Non-Technical Summary

Contents

1. Introduction

This document is the Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) for the Ballymun / Finglas to City Centre Core Bus Corridor Scheme (referred to as the Proposed Scheme throughout this NTS). The Proposed Scheme will support integrated sustainable transport use through infrastructure improvements for active travel (both walking and cycling), and the provision of enhanced bus priority measures for existing (both public and private) and all future services that will use the corridor.

The Proposed Scheme will have an overall length of 11km (kilometres) and is comprised of two main sections in terms of the route it follows, namely:

- Ballymun to City Centre (hereafter referred to as the Ballymun Section); and
- Finglas to Phibsborough (referred to as the Finglas Section).

The Ballymun Section will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4 and will be routed along the R108 on Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and R132 Church Street as far as R148 Arran Quay at the River Liffey on the western edge of Dublin City Centre. Priority for buses will be provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as at R108 St. Mobhi Road. A complementary cycle route is proposed along the Royal Canal Bank in Phibsborough.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough, where it will join the Ballymun Section of the Proposed Scheme. Priority for buses will be provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. No cycle tracks are proposed along the Finglas Bypass at the northern end of the Proposed Scheme, as there are more suitable routes are available along local streets.

The route of the Proposed Scheme is presented in Image 1.1, and general arrangement drawings of the Proposed Scheme are appended to this NTS.

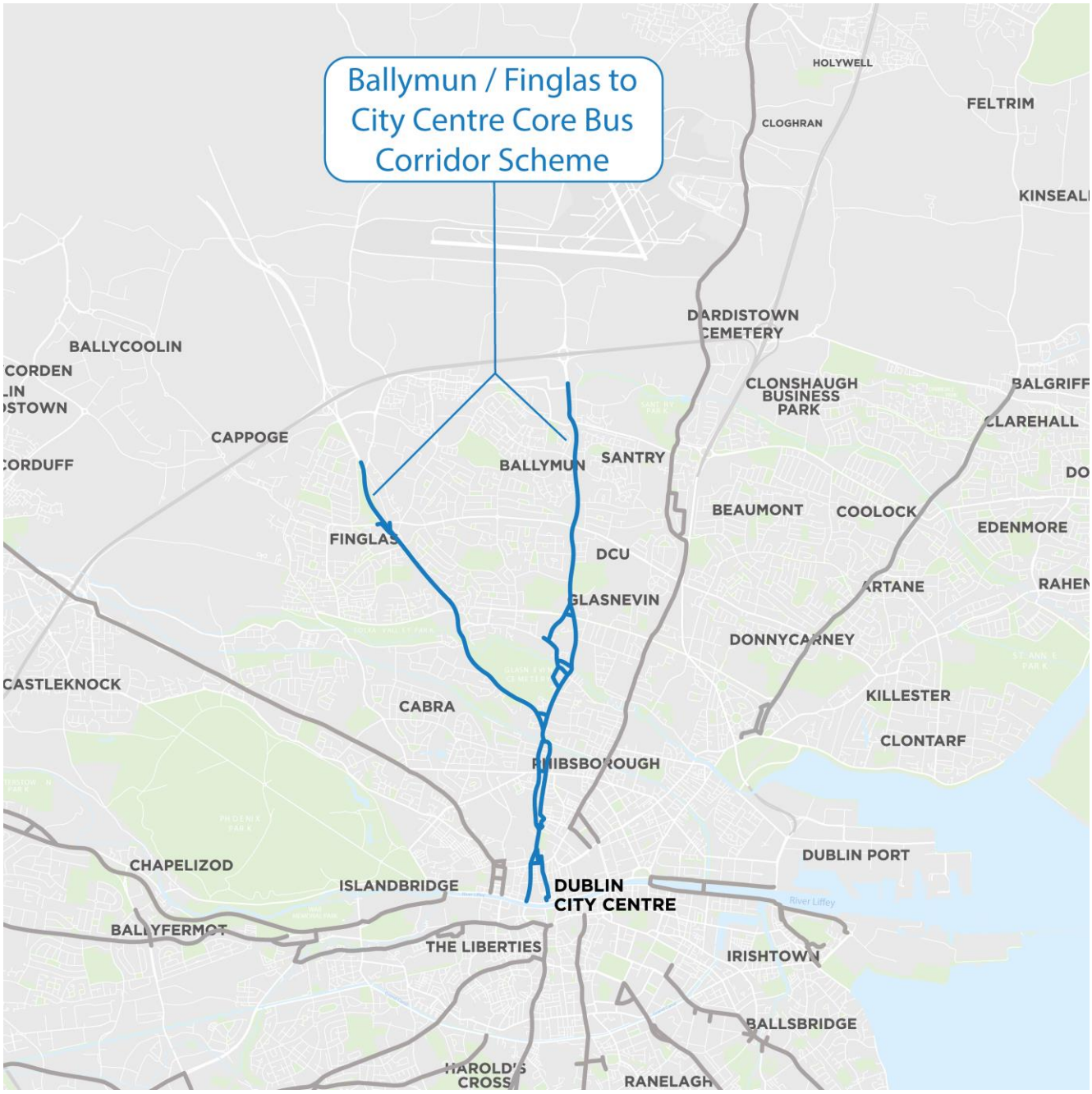

Image 1.1: Route of the Proposed Scheme

The Proposed Scheme would significantly enhance travel by public transport by providing bus priority as well as improved pedestrian and cycling infrastructure. Currently this access corridor is characterised by traffic congestion and while there are existing bus lanes on most of the route, buses and cyclists are competing for space with general traffic for part of the journey, making it less attractive for pedestrians, cyclists and bus users.

Through the provision of increased bus priority infrastructure, the Proposed Scheme will improve both the overall journey times for buses along the route and their journey time reliability.

In addition to the improvements to bus journey times and journey time reliability, the Proposed Scheme will provide benefits for cyclists and pedestrians. The scheme design has been developed having regard to the relevant accessibility guidance and universal design principles so as to provide access for all users.

The provision of dedicated cycling infrastructure along the Proposed Scheme will make cycling trips safer and more attractive. In this regard, the Proposed Scheme delivers substantial elements of the National Transport Authority (NTA) Greater Dublin Area Cycle Network Plan (hereinafter referred to as the Greater Dublin Area Cycle Network Plan), much of which does not currently have adequate provision, as well as linking with other existing and proposed cycling schemes and sustainable transport modes, contributing towards the development of a comprehensive cycling network for Dublin.

Several urban realm upgrades, including widened footpaths, high quality hard and soft landscaping and street furniture will be provided in areas of high activity to contribute towards a safer, more attractive environment for pedestrians.

The primary objective of the Proposed Scheme, therefore, is the facilitation of modal shift from car dependency through the provision of walking, cycle, and bus infrastructure enhancements, thereby contributing to an efficient, integrated transport system and facilitating a shift to a low carbon and climate resilient City.

The Proposed Scheme is one of 12 schemes to be delivered under the BusConnects Dublin - Core Bus Corridor Infrastructure Works (hereinafter called the CBC Infrastructure Works). The CBC Infrastructure Works is one of the initiatives within the NTA's overall BusConnects Programme. The BusConnects Programme seeks to greatly improve bus services in Irish cities, including Dublin, so that journeys by bus will be fast, reliable, punctual, convenient, and affordable. The proposed CBC Infrastructure Works are illustrated in Image 1.2.

Image 1.2: CBC Infrastructure Works

It is envisaged that the CBC Infrastructure Works, once completed, will deliver the radial Core Bus Corridors identified in the NTA's Transport Strategy for the Greater Dublin Area 2016-2035 (referred to as the Greater Dublin Area Transport Strategy).

1.1 Aims and Objectives

The aim of the Proposed Scheme is to provide improved walking, cycling and bus infrastructure on this key access corridor in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along the corridor. The objectives of the Proposed Scheme are to:

- Enhance the capacity and potential of the public transport system by improving bus speeds, reliability and punctuality through the provision of bus lanes and other measures to provide priority to bus movement over general traffic movements;

- Enhance the potential for cycling by providing safe infrastructure for cycling, segregated from general traffic wherever practicable;
- Support the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets;
- Enable compact growth, regeneration opportunities and more effective use of land in Dublin, for present and future generations, through the provision of safe and efficient sustainable transport networks;
- Improve accessibility to jobs, education and other social and economic opportunities through the provision of improved sustainable connectivity and integration with other public transport services; and
- Ensure that the urban realm is carefully considered in the design and development of the transport infrastructure and seek to enhance key urban focal points where appropriate and feasible.

The planning and design of the Proposed Scheme has been guided by these aims and objectives.

The outcomes achieved from delivering the Proposed Scheme will be:

- An attractive, resilient, equitable public transport network better connecting communities and improving access to work, education and social activity;
- To facilitate a transport infrastructure network that prioritises walking and cycling and a mode shift to public transport; and
- To support increased economic and social potential through integrated land use and transport planning to reduce the time burden of travel.

1.2 Role of the National Transport Authority

The NTA is a statutory non-commercial body, which operates under the aegis of the Department of Transport. The NTA was established on foot of Number 15 of 2008 - Dublin Transport Authority Act 2008 (as amended) (referred to as the 2008 Act).

In the case of the Proposed Scheme, the functions of the NTA include undertaking the design and planning process, seeking (and obtaining) all development consents including related compulsory acquisition approvals from An Bord Pleanála, and construction the Proposed Scheme (if approved).

2. Environmental Impact Assessment Process

2.1 EIA Process

Environmental Impact Assessment (EIA) is a systematic and an iterative process that examines the potential environmental impacts of a proposed scheme and establishes appropriate design and mitigation measures to avoid, reduce or offset impacts.

The EIAR reports the findings of an assessment of the environmental impacts of the Proposed Scheme. The purpose of the EIAR is to:

- Describe the baseline conditions before any work on the Proposed Scheme has commenced;
- Describe the Proposed Scheme;
- Describe the assessment methodologies used to assess the potential environmental impacts of the Proposed Scheme;
- Describe environmental issues and any likely significant impacts which may arise during the Construction and Operational Phases of the Proposed Scheme;
- Consider the potential cumulative impacts as a result of potential impacts from other schemes in combination with the predicted impacts of the Proposed Scheme;
- Propose mitigation measures to reduce or avoid these impacts; and

- Identify the significant residual impacts which occur after the proposed mitigation measures have been implemented.

All assessments have been carried out in accordance with best practice and applicable guidelines. Some chapters of the EIAR use specific guidelines related purely to that particular discipline.

This NTS is Volume 1 of the EIAR and presents a summary of the EIAR, including key aspects of the Proposed Scheme and the associated beneficial and adverse impacts of importance.

The EIAR documents have been divided into the following Volumes for ease of use:

- Volume 1 – NTS (this document);
- Volume 2 – Main Report;
- Volume 3 – Figures; and
- Volume 4 – Appendices.

3. Need for the Proposed Scheme

3.1 Context

Private car dependence causes significant congestion, affecting our quality of life, our urban environment, and road safety. As the population of the Greater Dublin Area is projected to rise to almost 1.5 million by 2040, there will be an increased demand for travel on roads which currently do not have the capacity for more traffic. Therefore, enhanced sustainable transport options are needed. Without intervention, traffic congestion will lead to longer and less reliable pedestrian, cycle, and bus journeys throughout the region and this will affect the quality of people's lives. On the other hand, sustainable transport infrastructure helps create more sustainable communities and healthier places, while also stimulating our economic development. It contributes to good health and well-being when delivered effectively.

3.2 Project Ireland 2040 - National Development Plan 2021-2030

Under the heading 'Major National Infrastructure Projects', the National Development Plan 2021 - 2030 sets out a selection of 'Sustainable Mobility' projects included in the Plan as 'Strategic Investment Priorities'. The Proposed Scheme, forming part of the CBC Infrastructure Works within the overall BusConnects Programme is identified as a component of a Strategic Investment Priority, with an associated investment commitment, which has been determined as central to the delivery of the National Planning Framework vision. Delivering the Proposed Scheme will provide the infrastructure needed to help us move from excessive dependence on private car to walking, cycling and public transport.

3.3 Climate Action Plan 2021

The Climate Action Plan 2021 sets out at a National level how Ireland is to halve its emissions by 2030 (51% reduction) and reach net zero no later than 2050. The Climate Action Plan 2021 is a road map to delivering Ireland's climate ambition. There are 475 actions identified that extend to all sectors of the economy aiming to transform Ireland into a low carbon nation over the next three decades.

In regard to modal shift, the Climate Action Plan 2021 sets out that:

> *'The proposed pathway in transport is focused on accelerating the electrification of road transport, the use of biofuels, and a modal shift to transport modes with lower energy consumption (e.g. public and active transport)'.*

Promoting more sustainable travel modes is seen as critical for climate policy. It offers an opportunity to '*improve our health, boost the quality of our lives, meet the needs of our growing urban centres, and connect our rural, urban and suburban communities'*.

BusConnects is referenced as a major transport project that will help to deliver the 500,000 additional sustainable journeys. A key goal of the Climate Action Plan 2021 is to provide citizens with reliable and realistic sustainable transport options. The Climate Action Plan 2021 further states:

> '*The new approach to public transport will be based on a vision of an integrated public transport network, enabling short, medium and long distance trips for people in every part of Ireland. This will mean increasing the frequency of existing rail and bus services, and expanding the bus network through the Connecting Ireland approach.'*

The Proposed Scheme is needed to support the key actions set out in the Climate Action Plan 2021. At a local level, the Proposed Scheme directly supports the provision of sustainable transport options to meet travel demand. The Proposed Scheme will expand, enhance, and connect to pedestrian and cycle networks and will help to deliver compact growth on zoned development lands close to the Proposed Scheme.

3.4 Greater Dublin Area Transport Strategy

The Greater Dublin Area Transport Strategy is an essential component for the orderly development of the Greater Dublin Area over the next 20 years. The purpose and primary objective of the Greater Dublin Area Transport Strategy is *'to contribute to the economic, social and cultural progress of the Greater Dublin Area by providing for the efficient, effective and sustainable movement of people and goods'.*

The Proposed Scheme is needed to support the implementation of the Greater Dublin Area Transport Strategy in regard to improving the pedestrian environment along the Proposed Scheme, while taking cognisance of and supporting pedestrian and urban realm planning objectives locally. In addition, the Proposed Scheme will improve the existing streetscape / urban realm setting along the corridor. This will include the provision of significantly enhanced crossing facilities, and the introduction of new and improved landscaping provisions along the corridor, and a complimentary planting regime and streetscape improvements at key locations will also enhance the character of the surrounding built environment along the corridor.

The Proposed Scheme supports the implementation of the Greater Dublin Area Cycle Network Plan as it will provide infrastructure that will support and enhance cycling as a transport mode, including the delivery of infrastructure for specific routes identified as part of the Greater Dublin Area Cycle Network Plan.

As part of the Greater Dublin Area Transport Strategy, the Core Bus Network is to be developed to achieve continuous priority for bus movement on sections of the Core Bus Network within the Metropolitan area. This is to be achieved through enhanced bus lane provisions and the removal of delays along the routes, and thus enabling the bus to move more quickly than cars along these routes.

The Proposed Scheme is needed to support the Greater Dublin Area Transport Strategy in so far as it will provide infrastructure required to facilitate a '*continuous priority for bus movement on the portions of the Core Bus Network within the Metropolitan Area*'. The Proposed Scheme is needed to help realise the objectives of the Greater Dublin Area Transport Strategy by making the bus a faster option for commuters than car-based transport.

The NTA prepared the Core Bus Network Report for the Dublin Metropolitan Area in 2015, which identified those routes upon 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. The Core Bus Network is defined as a set of primary orbital and radial bus corridors which operate between the larger settlement centres in the Dublin Metropolitan Area.

The development and implementation of priority infrastructure on the Core Bus Network is needed to ensure that delays are minimised, reliability is improved and use of buses is made more attractive.

There are three main bus corridors in the north central Dublin area linking the outer suburbs of Swords, Ballymun and Finglas to the City Centre. The latter two corridors from Ballymun and Finglas are included in this Proposed Scheme. There is a moderate level of bus priority provision of up to 49% of the length along the overall corridor length. Buses and cyclists share combined cycle / bus lanes along parts of the route where no segregated cycling infrastructure is available.

The Proposed Scheme will increase the effectiveness and attractiveness of bus services operating along the corridor and will result in more people availing of public transport due to the faster journey times and reliability improvements which the Proposed Scheme will provide. This in turn will support the potential to increase the bus network capacity of services operating along the corridor and thereby further increasing the attractiveness of public transport. In addition to this, the significant segregation and safety improvements to walking and cycling infrastructure that is a key feature of the Proposed Scheme 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. The Proposed Scheme has been designed to be accessible by all users.

In the absence of the Proposed Scheme, bus services will be operating in a more congested environment, leading to higher journey times for bus and lower reliability, which will lead to reduced levels of public transport use, making the bus system far less attractive and less resilient to higher levels of growth. The absence of the walking and cycling measures provided in the Proposed Scheme will significantly limit the potential to grow those modes into the future. Overall, the Proposed Scheme will make a significant contribution to the overall aims and objectives of BusConnects, the Greater Dublin Area Transport Strategy and will allow the city to grow sustainably into the future, which would not be possible in the absence of the Proposed Scheme.

4. Consultation

Public participation has been an integral part of the development of the Proposed Scheme from the outset. Non-statutory consultation was carried out, in three phases (one in relation to the Emerging Preferred Route and two in relation to the Preferred Route Option), to inform the public and stakeholders of the development of the Proposed Scheme from an early stage and to seek feedback and participation throughout its development.

The primary objective of the non-statutory public consultation process was and is to provide opportunities for members of the public and interested stakeholders to contribute to the planning and design of the Proposed Scheme and to inform the development process. Public participation in the planning and design of the Proposed Scheme was encouraged from an early stage through on-the-ground engagement and information and media campaigns.

The non-statutory consultation process assisted in:

- The establishment of a sufficiently robust environmental baseline for the Proposed Scheme and its surroundings;
- The identification, early in the process, of specific concerns and issues relating to the Proposed Scheme so that they could be appropriately accounted for in the design and assessment scope; and
- Ensuring the appropriate involvement of the public and stakeholders in the design and assessment process.

