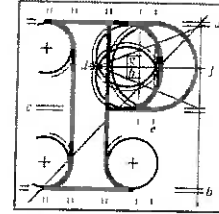


Our Case Number: ABP-317742-23

Your Reference: Shankill Community Action



**An
Bord
Pleanála**

Transport Analysis & Advocacy Ltd
631 Lisburn Road
Belfast
Antrim
BT9 7GT
Northern Ireland

Date: 16 October 2023

Re: BusConnects Bray to City Centre Core Bus Corridor Scheme
Bray to Dublin City Centre.

Dear Sir / Madam,

An Bord Pleanála has received your recent submission in relation to the above-mentioned proposed road development and will take it into consideration in its determination of the matter. Please accept this letter as a receipt for the fee of €50 that you have paid.


Please note that the proposed road development shall not be carried out unless the Board has approved it or approved it with modifications.

The Board has also received an application for confirmation of a compulsory purchase order which relates to this proposed road development. The Board has absolute discretion to hold an oral hearing in respect of any application before it, in accordance with section 218 of the Planning and Development Act 2000, as amended. Accordingly, the Board will inform you in due course on this matter. The Board shall also make a decision on both applications at the same time.

If you have any queries in relation to this matter please contact the undersigned officer of the Board at laps@pleanala.ie

Please quote the above-mentioned An Bord Pleanála reference number in any correspondence or telephone contact with the Board.

Yours faithfully,



Sarah Caulfield
Executive Officer
Direct Line: 01-8737287

HA02A

Teil	Tel	(01) 858 8100
Glaó Áitiúil	LoCall	1800 275 175
Facs	Fax	(01) 872 2684
Láithreán Gréasáin	Website	www.pleanala.ie
Ríomhphost	Email	bord@pleanala.ie

64 Sráid Maoilbhríde	64 Marlborough Street
Baile Átha Cliath 1	Dublin 1
D01 V902	D01 V902

Submission to An Bord Pleanála

HA27.317742

Bray to City Centre Core Bus Corridor Scheme

**Expert Report on Issues arising from the proposed BusConnects programme for
the Bray – Dublin City Centre Corridor**

Report

prepared by

Professor Austin Smyth

Transport Analysis & Advocacy Ltd

on behalf of

Shankill Community Action

10th October 2023

**Expert Report on Issues arising from the proposed BusConnects programme for
the Bray to City Centre Core Bus Corridor Scheme**

Contents

Preface	page 3
1 Introduction	page 5
2 Proposal Context	page 5
3 Methodology, Sources and Reporting	page 6
4 Proposed Scheme Description	page 9
5 The Need for the Proposed Scheme	page 18
6 Consideration of Reasonable Alternatives	page 28
7 Traffic and Transport Impacts of Proposed Scheme – An In-depth Assessment	page 46
8 Addressing uncertainty about the efficacy of the Proposed Scheme: Improving the Core Bus Corridor between Shankill and Bray with modified routeings and low cost supporting infrastructure and traffic management	page 61
9 Key Issues and Recommendations arising from the Proposed BusConnects CBC programme for the Bray – Dublin City Centre Corridor	page 79
10 Bibliography Key Sources	page 82

Expert Report on Issues arising from the proposed BusConnects programme for the Bray – Dublin City Centre Corridor

Preface

Bray - Dublin City Centre Scheme reference HA27.317742

Dear Bord

Shankill Community Action respectfully submits that having regard to the:

- Significant public interest nature of this Proposed Scheme
- The need to more fully investigate and test the implications of the scheme as set out in this submission.
- The issues identified and recommendations contained in this submission cannot be readily addressed by means of written submissions only.

We hereby request **An Bord Pleanála** hold an Oral Hearing into the matters raised in this submission with a view to their resolution.

Transport Analysis & Advocacy Ltd (Registered Office: 631 LISBURN ROAD, 631 LISBURN ROAD BT9 7GT) has been instructed by its client, **Shankill Community Action** to make this observation on its behalf.

We have been duly authorised by the Group to make this submission. *We have received certain factual information from Shankill Community Action related to the corridor and services on it and have been instructed that we can rely on that information without the need for full verification.*

Report Author: Professor Austin Smyth

Professor Austin Smyth has forty years experience in transport consultancy and research worldwide. He has acted as lead economist/project manager in securing in the region of €2,000 million investment in transport infrastructure in the UK, the Republic of Ireland and internationally.

Austin has experience of working for a variety of public and private sector clients in various EU States, Russia and Eastern Europe as well as North America, the Middle East and Thailand. He has advised Governments, Devolved Administrations and Local Authorities, as well as public transport operators on urban rail systems and intercity rail systems in the UK, the Republic of Ireland, USA, The Middle East, Russia and Ireland. Professor Smyth has been at the forefront for developing both bus and rail based systems in the UK, Ireland and internationally. He has specialised in conventional bus systems, BRT and LRT systems.

Professor Smyth's special fields of competence and technical experience includes: The economics and planning of public transport systems with particular reference to bus and rail projects and systems; economic appraisal techniques; multi criteria analysis, cost benefit analysis and other appraisal procedures; analytical issues relating to impact assessments, health and safety, and other policy initiatives; the contribution of innovative funding including PPP/PFI and bonds to infrastructure development; adviser on transport modelling to a variety of UK government agencies and public/private sector clients in the UK, mainland Europe and the United States ; He is an expert on discrete choice modelling particularly employing stated preference techniques; econometric techniques, land use/spatial allocation modelling procedures; psychological /attitudinal studies; transport and urban sustainability; transport and urban planning policy development with particular regard to promoting equity in access to opportunities and social cohesion; peripherality and its impact on economic competitiveness.

He has been an Examining Inspector (Planning Inspectorate England and Wales) (formerly Registered Commissioner to the UK's Infrastructure Planning Commission (IPC) 2010 to 2018. He has represented a number of bodies as Expert Witness at hearings held by the Civil Aviation Authority (CAA) and by the PAC in relation to Public Inquiries into Major Transport Strategies. He is experienced in scrutinising, probing and challenging and in providing analysis of reports submitted to Boards that inform decision making.

1. Introduction

- 1.1. The BusConnects Dublin – Core Bus Corridor Infrastructure Works as it relates to the Bray - City Centre Core Bus Corridor Scheme is intended to enable and deliver efficient, safe and integrated sustainable transport movement along the corridor. Arising from concerns felt by Shankill Community Action and its affiliated groups, Transport Analysis & Advocacy Ltd (TAA) has been requested to prepare a report on its behalf setting out an independent assessment of those and other matters that might arise during the course of the review and table a series of recommendations to An Bord Pleanála in its consideration of:

Bray to City Centre Core Bus Corridor Scheme ref. HA27.317742

2. Proposal Context

- 2.1. The National Transport Authority (NTA) have given notice of their applications under Section 51(2) of the Roads Act 1993 (as amended) to An Bord Pleanála for approval in relation to a proposed road development including construction of the Bray to City Centre Scheme, one of twelve schemes that make up the BusConnects Dublin – Core Bus Corridor Infrastructure Works.
- 2.2. Formal statutory public consultation processes have been triggered in respect of this and other schemes contained within the BusConnects Dublin – Core Bus Corridor Infrastructure Works programme. In addition to the Bray to City Centre Core Bus Corridor Scheme the programme includes:
- Ballymun/Finglas to City Centre Core Bus Corridor Scheme;
 - Belfield/Blackrock to City Centre Core Bus Corridor Scheme;
 - Blanchardstown to City Centre Core Bus Corridor Scheme;
 - Clongriffin to City Centre Core Bus Corridor Scheme;
 - Kimmage to City Centre Core Bus Corridor Scheme;
 - Liffey Valley to City Centre Core Bus Corridor Scheme Core Bus Corridor Scheme;
 - Lucan to City Centre Core Bus Corridor Scheme;
 - Ringsend to City Centre Core Bus Corridor Scheme;
 - Swords to City Centre Core Bus Corridor Scheme;
 - Tallaght / Clondalkin to City Centre Core Bus Corridor Scheme; and
 - Templeogue / Rathfarnham to City Centre Scheme.

Included within the process of applying to An Bord Pleanála for approval the NTA has prepared Environmental Impact Assessment Reports in addition to Compulsory Purchase Orders and Natura Impact Statements. The public has been provided with an opportunity to have their views heard and considered by An Bord Pleanála for the Bray to City Centre Core Bus Corridor Scheme as part of the statutory consultation process to inform the board's decision on the scheme. The decision by Shankill Community Action to commission preparation of a comprehensive report on issues arising from the National Transport Authority's plans and assessment of the Bray to City Centre BusConnects Bus Corridor Infrastructure Works Scheme takes advantage of the invitation issued to interested parties to prepare a submission under the consultation process for consideration by An Bord Pleanála in arriving at its conclusions on the merits of the scheme.

3. Methodology, Sources and Reporting

Overview

- 3.1. To realise the objectives of the provisions of the agreement between TAA and Shankill Community Action, it was deemed necessary to initiate a preliminary examination of a limited set of 'relevant' documents collated by Councillor Jim Gildea and Professor Smyth and site visits to Bray – Dublin City Centre Corridor to provide a realistic estimate of the work programme. That preliminary examination of 'relevant' documents and the experience of Professor Smyth has informed the design of the main work programme.
- 3.2. It was envisaged the report would consider the case for the scheme (as submitted) and allied documentation explicitly referred to or relied upon in support of the scheme as well as options and alternatives assessed by the NTA's consultants or alternatives developed by TAA in conjunction with the client.
- 3.3. The programme of work includes in-depth reviews of the proposed scheme and encompass consideration of;
 - the economic case for BusConnects Bus Corridor Infrastructure Works Scheme and its applicability to the Bray – Dublin City Centre corridor versus other corridors.
 - alternatives considered and assessed by the NTA's consultants encompassing mode alternatives, demand management options, technological programmes and route alternatives. This takes into account cycling options, their preferred route and design alternatives.
 - the scheme's impact assessment and transport and traffic modelling tools including the scheme transport modelling system employed.
- 3.4. A primary focus of the of the work is on the impacts on travel behaviour of the preferred option along with options either previously assessed or potential alternatives, both strategic and route, drawn up by the TAA team in consultation with the client and allied stakeholders.
- 3.5. In undertaking a robust assessment of the proposed scheme a pre-requisite is the availability of robust data relating to current travel behaviour in Shankill and its approaches, the reliability and validity of the forecasting tools and the accuracy and precision of the forecasts of behaviour these tools generate.
- 3.6. The agreed work programme took into account a situation where the Expert did not have access to additional documents available to review as deemed necessary and where he identified a requirement for development and implementation of a bespoke survey programme to collect primary data to inform assessment of the preferred scheme or any alternative that might emerge in consultation with the client.

3.7. This process also includes a reassessment of selected options developed by the NTA consultants in developing their recommendations during earlier phases of the design process including the stages that relate to emergence of the preferred scheme.

Bespoke survey programme

3.8. The preliminary work has identified limitations in the available evidence and data on which to specify a robust scheme that addresses the concerns of the client group and maximises efficacy of the investment. This points to a requirement for additional primary data relating to travel behaviour, both in relation to the preferred scheme and alternatives already assessed by the NTA consultants, and capable of informing assessment of any new scheme that emerges from the proposed programme of work.

3.9. The programme of work therefore encompasses provision for specification of a bespoke survey programme concerned with bus use in the corridor on sections 3 and 4 of the scheme as referred to above. This will involve combination of on-off bus counts, bus loadings as well as development and execution of a simple survey questionnaire designed to elicit basic information about bus travel to and from Shankill and between Bray and points in the corridor north of Loughlinstown. The survey will be designed and analysed by TAA Ltd with the data collection programme undertaken by/on behalf of the client. The data will be collected by a team from the client group.

Review of the travel demand modelling methodology

As part of the research design the work programme provides a review of the travel demand modelling methodology employed, its underlying assumptions and outputs as these relate to trips by bus, private car or cycling, as well as the timeliness of the data employed in generating travel demand forecasts. The findings from this stage could have important consequences for the assessment of the relative efficacy of the preferred scheme in comparison with rejected options and new alternatives specified by this team.

Deliverables and Final Report

3.10. The programme of work includes in-depth reviews of the proposed scheme and encompasses consideration of;

- alternatives encompassing mode alternatives, demand management options, technological programmes and route alternatives. This takes into account cycling options;
- the economic case for BusConnects Bus Corridor Infrastructure Works Scheme and its applicability to the Bray – Dublin City Centre corridor versus other corridors. This will include;
 - the implications of the scheme design for bus travellers, non-bus travellers or non cyclists, together with the consequences for residents in areas within the corridor, reflected in the wider impacts of the scheme for the local economy;
 - the proposed scheme's environmental impacts including consequences for biodiversity and emissions related effects, flora and fauna losses, landscape and visual effects, archaeological, architectural and cultural heritage impacts, and adverse land use character changes.

- scheme impact assessment and transport and traffic modelling tools including the scheme transport modelling system employed encompassing:
 - The Regional Modelling System, Local Area Models, Micro-Simulation Model, Junction Design Models
 - Data Inputs including data collection and collation, establishment of baseline conditions, bus journey times, traffic count data, population related indicators
 - Model Calibration and Validation

In particular it considers elements of the travel demand modelling methodology, its assumptions and outputs as these relate to trips by bus, private car or cycling as well as the timeliness of the data employed in generating forecasts.

NOTE: Throughout this report substantial sections extracted from the EIAR are set out in text boxes with a grey background. Observations by the author are set out in text boxes highlighted in yellow. To facilitate cross referencing to the EIAR the section numbering employed in the EIAR is retained.

3.11. The final report will provide conclusions on:

The relative efficacy of the Proposed Scheme, options and alternatives including;

- Impacts for selected stakeholders including residents, pedestrians, cyclists, bus users and car users.
- Impacts on the environment.
- Impacts on the local economy.

The report also tables observations and recommendations on alternatives to the proposed scheme should the investigation reveal opportunities to yield overall improved net levels of economic welfare, including wider economic benefits and environmental outcomes.

This assessment is consistent with the Government's 'Common Appraisal Framework for Transport Projects and Programmes'.

3.12. The programme of work is informed by access to a range of published sources including:

- Department of Public Expenditure and Reform, Major Projects Advisory Group Review of the NTA's BusConnects Preliminary Business Case.
- EU Joint Assistance to Support Programmes for European Regions Guidance Note 3 on BusConnects: Project Review: Phase 3 (Preliminary Business Case).
- National Transport Authority: Greater Dublin Area Transport Strategy 2016 – 2035 as it relates to BusConnects and specifically in relation to the Bray – Dublin City Centre Corridor.
- National Transport Authority: BusConnects Dublin Cover Note to Preliminary Business Case.
- National Transport Authority: Greater Dublin Area Transport Strategy 2022 - 2042 [as](#) it relates to BusConnects and specifically in relation to the Bray – Dublin City Centre Corridor.
- National Transport Authority: BusConnects Dublin Preliminary Business Case.

4. Proposed Scheme Description

- 4.1. Chapter 4 of the Environmental Impact Assessment Report (EIAR) provides a comprehensive description of the Bray to City Centre Core Bus Corridor Scheme. Here we provide a comprehensive description of the Proposed Scheme, drawing largely on the content of Chapter 4 as a precursor to reviewing the case for the scheme as tabled by the NTA. To facilitate cross referencing to the EIAR the section numbering employed in the EIAR is retained and the summarised content highlighted.
- 4.2. Chapter 4 of the Environmental Impact Assessment Report (EIAR) provides a detailed description of the Proposed Scheme. The aim of the scheme is to provide an upgrade of the existing bus priority and cycle facilities. As a result of this scheme the level of bus priority provided along the alignment, including the provision of additional lengths of bus lane will see a substantial increase. In addition, bus stops will be enhanced throughout the Proposed Scheme in an effort to improve the overall journey experience for bus passengers. Cycle facilities will be substantially improved with segregated cycle tracks provided along the links and protected junctions with enhanced signalling for cyclists provided at junctions. Upgraded pedestrian facilities will include additional signalised crossings. Urban realm works will be undertaken at key locations with higher quality materials, planting and street furniture provided to enhance the pedestrian experience.

The scale of the scheme is reflected in the following summary of changes to infrastructure, land use and associated traffic management facilities:

Total Length of Proposed Scheme	18.5km	
Bus Priority	Existing (km)	Proposed Scheme (km)
Bus Lanes		
Inbound	12.6	16.1
Outbound	12.8	17.1
Bus Priority through Traffic Management		
Inbound	0	2.3
Outbound	0	1.4
Total Bus Priority (both directions)	25.4	36.9 (+45%)
Bus Measures		
Proportion of Route with Bus Priority Measures	69%	99.6%
Cycle Facilities – Segregated		
Inbound	8.0	16.5
Outbound	9.4	16.9
Cyclist Facilities – Non-segregated		
Inbound	7.5	0.4
Outbound	7.4	0.0
Cyclist Facilities – Overall		
Total Cyclist Facilities (both directions)	32.3	33.8 (+5%)
Proportion Segregated (including Quiet Street Treatment)	47%	91%
Other Features		
Number of Pedestrian Signal Crossings	119	176
Number of Residential Properties with Land Acquisition	Not applicable	56

4.5 Description of the Proposed Scheme by Section

The Proposed Scheme commences at the St Stephen's Green / Leeson Street Lower Junction and runs along the R138 (Leeson Street Lower / Leeson Street Upper / Sussex Road / Morehampton Road / Donnybrook Road / Stillorgan Road) and includes a bus interchange facility at the Stillorgan Road entrance to UCD. It continues along the N11 (Stillorgan Road / Bray Road), R837 Dublin Road, R119 Dublin Road and R761 (Dublin Road / Castle Street), ending at the northern side of the Fran O'Toole Bridge in Bray, where it will tie into the proposed Bray Bridge Improvement Scheme. For the purposes of describing the Proposed Scheme it has been split into four sections as follows:

- Section 1: Leeson Street to Donnybrook (Anglesea Road Junction);
- Section 2: Donnybrook (Anglesea Road Junction) to Loughlinstown Roundabout;
- Section 3: Loughlinstown Roundabout to Bray North (Wilford Roundabout); and
- Section 4: Bray North (Wilford Roundabout) to Bray South (Fran O'Toole Bridge).

4.5.1 Section 1 – Leeson Street to Donnybrook (Anglesea Road Junction)

4.5.1.1 General Overview of the Proposed Scheme

The section runs along Leeson Street Lower and Upper from the junction with St Stephen's Green, providing continuous bus priority and segregated cycle tracks in each direction. A bus gate has been located at the end of Leeson Street Lower before the St Stephen's Green junction. General inbound traffic is now to be directed from Leeson Street Lower on to Hatch Street Lower, and then on to Earlsfort Terrace in order to reach St Stephen's Green.

There will be two-way general traffic introduced on Earlsfort Terrace between the Hatch Street Lower Junction and St Stephen's Green to facilitate this. This will require the northbound bus lane on Earlsfort Terrace to be made a general traffic lane. The existing left turning ban at Earlsfort Terrace towards Stephen's Green North has been removed to facilitate the general traffic movement. The one-way system on Sussex Road and the adjacent section of Leeson Street Upper have been retained, with a reduced number of general traffic lanes in each direction to allow for full bus and cycle lane provision and retain existing parking.

The proposed junction at Fitzwilliam Place and Leeson Street Lower from the Fitzwilliam Cycle Route (DCC 2023) has been incorporated into the Proposed Scheme, while revised junction layouts at Appian Way, Waterloo Road, and Wellington Place have been designed to improve road user throughput and safety. The full cycle track and bus lane provision continues along Morehampton Road, where in places the cycle tracks are brought behind the tree line. This will impact a number of on-street parking bays between Wellington Place and Belmont Avenue. A 'No Right Turn' restriction has been added from Morehampton Road onto Auburn Avenue to reduce crossing point conflicts. From Mulberry Lane to Rampart Lane the northbound bus lane has been removed to allow for two reduced width segregated cycle tracks in both directions, while the southbound bus lane has been retained along this narrow section. Signal Control Priority (SCP) at the Eglinton Terrace junction on Donnybrook Road will provide northbound bus priority over this length.

From Eglinton Terrace southwards to Eglinton Road a dedicated bus lane, segregated cycle track, and general traffic lane are provided in each direction. The tie in for the proposed Dodder Greenway, designed and built by others, has been included in the design at the Eglinton Road junction on Donnybrook Road. On Donnybrook Road between Eglinton Road and Anglesea Road in the southbound direction, there is a straight ahead and left-turn lane, a straight ahead general traffic lane, a bus lane, and a cycle track provided. The northbound approach on the Stillorgan Road towards Beaver Row has a cycle track, bus lane, a combined left and ahead general traffic lane, and a right-turn lane to Ailesbury Road. Between Beaver Row and Eglinton Road there is a cycle track, bus lane, and a combined left and ahead traffic lane.

Coach laybys have been proposed at certain locations to reduce instances of loading coaches blocking the bus lane. It is proposed that, where possible along Section 1 of the Proposed Scheme, existing kerb lines will be retained and the BusConnects Design Guide will be adhered to. SCP shall be employed at certain locations where full segregated bus lane provision has not been possible due to space constraints.

4.5.2 Section 2 – Donnybrook (Anglesea Road Junction) to Loughlinstown Roundabout

4.5.2.1 General Overview of the Proposed Scheme

The existing lane configuration is maintained on the Stillorgan Road between the Beaver Row / Anglesea Road junction and Foster's Avenue, apart from the southbound on-slip at Belfield, where a continuous bus lane is now provided from the slip road to the Stillorgan Road. To achieve this, the existing southbound bus lane on the Stillorgan Road has been truncated and will require coaches, buses, and taxis using it to merge with the adjacent general traffic lane as they pass under the Belfield flyover. New continuous bus lanes will be provided on the southbound off-slip, and across the Belfield flyover. It is intended to provide segregated cycle tracks on each slip road and a two-way segregated cycle track on the Belfield flyover. A separate cycle link will be provided to the adjacent sideroad to the east of the southbound slip roads.

On the Stillorgan Road between Seafield Road and Foster's Avenue it is intended to provide a bus lane, a oneway segregated cycle track, and two general traffic lanes in each direction. A short length of two-way segregated cycleway will be provided on each side in this area due to the proximity to UCD. This will run from Woodbine Road to Merrion Grove by the southbound carriageway, and from Foster's Avenue to the newly proposed cycle entrance into UCD opposite Seafield Road by the northbound carriageway. A short new two-way cycle track connection is provided southbound from Merrion Grove which will improve access from Coláiste Eoin / Coláiste Íosagáin to the N11 junction with Merrion Grove.

In addition, new junction layouts have been provided at RTÉ and Nutley Lane to improve road user throughput and safety. Bus stop locations and layouts have been reviewed, and in certain

areas adjusted, to ensure optimum integration with interfacing services. Coach laybys have been proposed at certain locations to reduce instances of loading coaches blocking the bus lane.

The bus interchange proposals at UCD have been developed in collaboration with UCD and are coordinated with the UCD Future Campus masterplan. The UCD Bus Interchange General Arrangement drawings (BCIDB-JACENV_LA-0013_IN_00-DR-LL-9001) in Volume 3 of this EIAR can be referenced in conjunction with the main drawing series for the Proposed Scheme, to provide a more detailed overview of the UCD Interchange proposals. The proposed UCD interchange is located adjacent to the Belfield interchange on the R138 Stillorgan Road (at Chainage A4000 of the Proposed Scheme) and consists of two main operation zones. The main interchange plaza adjacent to the N11 northbound slip road will accommodate high frequency bus routes. The interchange bus islands located south of the UCD veterinary building, to the north-west of the main plaza and existing woodland, will be used for lower frequency and regional bus routes, as well as to provide overflow for the main plaza services. The interchange proposals also capture upgrade works for a shared pedestrian and cyclist commuter route along a naturally developed route through the existing woodland area. The overall site will provide 20 bus stop locations with 12 standard NTA / UCD bus shelters finished to match UCD street furniture. Two landmark bus shelters are proposed with passenger seating area. Each shelter will serve two stops on each side of the main plaza, positioned central to the stops they serve. The shelter's cantilevered canopies provide large, covered areas of waiting, supplementing the semi-enclosed waiting rooms. 87m of seating is provided, enough for 40% of the estimated 350 peak bus patrons. They have been designed to provide a cohesive solution adjacent to UCD's proposed Future Campus masterplan development, including the proposed Arrival Plaza.

