Ringsend to City Centre Core Bus Corridor Options Study

Feasibility and Options Assessment Report Executive Summary

National Transport Authority

Project Number: 60507750

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Quality information

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1. Introduction

This report presents the findings of the route options assessment work undertaken for the Ringsend to City Centre Core Bus Corridor (CBC) and a recommendation on the emerging preferred route is made. The study was commissioned by the National Transport Authority (NTA) and undertaken by AECOM Roughan and O'Donovan (ROD) Consulting Engineers.

2. Core Bus Network

The Transport Strategy for the Greater Dublin Area 2016 – 2035 identified a core bus network for the Greater Dublin Area (GDA). This core network represents the most important bus routes in the region, which are generally characterised by a high frequency of bus services, high passenger volumes and with significant trip attractors located along the route. The identified core network comprises sixteen radial bus corridors, three orbital bus corridors and six regional bus corridors. The Ringsend-City Centre corridor represents one of the 16 radial bus corridors (Core Bus Corridors) forming the Core Bus Network.

The GDA Transport Strategy includes objectives to develop the Core Bus network to achieve, as far as practicable, continuous priority for bus movement on the sections of the Core Bus Network within the Metropolitan Area, with the goal of making the overall bus system more efficient and attractive to users.

3. Scheme Objectives

The following specific objectives have been set for the proposed scheme:

- Deliver the on-street infrastructure necessary to provide continuous priority for bus movements along the Core Bus Corridor. This will mean enhanced bus lane provision on the corridor, removing current delays in relevant locations and enabling the bus to provide a faster alternative to car traffic along the route, making bus transport a more attractive alternative for road users. It will also make the bus system more efficient, as faster bus journeys means that more people can be moved with the same level of vehicle and driver resources; and
- Provide any cycle facilities along the route that are required under the Greater Dublin Area Cycle Network Plan (published by the NTA, 2013) to the target Quality of Service(s) specified therein and to give consideration to further providing cycle facilities along sections of the route where they may be not expressly required under the Cycle Network Plan.

4. The Study Area

Arising from the transport policy context and scheme objectives set for the Ringsend Laoghaire CBC, the broad study area identified for the proposed scheme is

illustrated in red in

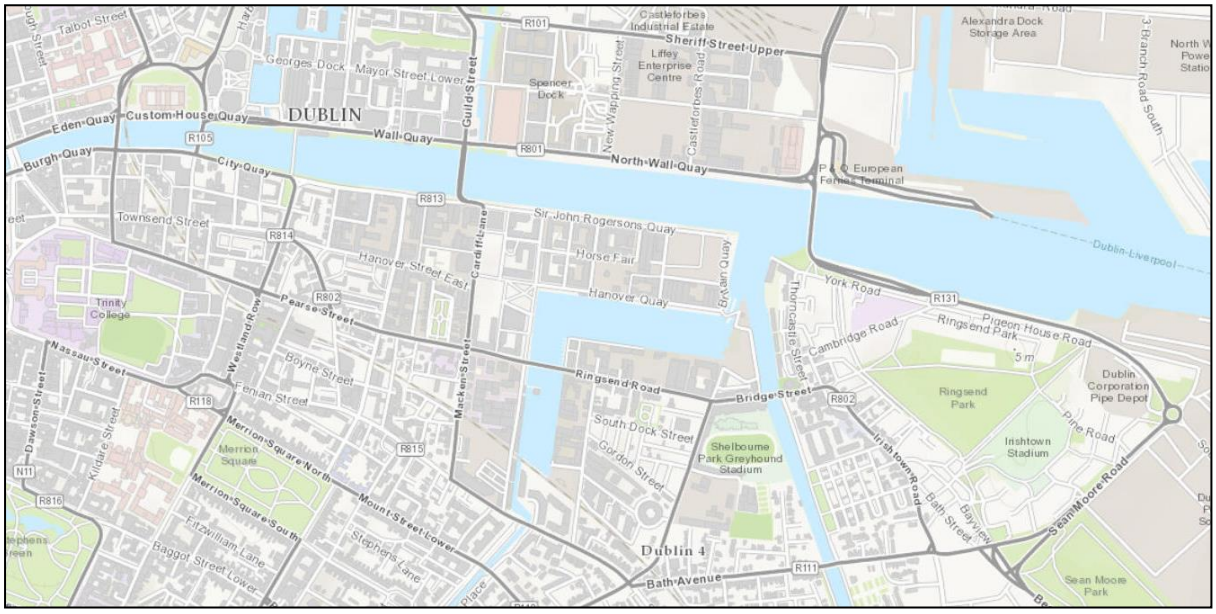


Figure (i**)** below. The study area includes a road network in the vicinity of the existing bus routes and extends to include additional potentially feasible route options. The study area is generally bounded to the west by the approximate extent of the eastern Dublin City Centre and to the approximate south-eastern extent of the Ringsend area.

