

# **BRT for Dublin: Expert Workshop Submission**

## **Preface**

A day long workshop was held on Wednesday 5th March at the Chartered Institute of Logistics and Transport<sup>1</sup>, 1 Fitzwilliam Place, Dublin 2. The aim of the workshop was to critically review the proposal published by NTA in February 2014 for a Bus Rapid Transit (BRT) system for Dublin, referred to as “Swiftway”, and to prepare a formal submission to the consultation process (deadline: March 18, 2014). The workshop was organised with the express intent to prepare a constructive response to the NTA’s proposal, hopefully towards a better understanding of the potential for BRT in Dublin. The view of the organisers was that this is a critical issue for Dublin, one which requires the fullest possible analysis and debate.

*The following report outlines a review of the discussion which took place and the key issues that arose thereof. This report and its content do not prejudice the individual views of workshop participants or necessarily represent the views of their organisations. Neither does it preclude any of the workshop participants from participating in or preparing separate, independent submissions to the consultation process.*

## **Introduction: is BRT realistic?**

It is extremely positive that a proposal for a comprehensive BRT strategy for Dublin has been tabled for Dublin. The proposal, conceptual in nature, includes 5 strategic, arterial bus-based corridors and a quality city centre bus network, with stops well spaced apart along the various routes.

There is some concern at the absence, at this stage, of detailed technical specifications for the proposed scheme with which to properly appraise it. It is hoped that this will be addressed as the consultation process progresses. This concern arises from a genuine eagerness to engage in dialogue on this important issue towards achieving the optimal BRT solution for Dublin.

BRT is a realistic and necessary transport solution for Dublin. It is critical that it is executed in the right fashion and equally that it gets off to a good start.

## **Network Integration**

The most pressing imperative for any metropolitan transport proposal, including a BRT system, should be that it is designed from the point of view of *network integration*.

This implies the development in Dublin of a *network* of high quality orbital and arterial public transport routes, all operating at a high level of service. Level of service is critical in order to make the network exist at all.

The point of BRT is to offer just such high levels of service. Getting it right on the first corridor should be regarded as a first step towards rolling it out across a wider network.

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<sup>1</sup> The organisers wish to clarify that the workshop was not a CILT event

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## **Brand Perception**

Bus is undoubtedly the workhorse of the capital's public transport system. Recently, another surface public passenger transport system has emerged in Dublin. LUAS has been tremendously successful and has yielded very high corridor efficiencies. These efficiencies are gained through a strong "brand effect", which is entirely dependent on consistently very high levels of service. The aim of the BRT project should be to proffer a similarly strong brand effect as enjoyed by LUAS on a core network of bus corridors in Dublin. Indeed, it may be considered more important to brand the network's physical infrastructure – the corridors – as opposed to branding any services that may operate along them.

Part of LUAS's success has been its high off-peak patronage. This is undoubtedly a function of its high levels of service. A BRT system for Dublin should support similarly high off-peak service levels. The core Dublin public transport network that can emerge from the BRT strategy should provide quality all-day mobility.

At the same time BRT is not LRT-on-tyres and there are fundamentally differing design principles between the system types. An example of this is station design where BRT can avail of a range of design solutions, (such as passing lanes which allow for multiple services to use a stop simultaneously) not normally available to LRT.

What both systems do have in common is the need for a strong brand, based on very high levels of service. Passengers riding both systems undoubtedly have the same expectations of quality and demands on their time.

It is critical that what is achievable on an LRT corridor should be at least achievable on a BRT corridor. Provided it makes sense from a technical, operational and design perspective, this may include similar or higher levels of junction priority, segregated alignments, allocated roadspace or other measures.

## **Interchange Strategy**

Stops and interchanges will be a key part of any successful network, including their design, management and maintenance. The overall brand quality of the network is also dependent on the quality of interchange. This incorporates multiple factors, including headway, public information systems, pricing and ticket integration.

## **Economic viability of BRT**

BRT has proven to be an economically viable strategy in hundreds of cities around the world, including many with comparable urban structure and density to Dublin. The costings on this proposal, relative to cost-per-kilometre benchmarks, appear high. A high amount of roadspace allocation is also already present within the existing QBC network. We need to clarify where these additional costs are arising and establish if they are justified.

