

# 6 Traffic Signals



## 1. Introduction

The first traffic lights were installed at Piccadilly Circus in 1926. Since that time they have been used widely across the highway network as an important way of managing traffic flows and reducing traffic collisions. Nowadays they are managed by complex computer programmes that can control the flow of traffic around the network and can react to the changes in traffic depending on the actual movements at junctions.

## 2. Typical Problems

'We need a pedestrian/toucan crossing'

'The Zebra Crossing holds up the traffic. Can we have a pelican crossing instead?'

'The roundabout gets congested. Can traffic lights be installed?'

'Can we have a green man on the traffic lights?'

## 3. Things to Consider

Signal controlled crossings and traffic lights can be expensive to install. For many LHPs, one scheme could take up the majority of the available budget and in many cases signals are not necessarily the only solution to the problem.

It is important to recognise that while the introduction of both signal controlled crossings and traffic lights help to manage the interaction between traffic and other road users; they can both result in an increase in congestion. This needs to be considered, especially where there are already air quality concerns along a traffic corridor.

All pedestrian phases at traffic signaled junctions will add to traffic delays. If there is already congestion, particularly at peak times, the extra delay can have a significant impact on journey times.



## 4. Typical Measures

### Light Controlled Crossings

These are used to help pedestrians, cyclists and horse riders to cross the road safely. The public tend to consider that these are a safer type of crossing, though there is no evidence to support this.

Most pedestrian crossings include a beeping sound which is emitted when the green man is showing. The beeper is not used at dual staggered crossings or at any locations where the audible beep may mislead pedestrians waiting at the adjacent crossing.



All push buttons now include a tactile rotating cone to assist visual and hearing impaired users.

- **Pelican (Pedestrian Light Control)** crossing is the traditional crossing. It originally showed the red/green man signal on the far side of the road. They are easily recognised by the flashing 'green man' signal to warn pedestrians that the signals are about to change and a flashing amber light indicating to drivers that they can proceed, providing there is no pedestrians waiting to cross.

*This older style of crossing is no longer approved for new installations.*

- **Puffin (Pedestrian User Friendly Intelligent Crossing)** – This new style crossing has near-sided pedestrian signals (located on the pole nearest to the waiting area). This type of crossing has detectors to extend the period after the green man has expired and before the drivers get a green light to allow pedestrians to clear the crossing.
- **Toucan (Two-Can Cross)** – Cyclist and pedestrian. These are implemented along cycle routes to help both cyclist and pedestrians cross safely.
- **Pegasus** (named after the mythical winged horse) – Placed where a bridleway crosses a road. The crossing provides special consideration for horse riders to walk alongside pedestrians.

*This style of crossing can be seen at the top of page 3.*

- **Tiger Crossing** – Like a zebra crossing, but cycling is permitted adjacent to the pedestrian crossing area and cyclists are not obliged to dismount.

A light-controlled crossing interrupts the flow of vehicles and can be frustrating to drivers if a pedestrian, cyclist or horse rider has already crossed.

Crossings across a wide road or dual carriageway are normally staggered so that there is a shorter interruption of the traffic flows while pedestrians are crossing one half of the road. The road must be wide enough to accommodate an area where pedestrians, cyclists and possibly horses can wait while the second phase of the crossing is operated. If horses are to be accommodated, the central island must be very wide to avoid the horses being spooked by traffic moving behind them.

## 4. Typical Measures continued

### PUFFIN Crossings

In 2012, in response to concerns raised by pedestrians, Transport Research Laboratory (TRL) conducted research into the benefits of the near-side display as opposed to the far-side display. The research showed that pedestrians comply better with the near-side display and make safer choices when crossing the road.

Since the release of the new [Traffic Signs and General Directions Guidance](#) in April 2016, light-controlled pedestrian crossings must be of the new PUFFIN Style which has the near side display as standard. However, the DfT has recognised that at the busiest crossings, the nearside display only, might not always be the best solution. In the 2016 guidance the DfT retained the provision for a far-side display at an existing site or for use at a new site if nearside signals are felt not to be the best option on safety grounds.



### TOUCAN and Pegasus Crossings

The general principles for the installation of a toucan or pegasus crossing are the same as those for a puffin crossing. In addition:

- A toucan crossing can only be sited where it links sections of a cycle route.
- A pegasus crossing can only be sited where it links sections of bridleway.