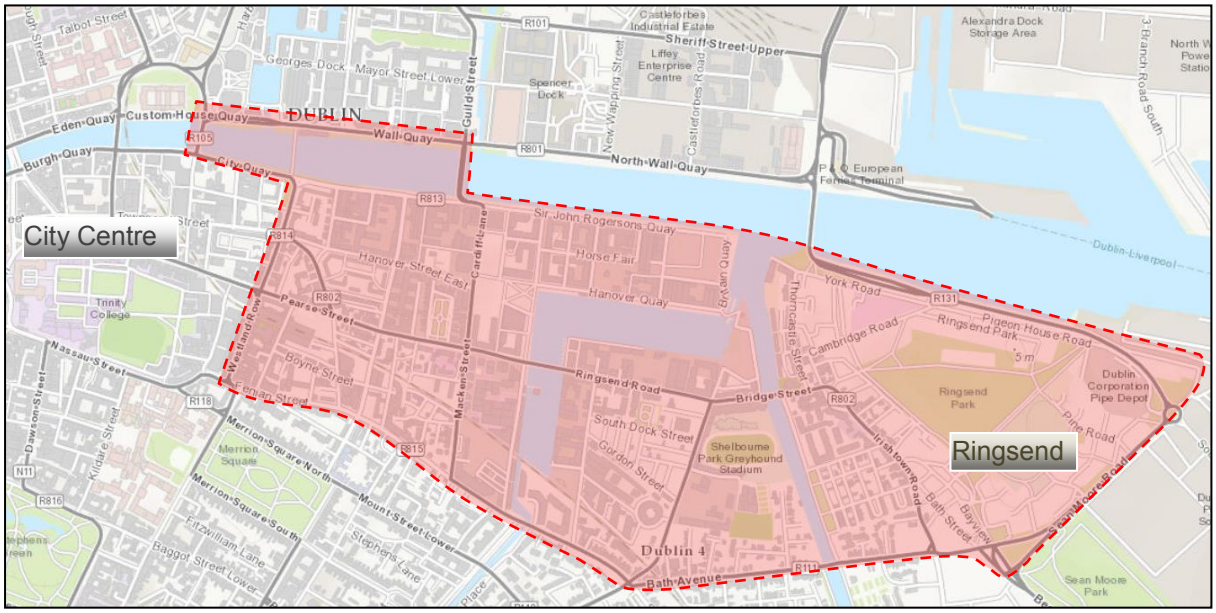


Figure (i): Study Area

5. Assessment Process

An initial ‘spiders-web’ of potential route sections that could accommodate a CBC was identified for the study area. This ‘spiders-web’ of route sections was chosen with reference to the CBC characteristics and in order to meet the scheme objectives as listed above.

Initial route sections identified also took cognisance of the physical constraints and opportunities present and the ability to integrate with other public transport modes and routes, including:

- Existing Dublin Bus services at numerous locations along the route;
- Existing DART service along the route;
- Proposed Swiftway BRT from Swords to City Centre; and
- The Eastern Bypass infrastructural proposals are also noted.

Of particular relevance in developing the spiders-web was the potential for the road or route sections to facilitate fast and reliable journey times and thereby be able to practically accommodate bus lane priority.

The resulting spiders-web of route sections identified in the study area is presented in **Figure (ii)**.

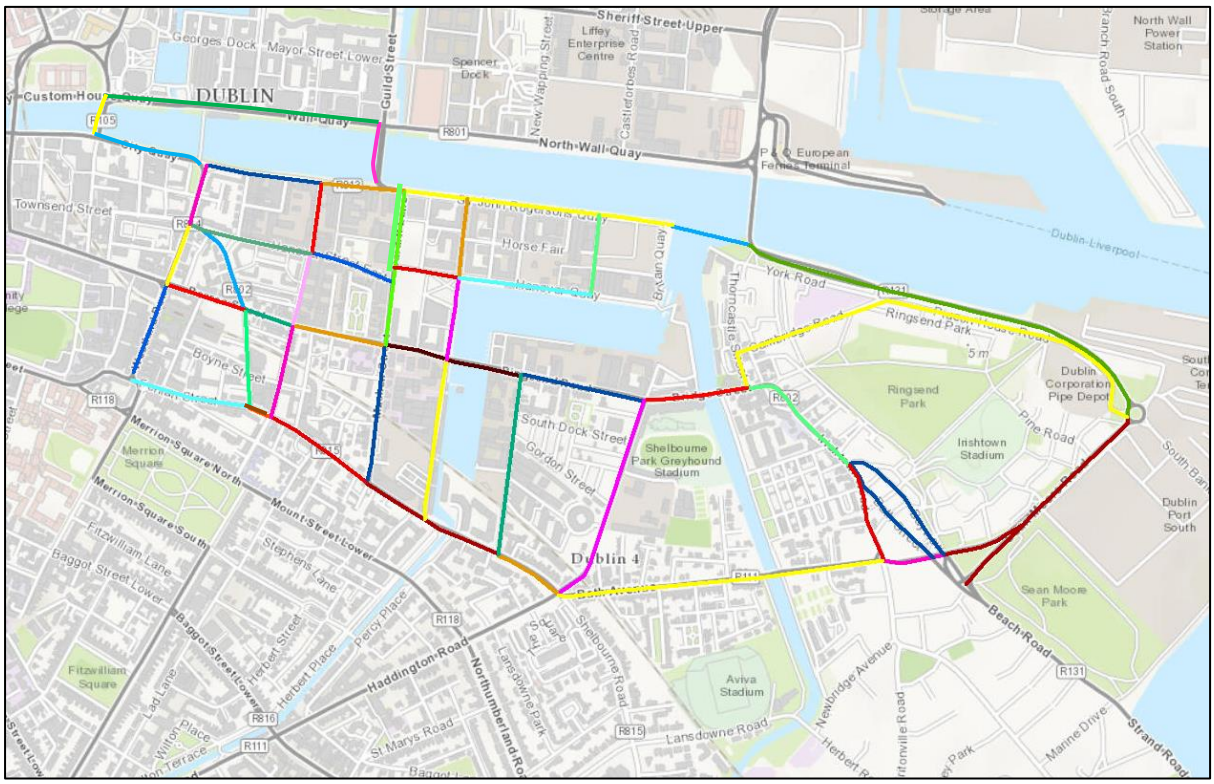


Figure (ii): Spiders Web of Route Sections

A two-stage assessment of the 'spiders-web' route sections was adopted:

5.1 Stage 1

At the Stage 1 'sifting' stage, the initial 'spiders-web' of route sections presented in **Figure (ii)** was narrowed down using a high level qualitative method based on professional judgement and a general appreciation for existing physical conditions/constraints within the study area from available survey information and site visits. This exercise identified route sections that would either not achieve the scheme objectives or would be subject to significant cost and/or impact to achieve these objectives (e.g. excessive land-take).

