Non-Technical Summary

Contents

1. Introduction

This document is the Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) for the Clongriffin 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 has an overall length of approximately 5.7km, and is routed along the R107 Malahide Road from Mayne River Avenue – R107 Malahide Road Junction to the junction with Marino Mart - Fairview and also routed for cyclists via the junction with Malahide Road-Brian Road along Carleton Road, St Aidan's Park, Haverty Road and Marglann Marino, all in the County of Dublin and within the Dublin City Council (DCC) administrative area. From here the Proposed Scheme ties into a separate project, the Clontarf to City Centre Cycle & Bus Priority Project, currently being developed by DCC. The Clontarf to City Centre Cycle & Bus Priority Project will provide segregated cycling facilities and bus priority infrastructure along a 2.7km route that extends from Clontarf Road at the junction with Alfie Byrne Road, to Amiens Street at the junction with Talbot Street in the City Centre. The start of the scheme ties into a separate project being developed by DCC namely, The Belmayne Main Street and Belmayne Avenue Scheme, which provides bus and cycle linkages to Clongriffin Dart Station.

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.

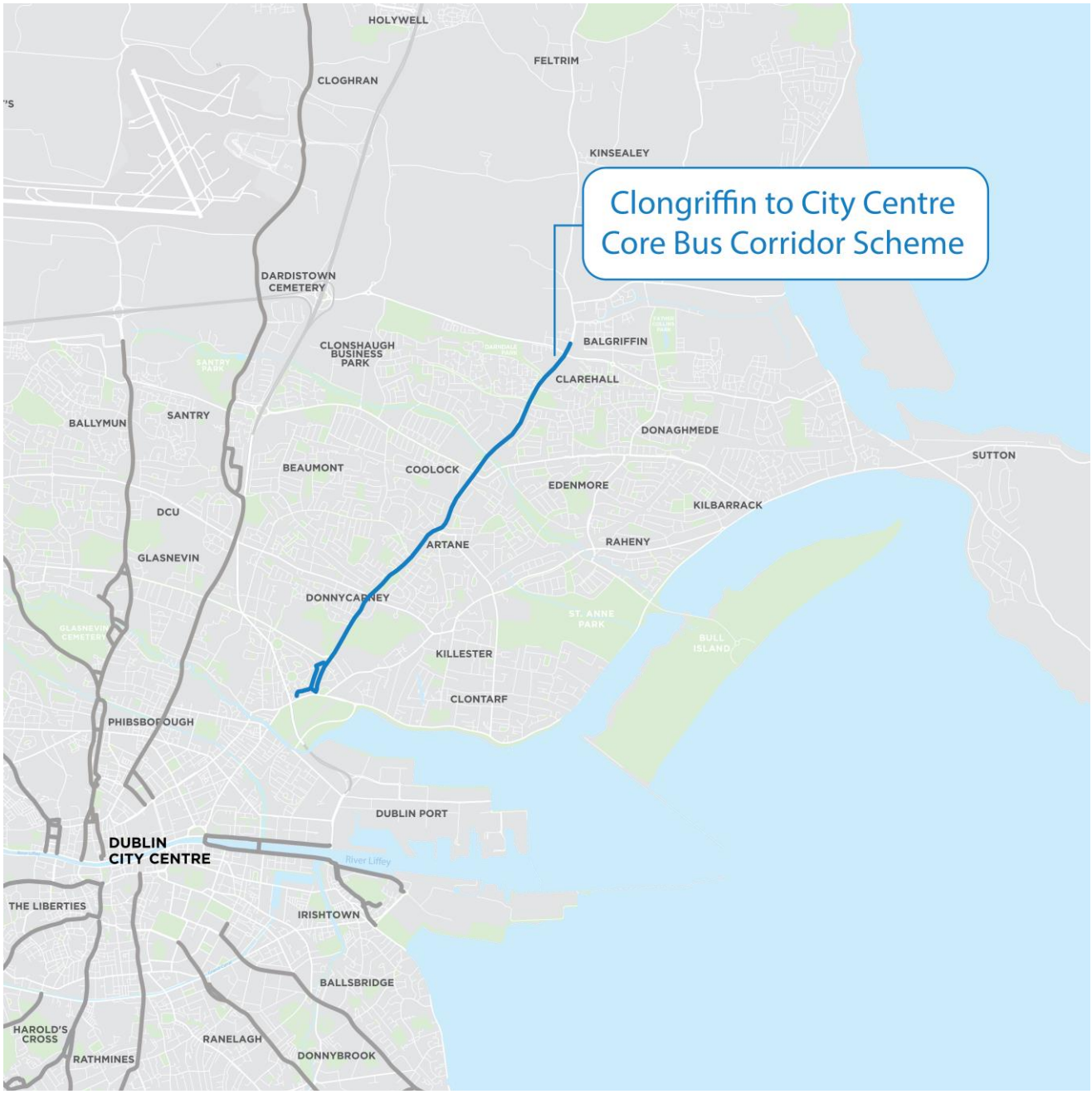

Image 1.1: Route of the Proposed Scheme

The Proposed Scheme will 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 as well as an alternative cycle route via the junction with Malahide Road-Brian Road along Carleton Road, St Aidan's Park, Haverty Road and

Marglann Marino, 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 GDA Cycle Network Plan) (NTA 2013), 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.

