhead where peak flows of traffic can be high and demand for particular movements can vary significantly throughout the day.

Where the sensors indicate there is reduced or no demand for a particular movement, the signal control unit will adjust the timing of the signal phases accordingly, to avoid unnecessary queuing.

### Reduced queuing times

Given the proximity of the A725/Kirkshaws Road/Hagmill Road and the A725/A8 slip-road junctions, there is limited road space for queuing traffic between the junctions. The wireless technology communicates between both junctions and the signal control unit to optimise the operation of both junctions and reduce queuing.

The signal controller may, for example, give a longer green light period to through traffic on the A725 at peak times to reduce queuing. This would result in traffic on the side roads waiting slightly longer than at off-peak times before being given a green light.

If the system detects that there is no demand at a specific stage, for example, during a pedestrian stage where no one is waiting to cross the road, then the system will skip this stage and move onto the next stage in the sequence.



### Better connections for Non-Motorised Users (NMUs)

The new junction design improves connectivity for NMUs between the communities of Bellshill in the south and Coatbridge in the north.

The signals at the A725/Kirkshaws Road/Hagmill Road junction include NMu phases providing access to the improved footpath/cyclepath network. The signals are equipped with similar sensors that detect if someone is crossing the road when the green man is displayed, ensuring the signals will not change until the crossing is clear.

#### Key

-  New shared bridges for cyclists and pedestrians
-  New cycle-ways and paths

## About Shawhead junction

Shawhead junction was upgraded as part of the £500m M8 M73 M74 Motorway Improvements Project. The new junction design was developed to manage the high volume of traffic on three trunk roads and four local roads that connect at Shawhead.

As a result of the new technology installed to manage the flow of traffic, journey times have significantly improved through the junctions since the upgrade was completed.

The majority of new signalised junctions built as part of the M8 M73 M74 Motorway Improvements Project utilise technology to optimise junction operation.

### The improved layout and technology at Shawhead have:

- Improved journey times
- Reduced queuing
- Improved safety for road users, pedestrians and cyclists
- Increased choice of travel mode.

## Shawhead junction upgrades

Upgrades made to Shawhead junction as part of the M8 M73 M74 Motorway Improvements Project.

Two new signalised junctions replaced two mini roundabouts

A new signalised junction connects the A8 westbound with the A725 and North Road (B7070)



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