Planning for Cycling

Executive Summary

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SQWconsulting

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Introduction

1. This is an important time for cycling. While there is a growing recognition of the contribution that cycling can make to some of the greatest challenges facing society; climate change, increasing levels of obesity and transport congestion, it is less clear whether and how this wider contribution is reflected in priorities for investment in infrastructure and activities to encourage cycling.

2. The report argues that unless these benefits are taken into account we will systematically under-invest in cycling. There are a number of factors that mean that there is now a major opportunity to develop the role of cycling, but competing with investment in other modes requires robust evidence on the performance and benefits of cycling investments. Addressing this will help improve its influence in the planning process and strengthen the political will to deliver successful cycling projects. The report starts to address this by valuing the benefits of attracting additional cyclists and using examples to demonstrate the number of cyclists needed to justify specific levels of investment.

3. The aim is to encourage local authorities to treat cycling investments alongside mainstream transport projects, balancing the full costs and benefits for each case before making rational decisions. The report finds that despite good intentions, the challenges of understanding and applying the full benefits, and a lack of evidence on the performance of cycling investments, remain obstacles to achieving this aim.

Cycling and planning

4. Current guidance raises the profile of cycling (and walking) and supports its consideration in planning. Local authorities are now encouraged to incorporate cycling in the new Local Transport Plans (LPT2s) and are required to include target figures for levels of cycling. The vast majority of local authorities now have cycling as part of their plans (76%) and are setting targets, although these are less ambitious than in the previous round. There is certainly a growing interest and commitment to delivering support for cycling and there are many good examples of new projects.

5. The evidence on the treatment of cycling within the Local Transport Planning system suggests that although there have been improvements in the last couple of years, in the period 2001/02 to 2005/06 delivery has fallen short of the expected targets and outcomes. A report by Atkins and PWC in 2007 found that only 25% of local authorities were considered to be 'on track' to achieve core cycling targets in 2005/06, well below the progress made against other transport targets. The report also suggested that one of the causes was that there has been less political will to deliver measures to increase cycling, than for more traditional transport investments.

6. The Atkins report also considered there "to be a poor understanding of the links between interventions and outcomes, particularly for public transport, walking, cycling etc., where

external factors and public attitudes can have a strong impact on the success of a scheme in bringing about travel behaviour". In part the weak performance was attributed to inconsistencies in the data which meant that changes in the levels of cycling locally could not be accurately determined.

7. We conclude that a lack of evidence is hindering both the effective planning for cycling and could be a cause of weaker political will. The need for evidence, rather than guidance, is summed up in the comments of one transport planner, reported in the NICE evidence presented as part of its report on environment and physical activity[1]

> *As transport planners we're… being absolutely bombarded with all this helpful advice and information. But it's how we can actually make best use of that to help us to achieve our aims. If you're telling us that you've got statistical evidence that will tell us that it will encourage, I don't know, so many thousands more people to walk or to cycle…then it might have a bit more weight. (Transport planner; NICE focus group).*

8. This report starts to address the need for this evidence in two ways:

- by demonstrating how the values of the benefits can be adopted
- using case studies to demonstrate how specific investments will generate additional cycling activity and particularly new cyclists

The benefits of cycling

9. The SQW report, Valuing the Benefits of Cycling (2007), set out the argument for investment in cycling and the value of the benefits that it generates. The overall value accrues from the unique combination of the benefits that cycling offers through:

- improvement in general health and fitness
- reduced pollution and the emission of CO2
- help in tackling congestion

10. The study calculated that if, by 2015, the number of cycle trips returned to the level of 1995, the savings in health, pollution and congestion would be around £500 million. An increase of 50% in the level of cycling – far below the original 1996 target of quadrupling trips by 2012 – would create total savings of more than £1.3 billion. These are conservative values, comprising only (by definition) those benefits which can be quantified. No account is taken of the further benefits of cycling to protecting children against obesity, improvement in physical development or quality of life in communities. Despite these omissions, the economic analysis made a compelling case for sustained investment in cycling.