This assessment stage focused on engineering constraints together with a desktop study, identifying high level environmental constraints and population catchment analysis.

5.2 Stage 2

Following completion of the ‘Stage 1’ assessment, the remaining potentially feasible route sections were progressed to Stage 2 of the assessment process which comprised a more detailed qualitative and quantitative assessment.

The first step in the Stage 2 assessment involved combining shorter route sections which passed the Stage 1 assessment to form longer end-to-end potential routes within the study area. The resulting route options are presented in

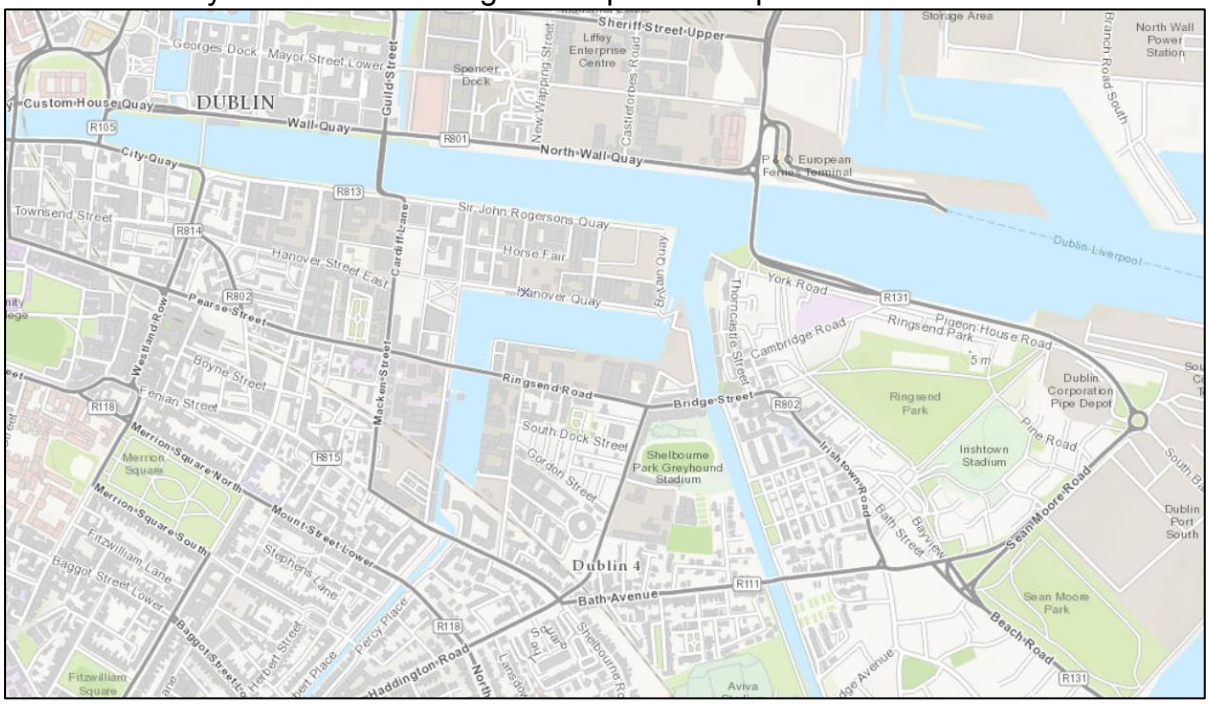


Figure (iii**)** below.

After developing routes options, each was explored using different design concepts to identify the degree of facility provision and necessary infrastructure requirements. This process involved the development of several scheme options for each route option.