In addition to the primary corridor an approximate 650m alternative cycle route is proposed between the Malahide Road and Fairview via Brian Road, Carleton Road, St. Aidan's Park, Haverty Road and Marglann Marino. The Proposed Scheme will see an overall increase in bus priority and segregated and non-segregated cycling facilities. The scheme will also provide improved pedestrian crossing facilities along the route, with an increase in the number of signalised crossing points, and the provision of side road ramps.

Several public 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 Proposed Scheme includes enhanced planting at Brookville Park / Bóthar Mhullach Íde that will provide a small community pocket park.

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 Corridors 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 GDA Transport Strategy) (NTA 2016).

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 public 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 the Dublin Transport Authority Act 2008 (as amended) (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 constructing the Proposed Scheme (if approved).

2. Environmental Impacts 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 Core Bus Corridors 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 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 need of our growing urban centres and connects 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 plan is to provide citizens with reliable and realistic sustainable transport options. The Climate Action Plan 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 road 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 2016 - 2035 (referred to as the GDA Transport Strategy) is an essential component for the orderly development of the Greater Dublin Area (GDA) over the next 20 years. The purpose and primary objective of the GDA 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 GDA Transport Strategy in regard to improving the pedestrian environment along the Proposed Scheme, while taking cognisance of and supporting pedestrian and public realm planning objectives locally. In addition, the Proposed Scheme will improve the existing streetscape/public 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 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 GDA 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 cycle network plan.

As part of the GDA Transport Strategy the Core Bus Network is to be developed to achieve a 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 GDA Transport Strategy in so far as it will provide infrastructure required to facilitate '*a continuous priority for bus movement on sections of the Core Bus network within the Metropolitan area*.' The Proposed Scheme is needed to help realise the objectives of the GDA 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.

The main bus corridors in the northeast Dublin area are on the Malahide Road and the Howth Road. The Malahide Road along the extent of the Proposed Scheme currently has a high portion of inbound and outbound bus-lane infrastructure. However, the quality of service is poor due to discontinuities of various types, with long lengths of the outbound route lacking a dedicated bus lane. At key locations along the corridor the existing bus lanes are shared, with parking/loading permitted at certain times during the day in one area, in addition to the designation of shared cycle/bus lanes along parts of the route where no segregated cycling infrastructure is available. This has the effect of slowing down bus journeys.

Based on the need to address the resulting service deficiencies along the Malahide Road and the need to serve significant demand and a high level of scheduled bus services along this entire corridor, the Core Bus Network study included a recommended route from Clongriffin to the City Centre.

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 provides. 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 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 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 GDA Strategy and 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 Emerging Preferred Route (EPR) and two in relation to the Preferred Route Option (PRO)), 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 EPR Option Consultation

The first round of public consultation carried out was based on the EPR and this ran from 14 November 2018 to 29 March 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 EPR 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 PRO 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 two-way communication between local communities through nominated community/ resident representatives, and also including elected representatives, and the BusConnects Infrastructure team. Community Forum meetings were facilitated during non-statutory public consultation periods and outside these periods when deemed appropriate, where the Community Forum attendees were 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 PRO Consultations

The PRO non-statutory public consultation took place from 4 March 2020 to 17 April 2020. This second round of consultation accepted public submissions until 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. A consultation event was held at the Bonnington Hotel, Swords Road on 11 March 2020 in which the public were able to view the proposals and discuss them directly with members of the BusConnects Infrastructure team. Due to the COVID-19 pandemic all further planned events scheduled after 12 March 2020 were cancelled. In deference to the submissions which had already been received, the decision was made not to cancel this non-statutory consultation phase.

The NTA held a third round of public consultation prior to finalising the PRO 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 PRO 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 PRO 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 undertook consultation during the preparation/ development of the EIAR with certain 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, 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 November 2019, March 2020 and November 2020). A letter drop was also carried out in summer 2020 to request access to properties to undertake more detailed surveys. Additional letters were sent to affected landowners in May 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 design team. Follow-up conversations have been facilitated as a result of these letters on request. In addition, a further attempt was made to contact those occupiers that had yet to make contact by visiting each property during September 2021. Where no one answered the door, a letter was placed through the letterbox again requesting the occupiers to contact the NTA.

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 November 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 provide feedback.

5. Alternatives Considered

5.1 Strategic Alternatives

The Proposed Scheme has been developed following careful consideration of alternatives. The GDA 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 GDA 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 GDA up to 2035 in the GDA Transport Strategy.

The Proposed Scheme aligns generally with part of Corridor A in the GDA Transport Strategy which extends from the core City Centre area through to Swords and North County Dublin and onwards towards Drogheda. The Proposed Scheme is within the Inner Metropolitan segment traversing through largely low to medium density suburban areas.

Through the work undertaken in the preparation of the GDA 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. The GDA Transport Strategy concluded that new heavy rail and light rail/metro alternatives would not be justified by the predicted level of demand. However, the existing DART line will be upgraded and extended as part of the GDA Transport Strategy.

Demand management and technological alternatives, such as congestion charges, road pricing, 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.

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

1) A **Feasibility and Options Report** was concluded in 2018, setting out the initial route options and concluding with the identification of an EPR along Malahide Road;
2) A first round of non-statutory **Public Consultation** was undertaken on the EPR from 14 November 2018 to 29 March 2019;
3) Development of **Draft PRO** (April 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder and community engagement and the availability of additional design information, the design of the EPR evolved with further alternatives considered;
4) A second round of non-statutory **Public Consultation** was undertaken on the Draft PRO from 4 March 2020 to 17 April 2020;
5) Further development of an updated **Draft PRO** was undertaken after 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 PRO from 4 November 2020 to 16 December 2020; and
7) Finalisation of **PRO**. Informed by feedback from the overall public consultation process, continuing stakeholder engagement and the availability of additional design information, the PRO, being the Proposed Scheme, was finalised.