Growing public interest and support

11. Recent increases in fuel prices, longer term issues about security of energy supply and the approaching recession make transport more expensive in both absolute and relative terms. At

[1] NICE,

the same time the contribution that cycling can make to healthy lifestyles as well as the success of the British cycling team in the Olympics has generated more interest in cycling generally. The number of bicycles sold is reported to have increased sharply over the past year. As the Economist reported in relation to bike manufacturer Giant, "after a slow 2006, sales took off last year in Europe and America as fuel prices shot up. Suddenly a bicycle seems like the remedy for many modern ills, from petrol prices to pollution and obesity"[2]. In the UK, the industry is upbeat about its prospects despite the recession.

12. According to national data[3], the majority of adults agree that everyone should be encouraged to cycle to assist their health (87%), help the environment (79%) and ease congestion (73%). Around 37% of people agree that that they could easily walk or cycle on journeys they currently make by car. Further there is public support for taking measures to improve conditions for cyclists. Just over two-thirds (68%) of respondents agree that *'cyclists should be given more priority*', while only 11% felt that *'cycle lanes on roads simply reduce space'*

13. Taken together these factors present a strong case for cycling and for investment in improving infrastructure, designing new facilities and for marketing and training. This is an opportunity to embed cycling's popularity through good investment, ensuring that it is not temporary. In effect it requires that cycling shifts from being perceived as a peripheral mode of transport that attracts largely ad-hoc investment, into the mainstream.

Valuing the benefits

14. This section of the report sets out a summary of the monetary values that have been estimated for one new cyclist, cycling regularly for a year. A model was developed with four different scenarios: urban on-road, urban off-road, rural on-road and rural off-road. The values for these scenarios are shown in Table 1.

Table 1 Annual values attributed to each additional cyclist, cycling regularly for one year – the figures assume that 50% of cycle trips replace a car trip

Benefits (annual for each additional cyclist)	**Urban**		**Rural**	
Health Benefits	On Road	Off Road	On Road	Off Road
Value of loss of life	£408.67	£408.67	£408.67	£408.67
NHS Savings	£28.30	£28.30	£28.30	£28.30
Productivity gains	£47.69	£47.69	£47.69	£47.69
Pollution	£34.57	£34.57	£6.49	£6.49
Congestion	£68.64	£68.64	£34.32	£34.32
Ambience	£13.20	£53.60	£13.20	£53.60
Total Benefits	£601.06	£641.46	£538.66	£579.06

Source: SQW

[2] The Economist October 2008 "Obesity and high oil prices are good news for the world's biggest bikemaker"
[3] Cycling. Personal Travel Fact Sheet. Department for Transport (January 2007).

15. The scenarios suggest that the annual economic benefits range from around £540 to £640 with the greatest economic benefits for cycling generated by urban off-road projects and the least by rural on-road ones. The average benefit per additional cyclist is £590 per year.

16. These values are higher than those reported in the SQW's Valuing the Benefits of Cycling report because of the use of the WHO estimates of health benefits per cycle trip and because of the inclusion of "ambience" values that relate to the improvements in the journey quality as a result of the new cycling infrastructure.

17. While the differences between the scenarios are reasonably significant, it is important to note that the greatest impact that cycling has is on the health benefits of *additional cyclists*. These health benefits are universal. If people can be convinced to cycle, around two-thirds of the economic benefit generated does not depend on the location or type of facility. This is important from a planning perspective. The greatest difference that new facilities can make is *on their ability to generate additional cyclists*. In this respect one might argue that attractive off-road facilities are of particular value because they are more likely to attract new cyclists, by overcoming concerns about safety.

Cycling Planning Model

18. The report develops a simple model which uses the monetised values of the "wider benefits" to produce estimates of the number of additional cyclists needed to justify a particular level of investment.

19. For example, an investment of £100,000 requires an overall increase of 11 more people cycling regularly for the life of the project. An investment of £1 million would require 109 new cyclists. This means that there must be 109 additional cyclists cycling at least 3 times a week throughout the full life of the project (assumed to be 30 years). This does not mean that the same people must continue to cycle, but that on average, there should be 109 more cyclists each year than would be the case were the investment not made.

