

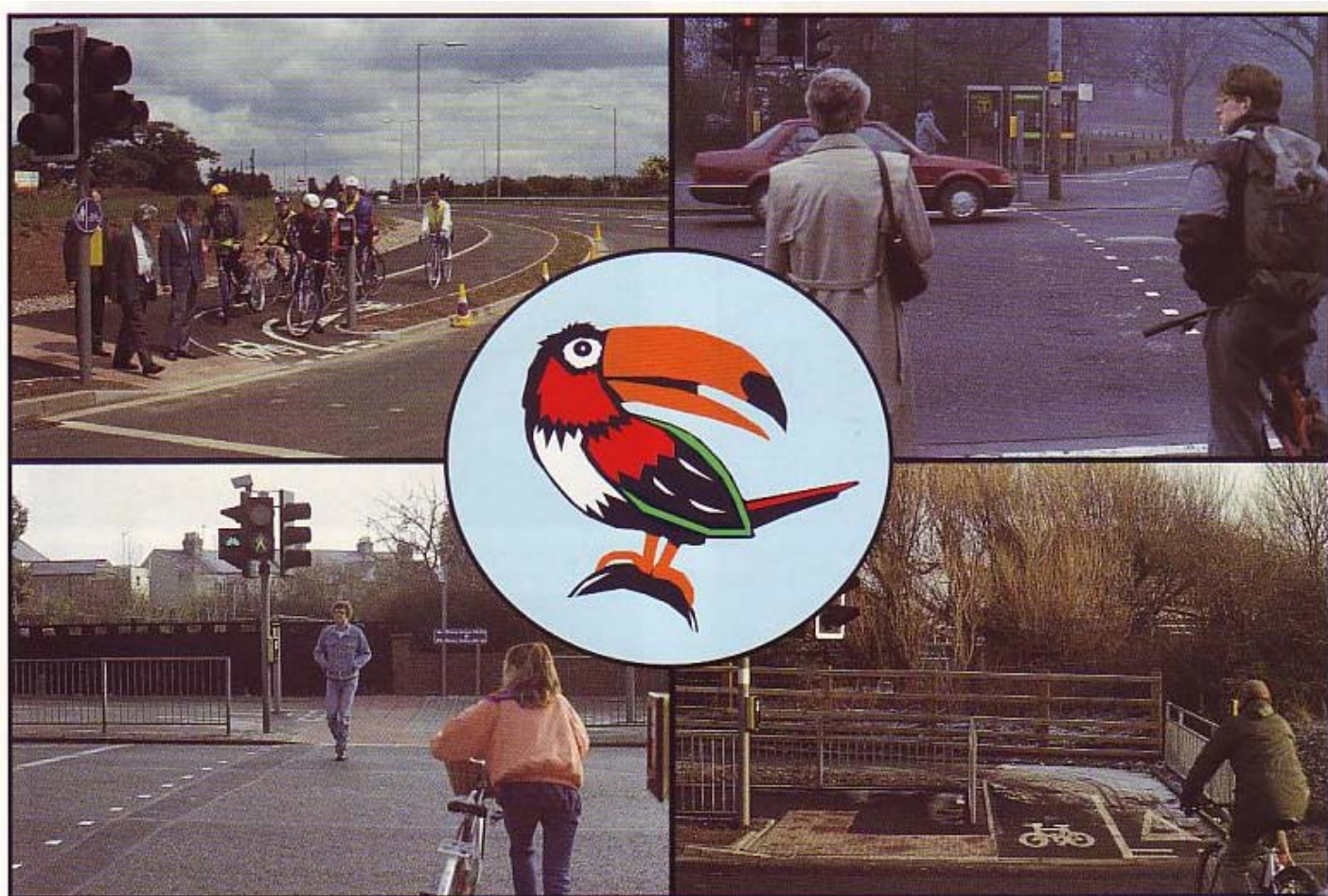
Traffic Advisory Leaflet 10/93
August 1993



"TOUCAN" - An unsegregated crossing for pedestrians and cyclists

Summary

This leaflet gives advice on the design and use of the Toucan signal controlled crossing, and describes future developments. The advice is based on the results of a trial project involving 13 sites throughout England, Scotland and Wales, comprising 25 crossing places.