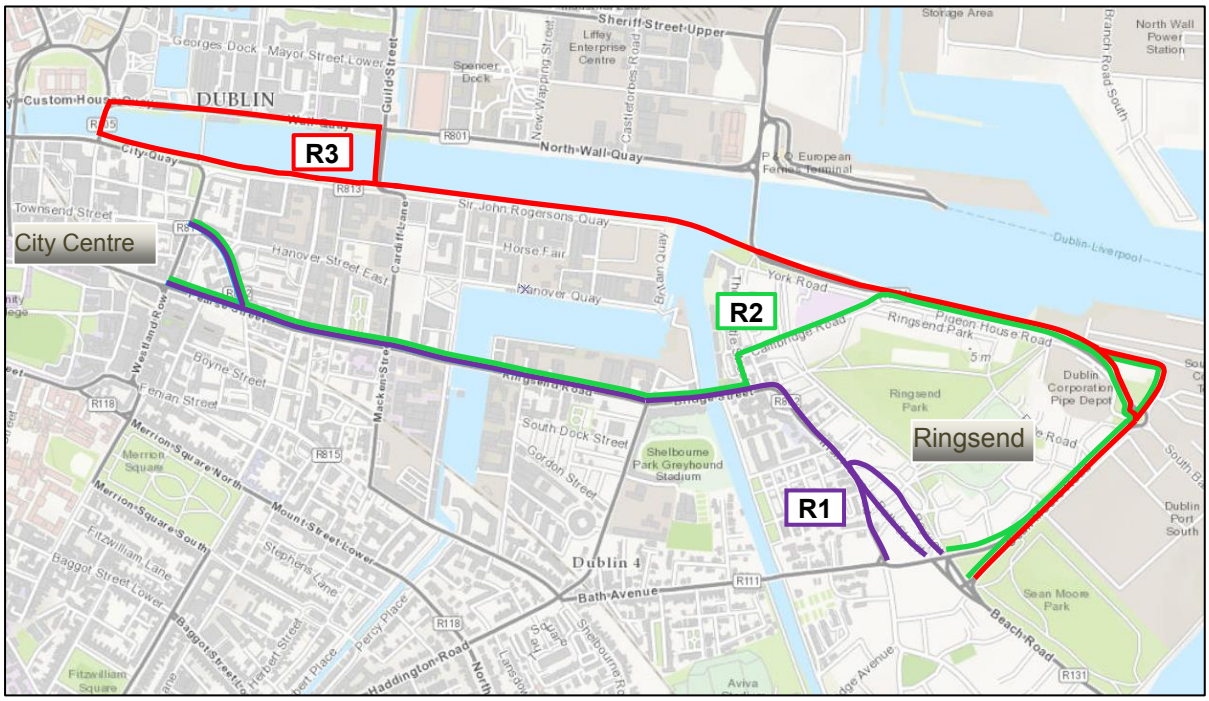


Figure (iii): Study Area Options

The scheme options developed for each route option were then progressed to a multi-criteria analysis.

The 'Common Appraisal Framework for Transport Projects and Programmes' published by the Department of Transport, Tourism and Sport (DTTAS), March 2016, requires schemes to undergo a 'Multi-Criteria Analysis' (MCA) under the following criteria;

- Economy;
- Integration;
- Accessibility and Social Inclusion;
- Safety;
- Environment; and
- Physical Activity.

An appreciation of constraints and opportunities within the study area as well as the defined project objectives, led to the establishment of project-specific route options MCA criteria.

These were tailored to have commonality to the Common Appraisal Framework guidelines where practical.

6. MCA assessment

Table (i) presents a summary of the MCA criteria and sub-criteria used as part of the 'Stage 2' detailed route options assessment process.

Table (i): MCA criteria

MCA criteria	Assessment Sub-Criteria
Economy	1.a. Capital Cost
	1.b. Transport Reliability and Quality (Journey Time)
Integration	2.a. Land Use Integration
	2.b. Residential Population and Employment Catchments
	2.c. Transport Network Integration
	2.d. Cycle Network Integration
	2.e. Traffic Network Integration
Accessibility & Social Inclusion	3.a. Key Trip Attractors (Education/Health/Commercial/Employment)
	3.b. Deprived Geographic Areas
Safety	4.a. Road User Safety
Environment	5.a. Archaeology and Cultural Heritage
	5.b. Architectural Heritage
	5.c. Flora & Fauna
	5.d. Soils and Geology
	5.e. Hydrology
	5.f. Landscape and Visual
	5.g. Air Quality
	5.h. Noise & Vibration
	5.i. Land Use Character

Each sub-criterion in the MCA table is evenly weighted and the scheme option which achieved the highest average score overall formed the preferred route for the Ringsend to City Centre CBC.

7. Emerging Preferred Route

Based on the conclusions from the route options assessment process, the recommended preferred route for the proposed scheme is presented in **Figure (iv)**.