BRT differs fundamentally from LRT insofar as utility-diversion works, normally the most costly and time-consuming of any urban LRT project, are not needed. Rolling stock procurement, replacement and maintenance costs tend to be lower also for BRT than LRT systems. While full life-cycle cost

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appraisals are always preferential, in order to ensure like-for-like comparisons it should be noted that many economic assessments factor in no fleet renewal costs.

Notwithstanding the above, an acutely constrained capital expenditure environment persists. Estimates suggest that operation and maintenance of existing services cannot be taken for granted, let alone additional capital expenditure.

As such, as an adjunct to the conventional appraisal frameworks, it may be an economic exercise to appraise the BRT proposals in terms of a *systems-based approach*, i.e. incrementally improving aspects of overall service components (running way – ticketing – stops – service plan – vehicle type) towards a target set of service level objectives. It is important to note that the prerogative of such an approach is not cost-saving. Rather the emphasis should be on reaching the same high service level targets but using an alternative project methodology (which may in turn yield cost efficiencies).

A further expedient approach may be to focus on the delivery of a single, as opposed to multiple corridors. Getting it “right first time” may then provide a sound economic basis for developing subsequent corridors.

Integration with the taxi service will ultimately also need to be addressed. This raises implications and concerns over corridor access. These concerns will only ever be addressed sustainably and fairly if the economics and viability of that important sector are fully and openly considered.

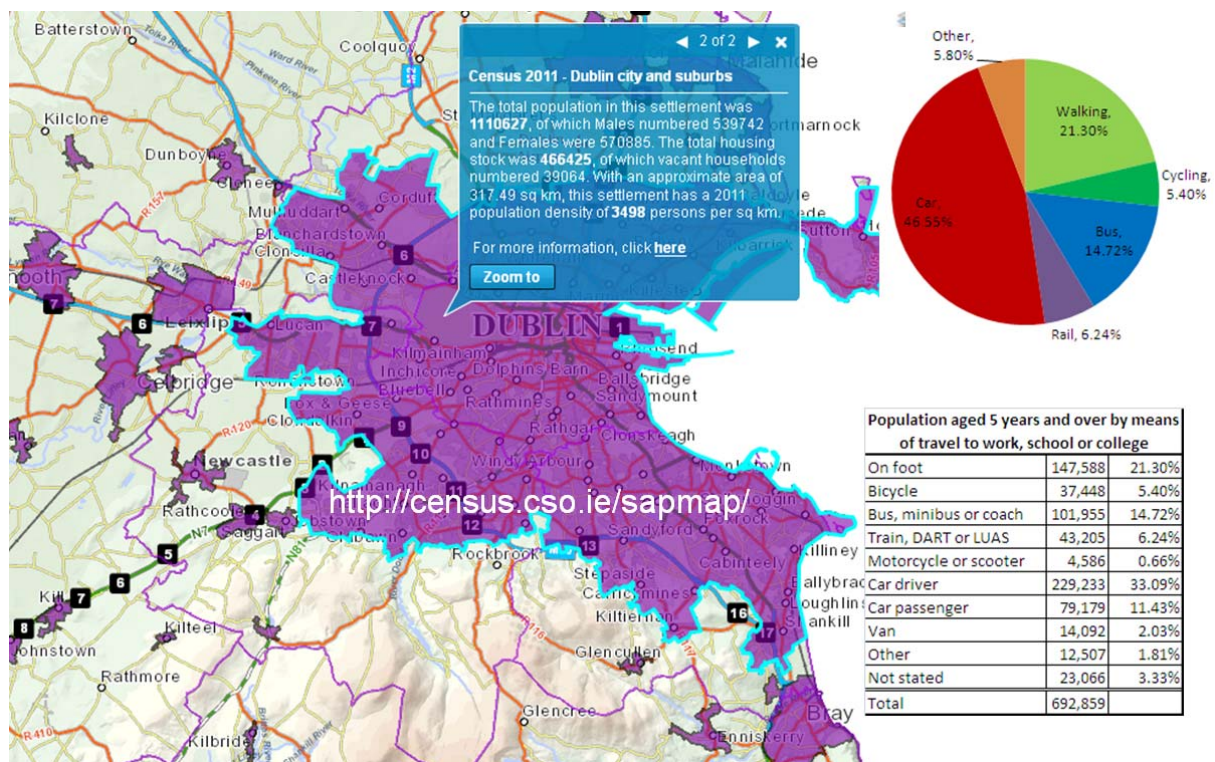


Figure 1: The area defined by the Central Statistics Office as “Dublin City and Suburbs” and 2011 Journey-to-Work mode share. Source: CSO, Census 2011