The existing Lane configuration between Foster's Avenue and Wyattville Road has for the most part been retained. Junction designs along the route have been reviewed in an attempt to remove left turn filter lanes crossing cycle lanes where possible.

Between Merrion Grove and Lower Kilmacud Road it is proposed to provide a bus lane and two general traffic lanes plus a one-way segregated cycle track in each direction. A new dedicated footpath is to be provided between the Lower Kilmacud Road and the Old Dublin Road (Stillorgan), and the Old Dublin Road (Stillorgan) and Trees Road Lower junctions on both sides of the Stillorgan Road. The new southbound footpath at this location will require an extension to the existing St Laurence's Park subway, where a new toucan crossing will also be provided across the Stillorgan Road. The slip road from the Stillorgan Road on to The Hill at Stillorgan is proposed to be closed.

The northbound cycle track north of Brewery Road has been diverted on to St Brigid's Church Road, additional traffic calming and footway improvement measures are proposed along the St Brigid's Church Road to accommodate this. A section of southbound cycle track has also been diverted on to Belmont Terrace at Galloping Green. A new pedestrian link is proposed to South Park from Bray Road in Cornelscourt, and to Shanganagh Vale from the Bray Road.

It is proposed to maintain one bus lane and two general traffic lanes in each direction between Wyattville Road and Loughlinstown Roundabout. Widening of the carriageway and a setback of existing vehicle restraint systems in front of the pedestrian footbridge will be provided on the southbound carriageway to ensure a continuous southbound bus lane through the Loughlinstown Roundabout.

Footpaths are not proposed as per existing infrastructure between the Old Bray Road and Cornelscourt Shopping Centre pedestrian bridge, and between Clonkeen Road and Johnstown Road junctions and between Johnstown Road junction and the new junction at Druid's Glen Road, as alternative walking routes exist on adjacent quieter roads.

A new footpath is proposed on either side of the Stillorgan Road at the new junction on the N11 at Druid's Glen Road which tie-in with the existing footpath towards Wyattville Road. Improvements have been made to cycle track provisions at the Wyattville Road Junction. The existing adjacent northbound Bray Road slip towards Cherrywood Road will be retained in its current two-way layout.

At the Loughlinstown Roundabout it is proposed to signalise the existing roundabout on three arms and to provide a continuous bus lane southbound through the junction towards Shankill.

In addition, new junction layouts have been proposed at all major junctions along this section to remove existing left turn slips and to provide improved cycle movements. The northbound U-turn lane has been removed at the Westminster Road junction in order to facilitate a toucan crossing.

It is proposed that existing kerb lines will be retained and that the BusConnects Design Guide will be adhered to where possible along Section 2 of the Proposed Scheme.

4.5.3 Section 3 – Loughlinstown Roundabout to Bray North (Wilford Roundabout)

4.5.3.1 General Overview of the Proposed Scheme

Between Loughlinstown Roundabout and Stonebridge Road it is intended to provide a bus lane and general traffic lane in both directions. Where bus lanes are not continuous, Signal Controlled Bus Priority has been provided. South of Stonebridge Road up to Crinken Lane, where bus lanes are not continuous in both directions due to existing constraints, SCP has been proposed to ensure bus priority. Signal Controlled Bus Priority has been proposed between the St Anne's Church / Corbawn Lane Junction and Rathmichael Woods in the northbound direction.

Segregated cycle tracks have not been provided between Loughlinstown Roundabout and Stonebridge Road along the Proposed Scheme. It is intended to provide a two-way cycle track from Stonebridge Road on the Dublin Road as far as the Shanganagh Road junction, and on

Stonebridge Road as far as Stonebridge Lane to provide a cycle link to the two schools on Stonebridge Road.

The roundabout between the Dublin Road, Corbawn Lane, and Shanganagh Road is proposed to be upgraded to a signalised junction with new pedestrian crossing facilities and SCP for buses. Corbawn Lane is to be an exit only junction on to Shanganagh Road. A dedicated right-turn lane is proposed from Shanganagh Road on to Beechfield Manor. A dedicated left turn lane from Shanganagh Road into Beechfield Manor is also to be provided.

The proposed design between the Shanganagh Road junction and Crinken Lane retains the existing general traffic lanes with no bus or cycle lanes, apart from a section of the northbound carriageway where a bus lane is provided from Crinken Lane to a new junction at the entrance to Olcovar. Signal-controlled bus priority will be provided along this section. The Quinn's Road roundabout is to be upgraded to a signalised junction, and an upgraded signalised junction is proposed at the entrance to the Olcovar development. Footpaths along the Dublin Road at Cherrington Drive and Beech Road are to be retained at their roadside location.

From Crinken Lane to the Wilford Roundabout it is proposed to provide northbound and southbound bus lanes, segregated cycle tracks and general traffic lanes. Signal-controlled bus priority will be used northbound from Wilford Junction for a short distance as far as Woodbrook College. Where appropriate, roadside trees shall be retained by locating the proposed footpaths and cycle tracks behind the tree line. Improved lighting and crowning of trees will be provided to enhance visibility.

New pedestrian crossings are proposed at the new junction outside Olcovar, south of Crinken Lane, south of Allies River Road, and by Crinken Church. The existing pedestrian crossing at Woodbrook College is to be moved southwards to provide a crossing point close to the relocated southbound bus stop.

At Shanganagh Park and Shanganagh Cemetery, the northbound and southbound cycle track are proposed to be diverted into the park, alongside the southbound footpath, and behind green space and existing trees to the eastern side of the carriageway between two Toucan Crossings, with a newly proposed cemetery boundary wall set back to enable the retention of the roadside tree line. New lighting and crowned trees will be provided to ensure through visibility. Playground areas will be retained in their current existing location as part of BusConnects proposals. Their final future location will be confirmed as part of the Shanganagh Park and Cemetery Masterplan (Dún Laoghaire-Rathdown County Council).

Two new residential developments are under construction, at Shanganagh Castle and the Woodbrook Estate. The proposed signalised junctions for these developments and bus stops have been coordinated with the development proposals and incorporated within the design.

It is proposed that existing kerb lines will be retained and that the BusConnects Design Guide will be adhered to where possible along Section 3 of the Proposed Scheme. Bus stop locations and

layouts have been reviewed, and in certain areas adjusted, to ensure optimum spacings. Coach laybys have been proposed at certain locations along the route to reduce instances of loading coaches blocking the bus lane.

4.5.3.2 Deviations from Standard Cross Sections

The width of the cross-sectional elements as outlined in Section 4.6.1 have been reduced at a number of constrained locations across the Proposed Scheme. The deviations within Section 3 – Loughlinstown Roundabout to Bray North (Wilford Roundabout) are detailed in Table 4.15.

Table 4.15: Reduced Standard Cross Sections on Section 3 – Loughlinstown Roundabout to Bray North (Wilford Roundabout)

Location	Design Element	DMURS	Design	Justification
A14180 – A14540	Footpath (southbound)	2.0m	Varies Approx. 1.6m – 2m	Footpath narrows to a pinch point of 1.6m to match existing.
E20 – E60	Footpath (northbound)	2.0m	Varies Approx. 1.2m – 2m	Footpath narrows to a pinch point of 1.2m as alignment matches existing kerb line and boundary wall to avoid land take.
E205 – E260	Footpath (northbound)	2.0m	Varies Approx. 1.6m – 2m	Footpath narrows to a pinch point of 1.6m as alignment matches existing kerb line and boundary wall to avoid land take.
A14810 – A15075	Footpath (northbound)	2.0m	Varies Approx. 1.6m – 2m	Footpath narrows to a pinch point of 1.6m in front of Applegreen petrol station to match existing.
G145 – G175	Footpath (northbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrows over a length of 30m to approximately 1.8m to tie into existing boundary.
H45 – H80	Cycle track (2-way)	3.5m	3m	3.0m 2-way cycle track is provided over a length of 45m to avoid land take.
H45 – H80	Cycle track (northbound)	2.0m	Varies Approx. 1.2m	Cycle track narrows to 1.2m to tie-in to combined traffic lane.
A15115 – A15160	Traffic Lane (southbound)	3.0m	Varies 2.2m – 3.0m	Traffic lane width narrows at pinch point to accommodate the cycle track and avoid impact to the bridge.
A15160 – A15800	Footpath (northbound)	2.0m	1.6m	Footpath narrows locally at pinch point.
A15175 – A15205	Footpath (southbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrows over a length of 30m to approximately 1.8m to tie into existing boundary.
A15495 – A15510	Footpath (northbound)	2.0m	Varies Approx. 1.5m – 1.8m	Footpath locally narrows to approximately 1.8m over 15m in length with a 1.5m pinch point to tie into existing boundary.
A15605 – A15630	Footpath (southbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrows over a length of 30m to approximately 1.8m to tie into existing boundary.
A15800 – A15865	Footpath (northbound)	2.0m	Varies Approx. 1.5m – 3.5m	Footpath narrows to a pinch point of 1.6m due to alignment of existing boundary wall at Sherrington Lodge.
A15825 – A16035	Footpath (southbound)	2.0m	Varies Approx. 1.5m – 2m	Footpath narrows to a pinch point of 1.5m due to alignment of existing boundary wall at Crinken College.
A16020 – A16040	Footpath (southbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrows over a length of 20m to approximately 1.8m to tie into existing boundary.
A16120 – A16140	Footpath (northbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrowed to 1.8m pinch point to tie into existing boundary wall.
A16220 – A16230	Footpath (northbound)	2.0m	Varies Approx. 1.8m	Footpath locally narrowed to 1.9m pinch point to tie into existing boundary wall.
A16645 – A16710	Footpath (southbound)	2.0m	Varies Approx. 1.65m – 2m	Footpath narrows to a pinch point of 1.65m matching existing kerb line to minimise land take and tree loss at Saint James' Lodge. Ties in to existing.
A16975 – A16990	Footpath (northbound)	2.0m	Approx. 1.8m	Footpath locally narrows over a length of 15m to 1.8m to tie into existing boundary wall.

4.5.3.3 Bus Lane Provision

An overview of the bus lane provision as part of the Proposed Scheme is set out in Section 4.6. As outlined within that section, full bus priority through the use of dedicated bus lanes is not possible at all locations, and SCP is used in a number of junctions in Section 3 of the Proposed

Scheme as listed in Table 4.16. Table 4.16: Proposed SCP Junctions in Section 3 of the Proposed Scheme.

Junction Location	Priority Type
Dublin Road / Shanganagh Road Junction to Shanganagh Park	Bus priority by provision of SCP has been adopted over this section of the corridor to minimise impacts to existing property, mature tree and other topography constraints. Approx. Chainage A15075 to A16130 Southbound.
Dublin Road / Oicover Junction to Woodbank	Bus priority by provision of SCP has been adopted over this section of the corridor to minimise impacts to existing property, mature tree and other topography constraints. Approx. Chainage A14630 to A15900 Northbound.

Chapter 4

Observations, Commentary and Issues

This is a key section of the Proposed Scheme that gives rise to concerns about the fate of a large number of trees, including mature trees and certain traffic management arrangements, notably those proposed for the roundabout between the Dublin Road, Corbawn Lane, and Shanganagh Road.

The proposal that Corbawn Lane is to be an exit only junction on to Shanganagh Road, with a dedicated right-turn lane from Shanganagh Road on to Beechfield Manor, together with a left turn lane from Shanganagh Road into Beechfield Manor seems unusually complex and potentially lead to addition vehicle collisions with additional right turns it imposes for residents trying to access and leave Corbawn Lane by private car. The residents report they feel they are being prevented from accessing both Dublin Road and Shanganagh Road when attempting to travel northward in particular.

An audit of trees in Section 3 of the Bray Corridor has identified 400+ trees including many mature trees that are designated for felling. It is the client's belief many more will be damaged or felled during the works. It is noteworthy that in the NTA consultants' reports more than half of all references to trees potentially at risk from the scheme relate to this short 3 km section of an 18.5 km scheme.

This submission addresses these concerns through a review of the Proposed Scheme as it relates to the robustness of the evidence put forward by the NTA's consultants in the EIAR, the methodology employed and the data underpinning their conclusions and recommendations, together with consideration of the implications of the observations for the efficacy of the proposed scheme in formal investment appraisal terms.

4.5.4 Section 4 – Bray North (Wilford Roundabout) to Bray South (Fran O'Toole Bridge)

4.5.4.1 General Overview of the Proposed Scheme

From the M11 junction (Wilford Roundabout) to the Lower Dargle Road, it is proposed to continue with a bus lane, general traffic lane and a segregated cycle track in each direction. All

junctions have been developed further to provide improved cycle movements. It is proposed to replace the Wilford Roundabout with a new signalised junction.

The Corke Abbey Avenue / Old Connaught Avenue junction with the Dublin Road has been designed to cater for the proposed bus and cycle lanes, and to remove the left turn slips in and out of Corke Abbey Avenue. The design for the Upper Dargle Road junction with the Dublin Road has removed the northbound left turn slip from the Dublin Road.

The proposed works will impact the existing Woodbrook Side Lodge, which is a heritage structure located at the southern end of the Woodbrook Estate in Bray. It is proposed to demolish the existing lodge and build a new lodge building further east of its present location.

The proposed works will also impact the existing Circle K Petrol Station on the eastern side of the Dublin Road.

At the end of the Proposed Scheme at the tie-in to the Fran O'Toole Bridge, the northbound bus lane starts just after the Lower Dargle Road junction. The tie-in at the Proposed Scheme termination consists of a southbound bus lane and two general traffic lanes and cycle track in both directions on the approach to the Fran O'Toole Bridge, where the Proposed Scheme will end.

It is proposed to retain the existing kerb lines wherever possible and adhere to the design standards from the PDGB along Section 4 of the Proposed Scheme. Bus stop locations have been reviewed, and in certain areas adjusted, to ensure optimum spacings.

. Chapter 4

Observations, Commentary and Issues

Section 4 adjoins Section 3, the key section of the Proposed Scheme from a Shankill Community Action perspective, and our proposals for Section 3 will offer considerable benefits to residents and visitors to Section 4 (Bray) through enhanced bus routing and service.

5. The Need for the Proposed Scheme

Chapter 2 of EIAR

Commentary

It was noted in the previous section that the concerns identified in relation to certain specific features of the Proposed Scheme prompts a requirement to review not only the evidence put forward by the NTA's consultants in the Environmental Impact Assessment Report (EIAR), the methodology employed and the data underpinning their findings but also the efficacy of their recommendations and the consistency of the Proposed Scheme with Proposed Schemes elsewhere in the city under the same programme.

The first stage in addressing this requirement is the need to investigate the case for the proposal described above (Chapter 4 of the EIAR) before reviewing in depth the efficacy of the scheme and potential alternatives to the Proposed Scheme.

Chapter 2 of the EIAR provides initially an outline of the requirement for the **Bray to City Centre Core Bus Corridor Scheme**. Having set out the context and the strategic need for the scheme in this section (Section 5) we provide a more detailed investigation of the need identified for and the benefits yielded to in the corridor by the Proposed Scheme, drawing on the content of Chapter 2 before reviewing the assessment of alternatives to the Proposed Scheme undertaken by the NTA and its consultants in the next section (Section 6) of this submission that draws on Chapter 3 of the EIAR. To facilitate cross referencing to the EIAR the paragraph/sub-section numbering employed in the EIAR from section 2.2.2 of the EIAR Chapter 2 is retained and the summarised content highlighted in this section (Section 5) of our submission.

Overview of the Context and Transport Need for the Proposed Scheme

- 5.1. The Proposed Scheme states its aim is 'To reduce journey times for modes of transport with higher person carrying capacity (bus, walking and cycling), which in turn provides significant efficiencies and benefits to users of the transport network and the environment'.

The Scheme claims that it will deliver efficient, safe, and integrated sustainable transport movement along the corridor through the provision of enhanced walking, cycling and bus infrastructure on this corridor. Among its objectives are the following;

- Bus speeds, bus reliability and punctuality, it claims, will be improved through prioritising bus movements over general traffic movements thereby enhancing both the capacity and potential of the bus transport system.
- The Scheme states that the potential for cycling will be provided through infrastructure for cycling, segregated from general traffic where feasible.

- The Scheme claims it supports the realisation of Ireland’s emission reduction targets.
- Compact growth, regeneration opportunities and more effective use of land in Dublin can be promoted through the sustainable transport system along the corridor. It claims that public realm will be carefully considered in the design and development of the transport infrastructure.
- The Scheme claims it will improve accessibility to jobs, education and other social and economic opportunities. This will be achieved through the provision of improved sustainable connectivity and integration with other public transport;
- Journey times for (bus, walking and cycling), modes of transport the Scheme claims will be reduced which in turn could provide significant efficiencies and benefits to users of the transport network and the environment.

The Scheme states that addressing the challenges posed by realisation of these objectives has underpinned preparation and subsequent adoption of the recent GDA Transport Strategies (for the period 2016 - 2035 and the new Strategy for 2022 - 2042).

In preparing the GDA Transport Strategy 2016 – 2035, a number of studies were undertaken by the NTA to assess the transport options within broad corridors and to examine a number of supporting transport policy measures. Transport demand and supply issues were examined and the transport interventions required to meet future demand were derived.

Bus Network, Cycle and Pedestrian Infrastructure

The Core Bus Network Report (NTA 2015) identified those routes on which there needed to be a focus on high capacity, high frequency and reliable bus services, and where investment in bus infrastructure should be prioritised and concentrated. On the basis of both demand and supply considerations corridors where investment is to be prioritised in the network were identified and mapped.

The Core Bus Network presented in the prior GDA Transport Strategy 2016-2035 comprises of 16 radial corridors, three orbital corridors and six regional corridors. A number of radial routes were then combined to form the 12 BusConnects schemes, a multi-faceted programme comprising several elements of which the Core Bus Corridors (CBCs) will provide approximately 230km of bus priority and approximately 200km of cycle routes.

The BusConnects Dublin – Core Bus Corridor Infrastructure Works forms part of the BusConnects programme that seeks to greatly improve bus services to ensure journeys by bus will be fast, reliable, punctual, convenient and affordable. BusConnects Dublin includes a range of interlinked and complementary proposals including:

- Management elements: Redesigning the network to increase the number of homes, jobs and services with coverage, improving orbital accessibility and restructuring radial routes into spines;
- Technological elements: Introducing new ticketing systems to improve convenience and reduce dwell time at bus stops;

- Fleet elements: Replacing the bus fleet with low emission vehicles, introducing branding and livery to give a new “look and feel”;
- Policy elements: Introducing a 90-minute ticket to remove the financial penalty for interchanging between buses or changing mode during trips; and
- Infrastructure elements: Creating infrastructure to separate buses and cyclists from other traffic to make sustainable travel a faster, safer and more reliable choice. Developing interchange hubs. Improving pedestrian facilities around bus stops.

The BusConnects Dublin programme contains nine elements, one of which is the BusConnects Dublin – Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works). The nine elements are:

- Core Bus Corridor Infrastructure Works;
- Dublin Area Bus Network Redesign;
- Transitioning to a new low emissions bus fleet;
- State of the art ticketing system;
- Cashless payment system;
- Simpler fare structure;
- New Park and Ride sites in key locations;
- New bus livery providing a common style across all operators; and
- New bus stops and shelters with better signage and information.

In preparing the GDA Transport Strategy (2022 - 2042) the NTA also carried out a review of the GDA Cycle Network Plan leading to preparation of the 2022 Greater Dublin Area Cycle Network that in turn closely aligns with the 2013 GDA Cycle Network Plan. The updated GDA Transport Strategy 2022 – 2042 indicates key elements of the Cycling Network Plan for the GDA will be delivered as part of the Core Bus Corridor schemes.

According to the EIAR Chapter 2 Vol 2 each of the other elements while individually bringing benefits, will generate cumulative benefits, dependent on the completion of the entire programme, given the network interdependencies between measures. However, the EIAR acknowledges implementation of these other elements will progress independently of the CBC Infrastructure Works element.

Chapter 2 of EIAR

Observations and Commentary

Assessing the efficacy of the scheme requires a review of the business case as reflected in the findings of the investment case produced in support of the scheme. This in turn will be based on the improvements the scheme offers to potential beneficiaries of the investment, both users of the facilities and non-users taking into account the ‘costs’ imposed on others both travellers and non-travellers residing, working or visiting the wider corridor.

The benefits attributable to the Proposed Scheme will reflect the size of improvements in the level of service offered to current or prospective bus users, cyclists and walkers afforded by

enhancements that would be brought about by the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray - City Centre corridor.

It must be emphasised in assessing the Proposed Scheme the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray - City Centre corridor excludes the benefits attributable to the other main elements of the BusConnects Dublin programme as they apply to the Bray - City Centre corridor. These encompass:

- The Dublin Area Bus Network Redesign;
- Transitioning to a new low emissions bus fleet;
- State of the art ticketing system;
- Cashless payment system;
- Simpler fare structure;
- New Park and Ride sites in key locations;
- New bus livery providing a common style across all operators;
- New bus stops and shelters with better signage and information.

The impacts of the BusConnects Dublin programme are restricted to the benefits of Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) that encompass:

- Creating infrastructure to separate buses and cyclists from other traffic.
- Developing interchange hubs; and
- Improving pedestrian facilities around bus stops.

Chapter 2 Vol 2 of the EIAR acknowledges 'each of the other elements while individually bringing benefits, will generate cumulative benefits, dependent on the completion of the entire programme, given the network interdependencies between measures'.

The EIAR also 'acknowledges implementation of these other elements will progress independently of the CBC Infrastructure Works element'.

These acknowledgements are reflected in the case drawn up by the NTA's consultants in presenting the case for the scheme (Chapter 2) and in tabling the detailed transport and traffic evidence (Chapter 6). They also have an important bearing in our review of the EIAR overall and the efficacy of the Proposed Scheme in particular.

Chapter 2 of EIAR

Observations and Commentary

It is important to note that the EIAR Chapter 2, Vol 2 also notes the *'Section 5.5.4 of the GDA Transport Strategy (NTA 2016) it states that '[a] number of the Core Radial Bus Corridors are proposed to be developed as Bus Rapid Transit routes, where the passenger numbers forecast on the routes are approaching the limits of conventional bus route capacity.'*

It also points out *'as design and planning work was progressed by the BusConnects Infrastructure team, it became clear that the level of differentiation between the Bus Rapid Transport (BRT) corridors and the Core Bus Corridors (CBC) would, ultimately, be limited, and that all of the radial CBCs should be developed to provide a similarly high level of priority service provision (i.e. to provide a consistency in terms of bus priority and infrastructure to support all bus services).'*

This is an important point we return to in next section (Section 6) of this submission.

2.2.2 The Local Transport Need

Both the previous and updated GDA Transport Strategy commit to provide continuous bus priority, as far as is practicable, along the core bus routes, with the objective of supporting a more efficient and reliable bus service with lower journey times, increasing the attractiveness of public transport in these areas and facilitating a shift to more sustainable modes of transport.

The Proposed Scheme connecting Bray to the City Centre serves a significant public transport demand between these locations. There are a number of high frequency public bus services along the routes to be improved by the Proposed Scheme (including the 145 and 155 bus routes).

According to the EIAR Chapter 2, Vol 2 the Bray - to City Centre corridor currently bus infrastructure is provided along 68% and 69% of the corridor (inbound and outbound respectively).

There are shared cycle/bus lanes along parts of the route where no dedicated cycling infrastructure is available. However, the Bray - to City Centre corridor is one of three main bus corridors in the south central Dublin area with varying degrees of bus priority linking outer suburbs to the City Centre.

The Core Bus Network study included a recommended route from Bray to the City Centre on the basis of the need to serve significant demand along this entire corridor, and the need to address service deficiencies (lack of bus priority and associated journey time reliability) for a high level of scheduled bus services already operating along this corridor.

