

Submission to Reading Transport Commission

January 2008

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1 Vision:

Transport in Reading and the surrounding area must change to deliver low-carbon solutions for the 21st century and to achieve acceptable air quality and improved quality of life everywhere. Reduced fuel use will also bring the benefit of reduced dependence on imported energy, and hence lower costs, to the national and local economy.

The scale of reduction in carbon emissions by developed nations that Sir Nicholas Stern now advocates is 80% by 2050. It is important to make rapid progress towards this goal. The transport sector must play its part and it would be wrong to gamble on such major changes resulting from improved vehicle technology so it is important to plan for traffic reduction rather than traffic growth. To date improvements in technology have been more than offset by increases in numbers of vehicles.

Traffic reduction will deliver environmental benefits and reduce the economic and social costs of congestion, save on economic costs of transport (including reducing car ownership), and save the economic and environmental costs of new infrastructure that would be required to cope with existing or increased traffic volumes. Travel is not an end in itself – it is a means to access goods and services so the provision of these needs to be managed to reduce the need for travel or to encourage travel by more sustainable modes.

There is no silver bullet. Accessibility will be maintained or improved by:

- genuine integration of transport and land-use strategies to reduce journey distances
 - more trips will be made on foot or by bicycle and trips in vehicles will be shorter
- more use of multi-occupancy vehicles – whether traditional public transport, car-sharing arrangements, or demand-responsive transport
- restraint on excess office-building which encourages commuting into Reading
- greater use of ICT to enable home working
- greater use of home delivery services
- greater use of ‘car clubs’ and short-term car hire
- managing demand e.g. through road pricing

On past trends and current predictions for employment growth any possible alternative measures to increase highway capacity will be quickly overwhelmed by growth in traffic volume unless either car parking is severely restricted or some form of congestion charging is introduced. The Commission should consider reducing car parking, introducing road user charging, and restraining the growth of employment as priorities rather than major expenditure on highway capacity.

2 Environmental Aspects of Urban Transport:

Traffic congestion in urban areas is an important economic problem – a report for Reading Buses in March 2007 costed it at £32 million a year for Reading - but it also has environmental and social side-effects:

- Air quality can be made worse – both by congestion and by high levels of traffic - according to the one-way IDR sustainability appraisal air quality in the town will be above government guidelines in both scenarios considered.
- More fuel will be consumed by vehicles than in free-flow conditions leading to more emissions of carbon dioxide (the main anthropogenic greenhouse gas) per km
- Emergency services can be delayed
- Environmentally-friendly transport alternatives – walking, cycling and public transport – may suffer delays or inconvenience and therefore be used less

Possible solutions to congestion in an urban area include:

- Increase highway capacity –
 - Build more roads, bridges and tunnels
 - Make more effective use of existing road-space
 - smart traffic lights

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- better junction design
- Advanced Traffic Management (as on the M42)
- Decrease traffic volumes

However possible solutions to congestion may have adverse effects on the environment:

- Infrastructure has its own environmental costs – energy, carbon, waste, footprint, land removed from other uses, and damage to landscape.
- If through traffic is re-routed from a town centre it may take more time and/or use more fuel to complete its journey
- Urban clearways and similar high speed options are dangerous, threatening or unpleasant for pedestrians and cyclists
- Reducing congestion encourages vehicle use for more journeys and for longer distances which increases fuel use and therefore carbon dioxide emissions
- Building more roads encourages more development and more traffic