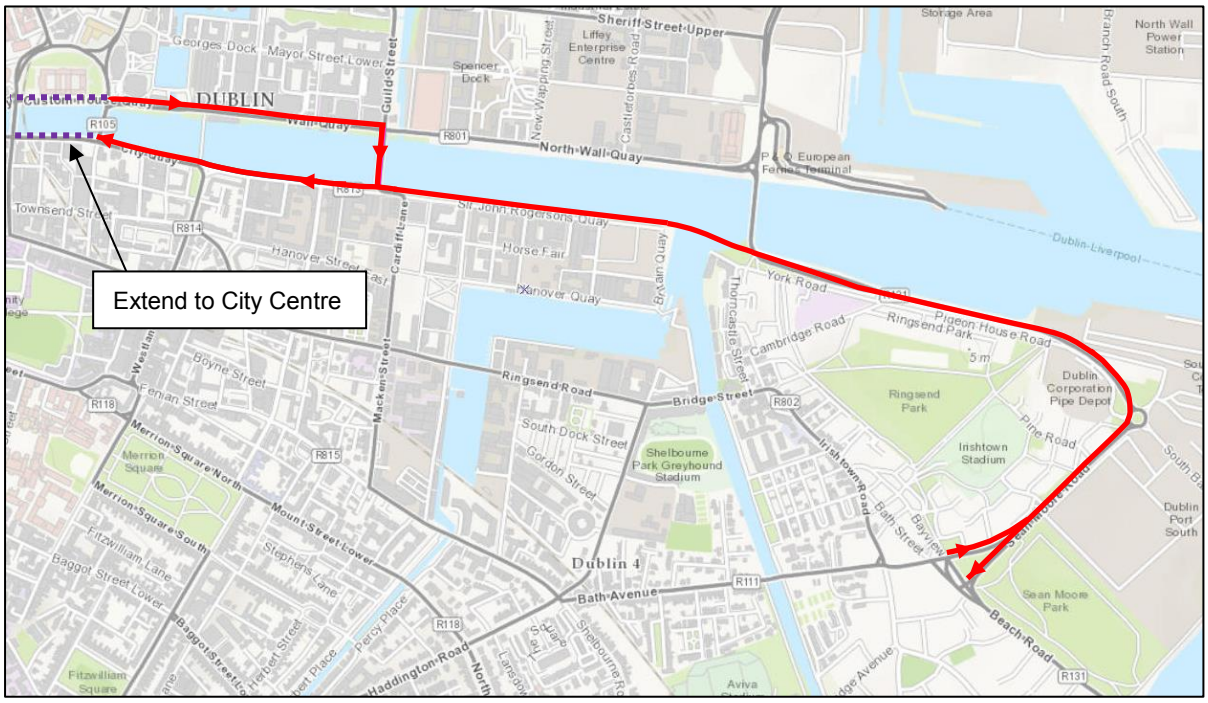
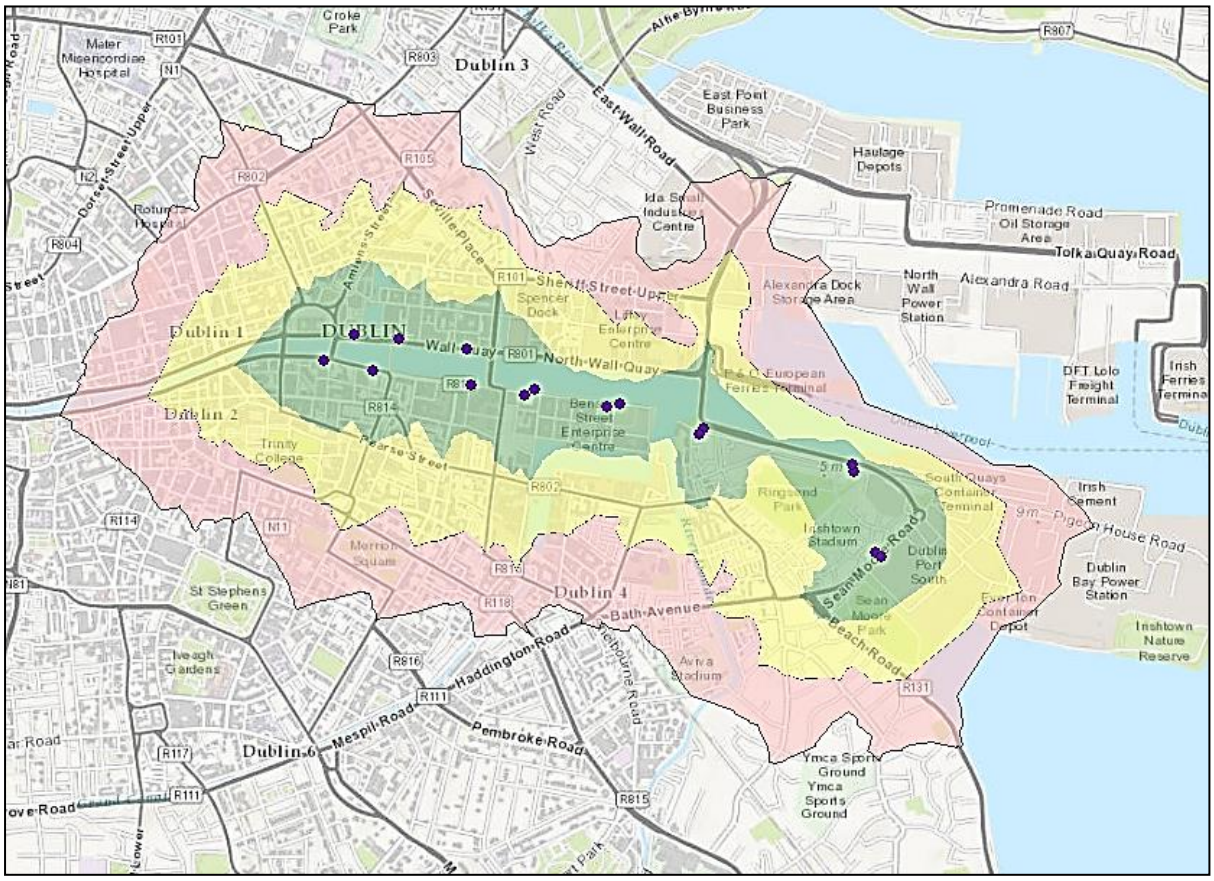


Figure (iv): Ringsend to City Centre CBC Scheme Preferred Route

- This scheme is intended to serve the Ringsend to City Centre Corridor with stops at key locations along the route – see All stop locations are indicated in Error! Reference source not found.. The residential catchment within 5, 10 and 15 minutes walking distance of the proposed stops is also illustrated in Error! Reference source not found.. The outermost isochrone defines the perimeter within which the stop can be reached by pedestrians in 15 minutes or less at a typical walking pace. The population residing within each of the isochrones areas is summarised below:
  - 0-5 minutes walking distance – 10,000 residents
  - 5-10 minutes walking distance – 16,000 residents
  - 10-15 minutes walking distance – 20,000 residents
  - Total catchment within 15 minutes walking distance – 46,000 residents

  These figures are based on the Census 2011 Small Area Population Statistics (SAPS). Furthermore, there are a total of 105,000 people working or attending an educational institution within the 15 minute walking catchment of the CBC stops i.e. 85,000 in employment and 20,000 in education.
- Having identified the emerging preferred option, the feasibility to enhance the existing bus facility along North Wall Quay, between Samuel Beckett Bridge and the Point junction, was identified. Consideration included the approved planned scheme for the Point junction and the provision of new continuous bus lanes, thus optimising journey time of bus services using the Port Tunnel coming from the North of the City. The Emerging Preferred Scheme also proposes a two-way cycle facility between Samuel Beckett Bridge and the Point junction. No trees or existing properties will be impacted by this scheme design though approximately 12 parking spaces will be removed.



- Figure (v).
- **Inbound:** This route option would connect Sean Moore Road to Talbot Memorial Bridge via Pigeon House Road/East Link grass verge, across the proposed bridge to Sir John Rogerson's Quay along the south quays to Talbot Memorial Bridge.
- **Outbound:** Buses would travel from Talbot Memorial Bridge along the north quays to Samuel Beckett Bridge and across to Sir John Rogerson's Quay where they continue to the proposed bridge, along Pigeon house Road / East Link grass verge and onto Sean Moore Road. This route is approximately 3.35km in each direction.