Background

The need for a signal controlled crossing to improve the safety of cyclists crossing busy roads became apparent in the early eighties. This led to the development of the cyclist signal controlled crossing, and the parallel shared use crossing. The latter combined the cycle signal controlled crossing with a light signal controlled crossing for pedestrians, though cyclists and pedestrians were segregated from each other. Both these crossing types are described in detail in Local Transport Note 1/86.

The parallel crossing is relatively expensive because of the amount of signal equipment it uses, and the space it occupies. As a result parallel crossings have not been widely used, and this has been a factor hindering the development of safe routes for cyclists. Experience gained from those parallel crossings which have been installed showed that pedestrians and cyclists used each others crossing areas if that was more convenient. In response, the Department of Transport (DOT) commissioned a report from the Transport Research Laboratory (TRL) on the behaviour of cyclists and pedestrians at crossings. The report, Contractors Report 173, confirmed the reluctance of authorities to install parallel crossings, and indicated that these crossings were not as satisfactory as Pelican or Zebra Crossings. It also noted that where cyclists cycle over Pelican or Zebra Crossings there were no safety or practical problems for pedestrians. The report led to the development of a shared, unsegregated pedestrian/cycle signalled crossing, referred to as the TOUCAN.

Toucan Crossing Development

A number of local authorities agreed to take part in a trial to test the practicality of the Toucan Crossing. They proposed their own schemes for inclusion, alongside ones from the Welsh and Scottish Offices and the DOT North West Regional Office. The Department is grateful to these local authorities for their cooperation. The authorities involved were the county councils for Hampshire, Avon, Devon, Nottinghamshire, Cambridgeshire, Lancashire, West Sussex and South Glamorgan, and Strathclyde Regional Council.



Typical signal aspect



Typical push button



Standard tactile surfacing

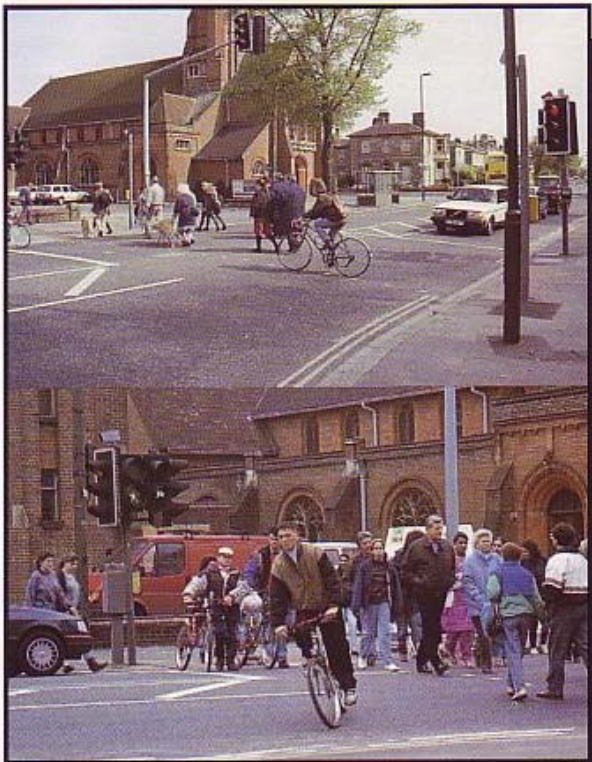
A working group was formed with representatives of the local authorities and agreed final details of the sites. These included conversions of a Zebra Crossing, several Pelican Crossings, and two Cycle Signal Crossings. No Parallel Crossings were included in the project. All installation costs were borne by the local authorities (except the trunk road site) while the Department funded research monitoring studies. The first crossing was commissioned in Southampton in February 1991, and the last crossings of the project in Cardiff and Weston-Super-Mare in June 1992.