The initial route alternatives considered covered a network of roads between Belmayne and Fairview. 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 EPR.

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

> *'The Core Bus Corridor (CBC) commences at Clongriffin DART Station and is routed via Clongriffin Main Street which will be extended to join the Malahide Road at a new junction to the north of Clare Hall Junction. The CBC is then routed via Malahide Road to the junction with Marino Mart / Fairview. From here the CBC ties into a separate project, Clontarf to City Centre Cycle Scheme* [now known as the Clontarf to City Centre Cycle & Bus Priority Project] *currently proposed by Dublin City Council.'*

5.3 Design Alternatives

Following the completion of the public consultation process in relation to the EPR, 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 PRO.

The EPR Option proposed to commence the Proposed Scheme at Clongriffin DART Station and was routed via Clongriffin Main Street to join the Malahide Road at a new junction (Mayne River Avenue / Malahide Road junction) to the north of Clare Hall Junction. The Proposed Scheme was then routed via Malahide Road to the junction with

Griffith Avenue. The EPR was reviewed in light of the proposed Belmayne Main Street and Belmayne Avenue Scheme being progressed by Dublin City Council which had been granted approval and it was determined that the Dublin City Council project would provide suitable linkage to Clongriffin Dart Station, and therefore the start of the Proposed Scheme was revised to commence at the Mayne River Avenue / Malahide Road Junction.

Several changes to the design were made based on feedback received during the second and third rounds of public consultation and dialogue with stakeholders. However, the changes made to the Draft PRO 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 has an overall length of approximately 5.7km, and is routed along the R107 Malahide Road from Mayne River Avenue – R107 Malahide Road Junction to the junction with Marino Mart - Fairview and also routed for cyclists via the junction with Malahide Road-Brian Road along Carleton Road, St Aidan's Park, Haverty Road and Marglann Marino, all in the County of Dublin and within the DCC administrative area. From here the Proposed Scheme ties into a separate project, the Clontarf to City Centre Cycle & Bus Priority Project, currently being developed by DCC. The Clontarf to City Centre Cycle & Bus Priority Project will provide segregated cycling facilities and bus priority infrastructure along a 2.7km route that extends from Clontarf Road at the junction with Alfie Byrne Road, to Amiens Street at the junction with Talbot Street in the City Centre. The start of the scheme ties into a separate project being developed by DCC namely, The Belmayne Main Street and Belmayne Avenue Scheme, which provides bus and cycle linkages to Clongriffin Dart Station.

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 disabled people.

A typical BusConnects road layout is shown in Image 6.1.

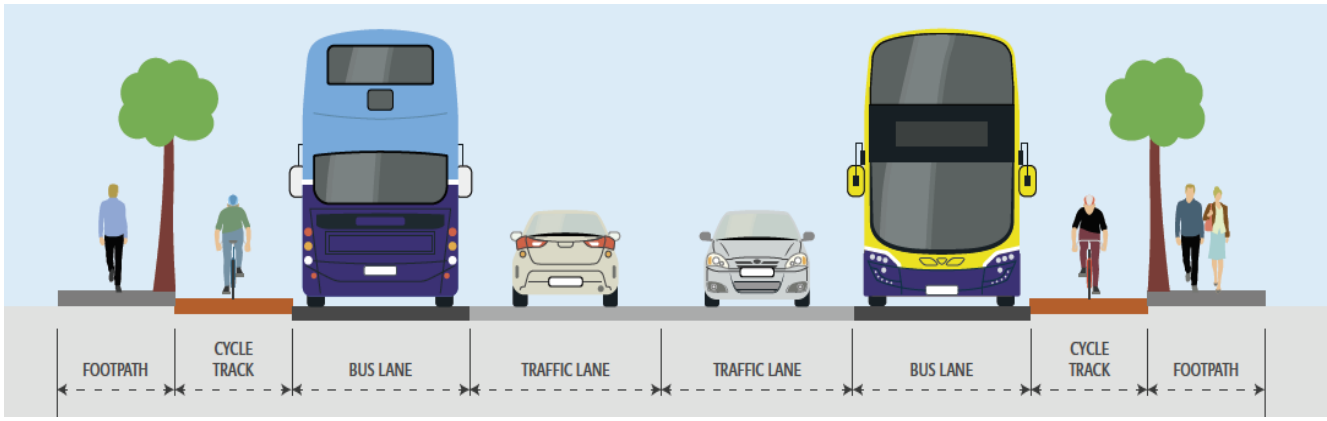

Image 6.1: Typical BusConnects Road Layout

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 45% from 36 to 52 as a result of the Proposed Scheme;
- The proportion of segregated cycle facilities will increase from 4% on the existing corridor to 100% on the Proposed Scheme;
- The proportion of the route having bus priority measures will increase from 74% on the existing corridor to 100% on the Proposed Scheme.

The Proposed Scheme is described in the following geographical sections:

- Section 1 - Mayne River Avenue to Gracefield Road – Malahide Road; and
- Section 2 - Gracefield Road to Marino Mart / Fairview – Malahide Road.