The proposed scheme will improve existing and provide new pedestrian and cycle facilities along the preferred route. The general extent of the proposed bus and cycle provisions along the preferred route are illustrated in Error! Reference source not ound.**)** below. Traffic light sequences shall also be amended at existing signalised junctions to allow bus lane priority along the prescribed route.

The emerging preferred route design is illustrated in Figure (v) below.

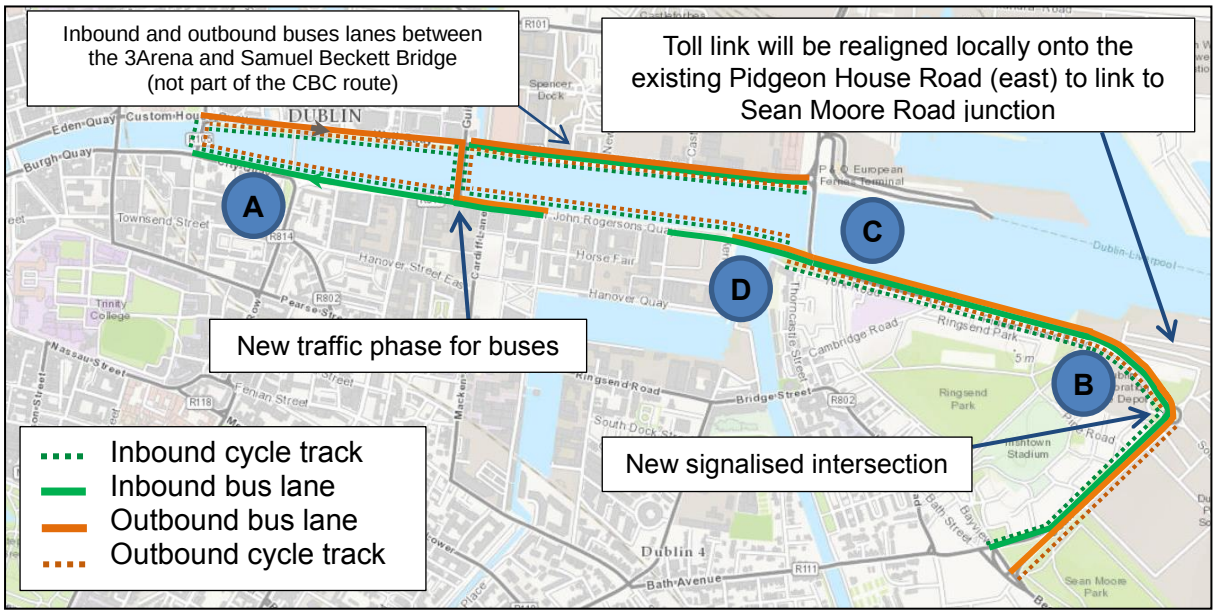


Figure (v): Emerging Preferred Scheme

The scheme design includes the following:

- **[A]** The routing of buses between Sir John Rogerson's Quay and Talbot Memorial Bridge via the south quays (inbound contra-flow bus lane) and the north quays and Samuel Beckett Bridge (outbound).
- Use of existing southbound (outbound) bus lanes along Samuel Beckett Bridge, North Wall Quay and Custom House Quay; any gaps in the existing bus lanes along these streets/bridge will be filled in by new bus lanes to ensure continuity of bus priority.
- The provision of new segregated bus lanes along the following streets/bridge:
  - City Quay (outbound);
  - Eastbound (outbound) and Westbound (inbound) along the grass margin in between Pigeon House Road and East Link.
  - Eastbound (outbound) and Westbound (inbound) along Sir John Rogerson's Quay from Samuel Beckett bridge to Forbes Street;
  - Inbound from Lime Street junction to City Quay;
  - Proposed bridge connecting Sir John Rogerson's Quay to Thorncastle Street over the Dodder (inbound and outbound); it should be noted that the final design of proposed bridge (delivered separately) will dictate the exact road alignment at either end of the bridge, thus the Ringsend CBC Scheme design at that location is dependent on the design process outcomes for the bridge.
  - **[B]** Roundabout to be upgraded to signalised cross-roads. Bus routes to continue along the existing East Link road; and
  - Sean Moore Road (northbound and southbound).
- Use and improvement (as required) of existing two-way cycle facility along the entire length of the route; the provision of new segregated cycle lanes along the following sections;

  - North Wall Quay, Custom House Quay, City Quay and Sir John Rogerson's Quay;
  - Pigeon House Road / East Link grass verge (two-way cycle lane); and
  - Sean Moore Road (segregated northbound and southbound lanes between Beach Road and the Pigeon House Road / R131 roundabout).

