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Getting the bus to work: why quality bus corridors work in Dublin

*Dublin has achieved a remarkable increase in bus patronage through the introduction of quality bus corridors. **Marcus Enoch** reports on Dublin's success which is founded on properly implemented bus lanes. He concludes that the key to persuading car users to switch to the bus is that the bus journey time must be consistently and significantly less than that taken by car.*

Persuading people to use public transport instead of their cars has long been seen as a key component of any sustainable transport policy approach. The Government's Ten Year Plan is no exception, requiring public transport use to increase significantly over the period until 2010.

To do this, the plan relies on the rail sector to deliver a 50% increase in passengers, while the bus industry's target is a more modest 10%. However, since the adoption of the plan, the railway system has degenerated into turmoil. Meanwhile light rail schemes will only ever be viable for a very few corridors in a very few cities. Thus, in the short term, the humble bus represents the only realistic hope of the Government's targets being met.

This is a tall order. Although bus patronage levels have remained stable over the past decade or so after a steady decline since the 1950s, much of this

could be explained by the booming economy. Bluntly, buses are perceived as being the 'mode of last resort' by the vast majority of people, and especially by those with access to a car.

On the other hand, buses currently perform two-thirds of all passenger journeys in the UK. And there are examples of towns and cities where bus use has increased, bucking the national downward trend.

One reason for this, has been the emergence of the concept of Quality Bus Partnerships. QBPs were developed to address the problem caused by the 1985 Transport Act, which separated bus operations from the infrastructure. In essence, the bus operator pledges to upgrade its bus service – generally by buying new state-of-the-art vehicles, improving frequencies and training drivers in customer care techniques. In return, the local authority offers to upgrade infrastructure along the route,

possibly through the provision of new bus shelters, real-time passenger information and bus priority measures.

While significant advances have been made in terms of patronage increases in a few cases, most notably by Trent Buses in the East Midlands and Brighton and Hove Bus and Coach Company, in general patronage gains have been fairly moderate. However, even in the Trent and Brighton cases, progress has been threatened because increasing levels of congestion are dramatically reducing the reliability of the bus service offered. In other words, the bus priority measures typically offered at the moment by local authorities are not up to the task.

One solution to this problem is to implement a network of guided busways, specifically designed to bypass the worst pinch points, and this is the option favoured by public transport authorities and providers in West Yorkshire!

Another less publicised approach is in place across the Irish Sea in Dublin.

Dublin Bus claim that commuters no longer run for a bus during the peak period because they can usually see the next one.



THE DUBLIN QBCS

During the 1990s, with economic growth of around 10% a year, Dublin was facing worsening levels of traffic congestion. This led in 1994 to the publication of the Dublin Transportation Initiative – the first integrated study of transport in the city – which in turn resulted in a virtual halt to urban road building (although the C-ring, the M50 motorway around the city was given

the go ahead), three LRT lines (now two) and a number of so-called Quality Bus Corridors – 10-11 radial routes, and one orbital.

The goal of the Quality Bus Corridor (QBC) is 'to provide a clearly defined, high performance bus transportation system segregated from other traffic'. In practical terms, the aim is to deliver bus journey speeds on the corridor of at least 20km/hr, with a minimum increase in bus journey speeds of 25% on all corridors. Buses must be segregated from other traffic along the complete length of the corridor, except where the road width is too narrow to provide a bus lane. In addition, it is aimed to provide high quality waiting areas with real-time passenger information throughout, while buses will have an average age of only five years, be accessible to mobility impaired people, be distinct in appearance from other buses and be air conditioned. Finally, average waiting times for passengers were set at three minutes during the peak and four minutes in the off-peak, with an average excess wait of two minutes allowed.

As of late 2002, 98 km of bus lanes forming nine QBCs are in place, and three remain to be developed – Orbital, South Clondalkin and Ballymun. The results are impressive. In total, bus use in the morning peak (07:00-09:15 Monday to Friday) inbound services has increased by 38%, from 138,500 to 191,500 since 1997, while on the Stillorgan QBC, patronage rose by 232%! Further, cordon counts on the 'canal ring' of traffic entering the city show that the modal share of the bus increased from 36.8% in 1997 to 40.5% in 2001. These counts also showed that some 60%-65% of new bus users had switched from the car.