Example of segregated layout



Queueing at junction, Tushmore roundabout, Crawley



Pedestrians and cyclists together

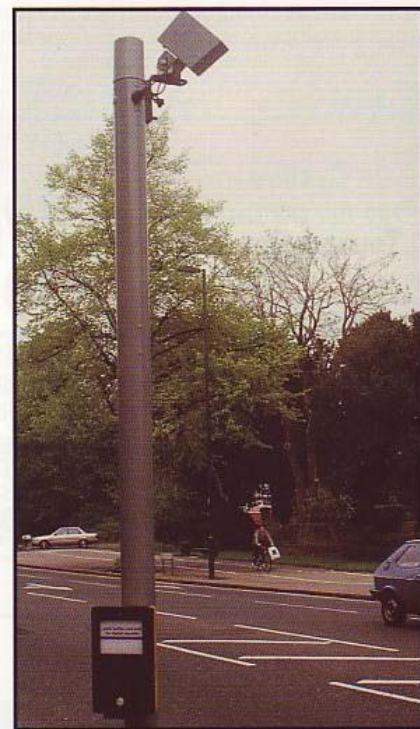
Equipment, signing and layout

The equipment used was of an approved type; special signs authorisation was (and still is) required for the cycle signal aspect and the modified push button plate. Push buttons were used because of siting and performance problems with inductance loops in some circumstances.

An unsegregated area at the footway threshold was the preferred design, as shown in the layout figure opposite. However, segregated approaches were agreed in some cases where the highway authority expressed a strong preference for them. All layouts required the following:

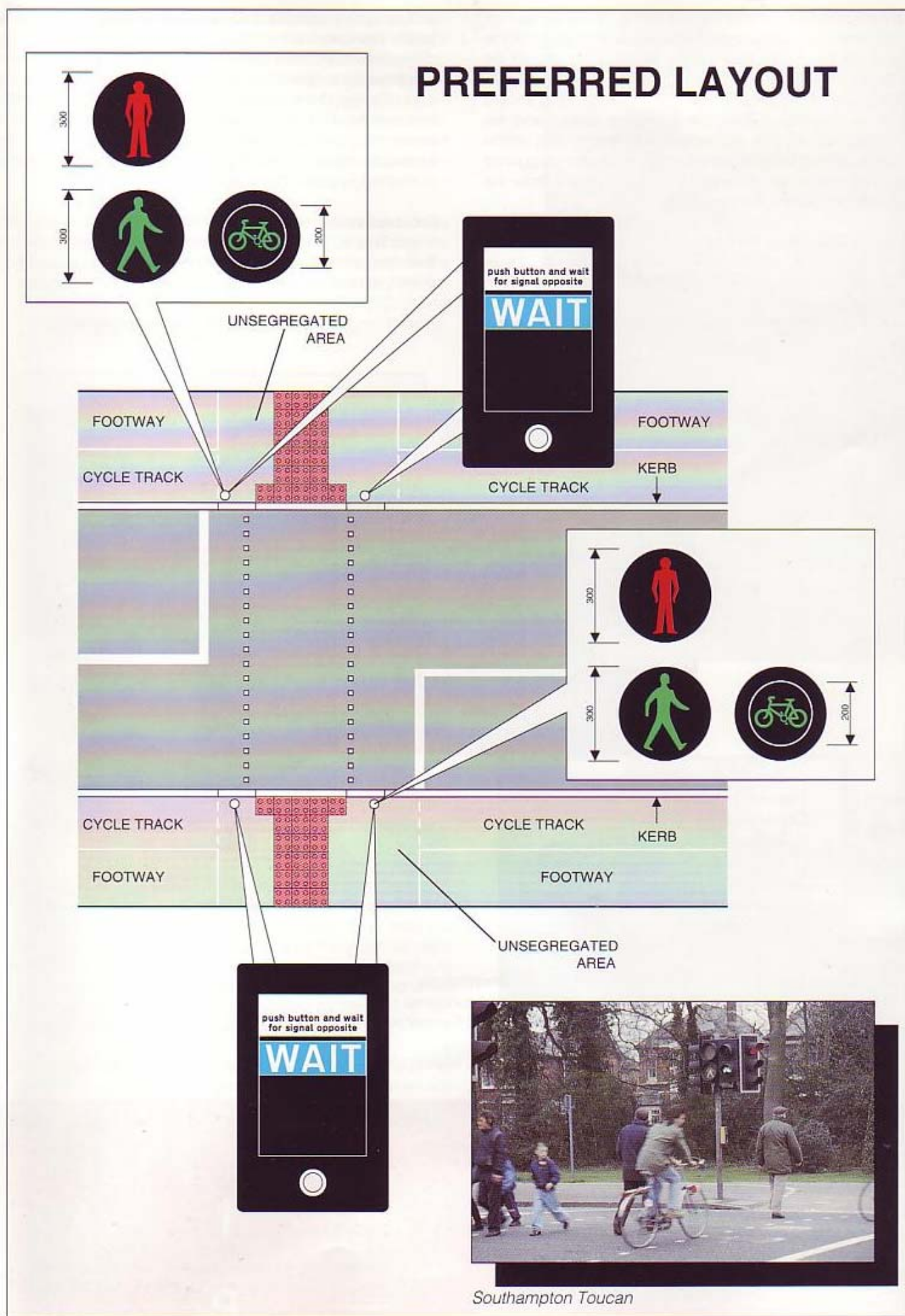
- a) Tactile surfaces in accordance with Disability Unit Circular 1/91.
- b) Audible beepers or tactile rotating knobs.
- c) Push buttons in each corner of the crossing.
- d) Red lamp monitoring.
- e) Vehicle detection on all approaches.