Currently there are sections along the route of the Proposed Scheme with poor bus priority resulting in poor journey time reliability particularly at peak times. Automatic Vehicle Locator (AVL) data from existing bus services operating along the Proposed Scheme corridor has been used to examine the current standard deviation for bus services along the corridor. The AVL data indicates that current bus journey times have a standard deviation of approximately 13 minutes along the route of the Proposed Scheme with any further increase in traffic levels likely to exacerbate this unreliability.

The Proposed Scheme will facilitate almost 100% bus priority and will complement the rollout of the Dublin Area Bus Network Redesign. As part of the BusConnects revised bus network proposals, the proposed scheme will serve the E Spine bus services to/the City Centre. Demand for travel by bus is anticipated to continue to grow in this corridor into the future, in line with population growth. The bus priority measures forming part of the Proposed Scheme are required to accommodate this growth in travel demand and to facilitate the revised bus network by providing journey time savings and reliability for passengers.

The CBC Infrastructure Works, including the Proposed Scheme, are intended to provide improved existing or new interchange opportunities with other existing and planned transport services, including Luas stations, Heavy Rail Stations, existing Dublin Bus and other bus services, the Greater Dublin Area Cycle Network Plan, future public transport proposals such as the DART + Programme and MetroLink as well as supporting the Dublin Bus Network Re-design.

The Proposed Scheme has an overall length of approximately 18.5km and commences at the top of Leeson Street Lower at the junction with St Stephen's Green. The Proposed Scheme will run along Leeson Street Lower and Upper, including Sussex Road, providing continuous bus priority and segregated cycle tracks in each direction. A bus gate will be located at the end of Leeson Street Lower by the St. Stephen's Green junction.

The full cycle track and bus lane provision will continue along Morehampton Road to Donnybrook Road. From Mulberry Lane to Rampart Lane the northbound bus lane is removed to allow for two reduced width segregated cycle tracks, while the southbound bus lane has been retained along this narrow section.

The Proposed Scheme will run south along the Stillorgan Road and Bray Road from the Anglesea Road junction. The existing lane configuration will be maintained for the most part along this section of the Proposed Scheme.

The Proposed Scheme will continue from Loughlinstown Roundabout and run south along the Dublin Road through Shankill as far as Wilford Roundabout. The proposed road layout varies depending on the constraints through this section, with breaks in the segregated bus lanes and areas without segregated cycle tracks. This section includes the upgrade of the Dublin Road / Corbawn Lane / Shanganagh Road roundabout, and the Quinn's Road roundabout to signalised junctions.

From Wilford Roundabout the Proposed Scheme will run south along the Dublin Road and Castle Street to the end of the Proposed Scheme, just north of Fran O'Toole Bridge. This section will include upgrade of the Wilford Roundabout to a signalised junction. The majority of this section will include a bus lane, general traffic lane and segregated cycle track in each direction.

The CBC Infrastructure Works are also intended to enhance walking and cycling infrastructure in this corridor. The Proposed Scheme is intended to provide extensive segregated cycling facilities, including two primary cycle routes running along the majority of the Proposed Scheme, as well as Secondary Cycle Routes on Templeogue Road, Camden Street, Aungier Street and South Great George's Street.

Within the extents of the proposed scheme there are mandatory cycle lanes provided on 51% and 43% of the route outbound and inbound respectively, while advisory cycle lanes provided on only approximately 40% and 41% of the route outbound and inbound respectively.

The Scheme proposes to provide safe, segregated cycling infrastructure throughout and to greatly enhancing the potential for cycling and address many of the deficiencies in the existing network. The Proposed Scheme includes significant improvements to the pedestrian environment along the route in terms of footpath improvements and through upgrading facilities for pedestrians at junctions and crossings.

2.4 Benefits of the Proposed Scheme

The Proposed Scheme has been designed to facilitate improved efficiency of the transport network through the improvement of the infrastructure for active (walking and cycling) and public transport modes making them attractive alternatives to car-based journeys.

In addition to reduced journey times and improved punctuality and reliability of bus services the Proposed Scheme will facilitate an increase in the bus network capacity of services operating along the corridor and thereby further increase the attractiveness of public transport.

The EIAR also argues cyclists and pedestrians require significantly less roadway space than general traffic users to move safely and efficiently. According to the EIAR providing space for improved pedestrian and cycle infrastructure can significantly benefit these sustainable modes and encourage greater use of these modes.

Chapter 2, Volume 2 of the EIAR includes a quantitative people-movement assessment as part of its transport impact assessment, for Do Minimum and Do Something peak-hour scenarios for the forecast years (2028 and 2043). The Do Something scenario provides for implementation of the infrastructure works and related traffic management changes while the Do Minimum scenario assumes no such works are undertaken. It is important to note that the Do Minimum does provide for implementation of the other measures provided for under the BusConnects

programme. Therefore the differences between the two scenarios relates solely to the road infrastructure changes and associated traffic management changes.

The transport modelling employed by the NTA's consultants provides demand outputs for people movement. In relation to the impact of implementation of the Do Something scenario compared to a Do Minimum scenario for 2028 the data for the AM Peak Hour people movement assessment projects an increase of 40% in the number of people travelling by bus, an increase of 108% in people walking or cycling, and a reduction of 49% in the number of people travelling by car along the route of the Proposed Scheme.

The transport modelling employed by the NTA's consultants also presents demand outputs for people movement by bus in terms of passenger loadings along the corridor for both the Do Minimum and Do Something scenarios in the 2028 AM Peak Hour in the inbound direction. It projects higher levels of bus passenger loadings along the Proposed Scheme with numbers peaking at the Stillorgan Road / Mount Merrion Road intersection where the volume of passengers reaches 4,600 passengers in the AM Peak hour, compared to approximately 3,600 in the Do Minimum scenario. The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 600 to 1,200 additional users during the AM Peak Hour along most of the corridor, compared to the Do Minimum scenario.

A key objective of the Proposed Scheme is to enhance the potential for cycling along the route. Currently within the existing extents of the Proposed Scheme there are segregated cycle tracks on approximately 48% of the route outbound and inbound respectively. This will increase to 91% in both directions.

The Scheme proposes to make significant improvements to pedestrian infrastructure through the provision of increased signal crossings, introduction of traffic calming measures, improved accessibility, increased pedestrian directness and wider footpaths and crossings.

Combined these improvements are anticipated to cater for higher levels of future sustainable population and employment growth.

Chapter 2 of EIAR

Observations, Commentary and Issues

The projected growth forecasts for bus travel in this corridor up 40% in the AM Peak Hour in the number of people travelling by bus, for the 'opening year' 2028 (5 years from now) are large, particularly when it is noted these are in response solely to time savings/service punctuality improvements attributable to the Core Bus Corridor Infrastructure Works (the CBC

Infrastructure Works) in the Bray - City Centre corridor increasing the extent of infrastructure to separate buses and cyclists from other traffic, developing interchange hubs, and improving pedestrian facilities around bus stops.

The 40% increase excludes the impact of any other main elements of the BusConnects Dublin programme as they apply to the Bray - City Centre corridor. The size of this increase warrants an in-depth review of the evidence and the basis on which that estimate has been presented by the NTA's consultants.

These and other projections quoted in Chapter 2 of the EIAR warrant closer and more detailed inspection and review of the evidence presented by NTA's consultants to support claims for such an increase in bus travel solely attributable to the CBC infrastructure bus priority measures. We will also review projections for Proposed Schemes for other core corridors in the GDA.

This poses questions about the robustness of any transport models employed to generate those forecasts and the validation and reliability of model parameters.

Any questions over the forecasts could raise questions about the robustness of the business case tabled in support of the investment in the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray - City Centre corridor.

We turn to consideration of the transport models in Section 7 of our submission. This draws on the detail provided by the NTA's consultants in the EIAR's Chapter 6 (Traffic & Transport) on the modelling and transport analysis, which also assesses the impact of the Proposed Scheme against key metrics and comparatively between Do Minimum and Do Something (i.e. with the Proposed Scheme) scenarios.

Chapter 2 of EIAR

Observations, Commentary and Issues

Implementation of the Do Something scenario compared to a Do Minimum scenario for the opening year of the scheme in 2028 projects an increase of 108% in the number of people walking or cycling.

As part of the wider observations on projected travel changes outlined above attributable to increasing the extent of infrastructure to separate buses and cyclists from other traffic, developing interchange hubs, and improving pedestrian facilities around bus stops that make up the CBC Infrastructure Works serving the Bray - City Centre corridor the impact on cycling and walking appears substantial.

The size of this increase also warrants closer and more detailed inspection and review of the evidence presented by NTA's consultants to support claims for such an increase in cycling and walking and the robustness of any transport models employed to generate those forecasts and the validation and reliability of model parameters.

Any questions over the forecasts also raises questions about the robustness of the business case tabled in support of the investment in the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray - City Centre corridor.

We turn to consideration of the transport models in Section 7 of our submission. This draws on the detail provided by the NTA's consultants in the EIAR's Chapter 6 (Traffic & Transport) on the modelling and transport analysis, which also assesses the impact of the Proposed Scheme against key metrics and comparatively between Do Minimum and Do Something (i.e. with the Proposed Scheme) scenarios.

The EIAR claims the Proposed Scheme and its objectives fit within the current planning frameworks that are described in Section 2.3. The Proposed Scheme will help deliver many of the objectives on an international, national, regional and local level. Overall, the Proposed Scheme claims to make a significant contribution to the overall aims and objectives of BusConnects, the GDA Transport Strategy 2022 - 2042 and allow the city to grow sustainably into the future.

Chapter 2 of EIAR

Observations, Commentary and Issues

The EIAR's claims the Proposed Scheme's objectives fits within the current planning and 'will help deliver many of the objectives on an international, national, regional and local level' and 'to make a significant contribution to the overall aims and objectives of BusConnects, the GDA Transport Strategy 2022 - 2042 and allow the city to grow sustainably into the future'.

Performance against these goals and objectives depends upon the projected scale of travel behaviour changes being credible and occurring. The review contained in this submission can inform the likelihood that these will be realised.

6. Consideration of Reasonable Alternatives

6.1. Chapter 2 of the Environmental Impact Assessment Report (EIAR) addressed the need for and reviewed evidence of the benefits yielded by the Proposed Scheme in the corridor. This identified a series of critical issues and posed questions about the efficacy of the Proposed Scheme. In the light of those issues it is important to review the consideration of reasonable alternatives as required by the planning legislation. The review draws substantially on the content of Chapter 3 before reviewing the assessment of alternatives to the Proposed Scheme undertaken by the NTA and its consultants in the next section of this submission. To facilitate cross referencing to the EIAR the section numbering employed in the EIAR is retained and the summarised content highlighted from Section 3.2.4 of Chapter 3 of the EIAR.

The Environmental Impact Assessment Directive requires consideration of reasonable alternatives. Article 5(1)(d) of Directive 2011/92/EU as amended by Directive 2014/52/EU (“the EIA Directive”) requires that an Environmental Impact Assessment Report (EIAR) contains ‘a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and the main reasons for the option chosen, taking into account the effects of the project on the environment’. Annex IV to the EIA Directive, provides that the EIA shall include: “A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects”.

Given the proposed road development for which approval is sought in this instance, section 50(2)(b)(iv) of the Roads Act 1993, as amended (“the Roads Act”) states that that the EIAR shall contain the same information. Section 50(2)(b)(vi) of the Roads Act also requires that “any additional information specified in Annex IV [quoted above] that is relevant to the specific characteristics of the particular proposed road development or type of proposed road development and to the environmental features likely to be affected” are also be included in the EIAR.

Chapter 3, Volume 2 of the EIAR sets out the ‘reasonable’ alternatives assessed and the main reasons for the selection of the Templeogue / Rathfarnham to City Centre Core Bus Corridor Scheme. It has considered the alternatives at three levels as follows:

- Strategic Alternatives;
- Route Alternatives; and
- Design Alternatives.

In referencing the Transport Strategy for the Greater Dublin Area 2022-2042 (Transport Strategy) replacing the GDA Transport Strategy 2016 – 2035 Chapter 3 notes the provisions of the 2016 – 2035 strategy were evaluated for potential significant effects, and measures integrated into the prior Strategy. These prior studies included the GDA Cycle Network Plan (2013), Bus Rapid Transit – Core Network Report (2012), Fingal / North Dublin Transport Study (2015), Review of the DART Expansion Programme (2015), various Luas studies published in 2008 as well as analysis of a 2011 Draft Transport Strategy.

It points out however, the bus system in the Dublin metropolitan area still accounts for 65% of public transport passenger journeys in the Dublin region. It goes on point out bus-based transport is the appropriate public transport mode for passenger demand levels of up to about 4,000 passengers per hour per direction. (UITP 2009). Light rail provision would generally be appropriate to cater for passenger demand of between 3,500 and about 7,000 passengers per hour per direction. Passenger demand levels above 7,000 passengers per hour per direction would generally be catered for by heavy rail or metro modes.

The development of the 2016 – 2035 GDA Transport Strategy considered the likely public transport passenger demand levels across the region using the NTA's transport model. That consideration also took into account various other studies, including an investigation into a potential light rail scheme within the area of this corridor. Projected passenger flows however, were within the capacity of bus transport and did not reach the threshold for provision of higher capacity rail solutions. Nevertheless the EIAR Chapter 3 did consider the case for Bus Rapid Transit (BRT), Light Rail, Metro and Heavy Rail alternatives to the proposed scheme as set out from section 3.2.4.

3.2.4 Bus Rapid Transit (BRT) Alternative

Bus Rapid Transit (BRT) has various manifestations worldwide. Definitions of BRT range from a Quality Bus Corridor (QBC) to a fully guided, fully segregated bus system. A Bus Rapid Transit (BRT) – Core Network Report, prepared in 2012 (NTA 2012) at feasibility study level, investigated the demand, technical, environmental, and economic feasibility of a proposed core BRT network.

The feasibility study recommended that further and more detailed work should proceed on two cross city corridors, one of which was the Clongriffin to Tallaght. Prior to the completion of these studies, the prior GDA Transport Strategy identified the development of a number of Core Bus Corridors as BRT schemes. These BRT routes formed part of the overall Core Bus Corridor network set out in the prior GDA Transport Strategy. As design and planning work progressed on the Core Bus Corridors, it became clear that the level of differentiation between the BRT corridors and the other Core Bus Corridors would, ultimately, be limited, and that all the corridors should be developed to a consistent standard, providing a more integrated, legible and coherent overall bus system.

Moreover, the identified Core Bus Corridors are proposed to be developed to provide a high level of priority for the bus vehicles, which is an essential component of a BRT system. Integrated, cashless ticketing systems are planned under the overall BusConnects Programme, delivering the type of functionality often required for a BRT system. While different type vehicles are used around the world on BRT schemes, the longer routes present in Dublin, due to the low density nature of the city, favours the use of double deck vehicles on both BRT and conventional bus corridors, given the better ratio of seated to standing passengers on such vehicles.

Accordingly, it is intended that all of the Core Bus Corridor Infrastructure Works, including the Proposed Scheme, will be developed to provide a BRT level of service, rather than establishing a separate mode on some corridors.

Consequently, the Proposed Scheme as a separate BRT mode was not progressed given the limited differentiation from the Core Bus Corridors and the advantages identified above of a unified integrated bus system.

Environmentally the BRT option compared to the Core Bus Corridor proposal would be more impactful in terms of construction impacts, including flora and fauna, heritage, air and noise. BRT typically requires continuous unbroken physical lane infrastructure to achieve high-priority. This would involve significantly more land take and potentially involve demolition of buildings at pinch-points. In the case of the Core Bus Corridor proposals bus priority can be achieved through short lengths at pinch-points by the use of signal-control priority.

3.2.5 Light Rail Alternative

It was concluded that a bus-based transport system would be the proposed public transport solution in the corridor of the Proposed Scheme. It was considered that there would be insufficient demand to justify the provision of an additional light rail alternative above what is proposed above, particularly given the low to medium density nature of development in this corridor. Similar to BRT, environmentally the light rail option compared to the Core Bus Corridor proposal would be more impactful in terms of construction impacts.

3.2.6 Metro Alternative

Metro systems are a higher capacity form of light rail, generally designed for peak hour passenger numbers exceeding about 7,000 passengers per hour per direction. The prior GDA Transport Strategy identified that a metro solution would not be economically justified within the area covered by this corridor. Accordingly, it was concluded that a high-quality bus-based transport system would be part of the proposed public transport solution in the corridor of the Proposed Scheme.

Environmentally the metro option compared to the Core Bus Corridor proposal would be more impactful in terms of construction impacts, including more land take and potentially involve demolition of buildings at pinch-points. In the case of the Core Bus Corridor proposals bus-priority can be achieved through short lengths at pinch-points by the use of signal-control priority.

3.2.7 Heavy Rail Alternative

Commuter heavy rail systems are generally designed for high levels of passenger demand, usually designed to carry in excess of 10,000 passengers per hour per direction. Where a surface corridor does not already exist in a built-up urban area, there are major challenges in creating sufficient surface space for such provision, requiring large amounts of property acquisition and building demolition.

Environmentally the heavy rail option compared to any CBC proposal would be more impactful in terms of construction impacts, including involve significantly more land take and potentially involve demolition of buildings at pinch-points.

Nevertheless, the current and projected level of likely public passenger use (demand) along the overall corridor of the Proposed Scheme assessed in the NTA consultants' transport modelling work supports heavy rail provision along this corridor. This is reflected in the current DART service, projected increases in demand for which are deemed to warrant increasing the capacity of the South Eastern rail line.

Of relevance to this scheme is the proposed new rail station is proposed on the line at Woodbrook Housing Development. The GDA Transport provides ,for a new DART station to be located by the proposed Woodbrook development between Shankill and Bray, which will also be close to and within interactive distances with the Proposed Scheme.

Chapter 3 of EIAR

Observations, Commentary and Issues

The EIAR tabled the claim bus-based transport is the appropriate public transport mode for passenger demand levels of up to about 4,000 passengers per hour per direction. (UITP 2009). Light rail provision would generally be appropriate to cater for passenger demand of between 3,500 and about 7,000 passengers per hour per direction. Passenger demand levels above 7,000 passengers per hour per direction would generally be catered for by heavy rail or metro modes. It also noted in developing the 2016 – 2035 GDA Transport Strategy projected demand levels provided the basis for choice of modes.

For a Bus Rapid Transit (BRT) alternative previous research by NTA investigated the demand, technical, environmental, and economic feasibility of a proposed core BRT network. The feasibility study recommended more detailed work on two cross city corridors, one of which was the Clongriffin to Tallaght. Prior to the completion of these studies, the prior GDA Transport Strategy concluded as design and planning work progressed on the Core Bus Corridors, there would be little to distinguish between BRT and conventional buses operating on Core Bus Corridors and all the corridors should be developed to a consistent standard operated by conventional double deck vehicles.

This led to the rejection of BRT in this and other corridors with other objections against BRT also levelled in terms of construction impacts and significantly more land take and potentially involve demolition of buildings at pinch-points. We are of the opinion that the decision to reject BRT was premature and certain objections to BRT are not sustainable based on actual experience of its implementation and operational performance in other locations.

3.2.8 Demand Management Alternative

One of the primary aims of the prior GDA Transport Strategy was to significantly reduce demand for travel by private vehicles, particularly during the commuter peaks, and to encourage use of walking, cycling and public transport. One of the mechanisms to achieve such reduction of private vehicle use is the use of measures to discourage travel by car – i.e. demand management.

Demand management can take many different forms from restricting car movement or car access through regulatory signage and access prohibitions, to parking restrictions, to fiscal measures such as tolls, road pricing, congestion charging, fuel/vehicle surcharges and similar. A key success factor of demand management is greater use of alternative travel modes, in particular public transport.

The EIAR contends the existing public transport system does not currently have sufficient capacity to cater for large volumes of additional users. It goes on to state in advance of a significant uplift in overall public transport capacity in the Dublin metropolitan area, the implementation of major demand management measures across that area would be unsuccessful. Effectively constraining people from making journeys by car and requiring them to use other modes, without those modes having the necessary capacity to cater for such transfer, would not deliver an effective overall transport system (*Environmental Impact Assessment Report (EIAR) Main Report Volume 2 of 4 Chapter 3 Page 8*).

Instead, the capacity of the public transport system needs to be built up in advance of, or in conjunction with, the introduction of major demand management measures in the Dublin metropolitan area. This is especially true in the case of the bus system where a major increase in bus capacity through measures such as the Proposed Scheme would be required for the successful implementation of large scale demand management initiatives.

While the foregoing addresses the dependency of demand management measures on public transport capacity, it is equally correct that the provision of greatly enhanced cycling facilities will also be required to cater for the anticipated increase in cycling numbers, both in the absence of demand management measures and, even more so, with the implementation of such measures. Consequently, the progression of demand management proposals will not secure the enhanced safe cycling infrastructure envisaged under the Proposed Scheme.

Accordingly, the implementation of demand management measures would not remove the need for additional infrastructure to serve the bus transport needs of the corridor covered by the Proposed Scheme, nor would it obviate the need to develop the cycling infrastructure required along the route of the Proposed Scheme.

Chapter 3 of EIAR

Observations, Commentary and Issues

In seeking to reduce demand for travel by private vehicles the 2016 -2035 GDA Transport Strategy one mechanism referred to in EIAR Chapter 3 section 3.2.8 is demand management. It also notes this can take many different forms from restricting car movement or car access through regulatory signage and access prohibitions, to parking restrictions, to fiscal measures such as tolls, road pricing, congestion charging, fuel/vehicle surcharges and similar.

The EIAR contends the existing public transport system does not currently have sufficient capacity to cater for large volumes of additional users. It goes on to state in advance of a significant uplift in overall public transport capacity in the Dublin metropolitan area, the implementation of major demand management measures across that area would be unsuccessful. Effectively constraining people from making journeys by car and requiring them to use other modes, without those modes having the necessary capacity to cater for such transfer, would not deliver an effective overall transport system (*Environmental Impact Assessment Report (EIAR) Main Report Volume 2 of 4 Chapter 3*).

For this corridor however, the projected increase in peak hour demand would imply an additional 10-15 buses per hour city bound. There are question marks over the ability of the N11 through Shankill to absorb up to an additional 30 buses per hour two way through the village even with the proposed arrangements set out above in Section 4 (Chapter 4 of the EIAR).

Illustrative timetables for the E spine routes in the corridor under the BusConnects network revamp appear to offer little change overall in the public transport carrying capacity in the Bray - Dublin City Centre Corridor compared to existing arrangements.

The 49% scale of the reduction in private vehicle use projected by NTA's consultants can therefore be interpreted as 'effectively constraining people from making journeys by car and requiring them to use other modes, without those modes having the necessary capacity to cater for such transfer' in this corridor (*Environmental Impact Assessment Report (EIAR) Main Report Volume 2 of 4 Chapter 3*).

These projections and changes in travel behaviour warrant specific consideration as a key element of the wider review of behavioural changes and transport models referred to above that draws on the detail provided in the EIAR's Chapter 6 (Traffic & Transport) on modelling and transport analysis, and the impact of the Proposed Scheme against key metrics and scenarios.

It is also appropriate to review behavioural change in other corridors designated for implementation of Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works). This will yield insight into the extent to which effectively people in the in the Bray - City Centre corridor would be constrained from making journeys by car and be required to use other modes and whether demand management of this type is intended to be uniformly and consistently applied to all the CBC Infrastructure Works/ BusConnects served corridors.

3.2.9 Technological Alternatives

Technological advances have opened up new areas of potential in the delivery of transport infrastructure. Driverless trains and smart highways are two examples. Some of these initiatives, such as driverless trains, are now in use.

Alternatives have to be able to accomplish the objectives of the project in a satisfactory manner.....there is no evidence that such developments will displace the need for mass transit, which is essential to the operation of a modern city. Accordingly, the need to improve the overall bus system will still remain.

Overall, while certain technological advances do provide new opportunities in the transport area, particularly in the area of information provision, they do not yet provide viable alternatives to the core need to provide for the movement of more people by non-car modes, including the provision of safe, segregated cycling facilities. Accordingly, there are no viable technological alternatives to meet the transport needs of this sector of the city.