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## **Market Organisation**

The area defined by the Central Statistics Office (CSO) as “Dublin City and Suburbs” (see Figure 1) comprises a population of 1.1m people. It includes the continuous and contiguous built up area of Dublin City plus the new towns of Tallaght, Lucan, Clondalkin and Blanchardstown. Public transport mode share within this core metro area is currently poor, running at 21%, of which bus comprises 15%.

It is beyond the scope of this submission to suggest a form of market organisation, other than to recommend that such analysis be undertaken. It may be helpful to consider the potential for a mix of service types, including *inter alia* (i) core metropolitan services, (ii) longer distance services which may have clock-face departure, limited stop and/or express service regimes. Outlying towns and suburbs should also have their internal travel demand patterns catered for.

## **The Swords – Airport – City Corridor**

Given existing licensed services on the Swords-Airport-City corridor, a question arises as to what type of service and service plan is appropriate for this sector. For example, should it be a BRT corridor with a semi-open service plan, etc.?

It is important that BRT is designed to deliver the best that can be achieved (within budget and technical parameters). At the same time it would be counter-productive if BRT were done in such a way as to undermine existing viable services with a lower level of service.

The proposal needs to be economically assessed in the light of existing services. Efforts should be made to explore how existing services can be accommodated within a future BRT environment where they fulfil a service demand with sufficiently high levels of service.

A final, operational point is that one in four “Swiftway” departures on the Swords route appear to be serving the airport. It is not clear if this will provide a comprehensive airport – city service.

## **BRT System Specification**

A major concern is whether the Swift-way concept is intended as an “open or closed system”.<sup>2</sup> Neither the public consultation documentation nor the technical document “Core BRT Network” are fully clear in this matter and it would be helpful to clarify this situation.

Generally speaking, the full potential of BRT networks are only realised within an open system environment (subject to the setting out of defined service specifications).

## **BRT Capacity**

Suggestions in the “Bus Rapid Transit Core Dublin Network” Report, that BRT acts as a kind of mezzanine service level between “conventional bus” and “light rail”, are categorically misleading and incorrect.

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<sup>2</sup> An “open system” is open to differing service types, potentially from different operators; a “closed” system is restricted to a single, customised service

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Specifically, the report states that BRT has an “ultimate capacity” of 3,600 passengers per direction per hour. This places unnecessary limits on design.

Available data shows that current operational capacities of between 5,000 – 16,000 passengers per direction per hour are already being achieved within sections of the Dublin QBC network.

Such capacities are, regrettably, counteracted by poor service levels. The “2010 NTA QBC Monitoring Report” shows journey-time variances of up to 289% on key corridors. Addressing service levels needs to be a key priority within any BRT proposal.

Contemporary studies clearly demonstrate that BRT offers *at least* the equivalent operational capacities and service levels as LRT, but with increased flexibility and at a fraction of the cost.

### **Service Aspects**

Quality needs to be central to BRT design. It is essential that “Quality” reflects what the customer considers to be important, and that this is sufficiently researched prior to any design decisions. This is likely to be a complex but achievable set of parameters:-

- BRT brings people to where they wish to go;
- Good connectivity with other transport modes and services;
- Differentiation of service types, that reflect the market segments and diversity of travel needs. This includes express services for those who seek rapid end-to-end travel, and access to shopping centres mid-route (e.g. Omni Shopping Centre);
- Predictability and consistency of journey times;
- Reliability of services;
- Availability of a seat, and avoidance of crowding;
- Ease of payment and speed of boarding;
- Excellence of information, both prior to and during the journey.

