

Beyond Transport Infrastructure: Lessons for the future from recent road projects

Supplementary report

An analysis of the ‘Five-Years After’ Post-Opening Project Evaluation for the A34 Newbury Bypass

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1. Introduction

In July 2006, CPRE and the Countryside Agency published a report commissioned from Transport and Environment, Transport for Quality of Life and John Elliott Consultancy which examined the appraisal and evaluation of road schemes. The report, *Beyond Transport Infrastructure: Lessons for the future from recent road projects*, included a detailed analysis of three road schemes, the A34 Newbury Bypass, M65 Blackburn Southern Bypass and A27 Polegate Bypass, plus consideration of the One-Year After Post-Opening Project Evaluation ('POPE') for ten other road schemes.

Since that report was published, the Highways Agency has published the Five-Years After POPE for the A34 Newbury Bypass, commissioned from Atkins. As this is the first Five-Years After POPE to be completed, and in particular because it is for the Newbury Bypass which formed one of the three main case studies for *Beyond Transport Infrastructure*, it seemed appropriate to carry out an analysis of the new POPE, to form a supplementary report to the original *Beyond Transport Infrastructure*.

In this supplementary report, we have concentrated on four key issues:

- the effect of the A34 Newbury Bypass on traffic levels and carbon dioxide emissions;
- the effect of the bypass on road safety;
- the relationship between the bypass and new development; and
- the Highways Agency's systems for learning from previous road schemes, and applying that learning to the future.

2. Effect of the Newbury Bypass on traffic levels and carbon dioxide emissions

In our original report, we noted that traffic increase on all of the case study routes was higher than forecast, and sometimes dramatically so. In the case of Newbury, the Highways Agency had predicted that between 30,000 and 36,000 vehicles per day would use the bypass by 2010¹. Yet these figures had already been exceeded six years early, in 2004, when 43,800 vehicles used the bypass every day². We suggested that, at the very least, this un-predicted surge in traffic *might* be evidence of substantial induced traffic, and that it was important that post-opening project

¹ Figures are AADT, two-way average annual daily traffic. Forecasts are from Highways Agency Study Team, *The Newbury Bypass Study Report*, July 1995. The relevant prediction is 30,000 because it uses the low growth national road traffic forecast of 1989, which most closely tallies with the subsequent actual national traffic growth.

² Since the report, 2005 data has become available on the Highways Agency Trads2 traffic database, showing that traffic on the bypass has continued to rise steeply to 45,900 (AADT, average annual daily traffic).

evaluations should examine the evidence and attempt to understand how much of the new traffic was induced, and how much re-assigned from other routes.

Our original report also noted that the construction of the bypass has not solved the congestion problem in Newbury town centre. Of particular significance are morning peak hour traffic volumes. The Department of Transport made the point in its evidence to the first Newbury Bypass Public Inquiry that the peak period was a prime cause of the 'severe conditions' that the bypass was seeking to remedy. Yet our research for *Beyond Transport Infrastructure* found that morning peak hour traffic on the old road had already (using 2003 figures) risen back to nearly the same level as before the construction of the bypass.³

Our original report also looked at the effect of the bypass on HGV traffic. It found that since the bypass was constructed, HGV traffic increase on the A34 has grown nearly four times as fast as the national average. The bypass diverted much HGV traffic but the old road still experiences high levels of HGVs, at least in part because of new industrial and business sites close to Newbury, which are accessed via the old road.

To what extent does the Newbury Five-Years After POPE offer fresh evidence, or throw new light on the issues that we raised?

2.1 Effect of the bypass in generating traffic

The Five-Years After POPE goes to considerable lengths to claim that the bypass, of itself, did not generate traffic.

The Atkins evaluation asserts that most the traffic increase is due to re-assignment – that is, diversion from other parallel routes – and that the most important reason that the original traffic predictions were wrong was because they failed to consider a wide enough area.

However, when it considers traffic flows across a much wider area (ranging as far as Chippenham, some 35 miles to the west, a much greater distance than most traffic is likely to consider deviating), Atkins' evaluation can only find 13,000 vehicles per day that could be considered to be 'missing' from parallel routes. This falls far short of the actual extra traffic in the A34 corridor, which is 34,400 vehicles per day on the busy section past central Newbury⁴.

³ Goodwin, P., 'Induced traffic again. And again. And again', in *Local Transport Today*, No. 450, August 2006, points out that the *Beyond Transport Infrastructure* report was the most recent in a line of studies dating back decades that show that new roads generate traffic and that the official evaluation process nevertheless refuses to accept this finding and that the appraisal processes therefore continue to systematically under-predict traffic levels for new roads.