These consultations are briefly described below.

4.1 Emerging Preferred Route Option Consultation

The first round of public consultation carried out was based on the Emerging Preferred Route and this ran from 26 February 2019 to 31 May 2019.

The issues raised during the first non-statutory public consultation process were considered as part of the route options assessment process and in determining the preferred route. The Emerging Preferred Route proposals were amended to address the issues raised in submissions where possible, incorporating suggestions and recommendations from residents, community groups, elected representatives and stakeholders where appropriate. These amendments were incorporated into the design and informed the Preferred Route Option design-development which was subsequently also published for non-statutory public consultation.

At the initiation of the public consultation process, a Community Forum was established with the aim of facilitating communication between community representatives, elected representatives, and the BusConnects Infrastructure team. A Community Forum meeting took place, where the Community Forum was provided with an update on the

design for the Proposed Scheme and given the opportunity to ask questions of the project team and provide feedback.

4.2 Preferred Route Option Consultations

The Preferred Route Option non-statutory public consultation took place from 4 March 2020 to 17 April 2020. The public were invited to make written submissions in relation to the published proposals to the BusConnects Infrastructure team either through an online form, by email or by post. Due to the COVID-19 pandemic, all further planned events scheduled after 12 March 2020 were postponed. In deference to the submissions which had already been received, the decision was made not to cancel the consultation.

The NTA held a third round of public consultation prior to finalising the Preferred Route Option in November 2020 and this took place from 4 November 2020 to 16 December 2020. This third round was carried out using virtual consultation rooms, offering a 'call-back' facility along with descriptions, supporting documentation and mapping of the draft Preferred Route Option as well as information on all revisions, if any, made since the second round of non-statutory public consultation in March 2020.

The issues raised during the second and third rounds of public consultation have been considered as part of the final Preferred Route Option and formed the basis of the preliminary design.

4.3 Consultation with Prescribed Bodies and Other Consultees

In addition to the public consultation on the Proposed Scheme, the NTA team undertook consultation during the preparation / development of the EIAR with prescribed bodies and relevant non-statutory consultees.

During the development of the EIAR, prescribed bodies (including the Department of Communications, Climate Action and the Environment, the Department of Transport, Dublin City Council, Fingal County Council, the Heritage Council) and relevant non-statutory consultees were provided with a report outlining the proposed approach to the environmental assessment and were invited to comment. Feedback from this consultation was also used to inform the EIAR and the preliminary design proposals.

4.4 Consultation with Landowners

There has been ongoing engagement with landowners whose properties will be impacted, or potentially affected, as the design development for the Proposed Scheme has progressed, from the earliest stages of the project in 2018 through to the Autumn of 2021. This engagement has overlapped with the public consultations (in March 2020 and November 2020). Letters were issued between July to September 2020 to request access to properties to undertake more detailed surveys. Additional letters were sent to affected landowners in July 2021 offering further engagement. Over the course of the engagements, affected property owners have had the opportunity to discuss different aspects of the Proposed Scheme with the BusConnects Infrastructure team. Follow-up conversations have been facilitated as a result of these letters, on request. Direct engagement occurred with all of the affected property owners.

4.5 Consultation with Local Residents and Business Groups

Throughout the design development of the Proposed Scheme, from the initiation of the first non-statutory public consultation in February 2019, the NTA facilitated consultation on request with small local resident groups and with business interests on / adjacent to the route. Similar to the Community Forum meetings, such events facilitated discussion on the design for the Proposed Scheme and attendees were given the opportunity to ask questions of the BusConnects Infrastructure team and to provide feedback.

5. Alternatives Considered

5.1 Strategic Alternatives

The Proposed Scheme has been developed following careful consideration of alternatives. The Greater Dublin Area Transport Strategy, and its associated Strategic Environmental Assessment, considered several strategic options relevant to the Proposed Scheme.

The consideration of alternative options included a 'Do Nothing' Scenario. This is a scenario where the Proposed Scheme would not be progressed. This option was deemed to be unacceptable as traffic congestion throughout the Greater Dublin Area is particularly high, with the number of cars on the road increasing and significant daily traffic delays. Without intervention, potential impacts could worsen for the region, including:

- Continued growth of traffic congestion;
- Impacts on the ability of the region to grow economically due to increased traffic congestion;
- Longer journey times and increased travel stress will diminish quality of life; and
- Environmental emissions targets will not be met.

The NTA carried out a review of the existing transport network and future forecasts of travel demand in Dublin. This review was further broken down into an assessment of existing and future land use and travel patterns and identified trends and issues within eight transport corridors. Based on these assessments, the most practical set of transport service proposals was set out for each of the eight corridors, combining to form the overall integrated transport system for the Greater Dublin Area up to 2035 in the Greater Dublin Area Transport Strategy.

The Proposed Scheme aligns generally with the broader Corridor A in the Greater Dublin Area Transport Strategy which extends from the core City Centre area northwards to Drogheda, via the North Inner City, Ballymun, Dublin Airport, Swords, and Balbriggan. There is a significant amount of population and employment growth planned for the larger urban areas within this corridor, including Swords, Balbriggan, South Drogheda, Clongriffin, Ballymun, Donabate and the Airport environs.

Through the work undertaken in the preparation of the Greater Dublin Area Transport Strategy, including its supporting studies, various alternatives to deal with the transport needs which are intended to be addressed by the Proposed Scheme were identified and considered.

Other strategic alternatives considered included:

- Bus Rapid Transit;
- Light Rail;
- Metro;
- Heavy Rail;
- Demand Management; and
- Technological Alternatives.

The Proposed Scheme has been developed to provide a level of service similar to Bus Rapid Transit. Arising from the various studies and analysis that had been carried out, and the specific assessment and transport modelling work undertaken for the Greater Dublin Area Transport Strategy, it was concluded that a high quality bus-based transport system supplemented by the implementation of MetroLink, would be part of the proposed public transport solution in the corridor of the Proposed Scheme, as the development of an underground Metro would not remove the need for additional infrastructure to serve the residual bus needs of the area covered by the Proposed Scheme, nor would it obviate the need to develop the cycling infrastructure required along the route of the Proposed Scheme.

Demand management and technological alternatives, such as congestion charges, road pricing and electric vehicles on their own would not remove the need for additional bus transport or cycling infrastructure along the route of the Proposed Scheme.

5.2 Route Alternatives

Alternative route options have been extensively considered during the design development of the Proposed Scheme. The development of the design has also been informed by a review of feedback and new information received during each stage of public consultation and as the level of data, such as surveys, transport and environmental data was collected and assessed.

It should be noted that the initial route selection comprised two separate routes (i.e. Ballymun to City Centre and Finglas to Phibsborough). However, as a result of careful consideration of the alternative route options, these two routes have been combined to form the Proposed Scheme. The principal reasons for combining the two sections into the Proposed Scheme include their geographical association, functional interdependence and the fact that the Finglas to Phibsborough Section joins the Ballymun to City Centre Section at Hart's Corner in Glasnevin, and shares the remaining section of the route from Hart's Corner to the City Centre.

Development of the Proposed Scheme has evolved in the following stages:

1) Two separate **Feasibility Study and Options Assessment Reports** were concluded, in 2017 for the Finglas Section, and in 2018 for the Ballymun Section of the Proposed Scheme, respectively, setting out the initial route options and concluding with the identification of the 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 the **Draft Preferred Route Option** (April 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder engagement 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) Further development of an updated **Draft Preferred Route Option** was undertaken subsequent to the second round of public consultation, which took account of submissions received, continuing stakeholder engagement and additional design information;
6) 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
7) Finalisation of the **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.

The initial route alternatives considered covered a wide network of roads between the City Centre and Ballymun / Finglas. These were narrowed down using a high-level qualitative method based on professional judgement and a general appreciation for existing physical conditions / constraints including environmental considerations within the study area.

The alternative route options were then evaluated under the following criteria:

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

Careful consideration for alternative cycling route options was also fundamental in the process of defining the Emerging Preferred Route.

Informed by the appraisal of alternative route options, the Emerging Preferred Route was identified. That Emerging Preferred Route is summarised as follows:

The Ballymun Section of the Proposed Scheme was summarised as follows:

> '*The Ballymun Core Bus Corridor (CBC) commences on the R108 Ballymun Road at its junction with Santry Avenue and Balbutcher Lane (Santry Cross) and is routed along Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and Church Street as far as Arran Quay, where it will join the prevailing traffic management regime on the North Quays.*'

The Finglas Section of the Proposed Scheme was summarised as follows:

> '*The Finglas Core Bus Corridor commences on the R135 Finglas Road at the junction between the Finglas Road and St. Margaret's Road and is routed along the Finglas Road as far as Hart's Corner. At Hart's Corner inbound buses are routed along Prospect Way and Botanic Road, and outbound buses along Prospect Road. Priority for buses is provided along the entire route, consisting primarily of dedicated bus lanes in both directions. Continuous segregated cycle tracks are provided from Church Street junction to Hart's Corner. The Finglas Core Bus Corridor shares the route of the Ballymun Core Bus Corridor from Hart's Corner to Arran Quay.*'

5.3 Design Alternatives

Following the completion of the public consultation process in relation to the Emerging Preferred Route, various amendments were made to the scheme proposals to address some of the issues raised in submissions, including incorporating suggestions and recommendations from residents, community groups, businesses, elected representatives 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. Alternatives considered during the development of the draft Preferred Route Option included:

- Two options were assessed for the section of Ballymun Main Street between Shangan Road and Gateway Crescent. One option was to maintain the two general traffic lanes while the second option looked at the reduction of the general traffic lanes down to one lane in each direction and to include on-street parking and additional street trees;
- For the Griffith Avenue Traffic Gyratory System, a three-lane and one-way road layout was originally proposed, with a bus lane, a shared left-turn, a straight ahead lane and a separate right-turn lane on R108 St. Mobhi Road on the southbound approach to the junction with R102 Griffith Avenue. This creates a significant conflict between left-turn traffic and straight-ahead bus and cyclist movements. An evaluation of the traffic demands at this location indicated that the removal of one of the three existing traffic lanes would be problematic and would overload the remaining two traffic lanes. It is clear therefore, that allocation of one of the three existing traffic lanes on this link to become a bus lane will require a reduction in the general traffic flows to match the reduced capacity of the two remaining traffic lanes. This can be achieved by removing the left-turn lane entirely and reversing the one-way system partially to divert the southbound to east traffic from R108 Ballymun Road around the western and southern sides of the triangle, to be joined by traffic from the west, which will be enabled to continue directly eastward along the southern arm. Thus, the left-turn conflict at R102 Griffith Avenue would be removed entirely for the benefit of buses, cyclists and pedestrians;
- Two potential options for bus priority and associated traffic management were considered between Griffith Avenue and Phibsborough. One option would provide for bus priority along R108 St. Mobhi Road and northbound through-traffic would be diverted to other routes to the west. The other option would require widening along R108 St. Mobhi Road to provide additional bus lanes with the removal of a large number of mature street trees; and
- An alternative to road widening along the R135 Finglas Road between Glasnevin Cemetery and Hart's Corner on the western side proposed an alternative arrangement with road widening on the eastern side of the street affecting fewer properties (three houses compared to 19) with larger gardens that could retain off-street parking. The Proposed Scheme will require land acquisition from St. Vincent's Secondary School by road widening on the western side of the street and three properties at Bengal Terrace on the eastern side.

Furthermore, a number of changes to the design were made based on feedback received during the second round of public consultation and dialogue with stakeholders. However, the changes made to the draft Preferred Route Option were relatively small scale.

The assessment of alternatives took account of environmental impacts, alongside other relevant factors including the economy, safety, and accessibility, to arrive at the Proposed Scheme.

6. Description of the Proposed Scheme

The Proposed Scheme will be approximately 11km in length and will be comprised of two main alignments in terms of the route it will follow, from Ballymun to the City Centre (the Ballymun Section) and from Finglas to Phibsborough (the Finglas Section).

The Ballymun Section of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4, and will be routed along the R108 on Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and R132 Church Street as far as R148 Arran Quay at the River Liffey on the western edge of Dublin City Centre. Priority for buses will be provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as at R108 St. Mobhi Road. A complementary cycle route along quiet streets is proposed along Royal Canal Bank in Phibsborough, which will extend southwards from the Royal Canal to Western Way, parallel a short distance to the east of R108 Phibsborough Road, and also through the Markets Area at the southern end of the Proposed Scheme.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough, where it will join the Ballymun Section of the Proposed Scheme. Priority for buses will be provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. No cycle tracks are proposed along the Finglas Bypass at the northern end of the Proposed Scheme, as more suitable routes are available along local streets.

The design of the Proposed Scheme has evolved through comprehensive design iteration with particular emphasis on minimising the potential for environmental impacts, where practicable, whilst ensuring the objectives of the Proposed Scheme are attained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development process has been incorporated where appropriate.

The Proposed Scheme has been developed to ensure that the principles of universal design are integrated fully in the design, providing access for all users, and eliminating barriers to people with disabilities.

A typical BusConnects road layout is shown in Image 6.1.

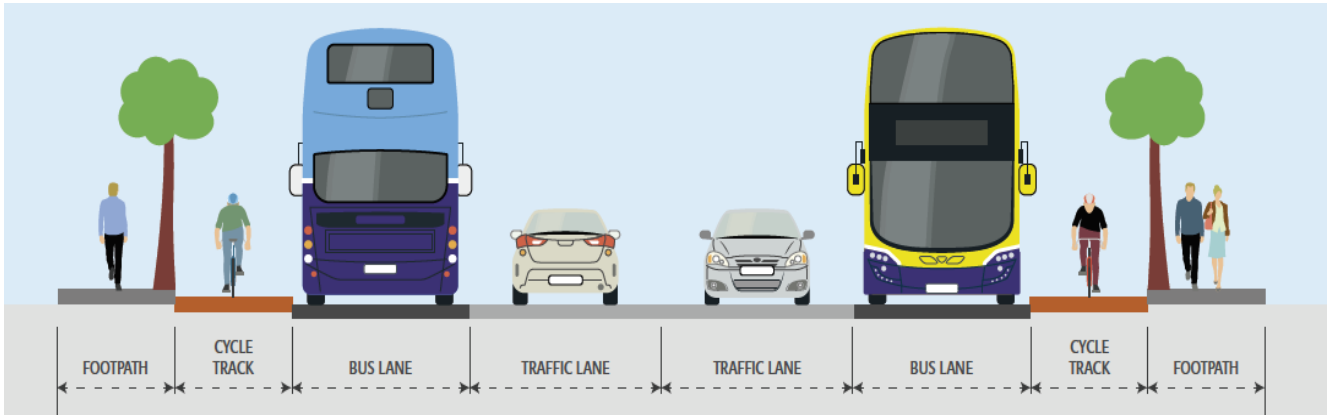

Image 6.1: Typical BusConnects Road Layout

The Proposed Scheme will make significant improvements to pedestrian and cycling facilities and to bus priority. Some of the key changes that will be made to the existing corridor as a result of the Proposed Scheme are the following:

- The number of pedestrian signal crossings will increase by 26 from 18 to 44 as a result of the Proposed Scheme;
- The proportion of segregated cycle facilities will increase from 60% on the existing corridor to 93% on the Proposed Scheme; and
- The proportion of the route having bus priority measures will increase from 49% on the existing corridor to 100% on the Proposed Scheme.

The Proposed Scheme is described in the following seven sections (Section 1 to Section 4 comprise the Ballymun Section of the Proposed Scheme and Section 5 to Section 7 comprise the Finglas Section of the Proposed Scheme):

- Section 1 – Ballymun Road from St. Margaret's Road to Griffith Avenue;
- Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner;
- Section 3 – Prospect Road, Phibsborough Road from Hart's Corner to Western Way;
- Section 4 - Constitution Hill and Church Street to Arran Quay;
- Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road;
- Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road; and
- Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner.

6.1 Section 1 – Ballymun Road from St. Margaret's Road to Griffith Avenue

Section 1 of the Proposed Scheme will commence on R108 Ballymun Road at its junction with St. Margaret's Road, just south of M50 Motorway Junction 4. This section of the Proposed Scheme extends along R108 Ballymun Road to the junction with R102 Griffith Avenue.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in both directions. Segregated cycle tracks will be provided in both directions.

In Section 1 there are 12 existing signal-controlled junctions, of which 11 are on the Ballymun Road dual carriageway, which are large in scale with long crossing distances for pedestrians. The Proposed Scheme will reduce the footprint of these junctions through narrower traffic lanes and tighter corners and through the removal of most left-turn slip lanes. This will provide more direct pedestrian crossings on all junction arms, where in some cases there may only be signal crossings on some but not all arms. Protected cycle tracks are proposed at each junction to maintain segregation from traffic to the greatest degree possible.

In Ballymun Town Centre, on Ballymun Main Street, the street layout will be altered from two general traffic lanes to one general traffic lane and one dedicated bus lane in each direction between the Shangan Road Junction and the Gateway Crescent Junction to provide permanent on-street parking at the commercial and civic premises along Ballymun Main Street. New street trees will be provided to improve the urban realm along Ballymun Main Street.

South of the R103 Collins Avenue Junction, the road layout in the northbound direction will be altered from two general traffic lanes to one general traffic lane and one dedicated bus lane on the western side of the carriageway north of the junction at St. Pappin Road to accommodate on-street parking spaces, which will serve frequent drop-off activity related to the Our Lady of Victories National School.

At the gyratory junction of R108 Ballymun Road / R102 Griffith Avenue / R108 St. Mobhi Road, the traffic system will be modified to divert southbound left-turn traffic on R108 St. Mobhi Road turning east onto R102 Griffith Avenue. This traffic will instead circulate around the western and southern arms of the triangular road system which will be modified to two-way movement on those arms. Likewise, eastbound traffic from the western section of R102 Griffith Avenue will continue directly along the southern side of the gyratory instead of diverting around

the northern end of it. This arrangement will remove a significant traffic conflict at the corner of R108 St. Mobhi Road and R102 Griffith Avenue which will benefit buses and cyclists.

Segregated cycle tracks will be provided through the traffic gyratory, plus a two-way cycle track along R102 Griffith Avenue on the southern side to facilitate the cycle connection from Griffith Avenue West (where there is a primary school and sports ground) to R108 St. Mobhi Road, without the need for eastbound cyclists to cross the road twice.

