Department for Transport

TRAFFIC ADVISORY LEAFLET 2/04

Rural traffic calming: Bird Lane, Essex

INTRODUCTION

Many rural communities are concerned about traffic growth and high vehicle speeds. Local authorities have to balance the need for traffic management against the desire to maintain rural character. Where roads have low traffic speeds and flows, they may be suitable for designation as Quiet Lanes to maintain these conditions. In Bird Lane designation as a Quiet Lane was considered. However, the high levels of traffic, the speed of vehicles, the perceived and actual risks to non-motorised users, and the lack of other roads to make into a Quiet Lanes network, meant designation was not considered a suitable option. A more interventionist approach was decided upon and a single-track with passing places scheme was implemented.

February 2004

Traffic Advisory Unit

Background

Bird Lane in Essex is a narrow, unlit, rural road about 900m long. It was being used as a rat-run, especially during peak periods, with much of the traffic commuting to a large office complex to the north. The road was 4-5m wide and vehicles passing one another along the lane were degrading the verges. Before scheme implementation, there was no separation between motorised and non-motorised users. This combined with inappropriate motor vehicle speeds created a threatening environment for walkers, cyclists and horse-riders.

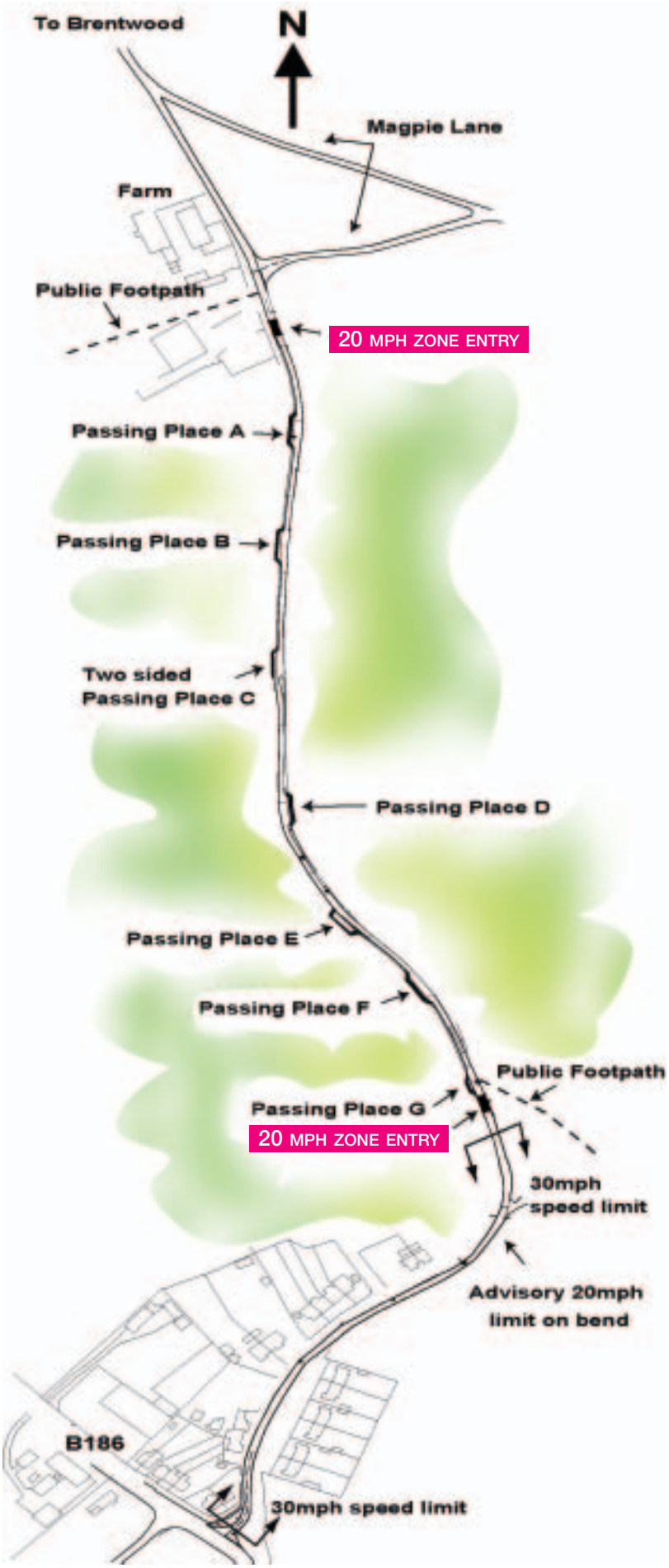
Details of the scheme

The aim of the scheme was to reduce traffic by deterring rat-running, particularly in the morning peak period, and to encourage non-motorised use of the lane. Prior to scheme, the speed and amount of traffic along Bird Lane concerned all of the non-motorised users surveyed (NB the sample size was very small).