6.1 Section 1 - Mayne River Avenue to Gracefield Road – Malahide Road

Section 1 of the Proposed Scheme is routed along the R107 Malahide Road, commencing from the Mayne River Avenue – Malahide Road Junction, to the junction with the R808 at Gracefield Road. The following junctions are intended to be upgraded to provide bus priority and enhanced pedestrian and cyclist facilities:

- Malahide Road / R139 Clarehall Avenue;
- Malahide Road / Entrance to Clarehall Shopping Centre;
- Malahide Road / Blunden Drive / Priorswood Road;
- Malahide Road / Tonlegee Road / Brookville Crescent; and
- Malahide Road / Gracefield Road.

Junctions have been redesigned to improve facilities and reduce conflict between users. On the northbound approach on the Malahide Road, it is proposed to extend the bus lane to the stop line. It is proposed that the speed limit will be reduced from 60kph to 50kph from Clarehall Avenue inbound towards the City Centre.

Between Clarehall Avenue and Blunden Drive, a single bus lane and two general traffic lanes will be maintained in each direction. Temporary land acquisition will be required for a Construction Compound between Buttercup Park and Malahide Road. Reinstatement of the proposed Construction Compound will involve landscaping with improved tree cover at this location. Land acquisition will be required 250m west of the Priorswood Road Junction to provide a bus turnaround facility.

Between Priorswood Junction and Newton Cottages there is a proposed pedestrian and cycle track linking Ayrfield Drive and Malahide Road. A proposed Toucan crossing has been aligned here with this new access. This is illustrated in Image 6.2.

Image 6.2: Malahide Road Cycle track and footpath improvements at Ayrfield Drive Crossing – looking South

Between Tonlegee Road junction and Gracefield Road junction, it is intended to retain the single bus and general traffic lane in each direction, with an outbound segregated cycle track. Inbound cyclists are proposed to be

redirected on to the adjoining quiet street, St. Brendan's Avenue. Cyclists can then re-join the Malahide Road at Gracefield Road.

The existing roundabout at Gracefield Road will be changed to a fully signalised junction. The cycle facilities will be enhanced with more segregation provided.

6.2 Section 2 - Gracefield Road to Marino Mart / Fairview – Malahide Road

Section 2 of the Proposed Scheme is between the Gracefield Road Junction and Marino Mart / Fairview. The Proposed Scheme will upgrade the following junctions on the Malahide Road within this section:

- Malahide Road / Collins Avenue;
- Malahide Road / Copeland Avenue / Griffith Avenue; and
- Malahide Road / Clontarf Road.

Between Gracefield Road Junction and Killester Avenue Junction, it is intended to provide a continuous bus lane with a single general traffic lane in each direction. Dedicated cycle tracks and footway facilities will be provided through this section. To accommodate this, areas of land acquisition will be required from private properties.

Between Killester Avenue Junction and Collins Avenue Junction, a continuous bus lane with a single general traffic lane in each direction will be provided. Dedicated cycle tracks and footway facilities will be provided through this section. The existing road between these junctions required widening to accommodate the desired lane widths and bus stop facilities. Between Maypark and Collins Avenue land acquisition is required from private properties on the inbound side of Malahide Road.

Between Collins Avenue Junction and Griffith Avenue Junction it is intended to provide a continuous bus lane with a single general traffic lane in each direction. In addition, to facilitate continuous dedicated cycle tracks in each direction on this section of the Malahide Road, road widening will be required and therefore will involve land acquisition of properties between Donnycarney Church and Clancarthy Road on the inbound side of Malahide Road. The proposed works will also require the removal of existing trees currently located on traffic islands or between the existing road and footpath, and opportunities to enhance the streetscape have been identified as part of the design. The public realm improvement at Donnycarney Church is illustrated in Image 6.3 and Image 6.4.

Image 6.3: Donnycarney Church Public Realm Improvement

Image 6.4: Donnycarney Junction Public Realm Improvement

Between Griffith Avenue Junction and Marino Mart / Fairview, it is proposed to continue the bus and general traffic lanes in both directions. There are currently only three traffic lanes on this section of road. To facilitate the new four lane arrangement, land acquisition is required from adjacent properties at the following locations:

- Between Charlemont Road and Crescent Place (inbound side); and
- Between Crescent Place and Clontarf Road (outbound side).

An alternative cycle route will be provided through a parallel, less trafficked quiet route along Brian Road, Carleton Road, St. Aidan's Park, Haverty Road and Marglann Marino in this section. Cyclists will then re-join at Marino Mart and tie-in with the Clontarf to City Centre Cycle & Bus Priority Project. It is proposed to close Haverty Road for vehicular traffic at the St Aidan's Park end of the street. The Clontarf to City Centre Cycle & Bus Priority Project, which is being advanced by DCC and has received Part VIII approval, will also help to further reduce traffic on Brian Road, Carleton Road and Haverty Road.

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 3 to 9 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 Compound;
  - 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;
  - 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.

A Construction Compound for the Proposed Scheme will be located at land adjacent to Buttercup Park / Malahide Road. The Construction Compound will be used as the primary location for the storage of materials, plant and equipment, site offices, worker welfare facilities and limited car parking. It will be secured, to ensure the safe storage of all on-site material and machinery. Temporary fencing will be erected, and site security will be employed. The layout for the Construction Compound is shown in Image 7.1.