3 Congestion Causes and Modelling:

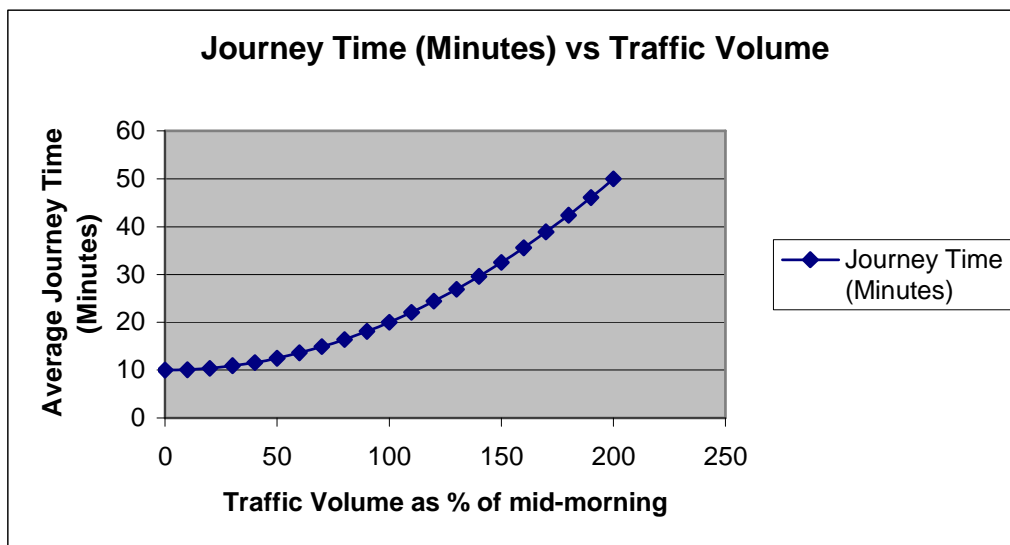
Delays at junctions are the main cause of congestion in urban areas.

For a given road network and set of desired journeys average journey time has a very non-linear response to traffic density.

The graph below illustrates simplistically how average journey time for an urban journey varies as the number of vehicles travelling at the same time varies.

The horizontal axis represents traffic volume on a road network expressed as a % of the volume mid-morning – busy but not in the rush hour. So 10% represents deserted roads at perhaps 2:00 a.m., 100% 11:00 a.m., and 150% 8:30 a.m. rush-hour.

Doubling the number of vehicles on the roads from the numbers travelling at 2:00 a.m. (10% to 20% on the horizontal axis) has little effect on average journey time, but a small percentage increase in traffic density from typical peak-hour levels can bring extreme delays – the slope of the curve is steeper.



Because the slope of the curve is steep in the peak hour (150%) the small reduction in traffic volume during school holidays (to perhaps 125%) brings a significant reduction in average journey time. Equally a small increase in peak hour traffic volume can bring about extreme congestion. A reduction in capacity due to roadworks or an accident moves the whole curve to the left and makes it steeper.

One of the nonsenses of traffic assessments of proposed developments is that an increase in traffic of less than 5% on a road is deemed insignificant. But if the slope is steep enough this alone will cause significant loss of time, and two or three such developments contributing to traffic on the same road may have a great cumulative effect.

It is important that any proposed changes to the network are simulated with greater and lower levels of traffic to establish the sensitivity of any proposals to changes in traffic volume which might come about from future development.

4 Commuting, Car Use and Land Use Planning:

Car use accounts for about 10% of UK emissions of carbon dioxide, the main anthropogenic greenhouse gas. Commuting is only a fraction of this but if people buy cars for commuting purposes they tend to use them for other journeys as well, and to make more journeys overall, thereby increasing emissions further. Heavy use of cars for peak-time journeys increases congestion.

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Public transport generally achieves less emissions per passenger-km than private car use (depending on load factor) but can still have high economic and environmental costs because of the need to pay staff and because vehicles are often run near empty for parts of their round trips. The longer the journey the higher the cost.

Walking and cycling are by far the 'greenest', healthiest and lowest cost modes of transport but require journeys to be short – of the order of one mile and five miles respectively.

Land use planning should aim to reduce journey distances to reduce car use. The Commission should recommend sub-urban regeneration as opposed to the form of 'urban regeneration' which seems to favour the town centre. Greater Reading should become a genuinely poly-centric urban area.

5 Land Use Strategy – Jobs and Labour Supply:

There is already a significant imbalance between local labour supply and employment and under current and emerging policies this will get worse. The Council should limit development of new employment and should positively encourage conversion of employment land to housing throughout the Borough to redress the balance and reduce demand for commuting.