⁴ Atkins, *Post Opening Project Evaluation, A34 Newbury Bypass, 'Five Years After' Evaluation (1998-2003)*, 2006, Table 4.5, p.4-10, the term A34 corridor refers to the old road plus the bypass.

To fill the gap, the evaluation asserts that in the Newbury area itself ‘the principal local effect has been reassignment from local roads’ – roads for which there is no actual traffic flow data.

To back up this assertion, the Atkins evaluation suggests that the very high rate of initial increase over the first year after bypass construction is *in itself* proof that the main effect is reassignment of traffic which already existed on other roads. Their argument is that such rapid traffic increase could not possibly be new trips, because these would take longer than a year to become manifest.

This is, in fact, just an assumption, and studies such as those of the Westway⁵ in west London have shown that with the advent of a new road, considerable volumes of completely new traffic *can* be generated within a year of construction. In the case of the Westway, generated traffic (traffic that could not be attributed to reassignment) amounted to 17,000 vehicles per day within a few months of opening, over one third of traffic flow on the new road. The same study showed that when the new bore of the Blackwall tunnel was built, traffic leapt 42% in three months, over 9,000 extra vehicles, with ‘no significant reassignment of traffic to the Blackwall Tunnels from the other river crossings’.

There is a further reason to doubt the validity of the Atkins’ assertion that the unaccounted-for traffic surge is due solely to reassignment from local roads. The evaluation notes that increase in traffic past central Newbury, before construction of the bypass, appeared to be suppressed because ‘existing congestion was limiting growth in the town centre’. In other words, it is highly likely that in the months after the opening of the bypass, there were new or additional car trips which previously would have been foregone, or made by other modes, because of the deterrent effect of congestion. This underlines the weakness of assuming that re-assignment was the main response.

As well as claiming that the rapid *short-term* traffic increase was due to re-assignment, the POPE also contends that the bypass did not result in any subsequent *longer-term* traffic increase above regional norms. In support of this conclusion, Atkins tabulates figures showing traffic increase on the A34 corridor (i.e. the old road plus the bypass) averaging 44% higher than regional rates of increase and ranging up to 67% higher, but claims that such rates are ‘not dissimilar’ to the regional rates⁶. These data fail any reasonable assessment for statistical similarity. There is an even worse mismatch with the traffic data for the bypass taken separately, which on its

⁵ Purnell, S., Beardwood, J., and Elliott J., ‘The Effects of Strategic Network Changes on Traffic’, in *World Transport Policy and Practice*, Vol. 5, No. 2, p28-48, (replication of the original 1985 study).

⁶ Atkins, *Post Opening Project Evaluation, A34 Newbury Bypass, ‘Five Years After’ Evaluation (1998-2003)*, 2006, Table 4.5, p.4-10, 1999-2003 traffic figures, taken against their own calculation of a 9% regional rate over the same period.

busiest section rose 100% faster than regional rates over the same period⁷. The report's conclusions on traffic fail to discuss this disparity, and state that the A34 corridor showed 'growth rates in line with regional rates' over this period.

In summary, the data presented in the Five-Years After POPE do not prove the evaluation's contention that re-assignment was the major response and do not justify its conclusion that generated traffic was proportionately small. In fact, the most sensible interpretation of the available data is that construction of the bypass has resulted in substantial induced traffic.

2.2 Effect of the bypass on Newbury town centre

The POPE concludes that 'natural traffic growth has eroded the relief to Newbury town centre only slightly, a key concern at Public Inquiry.'

However, the evaluation does not mention the key congestion period – morning rush hour – for which congestion is already approaching pre-bypass levels. For anyone in Newbury driving to work the experience is now as bad as it was before the bypass was built. As discussed earlier, peak congestion was one of the key justifications for the road presented by the Department of Transport in evidence to the Public Inquiry.

Of course there is no such thing as 'natural' traffic growth – traffic increase is driven by various factors, a major factor being road-space availability, and it has been shown that traffic levels in an area can go *down* under circumstances where highway capacity is reduced⁸ or where serious efforts are made to make alternative transport options more attractive⁹.

The Atkins evaluation does point out that space freed up on the old road has not been used for bus priority measures. It also notes that there has been no attempt to improve the presently poor bus-rail interchange. This is significant because the bypass was in part promoted as an opportunity to improve traffic management and other transport in the town. The failure to re-allocate road space on the old road is likely to be one of the reasons why traffic increase on the corridor as a whole has been so great.

2.3 Effect on traffic on other roads

The Atkins evaluation shows that when the bypass was built, traffic on the Newbury-Basingstoke A339 rose dramatically. The initial increase in traffic was 20%, and by 2003 traffic volumes on this road were 26% above pre-bypass levels. It is clear that traffic was generated on this road as soon as the bypass made it an attractive route.