6.2 Section 2 – St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner

Section 2 of the Proposed Scheme will commence at the R108 St. Mobhi Road / R102 Griffith Avenue Junction and will extend for 1.5km to Hart's Corner north of Phibsborough, where it will meet the Finglas Section of the Proposed Scheme.

A northbound Bus Gate will be provided on R108 St. Mobhi Road at the southern arm of the junction with R102 Griffith Avenue to provide appropriate priority for bus services where no bus lane is provided in the northbound direction due to width constraints. Segregated cycling tracks will be provided on each side of the street generally, with a two-way cycle track section proposed on part of the eastern side of R108 St. Mobhi Road to cater for higher flow of pedestrians and cyclists accessing a cluster of schools and sports clubs on that side of the road. Northbound through-traffic will be diverted at Hart's Corner via R135 Finglas Road instead of R108 Botanic Road. This traffic may then traverse eastward at Old Finglas Road to re-join R108 Ballymun Road at R102 Griffith Avenue. A second local traffic diversion route will divert away from R108 St. Mobhi Road along Botanic Road, Glasnevin Hill, Old Finglas Road, Cremore Villas and R102 Griffith Avenue to re-join R108 Ballymun Road. To the west of R108 St. Mobhi Road, a short section of Ballymun Road Lower between Claremont Avenue and Church Avenue will be restricted to a one-way southbound general traffic lane where the road is too narrow for two-way traffic alongside on-street parking, which will be formalised to accommodate the parking needs of residents with houses without driveways.

An offline segregated two-way cycle track will be provided through the public open space on the southern side of St. Mobhi Drive along the north bank of the River Tolka. Eastbound traffic access to R108 St. Mobhi Road from St Mobhi Drive will be prohibited to reduce traffic flows along this narrow residential street.

On R108 Botanic Road, south of the junction with R108 St. Mobhi Road, there is a narrow section of street where bus lanes cannot be accommodated. Instead, bus priority will be provided by signal controls at the upstream approaches to this section in both directions. Segregated cycle tracks will be provided on R108 Botanic Road as an upgrade of the existing advisory cycle lanes. Once R108 Botanic Road becomes wider at the former print-works, bus lanes will be provided in both directions.

In Section 2 there are four traffic signal junctions.. Protected cycle tracks are proposed at each junction to maintain segregation from traffic to the greatest degree possible.

6.3 Section 3 – Prospect Road, Phibsborough Road from Hart's Corner to Western Way

Section 3 of the Proposed Scheme will commence at the R108 Prospect Road / Lindsay Road Junction at the southern apex of Hart's Corner and will extend through Phibsborough over a length of 1.2km to the R135 Western Way Junction.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in both directions over most of the length, apart from at three short sections (Prospect Road / Whitworth Road, Phibsborough Road (150m south of Doyle's Corner) and Phibsborough Road (50m north of Western Way) where signal controlled priority for buses will be used.

A two-way segregated cycle track will be provided along the eastern side of R108 Prospect Road to the Royal Canal, where the cycle route will deviate a short distance eastwards to join the Royal Canal Bank, an infilled

former canal branch, bypassing Phibsborough Village. The existing railway bridge on the Connolly railway line to the south of Lindsay Grove will be widened, and two new cycle / pedestrian bridges will be provided:

- One over the Docklands railway line adjacent to Whitworth Road; and
- One over the Royal Canal.

Heading southward from the Royal Canal, the cycle route will largely avail of the existing quiet street along Royal Canal Bank. The cycle route will pass around the eastern side of Phibsboro Library and will then cross underneath R101 North Circular Road, where a new bridge will be provided to enable the north to south cycle route to pass through without the climb and delay of a traffic signal crossing.

6.4 Section 4 – Constitution Hill and Church Street to Arran Quay

Section 4 of the Proposed Scheme will commence at the R135 Western Way Junction and will extend along R108 Constitution Hill and R132 Church Street for 1km southwards to the R148 Arran Quay / Ormond Quay Junction at the River Liffey, which will be the end of the Proposed Scheme.

Priority for buses will be provided with dedicated bus lanes over most of this section, with three short gaps where Signal Controlled Priority will be provided instead at the following locations on Church Street Lower:

- Southbound from the junction of R804 King Street North to Mary's Lane for a length of 190m;
- Northbound from the junction at May Lane for a length of 60m; and
- Southbound from the junction at Chancery Street for a length of 50m.

Along R108 Constitution Hill, a two-way cycle track will be provided on the eastern side of the street to connect from R135 Western Way to Coleraine Street. An additional northbound cycle track will also be provided on the western side to connect to the Technological University Dublin campus at Grangegorman via Broadstone Gate. The main cycle route will follow quiet streets through the Markets Area from Coleraine Street to R148 Ormond Quay. Along Church Street Lower short sections of cycle track will be provided at the three locations where there will be gaps in the bus lanes.

6.5 Section 5 – Finglas Road from St. Margaret's Road to Wellmount Road

Section 5 of the Proposed Scheme will commence at the northern end at the junction of R135 Finglas Road with R104 St. Margaret's Road and will extend in a south-eastern direction along the Finglas Bypass dual carriageway over a length of 1.1km to the Wellmount Road Junction on the southern edge of Finglas Village.

The Finglas Bypass is a segregated dual carriageway road that caters only for vehicular traffic until the grade-separated junction with Mellowes Road on the western side of Finglas Village. There are no existing footpaths or cycle tracks along this northern 0.75km length of Section 5, and pedestrians and cyclists will continue to use the parallel local streets to the east and west of the Finglas Bypass. There are no existing pedestrian facilities at the roundabout junction of R135 Finglas Road and R104 St. Margaret's Road, with a footbridge that spans over the dual carriageway road, 35m south of the roundabout. New bus stops will be provided on the Finglas Bypass dual carriageway, just south of the roundabout, to cater for the proposed F1 route bus services that will bypass Finglas Village. To provide access to these bus stops, new footpaths will be provided around the roundabout, with associated signal pedestrian crossings on all four arms of the junction.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in both directions. There is an existing southbound bus lane over the full length of Section 5, but the existing northbound bus lane ends at the northbound merge ramp from Mellowes Road which is 0.5km south of the northern end of the Proposed Scheme.. In the Proposed Scheme, a northbound bus lane will be provided along the full length of this section through conversion of the existing left-hand traffic lane to a bus lane over a length of 0.5km. Bus lanes will also be provided on the southern slip ramps at the Mellowes Road grade-separated junction to cater for proposed bus route F2 that will serve the north-western area of Finglas.

6.6 Section 6 – Finglas Road from Wellmount Road to Ballyboggan Road

Section 6 of the Proposed Scheme will extend along R135 Finglas Road from the Wellmount Road Junction to the Ballyboggan Road Junction, over a length of 1.6km.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in both directions.

Segregated cycle tracks will be provided in both directions along the full length of this section of the Proposed Scheme.

6.7 Section 7 – Finglas Road from Ballyboggan Road to Hart's Corner

Section 7 of the Proposed Scheme will extend along R135 Finglas Road for a distance of 1.5km to Hart's Corner where it will meet the Ballymun Section of the Proposed Scheme.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in both directions. This will require road widening over a length of 330m in front of Glasnevin Cemetery at St. Vincent's School on the western side and at part of Bengal Terrace on the eastern side.

South of Claremont Lawns, alongside Glasnevin Cemetery, the existing on-street parking will be removed and replaced with a new parking facility with the same number of spaces, which will encroach into the open public space at Claremont Lawns.

Segregated cycle tracks will be provided in both directions along the full length of this section of the Proposed Scheme.

Reaching Hart's Corner, the southbound traffic turns left into R108 Prospect Way, which is the northern side of the one-way triangular gyratory traffic system at Hart's Corner. A two-way cycle track will be provided along the northern side of R108 Prospect Way to connect to the proposed two-way cycle track along the eastern side of R108 Prospect Road, as described in Section 2 of the Proposed Scheme. This will allow cyclists to circulate around the northern and eastern sides of Hart's Corner, fully segregated from traffic.

7. Construction

The Construction Phase for the Proposed Scheme is anticipated to take approximately 24 months to complete. It will be constructed based on individual sectional completions that will individually have shorter durations typically ranging between two to 12 months.

The construction of the Proposed Scheme will include the following activities:

- Site preparation and clearance works, including:
  - Land acquisition where temporary or permanent land take is required;
  - Installation of fencing and signage;
  - Protection of trees and vegetation to be retained;
  - Vegetation clearance and treatment of non-native invasive plant species;
  - Archaeological investigations;
  - Ground investigations;
  - Set up of the Construction Compounds;
  - Installation of temporary lighting; and
  - Demolition of items such as walls, gates, fencing, lighting poles and bus stops.
- Road and street upgrades, including:
  - Alterations to parking and access;

    - Implementation of pedestrian and cyclist safety measures;
    - Implementation of road closures or diversions;
    - Topsoil and subsoil excavation;
    - Works to cellars, if required;
    - Adjustment or upgrades to drainage;
    - Realignment, replacement or protection of utilities and services;
    - Construction of pavement, including carriageway, kerbs; changing roundabouts to signalised junctions; modifications to parking and loading bays; upgrades to footpaths; installation of cycle tracks; improvements covering existing and new bus stops (island, shared landing area, inline, layby types, plus shelters, CCTV and information displays); etc.;
    - Upgrade of road furnishings (including street furniture, signage, lighting, and communication systems); and
    - Landscaping.
- Construction site decommissioning, including the removal of all construction facilities and equipment.

The Construction Phase of the Proposed Scheme will also include the construction of the following structures:

- Pedestrian / cycle bridge over the railway line at Lindsay Grove. This structure will be located adjacent to the existing bridge over the railway line and will be independent to the existing bridge;
- Pedestrian / cycle bridge over the railway line at Whitworth Road. This structure will be located adjacent to the existing bridge over the railway line and will be independent to the existing bridge;
- Pedestrian / cycle bridge over the Royal Canal. This structure will be an arch bridge over the Royal Canal and will provide an alternative route for pedestrians and cyclists along the Royal Canal Bank;
- Pedestrian / cyclist underpass, under R101 North Circular Road. This structure will provide continuity to the cycle / pedestrian route along Royal Canal Bank beneath the R101 North Circular Road; and
- Retaining wall at Home Farm Football Club on R108 St. Mobhi Road. This structure will replace the existing retaining wall in this location which will be required to be demolished to accommodate the Proposed Scheme layout with a bus lane, cycle lane and pedestrian footpath on the eastern side of R108 St. Mobhi Road.

Construction Compounds along the Proposed Scheme will be located, as follows:

- Construction Compound B1 – North-eastern corner of Santry Cross;
- Construction Compound B2 – St. Mobhi Drive;
- Construction Compound B3 – Constitution Hill / Catherine Lane North Junction;
- Construction Compound F1 – Mellowes Park in the vicinity of St. Margaret's Road Roundabout;
- Construction Compound F2 – Finglas Road / Finglas Place Junction; and
- Construction Compound F3 – Claremont Lawns (opposite Glasnevin Cemetery).

Construction Compounds will be used as the primary location for the storage of materials, plant and equipment, site offices, worker welfare facilities and limited car parking. They will be secured to ensure the safe storage of all on-site materials and machinery. Temporary fencing will be erected and site security will be employed. The Construction Compounds are shown in Image 7.1 to Image 7.6.