Chapter 3 of EIAR

Observations and Commentary

The above is an important claim that may be impacted by changes in travel demand and patterns attributable to large increases in working from home, on line shopping and other activities. These trends have been significantly boosted by the impact of the COVID-19 Pandemic. It begs the question about the timeliness of the data input to the modelling processes implemented in the supporting assessment of the proposed scheme and alternatives.

3.3 Route Alternatives

Following on from the strategic alternatives considered earlier, this Section sets out the route alternatives which were considered as part of the process to establish the Proposed Scheme. Development of the Proposed Scheme has evolved in the following stages:

- 1) Feasibility and Options Reports were concluded in December 2017 and March 2018 (two reports associated with the Proposed Scheme (Bray to UCD CBC in December 2017 and UCD to City Centre (St. Stephen's Green) CBC in March 2018)), setting out the initial route options and concluding with the identification of the combined Emerging Preferred Route;
- 2) A first round of non-statutory Public Consultation was undertaken on the Emerging Preferred Route from 26 February 2019 to 31 May 2019;
- 3) Development of Draft Preferred Route Option (May 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder and community engagement and the availability of additional design information, the design of the Emerging Preferred Route evolved with further alternatives considered;
- 4) A second round of non-statutory Public Consultation was undertaken on the draft Preferred Route Option from 4 March 2020 to 17 April 2020. Due to the introduction of COVID-19

restrictions, some planned in-person information events were cancelled, leading to a decision to hold a third consultation later in the year;

5) A third round of non-statutory Public Consultation was undertaken on the updated draft Preferred Route Option from 4 November 2020 to 16 December 2020; and

6) Finalisation of Preferred Route Option. Informed by feedback from the overall public consultation process, continuing stakeholder engagement and the availability of additional design information, the Preferred Route Option, being the Proposed Scheme, was finalised.

3.3.1 Initial High-Level Route Alternatives

The Feasibility and Options Reports identified feasible options along the corridor, assessed these options and arrived at the Emerging Preferred Route, comprising:

- Stage 1 – an initial high-level route options assessment, or ‘sifting’ process, which appraised routes in terms of ability to achieve scheme objectives and whether they could be practically delivered. The assessment included consideration of the potential high level environmental aspects; and
- Stage 2 – Routes which passed the Stage 1 assessment were taken forward to a more detailed qualitative and quantitative assessment.

All route options that progressed to this stage were compared against one another using a detailed Multi-Criteria Analysis in accordance with the Department of Transport Document ‘Common Appraisal Framework for Transport Projects and Programmes’.

3.3.2 Stage 2 – Route Options Assessment

Stage 2 of the assessment process involved a more detailed qualitative and quantitative assessment using criteria established to compare the route options. The indicative scheme for each route option was progressed to a multi-criteria assessment.

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) which evaluated the route options under the following criteria:

1. Economy;
2. Integration;
3. Accessibility & Social Inclusion;
4. Safety; and
5. Environment.

Under each headline criterion, a set of sub-criteria were used to comparatively evaluate the options. For the Environment criterion the following sub-criteria were considered in the assessment to inform the Emerging Preferred Route:

- Archaeological, Architectural and Cultural Heritage
- Flora and Fauna
- Soils and Geology
- Hydrology
- Landscape and Visual
- Air Quality
- Noise & Vibration
- Land Use Character

The study area for the corridor comprised four main sections, split across two feasibility studies as follows:

Section 1 examined feasible route options from the City Centre to UCD.

Section 2 examined feasible route options from UCD to Loughlinstown.

Section 3 examined feasible route options from Loughlinstown to Bray North; and

Section 4 examined feasible route options from Bray North to Bray South.

The section of primary concern for this submission is:

Section 3 examined feasible route options from Loughlinstown to Bray North

The Route Options Assessment process for **Section 3** is summarised in the box below.

Route Options

3.3.2.3 Section 3: Route Options Assessment

Following the Stage 1 sifting process, five viable route options for Section 3 were taken forward for assessment and further refinement as shown in Image 3.13. These five route options were as follows:

- Route 2A would run parallel to the M11 on a newly constructed busway from Wilford Junction through to Loughlinstown Roundabout and then along the N11 to the Wyattville Interchange;
- Route 2B would run via the Dublin Road from Wilford Junction, through Shankill and onto the N11 at Loughlinstown Roundabout to the Wyattville Interchange;
- Route 2C would run via the Dublin road and Crinken Lane, and join a newly built bus-way parallel to the M11 at Loughlinstown Roundabout, before following the existing N11 to the Wyattville Interchange;
- Route 2D would have buses follow the same route as Route 2B, but general traffic could be diverted around Shankill Village using a newly constructed road on the same alignment as that proposed for the bus route in 2C. A Bus Gate would be put in place on the Dublin Road between the Shanganagh Road and Lower Road junctions; and
- Route 2E would combine routes 2A and 2B whereby the route would run parallel to the M11 on a newly constructed busway from Wilford Junction to the intersection with Crinken Lane, then it would run along the Dublin Road from Crinken Lane to Loughlinstown Roundabout and along the N11 to the Wyattville Interchange.

There is a good deal of overlap between these five route options. All five routes were also proposed to follow the same route along the N11 from the Loughlinstown Roundabout to the Wyattville Interchange.

Routes 2B and 2D are almost exactly the same except for the diversion of general traffic on to a new road around Shankill Village under Route 2D.

Routes 2B, 2C and 2D were proposed to take the same route along the Dublin Road from the Wilford Junction to Crinken Lane.

Routes 2A and 2E were proposed to take the alternative route along a new busway parallel to the M11 between Wilford Junction and Crinken Lane.

Routes 2A and 2C were proposed to take the same route from Crinken Lane to the Wyattville Interchange (via a new bus-way parallel to the M11).

Routes 2B, 2D and 2E were proposed to take the same route from Crinken Lane to the Wyattville Interchange (via the Dublin Road).



Image 3.13: Section 3 Route Options Remaining After Stage 1 Sifting (Bray to UCD CBC Feasibility and Options Report (NTA 2017))

Route Option 2A would commence at the Wilford Junction and run to the east of, and parallel to, the M11 along a dedicated bus route, passing west of Shankill Village, before joining the R837 Dublin Road south of Loughlinstown and continuing north on the N11 to the Wyattville Interchange.

Wilford Roundabout would be upgraded to a signalised junction. The route would travel from there along a dedicated bus route crossing Allies River Road at grade and rising to intersect Crinken Lane at grade before continuing north to the west of Mountain View and intersecting Lordello Road footbridge and pedestrian route to the west of New Vale. It would then travel west of Stonebridge Grove before rising to intersect with Stonebridge Road at grade.

The route would continue north, parallel to the M11, before joining the R837 Dublin Road to the south of Loughlinstown Roundabout via a proposed signalised junction. This option would require land take including private lands, portions of gardens, woodland, treelines and grass verges along the entire route and would require significant earthworks and retaining structures, as well as the removal of trees and hedgerows which currently provide screening for the M11.

On the southbound approach to Loughlinstown Roundabout road widening would be required to extend the bus lane to and around the eastern side of the roundabout, requiring realignment of the existing road to provide clearance for buses under the existing footbridge. There would also be a dedicated bus lane provided on the northbound approach to the Wyattville Interchange, requiring reconfiguration of the existing Cherrywood Road Junction and amendment of the existing service road running parallel to the N11 into a one-way northbound only route.

Route Option 2B would commence at the Wilford Junction and run via the Dublin Road through Shankill Village to Loughlinstown Roundabout and north to the Wyattville Interchange. Due to particular constraints along this route, particularly around Shankill Village, the route was broken down into a number of sub-sections with separate options assessments undertaken for each. The following lists the sub-sections and their individual options, with the chosen option indicated:

- Wilford Roundabout to Crinken Lane:
 - o Option 1 – providing parallel bus lanes, cycle tracks and footpaths in a 20m crosssection. Southbound footpath to run through Shanganagh Park (chosen option); and
 - o Option 2 – providing dedicated bus lanes and footpaths with a section of off-line cycle tracks running to the east of the Dublin Road.

- Crinken Lane to St. Anne’s Church Junction:
 - o Cycling – as it is not possible to provide continuous dedicated bus lanes and cycle tracks along this section, four options were considered for alternative cycle routes (refer to Section 3.3.3 of this Chapter for further details);
 - o Option 1 – a northbound bus lane between Crinken Lane and Quinn’s Road, with a section of northbound bus lane through Shankill Village between Stonebridge Close and Lower Road, and a southbound bus lane between Stonebridge Close and Crinken Lane;
 - o Option 2 – bus lanes in both directions between Crinken Lane and Quinn’s Road, and a southbound bus lane between Lower Road and Crinken Lane; and
 - o Option 3 – a northbound bus lane between Crinken Lane and Quinn’s Road, with a section of northbound bus lane through Shankill Village between Stonebridge Close and Lower

Road, and a southbound bus lane between Lower Road and Crinken Lane (chosen option). This section does not have segregated cycle tracks as cycling options were evaluated separately through this section as discussed under Section 3.3.3.

- St. Anne's Junction to Loughlinstown:
 - o Option 1 – bus lanes in both directions between St. Anne's Church Roundabout and Loughlinstown Roundabout, with a two-way cycle track on the western side of the Dublin Road between St. Anne's Church Roundabout and the Resource Centre, and a two-way cycle track on the eastern side of the Dublin Road between Seaview Park and Loughlinstown Roundabout (chosen option); and
 - o Option 2 – bus lanes in both directions between St. Anne's Church Roundabout and Loughlinstown Roundabout, with an alternative cycle route provided linking Loughlinstown Roundabout to Shanganagh Road and St. Anne's Church Roundabout via Seaview Wood and Seaview Park.

Route Option 2B would commence at the Wilford Roundabout which would be upgraded to a signalised junction to provide bus priority. Bus and cycle lanes would be provided in both directions to Crinken Lane. Bus lanes in both directions would be provided from Crinken Lane to Quinn's Road Roundabout, which would be upgraded to a signalised junction.

An offline cycle track would be provided to the west of Shankill Village along Beech Road, Mountain View, Assumpta Park / Stonebridge Close and Lower Road. Through Shankill Village a continuous southbound and only a section of northbound bus lane would be provided due to space constraints.

North of the village is an old bridge which constrains the carriageway width, requiring the buses to merge with general traffic. Bus lanes would be provided in both directions between the St. Anne's Church Junction and Loughlinstown Roundabout, with some segregated cycle tracks and some shared footpath / cycle paths proposed.

Land acquisition of agricultural lands, amenity lands and portions of gardens, as well as removal of a number of trees, throughout this section would be required in order to accommodate the proposed road widening. From Loughlinstown Roundabout it would be the same as Route Option 2A.

Route Option 2C would commence at the Wilford Junction and follow the R119 Dublin Road to Crinken Lane, and then run east of and parallel to the M11 along a dedicated bus route, passing to the west of Shankill Village, before joining the R837 Dublin Road south of Loughlinstown Roundabout and continuing north on the N11 to the Wyattville Interchange. This route option matches the proposals for Route Option 2B from Wilford Junction to Crinken Lane. From Crinken Lane, buses would divert on to a dedicated bus route running parallel to the M11, following the route as described for Route Option 2A from Crinken Lane to Wyattville Interchange.

Route Option 2D would commence at the Wilford Junction and run via the Dublin Road through Shankill Village to Loughlinstown Roundabout and north to Wyattville interchange. A Bus Gate would be provided at Shankill Village with general traffic routed to the west of the village via a new

link road. This route option matches the proposals for Route Options 2B and 2C between Wilford Junction and Crinken Lane. Road widening would be required between Crinken Lane and Quinn's Road to provide bus lanes in both directions.

A Bus Gate would be provided between the Lower Road and St. Anne's Church Roundabout and through traffic would be diverted onto a new link road to the west of Shankill, therefore it was assumed that separate cycle facilities and bus lanes would not be required through the village.

St. Anne's Church Roundabout would be upgraded to a signalised junction which would facilitate a Bus Gate immediately to the south and improve pedestrian and cyclist provision. From St. Anne's Church Roundabout to Wyattville Interchange the proposals match those of Route Option 2B. The alternative link road for general traffic would run parallel to the M11 running to the west of Mountain View, following approximately the same route as the proposed alternative bus route as described in Option 2B and 2C.

Route Option 2E would commence at the Wilford Junction and run east of and parallel to the M11 along a dedicated bus route, turning onto Crinken Lane to join the Dublin Road and continue north through Shankill Village to the Loughlinstown Roundabout, continuing north to the junction with Wyattville Road. This route option proposal starts in the same way as Route Option 2A between Wilford Junction and Crinken Lane. From that point, Crinken Lane would be widened to accommodate bus lanes in both directions. From the Crinken Lane junction on the Dublin Road to Wyattville Interchange, the route matches Route Option 2B, including the offline cycle route to the west of Shankill Village.

Each route option was evaluated using a multi-criteria assessment, with one of the primary criteria being 'Environment', under which there was a number of sub-criteria which each route option was considered against comparatively.

Route Option 2C was considered most favourable under the Archaeological, Architectural and Cultural Heritage sub-criterion, while Route Option 2A was considered most favourable under the Landscape and Visual; and the Land Use and Built Environment sub-criteria.

Route Options 2A and 2E were considered equally favourable under the Flora and Fauna sub-criterion; Route Options 2B, 2C and 2E were considered equally favourable under the Soils and Geology sub-criterion; and Route Options 2A, 2C and 2E were considered equally favourable under the Noise, Vibration and Air sub-criterion.

Overall, Route Option 2A was deemed to be the most advantageous under the Environment criteria as the loss of immature woodland along the M11 is considered to be less significant when compared to the loss of stone boundary walls, tree lines, hedgerows and mature trees along the Dublin Road.

Route Option 2A also required land take from lower amenity land than that required for the other options as it avoids Shankill Village.

Overall 2B was deemed to be the most advantageous route, even though it was not the most advantageous under the Environment criterion. This is due to its comparatively lower cost; significant benefits in terms of integration, accessibility and social inclusion as it serves the catchment of Shankill, integrates with the DART and provides continuous cycle facilities; and it would deliver a high level of service for bus passengers. Therefore, 2B was brought forward into the Emerging Preferred Route.

3.3.2.3.1 Loughlinstown Roundabout Options Assessment

In addition to the development of options for the route of this section of the Proposed Scheme, there were also three options assessed for Loughlinstown Roundabout. These options were:

- Option 1 – retaining the priority controlled roundabout configuration (as existing) and providing a dedicated southbound bus lane running on the eastern side of the roundabout;
- Option 2 – as per Option 1, with the addition of a signalised pedestrian crossing of the N11 to the north of the roundabout; and
- Option 3 – upgrading the priority controlled roundabout to a signal controlled roundabout, with the exception of the minor Rathmichael Manor arm which would be retained as a priority controlled arm.

These roundabout design options were evaluated using the same multi-criteria assessment. All three were considered neutral for all of the environmental sub-criteria. Option 3 was brought forward into the Emerging Preferred Route as it would be preferable in terms of journey-time reliability and transport network integration. It also scored highest under the Safety criterion.

3.3.4 Emerging Preferred Route

A public consultation on the Emerging Preferred Route was undertaken from 26 February to 31 May 2019, providing feedback which was then meaningfully considered in the further development of the scheme proposal.

3.4 Design Alternatives

3.4.1 Development of the Draft Preferred Route Option

Following the completion of the public consultation in relation to the Emerging Preferred Route, various amendments were made to the scheme proposals to address a number of the issues raised in submissions, including incorporating suggestions and recommendations from local residents, community groups and stakeholders, and / or arising from the availability of additional information. These amendments were incorporated into the designs and informed a draft Preferred Route Option.

Where substantial revisions had been made to the design since the publication of the Emerging Preferred Route options were assessed using MCA to determine the Preferred Route Option. The MCA assessed any newly developed options against the previously identified Emerging Preferred Route. The methodology and MCA used were consistent with that carried out during the initial route optioneering work (including consideration of the relevant environmental aspects), which informed the identification of the Emerging Preferred Route.

Following this design development process, the draft Preferred Route Option was identified. For ease of reference, the draft Preferred Route Option has been divided into four 'sections':

- Section 1 – St. Stephen's Green to UCD;
- Section 2 – UCD to Loughlinstown;
- Section 3 – Loughlinstown to Bray North; and
- Section 4 – Bray North to Bray South.

3.4.1.3 Section 3 – Loughlinstown to Bray North

Following a review of the Emerging Preferred Route in this section of the Proposed Scheme, four areas of Section 3 were identified for re-examination as follows:

- Section 3.2B – Wilford Roundabout to Crinken Lane;
- Section 3.2C – Cycle Provision between Crinken Lane and Loughlinstown Roundabout;
- Section 3.2D – Crinken Lane to St. Anne's Roundabout; and
- Section 3.2E – St. Anne's Church to Loughlinstown Roundabout.

3.4.1.3.1 Section 3.2B – Wilford Roundabout to Crinken Lane

The Emerging Preferred Route in this section proposed footpaths, segregated cycle tracks, a dedicated bus lane and a general traffic lane in both directions. The design in this section was reviewed as part of the development of the Preferred Route Option with a view to minimising the impacts while maintaining the necessary level of bus priority and cycle segregation.

Further development was undertaken following completion of additional topographical surveys and responses to public consultation submissions which outlined concerns about impacts on roadside trees and heritage walls.

Signal controlled bus priority was applied for northbound buses from Wilford Roundabout to enable a reduction in impact on properties and significant mature trees by locally shortening bus lane extents and widening on the east side, which was further developed for the Preferred Route Option. Signal priority measures through Shankill Village were extended for southbound buses as far as Shanganagh Castle grounds to reduce impact on properties.

Sections of cycle tracks and / or footpaths have been brought behind the roadside treeline where suitable between Quinn's Road and Wilford Junction, to maintain roadside tree canopy. To optimise the protection of the roadside trees in front of Shanganagh Cemetery and Shanganagh Park, a section of the southbound cycle track has been routed behind the roadside trees at Shanganagh Cemetery, and Shanganagh Park. The northbound cycle track follows the Dublin Road. The cycle track along this section was further evaluated and developed to a two-way cycle track routed through the Shanganagh Park and Shanganagh Cemetery; this is discussed further in Section 3.4.2.3.

The above design development has enabled a reduction in impact on adjacent heritage walls, properties and trees that was evident as a result of the updated topographical survey and tree survey in the area, while maintaining the proposed bus priority infrastructure.

3.4.1.3.2 Section 3.2C – Cycle Provision Between Crinken Lane and Loughlinstown Roundabout

Due to the number of submissions received during public consultation on the cycle provision along this section, the design for this section was further investigated. The section was split into two subsections, with alternative options assessed against the Emerging Preferred Route for each as outlined:

- Subsection 1 between Loughlinstown Roundabout and Stonebridge Road:
 - New Option 3.2C1 (M11 Cycle Track): would consist of a new cycle track constructed to the east of the M11, requiring clearance and construction along the grassed verge including additional vehicle restraints, retaining walls and earthworks to provide sufficient width. It would also require a ramp to be constructed from the M11 to Stonebridge Road due to the level difference;
 - New Option 3.2C2 (Dublin Road Cycle Route): would not provide segregated cycle tracks between Loughlinstown Roundabout and Stonebridge Road, requiring cyclists to share bus lanes or general traffic lanes along this length. It would provide a more direct route for cyclists and tie in with the GDA Cycle Network Plan Primary Route; and
 - The assessment concluded that New Option 3.2C2 was to be taken forward due to the potential impacts associated with constructing New Option 3.2C1.

- Subsection 2 between Stonebridge Road and Crinken Lane:
 - New Option 3.2C3 (M11 Cycle Track): would be a continuation of the M11 cycle track from Option 3.2C1. The cycle track would go from Stonebridge Road, along Stonebridge Grove and then along the M11 verge to Lordello Road Bridge. It would then go under the bridge and along the green space to Mountain View, continuing to the Elms on to Crinken Lane, eventually rejoining the Dublin Road;
 - New Option 3.2C4 (Library Road to Stonebridge Close): would bring advisory cycle lanes and quiet street treatment along Stonebridge Road to Library Road and New Vale, continuing along the laneway by Assumpta Park up to Lower Road. The cycle lanes would then pass through an existing wall on to Stonebridge Close and onto the Dublin Road, where they would share road space with other vehicles and buses until Crinken Lane;
 - New Option 3.2C5 (Library Road / Assumpta Park / Mountain View): would be the same as Option 3.2C4 as far as the laneway at Assumpta Park, where it would then turn onto the lane to the rear of the houses on Assumpta Park continue on to Mountain View, The Elms and Crinken Lane, until rejoining the Dublin Road at the end of Crinken Lane;
 - New Option 3.2C6 (Dublin Road Cycle Route): would be a continuation of Option 3.2C2 along the Dublin Road. It would not provide any segregated cycle infrastructure, with cyclists sharing bus and general traffic lanes. A speed limit of 30km/h would be in place between Stonebridge Road and the Signal Controlled Bus Priority south of Shankill Village;
 - New Option 3.2C7 (Corbawn Lane to Stonebridge Road): would provide a short section of segregated two-way cycle track to link the junction at Corbawn Lane to Stonebridge Road. A Toucan Crossing would be provided to bring cyclists across the Dublin Road on the northern side of Stonebridge Road. This would provide cycle infrastructure along the GDA Cycle Network Plan Inter Urban Route D4. Between Crinken Lane and the junction at St. Anne's Church, cyclists would share the carriageway with general traffic or buses where bus lanes are provided. As with Option 3.2C6 a 30km/h speed limit would be in place; and

o The assessment concluded that New Option 3.2C7 was to be taken forward. Although it would not provide segregated cycling along the entire length, the impact associated with segregated cycling infrastructure on properties and planted areas would be considerable, and this option would provide safer cycling between residential areas and schools on Stonebridge Road, and maintains the viability of the primary cycling route through Shankill through reducing the speed limit to 30km/h.

A combination of Options 3.2C2 and 3.2C7 were brought forward for the Proposed Route Option as they provide safe cycling provision along the GDA Cycle Network Plan Primary Route in this area; minimise the impact on the environment; and respond to input from the local community.

3.4.1.3.3 Section 3.2D – Crinken Lane to St. Anne’s Roundabout

The Emerging Preferred Route for this section would have provided a northbound bus lane between Crinken Lane and Quinn’s Road, with a section of northbound bus lane through Shankill between Stonebridge Close and Lower Road, and a southbound bus lane between Lower Road and Crinken Lane. The design in this section was reviewed as part of the development of the Preferred Route Option following consultation feedback, a new topographical survey and a tree survey. Three additional options were assessed as described in the following.

Route Option 3.2D4 would maintain two traffic lanes for buses and general traffic to share through Shankill Village, with Signal Controlled Bus Priority in place at either side of the village. A northbound bus lane would run from Crinken Lane to a Signal Controlled Bus Priority junction located on approach to Shankill Village, while the southbound bus lane would commence further south. Cycle lanes through Shankill Village would provide segregated cycle facilities between Stonebridge Close and Lower Road, outside which cyclists would share the carriageway with buses and general traffic.

Route Option 3.2D5 would maintain two general traffic lanes through Shankill Village, with a northbound bus lane provided between Stonebridge Close and Lower Road, and Signal Controlled Bus Priority introduced either side of the village to provide bus priority through this section.

Route Option 3.2D6 would maintain two general traffic lanes through Shankill Village, with Signal Controlled Bus Priority systems in place on the approach either side of the village. Signal Controlled Bus Priority would be provided at St. Anne’s Church Junction for southbound buses. A northbound bus lane would be provided from Crinken Lane to a Signal Controlled Bus Priority system on approach to Shankill Village, while the southbound bus lane would recommence at Shanganagh Castle. A 30km/h speed limit would be in place for the village to enhance safety in this shared section of road.