The scheme involved narrowing of the carriageway to 3m for 600m of Bird Lane. The remaining space was re-allocated as a raised way for non-motorised users travelling along the lane. The width of the lane meant that the raised way could not be continued through the passing places and at these points all users shared the road space. Where possible, the passing places were sited on alternate sides of the road to encourage drivers to give way in turn. The passing places were 17m long, enough to accommodate 3 cars.

The length of the scheme was designated as a 20mph zone, using the road narrowing to reduce vehicle speeds; this meant that 20mph repeater signs were not required. Essex County Council has since decided to change the scheme to a 20mph limit with repeater signs as the 20mph zone has not proved self-enforcing. At the northern entry to the zone there was also a small build-out on either side of the carriageway with priority working signs to indicate that drivers entering the scheme should give way to oncoming vehicles.

FIGURE 1 PLAN OF THE SCHEME



Some two-sided passing places were used to encourage giving way in both directions

Monitoring:

The Department for Transport commissioned TRL to carry out before and after monitoring of the scheme.

Speed

Changes in mean and 85th percentile speeds before and 8 months after scheme implementation can be seen in table 1. This shows that both mean and 85th percentile speeds within the scheme length were significantly reduced after the scheme implementation. Despite these reductions, the traffic calming effect of the scheme was not sufficient to reduce speeds to 20mph or less, with mean speeds remaining in the mid twenties.

A more detailed examination reveals that there were greater reductions in speed during the morning peak period. In general, southbound speeds were reduced more than northbound speeds. Southbound drivers gave way more often even where the passing places were not on their side of the road. This may be partially explained by the fact that the southbound vehicles are travelling downhill and partially by the higher northbound flows, including a high percentage of drivers commuting during

TABLE 1: CHANGES IN 24 HOUR MEAN AND 85TH PERCENTILE SPEEDS ALONG BIRD LANE (IN MPH)

Site*	Mean speeds			85th percentile speeds		
	Before	After	Difference	Before	After	Difference
Southern gateway	25.2	25.0	-0.2	29.3	29.1	-0.2
Southern entry	27.3	25.5	-1.8	32.6	30.6	-2.0
Double passing place C	31.9	25.5	-6.4	38.0	30.3	-7.7
Between passing places	31.9	25.1	-6.8	38.1	30.3	-7.8
Single passing place A	33.5	27.7	-5.8	39.1	33.6	-5.5
Northern entry	31.4	25.3	-6.1	40.7	33.1	-7.6

**For locations of the monitoring sites see TRL report 597*

Northern entry to the scheme (left) had a greater speed reducing effect than the southern gateway

TABLE 2: BEFORE AND AFTER 24 HOUR FLOWS ON WEEKDAYS AND WEEKENDS

Site	Weekday				Weekend			
	Before	After	Difference	% change	Before	After	Difference	% change
Bird Lane	2218	1768	-450	-20.3	1199	950	-249	-20.7
B186	8431	8725	+294	+3.5	4652	4928	+276	+5.9
Little Warley Hall Lane	399	461	+62	+15.5	272	247	-25	-9.2
Childerditch Lane	1286	1285	-1	-0.1	557	531	-26	-4.7

the week to the offices to the north. In addition, the first passing place cannot be seen from the northern entry to the scheme leading to a high level of vehicle reversing at this point, slowing southbound drivers as they first enter the scheme.

Vehicle Flows

The assessment of vehicle flows included an assessment to identify whether the traffic from Bird Lane had simply been transferred to other minor rural roads. Measurements were therefore carried out on the three possible diversion routes as well as on Bird Lane.

Table 2 shows that there has been approximately 20% reduction in traffic flow on Bird Lane since the implementation of the scheme. The majority of the vehicles seem to have diverted onto the B186, with a small number transferring on Little Warley Hall Lane during the week.

Accidents

Accident frequency was 1.2 accidents/year in the 5 years preceding scheme implementation and 1.0 accident/year in the 1 year after. Longer term monitoring will be required to get a true picture of accident rates following scheme implementation.

Non-motorised use

The number of non-motorised users (NMUs) travelling along Bird Lane was very low in both the 'before' and 'after' surveys. Table 3 shows the number of non-motorised users recorded during manual classified counts along Bird Lane. On the Friday in 2002 there was heavy rain which is likely to have caused the very low NMU numbers. The number of users on the Saturday in 2002 is more encouraging but is too low to be statistically significant.

The scheme implemented in Bird Lane did not extend the full length of the road. At the southern end the non-motorised area led to an off-road route but then stopped at a bend where there was no separate facility. Also, due to the passing places being on alternate sides of the road, non-motorised users had to cross from one side to the other. This lack of a continuous route for NMUs may have discouraged some people from using the lane.