BRT should be designed around the customers’ priorities. A situation should be avoided where the design features are decided first, and then expensive technologies are deployed on the assumption that this represents quality. This has five main implications:-

- The services are the primary attractiveness of the BRT to the customer, not the technology;
- The infrastructure must be designed to meet the current and future needs of the service plan, rather than the service plan being made to fit to what the infrastructure can handle;
- The BRT services need to increase and enhance the overall public transport offer;
- Door-to-door journey times will be more important to the customer than performance on the main running way;
- BRT needs to be actively managed to deliver higher quality, starting from specification and procurement, through to operations management and performance monitoring.

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It is not clear from the consultation documents what research has been done to determine the quality priorities for BRT in Dublin, nor the basis for determining the design parameters. This needs to be clarified to support the needed dialogue and consensus-forming.

It is noted that these issues have been designed and delivered in a wide range of European and global environments. BRT for Dublin needs to thoroughly research international experience, and draw on best practice.

### **BRT Vehicle Specification**

A concern exists that the Swiftway proposal is committing itself too early and too rigidly to a vehicle specification and design.

There are many issues to be considered in this regard. While Dublin in the past has had a bad experience with the use of bendi-buses, there were undoubtedly technical and design issues which were not properly addressed.

At the same time Dubliners already readily accept double-deck vehicles, an unparalleled advantage in running efficient, high capacity services. This is an important consideration, particularly in the context of an open-system approach.

### **Basis for corridor identification**

While the Swiftway BRT Strategy proposes various corridors, there is little information provided as to the basis for corridor identification.

The Ballymun / DCU corridor is not included in the proposal. This is in spite of its inclusion in various earlier proposals for both Luas and Metro. Strong land use planning and socio-economic arguments have been made in its favour. It would be helpful to clarify the rationale for this omission and the extent to which its inclusion could be reconsidered.

Similarly, the Finglas and Lucan corridors have been the basis for previous proposals.

There are key pinch-points along several of the corridors, e.g. Whitehall junction, where relatively low-cost traffic management measures could materially improve service levels.

A readymade, well-connected, high-quality interchange exists at Clongriffin, where a Local Area Plan exists for continued high-density, mixed-use development. This could act as the terminus & interchange, providing additional catchment to the Clongriffin route.

It is not clear why the Stillorgan corridor should commence service at UCD and not, for example, at Cherrywood or Foxrock Church.

### **Corridor and running way quality**

Clearly a combination of many design measures will need to be considered in terms of corridor and running way quality throughout the Dublin BRT system. Factors including side or central alignment, automatic guidance systems, dealing with pinch-points, etc. need to be given due consideration.

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An aspect not developed in the proposals is the presence of one-way loops, for example the Christchurch contra-flow, and the rationale behind these sections.

It would be normal to have bus-only or “busway” sections as part of any BRT system. However, the only incidences of these appear at the northern extremity of the Swords corridor. Increased use of busways, for which legislation already exists, could be an advantage to the deployment of BRT in Dublin, particularly within city, town or village centre sections.

The proposed BRT alignments seek to avoid rather than penetrate town and village centres. One of the unparalleled advantages of BRT is its flexibility allowing it to serve constrained urban and heritage environments, often even enhancing their quality. Consideration could be given to how BRT might directly serve centres such as Swords and Santry town and village centres. Nantes and Amsterdam’s Zuidtangent in Haarlem are good examples of BRT switching from busway mode to urban street mode where it is appropriate.

### **Environmental design quality**

One of the big successes of BRT internationally has been the ability to create high quality urban spaces and neighbourhoods around correspondingly high quality infrastructure. There are as good examples of this in hugely sensitive inner-city heritage environments as in low-density outer suburban zones.

BRT, if carefully executed, can be a regenerative agent in any town or city. Transit hubs can also have their own urban character, bringing identity, legibility and activity to an area.

At the core of any BRT design team must be strong *Placemaking* expertise, with a clear commitment to human-scale design. A BRT design team – in the spirit of the recently launched “Design Manual for Urban Roads and Streets” – MUST be strongly multi-disciplinary, incorporating *inter alia* urban design, engineering, community development, heritage and spatial planning skills. These need to be combined with the best in transport planning, transport operations and transport business planning skills in order to ensure that both people and place are served by the highest quality services.