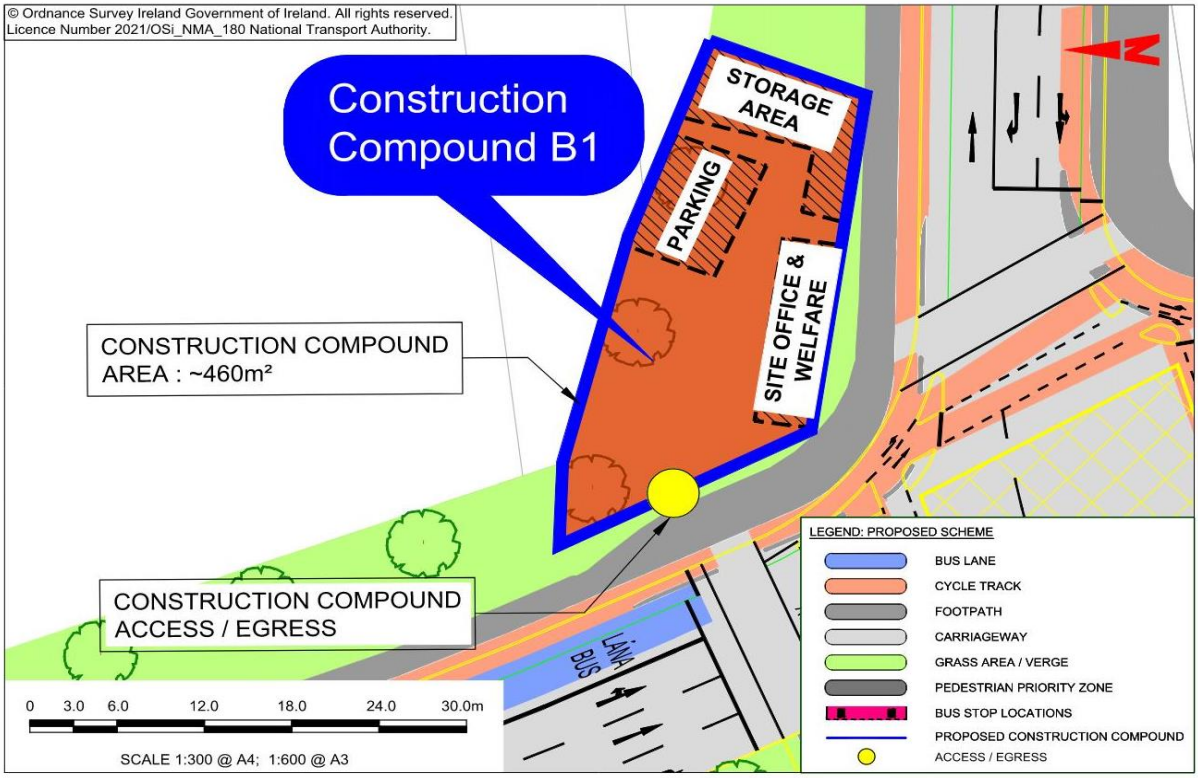

Image 7.1: Location and Extent of Construction Compound B1

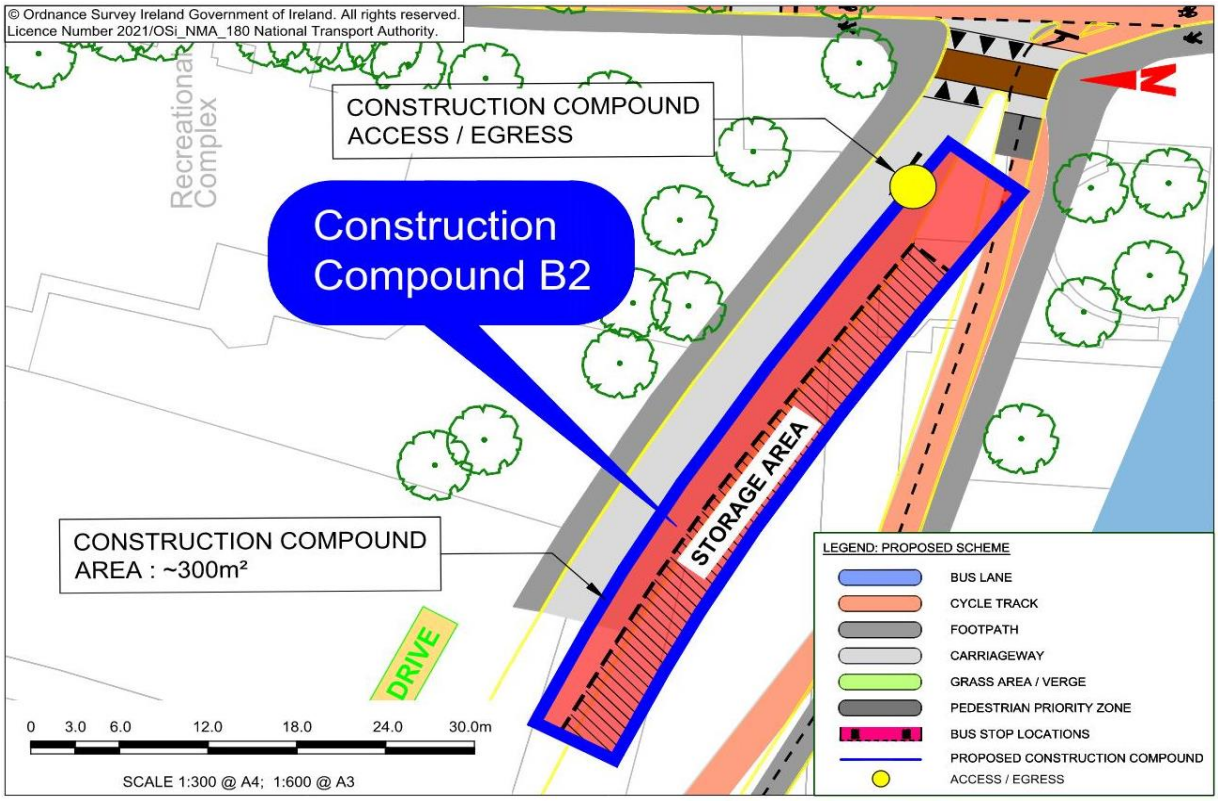

Image 7.2: Location and Extent of Construction Compound B2

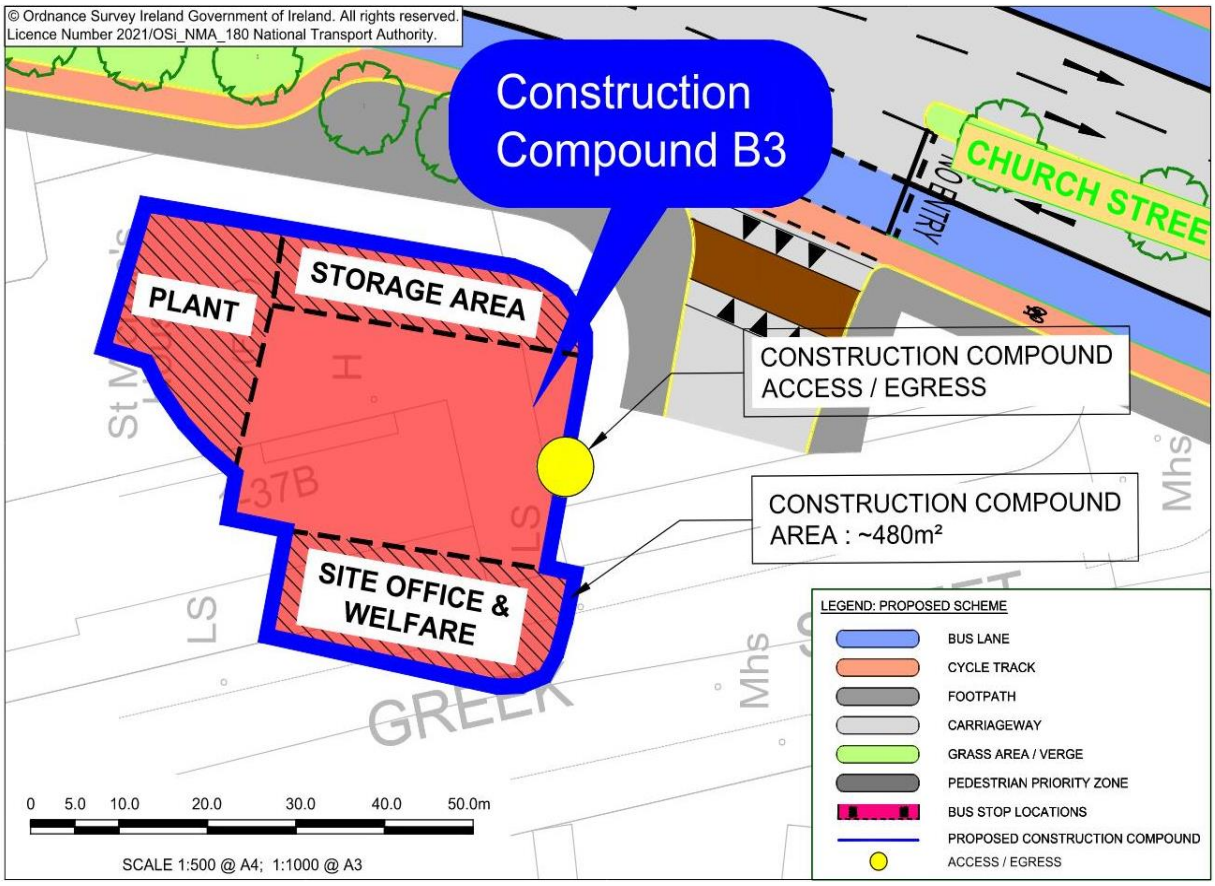

Image 7.3: Location and Extent of Construction Compound B3

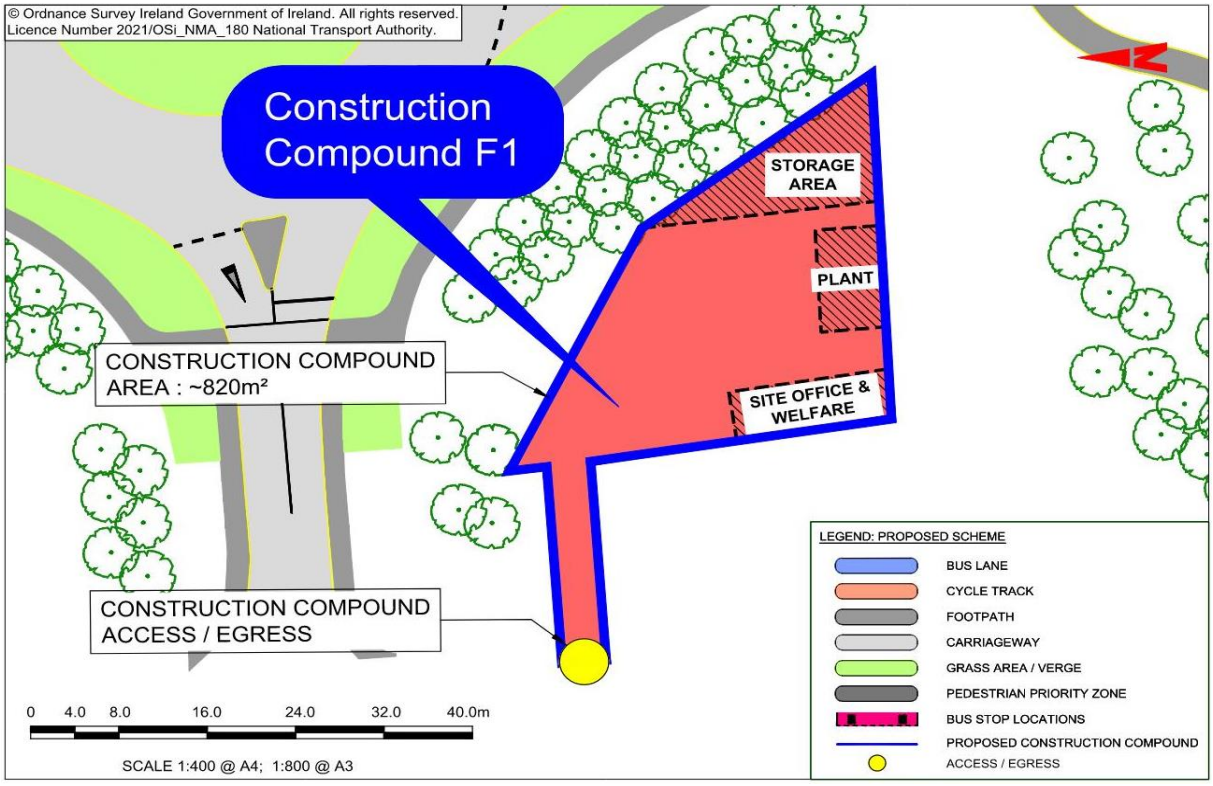

Image 7.4: Location and Extent of Construction Compound F1

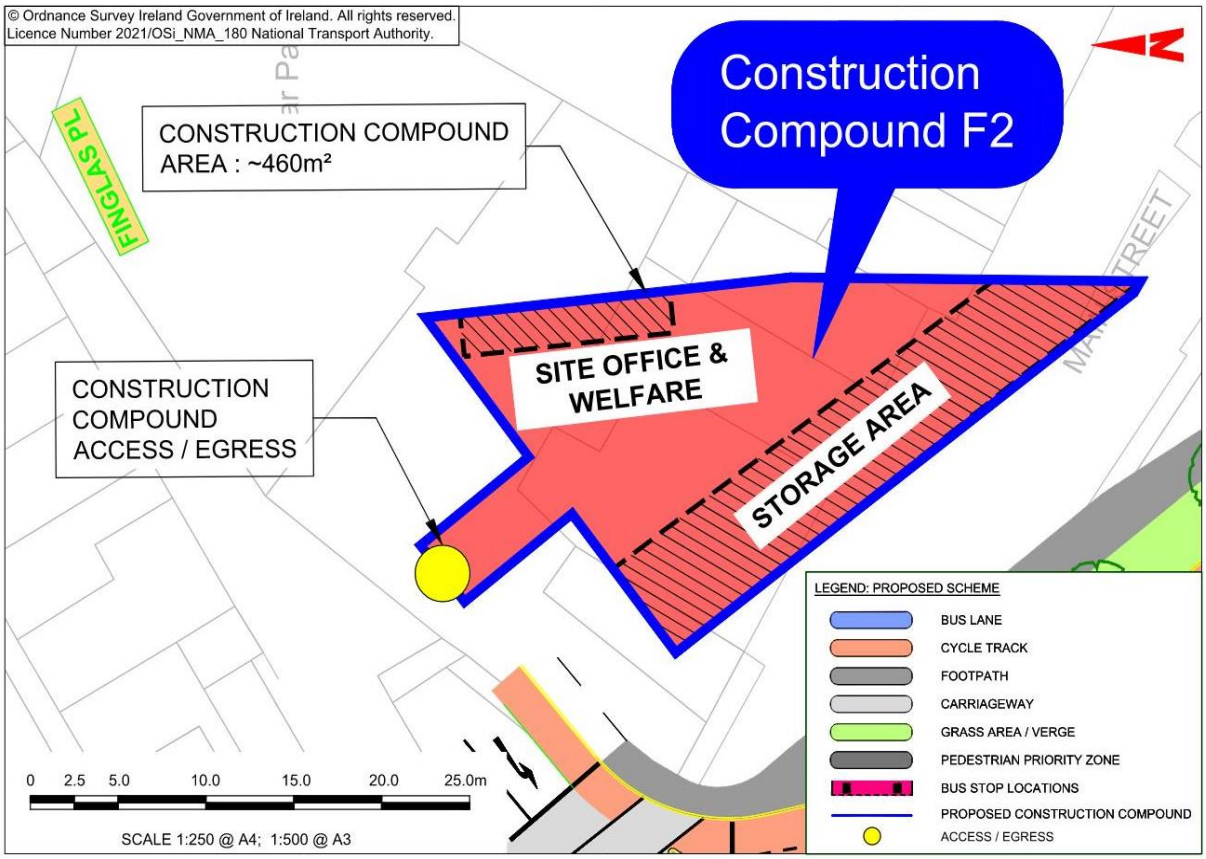

Image 7.5: Location and Extent of Construction Compound F2

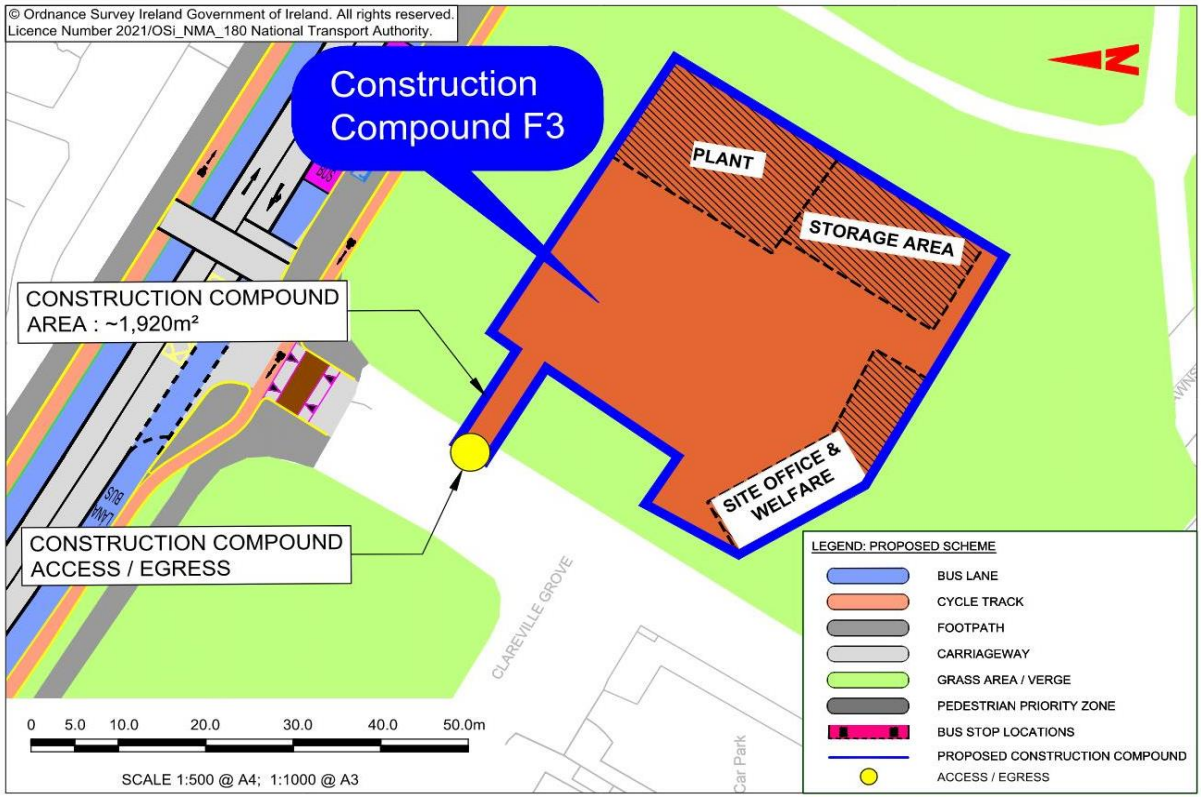

Image 7.6: Location and Extent of Construction Compound F3

7.1 Construction Environmental Management Plan

A Construction Environmental Management Plan (CEMP) has been prepared which describes the overall environmental management strategy that will be implemented during the Construction Phase of the Proposed Scheme. The CEMP includes the mitigation measures which will be implemented to provide environmental protection during the Construction Phase of the Proposed Scheme. The CEMP addresses construction traffic management, resource and waste management, invasive species management, surface water management and environmental incident response measures.

The CEMP will be updated by the NTA (the Employer for the construction works) prior to the commencement of the Construction Phase, so as to include any additional measures required pursuant to conditions attached to any decision to grant approval. The NTA shall set out the Employer's Requirements in the Construction Contract including all applicable mitigation measures identified in this EIAR, as well as any additional measures required pursuant to conditions attached to any decision to grant approval.

The CEMP has regard to the guidance contained in the Transport Infrastructure Ireland Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan, and the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site Guide, 4th Edition.

7.2 Construction Traffic Management Plan

A Construction Traffic Management Plan has been prepared to demonstrate how the interface between the public and construction-related traffic will be managed and how vehicular movement will be controlled.

The roads and streets along the Proposed Scheme that will be upgraded will remain open to traffic, wherever practicable, during the Construction Phase. To maintain traffic movements, it will be necessary, in limited instances, to undertake some traffic diversions or lane restrictions locally to complete particular elements of the works.

Access to properties will be maintained as far as reasonably practicable. While there may be temporary constraints to access during the normal hours of work, these will be communicated and arranged in consultation with the impacted users. Access for emergency vehicles will be maintained at all times.

Wherever possible, cycle and pedestrian routes will also be maintained along the route throughout the duration of the construction works. If necessary, alternative routes will be provided to facilitate both pedestrian and cycle movements. Bus services will be maintained. However, some existing bus stop locations will need to be temporarily relocated to accommodate the works.

The works will be completed on a sectional basis along the corridor such that no areas will experience an extended period of construction disruption over the approximate 24-month duration. The NTA will facilitate pro-active communication of the scheduled planned works by the appointed contractor to ensure that impacted individuals, businesses and communities are kept aware of upcoming likely temporary disruptions.

8. Environmental Impacts and Mitigation

The EIA process provides a valuable opportunity to reduce potential environmental impacts through design refinement, and this has formed an integral part of the design process for the Proposed Scheme, whilst ensuring the objectives of the Proposed Scheme are attained. In addition, feedback received from the comprehensive consultation programme undertaken throughout the option selection and design development has been incorporated where appropriate.

The design of the Proposed Scheme has been developed to a stage where all potential environmental impacts can be identified, and a fully informed environmental impact assessment can be carried out.

The NTA (the Employer for the construction works) shall set out the Employer's Requirements in the Construction Contract and will ensure that all applicable mitigation measures identified in the EIAR, as well as additional measures required in any conditions attaching to An Bord Pleanála's decision to grant approval are adhered to. The procurement of the construction contractor will involve the determination that the appointed contractor is competent to carry out the works, including the effective implementation of the mitigation measures. The appointed contractor will be required to plan and construct the Proposed Scheme works in accordance with the Employer's Requirements, and the NTA will employ an Employer's Representative team with appropriate competence to administer and monitor the Construction Contract for compliance with the Employer's Requirements, which in turn shall contain all mitigation measures detailed in this EIAR and the relevant documentation appended thereto.

The following sections provide a summary of the assessments for each environmental topic and sets out the likely significant residual impacts as a result of the construction and operation of the Proposed Scheme. The following environmental topics are described:

- Traffic and Transport;
- Air Quality;
- Climate;
- Noise and Vibration;
- Population;
- Human Health;
- Biodiversity;
- Water;
- Land, Soils, Geology and Hydrogeology;
- Archaeological and Cultural Heritage;
- Architectural Heritage;
- Landscape (Townscape) and Visual;
- Waste and Resources;
- Material Assets;
- Risk of Major Accidents and / or Disasters; and
- Cumulative Impacts and Environmental Interactions.

8.1 Traffic & Transport

The traffic and transport impact assessment has two distinct parts: the physical changes to transport networks; and the traffic modelling.

The traffic and transport impacts have been broken down into the following assessment topics for both the Construction and Operational Phases:

- The assessment of physical changes:
  - **Pedestrian Infrastructure:** The changes to the quality of the pedestrian infrastructure as a result of the Proposed Scheme;
  - **Cycling Infrastructure:** The changes to the quality of the cycling infrastructure as a result of the Proposed Scheme;
  - **Bus Infrastructure:** The changes to the quality of the bus infrastructure as a result of the Proposed Scheme; and
  - **Parking / Loading:** The changes to the availability of parking and loading as a result of the Proposed Scheme.
- The modelling-based assessment:
  - **People Movement:** An assessment has been carried out to determine the potential impact that the Proposed Scheme will have on the projected volume of people (by mode – Walking, Cycling, Bus and General Traffic) moving along the Proposed Scheme during the Operational Phase;

- **Bus Performance Indicators:** The changes to the projected journey times and reliability for buses as a result of the Proposed Scheme; and
- **General Traffic:** The direct and indirect impacts on general traffic using the Proposed Scheme and surrounding road network.

For the Construction Phase temporary traffic management arrangements will be prepared in accordance with Department of Transport's Traffic Signs Manual, Chapter 8 Temporary Traffic Measures and Signs for Roadworks. Measures to minimise the impacts associated with the Construction Phase will be implemented. A Construction Stage Mobility Management Plan, as described in the CEMP, will be prepared by the appointed contractor to encourage its personnel to travel to site by sustainable modes.

The assessment concludes that the impact during the Construction Phase will be Negative, Slight to Moderate, and Temporary in nature, and with the application of the proposed mitigation measures described above, the impact on traffic and transport will not be significant.

