

Traffic light management and maintenance

We manage permanent traffic lights throughout Somerset to aid and manage the safe movement of all users. We currently look after 234 (and increasing) traffic light controlled crossings and junctions. All the sites are remotely monitored so that most faults are reported automatically and repaired promptly for public safety and network efficiency.

At a junction controlled by traffic lights vehicles are allowed to move in a strictly sequenced way. The amount of vehicles, size of the road, layout of the road and stage sequences will affect the way the lights run. In Somerset we strive to install traffic lights using best techniques and up-to-date technology to help reduce delays to all traffic without compromising safety.

Traffic lights are controlled in different ways depending on the location, day of the week or time of day. Contrary to popular belief traffic lights in Somerset and the UK do not run on fixed timings. Methods of control used in Somerset are as follows:

VA (Vehicle Actuation) This is the simplest form of controlling traffic lights. Each lane leading to a junction will have a sensor either buried in the ground or on top of a pole. We call these sensors 'detectors' as they are able to detect vehicles approaching the junction. This information is sent through to the controller at the junction which is usually installed in a large grey or black box on the side of the road close to the junction. The controller is effectively a large calculator that can count the number of vehicles and decides when to change the lights and how long the lights stay green.

MOVA (Microprocessor Optimisation Vehicle Activated) This system is very similar to VA but is a lot more intelligent. It too uses detectors buried in the ground but not only does it count cars, it can tell the speed they are travelling. This system is normally used at junctions that are on the outskirts of towns and not close to other junctions. Junctions controlled by MOVA have a computer that can calculate the amount of vehicles and change the lights much faster than standard junctions controlled by VA. This processing power provided by the computer enables the junction to run more efficiently, but still in a safe way.

'SCOOT' Urban Traffic Control system. Some of the traffic light junctions in the main towns are connected to a central computer at County Hall, Taunton. This computer runs software called SCOOT (Split Cycle Offset Optimisation Technique), which links the junctions together and will judge the amount of vehicles over the whole road network rather than just one junction. The linking provides benefits in reducing congestion and makes sure that any queues that emerge are not just moved to the next set of lights. SCOOT is able to treat large areas or even whole towns as one super junction and work out the best choice of action for the whole network, not just one set of lights. We use SCOOT widely in Bridgwater, Taunton, Wells, and Yeovil.

Maintenance and testing

There are strict rules in place regarding the design and testing of traffic lights before and after they are installed. Before a controller is installed on the roadside we test it at the manufacturer's factory and again when it has been installed on the roadside. The most important test carried out is to make sure the 2 green lights that conflict can never be shown at the same time. Should the controller malfunction and try to show 2 greens that conflict, it will shut down and switch out all the lights instantly. Should you approach a set of lights that have switched out you should proceed with extreme caution. This safety feature makes it impossible to have 2 conflicting green lights showing at the same time. All traffic lights and signal-controlled pedestrian crossings in Somerset are linked back to County Hall, Taunton, via a phone line and constantly communicate with a monitoring

system at County Hall. If a fault occurs, the traffic lights should inform the monitoring system. A Traffic Control Engineer will study the faults and will try and fix the fault via the phone line. If that is not possible he will report them to the maintenance contractor for investigation and repair. Sometimes faults will occur that cannot be detected by the control systems. We are then reliant on the public and the Police to report the fault to us.

New technologies LED (light-emitting diodes) Traffic lights

Traffic lights have traditionally used incandescent or halogen light bulbs, but recently more cost effective alternatives using LEDs have become available. The advantages to using LED traffic lights are:

- Much greater energy efficiency - which is good for the environment and the running costs of traffic lights.
- Much longer lifetime between replacements, measured in years rather than months. Instead of sudden burn-out like incandescent-based lights, LEDs start to gradually dim when they wear out, this gives us plenty of warning as to when to change the light - which is much safer than a sudden loss of a traffic light.
- Brighter illumination with better contrast against direct sunlight. All new traffic lights in Somerset will use
- LED signal heads and all existing lights will be changed to LED's when we upgrade the site.
- ELV (Extra low voltage) Traditional traffic lights run on 230 volts. With the development of the more efficient
- LED lights which use less energy, we are now able to run new traffic lights on ELV (extra low voltage) of 48 volts. The benefits of using ELV lights are as follows · There is approximately a 60% saving in energy used compared to a traditional system. This leads to a large reduction in CO2 production and energy costs. The ELV sites work on a much safer voltage level. The ELV equipment use less materials as the amount of cables installed in the ground is reduced. All new traffic lights in Somerset will use the ELV system where possible and all existing lights will be changed to ELV when the location is upgraded.