The area closest to the Station, being highly accessible from other towns by rail and proposed Mass Rapid Transit, should be reserved for higher order uses appropriate to the Borough's status as capital of the Thames Valley – not used for general office development. As discussed below there is little hope of an increase in commuting to Reading from neighbouring sub-regions.

The Local Development Framework (LDF) Core Strategy (CS) Section 5.1 says that there is an imbalance between jobs and labour in the Borough which has led to further commuting, longer travel distances, and greater demand for housing.

Overview - Negative Impacts of Imbalance:

If there is insufficient local labour supply then imbalance between jobs and labour will lead to a larger catchment area for Reading and increase commuting numbers and distances. Increased commuting leads to higher social, economic and environmental costs including emission of greenhouse gases, greater pressure on transport infrastructure, congestion, increased stress, longer unproductive hours, higher house prices leading to more demand for affordable housing, and reduced quality of life.

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Economic Growth:

According to SEERA evidence to the SE Plan EiP economic growth is expected to come from two sources:

- continuing increase in workplace productivity (largest part of projected increase) and
- increase in working population (smaller part of projected increase).

For example SEERA Scenario 7 has (for whole SE Region) the following annual percentage rates which give the 20-year increases shown in column three of the table:

	Annual Percentage Rate	Increase over 20 Years
Total Economic Growth	2.74%	72%
Productivity Growth	2.23%	55%
Employment Growth	0.50%	10%

It is clear that the key factor in economic growth is expected to be productivity growth, not employment growth. 'Smart Growth' is seen as an important way forward (see WCBV5 of the emerging SE Plan).

Those figures apply to the SE Region as a whole. At the local level Reading can still aim to attract inward investment and achieve economic growth through productivity growth - without employment growth or even with negative employment growth. Employment growth that exacerbates the imbalance with the local labour force adds to local environmental, social and economic problems.

Estimates of Numbers:

Berkshire Structure Plan (BSP) 7.02 states "The expansion of jobs has far outpaced the rate of growth of the labour force in recent years and looks set to continue to do so in the immediate future. The housing provision, set down in RPG9 and reflected in this Plan (Policy H1) would support a workforce by the end of the Plan period of approximately the same size as the current one. "

There are already many more jobs than people in the workforce in Berkshire and this is set to get worse. At the Berkshire Structure Plan Examination in Public Berkshire Friends of the Earth (BFoE) estimated excess employment of 138,700 in 2016 by allowing for 40,000 commuting from Berkshire to Greater London and Heathrow. The BFoE estimates are based on employment to Experian Scenario 1 (constrained growth - prepared for the Berkshire Joint Strategic Unit) and new housing and total workforce in accordance with the Structure Plan proposals. They make

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allowance for 40,000 workers travelling to greater London (including Heathrow) every day, on the assumption that the number travelling from each Unitary Authority is proportional to the housing in that authority:

2016 Figures Scenario 1 (40k to London)	Total Workforce	"Berks." Workforce (40k to London)	Local Workplace Employment	"Excess" Employment (40k to London)
Berkshire	431800	391800	530500	138700
Bracknell	61452	55760	79000	23240
W. Berks	80801	73316	86600	13284
Reading	78499	71227	116600	45373
Slough	59363	53864	90100	36236
RBWM	72679	65947	85200	19253
Wokingham	79004	71686	73000	1314

It is not our contention that these figures are up-to-date or accurate, but a similar analysis, but updated and with finer granularity, should lead to quantitative proposals to limit employment growth in the Borough, and to achieve a better local balance within the Borough.

The Berkshire FoE figures suggest that employment in Reading should be reduced, but already 'in the pipeline' are plans for around 4,600 employment spaces in Sackville Developments' proposals for Station Hill and for 5,516 additional town-centre jobs by 2024 identified in Table 15.1 of the Reading IDR one-way scheme – Environmental Statement, and 6,000 jobs proposed for the 'Reading Gateway' site in South Reading. If these proposed developments are not at least balanced by reductions elsewhere a bad situation will be made worse.