### **Conclusion: Designing a BRT system**

Taking account of the above, BRT in Dublin needs to consider the following technical design aspects, which do not come across strongly in the consultation documents:

- A high level of priority needs to be granted to buses wherever delays may be experienced, both in the running ways and at junctions. This will require commitment and some difficult decisions.
- Buses are inherently flexible, and the street profile in Dublin varies among and within the five corridors. Different technical solutions can be utilised on different sections, in a way not possible with rail modes.
- In the city centre and on some arterials, the needed reliable operational conditions could be provided by excellent traffic management and signal coordination rather than by dedicated infrastructure, as in Zurich. This can reduce cost and disruption in the most sensitive areas.

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- Median lanes normally provide better priority for bus, and should be considered where possible. The current documentation shows only kerbside lanes.
- Provision for overtaking is essential, and can greatly increase capacity for marginal cost. Passing lanes are ideal, but the flexibility of bus means that moving into the general traffic lane can be sufficient (where it is safe to do so).
- A mix of service types and multiple routes greatly increases the utilisation and capacity of the BRT lanes, even if not all routes are designated “BRT”. It also makes the benefits available to more customers and increases value-for-money and social cost-benefit.
- Designing the infrastructure and stations around a single bus type – in particular for articulated buses – reduces the usability of the BRT investment. Multi-door, double-stairwell double-deck buses – as used in Singapore – offer comparable capacity to articulated buses while allowing most customers to have a seat.
- The priority for ticketing is off-vehicle payment, rather than off-vehicle validation. Tag-on/tag-off validation is likely to achieve the operational benefits while maintaining flexibility

BRT is emerging as a preferred solution in many transport markets and it is welcome that the NTA is considering such a “best-practice” concept.

However, relative to many comparative, low-density and dispersed cities, Dublin already has an established *Quality Bus Corridor* network. In terms of value-for-money, expedience and providing optimal, sustainable mobility, it may, as an adjunct to the conventional appraisal frameworks, be worthwhile to consider the BRT proposals in terms of a *systems-based approach*, i.e. incrementally and continually improving aspects of overall service components towards a target set of service level objectives. It is important to note that the prerogative of such an approach is not cost-saving. Rather the emphasis should be on reaching the same high service level targets but using an alternative project methodology (which may in turn yield cost efficiencies).

It may also be expedient considering a single, as opposed to multiple corridors. Getting it “right first time” may then provide a sound economic basis for developing subsequent corridors.

Irrespective, the priority must be to deliver at least one BRT corridor performing to the highest standards, balancing value-for-money and appropriate technology. This can demonstrate the important role that BRT can play in delivering the high level of mobility that Dubliners, and visitors to Dublin, deserve.

**Brendan Finn**

**David O'Connor**

**18<sup>th</sup> March 2014**



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### **Appendix A: Workshop Participants**

*Conor Brady, DIT Spatial Planning undergraduate*

*Colin Broderick, postgraduate researcher, Lisbon & Muenster Universities*

*Ciaran Cuffe, DIT Environment & Planning*

*Brendan Finn, European Transport & Telematics Systems Ltd. [organiser]*

*Mike Goodliffe, Private Association of Motor Bus Operators*

*Paddy Kavanagh, Eirebus*

*Bob Laird, Chartered Institute of Transport & Logistics of Ireland*

*James Leahy, an Taisce*

*Pat Mangan, Chartered Institute of Transport & Logistics of Ireland*

*Andrew Montague, Dublin City Council*

*David O'Connor, DIT Environment & Planning [organiser]*

**For further information regarding the workshop and for correspondence purposes please contact workshop organisers, Brendan Finn and / or David O'Connor, at either contact details below.**

Brendan Finn

Independent Transport Consultant, European Transport & Telematics Systems Limited

etts@indigo.ie

David O'Connor

Lecturer, DIT Environment & Planning

david.oconnor@dit.ie

***The organisers wish to thank the Chartered Institute of Transport & Logistics of Ireland for the courtesy of a venue for the purposes of the workshop.***