Altogether, the QBCs cost €57m for 98km to implement, or €575,000 per km. While installing the lanes was relatively cheap, the cost of providing traffic signal improvements, additional cycle lanes and a whole raft of 'village improvements' – necessary for gaining local approval of the process – were more costly. The QBCs were mainly funded through European Regional Development Funding and Traffic Management Grants from the DTO.

In practice, Dublin Bus claims that commuters no longer run for a bus during the peak period because they can usually see the next one – frequencies average 90 seconds. In the off-peak, frequencies are closer to ten minutes, although sometimes passengers can be caught out. Meanwhile most of the lanes operate 7am to 7pm (which matches the parking time limits across the city), although some have windows



for loading between 10am-12noon and others are 24 hours.

Initially the Irish National Road Authority was against the QBC concept. Thus when Dublin Bus officials sent drawings of bus lanes to the NRA, they were sent back with the lanes crossed out. The main problem was that the NRA did not want to lose junction capacity. Interestingly neither did Dublin Bus – lost junction capacity slows down buses. Instead, the bus company did its own evaluation and then asked a consultant to work out the details. In the event, the proposal from the consultant was not radical enough about where to put the bus lanes, and had to be redrafted to be more ambitious!

In terms of the throughput of people in the corridor as a whole, where QBCs have been introduced, some have increased throughput by 20%. The balance that needs to be struck is between providing the infrastructure and using it enough. In the case of the QBCs, Dublin Bus estimates that around 20 buses an hour are needed to justify bus lane infrastructure.

QBCs have been implemented in a wide range of area types. For example, the Malahide Road QBC already had high usage with a bus modal share of over 40% prior to the QBC being introduced. However, the QBC upped this to over 50% by providing a bus every 35-40 seconds in the peak.

By contrast, the Stillorgan QBC serves what should be classic non-bus operating territory, where residents have high incomes and high car ownership levels. Here, the heavily congested corridor meant that within six weeks patronage had increased dramatically – from 10,000 passengers to 25,000, between 07:00-09:14 Monday to Friday in the peak flow direction only. This was almost entirely due to the bus consistently taking only 30 minutes compared to a car journey time of 50 minutes.

Indeed, customers with a 09:00 start when they first took the bus set off 75 minutes early, but after a few weeks set off only 35 minutes earlier. Of course

the downside of this reliability is that the peak has sharpened as a consequence meaning more buses are required – roughly 80 buses now serve the corridor over the period. On the positive side, outbound commuting too has strongly increased. And, large numbers of buses using the lanes helps justify their implementation – on some lanes there are as many bus passengers as car occupants. Buses are perceived to be so frequent that drivers even drop their families off at bus stops.

There are though, a number of problems. In particular, worsening congestion on road sections once buses leave the main bus-laned corridors has impacted on reliability. Discussions are ongoing with local councils to try and improve accessibility to various places through bus only roads/gateways in certain locations.

Other than that it is in the marketing area where the difficulties arise. This is partly due to the complex route network which makes operational planning complicated too – although the system does work from the provider point of view. Two related issues are that while branding buses as QBC buses was tried, it was found to be inefficient and difficult to maintain, and has therefore been abandoned. The provision of information too remains poor, and although there is a high proportion of pre-paid tickets (35%), cash fares require an exact fare which while good for boarding times can be annoying for the passenger – especially where information is difficult to understand. There is also a perception that there is a lack of integrated tickets, although this is not the case.

The lessons from the QBC policy are simple. If car users are to be persuaded to switch to using the bus, then there must be a tangible benefit. In short, the journey time taken by bus must consistently be significantly less than that taken by car. As a consequence, congestion is seen as the ally of the bus – at least on the segregated sections of the QBCs.

For this to apply, the bus lanes must

QBC's which have not been as successful are those that do not have close to 100% segregation, have unfavourable demographics or are simply too short to generate a sufficient journey time differential with the car.

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Table 1:
Based on Dublin
Transportation
Office (2002).