There is no prescribed sign for a raised way for use by pedestrians, cyclists and horse riders so no signs to this effect were erected on Bird Lane. This led to some confusion amongst non-motorised users; for example some cyclists continued to ride in the carriageway with motorised vehicles. These cyclists reported that, due to

TABLE 3: MANUAL CLASSIFIED COUNTS OF NON-MOTORISED USERS

Date	Day	Weather	Cyclists	Pedestrians	Horse riders	Total	% change
'Before' survey							
9/11/01	Friday	Fine	2	6	0	8	-
10/11/01	Saturday	Fine	4	3	3	10	-
'After' survey							
8/11/02	Friday	Heavy rain	1	1	0	2	-75%
9/11/02	Saturday	Fine	5	13	0	18	+75%

Lack of separate facility to the south of the scheme could put off vulnerable users

the narrower carriageway, they felt less safe travelling along Bird Lane than they had before scheme implementation. The fact that the non-motorised way is fairly narrow (about 1.5m) with a ditch alongside part of it may also have discouraged some cyclists and horse-riders from using this facility.

Attitudes

Prior to scheme implementation the number and speed of vehicles along Bird Lane bothered all pedestrians and cyclists on the lane "quite a lot" or "very much". After scheme implementation this decreased to about 50% of the respondents.

Raised way

Over half of all drivers questioned thought driving along Bird Lane was more difficult than before, with a few drivers reporting damage to tyres caused by hitting the kerbs and others mentioning poor or aggressive driver behaviour. The video surveys showed that southbound drivers (the minority) gave way more often, even when the passing bay was located on the opposite side of the carriageway; although this also happened during the off-peak period when flows were more balanced.

Before the scheme most of the small number of residents of Bird Lane felt there was a need to reduce the speed and the amount of traffic along the lane, and were in favour of the proposed scheme. The attitudes of drivers before implementation were different with only 27% in favour of the scheme. Post-implementation 50% of all respondents (drivers and a much wider group of residents) were in favour of the scheme.

Environmental impact

The scheme avoided traditional urban traffic calming measures and coloured surfacing in favour of the single track with passing places, a style of road that would historically have been found in rural areas. However for safety and accessibility reasons the scheme also involved signs, road markings, reflective posts, and a raised area with a vertical kerb for non-motorised users; these features have had a negative impact on the rural character of Bird Lane. These negative impacts must be weighed against predicted positive impacts, for example improved conditions for non-motorised users in Bird Lane.

Costs

The cost of the scheme as described was £90,000.

Maintenance

The roadside verge along Bird Lane was considerably eroded before scheme implementation. Unfortunately, the nature of the scheme has led to continuing erosion opposite the passing places, probably because drivers move as far left as possible to wait for oncoming vehicles. Brentwood Borough Council has tried to overcome this problem by placing additional reflective posts at intervals along the lane. This has been only partially successful with vehicles continuing to encroach onto the verge between the posts. One possible alternative would be to use logs or kerbing alongside the carriageway as additional verge protection.

Verge erosion has continued opposite the passing places

There is a need for on-going maintenance of traffic signs associated with the scheme, including cutting back vegetation to ensure signs remain visible.

Considerations when planning a single track with passing places scheme

- To prevent excessive delay to vehicles, it is recommended that maximum two-way flow should not exceed 300 vehicles per hour. A certain equality of flow is important in order to achieve speed reductions and help prevent vehicles travelling in one direction forcing all others to give way.
- Passing places should have a minimum length of 3 cars. Ideally each passing place should be clearly visible from the last, with spacing no greater than 60m (research shows this is sufficient for vehicle flows of up to 300 vehicles per hour).
- Kerb height should not be too high, to minimise possible tyre damage, nor too low, to discourage abuse by drivers.
- Any non-motorised facility should be thought of in terms of desire lines, for example linking homes to shops or off-road routes.
- Passing places on one side of the road only means that non-motorised users do not have to cross the road; however drivers travelling in one direction may have to give way repeatedly. In reality, visibility requirements may influence the location of passing places.
- Schemes must be designed with operation under all conditions in mind. White lines will help guide drivers past build-outs, but reflective hazard markers may still be required to ensure these are clearly visible when roads are wet or the markings obscured by dirt or leaf mould in the autumn.
- Signs should be kept to a minimum on country lanes.

References

Highways (Traffic Calming) Regulations 1999, Statutory Instruments 1999 No. 1026

The Traffic Signs Regulations and General Directions 2002, Statutory Instruments 2002 No. 3113

TRL No 597 Rural traffic calming in Bird Lane, Brentwood (Essex) by J Kennedy, A Wheeler, and C Inwood. TRL Limited, Crowthorne. 2004.(to be published)

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Department for Transport

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