### Traffic Lights

- These control the flow of traffic at a junction and in conjunction with other signal-controlled junctions, manage the traffic along a route
- They may or may not include pedestrian phases.
- All traffic signals in Essex are set to adapt to the traffic flows along the network.

When considering changing the type of control at a junction it is important to understand the impact on the whole route. This will require traffic modelling to be undertaken before a scheme can be agreed.

Adding a pedestrian phase to a set of traffic signals will stop all traffic in a particular direction while the pedestrians cross and at some junctions may have an all red phase depending on the junction layout. Typically a crossing on one arm of a 3 or 4 arm junction of single carriageway would require all traffic to stop

All pedestrian phases will add to traffic delays at the junction. If there is already congestion, particularly at peak times, the extra delay can have a significant impact on journey times.

## 5. Scheme Investigation

All LHP requests for crossings must be submitted with the problem on a request form.

All LHP schemes will require a pedestrian vs vehicle count (PV<sup>2</sup>) to ascertain whether the location meets the criteria for a signal controlled crossing. A PV<sup>2</sup> score of 0.7 X 10<sup>8</sup> is the minimum requirement for a signal controlled crossing.

Key factors that will be considered by an engineer when designing a signalised crossing include:

- The highway boundary – does ECC own all the land necessary to install a new crossing?
- Traffic counts and traffic modelling will be required to investigate the impact of signals and signal timings on the highway network; this will be particularly necessary for traffic signals at busy junctions

*It is important to note that traffic modelling can be both expensive and time consuming and may result in abortive costs if it is found that the new signals will have a detrimental impact on the overall traffic flows.*

- Accident history, type and severity and identification of common factors.
- Speed limits and speed of traffic.
- Lighting will be required when a pedestrian crossing is introduced.
- Is there a power source for the lighting and light-controlled crossing?
- What utility apparatus is there within the highway that may need to be relocated?

Signal controlled crossings are normally the only option on high speed roads (40mph and above). The current guidance states that 'Where the 85th%tile speed is greater than 50 miles per hour, serious consideration should be given to speed reduction measures before installing at-grade crossings'.\*

Zebra crossing requests where the 85%ile speed are above 35mph will need to be considered for a signalised crossing as an alternative.

\* The 85th%tile is if is the speeds of all motorists are ranked slowest to fastest, the %tile speed separates the slowest 85% from the fastest 15%

## 6. Costs and timescales

The Essex County Council contract with Ringway Jacobs is a target cost contract and not a fixed price contract. This type of contract was chosen as the best type of contract to deliver savings and efficiencies and also to promote partnering between ECC and Ringway Jacobs.

An explanation of the process, including costs and timescales for typical schemes can be found in [Appendix 1](#).

## 7. Glossary of Terms

<b>AVL</b>	Automatic Vehicle Location (similar to RTPI)
<b>CMA</b>	Cabinet Member Action
<b>CMB</b>	Cabinet Member Briefing
<b>EA</b>	Environment Agency
<b>ECC</b>	Essex County Council
<b>EH</b>	Essex Highways
<b>LHP</b>	Local Highways Panel
<b>NEPP</b>	North Essex Parking Partnership
<b>PP</b>	Parking Partnership
<b>RTPI</b>	Real Time Passenger Information
<b>S106</b>	Section 106 (Money provided by a Developer to County Council to implement infrastructure as an obligation of the planning permission)
<b>S278</b>	Section 278 (Infrastructure required to be implemented by the Developer as an obligation of the planning permission)
<b>SERP</b>	Safer Essex Roads Partnership
<b>SID</b>	Speed Indicating Device
<b>SEPP</b>	South Essex Parking Partnership
<b>SLO</b>	Speed Limit Order
<b>SSSI</b>	Site of Special Scientific Interest
<b>TRO</b>	Traffic Regulation Order
<b>TSRGD</b>	Traffic Signs Regulations and General Directions
<b>VAS</b>	Vehicle Activated Sign
<b>85th%tile</b>	85th%tile (If speeds of all motorists is ranked slowest to fastest, the %tile speed separates the slowest 85% from the fastest 15%)