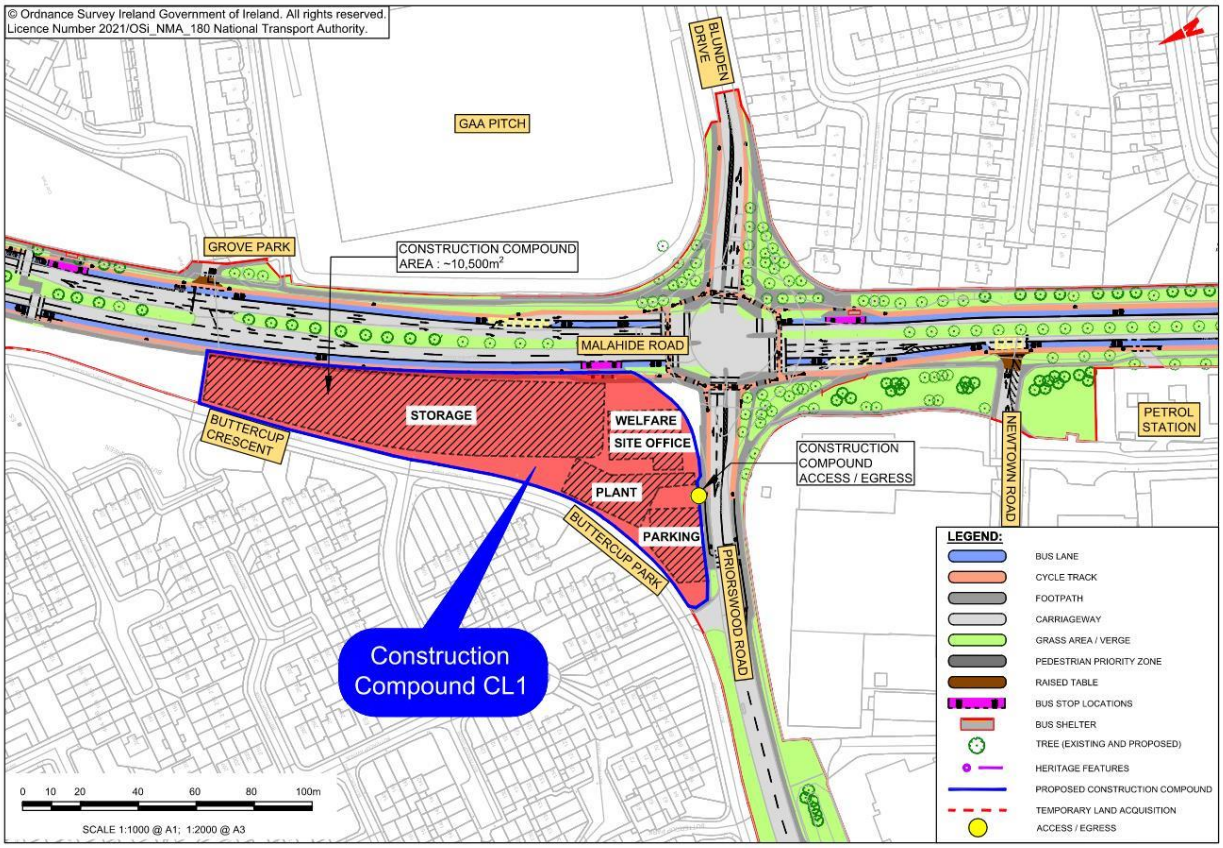

Image 7.1: Layout of Construction Compound CL1

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 prior to finalising the Construction Contract Documents for tender, so as to include additional measures required pursuant to conditions attached to An Bord Pleanála's decision. It will be a condition of the Employer's Requirements that the successful contractor, immediately following appointment, must detail in the CEMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála to any grant of approval. The CEMP has regard to the guidance contained in the TII 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 (CIRIA 2015).

7.2 Construction Traffic Management Plan

Construction traffic management has been prepared to demonstrate the manner in which 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 will 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 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. 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 process 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 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 construction 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 effects 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 and Transport

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

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

- The assessments 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 addresses:
  - **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, and temporary in nature, and with the application of the proposed mitigation measures, 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 will have a positive, significant, and long-term effect in Section 1 (the northern part of the Proposed Scheme), and a positive, moderate, and long-term effect in Section 2 (the southern part of the Proposed Scheme).
- **Cycling Infrastructure:** Given the quality of the existing cycling infrastructure along the Proposed Scheme, the improvements will have a positive, very significant and long-term effect across the Proposed Scheme.
- **Bus Infrastructure:** The results of the assessment demonstrate that the improvements to the quality of the bus infrastructure will have a positive, very significant and long-term effect.
- **Parking and Loading:** Given the nature of the loss in parking and the availability of alternative spaces, the impact is expected to have a negligible and long-term effect in Section 1 and a negative, moderate, and long-term effect in Section 2.
- **People Movement:** Overall, it is anticipated that the increases to the total number of people travelling through the Proposed Scheme will have a positive, very significant and long-term effect.

- **Bus Network Performance:** Overall it is anticipated that the improvements to the network performance for bus users along the Proposed Scheme will have a positive, significant, and long-term effect.
- **General Traffic Network Performance:** Overall, it has been determined that the impact of the reduction in general traffic flows along the Proposed Scheme will be a positive, moderate, and long-term effect whilst the impact of the redistributed general traffic along the surrounding road network will have a negative, slight, and long-term effect. Thus overall, there will be no significant deterioration in the general traffic environment in the area.

The Proposed Scheme will deliver 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 the 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.

The impacts assessed for the Construction Phase include dust emissions from activities such as site clearance, 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.

The potential air quality impacts associated with Construction Phase construction traffic routes and changes in traffic flows have been assessed. The assessment concludes that construction traffic will be short-term and/ or temporary in nature, and with the application of the proposed mitigation measures, the impact on air quality will not be significant. No mitigation measures will be required during the Construction Phase as all ambient air pollutant levels are predicted to comply with air quality standards. The assessment identifies a generally neutral, short-term, and not significant impact on air quality as a result of Construction Phase of the Proposed Scheme.