The impacts assessed for the Operational Phase determines how the Proposed Scheme integrates within the existing network and changes to traffic flows in the direct and indirect study area. The assessment demonstrates the following:

- **Pedestrian Infrastructure:** Overall, the improvements to the quality of the pedestrian infrastructure along the Proposed Scheme will improve along all sections. The scale of improvements are as follows:
  - Positive, Moderate and Long-Term along Sections 1, 2 and 4;
  - Positive, Significant and Long-Term along Sections 3, 6 and 7; and
  - Positive, Very Significant and Long-Term along Section 5.
- **Cycling Infrastructure:** Overall, the improvements to the quality of the cycling infrastructure along the Proposed Scheme will improve along all sections. The scale of improvements are as follows:
  - Positive, Moderate and Long-Term along Section 2, 4, 5, 6 and 7;
  - Positive, Significant and Long-Term along Section 1; and
  - Positive, Very Significant and Long-Term along Section 3.
- **Bus Infrastructure:** The results of the assessment demonstrate that the improvements to the quality of the bus infrastructure across the Proposed Scheme will vary as follows:
  - Positive, Moderate and Long-Term along Section 2;
  - Positive, Significant and Long-Term along Sections 1, 4 and 6; and
  - Positive, Very Significant and Long-Term along Sections 3, 5 and 7.
- **Parking and Loading:** Given the nature of the loss in parking and the availability of alternative spaces, the impact is expected to be as follows:
  - Negative, Moderate and Long-Term along Section 3;
  - Negative, Slight and Long-Term along Section 2;
  - Negligible along Sections 4, 5, 6 and 7; and
  - Positive, Slight and Long-Term along Section 1.
- **People Movement:** Overall, it is anticipated that the increases to the total number of people travelling along the Proposed Scheme will have a Positive, Significant and Long-Term effect;
- **Bus Network Performance Indicators:** Overall, it is anticipated that the improvements to the network performance indicators for bus users along the Proposed Scheme will have a Positive, Significant, and Long-Term effect; and
- **General Traffic Network Performance Indicators:** Overall, it has been determined that the impact of the reduction in general traffic flows along the Proposed Scheme will be Positive, Moderate and Long-Term, whilst the impact of the redistributed general traffic along the surrounding road network overall will be Negative, Slight and Long-Term. Thus overall, there will be no significant deterioration in the general traffic environment in the area.

The Proposed Scheme will deliver strong positive impacts to the quality of pedestrian, cycling and bus infrastructure during the Operational Phase, improving people movement in line with the scheme objectives. These improvements will help to provide attractive alternatives to the private car and promote changes from the

use of private cars to walking, cycling and public transport, allowing for greater capacity along the corridor to facilitate the sustainable movement of people as population and employment levels grow in the future. The scheme design has been developed with cognisance of the relevant accessibility guidance and universal design principles so as to provide access for all users.

Given that the Proposed Scheme results in a positive impact for walking, cycling, bus and people movement, mitigation and monitoring measures have not been considered beyond those already incorporated as part of the Proposed Scheme.

The impacts to general traffic and parking / loading, including mitigation measures are incorporated into the Proposed Scheme and no further mitigation measures are required to be considered.

Additional analysis undertaken using the Proposed Scheme models has shown that the new bus infrastructure facilitates a significant level of resilience for bus services that will use the Proposed Scheme, from implementation into the future. The Proposed Scheme will provide a higher level of protection to bus journey time consistency and reliability and will allow the service pattern and frequency of bus services to be increased into the future to accommodate additional demand without having a significant negative impact on bus journey time reliability or the operation of cycle and pedestrian facilities.

8.2 Air Quality

The air quality assessment involved a review of available published data, a review of applicable guidelines, air quality monitoring at sensitive locations along the Proposed Scheme and calculations to assess air quality impacts that are predicted to occur as a result of the Proposed Scheme.

The existing air quality along the Proposed Scheme meets National and European Union air quality standards. However, the annual mean limit value for nitrogen dioxide (NO_2) was exceeded at monitoring locations on R132 Dorset Street / R804 King Street North / R132 Bolton Street / Church Street, R108 Phibsborough Road / R135 Finglas Road / R108 Botanic Road / R108 High Street, R148 Arran Quay, R804 Queen Street and R805 Manor Street.

The impacts assessed for the Construction Phase include dust emissions from activities such as site clearance and preparation, utility diversions, road and junction construction works, and landscaping. Appropriate mitigation measures to ensure that construction dust nuisance is minimised will be implemented for the duration of the Construction Phase.

Air quality impacts associated with Construction Phase traffic and changes in traffic flows have also been assessed. The assessment concluded that Construction Phase traffic emissions will be neutral overall in the study area.

The assessment of potential air quality impacts associated with Construction Phase activities concludes that the works will be short-term in nature, and with the application of the proposed mitigation measures, the impact on air quality will not be significant.

The impacts assessed for the Operational Phase include the potential air quality impacts associated with changes to traffic flows along the Proposed Scheme and realigned traffic lanes and traffic flows. No mitigation measures are required during the Operational Phase as the majority of ambient air pollutant levels are predicted to comply with air quality standards. Some significant (moderate) adverse impacts have been identified at R101 North Circular Road Junction with R108 Phibsborough Road, where both baseline and future baseline concentrations are modelled above the annual limit value of 40µg/m^3 (micrograms per metre cubed) for nitrogen dioxide (NO_2). The impact from the Proposed Scheme will derive mainly from high baseline concentrations and an increase in traffic flows at this location due to the Proposed Scheme. However, these impacts are predicted to reduce to slight by 2043. The assessment concludes that the overall impact on air quality along the Proposed Scheme will be neutral and long-term during the Operational Phase.

8.3 Climate

Climate is defined as the average weather over a period of time. Climate change is a significant change to the average weather, and while climate change is a natural phenomenon, human activities are negatively impacting on the climate, through the release of greenhouse gases.

The climate assessment involved a review of greenhouse gas emissions, a review of applicable guidelines and predictive calculations to assess climate impacts. The Proposed Scheme was also assessed in terms of its vulnerability to climate change.

The impacts assessed during the Construction Phase included emissions from activities such as site clearance, utility diversions, road widening and excavation works (where required), works at junctions and landscaping. Construction traffic routes were also assessed as part of the assessment. Construction traffic and the embodied carbon (i.e. the total energy required to make / produce any product or services) for any construction materials required will be the main sources of greenhouse gas emissions during construction.

Mitigation measures have been incorporated into the construction design with the goal of reducing the embodied carbon associated with the Construction Phase of the Proposed Scheme. These mitigation measures include the replacement, where feasible, of concrete containing Portland cement with concrete containing ground granulated blast furnace slag.

The Proposed Scheme is estimated to result in total Construction Phase greenhouse gas emissions of approximately 9.316kt (kilotonnes) of embodied CO_{2eq} (carbon dioxide equivalent) for materials over the approximate 24-month construction period, equivalent to an annualised total of 0.008% of Ireland's national emissions in 2019 or 0.012% of Ireland's non-Emission Trading Scheme 2020 target.

Following the application of mitigation measures, it is expected that there will be a Negative, Significant and Short-Term residual impact on climate as a result of the Construction Phase of the Proposed Scheme.

The maintenance greenhouse gas emissions associated with the Operational Phase of the Proposed Scheme are predicted to generate 0.155kt of CO_{2eq} over the predicted 60-year lifespan. Following the implementation of mitigation, this impact is predicted to be Neutral and Permanent.

The operational traffic greenhouse gas emissions associated with the Operational Phase of the Proposed Scheme are predicted to be Neutral and Permanent. Thus, the residual impact from Operational Phase traffic as a result of the Proposed Scheme will be Neutral and Permanent.

The Proposed Scheme will be an enabler to allow for further reductions in car mode share with corresponding transfer to public transport, walking and cycling modes. This can be achieved through signal optimisation, increased bus frequency, further growth in cycling and demand management measures. A greater increase in sustainable mode share will in turn lead to further reductions in greenhouse gas emissions, beyond those reported in the above assessment. The Proposed Scheme has the potential to reduce greenhouse gas emissions equivalent to the removal of approximately 14,500 and 15,200 car trips per weekday from the road network in 2028 and 2043 respectively. This represents a significant contribution towards the national target of 500,000 additional trips by walking, cycling and public transport per day by 2030 as outlined as a target in the Government's Climate Action Plan 2021.

The CBC Infrastructure Works will also support the delivery of government strategies outlined in the Climate Action Plan 2021 and the 2021 Climate Act by enabling sustainable mobility and delivering a sustainable transport system, aligning with aims to provide enhanced walking, cycling and bus infrastructure on key access corridors in the Dublin Region. This will subsequently enable and deliver integrated sustainable transport movement along these corridors. The CBC Infrastructure Works will provide connectivity and integration with other public transport services leading to more people availing of public transport.

By creating a resilient, accessible public transport network, the CBC Infrastructure Works will provide an attractive alternative to private car travel, encouraging more passenger travel by more sustainable modes. As a result, a greater share of the demand will be by sustainable modes (public transport, walking and cycling).

8.4 Noise & Vibration

The noise and vibration assessment involved a review of available published baseline noise data, the completion of baseline noise and vibration monitoring to establish the current background levels, and a detailed noise and vibration impact assessment associated with the Construction and Operational Phases.

The baseline surveys determined that currently the main source of noise within the study area is road traffic with a small contribution from local urban and residential sources such as pedestrian movements. There are no notable sources of vibration in the surrounding environment. Road traffic along the existing road network generates a negligible level of vibration that would not be perceptible to building occupants.

The impacts assessed for the Construction Phase included the generation of noise and vibration from general road works including road and junction reconfiguration and resurfacing works, and where required, road widening works, utility diversions, Bus Gate construction, quiet street treatment, urban realm improvements including landscaping, boundary wall construction and other ancillary works. Construction traffic routes were also assessed as part of the assessment.

For the duration of the Construction Phase, appropriate mitigation measures will be implemented, including the appropriate use of acoustic enclosures or screens where required, and the monitoring of vibration at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

Following the application of these mitigation measures, it is expected that there will be no significant residual noise or vibration impacts, as a result of the Construction Phase of the Proposed Scheme.

The impacts assessed during the Operational Phase relate to changes in traffic noise levels along the Proposed Scheme as a result of reconfigured cross sections to include new or upgraded bus lanes and predicted changes in traffic movement. The Proposed Scheme aligns with policy objectives to reduce populations exposure to traffic noise across the city through the incorporation of improved public transport, and increasing bus, train, and bicycle journeys.

The results of the noise assessment for the Design Year (2043) Operational Phase have determined that indirect long-term changes in traffic noise levels will be Negative and Imperceptible to Slight along the Proposed Scheme. Along the surrounding road network, small changes in traffic noise levels will occur as a result of traffic redistribution off the Proposed Scheme during daytime periods only.

8.5 Population

The population assessment considered impacts on residential properties, community facilities and commercial businesses within the study area. The population study area comprised 15 community areas: Finglas, Balcurris, Ballymun, Finglas West, Silloge, Ballygall, Ballymun Road, Rivermount, Drumcondra, Glasnevin, Iona Road, Phibsboro, Berkeley Road, Halston Street, and Dominick Street.

The Proposed Scheme comprises of two separate sections, one stretching from Ballymun to the City Centre (Ballymun Section) and the other commencing in Finglas at the junction of R135 Finglas Road and R104 St. Margaret's Road and continuing south along R135 Finglas Road as far as Hart's Corner (Finglas Section) where it will join the Ballymun Section. The Ballymun Section of the Proposed Scheme will commence in the community areas of Ballymun and Balcurris orientating southwards along R108 Ballymun Road through the communities of Silloge, Ballymun Road, and Ballygall. Initially, this part of the Proposed Scheme will pass through a less densely developed and populated area before it will continue through the community areas of Drumcondra, Glasnevin, Iona Road, Phibsboro, Berkeley Road, Dominick Street and Halston Street to R148 Arran Quay in the City Centre. The Finglas Section of the Proposed Scheme will commence in the community area of Finglas and will proceed southwards through the community areas of Rivermount, Drumcondra and Iona Road to Hart's Corner.

The impacts on population assessed for the Construction and Operational Phases include:

- Indirect amenity impacts on community facilities and commercial businesses from a combination of residual air, noise, traffic, and visual impacts. Direct amenity impacts on commercial businesses that may impact on business viability;

- Temporary and permanent land acquisition from residential properties, community facilities and commercial businesses including reduction of front garden areas, driveways, private landings, and private parking spaces; and
- Changes in accessibility for walkers, cyclists, bus users and private vehicles along the Proposed Scheme and in the surrounding road network as a result of construction traffic, diversions and traffic management measures during the Construction Phase and redistributed general traffic during the Operational Phase.

The assessment concluded that there will be no negative, significant impacts on any community areas from an amenity, land acquisition or accessibility stand-point during the Construction Phase of the Proposed Scheme. However, the following localised negative impacts are expected during construction:

- A Negative, Moderate / Significant and Temporary impact on amenity at the Ballymun Civic Centre (and adjoining commercial receptors);
- A Negative, Moderate and Temporary impact on amenity at all community and commercial receptors situated directly along the Proposed Scheme;
- A Negative, Significant and Temporary impact on the area of public open space outside of Phibsboro (Phibsborough) Library as a result of temporary land take required during the Construction Phase;
- A Negative, Moderate and Temporary impact on Home Farm Football Club (St. Mobhi Road) as a result of temporary land take from the pitch area that is required to facilitate construction activities; and
- A Negative, Moderate and Temporary impact on cyclist, bus user and private vehicle accessibility along the Proposed Scheme (and in the surrounding road network in respect to private vehicles).

Similar to the Construction Phase, the assessment concluded that there will be no negative, significant impacts on any community areas from an amenity and land acquisition perspective during the Operational Phase. Localised negative impacts are expected in terms of permanent land acquisition however, particularly at St. Vincent's Secondary School and Phibsborough Shopping Centre, where a Negative, Moderate and Long-Term impact is assessed due to a reduction in available parking, and The Bernard Shaw (public house) where the assessment has concluded that a Negative, Significant and Long-Term impact is anticipated due to the loss of the private landing that is currently used for outdoor dining.

The Proposed Scheme will deliver positive impacts in terms of accessibility to community facilities and commercial businesses for pedestrians, cyclists and bus users during the Operational Phase. The Proposed Scheme is also expected to benefit individuals and businesses whose workers live along the corridor. This is illustrated by the positive impacts reported within the community areas directly located along the Proposed Scheme:

- Pedestrian accessibility: Positive, Moderate to Very Significant and Long-Term impact;
- Cyclist accessibility: Positive, Not Significant to Very Significant and Long-Term impact;
- Bus user accessibility: Positive, Moderate to Very Significant and Long-Term; and
- Private vehicle accessibility: Positive, Moderate and Long-Term.

A Negative, Moderate and Long-Term impact on private vehicle accessibility to commercial businesses is expected on the surrounding road network during the Operational Phase, primarily in the community area of Finglas West.

These improvements will help to achieve the aims and objectives of the Proposed Scheme by providing an attractive alternative to the use of private vehicles and promoting a modal shift to walking, cycling and public transport, allowing for greater capacity along the corridor to access residential, community and commercial receptors.

8.6 Human Health

The interaction of factors such as individual characteristics, lifestyle and 'wider determinants of health' (the physical, social, and economic environment) have an important influence on the health of a population. These are illustrated in Image 8.1.

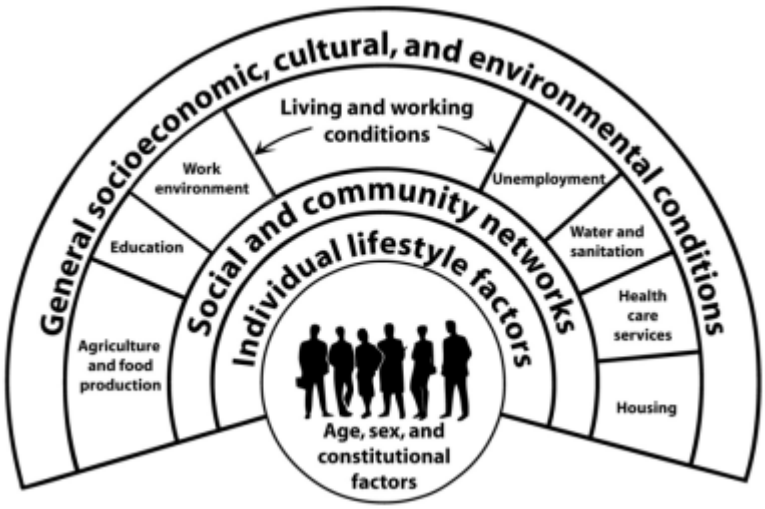

Image 8.1: Wider Determinants of Health

A related issue is that of social inequalities of health, which are the unfair and avoidable differences in health status across groups in society. The aim of this assessment was to identify the wider determinants of health that would likely be affected by the Proposed Scheme and how those impacts are associated with health outcomes.

Currently, Dublin's population has a better overall health status than average for Ireland with lower death rates.

Levels of air pollution within Dublin are almost entirely within the set European Union limit values for nitrogen dioxide and particulate matter.

Exposure to traffic noise causes annoyance and, in very high levels of exposure, is linked to several other adverse health outcomes. There is widespread exposure in the study area to noise levels which exceed the levels set by the World Health Organization to prevent adverse health outcomes. However, the noise levels experienced are typical of an urban environment.

Temporarily increased traffic congestion because of traffic management measures and diversions during construction will likely cause frustration and annoyance particularly for commuters and people travelling to appointments. Construction noise and vibration, as well as dust may cause annoyance for some nearby residents and workers. The temporary to short-term nature of these impacts means that no lasting impact on health is likely.

There may be a requirement for some works to take place at night. This will temporarily increase the likelihood of sleep disturbance in the nearby residential population as a result of noise associated with the construction works. During the day there is risk of sleep disturbance for shift workers due to construction noise. Mitigation measures to control and limit noise associated with the construction works are included in the EIAR.