As with the selection of the Emerging Preferred Route options, each route option was evaluated using a multicriteria assessment with one of the primary criteria being ‘Environment’, under which there was a number of subcriteria which each route option was considered against comparatively. With respect to the Environment criterion, the three new options performed equally well with respect to the Archaeology and Cultural Heritage; Architectural Heritage; and Flora and Fauna sub-criteria. Options 3.2D4 and 3.2D6 performed equally well under the Noise and Vibration sub-

criteria. Option 3.2D6 performed the best under the Landscape and Visual, and the Land Use Character sub-criteria.

Overall Option 3.2D6 was deemed to be the most advantageous option. This is due to it minimising the impact to the visual identity of Shankill Village, and maintaining existing footpath widths through the village, with a reduced speed limit providing improved safety. Therefore 3.2D6 was brought forward into the Preferred Route Option. In addition to the changes through Shankill Village, Signal Control Priority measures which commenced through Shankill Village were extended for southbound buses as far as the Shanganagh Castle grounds (from Quinn's Road Junction to after Crinken Lane Junction) to reduce impact on properties and trees.

3.4.1.3.4 Section 3.2E – St. Anne's Church to Loughlinstown Roundabout

The Emerging Preferred Route for this section would have provided a full suite of two footpaths, two segregated cycle tracks, two bus lanes and two general traffic lanes from St. Anne's Church Roundabout to Loughlinstown Roundabout. The design in this section was reviewed as part of the development of the Preferred Route Option following consultation feedback, updated topographical survey information and a tree survey. Options were assessed for combinations of Signal Controlled Bus Priority in order to reduce the impact on adjacent properties and trees.

Following the first Non-Statutory Public Consultation, taking comments from the public and local community feedback into account, the cycle tracks on this section were removed from the design due to the additional impact that the 4m of cross-section had on adjacent lands and properties. The proposed cycle route required cyclists to share bus lanes between Loughlinstown Roundabout and Stonebridge Road. Cycle track options are discussed in more detail in Section 3.4.1.3.2 and Section 3.4.1.3.3 above as Options 3.2C and 3.2D.

The design was amended to provide continuous bus lanes where possible, with Signal Controlled Bus Priority proposed between St. Anne's Church Junction and Rathmichael Woods in the northbound direction. A two-way cycle track is proposed between the new Dublin Road / Shanganagh Road Junction and Stonebridge Road to link Corbawn Lane to the two schools on the Stonebridge Road as described in Section 3.4.1.3.2.

The closure to the Corbawn Lane as proposed in the Emerging Preferred Route, was revised to provide exit only onto Shanganagh Road. A dedicated right-turn was proposed from Shanganagh Road onto Beechfield Manor. From the Dublin Road / Shanganagh Road Junction to the Dublin Road / Stonebridge Road Junction, the necessary widening is entirely to the east of the carriageway. From the Dublin Road / Stonebridge Road Junction to the Loughlinstown Roundabout, the necessary widening is entirely to the west of the carriageway.

Chapter 3 of EIAR

Observations, Commentary and Issues

It has been noted above this is the key section of the corridor the client commissioning the work is concerned about.

TAA has identified a potential route bypassing Shankill similar to Route 2A under the Stage 2 Options Assessment but without the need for a bespoke and expensive busway. Instead the parallel route to Route 2A would make use of the planned N11/M11 Bus Priority Interim Scheme that provides for implementation of dedicated bus lanes along the section of existing N11/M11 route extending from Loughlinstown roundabout in the north to N11 offramp at N11 (Junction 5). In the southbound direction this may require implementation of a short extension of the hard shoulder located bus lane to the Bray (North) off ramp. In the northbound it is not anticipated additional bus priority would be required to provisions under the N11/M11 Bus Priority scheme that extends to Loughlinstown roundabout.

7. Traffic and Transport Impacts of Proposed Scheme – An In-depth Assessment

Context

- 7.1. Chapter 2 of the Environmental Impact Assessment Report (EIAR) addressed the need for and reviewed evidence of the benefits yielded by the Proposed Scheme in the corridor. We now turn to consideration of the transport models in Section 7 of our submission. This draws on the detail provided by the NTA's consultants in the EIAR's Chapter 6 (Traffic & Transport) on the modelling and transport analysis, which also assesses the impact of the Proposed Scheme against key metrics and comparatively between Do Minimum and Do Something (i.e. with the Proposed Scheme) scenarios.

This identified a series of critical issues and posed questions about the efficacy of the Proposed Scheme. In the light of those issues, it is important to investigate the case for and impacts of the Proposed Scheme in more depth. A more detailed assessment of transport impacts arising from the delivery of the Proposed Scheme is presented in Chapter 6 (Traffic & Transport). Further detail is provided in Chapter 6 (Traffic & Transport) on the modelling and transport analysis carried out as part of the EIAR, which assesses the impact of the Proposed Scheme against key metrics and comparatively between Do Minimum and Do Something (i.e. with the Proposed Scheme) scenarios.

This review draws substantially on the content of Chapter 6 and supporting documents as well as additional material relating to the tools employed in the forecasting and investment appraisals that have informed assessment of the efficacy of the Proposed Scheme. To facilitate cross referencing to the EIAR the section numbering employed in the EIAR is retained and the summarised content highlighted from Section 6.1 of Chapter 6 of the EIAR.

Assessing the efficacy of the scheme requires a review of the business case as reflected in the findings of the investment case produced in support of the scheme. This in turn will be based on the improvements the scheme offers to potential beneficiaries of the investment, both users of the facilities and non-users taking into account the 'costs' imposed on others both travellers and non-travellers residing, working or visiting the wider corridor. The benefits attributable to the Proposed Scheme will reflect the size of improvements in the level of service offered to current or prospective

bus users, cyclists and walkers afforded by enhancements that would be brought about by the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray - City Centre corridor.

Chapter 6 of EIAR

Observations and Commentary

We have noted already the projected growth forecast for bus travel in this corridor, up 40% in the AM Peak Hour in the number of people travelling by bus, for the 'opening year' 2028 (5 years from now) is significant, particularly when it is noted these are in response solely to time savings/service punctuality improvements attributable to the CBC Infrastructure Works in the corridor. The scale of these increases warrants an in-depth review of the evidence and the basis on which that estimate has been presented by the NTA's consultants.

These and other projections quoted in Chapter 2 of the EIAR warrant detailed inspection and review of the evidence, including the basis of its estimation, presented in support of claims for such increases in bus travel solely attributable to the CBC infrastructure bus priority measures.

Any doubt about the accuracy of these large forecast changes in travel behaviour also pose questions about the robustness of transport models employed to generate those forecasts and the validation and reliability of model parameters.

Any questions over the forecasts also raises questions about the robustness of the business case tabled in support of the investment in the Core Bus Corridor Infrastructure Works (the CBC Infrastructure Works) in the Bray- City Centre corridor.

Assessment of Traffic and Transport Impacts of Proposed Scheme – The Approach and Methodology Adopted

6.1.2 Iterative Design Process and Mitigation by Design

The development of the Preliminary Design for the Proposed Scheme involved various design stages. The multi-tiered modelling framework referred to above was developed to support this iterative design process.

Diagram 6.1 illustrates how the emerging design for the Proposed Scheme have been tested using the transport models as part the iteration. The transport models are intended to inform understanding of impacts of the proposals (mode share changes, traffic redistribution, bus performance etc.) with traffic flow information intended to provide indicators of other environmental parameters(e.g. Air Quality, Noise and Vibration, Climate etc.). This can provide feedback of potential impacts into the design process to allow for changes and in turn mitigation

to be embedded in the designs. The design process included physical changes and adjustments to traffic signals as well as traffic management arrangements.

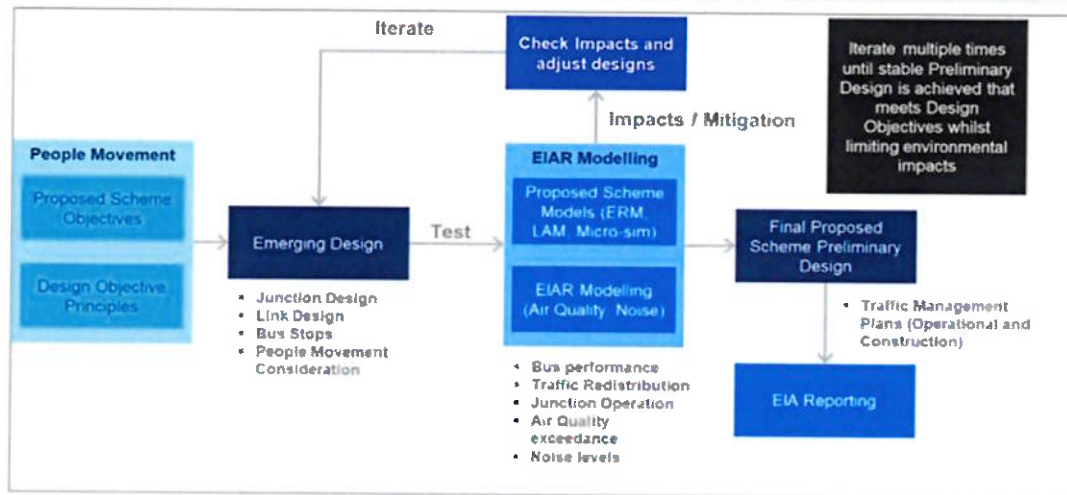


Diagram 6.1 Proposed Scheme Impact Assessment and Design Interaction

6.2.3 Scheme Impact Assessment Modelling Tools

The modelling tools that have been developed as part of the assessment, work as a combined modelling system, the foundations for which is the NTA's East Regional Model (ERM) as the primary source for multi-model demand and trip growth. Demand information is fed from the ERM to the cordoned Local Area Model (LAM), corridor micro-simulation models and junction models which have been refined and calibrated to represent local conditions to a greater level of detail than that contained in the ERM.

Four tiers of transport modelling have been used to assess the impacts of the Proposed Scheme as follows:

- Tier 1 (Strategic Level): The NTA's East Regional Model (ERM) is the primary tool which has been used to undertake the strategic modelling of the Proposed Scheme and has provided the strategic multi-modal demand outputs for the proposed forecast years;
- Tier 2 (Local Level): A Local Area Model (LAM) is a subset model created from the ERM and contains a more refined road network model used to provide consistent road-based outputs to inform the TIA, EIA and junction design models. This includes information such as road network speed data and traffic redistribution impacts for the Operational Phase. The LAM also provides

traffic flow information for input to micro-simulation model and junction design models and has been used to support junction design and traffic management plan testing;

- Tier 3 (Corridor Level): A micro-simulation model of the full 'end to end' corridor has been developed for the Proposed Scheme to support the ongoing development of junction designs and traffic signal control strategies and to provide bus journey time information for the determination of benefits of the Proposed Scheme; and
- Tier 4 (Junction Level): Local junction models have been developed, for each junction along the Proposed Scheme to support local junction design development. These models are informed by the outputs from the above modelling tiers, as well as the junction designs.

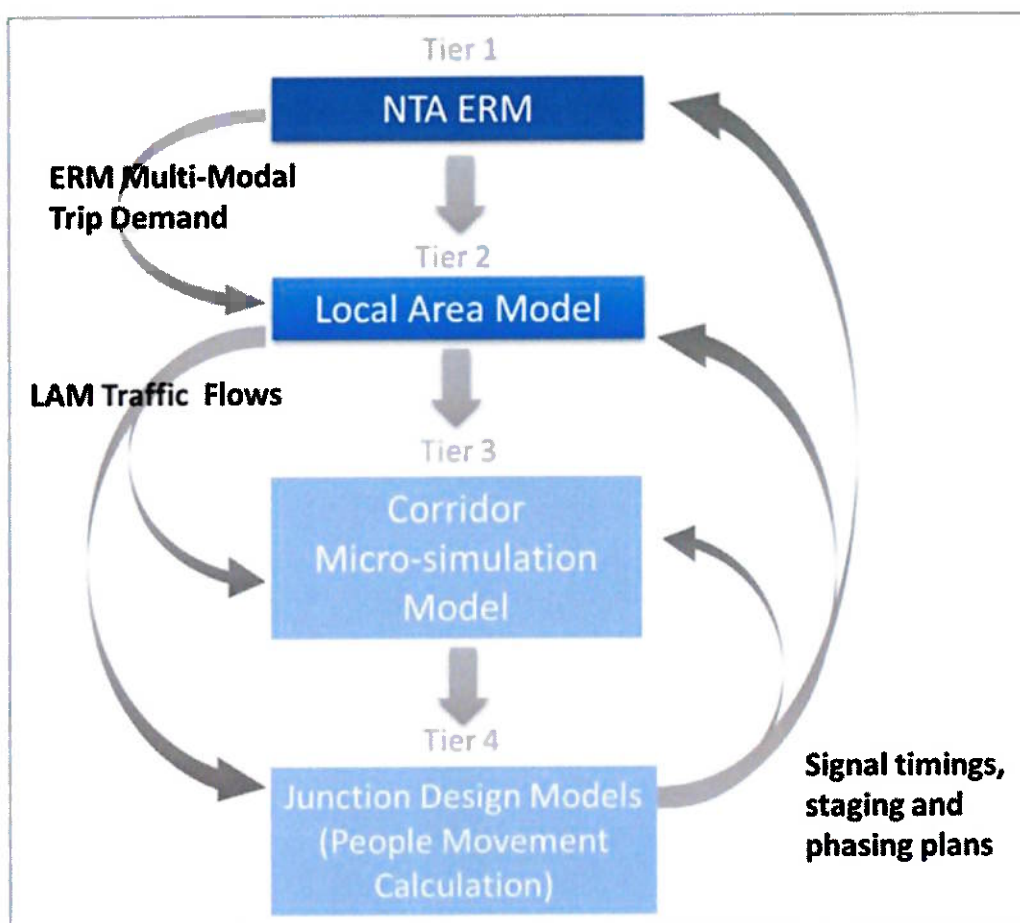


Diagram 6.3: Proposed Scheme Modelling Hierarchy

Chapter 6 of EIAR

Observations

Details on the transport model development process, the traffic data inputs used, the calibration, validation and forecast model development for the suite of transport models are set out in the Transport Modelling Report, in Appendix A6.2 (Transport Modelling Report) and Appendix A6.3 (Junction Design Report) in Volume 4 of the EIAR.

6.2.4 Appraisal Method for the Assessment of Impacts

6.2.4.1 Overview

The approach to assessing impacts encompasses outlining the assessment topics, determining the predicted magnitude of impacts, defining the sensitivity of the environment and determining the significance of effects. The approach has been carried out in accordance with procedures described in the Guidelines to be contained in EIARs (EPA 2022) and methodologies outlined in the 'Traffic and Transport Assessment Guidelines (TII 2014), using a Multi-Modal Level of Service (LoS) approach.

6.2.4.3 Determining the Predicted Magnitude of Impacts

The methodology used for determining the predicted magnitude of impacts has considered the traffic and transport conditions of the environment before and after the Proposed Scheme is in place.

The impact assessments have been implemented with reference to three types of scenarios:

- 'Do Nothing' – The 'Do Nothing' scenario represents the current baseline traffic and transport conditions of the direct and indirect study areas without the Proposed Scheme in place and other GDA Strategy projects. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the qualitative assessments only.
- 'Do Minimum' – The 'Do Minimum' scenario (Opening Year 2028, Design Year 2043) represents the likely traffic and transport conditions of the direct and indirect study areas including for any transportation schemes which have taken place, been approved or are planned for implementation, without the Proposed Scheme in place. This scenario forms the reference case by which to compare the Proposed Scheme ('Do Something') for the quantitative assessments.

Chapter 6 of EIAR

Observations

It is important to note the Do Minimum scenarios (in both 2028 and 2043) include all other elements of the BusConnects Programme of projects (apart from the CBC Infrastructure Works elements) i.e. the new BusConnects routes and services (as part of the revised Dublin Area bus network), new bus fleet, the Next Generation Ticketing and integrated fare structure proposals are included in the Do Minimum scenarios.

In 2028, other notable Do Minimum transport schemes include; the roll out of the DART+ Programme, Luas Green Line capacity enhancement and the Greater Dublin Area Cycle Network Plan implementation (excluding BusConnects CBC elements). For 2043 the Do Minimum scenario assumes the full implementation of the GDA Strategy schemes, so therefore 'assumes' that proposed major transport schemes such as MetroLink, Luas line extensions to Lucan, Finglas, Poolbeg and Bray are all fully operational.

In terms of the transport modelling scenarios for the traffic and transport assessment, there are no specific demand management measures included in the Do Minimum scenario in the 2028 opening year, other than constraining parking availability in Dublin at existing levels. For the design year, 2043 scenario, demand management is included in the Do Minimum in line with the Strategy's Core Demand Management Measures, including reduction of free workplace parking in urban areas, increased parking charges and adjustment of traffic signal timings to facilitate movement by sustainable modes.

- 'Do Something' – The 'Do Something' scenario represents the likely traffic and transport conditions of the direct and indirect study areas including any transportation schemes which have taken place, been approved or are planned for implementation, with the Proposed Scheme in place (i.e. the Do Minimum scenario with the addition of the Proposed Scheme). The same demographic assumptions (population, employment levels) are included in both the Do Minimum and Do Something scenarios.

6.2.5 Data Collection and Collation

The assessment of the Traffic & Transport impacts of the proposed scheme has two distinct parts namely, qualitative methods which consider the physical changes to transport networks and quantitative methods which are based upon traffic modelling.

6.2.5.1

The qualitative assessment data collection encompasses site surveys, including walkovers of the route of the Proposed Scheme and photographs to record locations of particular importance, three sources of mapping data have been used to inform the analysis, Ordnance Survey Mapping (OSM), NavStreets and OpenStreet Map.

6.2.5.2

Data collection to support the quantitative assessment included a review of existing traffic survey data available for the area of interest, including the NTA Traffic Count Database and TII traffic counters. Information on bus passenger volumes was already available and included in the modelling process as part of the ERM base model calibration and validation, which includes the annual canal and M50 cordon counts as well as ticketing data.

Due to the scale of the CBC Infrastructure Works, the Proposed Scheme required a full set of consistent updated traffic counts for a neutral period e.g. November / February when schools, colleges were in session. Traffic surveys were undertaken in November 2019 and February 2020 (Pre-Covid) with the surveyed counts used as inputs to the model calibration and validation process of the strategic model and micro-simulation model. The two types of counts used in the study are Junction Turning Counts (JTCs) and Automatic Traffic Counts (ATCs).

6.2.5.2.3

Road and Bus Journey Time Data

Bus Journey time data for the Proposed Scheme was provided by the NTA from the Automatic Vehicle Location (AVL) dataset used to monitor bus performance. Road Journey time data for the Proposed Scheme models has been sourced from TomTom.

Chapter 6 of EIAR Observations and Commentary

6.4.3.2 Do Minimum Transport Demand

The transport demand changes for the 2028 and 2043 assessment years have been included in the analysis contained within this chapter, using travel demand forecasting, which accounts

for increases in population and economic activity, in line with planned growth contained within the NPF, Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland region and the local development plans for the GDA local authorities.

The GDA Strategy (along with existing supply side capacity constraints e.g., parking availability, road capacity etc.) has the effect of limiting the growth in car demand on the road network into the future.

In general, trip demand (combining all transport modes) will increase into the future in line with population and employment growth. A greater share of the demand will be by sustainable modes (Public Transport (PT), Walking, Cycling). Private car demand may still grow in some areas but not linearly in line with demographics, as may have occurred in the past.

Total trip demand will increase into the future in line with demographic growth (population and employment levels etc.). To limit the growth in car traffic and to ensure that this demand growth is catered for predominantly by sustainable modes, a number of measures will be required, that include improved sustainable infrastructure and priority measures delivered as part of the NDP/GDA Strategy. In addition to this, demand management measures will play a role in limiting the growth in transport demand, predominantly to sustainable modes only. The result will be only limited or no increases in overall demand for travel by private car. The Proposed Scheme will play a key role in this as part of the wider package of GDA Strategy measures.

6.4.4 'Do Something' Scenario

The Do Something scenario represents the likely conditions of the direct and indirect study areas with the Proposed Scheme in place.

Chapter 6 of EIAR

Observations and Commentary

As the bus network and frequency assumptions are the same in both scenarios the NTA consultants argue that the assessment of demand impacts attributable to the scheme is conservative in terms of the level of people movements forecast under the Do Something scenario.

They argue the Do Something scenario will facilitate opportunities to increase bus network capacity while the segregation and safety improvements to walking and cycling infrastructure will further maximise the movement of people travelling sustainably along

the corridor and will therefore cater for higher levels of future population and employment growth.

Traffic and Transport Impacts of Proposed Scheme – Key Projected Changes in Travel Behaviour

6.4.6.2.2 Peak Hour People Movement along the Proposed Scheme

To determine the impact that the Proposed Scheme has on modal share in the direct study area as a result of its implementation, the weighted average number of people moved by each mode (Car, Bus, Active Modes) has been extracted from the ERM / LAM. The analysis compares the Do Minimum and Do Something scenarios both in the inbound and outbound direction in the AM and PM peak hours (8-9am, 5-6pm) for each forecast year (2028, 2043).

6.4.6.2.2.1 2028 AM Peak Hour People Movements

Diagram 6.6 illustrates the People Movement by mode travelling along the Proposed Scheme towards the city centre during the AM Peak Hour in 2028

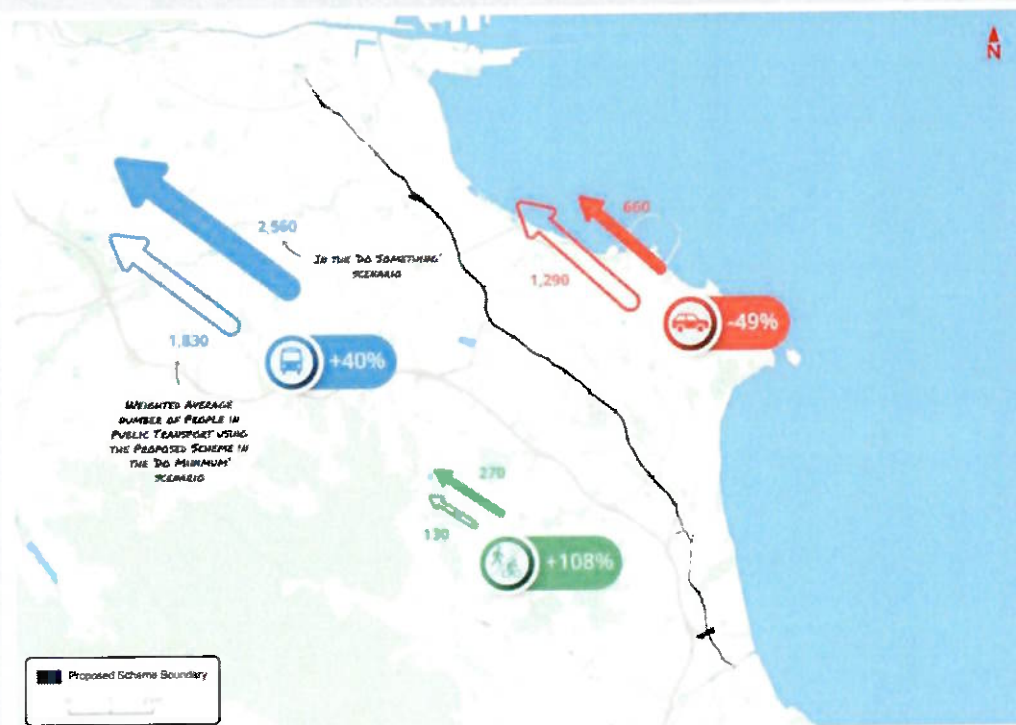


Diagram 6.6: Weighted Average People Movement by Mode During 2028 AM Peak Hour

As indicated in Diagram 6.6, there is a reduction of 49% in the number of people travelling via car, an increase of 40% in the number of people travelling via bus and an increase of 108% in people walking or cycling along the Proposed Scheme during the AM Peak Hour.

The Proposed Scheme will facilitate a significant change in the level of segregated cycling provision in comparison with existing conditions along the entire length of the corridor. According to the NTA's consultants the transport modelling is conservative in terms of the predicted cycling mode share. The Proposed Scheme has been designed to cater for much higher levels of cycling uptake than modelled outputs, to cater for long-term trends in travel behaviours as people are assumed to make sustainable travel lifestyle choices.