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 will be required during the Operational Phase as all ambient air pollutant levels are predicted to comply with air quality standards. The assessment identifies a generally neutral, long-term impact on air quality as a result of the Operational Phase of the Proposed Scheme.

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. This measure has led to a saving of approximately 243 tonnes of CO_{2eq} in the current design of the Proposed Scheme.

The Proposed Scheme is estimated to result in total Construction Phase greenhouse gas emissions of approximately 5,226 tonnes embedded CO_2eq for materials over the approximate 24-month construction period, equivalent to an annualised total of 0.005% of Ireland's national emissions in 2019 or 0.008% of Ireland's non-Emission Trading Scheme 2020 target.

Following the application of the mitigation measures, it is expected that there will be a short-term, negative, significant residual impact on climate as a result of the Construction Phase of the Proposed Scheme.

The potential changes in greenhouse gas emissions on a per person basis for the direct Operational Phase traffic impacts along the Proposed Scheme are a 24% to 27% decrease over the period 2028 to 2043. The Proposed Scheme will be effective in facilitating people to change travel mode from private vehicles to buses along the corridor of the Proposed Scheme, facilitating the predicted very large percentage decrease in greenhouse gas emissions on a per person basis.

The potential impact to climate during the Operational Phase of the Proposed Scheme from cars and buses affected by the scheme will be Positive, Significant 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 GHG emissions, beyond those reported in the above assessment. The Proposed Scheme has the potential to reduce GHG emissions equivalent to the removal of approximately 18,000 and 19,500 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 2021 Climate Action Plan. The greenhouse gas emissions associated with the Operational Phase of the Proposed Scheme (i.e. maintenance of the scheme infrastructure), after mitigation, is predicted to be neutral and permanent.

The CBC Infrastructure Works will also support the delivery of government strategies outlined in the Climate Action Plan 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.

8.4 Noise and 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 suburban sources such as pedestrian movements and commercial activities. 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 utility diversions, road resurfacing and realignments road widening 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 Operational Phase confirms that with the introduction of the various measures included as part of the Proposed Scheme, a reduction in traffic noise can be achieved along the Proposed Scheme where highest existing traffic noise levels are experienced. The various design measures associated with the Proposed Scheme also align with the various intervention measures recommended within the World Health Organization Environmental Noise Guidelines to reduce traffic noise exposure across populations. There are no significant residual Operational Phase noise or vibration impacts associated with the Proposed Scheme.

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 11 community areas: Donaghmede, Ayrfield, Darndale, Ardlea, Coolock, Artane, Killester, Donnycarney, Marino, Clontarf (St. Anthony's) and Fairview.

The Proposed Scheme commences in the community areas of Donaghmede and Darndale orientating southwards along the Malahide Road through the communities of Ayrfield and Coolock. Initially this part of the Proposed Scheme is through a more industrial and larger scale commercial section of the route before it continues through the residential community areas of Coolock, Ardlea, Artane, and Donnycarney. At the junction of Marino Mart, the Proposed Scheme terminates in the community area of Marino where it is planned to tie into the Clontarf to City Centre Cycle and Bus Priority Project which is being delivered by DCC. An alternative cycling route via Brian Road and Carleton Road is proposed into Fairview as part of the Proposed Scheme in this area.

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 land acquisition and accessibility during the Construction and Operational Phases of the Proposed Scheme. However, localised negative, significant, and short-term land acquisition impacts are expected at 77 of the 80 residential properties subject to acquisition to accommodate construction activity during the Construction Phase while negative, significant, and long-term land acquisition impacts arise at nine properties during the Operational Phase. Eight businesses are also expected to lose some private landing/ parking.

Negative, moderate to significant short-term impacts on amenity are expected during the Construction Phase on Nazareth House Nursing Home, Clontarf Golf Course, and the Hilton Dublin Airport Hotel.

In addition, positive, moderate to very significant and long-term impacts are expected on walkers, cyclists, and bus users in the community areas of Darndale, Ayrfield, Coolock, Artane, Donnycarney and Marino during the Operational Phase.

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.

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.

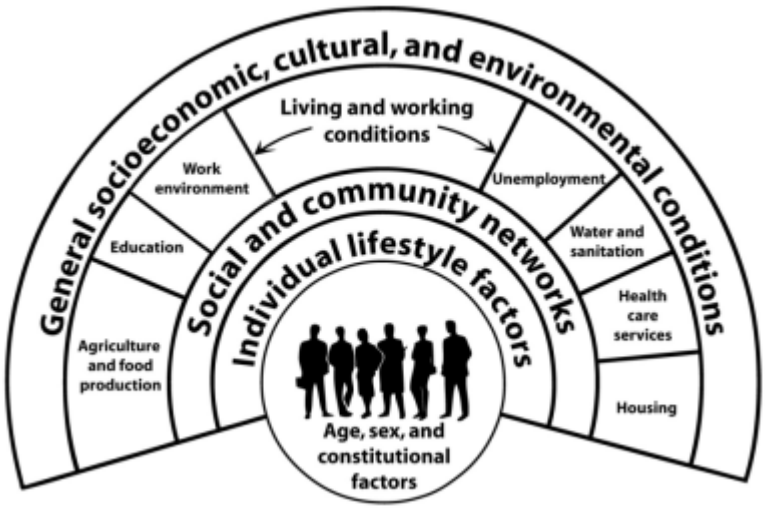

Image 8.1: Wider Determinants of Health

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 EU 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. Measures to control and limit noise are described in the Noise and Vibration section of this NTS.