- **[C]** Relocation of existing Boat House and services sub-stations located near East Link Toll Plaza.
- The provision of a new signalised junction at the Pigeon House Road / R131 roundabout.
- A new roundabout will be provided at the South Bank Quay entrance (port) to cater for local access movements including the Poolbeg Yacht and Boat Club.
- **[D]** York road becomes one-way westbound.
- The provision of a bus gate to allow buses to continue westbound on Sir John Rogerson's Quay at the Samuel Beckett Bridge junction.
- Provision of sustainable bus priority through traffic management proposals along Sir John Rogerson's Quay between Forbes Street and the proposed Dodder Bridge.
- New bus stop provisions, as required, along the route to optimise patronage.
- Existing bus stops to be upgraded with shelters, bus kerbing and RTPI etc. as required.
- All stop locations are indicated in Error! Reference source not found.**.** The residential catchment within 5, 10 and 15 minutes walking distance of the proposed stops is also illustrated in Error! Reference source not found.**.** The outermost isochrone defines the perimeter within which the stop can be reached by pedestrians in 15 minutes or less at a typical walking pace. The population residing within each of the isochrones areas is summarised below:

  - 0-5 minutes walking distance – 10,000 residents
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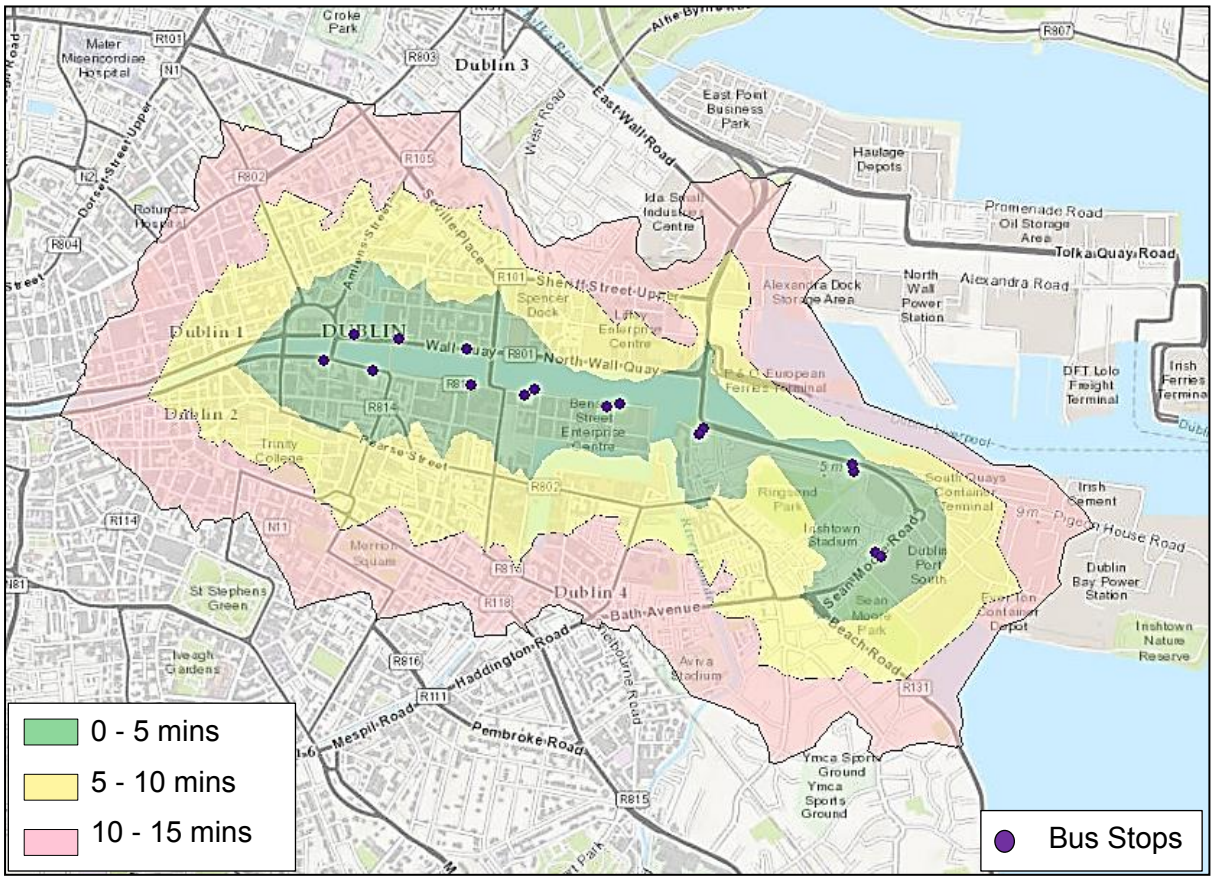

Figure (v): Walking distance catchment zones for CBC bus stops

8. Proposed Scheme – Main Features

The following summarises the main features of the proposed preferred route:

Table (ii): Summary table of preferred scheme

Route length	**3.35 km**
Length of bus priority (outbound)	3.35 km
Length of bus priority (inbound)	3.35 km
Length of dedicated one-way cycle lanes in each direction	0.63 km
Length of dedicated two-way cycle lanes	2.72 km
Number of bus stops (outbound)	8
Number of bus stops (inbound)	8
Residential catchment area (within 15 mins walking distance of nearest bus stop)	42,000
Number of people working or attending an educational institution within the 15 minute catchment area	105,000
Number of signalised intersections	10
Number of pedestrian crossings	6

9. Feasibility Working Cost Estimate

9.1 High Level Cost Estimate

The Feasibility Working Cost Estimate for the proposed Ringsend to City Centre CBC, based on current rates, is approximately **€8.78 million** plus **€30 million** for the construction of the proposed bridge over the Dodder. It was developed primarily based on standard rates that AECOM-ROD have available from similar types of projects in Dublin and includes high level information on the typical urban streetscape construction including:

- Preliminaries;
- Site Clearance;
- Earthworks;
- Pavement;
- Kerbs and Footways;
- Traffic Signs and Markings;
- Other Items (Ramps, Traffic Signals, Pedestrian Crossings, Street Lights, Landscaping, Boundary);
- Design and Construction Supervision Costs; and
- High Level Land Acquisition Costs.

A detailed cost estimate and significant further work would be required to provide a more accurate cost at the subsequent stage of development. This detailed estimate would need to allow for Risk, Contingencies and future inflation etc.