The LDF Submission Employment Background Paper discusses the gap between labour and employment and summarises findings in Figure 4.18. The gap rises from around 30,000 to around 50,000 by 2020. The key point to make about these findings is that there is no allowance for the area's role as a dormitory for London which must be assumed to continue to some extent – despite the transport implications. This reduces the labour force available to work locally and therefore increases the 'gap'.

The Report of the Panel into the SE Plan Examination in Public discussed the 'Balance between Jobs and Labour Supply' in the Western Corridor and Blackwater Valley sub-region in paragraphs 21.29 to 21.32 commenting (21.31) 'we cannot fail but to be concerned about the scale of this projected mismatch'. In the third bullet of 21.36 they conclude 'it is difficult to see where additional

in-commuting might come from, given that surrounding sub-regions ... are also expecting significant job growth.'

6 Road User Charging and Public Transport Funding

Road user charging has been widely discussed, for example by the Commission for Integrated Transport – see <http://www.cfit.gov.uk/ruc/factsheets/need/index.htm>.

Charging for driving on a congested road gives business and private motorists the opportunity to purchase road-space leading to faster and more-predictable journey times, and can fund improvements to public transport (or other facilities) to benefit those who choose not to drive because of the charges. Economic analysis of such Pigouvian taxation shows that such schemes can increase the welfare of the society as a whole. (See Blueprint 5 – 'The True Costs of Road Transport' – ISBN 1-85383-268- 5).

The technology has now advanced to the point where it will be cost-effective to charge individual vehicles varying fees by time of day and distance travelled – and to vary the fee by type of vehicle and perhaps by its home address – much fairer than the crude one-size-fits-all 'congestion zone' scheme originally introduced in London.

Until a national scheme based on global positioning systems (GPS) – which would allow very flexible charging – has been widely adopted there could be a number of systems in parallel catering for vehicles making different levels of use of the road network. A cordon using cameras and Automatic Number Plate recognition (ANPR) like the original London scheme for occasional users paying a flat fee, major roads fitted with microwave technology to detect vehicles with on-board 'tags' to allow more sophisticated charging, and a GPS-based scheme for those who had the equipment fitted to their vehicles.

The funding raised should initially be used to fund initiatives to reduce traffic to benefit those paying the charges – peak-hour public transport improvements, home-working initiatives, perhaps improvements to suburban shopping centres and incentives for use of suburban business hubs. Eventually a national GPS-based scheme would allow pay-as-you go motoring by charging, based on usage, for congestion, insurance, road maintenance, road lighting, contribution to poor air quality, and infringement of the speed restrictions. This would be fairer than the present lump sum road fund licence.

Tolling the Thames Bridges – including Sonning – could be a useful start and would enable through traffic (identified by postcode of registration) to pay for the congestion and pollution it inflicts on people who have business in Reading. Local vehicles could pay a reduced fee if so desired.

7 Positive Measures:

The Commission should consider the following measures to reduce the use of private cars – some require little funding, others could be funded from local authority funds or from road user charging:

- Encouragement of ‘Walking School Buses’
- Free or reduced cost school buses for all students – including over-16s
- Encourage schools to take pupils from tighter catchment areas – within walking distance – a win-win for traffic reduction and community development
- Provision of more peak-hour buses – would require some subsidy
- Lower bus fares
- Improved bus priority measures
- Better provision for cyclists and motor-cyclists – on-road cycle lanes (especially on major routes), shared-use links that at present are pedestrian-only, more cycle parking, contraflow cycling along one-way streets
- Education and publicity on the social, environmental and health benefits of walking and cycling
- Training in schools on cycle use and cycle maintenance
- Reserved lanes for multi-occupancy vehicles on major roads
- Encourage demand-responsive transport – mini-buses acting as ride-sharing taxis co-ordinated and route-planned by computers and ICT
- Improved automation of traffic signals – including detection and prioritisation of buses and emergency services.