QBC	Launch Date	QBC length (km)	Total Route Length of Service (km)	Inbound am peak scheduled run time pre-QBC (mins)	Time Saving Over Route Since QBC (mins)	Journey Time Survey Length (km)	Survey Bus Journey Time QBC (mins)	Time Saving Over Survey Distance (mins)	Bus Journey Speed Over Survey Before (km/hr)	Bus Patronage Over Survey Before QBC	Increase In Patronage Over Survey Distance (%)
Stillorgan	Aug-99	12.9	17.3	75	15	11.1	41	11	21.9	9769	232
Malahide	Dec-98	7.5	12.5	55	5	6.5	26	8	21.75	22018	27
Finglas	Jul-00	6	11.2	45	10	5.2	18	3	19.78	8928	0.5
Lucan	Jul-96	12.1	17.8	60	-10	11.1	45	9	18.65	16328	36
Rathfarnham	Mar-01	7.1	12	60	0	7.4	54	30	18.25	10786	37
Tallaght	Apr-01	12.2	15.7	80	0	11.1	44	6	17.47	18916	19
N. Clondalkin	Feb-01	12.1	14.1	55	0	8.7	43	8	14.96	14723	-2
Swords	Nov-01	11.7	14.9	60	5	4.8	25	4	13.48	16829	17
Blanchardstown	Sep-01	16.4	19.2	60	-20	8.4	24	-	21	20383	39

be as continuous as possible. Four kilometres of bus lanes on a six kilometre route is of limited value if congestion will still interfere with reliability and journey times in the remaining two kilometre stretch. Pre-signal traffic management is helpful too, as is active bus management. To this end, Dublin Bus injects spare buses into routes where necessary to better match demand. Finally, extremely frequent buses are highly visible to car users and along with the continuous nature of the lanes (which makes it very difficult for traffic to re-merge into the general purpose lane) helps negate the need for police or camera enforcement although there was an initial presence at the launch.

Beyond the bus sector, recent changes in parking policy have helped. While there was a severe over supply during the 1980s and 1990s, this is now being redressed and high parking charges often form an important push for people to change to the bus.

QBCs that have not been as successful are those that do not have close to 100% segregation, have unfavourable demographics or are simply too short to generate a sufficient journey time differential with the car.

For the future there are plans to try and introduce orbital QBCs to match changing travel demand patterns. There is also a move to introduce more cross city routes. This was impossible until recently due to high levels of city centre congestion with no scope for bus lanes. But, a series of low-profile traffic management measures preventing cars and lorries from entering certain streets or making certain turning movements, has now discouraged some through traffic² and transformed a 15-minute trip across town to a five minute one. And, more alterations are planned.

Meanwhile Dublin Bus is now looking to be still more radical in where it puts bus lanes. And, if space permits only a single bus lane in a two-way

street it will now seek to introduce a lane in one direction for the whole length of the link. Previously, Dublin Bus would have introduced a lane in one direction and a lane in the other direction both for only half the length of the link.

A further change on the cards is that Ministers are keen to see more competition in the bus market, although this is more likely to follow the Scandinavian route franchising model than that adopted in Great Britain outside London.

LESSONS FOR THE UK

In transferring such experience to the UK, it is clear that the major advantage of the bus company in Dublin is that it is part of the same organisation as the transport planners and therefore 'singing from the same hymn sheet'. This is not the case in Britain where local authorities are sometimes distrustful of bus operators that are seeking to maximise profits, although the development of QBCs should have gone some way to addressing this issue.

Related to this, is that the core objective of the Dublin QBCs is to reduce peak period congestion, and hence the size of the vehicle fleet, the cost of providing that and the level of public subsidy has risen as a result. This may be a significant barrier in the UK context, although bus companies are already being forced to supply more buses in peak periods due to units being trapped in congestion.

Otherwise, neither the transport problems nor the transport institutional set up are sufficiently different to prevent a UK council following the Dublin example.

While the results of the Dublin QBC experience are truly impressive, what is extraordinary is that these have been gained almost exclusively due to the

bus lanes. However, unless one actually searches for the QBCs it is very difficult to tell that they are there. This is because the buses and stops used are branded in the standard corporate livery, there are virtually no adverts – even on shelters or on the buses themselves – and the lanes themselves are black asphalt rather than pigmented green as in Edinburgh for example. Further, the information for the services is not easy to understand, and the use of the exact fare system is off putting – although a key component in reducing bus boarding times and hence overall journey times.

Such a revelation is actually rather positive for the future of the bus industry as a whole, as it would appear that no urban area in the British Isles has yet tried matching a Trent Buses-style marketing strategy with a Dublin Bus-style bus lane solution. Given the almost 40% increase in bus use just from properly implementing bus lanes, one could only imagine what results that approach would achieve.

Acknowledgements

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Footnotes

1. Bain R (2002) Kerb guided bus: is this affordable LRT?, Traffic Engineering and Control, February, pp.51-55.
2. Roughly 40% of traffic on O'Connell Street, the main street in the city was through traffic before the traffic management measures.

About the author

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