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.

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 sites). The nearest European sites with a direct hydrological connection (connection by water) to the Proposed Scheme are North Dublin Bay Special Area of Conservation (SAC) and North Bull Island Special Protection Area (SPA) which are both located approximately 3km downstream of the proposed crossing point of a watercourse, referred-to as Santry_020.

The main habitats within the Proposed Scheme include mixed broadleaf woodland, hedgerows, treelines, scrub, grassland and buildings and artificial surfaces. Desk studies and surveys identified:

- No protected plant species, or non-native invasive species along the Proposed Scheme;
- Five bat species (Leisler's, Common pipistrelle, Nathusius' pipistrelle (not recorded, but known to occur in the wider study area), Soprano pipistrelle and an unidentified pipistrelle species);
- Potential roost features (locations where bats rest) in four locations;
- No evidence of badgers;
- No otter signs were found during survey, although otter are present in the River Mayne and Santry River systems;
- No evidence of amphibians or reptiles; and
- A total of 93 breeding bird species and 48 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;
- Road widening, pavement reconstruction, and kerb improvements;
- Reconfiguration of traffic lanes throughout;
- 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 groups of trees identified to contain potential roost features for bats where practicable, and planting new street trees, hedgerows, and species-rich grassland. 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 construction will be not significant beyond the local level.

Potential impacts on biodiversity for the Operational Phase may relate to the presence and operation of traffic on roads within the Proposed Scheme, the introduction of new lighting in previously unlit areas, routine maintenance works and an overall increase in impermeable surfaces.

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

- Excess light spill will be minimised through lighting design in two key locations around Maypark and St David's Wood where installation of additional lighting in previously dark / poor lighting areas will occur; light spill will be kept beneath three lux on the surrounding treelines;

- 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.
- The implementation of sustainable drainage measures will help prevent habitat degradation.

The assessment concluded that there will be no significant impacts on 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 following the implementation of the prescribed mitigation measures the Proposed Scheme will not, individually or in combination with other plans or projects, have any adverse effect on the integrity of any European sites in view of their conservation objectives.

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 the:

- Mayne_010, which has a total length of 16.52km and has a catchment area of approximately 20.3km^2. Land use to the north of the watercourse is for agricultural purposes whilst to the south, land use is predominantly urban. It is heavily modified and is largely culverted;
- Mayne Estuary, which is a transitional water body. It is also designated as a Special Area of Conservation (SAC) and a Special Protection Area (SPA) (Baldoyle Bay) and a proposed Natural Heritage Area (pNHA);
- Santry_020, which begins at Northside Shopping Centre in Coolock and flows through Raheny before discharging into the North Bull Island transitional waterbody and North Dublin Bay SAC; and
- Tolka Estuary, which is a transitional waterbody within the 09 Liffey and Dublin Bay Catchment and is within the protected areas of South Dublin Bay and River Tolka Estuary SPA, and the Tolka Estuary Nutrient Sensitive Area.

The current European Union Water Framework Directive (WFD) status of the waterbodies, and their At Risk (of not achieving its WFD objectives) status is as follows:

- Mayne_010: Poor status and At Risk;
- Mayne Estuary: Unassigned status and At Risk;
- North Bull Island: Unassigned status and At Risk;
- Santry_020: Unassigned status and At Risk; and
- Tolka Estuary: Moderate status and At Risk.

The surface water along the Proposed Scheme corridor currently drains into a surface water system which directly discharges to all the waterbodies as it travels from north to south and also indirectly into the Tolka Estuary via the culverted Wad River. The main existing pressure on water quality relates to urban runoff, overflows from the foul sewer network (emergency only), other unknown anthropogenic pressures and culverting.

A Flood Risk Assessment has been completed for the Proposed Scheme which determined that the Proposed Scheme will be in two Flood Zones, referred to as A and B, where the probability of flooding from rivers and the sea is high and low respectively.

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 construction, the water quality of all five waterbodies 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 for disruption to local drainage networks if they require 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.

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 waterbodies, 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. 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 and 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/contamination 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 authority, 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 and Cultural Heritage

The archaeological and cultural heritage assessment included 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.

Prior to the 20th century, the study area formed part of the agricultural lands surrounding the city, populated by small villages (such as Coolock), country villas and estates. Although Marino Crescent was built in 1792, suburban residential development did not begin in earnest until the early 20th century, in the areas east and west of the Malahide Road, as far north as Griffith Avenue. Although this part of Dublin has seen activity and settlement since the prehistoric period, there are relatively few upstanding archaeological sites surviving, most having been destroyed by intensive agricultural practices and later development. One such site is the possible prehistoric burial mound that stands within the grounds of the Cadbury factory at Coolock.

There are three archaeological heritage sites on the Records of Monuments and Places / Sites and Monuments Record, one on the Dublin City Industrial Heritage Record, and one non-designated archaeological site, with all three having the potential to be impacted by 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;
- 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.

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 predicted 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.

Much of the study area was in open agricultural use until the middle of the twentieth century. Early settlements included Coolock, Artane and Donnycarney, and were in their first phases, characterised by neat rows of cottages, some of which survive, facing directly onto the Malahide Road. These villages saw no significant expansion until c.1950 after which time they began to develop as part of the Dublin suburbs.