8 Lessons from One-Way IDR Proposals

While the Environmental Statement gave more details of the scheme than were available originally there is no comparison with possible alternative schemes or strategies and no reports of the effects of different levels of traffic. Predictions of unchanged carbon emissions, and air quality levels above national objectives, are an unacceptable vision of the future.

As our earlier response stated:

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“Given the high level of investment in the IDR scheme the benefits to public transport are minimal. We think that Reading Borough Council hasn’t considered alternatives sufficiently. These alternatives should start with a vision to reduce overall traffic and improve the conditions for sustainable modes of transport. We would like to see a serious consideration of road user pricing and/or charging for work place parking combined with sustainable transport enhancements as an alternative.”

The Statement says that the scheme is expected to give an ‘insignificant benefit’ of ~1% reduction in carbon dioxide emissions and a ‘low benefit’ of 4% reduction in bus journey times. Air quality will be improved overall but will still exceed national objective levels in some places.

The scheme seems designed to avoid gridlock while allowing for increased peak-hour traffic in central Reading as a result of the 5,500 more jobs the Council expects to be generated in the town centre through its development agenda. It appears to do nothing for climate change. It does not appear to meet objectives for air quality so to meet these objectives will require traffic reduction.

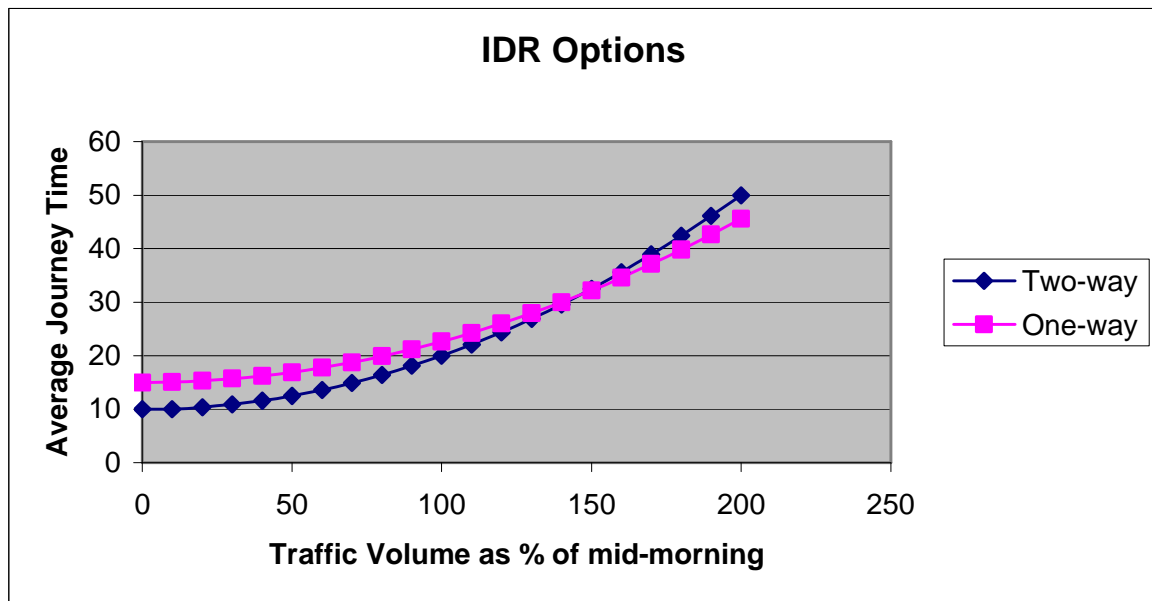
The Council should propose and evaluate alternative transport schemes compatible with the expected government target for an overall 80% reduction in carbon dioxide emissions by 2050 and which result in acceptable air quality everywhere.

Integrated transport **and** land-use planning is required to deliver a sustainable future with lower levels of traffic.

Detailed Points and Questions

The baseline is 2009 so there is no opportunity to compare the predictions with observed conditions in 2005/6 – either for journey times or for environmental effects. How much more traffic is expected in 2009? How much will delays, carbon emissions and air pollution have increased with expected traffic growth by 2009? What is the sensitivity of the results to the choice of base-year?