Table 6.43 outlines the difference in modal split between the Do Minimum and DoSomething scenarios for each mode of travel in an inbound direction towards the City Centre during the AM Peak Hour. The results indicate a 44% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 6.43: Modal Shift of 2028 AM Peak Hour Along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Inbound towards the City Centre	AM Peak Period	General Traffic	1,290	40%	660	19%	-630	-49%
		Public Transport	1,830	56%	2,560	73%	730	40%
		Walking	100	3%	120	3%	20	20%
		Cycling	30	1%	150	4%	120	400%
		Combined Walking / Cycling	130	4%	270	8%	140	108%
		Sustainable Modes Total	1,960	60%	2,830	81%	870	44%
		Total (All modes)	3,250	100%	3,490	99%	240	7%

6.4.6.2.2.2 2028 PM Peak Hour People Movements Diagram

6.7 illustrates the People Movement by mode travelling outbound from the city centre during the PM Peak Hour.

6.4.6.2.2.3 2043 AM Peak Hour People Movements

For the AM Peak Hour in 2043 the models project a decrease of 47% in the number of people travelling via car, an increase of 60% in the number of people travelling via bus and an increase of 211% in the number of people walking and cycling along the Proposed Scheme during the AM Peak Hour.

Table 6.45: Modal Shift of 2043 AM Peak Hour Along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Inbound towards the City Centre	AM Peak Period	General Traffic	1,096	42%	586	19%	-510	-47%
		Public Transport	1,358	53%	2,168	69%	810	60%
		Walking	81	3%	97	3%	16	20%
		Cycling	49	2%	307	10%	258	524%
		Combined Walking / Cycling	130	5%	405	13%	275	211%
		Sustainable Modes Total	1,489	58%	2,573	81%	1,084	73%
		Total (All modes)	2,585	100%	3,159	100%	574	22%

Table 6.45 outlines the difference in modal split between the Do Minimum and DoSomething scenarios for each mode of travel in an inbound direction towards the City Centre during the AM Peak Hour. The results indicate a 73% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

6.4.6.2.2.4 2043 PM Peak Hour People Movements

For the PM Peak in 2043 there is anticipated to be a decrease of 42% in the number of people travelling via car, an increase of 17% in the number of people travelling via bus and an increase of 125% in the number of people walking and cycling along the Proposed Scheme during the PM Peak Hour.

Table 6.46 outlines the difference in modal split between the Do Minimum and DoSomething scenarios for each mode of travel in an outbound direction from the City Centre during the PM Peak Hour. The results a 26% increase in people moved by sustainable modes (Public Transport, Walk, Cycle).

Table 6.46: Modal Shift of 2043 PM Peak Hour Along Proposed Scheme

Direction	Time Period	Mode of Transport	Do Minimum		Do Something		Difference	
			Hourly Trips	Modal Split (%)	Hourly Trips	Modal Split (%)	Hourly Trips	Difference (%)
Outbound from the City Centre	PM Peak Period	General Traffic	975	34%	566	20%	-410	-42%
		Public Transport	1,695	60%	1,978	68%	283	17%
		Walking	86	3%	80	3%	-5	-6%
		Cycling	71	3%	272	9%	201	282%
		Combined Walking / Cycling	157	6%	352	12%	195	125%
		Sustainable Modes Total	1,852	66%	2,330	80%	478	26%
		Total (All modes)	2,827	100%	2,896	100%	68	2%

6.4.6.1.9 People Movement by Bus

6.4.6.2.3.1 2028 AM Peak Hour Bus Passengers

With regard to 2028 AM peak hour passenger volumes (inbound direction – Bray – City Centre) higher levels of bus passenger loadings are projected with scheme in place with a peak at intersection between Stillorgan Road and Mount Merrion Avenue where the volume of passengers reaches 4,600 per hour, compared to approximately 3,600 in the Do Minimum scenario. The increase in bus passengers remains at a high level along the Proposed Scheme with approximately 600 to 1,200 additional users on most of the corridor, compared to the Do Minimum scenario. The equivalent figures for 2043 are 250 to 1,850 additional users.

6.4.6.2.3.2 2028 PM Peak Hour Bus Passengers

For the 2028 PM Peak Hour the projections indicate higher levels of bus passenger loadings along the Proposed Scheme with a peak at UCD where the volume of passengers reaches 4,100 in the PM Peak hour, compared to approximately 3,800 in the Do Minimum scenario. The increase in bus passengers is consistent along the Proposed Scheme with approximately 300 to 400 additional users on the corridor, compared to the Do Minimum scenario. The equivalent figures for 2043 are 250 to 750 additional users.

Bus Journey Time and Reliability Changes accredited to the Proposed Scheme.

Chapter 6 of EIAR

Observations

The projected large increases in bus travel presented above (published in Chapter 6) and earlier in evidence sourced from Chapter 2 of the EIAR are attributed by the consultants solely to Bus Journey Time and Reliability changes accredited to the CBC infrastructure bus priority measures to be implemented under the Proposed Scheme.

A key element to forecasting changes in travel behaviour is the scale of improvements that are expected to result from implementation of the Proposed Scheme.

Growth forecasts in bus use purely attributable to the CBC infrastructure bus priority measures seem optimistic even when linked to the estimated bus journey time savings and indicators of improved bus service punctuality applied by the consultants in their analysis. Estimated improvements have been based on the assumption of the full implementation of the BusConnects network re-design in both the Do Minimum and Do Something scenarios.

6.4.6.2.5.2 Bus Journey Time and Reliability changes as a result of the Proposed Scheme Inbound

The Proposed Scheme is expected to deliver bus journey time savings in both the AM and PM peaks. Whilst modest benefits are expected through Bray, Shankill and the southern half of the Stillorgan Road, these are projected to increase beyond Stillorgan Park Road with further savings seen on the Morehampton Road approaches to Wellington Place, Waterloo Road and Appian Way as well as the Leeson Street Lower approach to the Eustace Bridge. Overall the Proposed Scheme is projected to deliver average inbound journey time savings for E1 service bus passengers of 5.9 minutes (11%) in 2028 and 5.8 minutes (10%) in 2043. Additionally, the model projections suggest an improvement in bus journey time reliability.

Outbound

The Proposed Scheme is expected to deliver savings in bus journey time in both the AM and PM peak. In the AM peak, significant delay savings can be seen on Donnybrook Road between Victoria Avenue / Belmont Avenue and Anglesea Road / Beaver Row following the introduction of an outbound bus lane in the Proposed Scheme. In the PM peak, delay savings can also be seen on Leeson Street Lower between St Stephens Green and the Eustace Bridge. Outside of these sections, modest local journey time savings are anticipated along the CBC due to the introduction of signal controlled priority at junctions. Overall the Proposed Scheme is projected to deliver average outbound journey time savings for E1 service bus passengers of up to 7.3 minutes (12%) in 2028 (PM) and 7.5 minutes (13%) in 2043 (AM). Additionally, the model projections suggest an improvement in bus journey time reliability.

Chapter 6 of EIAR

Observations

Projected Changes in Travel Behaviour, Bus Journey Times and Reliability – Methodological Perspectives

A key element to forecasting changes in travel behaviour is the scale of improvements that are expected to result from implementation of the Proposed Scheme. These improvements provide an input to the demand forecasting suite of transport and traffic models. In the case of forecasting modal shift to bus for instance, the East Regional Model (ERM) is the primary tool which yields strategic multi-modal demand outputs for the opening year and subsequent forecast years.

These improvements provide an input to the demand forecasting suite of transport and traffic models. In the case of forecasting modal shift to bus for instance, the East Regional Model (ERM) is the primary tool which yields strategic multi-modal demand outputs for the opening year and subsequent forecast years.

A prerequisite for reviewing the robustness of any transport models employed to generate demand forecasts and the validation and reliability of model parameters are the input values for journey time, service level and reliability. Chapter 6 contains modelled estimates of improvements in these levels of service indicators resulting from

The projections of very large modal shifts set out above pose important questions concerning the robustness of the forecasts generated by the forecasting tools employed. Addressing questions about the robustness of these projections would require in-depth review of the validation performance of the models, as well as application of realism testing and sensitivity testing.

The uncertainty over projections of travel demand extends to cycling. An inspection of the methodology applied to forecasts of trips by bicycle reveals an absence of validated behavioural models capable of generating robust estimates of demand, and projections mainly rely on limited counts of cycle movements across cordons, consideration of the supply of capacity for bicycles and professional judgment and extrapolation of the quantum of potential trips.

8. Addressing uncertainty about the efficacy of the Proposed Scheme: Improving the Core Bus Corridor between Shankill and Bray with modified routeings and low cost supporting infrastructure and traffic management

The uncertainties about the robustness of the forecasts of travel demand referred to above in addition to observations on the alternatives assessment process pose questions about the efficacy of the Proposed Scheme for the Bray - – Dublin City Centre Corridor, a key element of the overall BusConnects Dublin programme. The initial publication of BusConnects route 13 (as the proposed E Route was called then) was in Feb 2019, with option selection no later than in 2018.

Observations on the Preliminary Business Case for the overall proposed BusConnects programme

The main preparatory work on the BusConnects Dublin Preliminary Business Case (PBC) was carried out during 2019. The cost estimation work for input to the Preliminary Business Case (PBC) economic and financial analysis was finalised in 2020, using Q4 2019 base estimates. An updated cost estimate was prepared to reflect the impact of revised inflation parameters and provided to Government Q1 2022 as part of the PBC approval process.

The Preliminary Business Case for the overall proposed BusConnects programme has been published by the NTA only for the city area as a whole. In addition to the complete BusConnects programme, including the Proposed Scheme, for the Bray – Dublin City Centre Corridor it encompasses an additional 11 other such schemes.

Overall, the quantitative economic CBA results for BusConnects Dublin under the 2019 costs suggest a benefit to cost ratio (BCR) of 1.6 for an assumed base scenario (range 1.1 – 2.0). This reflects significant benefits for both new and existing public transport users – through improved services, reduced journey times and increased frequencies. These benefits offset negative impacts on other road traffic (car and goods vehicles). The economic appraisal of the Base Case presents a positive if modest case for the BusConnects Dublin programme based on the current designs and information provided.

Of the total incremental costs for BusConnects Dublin totalling €2.578 billion(excl. VAT) over a Do-Minimum cost base the Core Bus Corridors works total some €1.09 billion excluding an amount for inflation and VAT or an average of €90 million per corridor.

The PBC was subject to review by the Major Projects Advisory Group (MPAG) that is tasked to support the application of the Public Spending Code and consider major public investment proposals (in particular in relation to costs, scheduling, delivery and risk) in advance of a Government decision.

The MPAG in its review of the PBC referring to demand forecasting, economic appraisal and financial appraisal advised *‘the Sponsoring Agency and Approving Authority should continue to assess demand forecasts for the programme, the sensitivity of the economic case to emerging patterns of mobility and commuting post-COVID-19 and the implications for demand forecasts of other transport megaprojects planned for Dublin. In particular, the specific impact on particular route corridors should*

be monitored. As more granular detail becomes available, demand sensitivities should assess the implications for overall programme impact in the event that particular route corridors are curtailed, delayed or amended.

Given the recent high rates of construction inflation and the base case – using 2020 prices – shows a BCR of 1.6 and a downside BCR of 0.9, the economic case for the project needs to be monitored carefully as further information becomes available’.

Uncertainties in forecasting, costs, route options assessment and the PBC

The scale of public spending involved and evident uncertainty about the robustness of the forecast travel demand patterns attributable to the Proposed Scheme point to an urgent requirement to undertake an update of the Preliminary Business Case for the BusConnects programme including the Proposed Scheme as it currently applies to the Bray – Dublin City Centre Corridor. This will help ensure it offers society value for money.

Of particular relevance is the timeliness of the data input to the demand mode system. Moreover, in the case of the Bray- City Centre Corridor scheme the level of disaggregation and detail concerning travel behaviour at the southern end of the corridor that was employed in the analysis is of real concern. This is particularly important in assessing the efficacy of Route Options as set out under the Stage 2 Assessment in the NTA’s EIAR Chapter 3.

For Section 3 the Route Options Assessment comprised five route options as follows:

- Route 2A would run parallel to the M11 on a newly constructed busway from Wilford Junction through to Loughlinstown Roundabout and then along the N11 to the Wyattville Interchange;
- Route 2B would run via the Dublin Road from Wilford Junction, through Shankill and onto the N11 at Loughlinstown Roundabout to the Wyattville Interchange;
- Route 2C would run via the Dublin Road and Crinken Lane, and join a newly built bus-way parallel to the M11 at Loughlinstown Roundabout, before following the existing N11 to the Wyattville Interchange;
- Route 2D would have buses follow the same route as Route 2B, but general traffic could be diverted around Shankill Village using a newly constructed road on the same alignment as that proposed for the bus route in 2C. A Bus Gate would be put in place on the Dublin Road between the Shanganagh Road and Lower Road junctions; and
- Route 2E would combine routes 2A and 2B whereby the route would run parallel to the M11 on a newly constructed busway from Wilford Junction to the intersection with Crinken Lane, then it would run along the Dublin Road from Crinken Lane to Loughlinstown Roundabout and along the N11 to the Wyattville Interchange.

According to the NTA Consultants in Chapter 3 of the EIAR *‘Overall, Route Option 2A was deemed to perform best under the Environment criteria as the loss of immature woodland along the M11 is considered to be less significant when compared to the loss of stone boundary walls, tree lines, hedgerows and mature trees along the Dublin Road. Route Option 2A also required land take from lower amenity land than that required for the other options as it avoids Shankill Village’.* Notwithstanding these findings Option 2B was deemed to be the most advantageous route, even though it was not the most advantageous under the Environment criterion. This was due to;

- a comparatively lower cost;
- significant benefits in terms of integration, accessibility and social inclusion; and
- a high level of service for bus passengers.

Bespoke survey programme for the Shankill - Bray sections of the Proposed Scheme

In conjunction however, with the observations made in this submission concerning the limitations in the data used and the uncertainties in the mode projections for input to the assessment of the proposed scheme set out in Section 4 of this submission (Chapter 4 of the EIAR) as it relates to Sections 3 and 4 of the Bray – Dublin City Centre corridor, this has prompted the client to undertake bespoke survey of travel behaviour in the corridor’s southern end (Shankill and Bray).

The survey comprises two elements, the first a comprehensive monitoring of bus loadings on approaches to the Shankill series of bus stops and on leaving the Shankill area and counts of passengers getting off and boarding buses within Shankill. These surveys were mounted throughout the day over an extended period during September 2023.

The second element of the survey programme was undertaking interviews among intending passengers boarding buses in Bray on their way northward through Shankill to identify travel patterns, and characteristics of passengers in part to determine how many were intending to leave the bus within the section Wilford roundabout and Loughlinstown roundabout. The purpose of this was to determine the proportion of passengers for whom Shankill was their destination.

Allied to the on and off bus loading counts the questionnaire survey has been employed to assess the potential for a restructuring of the route network with a view to minimising the environmental impact, including visual landscape features on Shankill, obviating the requirements for invasive felling of trees and removal of hedgerows and boundary walls advised by the NTA consultants.

At the same time these insights would underpin consideration of a route bypassing Shankill similar to Route 2A under the Stage 2 Options Assessment but without the need for a bespoke and expensive busway. Instead, the parallel route to Route 2A would make use of the planned N11/M11 Bus Priority Interim Scheme that provides for implementation of dedicated bus lanes along the section of existing N11/M11 route extending from Loughlinstown roundabout in the north to N11 offramp at N11 (Junction 5). In the southbound direction this may require implementation of a short extension of the hard shoulder located bus lane to the Bray (North) off ramp. In the northbound it is not anticipated additional bus priority would be required to provisions under the N11/M11 Bus Priority scheme that extends to Loughlinstown roundabout.

The survey evidence collected and analysed encompasses evidence on boardings and alightings from Bray as far as Loughlinstown roundabout and the section of corridor extending beyond the latter towards Dublin. The data encompasses the period 0700 hours to 1900 hours weekdays. It provides information on the number of people on board buses arriving at the first stop after Wilford junction and the number leaving the last stop before Loughlinstown roundabout as well as the numbers alighting at stops between Wilford and Loughlinstown and the number boarding at the same stops.

The second interview survey provides insights on destinations of trips made by intending passengers at stops in Bray in the am peak , their return date/time , journey purpose, frequency of travel , use of ticket types, access to private car transport for that journey, as well as their demographic characteristics.

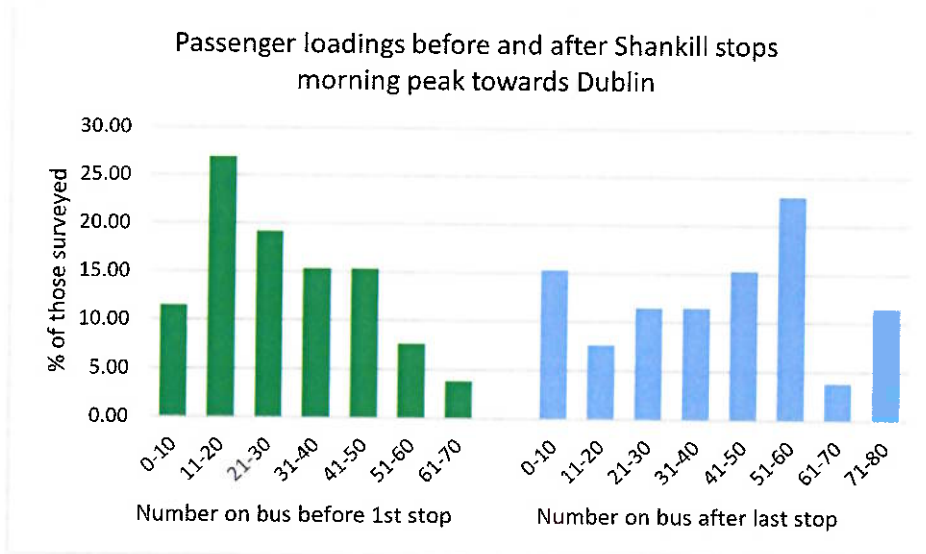
Bus loadings on approaches to and departure from Shankill bus stops: Counts of passengers getting off and boarding buses within Shankill

The monitoring programme extended over two weeks during mid to late September during the morning peak 7am-9am Daytime around midday and the evening peak 4pm – 7pm.

Figure 1- 2 show the loading pattern in the am peak towards Dublin indicating an average load of 29 passengers on the approach to Shankill (modal value 11-20 passengers) with 4 passengers getting off the bus across all the Shankill stops (9 of these) (modal value 0-10) with a further 15 getting on between Wilford and Loughlinstown Roundabout (modal value 11-20). Upon reaching Loughlinstown Roundabout the average loading is 39 passengers (modal value 50-60).

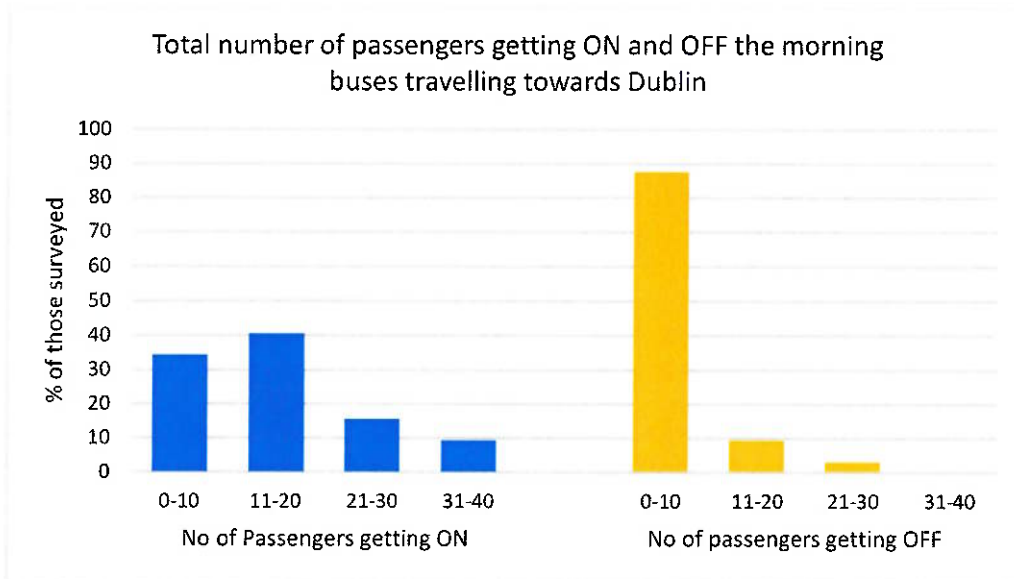
The mean journey time for the section between Wilford and Loughlinstown Roundabout is 7 minutes although the pattern of times exhibits a spread from less than 5 minutes up to in excess of 10 minutes (Figure 3).

Figure 1



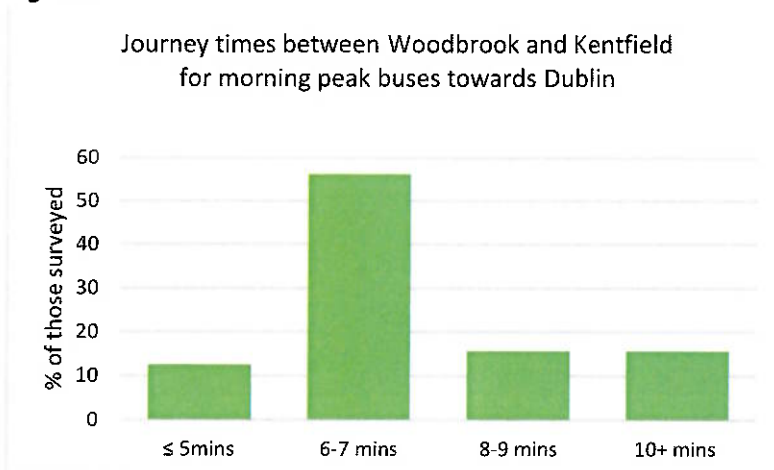
Mean – 1st stop (29 passengers) – last stop (39 passengers)

Figure 2



Mean – getting ON (15 passengers) – getting OFF (4 passengers)

Figure 3



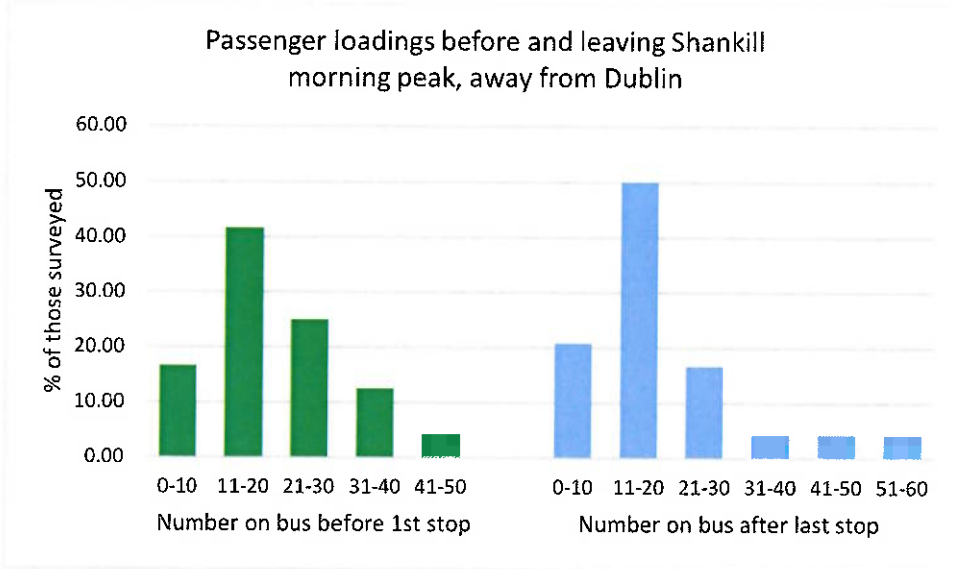
Mean – 7 minutes

For outbound am peak the equivalent data is presented in Figures 4 – 5. These highlight the average number approaching the first stop serving Shankill is 20 passengers (modal value 11-20) with the average number approaching Wilford 19 passengers. An average of 7 get on in Shankill while 9 get off. Modal values in each case are 0-10.