⁷ Ibid, para 4.24, p.4-6, cites traffic increase of 18% 1999-2003. This traffic increase cannot be attributed to re-assignment from the old road because the measurement period 1999-2003 post-dates the depression in traffic on the old road in the year immediately following bypass construction, and over the same period traffic on the old route was actually rising again.

⁸ Cairns, S., Atkins, S., and Goodwin, P., 'Disappearing traffic? The story so far' in *Municipal Engineer*, 2002, No. 151, pp 13-22.

⁹ For example, traffic entering central London fell after introduction of the GLC's 'Fare's Fair' policy.

This was not predicted to happen. If it had been, it would have aroused even more opposition to the bypass because this road was already extremely busy and notable for accidents.

2.4 Effect on HGV traffic

The Atkins evaluation ignores the key issue of HGV traffic through Newbury town centre. The POPE highlights an 87% reduction in HGVs on a short section of B road to the south west of Newbury, but fails to comment on the fact that the old road past the centre of Newbury has seen a lower reduction in HGV traffic and still carries 2,300 HGVs per day.

2.5 Effect of the bypass on carbon dioxide emissions

In our original report, we highlighted the urgent need for all post-scheme evaluations to include an assessment of the amount of carbon dioxide emitted by additional traffic arising after construction of new roads. We noted that the treatment of carbon dioxide impacts in the One-Year After POPEs that we examined was either non-existent or superficial. We suggested that future evaluations should include an assessment of how much carbon dioxide has been, and will be, generated as a result of a new road, on a year by year basis. This is a necessary first step towards making an assessment of the cumulative effect of the trunk roads programme on carbon dioxide emissions. We noted that the Government's recently updated Climate Change Strategy claims that road building has a small effect on carbon dioxide emissions, but that at present there is no empirical evidence based on analysis of actual road schemes that would either confirm or disprove this assertion. Given the urgent need to achieve large cuts in carbon from the transport sector, it is clearly crucial that we should understand whether the contribution of the roads programme to carbon dioxide emissions, as a result of induced traffic, is large or small compared to the contribution from other policies.

Given these comments, we regret that the Atkins evaluation makes no attempt to assess the carbon dioxide emissions resulting from the traffic increase that the road has caused. Even though this study is so extensive that it has taken three years to compile, no attention has been paid to this strategically important issue.

3. Effect of the Newbury Bypass on road safety

Our original report did not consider the road safety effects of the Newbury Bypass, because insufficient data were available at that stage on before and after road fatalities and casualties. The Five-Years After evaluation now provides data on which an assessment of the effects of the bypass can be made.

The data on road casualties are alarming. The evaluation shows that crashes causing deaths and serious injuries have risen by 50% as a result of the bypass¹⁰. The trend is even worse for fatalities considered separately, which have risen 67%. Deaths on the A34 corridor rose from six in the five years before the bypass opened to 10 in the half-decade afterwards. This was not meant to happen. The official prediction was that there would be 17 fewer deaths over a 30 year assessment period (equivalent to a 47% reduction), but on present trends there will be 24 *more* deaths over this time¹¹. The evaluation de-emphasises this finding and instead highlights that the number of accidents causing slight casualties has gone down somewhat (15% reduction).

In the five years from its opening until 2003, eight people died on the short 13.5 km of bypass – a heavy price to pay for what the report estimates to be just four to 11 minutes of drivers' journey time saved. These eight deaths account for 80% of all road fatalities in the Newbury area in this period.

The only specific cause for the increase in death and serious injury that is cited by Atkins in the safety chapter's conclusions is that there were more pedestrian and cyclist injuries on the old road. However, the great majority of deaths occurred on the bypass, and of these only one involved a person outside a motor vehicle.

It is worth noting that for one of our other case study road schemes, the A27 Polegate bypass, there was also a glaring mismatch between the official prediction that accidents would reduce and an actual observed increase reported in the One-Year After POPE study. For the Polegate scheme no data were presented to show whether serious injuries and deaths rose in line with this overall accident trend, which in light of the Newbury results is an unfortunate omission.

Newbury Bypass raises questions about how common increases in fatalities and serious injuries may be following the construction of new high-speed roads.

4. Development resulting from the bypass

Our original report noted a number of examples of new developments that either have already taken place, or may do so in future, as a result of the construction of the bypass. Some of these are 'infill' developments on the land between Newbury and the bypass. Others are on former greenfield sites adjacent to the bypass, including Tot Hill services area which lies in North Wessex Downs Area of Outstanding Natural Beauty. Yet others are developments adjacent to the old road, which would have been unlikely to have been permitted, because of their traffic generating impacts, if the bypass had not been built. An example of this is Vodafone's world HQ with more

¹⁰ Atkins, *Post Opening Project Evaluation, A34 Newbury Bypass, 'Five Years After' Evaluation (1998-2003)*, 2006, para. 8.13, p.8-2.