The need for pedestrian and cycle diversions around areas of construction works may increase the risk of collisions, unless appropriately designed and managed. Cyclists and pedestrians are more vulnerable to injury and death in the event of a collision and so need greater protection. Construction traffic management has been considered to outline measures deemed necessary to provide protection for pedestrians and cyclists in each location of the Proposed Scheme. With these measures in place, the risks will be mitigated. Since the construction works will be short-term overall and temporary, the Proposed Scheme is not likely to result in any increased exposure to risk for pedestrians and cyclists over and above trends in the current street environment in Dublin. In addition, access to the Mater Misericordiae Hospital will be maintained.

No other health effects are considered likely from the Construction Phase of the Proposed Scheme.

The Proposed Scheme will create opportunities for building in regular physical activity into daily life through the improved pedestrian and cycling facilities, as well as through walking to and from bus stops. It is predicted that this will result in positive health outcomes as some people will change their travel behaviours and benefit from increased regular physical activity as a result.

With mitigation in place, people living near some of the proposed new bus stops may experience a new noise source. A small proportion of residents may experience an increase in traffic noise from redirected traffic along some side streets. However, for most people, there will be no perceptible change in environmental noise from the Proposed Scheme.

Reductions in general through-traffic, improved pedestrian infrastructure and improvements to the streetscape are likely to encourage more social interaction along the Proposed Scheme, resulting in positive health outcomes such as good mental wellbeing. The new public transport infrastructure is expected to bring improved journey times and improved reliability for public transport journeys, resulting in improved mental health outcomes such as reduced stress, as well as improved access to health, employment, education, and leisure services.

The inclusion of bus priority measures and improvements to pedestrian and cyclist infrastructure will support safer and more equitable access for those who do not or cannot use a car. This is expected to have positive impacts on health, by addressing these wider determinants and health inequalities. In addition the urban environment would be improved and easier to use for a wider variety of pedestrians, including the visually impaired, wheelchair users and the persons with mobility impairment.

No other health hazards or likely health outcomes have been identified as relevant for the Operational Phase of the Proposed Scheme.

8.7 Biodiversity

The biodiversity (ecology) assessment included a review of available published data to identify any features of ecological value and field surveys of habitats, bats, ground mammals, birds, amphibians (frogs and common newts) and reptiles.

The Proposed Scheme does not overlap with any nature conservation sites of European importance (European site). The nearest European sites with a hydrological connection (connection by water) to the Proposed Scheme are South Dublin Bay and River Tolka Estuary Special Protection Area (SPA), followed by South Dublin Bay Special Area of Conservation (SAC), which are located approximately 2.7km and 4km away from the Proposed Scheme, respectively.

The main habitats within the Proposed Scheme boundary include mixed broadleaved woodland, hedgerows, treelines, scrub, flower beds and borders, grassland, and buildings and artificial surfaces. The study identified:

- No protected plant species along the Proposed Scheme;
- Four non-native invasive species (Giant hogweed, Himalayan balsam, Japanese knotweed and Nuttall's waterweed);
- Six bat species (Leisler's, Common pipistrelle, Nathusius' pipistrelle, Soprano pipistrelle, unidentified pipistrelle species and Myotis);
- Potential roost features (locations where bats rest) in six locations;
- No evidence of badgers;
- No evidence of otters;
- No evidence of amphibians or reptiles; and
- A total of 75 breeding bird species and 16 wintering bird species.

Potential impacts on biodiversity for the Construction Phase may arise from:

- Site preparation and clearance;
- Removal of existing boundaries, pavements, lighting columns, bus stops, and signage;

- Removal of trees and vegetation;
- Protection and / or diversion of buried services;
- Reconnection of existing and new drainage infrastructure into the existing surface water drainage infrastructure;
- Road widening, pavement reconstruction, and kerb improvements;
- Temporary and permanent land take at a number of key areas including:
    - Royal Canal proposed Natural Heritage Area (pNHA) at Cross Guns Bridge; and
    - Home Farm Football Club on St. Mobhi Road - Road frontage.
- Installation of new bus stops and junction / roundabout modification;
- Property boundary reinstatement, signage replacement; installation of lighting columns; and
- Landscaping and tree planting, and reinstatement of temporary land acquisitions.

A range of mitigation measures will be implemented to avoid or reduce negative impacts on biodiversity during the Construction Phase, including retaining trees identified as containing potential roost features for bats (insofar as is possible), and planting new street trees, hedgerows and species-rich grasslands. Invasive species management will be implemented to mitigate any risk of the Proposed Scheme contributing to the spread of invasive species during the Construction Phase.

The assessment concluded that with the application of the proposed mitigation measures, the impact on biodiversity during the Construction Phase will not be significant beyond the local level.

Potential impacts on biodiversity for the Operational Phase may relate to habitat loss, habitat degradation as a result of water quality changes from pollution or accidental spillage and non-native invasive plant species.

The measures proposed to avoid or reduce negative impacts on biodiversity during the Operational Phase will include:

- Planting of treeline, hedgerow and grassland habitats within the Proposed Scheme, as outlined in the design, will provide suitable habitats for breeding birds and foraging / commuting habitat for bats;
- Bat boxes will be installed wherever there is a loss of a potential roost feature for bats; and
- The implementation of sustainable drainage measures will prevent habitat degradation.

The assessment concluded that there will be no significant impacts on habitats, rare and protected plant species, mammals, amphibians, reptiles, and fish during the Operational Phase.

In addition, potential impacts on designated European sites are specifically assessed in the Natura Impact Statement (NIS), which also forms part of this application. The conclusion of the NIS is that the Proposed Scheme will not have any adverse effect on the integrity of any European site.

8.8 Water

The water assessment involved a desk-based study and the completion of field surveys to establish the current surface water conditions to identify the likely impacts of the Proposed Scheme.

The Proposed Scheme will be located within the River Liffey catchment which is mainly urban and industrial in character. The waterbodies relevant to the Proposed Scheme are:

- Santry_010, which flows from immediately south of the western edge of Dublin Airport east under the M50 Motorway at Ballymun and through Santry Demesne. It then passes under the M1 / M50 Motorway at Santry, through Kilmore, Edenmore, Raheny and under the Dublin / Belfast railway line before discharging to Dublin Bay at the North Bull Island SPA. It has a total length of approximately 6km;
- Tolka_050 is approximately 9km and consists of the main channel from Blanchardstown to Glasnevin, as well as three minor unnamed tributaries in Finglas;

- Tolka_060, is 3km and flows from Glasnevin to Drumcondra, where it becomes the transitional water body, the Tolka Estuary;
- Royal Canal Main Line (Liffey and Dublin Bay) which is an artificial waterbody (AWB), primarily used for recreation and was constructed in the 18th century, shortly after the Grand Canal. The Royal Canal is 146km long and runs from the River Liffey in Dublin to Cloondara on the River Shannon, with an 8km branch line into the town of Longford; and
- Liffey Estuary Upper, which is a transitional waterbody and is within the Liffey Nutrient Sensitive Area. It flows into Liffey Estuary Lower before reaching Dublin Bay. The waterbody covers an area of 0.2km^2 (kilometres squared) from the National War Memorial Garden to approximately 40m upstream of the Talbot Memorial Bridge, which marks the upstream limit of the Liffey Estuary Lower.

The current European Union Water Framework Directive (WFD) status of the water bodies, and their Risk (of not achieving their WFD objectives) status are as follows:

- Santry_010: Poor status, At Risk of not achieving Good Ecological Status (GES);
- Tolka_050: Poor status, At Risk of not achieving GES;
- Tolka_060: Moderate status; At Risk of not achieving GES;
- Royal Canal Main Line (Liffey and Dublin Bay): Good Ecological Potential (At Risk status is under review); and
- Liffey Estuary Upper: Good status, At Risk of not maintaining GES.

The surface water along the Proposed Scheme corridor currently drains into a surface water system which discharges into the Tolka_050 and Tolka_060 and to a combined sewer and on to Ringsend wastewater treatment plant. The main existing pressure on water quality relates to urban runoff and overflows from the foul and combined sewer network.

A Flood Risk Assessment has been completed for the Proposed Scheme which determined that the primary sources of flood risk for the Proposed Scheme are from a combination of surface water and pluvial (rainfall) sources.

The impacts assessed during the Construction Phase included impacts from construction runoff and watercourse disturbance due to utility diversions, road resurfacing and road realignments.

During the Construction Phase, the water quality of all five water bodies could potentially be impacted by surface water runoff containing fine sediments, accidental spillages and accidental leakages of construction materials via surface water system connections. There is also the potential to disrupt local drainage networks if they are required to be diverted to allow construction works to take place.

Surface water management is addressed in the CEMP, which details control and mitigation measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase of the Proposed Scheme. These include a requirement for an environmental incident response plan; the control of runoff of fine sediments; the management of storage of materials / fuels; management of the batching and use of concrete; and the management of vehicles and plant. Additionally, site-specific measures are proposed to avoid or reduce negative impacts related to Construction Compound B2 at St. Mobhi Drive and the proposed new cycle / pedestrian bridge at the Royal Canal.

Following the implementation of the mitigation measures, no significant impacts are anticipated on any water body as result of the Construction Phase of the Proposed Scheme.

The impacts assessed during the Operational Phase include the potential surface water impacts associated with areas of impermeability and traffic displacement. During the Operational Phase, the design of the Proposed Scheme will ensure that there will be no net increase in surface water runoff rates to any of the connected water bodies, using a combination of sustainable drainage systems in the form of filter drains and bioretention systems, which also reduce the potential risks to water quality from routine road contaminants.

In the Operational Phase, the infrastructure (including sustainable drainage systems) will be maintained by the local authorities and will be subject to their management procedures. No additional mitigation is required, and no impacts are anticipated on any water body as result of the Operational Phase of the Proposed Scheme.

8.9 Land, Soils, Geology & Hydrogeology

The land, soils, geology and hydrogeology assessment included a desk-based study of publicly available information, historic ground investigations and a scheme walkover survey.

The geology (soils and rock) beneath the study area of the Proposed Scheme mainly comprises made ground, alluvium and glacial till derived from limestone which are underlain by limestone rock. The land within the study area is mainly used for urban developments, including but not limited to; industrial, commercial, residential, and recreational.

Aquifers (which store / produce groundwater) within the study area of the Proposed Scheme are classified as 'Locally Important' (moderately productive in local zones) or 'Poor' (generally unproductive except for local zones), in terms of their ability to produce water.

As the Proposed Scheme is in an urban environment, there is the potential for some contaminated ground in the study area. The assessment of contaminated land focused on the footprint and directly on either side of the Proposed Scheme unless there is likely to be a pathway connecting the possible source of contamination to the footprint of the Proposed Scheme. These potential sources are outlined and assessed.

The impacts assessed during the Construction Phase of the Proposed Scheme include:

- Loss or damage of topsoil;
- Excavation of potentially contaminated ground;
- Loss of future quarry or pit reserves;
- Loss or damage of a proportion of a Geological Heritage Area;
- Loss or damage of parts of an aquifer; and
- Change to groundwater flows.

Appropriate mitigation measures will be implemented to avoid or reduce negative impacts on land, soils, geology and hydrogeology during the Construction Phase. It is expected that there will be no residual construction impacts on land, soils, geology and hydrogeology.

The impacts assessed during the Operational Phase include the potential land, soils, geology and hydrogeology impacts associated with changes to water supply and the pollution of groundwater and watercourses.

In the Operational Phase, the infrastructure will be maintained by the local authorities, and will be subject to their management procedures to ensure that the correct measures are taken in the event of any accidental spillages and this will reduce the potential for any impact.

It is predicted that there will be no residual operational impacts on land, soils, geology and hydrogeology.

8.10 Archaeological & Cultural Heritage

The archaeological and cultural heritage assessment involved a desk-based review of published and unpublished documents, historical mapping and a field survey and has been carried out according to best practice and guidelines relating to archaeological and cultural heritage.

The Ballymun Section of the Proposed Scheme will commence in Ballymun and will continue to Glasnevin where it will meet the Finglas Section at Hart's Corner. The Finglas Section of the Proposed Scheme will pass west of Glasnevin, along the perimeter of Glasnevin Cemetery, while the Ballymun Section will pass the early medieval monastic site and along the east side of the Botanic Gardens. The lands of Glasnevin and Finglas have seen significant change over the years but have their origins as early medieval ecclesiastical establishments. The

Proposed Scheme will travel into the City Centre via Phibsborough and Constitution Hill before terminating at Arran Quay. It will cross the Royal Canal at Cross Guns Bridge and continue south under Phibsborough Road before entering the Zone of Archaeological Potential (ZAP) of the Historic City of Dublin at Constitution Hill next to Broadstone, the former railway terminus. Prior to the development of the Royal Canal, the area would have been drained by the River Tolka and the River Bradogue, which is named after Glas mo Canoc, or Canoc's Stream. Within the ZAP for the Historic City of Dublin (RMP DU018-020), human occupation can be traced back to the prehistoric period, with Viking settlement in the early medieval period, and continued occupation throughout the medieval and post-medieval periods. One of the most significant of these phases is the earliest 'urban' development of the area when Oxmantown became an important Viking suburb on the north side of the River Liffey. Church Street is shown on the earliest maps of Dublin and was variously referred to as the 'Great Street', 'High Street', 'the King's Way', 'the Great Street of Oxmantown' and 'Oxmantown Street'.

No National Monuments or sites under preservation order have the potential to be impacted within the Proposed Scheme.

There are 32 archaeological heritage features on the Records of Monuments and Places / Sites and Monuments Record, eleven on the Dublin City Industrial Heritage Record, and twelve cultural heritage assets as well as 11 areas of archaeological potential assets that have the potential to be impacted within the Proposed Scheme.

The main potential impacts on archaeology and cultural heritage as a result of construction works could arise from:

- Pavement construction, repairs and reconstruction works;
- Road resurfacing works;
- Piling;
- Any excavations of soil, including landscaping works; and
- Any ground disturbance for utility works.

There is the potential for the discovery of previously unknown below-ground archaeological features, materials and deposits along the Proposed Scheme.

The mitigation measures proposed to avoid or reduce negative impacts on archaeological and cultural heritage during the Construction Phase include the provision for and funding of the necessary archaeological monitoring, inspection and excavation works that will be required prior to and during construction.

Given the results of previous geophysical survey and archaeological testing at the newly discovered enclosure site (located at Home Farm Football Club pitch), archaeological investigation in consultation with the Department of Housing, Local Government and Heritage will be required within the land take for the retaining wall on St. Mobhi Road, prior to works.

There will be no Operational Phase impacts as a result of the Proposed Scheme and no mitigation is required.

With the implementation of the proposed mitigation measures, it is expected that there will be no residual impacts on archaeological and cultural heritage.

8.11 Architectural Heritage

The architectural heritage assessment included a desk-based study including a review of all available relevant and published and unpublished documents, and field surveys, which were carried out to identify known architectural heritage sites, and to identify any previously unrecorded features.

Finglas and Glasnevin were significant early settlements which developed on the site of monastic foundations. The curved streets and steep topography are evidence of this in the modern street pattern and it follows that the villages retain buildings and features of many different styles from the medieval church yards to the great houses, with Georgian, Victorian and Edwardian terraces, and some large and small scale modern interventions. Similarly, the origins of Church Street can be traced back to the prehistoric period, right through the Viking / Anglo Norman period to the later medieval and post-medieval periods and this street too, is a juxtaposition of architectural

characters. Fr Matthew Bridge is on the site of the earliest bridge over the River Liffey, c.1000 AD. St Michan's Church of Ireland parish church (RMP DU018-020084), on the west side of Church Street, was built in 1685 to 1686 on an earlier site with a foundation date of c. 1096. It is the oldest parish church on the north side of the River Liffey.

Despite the presence of very early settlements at Finglas and Glasnevin, the majority of the study area has a modern character and is now characterised by three or four-lane highway and a dual carriageway with a median on parts of the outer R108 Ballymun Road and R135 Finglas Road. Along the R108 on Ballymun Road, St. Mobhi Road and Botanic Road, the character changes to more suburban and residential, with small sections of neighbourhood and mixed-use facilities. These neighbourhoods developed between the early villages, with terraces of houses built, radiating out from the village cores. It is possible to read the expansion of the city and the outer villages through the 19th and 20th centuries, in the changing architectural styles of the terraced housing lining the R108 on Phibsborough Road, Botanic Road and Ballymun Road, and R135 Finglas Road. The architectural quality of many of these areas recognised through their designation as Conservation Areas (along sections of St. Mobhi Road, Botanic Road, Finglas Road at Prospect, south of the Royal Canal, Phibsborough Road north of Constitution Hill and around Father Mathew Church off Church Street) and Architectural Conservations Areas (ACAs) (Prospect Square / De Courcy Square Environs ACA and Phibsborough Centre ACA).

Within the Royal Canal lies Phibsborough Village, which consists of 19th and early 20th century red-brick buildings, focused on a number of 19th century public houses at Doyle's Corner (DCC RPS 6734 – 6736). Public Buildings of note include the Carnegie Library in Phibsborough (DCC RPS 8884). To the south of Phibsborough Road, North Circular Road, Royal Canal Bank, Geraldine Street, Dominic Street Upper, Constitution Hill and Church Street Upper contain 18th and 19th century terraced houses. Important buildings include the King's Inns and Registry of Deeds on Constitution Hill which was designed by James Gandon in 1801 (DCC RPS 3658), and the Four Courts, also designed by Gandon (DCC RPS 3999).

In contrast to Finglas, Ballymun, is an entirely-modern outer-suburb. Early features include the site of the 17th century Stormanstown House (RMP DU014-067001), though there are no surviving above ground remains of this structure. Construction of Ballymun began in the 1960s with substantial redevelopment in the 1990s.

Given that Church Street was a major historic route, it is appropriate that modern and historic developments in the study area have followed infrastructural imperatives. On Prospect Road, the Proposed Scheme will cross both the mid-19th century Cross Guns Railway Tunnel (NIAH 50060112) and the Cross Guns or Westmoreland Bridge over the Royal Canal (DCC RPS 8807). The canal and railway infrastructure played a significant role in the development of the city and its suburbs from the 18th century. In 1876 a tramline from Glasnevin was built along the Proposed Scheme route and serviced the population of the new suburbs until 1939.