The mean journey time for the section between Loughlinstown Roundabout and Wilford is 7 minutes although the pattern of times exhibits a spread from less than 5 minutes to in excess of 10 minutes (Figure 6).

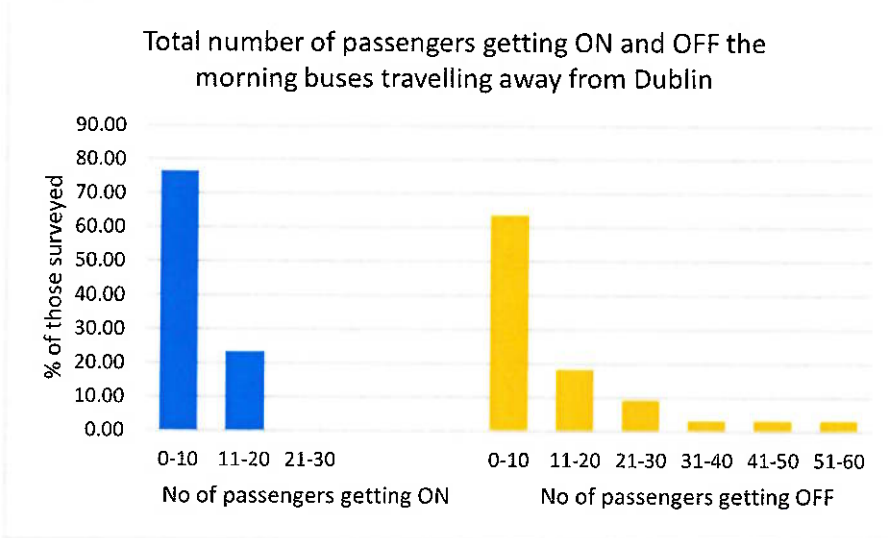
Morning Graphs away from Dublin

Figure 4



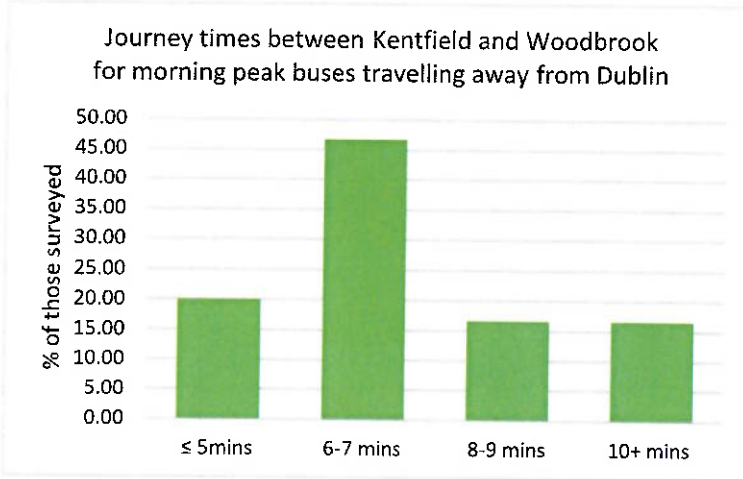
Mean – Before 1st stop (20 passengers) – After last (19 passengers)

Figure 5



Mean : Getting on (7 passengers) – Getting off (9 passengers)

Figure 6



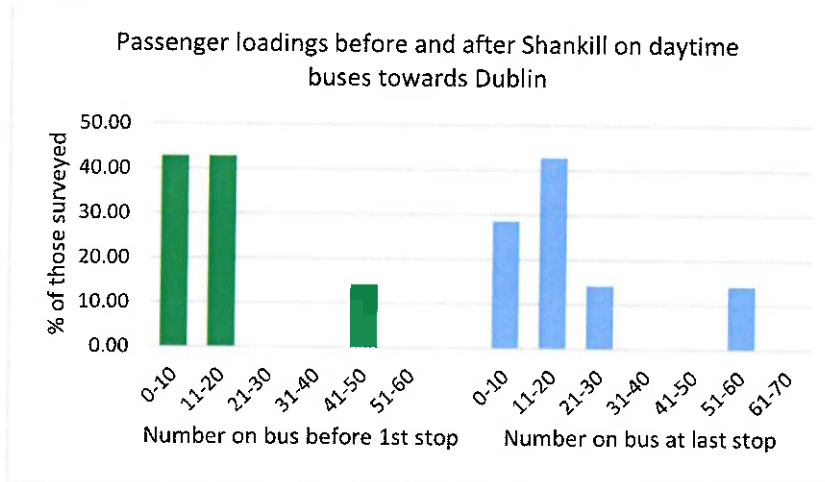
Mean: 7 minutes

For the day time period for journeys towards Dublin (Figures 7 - 8) the average number approaching the first stop serving Shankill is almost 15 passengers (modal value 0-20) with the average number approaching Loughlinstown 21 passengers. An average of 9 get on in Shankill while 3 get off. Modal values in each case are 0-10.

The mean journey time for the section between Wilford and Loughlinstown Roundabout is 7 minutes although the pattern of times exhibits a spread from less than 5 minutes up to 9 minutes (Figure 9).

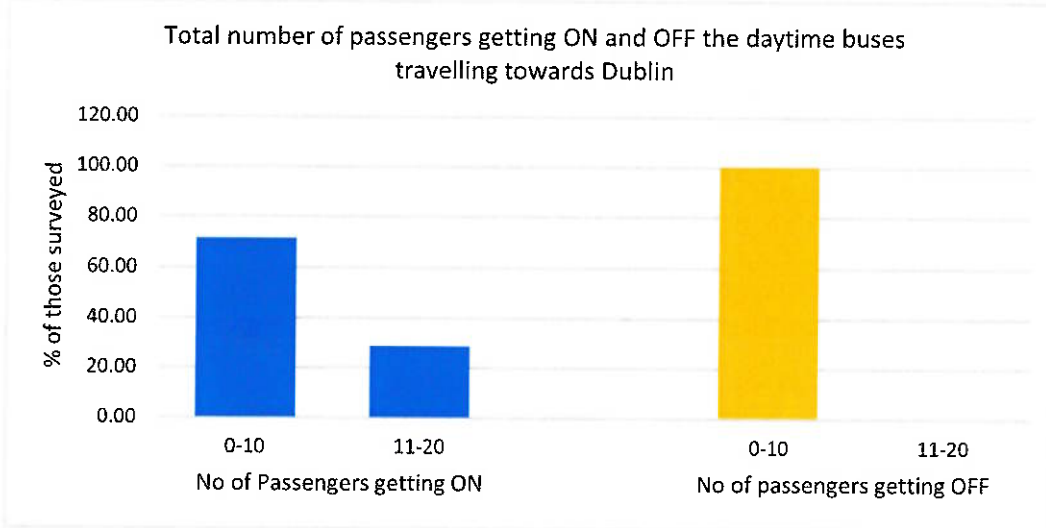
Daytime Graphs towards Dublin

Figure 7



Mean – 1st stop (15 passengers) – last stop (21 passengers)

Figure 8



Mean – getting ON (9 passengers) – OFF (3 passengers)

Figure 9



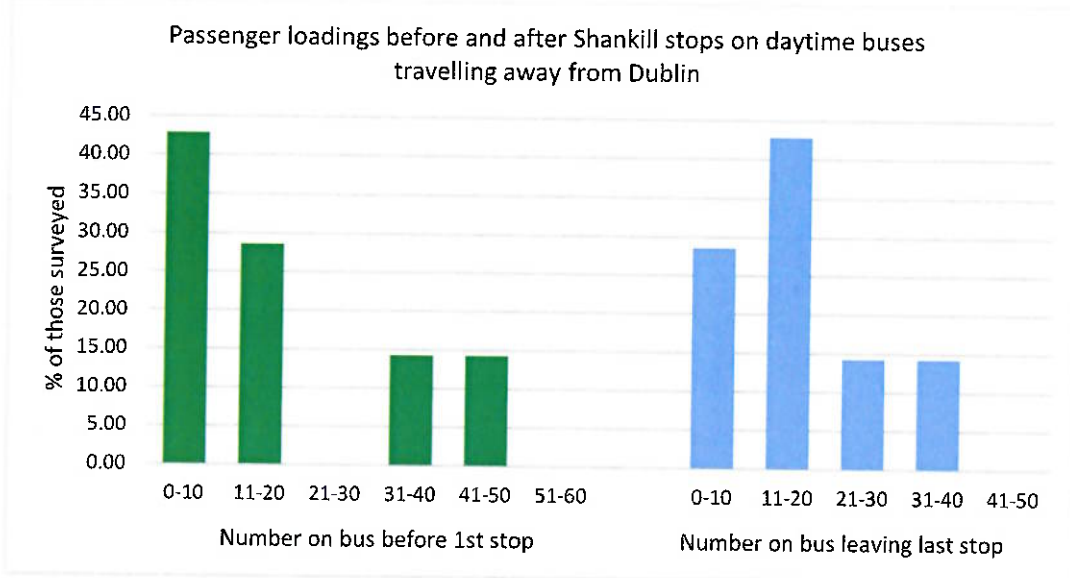
Mean – 7 minutes

For the day time period for journeys away from Dublin (Figures 10-11) the average number approaching the first stop serving Shankill is 20 passengers (modal value 0-10) with the average number approaching Wilford almost 16 passengers. An average of 3 get on in Shankill while 8 get off. Modal values in each case are 0-10.

The mean journey time for the section between Loughlinstown Roundabout and Wilford is just under 6 minutes although the pattern of times exhibits a spread from less than 5 minutes up to 9 minutes (Figure 12).

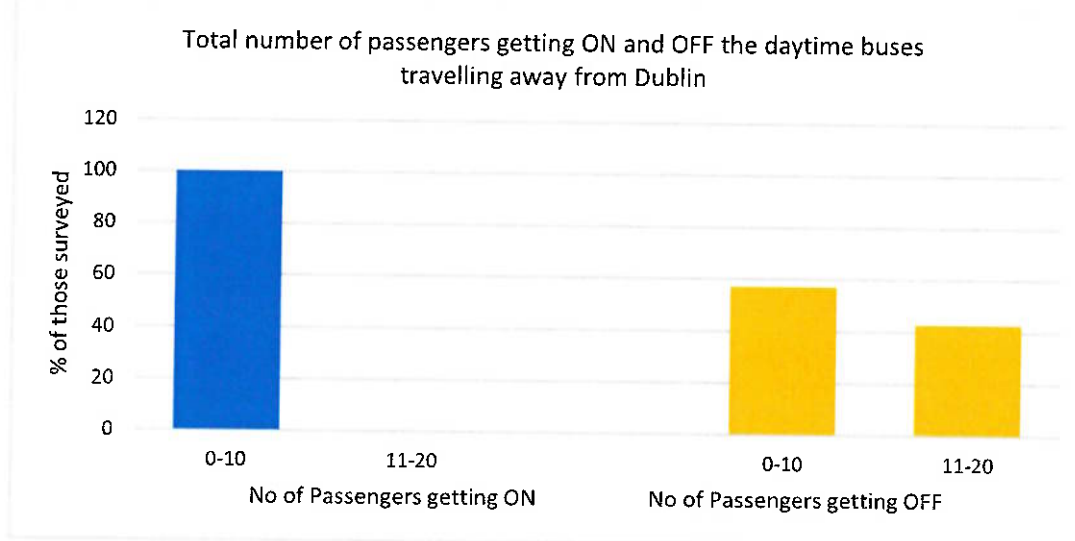
Daytime Graphs away from Dublin

Figure 10



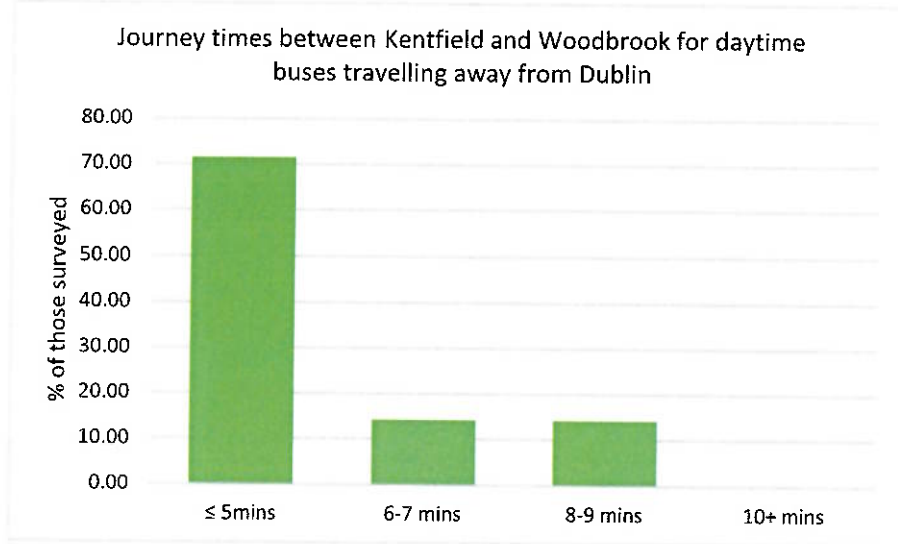
Mean – 1st stop (20 passengers) – last stop (16 passengers)

Figure 11



Mean – getting on (3 passengers) – getting off (8 passengers)

Figure 12



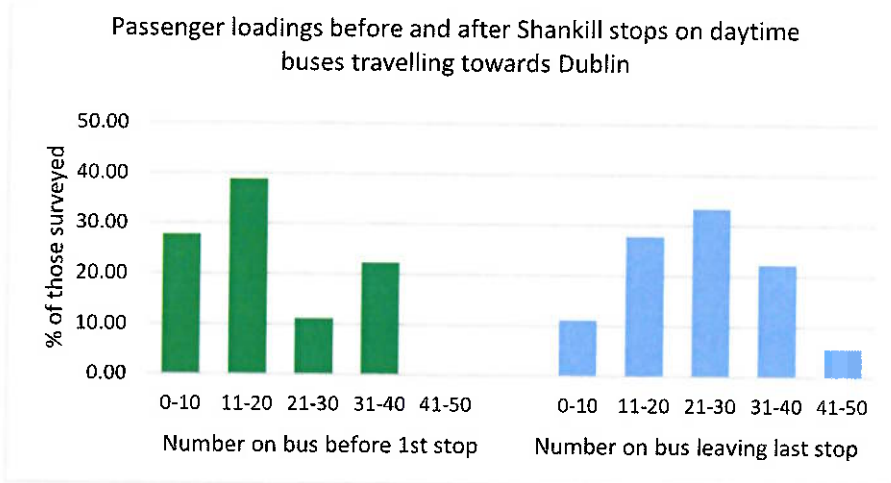
Mean – 6 minutes

Figure 13- 14 show the loading pattern in the pm peak towards Dublin indicating an average load of 18 passengers on the approach to Shankill (modal value 11-20 passengers) with 3 passengers getting off the bus across all the Shankill stops (9 of these) (modal value 0-10) with almost 8 getting on between Wilford and Loughlinstown Roundabout (modal value 0-10). Upon reaching Loughlinstown Roundabout the average loading is 24 passengers (modal value 21-30).

The mean journey time for the section between Wilford and Loughlinstown Roundabout is 6 minutes although the pattern of times exhibits a spread from less than 5 minutes up to 9 minutes (Figure 15).

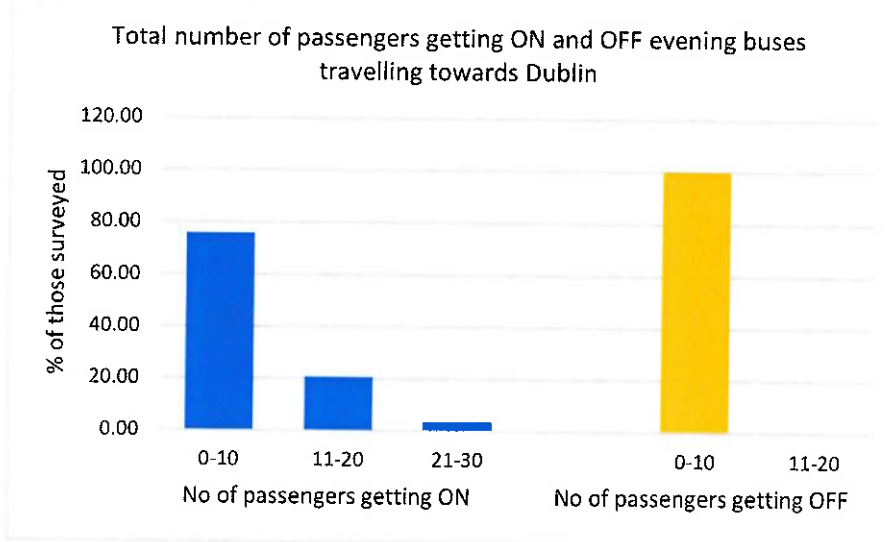
Evening Graphs towards Dublin

Figure 13



Mean – 1st stop (18 passengers) - last stop (24 passengers)

Figure 14



Mean – getting ON (8 passengers) – getting OFF (3 passengers)

Figure 15



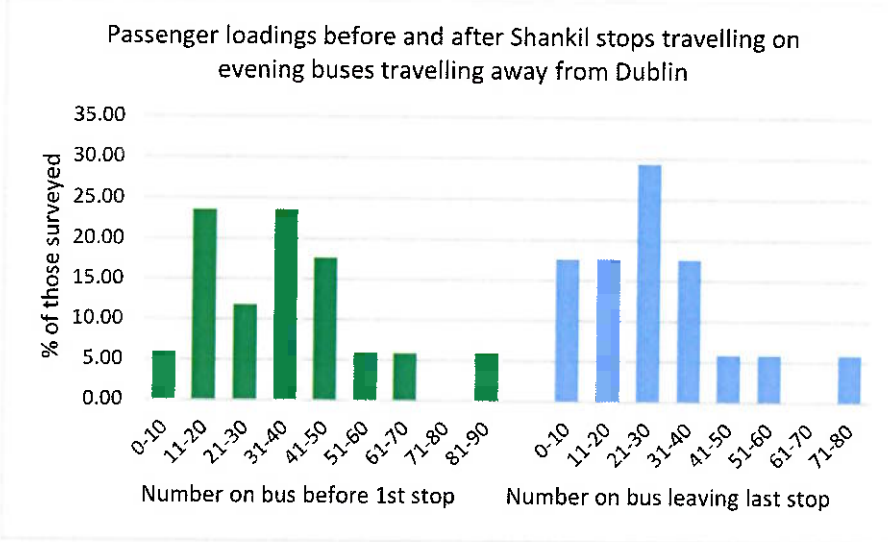
Mean – 6 minutes

For the evening peak period for journeys away from Dublin (Figures 16-17) the average number approaching the first stop serving Shankill is 36 passengers (modal value 11-20 and 31-40) with the average number approaching Wilford almost 28 passengers. An average of 3 get on in Shankill while 11 get off. Modal values are 0-10 and 0-20 respectively .

The mean journey time for the section between Loughlinstown Roundabout and Wilford is 7 minutes although the pattern of times exhibits a spread from less than 5 minutes to in excess of 10 minutes (Figure 18).

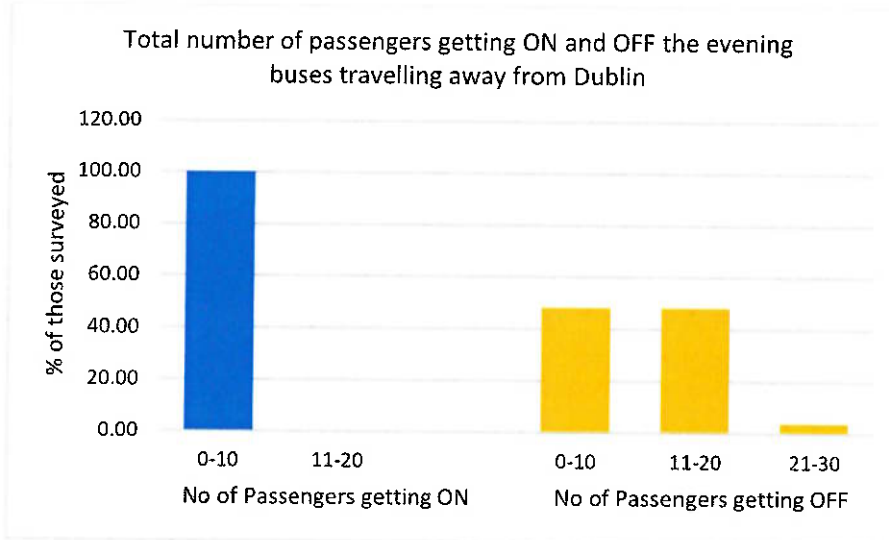
Evening Graphs away from Dublin

Figure 16



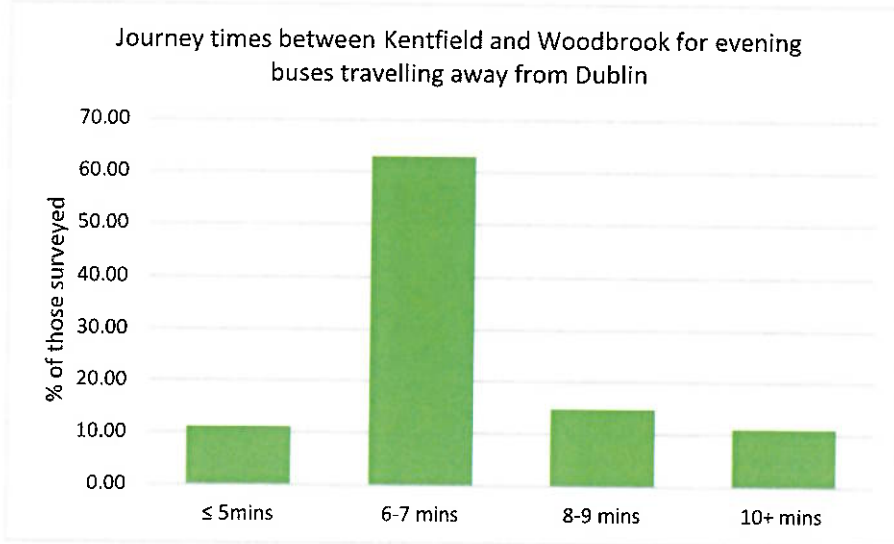
Mean – 1st stop (36 passengers) – last stop (28 passengers)

Figure 17



Mean – getting ON (3 passengers) – getting OFF (11 passengers)

Figure 18



Mean 7 minutes

Passenger Profiles and Trip Patterns on the Bray Corridor

The question of who is travelling by bus, their demographic characteristics and their travel patterns is addressed by the second element of the survey programme. This involved interviewing intending passengers (travelling towards Dublin) in Bray in the morning peak period over period during September 2023. Some 200 passengers were interviewed.

Figures 19 and 20 demonstrate a wide cross section of age groups although almost half were in the 24-65 age group while females made up 56% of the sample.