Table (iii): Feasibility Working Cost Estimate for EPO

CBC	Infrastructure (€)	Preliminaries and Contingency @ 30% (€)	Land acquisition (€)	Total cost (€)
Ringsend to City Centre	5,496,250	1,648,875	1,635,000	38,780,125
	bridge over the Dodder: €30,000,000			

9.2 Exclusions

The high-level cost estimate for the Ringsend CBC EPO does not consider:

- Professional Fees;
- Planning Costs;
- Marketing;
- Capital Contributions;
- Inflation;
- VAT;
- Costs associated with neighbouring proposed CBC projects (e.g. Ringsend CBC);
- Potential city centre cellar works and acquisition of private landings;
- Administration and management costs; and
- Maintenance costs.

10. Supplementary Scheme Design along North Wall Quay

Having identified the emerging preferred option, the feasibility to enhance the existing bus facility along North Wall Quay, between Samuel Beckett Bridge and the Point junction, was identified as supplementary scheme design – refer to Figure (vii).

Considerations included the approved planned scheme for the Point junction and the provision of new continuous bus lanes, hence optimising journey time of bus services using the Port Tunnel coming from the North of the City.

The supplementary scheme design along North Wall Quay also proposes a continuous two-way cycle facility between Samuel Beckett Bridge and the Point junction.

No trees or existing properties will be impacted by this scheme design.

However, the design encroaches into the Liffey Campshires locally, where indented bus stops are proposed and requires the removal of 12 parking spaces on the northern side of North Wall Quay.

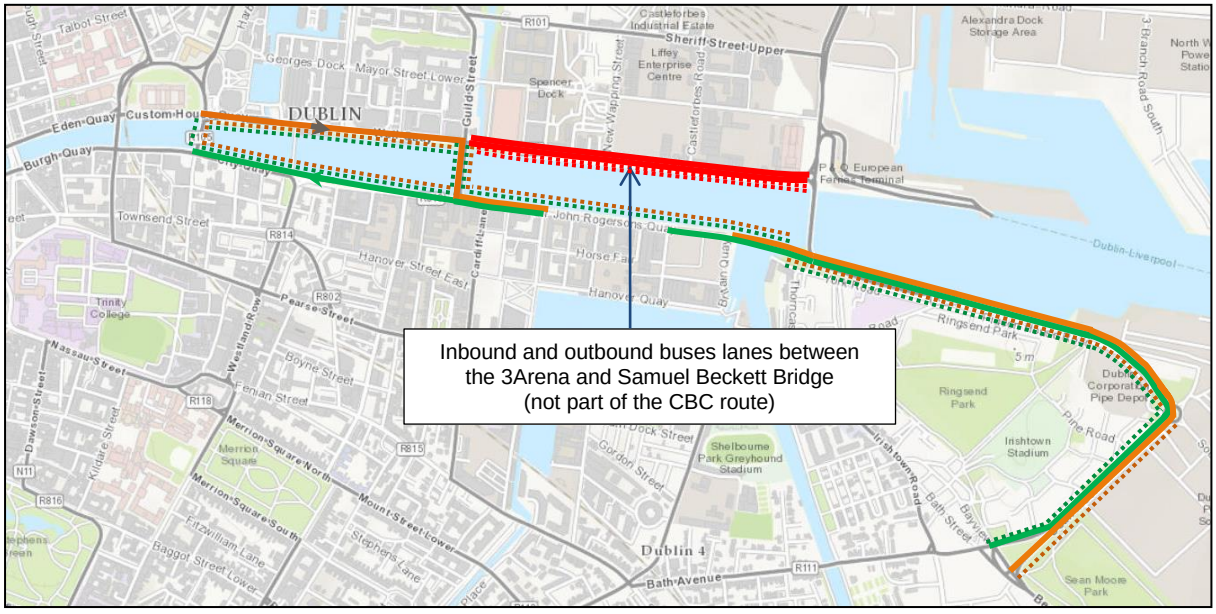

Figure (vii): Supplementary Scheme Design along North Wall Quay

11. Benefits

The Emerging Preferred Scheme will have the following benefits:

- Serving the future planned development in the Poolbeg Peninsula;
- Utilising in the most effective way the planned bridge over the Dodder River;
- Reliability due to bus priority in the vast majority of locations;
- Reduction of commuting time;
- Reduction of car congestion and enhancement of attractiveness of urban centres;

- Provision of safe cycling facilities and the opportunity for more people to cycle along the Ringsend to City Centre CBC;
- Reconfiguration of existing junctions, which will provide considerable benefits for pedestrian accessibility and bus priority, making the bus routes more attractive;
- Proposed new bus stops, which increase the attractiveness and catchment area of the bus route in this Study Area;
- Complementary pedestrian facilities upgrade; and
- Serving important trip attractors:
  - Irish Glass Bottle Site;
  - South/Grand Canal Docks;
  - IFSC; and
  - Convention Centre.

12. Next Stages of Design Development

This report has identified an emerging preferred route for the bus infrastructure along this Ringsend to City Centre Core Bus Corridor for which a concept design has been developed. The next project stage (The development of a Preliminary Design) will further refine and update the initial concept design along the route. Further account will be taken of likely public transport service levels, particularly the bus service patterns and any changes to the overall bus network which may arise from the separate bus network review process. The proposals will be amended, if and as required, to integrate any resultant changes. The Preliminary Design will define the final practically achievable scheme for the CBC, taking into account more detailed studies of constraints, impacts and environmental assessment required at a local level.

Prior to finalisation of the Ringsend CBC scheme design, a public consultation process will be undertaken, with inputs and feedback received incorporated where practical and appropriate to do so. This Preliminary Design will form the basis of the planning consent process for the scheme, which will require a development consent application to be made directly to An Bord Pleanála, due to the nature and extent of the proposed works.