There are significant open spaces with mature tree planting, all originating in historic landscapes, such as the institutional lands at the King's Inns (NIAH 2359), the Convent of the Holy Faith (NIAH 5415), the Bon Secours (NIAH 2365), Whitehall College (DCC RPS 7746) and Albert College (DCC RPS 479). There are significant landscapes along the Tolka Valley at the Botanic Gardens (NIAH 2360) and Glasnevin Cemetery (NIAH 2356).

As Fr. Matthew Bridge is on the site of a major historic route and an early River Liffey crossing point (DU018-020042), it is appropriate that modern and historic developments in the study area have followed infrastructural imperatives. The development of the canal and rail networks in the mid-19th century, and later road widenings and realignments, have had a large bearing on the architectural character over time. This is acutely felt, along the outer Ballymun Road, Finglas Road, Cross Guns, Western Way and Constitution Hill.

Industrial heritage features that have been identified range from the site of a smithy at 5 Finglas Road (DCIHR 18_03_044) to the modernist Hendron Building on Dominick Street Upper (DCC RPS 8783). Most of the industrial heritage features which were identified were either associated with the Royal Canal, the construction of which began in 1790 or the Midland Great Western Railway which was built in the middle of the 19th century. The Royal Canal is designated as a Conservation Area and includes the 5th Lock (NIAH 50060184) and associated Lock House. A former canal spur, tow path, and dry dock are also located on Royal Canal Bank which has since been infilled and is now a public park, as is the former Canal Basin on Blessington Street (DCC RPS 803).

Industrial heritage features associated with the railway include Broadstone Station (DCC RPS 2029), Glasnevin Station, Cross Guns Tunnel on Whitworth Road (NIAH 50060112), and a Railway Coach Factory at 21 Phibsborough Road (DCC RPS 6724). Bridges include the site of the Wad River Bridge, located at Our Lady of Victories Primary School on Ballymun Road, a railway bridge on Prospect Road in Glasnevin, Westmoreland (Cross Guns) Bridge (DCC RPS 8807) and the former Blaquiere Bridge on the North Circular Road at Broadstone Park (DCC RPS 8483). Former tram routes were identified on Botanic Road and Phibsborough Road, though no trace of these survive in the modern streetscape.

The main potential impacts on architectural heritage during the Construction Phase will include:

- Direct impacts to the boundaries (walls, railings etc.) and entrance gates of protected structures and other architectural heritage features where road widening is required;
- Direct impacts to street furniture (i.e. lamp posts, post boxes etc.) due to land acquisition, construction works to pavements, changes in the layout of footpaths and landscaping works;
- Indirect impacts as a result of the potential for damage to sensitive structures in areas where the construction works for the Proposed Scheme come into close contact with these structures;
- Indirect impacts as a result of the potential for damage to protected structures due to increased vibration from construction vehicles; and
- Visual impacts on the setting of protected structures or buildings or structures of architectural heritage interest, historic streetscapes and views which will temporarily impact on their setting during the Construction Phase.

The measures proposed to avoid or reduce negative impacts on architectural heritage during the Construction Phase will include:

- Appropriate recording, protection, removal, storage and reinstatement of boundaries and street furniture; and
- The retention or replacement of trees along the Proposed Scheme.

With the implementation of the proposed mitigation measures, it is expected that there will be no significant residual impact on the architectural heritage resource, as a result of the Construction Phase of the Proposed Scheme. There is one Negative, Moderate and Permanent residual impact anticipated for the Former Player's Factory protected structure (DCC RPS 855) on Botanic Road due to the proposed land take at this location.

The main potential impacts on architectural heritage during the Operational Phase will include:

- Impacts associated with visual changes on architectural heritage resources (including from the proposed locations of bus shelters which have been carefully considered), as well as impacts on the setting of these resources due to traffic changes. New paving, new tree planting and landscaping will generally have a positive impact on the historic environment and character of streets along the Proposed Scheme; and
- Impacts where the Proposed Scheme requires physical changes to, or the repositioning of, heritage features.

With the implementation of the proposed mitigation measures, it is expected that there will be no significant residual impact on the architectural heritage resource, as a result of the Operational Phase of the Proposed Scheme.

8.12 Landscape (Townscape) & Visual

The landscape (townscape) and visual assessment included a desk-based review of available information including aerial photography and mapping of the Proposed Scheme. Route walkovers were carried out to verify desk-based findings and this included field surveys and the preparation of photomontages.

The Proposed Scheme will run from the outer city suburbs around Ballymun and Finglas, through the established outer city suburb of Glasnevin and through (or by) the inner city suburbs of Phibsborough, Broadstone, Grangegorman and Smithfield. Both sections (Ballymun Section and Finglas Section) of the Proposed Scheme will commence in outer residential and mixed-use city suburbs and will follow major dual carriageway road

corridors (i.e. R018 Ballymun Road and R135 Finglas Road), through more established outer and inner residential suburbs (e.g. Glasnevin, Phibsborough, Broadstone) to the mixed-use urban streetscape of the Constitution Hill / Smithfield / Four Courts area of Dublin 7, located to the west of the City Centre.

The Ballymun Section of the Proposed Scheme will pass west of Dublin City University (DCU) / Albert College Park (Hampstead Park) and the grounds of CLG Na Fianna, Home Farm Football Club and Whitehall College of Further Education. The Ballymun Section will cross the tree-lined avenue of R102 Griffith Avenue and the landscape corridor of the River Tolka in Glasnevin, and the Royal Canal and adjoining railway corridor, north of Phibsborough. The Ballymun Section of the Proposed Scheme will also involve works along Ballymun Road Lower leading to Glasnevin Hill and Botanic Road, which will take the route past the Botanic Gardens, through Glasnevin Village and past Met Éireann. The Ballymun Section will also pass by the Phibsborough District Retail Centre, will cross the R101 North Circular Road, east of Broadstone Rail Station and the Technological University Dublin (TUD) City Campus at Grangegorman and east of King's Inns Park (Law Library) before it will follow R132 Church Street south to R148 Arran Quay at the River Liffey.

The Finglas Section of the Proposed Scheme will commence on the R135 Finglas Road at the junction with R104 St. Margaret's Road and will be routed along the R135 Finglas Road as far as Hart's Corner in Phibsborough where it will join the Ballymun Section of the Proposed Scheme from Hart's Corner to R148 Arran Quay. Priority for buses will be provided along the entire Finglas Section, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks will be provided from the Church Street Junction in Finglas to Hart's Corner. The Finglas Section of the Proposed Scheme will cross the River Tolka west of Glasnevin (Prospect) Cemetery and will follow the R135 Finglas Road along the southern boundary wall of the Cemetery.

The Proposed Scheme will also involve works along the Royal Canal Bank, around Phibsboro (Phibsborough) Library and past Blessington Basin to Constitution Hill, as well as minor works along a short section of R804 King Street North. A Quiet Street Treatment is proposed to Coleraine Street, Linenhall Street, King Street North, Anne Street North, George's Hill, St. Michan's Street, Ormond Square and Charles Street with very minor changes to signalling, signage and road markings.

Consideration of the potential landscape (townscape) and visual impacts have been important in defining the Proposed Scheme design. The Proposed Scheme has undergone iterative design development with the aim of minimising potential negative impacts as far as practicable and this has also helped define suitable improvements to the urban realm. Examples of design changes that have been incorporated into the Proposed Scheme design, and which have led to a reduction in predicted landscape and visual impacts include:

- The reduction of the traffic lanes on Ballymun Main Street from two general traffic lanes and a bus lane to one general traffic lane and a bus lane to facilitate on-street parking with the addition of new street trees for the enhancement of the town centre amenities and visual environment; and
- The provision of an extended urban realm area at the southern end of Hart's Corner in front of local shops and businesses in the central island area.

The main potential landscape (townscape) and visual impacts during the Construction Phase will include:

- Site mobilisation and establishment, fencing and hoarding of Construction Compounds and works areas, including within private areas / gardens;
- Site demolition, including the removal of boundaries, kerbs, verges, surfaces, landscape areas, trees and plantings, including boundary fences, walls and plantings within private areas / gardens;
- Site activity and visual disturbance from general construction works and the operation of construction machinery both within the site and at the Construction Compounds;
- Construction works involving diversion of existing underground / overground services and utilities, provision of new services and utilities, drainage features and connections, etc.;
- Site activity and construction works involved in the construction of new carriageways, kerbings, footpaths and cycle tracks, bus stops and signage, reinstatement of boundaries / provision of new boundaries and landscape reinstatement works / provision of new landscape, etc.; and
- Decommissioning of works areas and the Construction Compounds.

Construction of the Proposed Scheme will require land acquisition (temporary and / or permanent) from three residential properties at Bengal Terrace (No. 34, 36 and 38) on the Finglas Section and from a portion of the residential site currently under construction at Daneswell Place, Botanic Road on the Ballymun Section.

Appropriate measures to avoid or reduce negative landscape (townscape) and visual impacts during the Construction Phase will be implemented, including ensuring that trees and vegetation to be retained within and adjoining the works area will be protected. Works required within the root protection area (RPA) of trees to be retained will follow a project-specific arboricultural methodology for such works.

While mitigation for the Construction Phase is focused on protecting any landscape features that are to be kept and providing as much visual screening from construction works as possible, it will not be possible or practical to mitigate against impacts on landscape (townscape) and visual characteristics resulting from the removal of mature trees to facilitate construction.

With the implementation of proposed mitigation measures, it is expected that Negative, Moderate, Significant and Very Significant and Temporary / Short-Term residual impacts on townscape and streetscape character will remain during construction the Proposed Scheme, as follows:

- Negative, Moderate and Temporary / Short-Term residual impacts are anticipated on the Ballymun Road from the South of Ballymun District Centre (Gateway Avenue) South to Griffith Avenue section;
- Negative, Very Significant and Temporary / Short-Term residual impacts are anticipated on the St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner and the Prospect Road, Phibsborough Road from Hart's Corner to Western Way section; and
- Negative, Significant and Temporary / Short-Term residual impacts are anticipated on the Constitution Hill and Church Street to Arran Quay section.

In addition to these impacts, a range of Neutral to Negative, Moderate to Significant to Very Significant and Temporary / Short-Term residual impacts are predicted on the streetscape characteristics of an ACA, Residential Conservation Areas, protected structures, amenity designations, residential and non-residential properties, and trees and vegetation.

The main potential landscape (townscape) and visual impacts during the Operational Phase will include:

- Alterations in the corridor of the existing road / street;
- Changes in traffic, pedestrian and cycle movements;
- Modification of areas of private property / gardens / boundaries; and
- Adjustments to other areas / boundaries.

Alterations in the road corridor and changes in traffic, pedestrian and cycle movements are features of the Proposed Scheme. Changes in road corridors, including in traffic signalisation, signage, and in carriageway / parking allocation and traffic movements are a common and regular aspect of active road and traffic management for urban roads and streets. Therefore, such aspects may be considered as a dynamic part of the receiving streetscape environment.

It is expected that there will be Neutral, Negative and Positive, Moderate to Significant and Long-Term residual impacts on townscape and streetscape character, as follows:

- Positive, Moderate and Long-Term residual impacts are anticipated on the Ballymun Road from the South of Ballymun District Centre (Gateway Avenue) South to Griffith Avenue section;
- Negative, Moderate and Long-Term residual impacts are anticipated on the St. Mobhi Road and Botanic Road from Griffith Avenue to Hart's Corner section;
- Positive, Moderate to Significant and Long-Term residual impacts are anticipated on the Prospect Road, Phibsborough Road from Hart's Corner to Western Way section;
- Positive, Moderate and Long-Term residual impacts are anticipated on the Constitution Hill and Church Street to Arran Quay section; and
- Neutral, Moderate and Long-Term residual impacts are anticipated on the Finglas Road from Tolka Valley Road to Hart's Corner (tie in to the Ballymun Section) section.

In addition, a Positive, Significant and Long-Term residual impact is predicted for Phibsborough ACA, and Neutral, Slight to Moderate to Significant and Long-Term residual impacts are predicted on various Conservation Areas, protected structures and amenity designations. A Negative, Moderate and Long-Term residual impact is predicted at residential and non-residential properties where permanent land take will be required to facilitate the Proposed Scheme.

The Proposed Scheme has been subject to an iterative design development process which has sought insofar as practicable to avoid or reduce negative impacts, including landscape (townscape) and visual impacts. Nevertheless, the Proposed Scheme will give rise to some degree of landscape (townscape) and visual effects, most notably during the Construction Phase. These impacts arise especially where there is temporary and / or permanent acquisition of lands associated with residential or other properties including amenities, and where tree removal is required. The Proposed Scheme includes for replacement of disturbed boundaries, reinstatement of the Construction Compound areas, the return of temporary acquisition areas, and for additional tree and other planting where possible along the Proposed Scheme.

In the Operational Phase, residual effects will remain for properties experiencing permanent land acquisition and in the loss of trees particularly along the section of the Proposed Scheme along St. Mobhi Road and Botanic Road to Griffith Avenue to Hart's Corner. There will be positive effects for the other sections of the Proposed Scheme, most notably in the centres of Ballymun and Phibsborough, as the Proposed Scheme will provide for substantial improvements in the urban realm, which will provide positive long-term effects for the landscape (townscape) and visual character. The Proposed Scheme will also provide for a significantly enhanced level of service for public transport and for pedestrian / cycle connectivity.

8.13 Waste & Resources

This waste and resources assessment included identifying the types of waste that could be generated by the Proposed Scheme, as well as the potential for reuse of materials. The assessment included a desk-based review of relevant policy and legislation, and data on waste generation and waste and resources management.

Sustainable waste and resource management principles have been incorporated into the design of the Proposed Scheme and these principles will also be applied in line with the Circular Economy Model (see Image 8.2) throughout the Construction and Operational Phases. This will ensure that waste generation will be minimised.

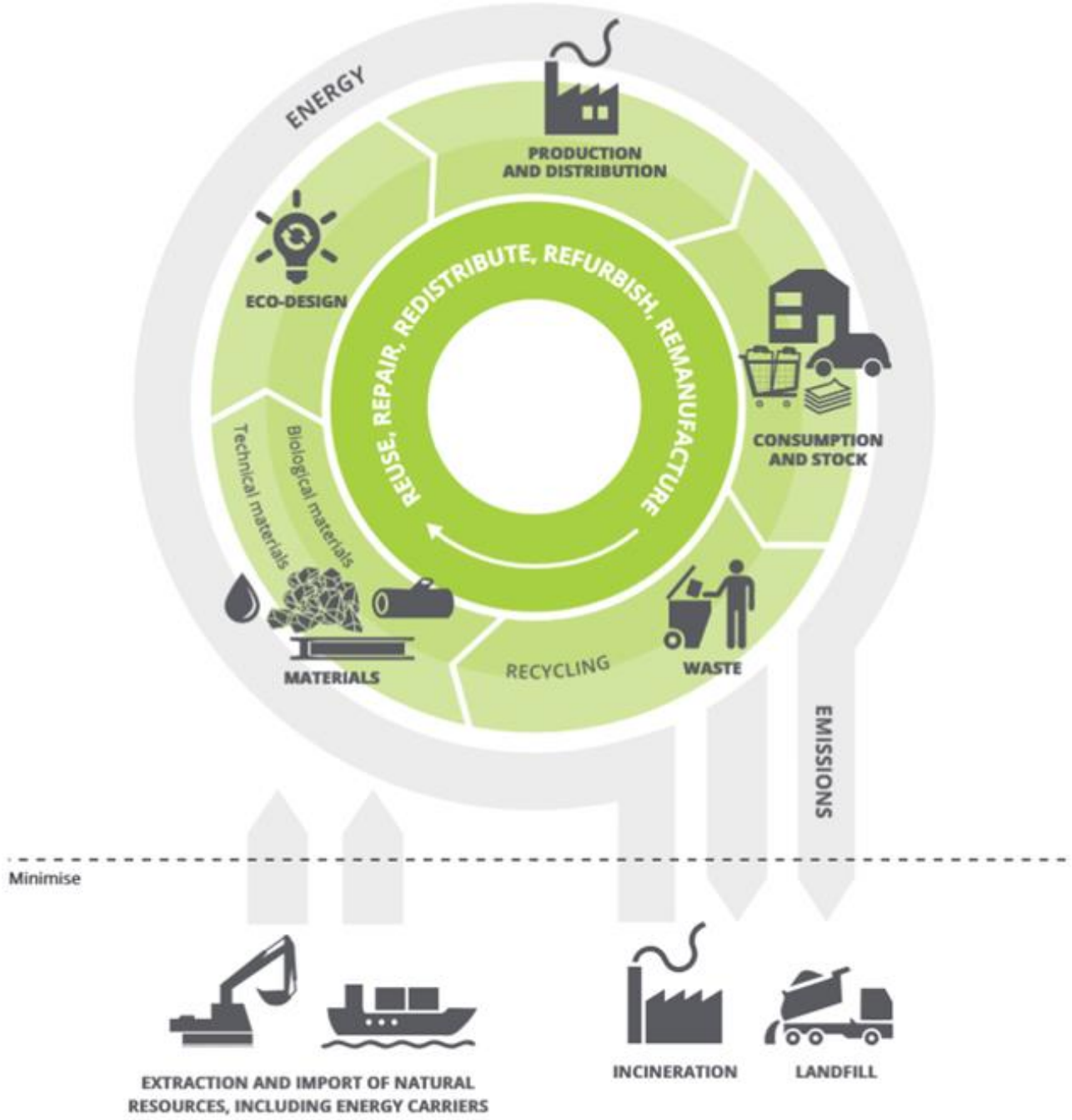

Image 8.2: The Circular Economy Model

In Ireland, the most recently available published data records that 8.8 million tonnes of construction and demolition waste was generated in 2019. This represented an increase of 2.6 million tonnes from 2018. Of this waste, 7.5 million tonnes was comprised of soil and stones and these make up 85% of the current construction and demolition waste stream.

In Ireland, municipal waste (i.e. typical household waste types) is made up of household waste as well as commercial and other waste that, because of its type, is similar to household waste. According to the Environmental Protection Agency, Ireland generated 3.1 million tonnes of municipal waste and recycled 37% of this waste in 2019.