It seems that the one-way IDR would increase average journey distances and times under normal conditions but there would be less risk of extreme congestion because the junctions would function better. The performance of the two networks may be crudely represented by the following graph:



At normal rush-hour numbers of journeys on the network the slope of the response would be less with the one-way system, so there would be less risk of extreme congestion.

In earlier phases of the consultation we were led to believe that the proposed scheme would have higher capacity than the existing layout but the longer journey times simulated for 2009 suggest that this is not the case – or that the Borough is using a different definition of capacity – perhaps related to onset of gridlock rather than average journey time. A set of simulations with different levels of traffic would help to clear up this issue.

It is not clear from the report what the area simulated is so it is impossible to judge whether the simulations have captured all the likely impacts of the scheme such as traffic diversion down alternative routes such as residential streets. The simulations presumably model changes in routes taken due to the changed highway layout but do not model changes in travel patterns as a result of the apparent longer journey times with the proposed scheme – journeys changing to off-peak hours or alternate modes of transport or not going through town or not happening at all – so the report does not reveal what the overall result will be.

It is not clear from the report what traffic management policies were modelled – either for the existing layout or the proposed scheme. Traffic light phasings can be altered and junction designs varied marginally so as either to maximise vehicle traffic flow or to restrict vehicle flow to improve conditions for other road users – pedestrian safety, accident reduction, and cycle access could all be beneficiaries of such policies but journey times and carbon emissions would be worse.

The simulation shows a low-moderate adverse effect on peak-hour journey times with the proposed scheme. The report does not give figures for overall differences in journey times over the full day, but these would be expected to be worse because there will be less congestion on the shorter routes with the two-way IDR during off-peak hours.

It would be very revealing to see simulation results for emissions, air quality and average journey time for different scenarios of traffic growth and traffic reduction. It seems likely that at lower traffic levels – which would improve the absolute results for carbon emissions and air quality – there would be greater differences between the two schemes. With less traffic there would be much less congestion with the existing layout so average journey times in the peak hours would fall substantially and emissions of carbon dioxide (and possibly nitrogen dioxide) per vehicle would fall – but if flows on the proposed scheme are relatively uncongested at the simulated 2009 traffic levels there would be less change in average journey times and emissions per vehicle at lower traffic levels. So at lower traffic levels the proposed scheme would look relatively less attractive on measures of carbon emissions and average journey times.

The absolute levels of traffic will also have a marked effect on congestion – and it seems that the simulations do not take account of traffic growth due to redevelopment of the station area – it would be good to see what impact these developments will have, and to find out at what level of traffic the proposed scheme will become gridlocked in its turn.

The report does not present nearly enough information to allow an accurate assessment to be made of the effects of the proposed scheme or on the level of traffic reduction required to achieve the substantial environmental benefits and improvements in public transport that we would like to see - with either the existing layout, the proposed scheme, or an improved scheme with greater public transport emphasis.

The proposed scheme is assessed to offer the prospect of significant reduction in accidents and in improvements to visual amenity and to pedestrian and cycle access. We have not evaluated these claims but, if true, they would be welcome. However similar benefits could presumably be achieved by traffic reduction, junction re-design and revised traffic light phasings in an alternative scheme.

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9 Conclusions:

The vision of the future presented in the one-way IDR Environmental Statement on air quality, carbon emissions and vehicle delays is not acceptable. The Council should develop an alternative strategy based on traffic reduction (achieved by some combination of road user pricing and reduction in car park availability) and road layout changes to give much greater priority to public transport and cycles.

Consideration of transport issues and the need to develop a low-carbon economy should lead to a reappraisal of land use planning and economic growth strategy – a better balance between housing, employment, retail and other facilities is needed at a local scale.

Reading Friends of the Earth.
C/o 27 Instow Road,
Earley, RG6 5QH.

www.readingfoe.org.uk
01189 868260