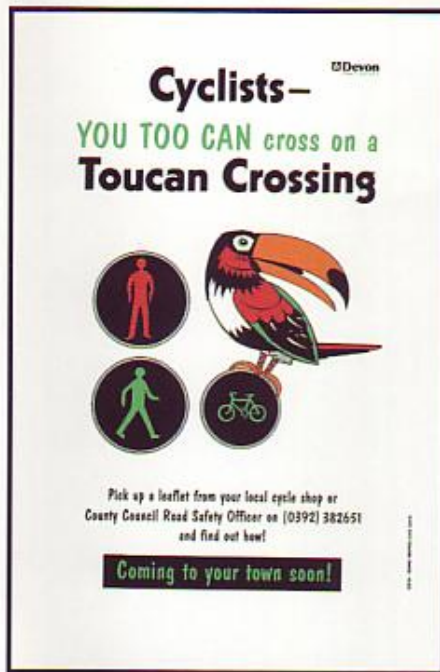
Initial research suggested the crossing width should be 4m in practice a range of widths were used. As a result it was apparent that whilst 4m was desirable, minimum of 3m could be acceptable in some situations.



Infra - red detector

Preferred layout of a Toucan site





Toucan publicity adverts

Publicity

The Department required local authorities to publicise the schemes locally. Schools in the immediate area of the crossings and local associations for blind and partially sighted people were to be informed directly. The standard of leaflets produced by local authorities to publicise the crossings was generally very high.

Analysis

TRL organised Before and After studies through local authorities for each of the crossings, and video surveys at certain sites.

TRL analysed the results from studies and surveys. No problems were identified for pedestrians and cyclists sharing the same crossing area. In addition, no advantage was found in segregating pedestrians from cyclists close to the crossing. Observation confirmed previous findings that where there were segregated areas, pedestrians and cyclists used the most convenient side, regardless of whether it was intended for cyclists or pedestrians. Segregated approaches are more costly and, unless there are exceptional reasons, they are difficult to justify. The use of unsegregated approaches is therefore recommended.