The main construction elements that are likely to result in potential impacts on waste and resources will include:

- Construction and reconstitution of cycleways, pathways, road widening and urban realm improvements;
- Removal of trees, concrete kerbs, walls, fences and gates;
- Removal of small retaining walls;
- New street furniture, including traffic lights and bus stops, and landscaping works;
- Removal of boundary walls, fences and gates, as required;
- Widening of cycle and pedestrian bridges;
- Minor utility diversions and / or protections, as required; and
- Excavation of pavements and carriageways.

A range of mitigation measures will be implemented to avoid or reduce negative impacts on waste and resources during the Construction Phase, including minimising waste disposal. Opportunities for reuse of materials, by-products and wastes will be sought throughout the Construction Phase of the Proposed Scheme. This will be managed through the Construction Phase by implementing a Construction and Demolition Resource and Waste Management Plan.

The approximately 1,220 tonnes of demolition waste that will be generated as a result of the Proposed Scheme is equivalent to 0.01% of the construction and demolition waste management baseline in the Eastern-Midlands Waste Region. The predicted impact of demolition waste during the Construction Phase is Adverse, Not Significant and Short-Term. The total forecast of surplus excavation material from the Proposed Scheme will be approximately 91,000 tonnes and is equivalent to 0.85% of the construction and demolition waste management baseline for the Eastern-Midlands Waste Region. There is potential for incorporating reused aggregates in the Proposed Scheme, and this will be done where practicable. In addition, where practicable, the remaining material will be reused. The predicted impact of excavation waste during the Construction Phase, is Adverse, Slight, and Short-Term.

The main potential impacts on waste and resources during the Operational Phase will be waste generated from road maintenance activities following completion of the Construction Phase. Maintenance operations will be undertaken under the jurisdiction of the local authority and in accordance with their waste management plans. No additional mitigation or monitoring measures are considered necessary. The quantity of bitumen containing material generated, during the Operational Phase, over the assumed lifetime of the Proposed Scheme (assumed to be 60 years), will decrease by approximately 1,200 tonnes. The predicted impact of operational construction and demolition waste will be Positive, Not Significant and Long-Term.

With the implementation of the proposed mitigation measures, it is expected that there will be no residual significant impacts on waste and resources.

8.14 Material Assets

This material assets assessment was considered in terms of:

- Major utilities (both underground and overground) such as gas, water pipelines (drinking water pipelines and sewers) and storm water networks, electricity transmission lines and telecommunications lines;
- Manmade transport infrastructure such as roads, rail and canals; and
- Raw materials that are required to be imported for the Proposed Scheme.

This assessment involved a desk-based review of these material assets. Utility information was requested from relevant organisations and service providers.

Existing material assets within the Proposed Scheme include:

- Electricity Supply Board electricity lines (high, medium and low voltage) and associated infrastructure;
- Gas Networks Ireland gas mains (high, medium and low pressure) and associated infrastructure;
- Irish Water drinking water mains and associated infrastructure;

- Irish Water sewer lines (foul and combined sewers) and associated infrastructure;
- Local Authority surface water drainage network and associated infrastructure;
- Eir, Enet and Virgin Media telecommunications lines and associated infrastructure;
- Local Authority traffic signal ducting;
- Railway lines (Western Commuter Line and South Western Commuter Line);
- The Royal Canal;
- Luas lines (both Green Line and Red Line).

Within the site of the Proposed Scheme, material is currently imported as part of regular maintenance activities which are undertaken on the existing roads, cycle lanes, footpaths, utilities, and verges.

The main construction elements that are likely to result in potential impacts on material assets will include:

- Construction of the new pedestrian and cycling bridge over the Royal Canal, which will require temporary lowering of the water level and will temporarily disrupt the usability of the canal in this area;
- Construction Compounds will require electricity to power temporary office and welfare facilities and for temporary lighting which will be required to be supplied via a connection to the grid network or a generator;
- Construction Compounds will require a water supply for welfare facilities and spraying to prevent dust, wherever necessary;
- Construction Compounds will require telecommunications access;
- The diversion of electricity lines in areas where there will be interfaces with the Proposed Scheme works;
- The diversion of underground watermains where there will be interfaces with the Proposed Scheme works;
- Upgrade works required to the surface water drainage network to accommodate for new road layouts and increased hardstanding;
- The diversion of gas infrastructure where there will be interfaces with the Proposed Scheme works; and
- Importation of construction materials including concrete, metals, cement, road surface materials and landscaping materials. The amount of materials required for the Proposed Scheme will only represent a small proportion of the Irish quantities manufactured per year.

The Proposed Scheme has been designed to minimise the impact on utility infrastructure. This includes avoiding interactions with major utility infrastructure, wherever possible. Where there are interfaces with existing utility infrastructure, these will be protected in place or diverted as necessary to prevent long-term disruption to services. Diversions and changes to the location or layout of any utility infrastructure have been accounted for in the overall design of the Proposed Scheme.

All possible precautions will be taken to avoid unplanned disruptions to any infrastructure or services during the Construction Phase. Proposed utility works are based on available records, and preliminary site investigations. Prior to excavation works being commenced, localised confirmatory surveys will be undertaken to verify the results of the pre-construction assessments undertaken and reported in this EIAR.

Consultation has taken place with the major utility companies, and the appointed contractor will continue to consult these companies, in liaison with the NTA. Where diversions are required and service disruptions to the surrounding properties are unavoidable, this will be planned with prior notification given to the impacted property owners.

The Proposed Scheme has also been designed to minimise the amount of major construction works required. When sourcing materials for the Proposed Scheme, the appointed contractor will carefully consider the sustainability of materials. Aspects considered will include the source, the material specification, production and transport costs, and the availability of the material. Construction materials will be managed on-site appropriately to prevent over-ordering and waste.

With the implementation of the proposed mitigation measures there will be no significant residual impacts on material assets as a result of the construction of the Proposed Scheme.

The main operational elements that are likely to result in potential impacts on material assets will include:

- The requirement for electricity connections for new lighting, for bus stop information and for junction signalling; and
- The requirement for telecommunications connections at bus stops which contain real time passenger information, to allow the buses and the real time information to sync up with each other.

There will be no significant Operational Phase impacts on utility infrastructure. Due to the measures included in the design of the Proposed Scheme and the fact that there are minimal impacts predicted during the Operational Phase, no specific mitigation measures are required.

8.15 Risk of Major Accidents and / or Disasters

This assessment considered the potential significant impacts of the Proposed Scheme on the environment, resulting from its vulnerability to risks of major accidents and / or disasters during the Construction Phase and Operational Phase.

The risk assessment:

- Identified major accidents and / or disasters (i.e. unplanned incidents) that the Proposed Scheme may be vulnerable to; and
- Assessed the likely impacts and consequence of such incidents in relation to the environmental, social and economic receptors that may be affected.

A register of all potential risks and the associated potential impacts was developed for the Construction and Operational Phases of the Proposed Scheme. This register assumed a worst-case scenario, before any mitigation measures or emergency plans would be put in place to reduce the likelihood and potential impact of any major accidents and / or disasters.

Risks are rated by multiplying the likelihood rating (likelihood of a risk happening which ranges from extremely unlikely to very likely) with the consequence rating (level of consequences if a major accident and / or disaster occurred, which ranges from minor to catastrophic). This gives a risk score of low, medium or high. Low risk scores do not meet the definition of a major accident and / or disaster and high risk scores would be considered high risk and unacceptable for the development of the Proposed Scheme and would need to be designed out. Medium risk scores would require a level of mitigation that would reduce the level of impact.

For the Construction Phase, there were a number of risks that were deemed low and were not considered further. No high risks were identified and the following medium level risks were identified for the Construction Phase:

- Risk of gas explosion due to striking underground gas mains during excavation works;
- Risk of pollution occurring to a watercourse or groundwater, most notably associated with the release of fine sediments during construction works;
- Risk of spread of non-native invasive species during construction works, particularly during site clearance; and
- Risk of explosion / fire due to strike of aviation fuel pipeline.

The Proposed Scheme complies with relevant design standards, which include measures to reduce the likelihood of risk events occurring.

Appropriate mitigation measures will be implemented during the Construction Phase, including the implementation of a CEMP and Environmental Incident Response Plan. Once these mitigation measures are applied, there are no remaining identified incidents or major accidents and / or disasters risk events that present a level of risk that would lead to significant impacts or environmental effects.

No significant risks were identified as likely to occur during the Operational Phase.

8.16 Cumulative Impacts and Environmental Interactions

This assessment considers the potential cumulative impacts and impact interactions as a result of potential impacts from other schemes in combination with the predicted impacts of the Proposed Scheme, and interactions between environmental aspects. The assessment included a consideration of the potential effects of other BusConnects Core Bus Corridor Schemes as well as other projects.

Impact interactions between environmental aspects are generally addressed as part of the individual topic assessments, so for example the population assessment included effects on community amenity, which relates to the interaction of impacts on air quality, visual amenity, traffic and transport, and noise and vibration.

The following sources were considered in identifying other relevant developments for the assessment of cumulative impacts:

- An Bord Pleanála website – for details of strategic infrastructure developments and strategic housing developments;
- Local authority websites and the development plans – for details of allocations and areas for regeneration;
- National Planning Application Database – for a downloadable list of planning applications sent from local authorities;
- NTA website – for details of major transport programmes. This included a review of the NTA's Greater Dublin Area Transport Strategy;
- Project Ireland 2040, which combines the National Development Plan and National Planning Framework. and its interactive mapper;
- The Transport Infrastructure Ireland website – for details of major transport programmes;
- The EIA Portal maintained by the Department of Housing, Planning and Local Government – for applications for development consent accompanied by an EIAR; and
- Irish Water's website, which includes a page on its projects.

A combined worst-case scenario was considered, with the simultaneous construction of all the BusConnects Core Bus Corridor Schemes. Traffic modelling of this scenario identified the potential for cumulative impacts on the wider road network, including local and residential roads. For this reason, it is not considered feasible or acceptable to construct all 12 schemes at the same time. Consequently, an alternative scenario was developed to identify a more realistic worst-case scenario for the traffic-related cumulative impact assessment. This scenario proposes a limitation on the number of schemes that can be constructed concurrently. This scenario was considered, in combination with the other identified major infrastructure projects and major developments which could directly interface with the Proposed Scheme with regard to traffic and transport.

No likely significant cumulative effects relating to traffic and transport are predicted, over and above the effects of the Proposed Scheme assessed in isolation.

With regard to air quality, as the cumulative construction traffic effects will be broadly in line with those of the Proposed Scheme in isolation and the associated cumulative air quality effects will not be significant. Dust mitigation at the Construction Phase for the Proposed Scheme, with similar measures in place for other projects, will mean that overall cumulative effects of construction dust will not be significant.

The construction of a wide range of projects in Ireland over the construction period of the CBC Infrastructure Works will result in the generation of embodied carbon. These projects include local planning applications, major projects and strategic developments with a varying extent of embodied carbon generation. Any increase in carbon emissions is assessed as a significant negative impact. The climate impact assessment of road traffic emissions from the Construction Phase of the Proposed Scheme cumulatively with the 11 other Core Bus Corridor Schemes predicts a temporary overall increase of 2.6% of carbon dioxide equivalent. A series of embedded mitigation measures have been incorporated into the design of the Core Bus Corridor Schemes with the goal of reducing the embodied carbon and traffic emissions associated with the Construction Phase of all Core Bus Corridor Schemes. For example, concrete containing Portland cement will be replaced with concrete containing ground granulated blast furnace slag which will save on embodied carbon across the 12 Core Bus Corridor Schemes.

The combined impact on climate of the Proposed Scheme with other schemes under construction concurrently is considered to result in a cumulative Negative, Significant and Short-Term impact. In general, the carbon emissions associated with embodied carbon and energy to construct schemes on a national basis is accounted for cumulatively as part of the ETS. Impacts on climate associated with the Proposed Scheme cumulatively with the construction of all other Core Bus Corridor schemes are predicted to be Negative, Significant and Short-Term.

On the basis that the more realistic worst-case scenario for construction traffic is predicted to result in traffic conditions which are broadly in line with the effect of implementing each of the Proposed Schemes in isolation, there would be no likely significant cumulative effect on traffic related noise over and above the effects of the Proposed Scheme assessed in isolation.

With regard to biodiversity, the construction of the Proposed Scheme in combination with other projects, will not give rise to significant cumulative impacts.

During construction, post-mitigation, the human health assessment identified four other projects as having the potential for in-combination impacts assessed to be Negative, Moderate and Temporary.

The landscape (townscape) and visual assessment identified that where the construction of the Proposed Scheme coincides with other developments, or construction is successive, there remains potential for localised Moderate and Temporary / Short-Term cumulative effects during construction on the townscape / streetscape.

No other significant construction related cumulative effects were identified from the Proposed Scheme in combination with other projects (including the other Core Bus Corridor Schemes) over and above those identified in the standalone assessments.

For Operational Phase effects, the assessments assume all 12 proposed Core Bus Corridor Schemes would be operational, along with other identified projects and the Greater Dublin Area Transport Strategy projects included in the Do Minimum and Do Something scenarios. For traffic and transport, the assessment predicted that the Proposed Scheme and the other 11 Core Bus Corridor Schemes are expected to facilitate a Positive, Profound and Long-Term cumulative effect on People Movement by sustainable modes. The Core Bus Corridor Schemes are seen to enable significant improvements in People Movement by sustainable modes along the direct Core Bus Corridor routes, particularly by bus and cycling, with reductions in car mode share due to the enhanced sustainable mode provision. The Proposed Scheme and the other 11 Core Bus Corridor schemes will provide for enhanced integration and efficiencies for all public transport modes by facilitating substantial increases in public transport average network wide travel speeds.

The climate impact assessment predicts a Negative, Significant and Permanent cumulative impact on climate during the maintenance phase. A Positive and Significant impact is predicted on climate in 2028 with a Neutral impact in 2043 due to the predicted cumulative change in operational traffic and the significant mode shift from cars to more sustainable modes (walking, cycling and public transport). Fewer climate benefits are seen in 2043 relative to 2028 due to the further electrification of the wider fleet in both the Do Minimum and Do Something scenarios.

The CBC Infrastructure Works will also support the delivery of government strategies outlined in the Climate Action Plan 2021 and the Climate Action and Low Carbon Development (Amendment) Act, 2021 by enabling sustainable mobility and delivering a sustainable transport system. The CBC Infrastructure Works will provide connectivity and integration with other public transport services leading to more people availing of public transport, helping to further reduce greenhouse gas emissions.

Based on the analysis outlined above, it is concluded that the CBC Infrastructure Works achieves the project objectives in supporting the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets. The CBC Infrastructure Works has the potential to reduce greenhouse gas emissions equivalent to the removal of approximately 105,500 and 102,200 car trips per weekday from the road network in 2028 and 2043, respectively. This represents a very significant contribution towards the national target of 500,000 additional trips by walking, cycling and public transport per day by 2030 as outlined as a target in the Climate Action Plan 2021. It is concluded that, cumulatively, the CBC Infrastructure Works will make a significant contribution to carbon reduction.

There is potential for Positive, Very Significant and Long-Term cumulative effects on human health as a result of the other Core Bus Corridor Schemes. The Core Bus Corridor Schemes would be complementary to the Proposed Scheme and offer a greater choice of priority bus routes for bus passengers. It is considered likely that this would encourage greater uptake of bus services among the population surrounding the Proposed Scheme by offering a choice of efficient public transport journeys. This would be beneficial to health by improving wellbeing from greater journey reliability, access to services for those without a car and supporting greater physical activity as a part of an overall journey via public transport.

Similarly, for five other major projects it is considered that the proposals and Proposed Scheme are complementary and could have cumulative beneficial effects by connecting different communities and destinations which would improve general accessibility to areas of leisure and employment which can have positive effects on mental health, which is judged to be Positive and Significant in the Long-Term on human health for three Major Projects and Positive and Moderate in the Long-Term on human health for two Major Projects.

Significant environmental interactions occur between the topics of population, human health, air quality, noise and vibration and traffic and transport. The assessments made for each of those topics consider those interactions both directly and indirectly. As an environmental factor, landscape and visual considerations have natural relationships with all other environmental factors. Some are direct relationships (e.g., population and visual impacts; biodiversity and landscape; land, soils and water and landscape; or the setting around features of cultural heritage etc.). Others may be indirect (e.g. human health, air quality and landscape, material assets and landscape and visual aspects). Wherever possible these potential interactions have been incorporated into the relevant assessments.

In brief, the Proposed Scheme will address sustainable mode transport infrastructure deficits while contributing to an overall integrated sustainable transport system as proposed in the Greater Dublin Area Transport Strategy. It will increase the effectiveness and attractiveness of bus services operating along the corridor and will result in more people availing of public transport due to the faster journey times and reliability improvements which the Proposed Scheme will provide. This in turn will support the potential to increase the bus network capacity of services operating along the corridor and thereby further increasing the attractiveness of public transport. In addition to this, the significant segregation and safety improvements to walking and cycling infrastructure that is a key feature of the Proposed Scheme 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.

9. What Happens Next?

The application for consent / approval, this EIAR and the Natura Impact Statement (NIS) may be viewed / downloaded on the following website: www.ballymunfinglasscheme.ie.

This application may also be inspected free of charge or purchased on payment of a specified fee (this fee shall not exceed the reasonable cost of making such a copy) for a period of 8 weeks commencing on the date of publication of the Proposed Scheme. Further details of these arrangements can be found at www.ballymunfinglasscheme.ie.

Submissions or observations may only be made to An Bord Pleanála (Strategic Infrastructure Division), 64 Marlborough Street, Dublin 1, D01 V902 for a period of 8 weeks commencing on the date of publication of the Proposed Scheme, relating to:

- The likely effects on the environment of the Proposed Scheme;
- The implications of the Proposed Scheme for proper planning and sustainable development in the area in which it is proposed to situate the Proposed Scheme; and
- The likely adverse effects of the Proposed Scheme on a European site.

An Bord Pleanála may, in relation to an application submitted for approval under Section 51 of the Roads Act 1993 (as amended), by order, approve the Proposed Scheme, with or without modifications and subject to whatever environmental conditions it considers appropriate, or may refuse to approve the Proposed Scheme.