Table 2 Number of cyclists needed to achieve a benefit to cost ratio of 1:1

Cost of Project	Urban		Rural		Average
	On Road	Off Road	On Road	Off Road	
£10,000	1	1	1	1	1
£25,000	3	3	3	3	3
£100,000	11	10	12	11	11
£250,000	27	25	30	28	27
£500,000	54	50	60	56	55
£750,000	80	75	90	83	82
£1,000,000	107	100	120	111	109
£1,250,000	134	125	149	139	136
£1,500,000	161	151	179	167	164
£1,750,000	187	176	209	195	191
£2,000,000	214	201	239	222	218

Source: SQW

20. These figures provide a simple and straightforward way to assess whether a cycling project is likely to generate a positive return on investment. As a rule of thumb, every £10,000 invested would need to generate at least one extra cyclist, each year, over a 30 year period in order to break even. Where the effect of the intervention is likely to be shorter, the number of extra cyclists will need to be higher.

21. It is also important to bear in mind that the investment will frequently contribute to other objectives, such as increasing walking or may be part of a wider set of public realm improvements which are intended to improve amenity. Where this is the case only an appropriate proportion of the costs of the investment should be attributed to cycling.

Building in demand

22. A further complicating factor is that over the period of the intervention the underlying *demand* for cycling is likely to change. It is difficult to anticipate this pattern, but it is not unusual for appraisals to build in some growth. As we noted earlier, there is some limited evidence of this from for example the Lancaster Millennium Bridge (average year on year growth of 5% over the seven years after construction) and from discussions with Sustran's Research and Monitoring group who have experience of tracking changes in usage.

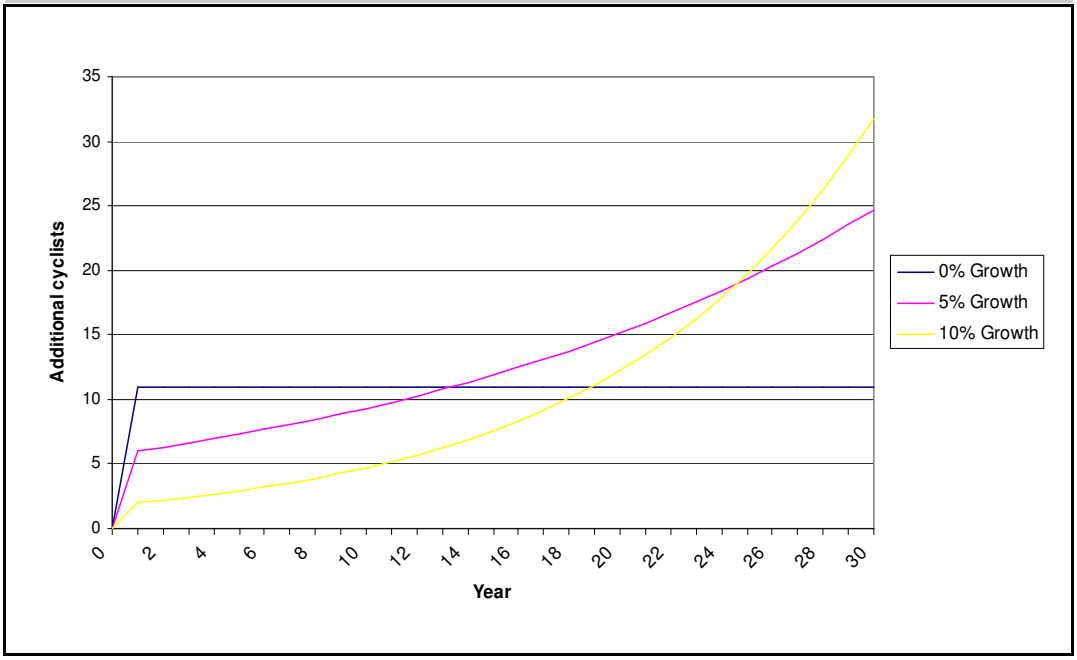
23. Figure 1 shows the impact of building in some growth in the number of additional cyclists. In effect this shows that although the number of additional cyclists generated by a project starts at a lower level, it can still generate a positive rate of return if it grows over the period of the analysis.

24. These examples show that projects which would not be deemed viable if judged on the assumption of static growth can generate positive returns if there is a case to factor in stronger

effects over time. For example, projects which start off with low levels of uptake may see increases in usage as they become embedded into the local transport infrastructure.

25. In Figure 1, the curved line shows that despite generating just six additional cyclists in the first year, an assumption of 5% annual growth would see this increase to 19 by the end of the project, which is sufficient over the project lifetime to breakeven. Although it can be appropriate to use estimates of growth these need to be very carefully justified. This is another area where stronger evidence would help planners understand whether the impact of certain projects is likely to grow, or even reduce, over time and if so on what sort of scale.