¹¹ *Ibid*, Table 8.9, p. 8-10, percentage calculation taken against baseline of 36 fatalities over 30 years, calculated from pre-bypass figure of 6 over 5 years as shown in table 8.2, p.8-2.

than 3,500 employees just north of Newbury, which required an access roundabout on the old road (now the A339 Donnington Link).

The Atkins evaluation notes that ‘14 substantial developments have taken place in Newbury since the bypass opened. Since these were not taken into account in the forecasts, they will be a significant reason why observed flows on the old and new routes are higher than was forecast.’

The evaluation goes on to say that these developments were a ‘major factor in the fact that ‘after’ traffic volumes are higher in the town compared to predictions’. This illustrates a key failing of the present system of road appraisal which blinkers itself either from considering traffic to developments that the road in question will facilitate, or from considering landscape impacts of resultant development. A number of the major developments that the Atkins evaluation lists were ‘on the cards’ well before the bypass was built and the change in the attractiveness of sites to developers as a result of the construction of the bypass could have been foreseen.

The evaluation quotes the planning authority as saying that these developments were not ‘deemed to be related directly to the bypass itself’ and states that they were not ‘said to be conditional’ on it. This is in itself contentious. For example, Vodafone’s HQ is accessed by a roundabout on the old road that would have been most unlikely to gain approval before the construction of the bypass enabled the old road to be de-trunked. But the broader point is that these developments unquestionably have made use of the road space freed up, and in a number of cases they would have been unlikely to succeed without the bypass in place. Moreover, without the bypass the developments might have been built in less car-dependent locations leading to more sustainable transport patterns.

5. Learning from previous road schemes

The foreword to our original report commented that using past mistakes as part of a learning experience is an important lesson for life. The purpose of the POPEs is, in theory, exactly this – to apply objective criteria to evaluate the extent to which new road schemes achieve the aims that they were supposed to deliver, to be honest enough to own up to past mistakes, and to use the information thus gained to change policy and practice so that these past errors are not repeated. In other words, the POPE process should enable the Government and the Highways Agency to do better next time.

There are several respects in which the Five-Years After Newbury POPE, and the whole process of appraisal, documentation, evidence-gathering and evaluation in relation to the Newbury Bypass, has failed to do this.

First, the documentation and archiving process appears to be faulty. According to the evaluation, both the scheme noise report and the visual impact study report for the

Newbury Bypass have been lost. These were important documents, prepared as part of the appraisal process to justify the building of the bypass. The fact that they have gone missing, even though the Newbury Bypass was such a high profile scheme, raises questions about the competence of the Highways Agency's archiving systems. Their loss makes evaluation and learning for future projects considerably more difficult.

Second, we are concerned that the manipulation and presentation of data gives the impression that the report seeks to portray the Newbury Bypass in the best possible light, drawing attention to favourable figures and neglecting statistics which are less favourable to its case. The treatment of traffic increase and accident statistics gives particular cause for concern. At the very least, there must be a question as to whether evaluations should in future be reviewed by an independent party, such as a university transport studies department, to ensure that consultants do not feel undue pressure to tell their client, the Highways Agency, what they believe it wants to hear.

Finally, there is an issue of timeliness. The Newbury Bypass opened in 1998. One might reasonably have expected, therefore, that the five-years-after study, dealing with the period up until 2003, would be published by the end of 2004. In fact it was not published until August 2006, nearly two years late. This suggests that the Highways Agency has not given the evaluation of road schemes the priority that it surely deserves.

6. Conclusions

In the conclusions to our original report, we identified a number of shortcomings in the appraisal and evaluation processes for road schemes, as well as failures of transparency and failures of the evaluation process to impact on policy. Taken together, these have led to a failure of the Government's roads programme, which continues to deliver schemes which have, at best, unproven benefit.

Our review of the Newbury Five-Years After POPE suggests that these shortcomings have not yet been addressed. In particular, it suggests that:

- the consideration of the traffic generating impact of new road schemes is still inadequate;
- this in turn means that the Highways Agency has no robust basis on which it can evaluate the effect of individual road schemes, and the roads programme as a whole, on carbon dioxide emissions;
- there are some very serious concerns about the way in which the construction of high-speed roads such as the Newbury Bypass may result in more deaths and serious injuries than would otherwise have been the case, and this needs to be looked at closely both for individual schemes and (as with carbon) for the roads programme as a whole;

- the validity of the pre-scheme appraisal process is undermined by the failure to factor in the likely effect of a road scheme allowing new car-orientated development to take place; and
- There is a question mark over the independence of post-scheme evaluation process, and whether it is really delivering an objective view.