Figure 19

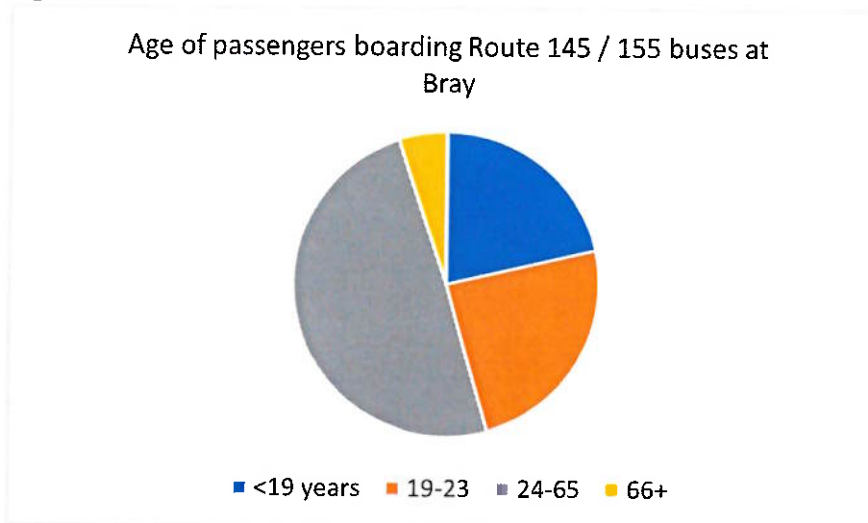
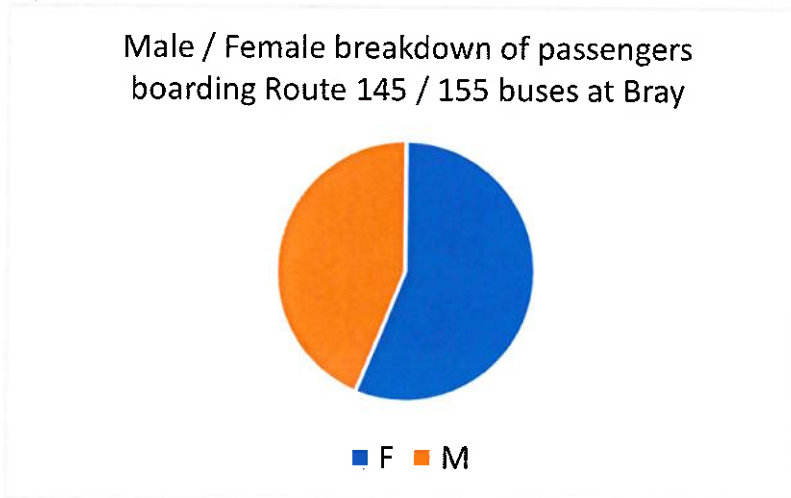


Figure 20



Among intending bus passengers 25% had access to a car as driver while 39% could have been driven by car to their destination rather than take the bus (Figures 21 and 22).

Figure 21

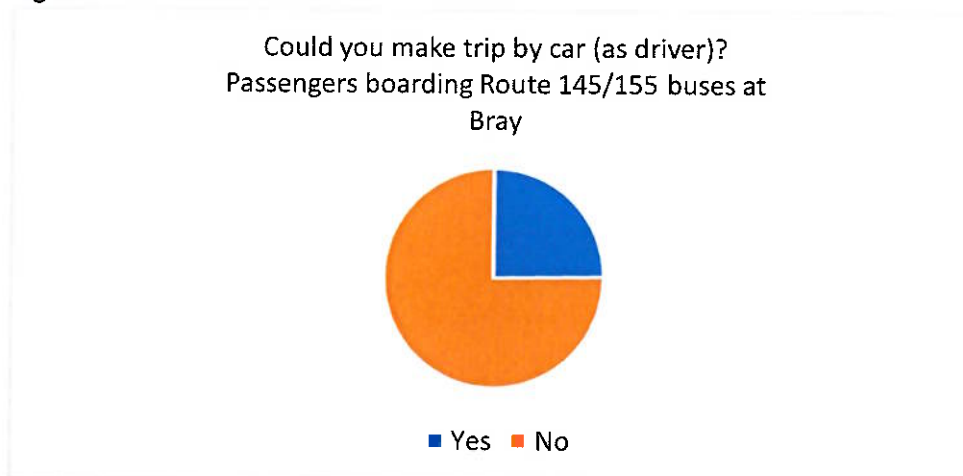


Figure 22

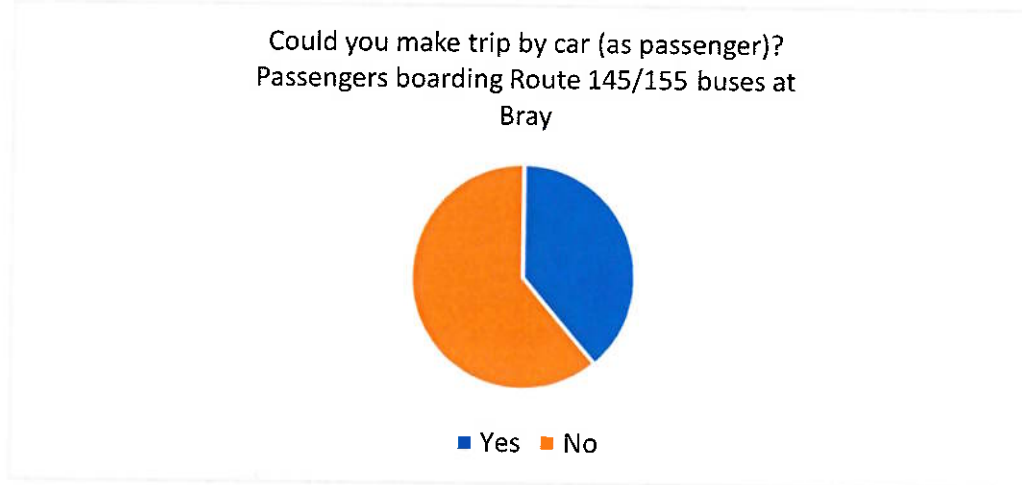
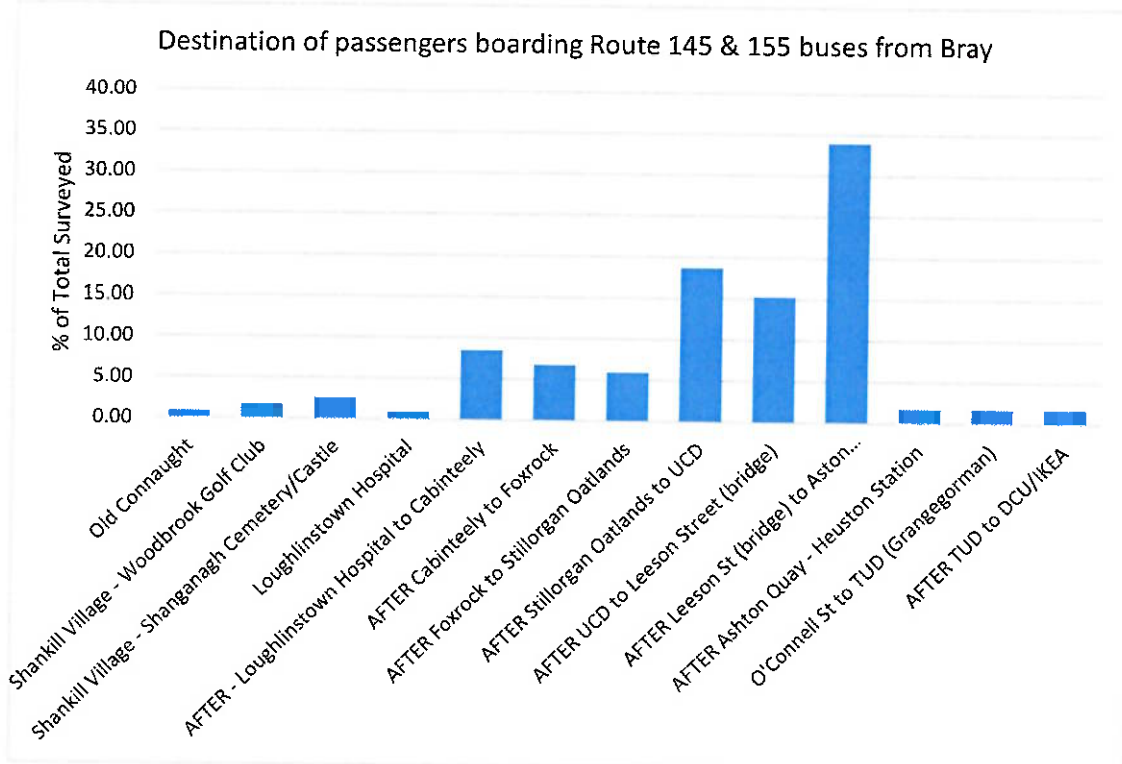


Figure 23 demonstrates of those people taking the bus from Bray the vast majority were travelling at least as far as the UCD campus with the modal group of destinations between Leeson Street and O'Connell Bridge to which a third were travelling. Just over 4% were destined for the stops between Wilford and Loughlinstown Roundabout.

Figure 23

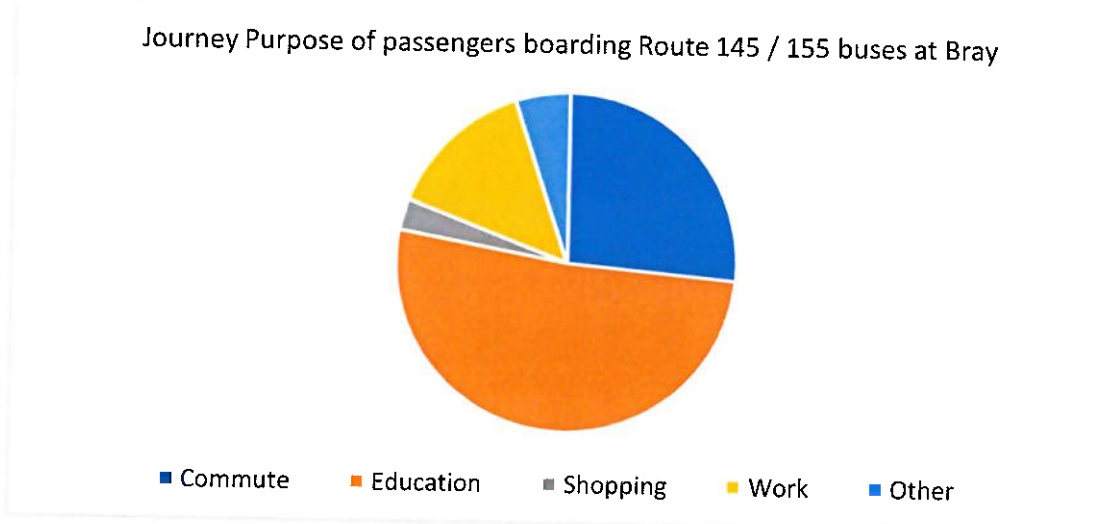


Among those citing details of return journeys just over 70% said they would return to Bray between 4pm and 7pm (Figure 24). This reflects the dominance of commuting, work and education as the main trip purposes. Together they accounted for 91% of trips with education making up just over half of peak hour trips by bus from Bray (Figure 25).

Figure 24



Figure 25



This pattern is also mirrored in the frequency of trips by bus (Figure 26) with almost half travelling 5 or more times per week, more than a fifth 4-5 times per week and 16% 2-3 times per week. Again this pattern of regular travel is underpinned by 91% of respondents using the Leap Card as the method of payment for their journey (Figure 27).

Figure 26

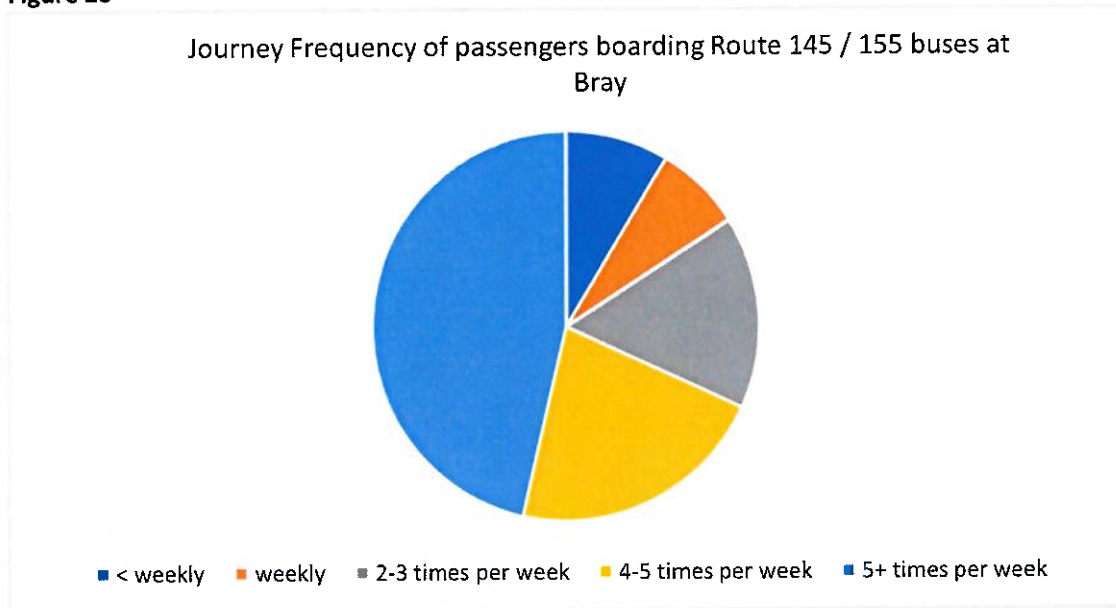
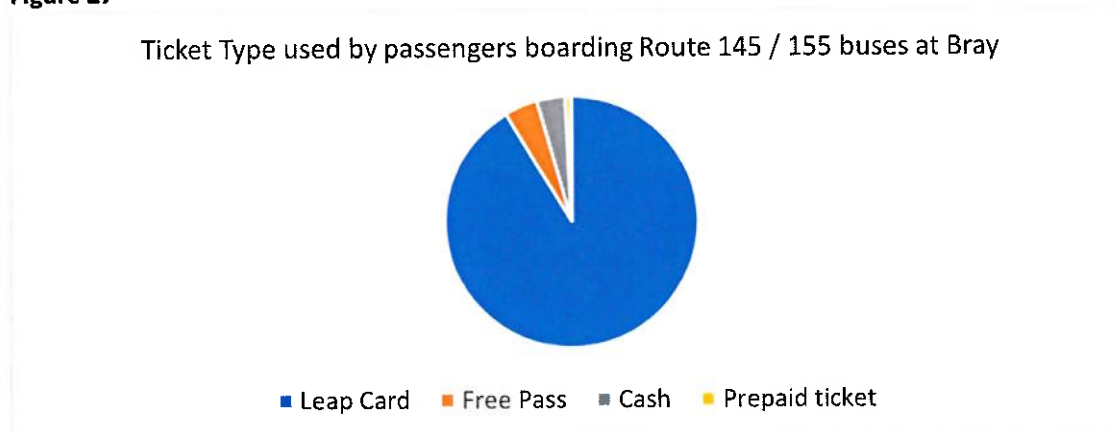


Figure 27



Implications of the findings for bus route planning to/from Bray on the Bray – Dublin City Centre Corridor

It is important to note that the NTA’s projected increase in peak hour demand would imply a requirement for an additional 10-15 buses per hour city bound over the Do Minimum option in 2028. There are question marks over the ability of the N11 through Shankill to absorb up to an additional 30 buses per hour two way through the village even with the proposed arrangements set out above in Section 4 (Chapter 4 of the EIAR).

These observations based on the NTA’s own projections, together with the findings generated by the bespoke survey programme reported in this section (undertaken by TAA in association with Shankill Community Action) lend support to the case to implement a bus service pattern on the 145/155 (E

spine) that would see 50%-60% of peak hour services continue to operate through Shankill Village serving existing or relocated stops between Wilford Roundabout and Loughlinstown Roundabout, thereby maintaining a 10 minute frequency in the village. The findings from our survey programme indicate this would maintain a quality service for residents and visitors to Shankill while offering an improved service to residents of and visitors to Bray.

At the same time this proposal would yield savings in capital spending and operating costs incurred by the Government and by or defrayed by its agencies.

40%-50% of services (at least during peak periods) would operate non-stop between Wilford Roundabout and Loughlinstown Roundabout via the N11/M11 off and on ramps and the planned N11/M11 Bus Priority Interim Scheme's dedicated bus lane along the section of existing N11/M11 route extending to Loughlinstown roundabout in the north and southbound from there to the N11 offramp at N11 (Junction 5 approaching Wilford Roundabout) again on the planned dedicated southbound bus lane.

The impacts of this arrangement would include:

1. Obviating the need for extensive and intrusive felling of 400+ trees and removal of substantial lengths of hedgerow between Loughlinstown Roundabout and Wilford Roundabout.
2. Obviating the need for land take and removal of old stone based walls.
3. Obviating need for traffic management restrictions including at Shanganagh Road/Beechfield Manor/ Corbawn Lane.
4. Reduced peak hour bus journey times in the corridor to/from Bray by 3.5 minutes at little or no extra capital cost compared to the proposed scheme. This compares favourably with an estimated total saving of 5.9 and 7.3 minutes (peak inbound and outbound) for the proposed overall scheme as submitted to **An Bord Pleanála**.
1. Maintenance of at least a 10-12 minute frequency through Shankill
2. Maintaining capacity for intending passengers in Shankill
3. Maintaining access to Shankill and planned DART station for passengers intending to alight/board between Wilford and Loughlinstown
4. Reduced likelihood of bus bunching and improved punctuality of services
5. Reduced bus operating costs through reduced Peak Vehicle Requirement (PVR) given the round trip time savings for vehicles serving the corridor.

9. Key Issues and Recommendations arising from this review of the Proposed BusConnects CBC programme for the Bray – Dublin City Centre Corridor

Overview of Key Issues

Growth forecasts in bus use purely attributable to the CBC infrastructure bus priority measures seem optimistic when linked to the estimated bus journey time savings and indicators of improved bus service punctuality applied by the consultants in their analysis.

It is important to remember the Do Minimum scenarios (in both 2028 and 2043) include all elements of the BusConnects Programme of projects apart from the CBC Infrastructure Works elements i.e. the new BusConnects routes and services (as part of the revised Dublin Area bus network), new bus fleet, the Next Generation Ticketing and integrated fare structure proposals are included in the Do Minimum scenarios.

These projections of very large modal shifts pose important questions concerning the timeliness of the travel related data employed, together with the robustness of the forecasts generated, by the forecasting tools employed. Addressing questions about the robustness of these projections would require in-depth review of the validation performance of the models, as well as application of realism testing and sensitivity testing.

The uncertainty over projections of travel demand extends to cycling. An inspection of the methodology applied to forecasts of trips by bicycle reveals an absence of validated behavioural models capable of generating robust estimates of demand, and projections mainly rely on limited counts of cycle movements across cordons, consideration of the supply of capacity for bicycles and professional judgment and extrapolation of the quantum of potential trips.

Uncertainties about the robustness of the forecasts of travel demand also pose very substantial questions about the efficacy of the Proposed Scheme for the Bray - City Centre Corridor.

The Preliminary Business Case for the overall proposed BusConnects programme has been published by the NTA only for the city area as a whole. In addition to the complete BusConnects programme, including the Proposed Scheme it encompasses an additional 11 other such schemes.

Key Recommendations

Notwithstanding the concerns of the client organisations reflected in this submission the client lends its support in principle to the Proposed Scheme for the Bray– Dublin City Centre corridor. However, this comes with a requirement for amendments to the scheme where it is currently envisaged to operate on the approaches to and through Shankill.

These stem from a continuing and widely held concern regarding the impact on the local environment and restrictions on residents' access to certain arteries attributable to various highway and cycle provision realignments and traffic management arrangements contained in the scheme as currently proposed.

Despite amendments to the NTA consultants' plans as a result of the route alternatives assessment process, an audit undertaken by local residents has estimated 400+ trees would be felled under the Proposed Scheme, many of them mature trees. It is noted that in Chapter 4 of the EIAR submitted by the NTA to An Bord Pleanála more than 50% of references to potential risk to/ felling of trees in the entire corridor relate to the approximately 3 kilometres between Loughlinstown roundabout and Wilford.

Moreover, there is a belief that the scheme as currently proposed for the village may not be necessary in the light of the proposed use of the N11/M11 Bus Priority Interim scheme currently being designed by a multi-authority team from the local councils, the TII and NTA. Adoption of a modified Route 2A as set out above (Route 2A was cited in Stage 2 of the route alternatives assessment process for Section 3 of the corridor) would achieve its favourable performance, particularly in relation to environmental impacts and land take referenced by the NTA Consultants but without the expense referenced by the consultants as their reason for rejecting their own design for Route 2A.

It would also afford a higher quality bus service to people travelling to/from Bray from points north of Loughlinstown Roundabout, while maintaining a high quality service to and from Shankill. Moreover, this proposal to take advantage of the N11/M11 Bus Priority Interim scheme currently under development, would increase bus journey time savings on the corridor for end to end journeys by between 48 % and 59%, this being achievable at reduced capital costs and reduced bus operating costs compared to the current Proposed Scheme.

Recommendations

- I. Pause advancement of the Proposed Scheme pending;
 - a transparent assessment of the proposed alternative scheme set out in this submission for the Bray – Dublin City Centre Corridor scheme encompassing Sections 3 and 4 of the route alternative assessment process that is subject to independent scrutiny by experts.
 - this would also encompass submitting findings to public consultation and a comprehensive survey of residents, businesses, regular users of facilities in the corridor as well as other stakeholders.
 - determination of the outcomes of execution of recommendations II-VI
 - *replacement of the Proposed Scheme for the Bray – Dublin City Centre Corridor with a revised scheme to reflect the outcomes of execution of recommendations I-VI.*

- II. Comprehensive review to be undertaken of key elements of the Easternn Region Model (ERM) and Local Area Model (LAM) in conjunction with corridor micro-simulation models and junction models. This would pay particular attention to behavioural sensitivity to various level of service, validation performance and in relation to other performance indicators. The task would include reviewing the elasticities employed in yielding demand projections for a range of public policy interventions. It would also involve applying realism testing and sensitivity testing. It would seek to reconcile the demand forecasts generated for the EIAR with the model

parameter values and provide an in-depth explanation of the findings of a series of specified realism and sensitivity tests.

- III. Specification, development and application of a robust cycle trip forecasting tool including undertaking comprehensive validation of the model. Ensure it is compatible with the existing suite of travel demand and traffic models employed by NTA to inform development and or refinement of the Proposed Scheme.
- IV. Independent review to be undertaken of the timeliness of and coverage of the data inputs to the suite of transport models employed in developing forecasts of travel demand and associated spatial travel and traffic patterns. This would take into account the changes in activity behaviour patterns that have been emerging since the beginning of the COVID-19 pandemic including the incidence and pattern of working from home as well as other changes in spatial movement patterns.
- V. Comprehensive survey to be undertaken of travel behaviour, access to transport alternatives among residents of and visitors to the corridor including commuters, as well as their demographic characteristics.
- VI. Updated and independent review to be undertaken of the Preliminary Business Case (PBC) for the BusConnects programme (including the Proposed Scheme (or variants)) as it applies to the Bray – Dublin City Centre Corridor, and undertake an updated PBC for a The ‘Do Something’ scenario and a ‘Do Minimum’ scenario (Opening Year 2028, Design Year 2043). The updated PBC would be informed by completion and delivery of recommendations III – VII. This will ensure an appropriate scheme for this corridor could offer society maximum ‘value for money’.

Request for Oral Hearing

Shankill Community Action respectfully submits that having regard to the:

- Significant public interest nature of this Proposed Scheme.
- The need to more fully investigate and test the implications of the scheme as set out in this submission.
- The issues identified and recommendations contained in this submission cannot be readily addressed by means of written submissions only.

We hereby request **An Bord Pleanála** hold an Oral Hearing into the matters raised in this submission with a view to their resolution.

10 Bibliography and Key Sources

Department of Public Expenditure and Reform, Major Projects Advisory Group Review of the NTA's BusConnects Preliminary Business Case.

EU Joint Assistance to Support Programmes for European Regions Guidance Note 3 on BusConnects: Project Review: Phase 3 (Preliminary Business Case).

National Transport Authority: BusConnects Dublin Cover Note to Preliminary Business Case

National Transport Authority: Greater Dublin Area Transport Strategy 2016 – 2035 as it relates to BusConnects and specifically in relation to the Bray – Dublin City Centre Corridor

National Transport Authority: Greater Dublin Area Transport Strategy 2022-2042 as it relates to BusConnects and specifically in relation to the Bray – Dublin City Centre Corridor

National Transport Authority: BusConnects Dublin Preliminary Business Case