Figure 1: Impact of growth in the number of additional cyclists **needed to break-even** on a £100,000 cycling project investment



Source: SQW

26. Growth in cycling demand is an important consideration given the current and potential economic and cultural changes which are likely to generate greater awareness of the costs of car travel and the health and financial benefits of cycling. If there is an opportunity to build high quality new cycle facilities now in the anticipation of future usage, this potential future usage should be taken into account at an early stage.

27. It is impossible to predict future levels of cycling with any certainty and the latent demand for facilities will vary according to the project and its location. Our view is that in planning for cycling a view should be formed on how demand for cycling is likely to change over the lifetime of the project rather than use a static assumption. These assumptions should be realistic and defensible in the context of the project.

Case examples

28. A brief description of the economic impact of each case study is outlined in Table 3. The value of the benefits for every one pound invested vary considerably, ranging from 34 pence to over £40. However, this range is understandable given that some of the projects have only

very recently been completed. This is particularly true of Priory Vale, Queen Elizabeth Park and Surrey University's Manor Park campus. The average benefit to cost ratio of the five case studies is just under 2:1 excluding the Hull case study which is much higher than the other results. Including this outlier, the average benefit to cost ratio is almost 10:1. It is also worth stressing that these cases were identified independently by the consultants as typical examples.

Table 3 Estimated impacts of five cycling infrastructure projects

Case Study	Cost	Cyclists generated	Benefit to cost ratio	NPV
Priory Vale, Swindon	£3,735,000	129	0.34:1	-£2,801,963
Lancaster Millennium Bridge	£1,800,000	138	0.77:1	-£466,395
Queen Elizabeth Park, Guildford	£157,564	16	1.07:1	£12,708
Surrey University, Manor Park Campus	£300,000	123	5.56:1	£1,563,700
Reallocation of road space, Hull	£148,303	585	42:1	£7,038,270

Source: SQW

29. The economic impact results shown in the case studies highlight the diverse range of values which cycling projects can generate. The retrofitting of seven streets in Hull has proved to be extremely successful, combining low costs with a high number of additional cyclists. The implementation of a 20mph speed limit and other measures also contributed to the growth in cycling. The Lancaster Lune Millennium Bridge was a major investment that improves cycle links and pedestrian access, but the results to date indicate that, on their own, the volume of cycling is not yet sufficient to generate a positive net present value. However, this would change if additional pedestrian activity was also included or perhaps the wider "iconic" impact of the bridge was valued. It is too early to draw conclusions on the economic benefit of the project which will depend on changes in cycling use over the next 30 years.

30. The evidence from the counters adjacent to the Priory Vale project has not shown significant increases since the new housing development and cycle infrastructure were constructed. At Surrey University, the number of students living and studying on the new campus is forecast to increase until final completion of the new campus in 2020. The available evidence at the Queen Elizabeth Park site shows that cycling is increasing year on year but there is insufficient data to accurately forecast likely future increases.

31. There is very little evidence that the cycling investments which were implemented in the case studies were subject to any sort of analysis of the costs and likely benefits of the cycling infrastructure. It is unlikely that new roads or other forms of transport investment would go ahead without an assessment of their usefulness and value for money.

Conclusions

32. The report argues that despite a growing recognition of the contribution that cycling can make to a number of important policy areas, it still proves difficult to ensure that these benefits are taken into account in decisions about transport investment. The challenges in incorporating these benefits and the relative lack of evidence on the performance of cycling investment has made it difficult to make strong cases and may contribute to a lack of political will to take more radical action.

33. The report argues that better understanding of the wider benefits of cycling and the collection of more evidence that investment in cycling encourages more people to cycle, will go a long way towards integrating cycling more fully into transport and planning processes.

34. Unless planners and developers are aware of the full economic benefits it is difficult to ensure that the costs and benefits of cycling investment will be considered fairly. Only if this becomes common practice will cycling investment approach levels that its economic (and social) contribution justifies. In effect, we under invest in cycling because we fail to explicitly, and systematically, recognise these wider economic benefits.

35. With increased Government funding, supportive guidance and growing public interest, there is an opportunity for cycling to shift from the transport periphery into the mainstream, but achieving this requires a clearer demonstration of the value and success of investment.