Evidence from the videos revealed a small minority of drivers who failed to obey the traffic signals. Some delays to vehicles occurred at many of the sites, though typical delays to vehicles were found to be no different from those which would occur

with a parallel crossing. In one case queuing did seriously interfere with adjacent junctions.

It was not possible to use the flashing amber aspect with the Toucan Crossing, as this is restricted by regulations for use with Pelican Crossings only. However, at the same time as the Toucan Crossings trial, studies were being carried out into the Puffin Crossing. This uses pedestrian detection both at the footway threshold and across the carriageway, with nearside instead of far side signal aspects. A Network Management and Driver Information Division Leaflet, published in March 1993, gives details of the Puffin Crossing.

Infra red detection

Infra red detection is used at Puffin Crossings to detect pedestrians on the crossing in order to be able to extend their crossing time if necessary. This technique was adapted, with DOT authorisation, for use with the Toucan Crossing by Hampshire County Council. It was installed at the Southampton site in December 1992. It has reduced delays to motor vehicles, and improved crossing conditions for elderly and disabled persons by automatically varying the crossing times.

At another Toucan site the main cause of increased delay was from cyclists registering a demand by pushing the button and subsequently finding a suitable gap in the traffic before the lights changed. In such situations the footway detection equipment used by the Puffin Crossing might help to overcome this unnecessary signal change.

Conclusion

The Toucan trial project has confirmed that in most cases pedestrians and cyclists can satisfactorily use the same crossing facility. Where there are many pedestrians, the evidence is that cyclists will dismount and avoid conflict with pedestrians.

Future developments

It is recognised that the Puffin Crossing may have several advantages to offer the Toucan Crossing. One is nearside signal aspects, rather than the far side aspects used in Pelican and light signal controlled crossings. Nearside aspects have several advantages; in particular they avoid the use of the black out period when the pedestrian signal is extinguished at the end of the steady green period.

A suitable aspect that could be used to indicate that the crossing is for joint use by both pedestrian and cycles will need to be developed. Other features that merit further study include provision of central refuges, and staggered crossings.

Regulations

There are no specific regulations concerning Toucan Crossings, but the trial has suggested that there are certain features which should be regulated, such as use of zig-zag lines, and the type of equipment. These matters will be investigated further during future development of the Toucan Crossing.

Extending the trial

Further installations of Toucan Crossings will be given favourable consideration. Authorisation of the signing would be necessary, and applications should be made as described in Traffic Advisory leaflet 3/93. Applications will be considered on their merits. They should as far as possible follow the preferred layout and be unsegregated on the immediate approach, but some variations such as the provision of central refuges or staggered crossings would be allowed. Local authorities may be requested to monitor the performance.

Subject to satisfactory locations being available, inductance loops could be used to detect cyclists. However, these should still be supplemented by push buttons for both pedestrians and cyclists to use. Experience indicates that there is no advantage in segregating the area of the footway/cycle track immediately adjacent to the crossing, and so unsegregated shared use is recommended. Equipment, including the aspects, red lamp monitoring and audible/tactile devices, must be the same as that used in the trial project. Further crossings should include infra red detection equipment for cyclists and pedestrians over the crossing area. A copy of the necessary specification for this can be obtained from the contact address given below. If it can be shown that such detection equipment is unnecessary, for example where a Toucan Crossing is used as a signal controlled junction, this requirement will be waived.

Local authorities are recommended to carry out safety audits where Toucan crossings are proposed. They should publicise the installation and operation of their crossings particularly to nearby schools and local associations for blind people.

Contact

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76 Marsham Street
London SW1P 4DR

Telephone 020 79442974

References

- Traffic Advisory Leaflet 3/93 - Traffic Calming Special Authorisations
- Local Transport Note 1/86 - Cyclists at Road Crossings and Junctions
- TRL Contractors Report 173 - Cyclists' Use of Pedestrian and Cycle/Pedestrian Crossings
- TRL Project Report 15 - Cycling in Pedestrianised Areas
- Network Management and Driver Information Division Leaflet, march 1993 - The Use of Puffin Pedestrian Crossings

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