The most prominent demesne landscapes in the eighteenth century were associated with Marino House and Artane Castle. Both houses have been demolished, with their grounds subject to suburban residential, industrial, institutional, and retail uses, though some features of their historic landscapes survive, the most important being the Casino Marino, a garden temple which now sits in part of the former demesne of Marino House. The Casino Marino is designated as a National Monument and a Protected Structure and is in an Architectural Conservation Area.

Industrial heritage features along the route include three milestones and two bridges. An early ESB sub-station at the junction of Malahide Road and Fairview Strand was built c.1895 to facilitate the electrification of the tram service on the Malahide Road. There are eight further buildings or sites which are included in the National Inventory of Architectural Heritage (NIAH).

There are four Protected Structures or groups of Protected Structures in the study area of the Proposed Scheme, the most significant of which is the Casino Marino, a National Monument and Protected Structure of International Importance. They are situated in a short section of the study area between Griffith Avenue and Fairview Strand. The former Marino Demesne is protected as an Architectural Conservation Area, and is the most significant architectural heritage feature identified in the study area, with the Casino Marino recognised as a building of international significance. Street furniture of note includes three milestone markers, all in good condition, four pillar post boxes and lampposts in the Marino suburb and along Fairview Strand.

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 include:

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

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

- Impacts associated with visual changes on architectural heritage resources (including from the proposed locations of bus shelters), 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.

A moderate, negative, and permanent residual impact is anticipated on architectural heritage as a result of the Proposed Scheme at one location. This is where road widening will impact on the boundaries of Alpha Cottages at 20 and 22 Malahide Road. The cottages are not protected or included in any existing inventories, but they are, nevertheless of architectural and artistic interest.

8.12 Landscape (Townscape) and 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.

Along the section of the Proposed Scheme comprising the dual-carriageway Malahide Road, from Mayne River Avenue to Gracefield Road, the townscape is dominated by the mixed use and retail development as well as undeveloped plots of land. There is a protected structure in the form of a granite milestone at Belcamp Lane. There is some public space fronting the Hilton Hotel but no amenity space or other notable landscape features. There is recently-established street tree planting through much of the area.

In the section of the Proposed Scheme along the mostly dual-carriageway Malahide Road, from Belcamp Lane to Gracefield Road, the surrounding townscape is primarily two-storey residential development, with some stretches of business and commercial development, notably including the established Cadbury facility. There is a protected structure at the Cadbury facility (a moat) and amenity spaces at Santry River Corridor, O'Toole's GAA and adjacent to Buttercup Park. Trees are an important feature along many sections of the road corridor, including within the central median, on road verges and roundabouts, and within roadside open spaces and properties.

The section of the Proposed Scheme along the single-carriageway Malahide Road, between Gracefield Road and Marino Mart / Fairview, is generally characterised by two-storey semi-detached housing with mature established gardens. There is a transition to attractive terraced properties south of Clontarf Golf Course and through to Marino where Marino Crescent is a striking architectural element. Street side terraces of single-storey properties are a feature through Artane, and some modern developments are also present. Donnycarney Church is a major landmark, while the Casino Marino is an internationally important heritage property located to the west of the Proposed Scheme. There are amenity spaces at St. David's Park, Thorndale Park and Maypark, the Casino Marino, Marino Crescent Park and Fairview Park. Mature tree planting is a prominent feature along the boundary of the open spaces, and other properties along the route.

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

- Site mobilisation and establishment, fencing and hoarding of the Construction Compound and works areas - including within private areas / gardens;
- Site demolition, including 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 Compound;
- 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 cycleways, 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 Compound.

Construction of the Proposed Scheme will require land acquisition (temporary and / or permanent) from several residential properties. Temporary fencing / hoarding will be erected and access to property for the owners/ occupiers will be maintained for the landowner as far as reasonably practicable. Works will require removal and reinstatement of existing roadside boundary walls, railings, entrance gates, together with areas of existing garden plantings, garden accesses and garden features.

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 the proposed mitigation measures, it is expected that there will be a temporary / short-term moderate negative Construction Phase impact on the Belcamp Lane to Gracefield Road section, and a significant negative Construction Phase impact on the Gracefield Road to Marino Mart / Fairview section due to changes to the townscape. There will be temporary/ short-term significant negative impacts on protected structures, Nos. 62 and 64 Malahide Road, and on open spaces at St. David's Wood and at Maypark. Where there is land acquired from residential properties with gardens there will be very significant temporary / short-term negative impact. For residential properties where gardens have been converted to parking there will be a temporary / short-term significant negative impact, resulting from land acquisition, visual disturbance, and changes to boundaries, planting, and layout.

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.

While alterations in the road corridor and changes in traffic, pedestrian and cycle movements will be features of the Proposed Scheme, it is not anticipated that these aspects will give rise to significant landscape, townscape, or visual effects. Changes in road corridors, including in traffic signalisation, signage, and in carriageway allocation and traffic movements are a common and regular aspect of active road and traffic management in 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 a moderate / significant and long-term negative Operational Phase impact on residential properties which have mature gardens from which land will be acquired.

There will be moderate negative impacts on the Gracefield Road to Marino Mart / Fairview section of Malahide Road, protected structures at Nos. 62 and 64 Malahide Road, on Maypark (Donnycarney Park), and on the island in Malahide Road / Clontarf Road / Marino Mart Junction. There will be moderate positive long-term residual impacts on Malahide Road / Ardlea Road / Gracefield Road Junction, open space adjacent to Buttercup Park, open space at Pinebrook and St. David's Wood, and generally on trees and vegetation.

8.13 Waste and 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.

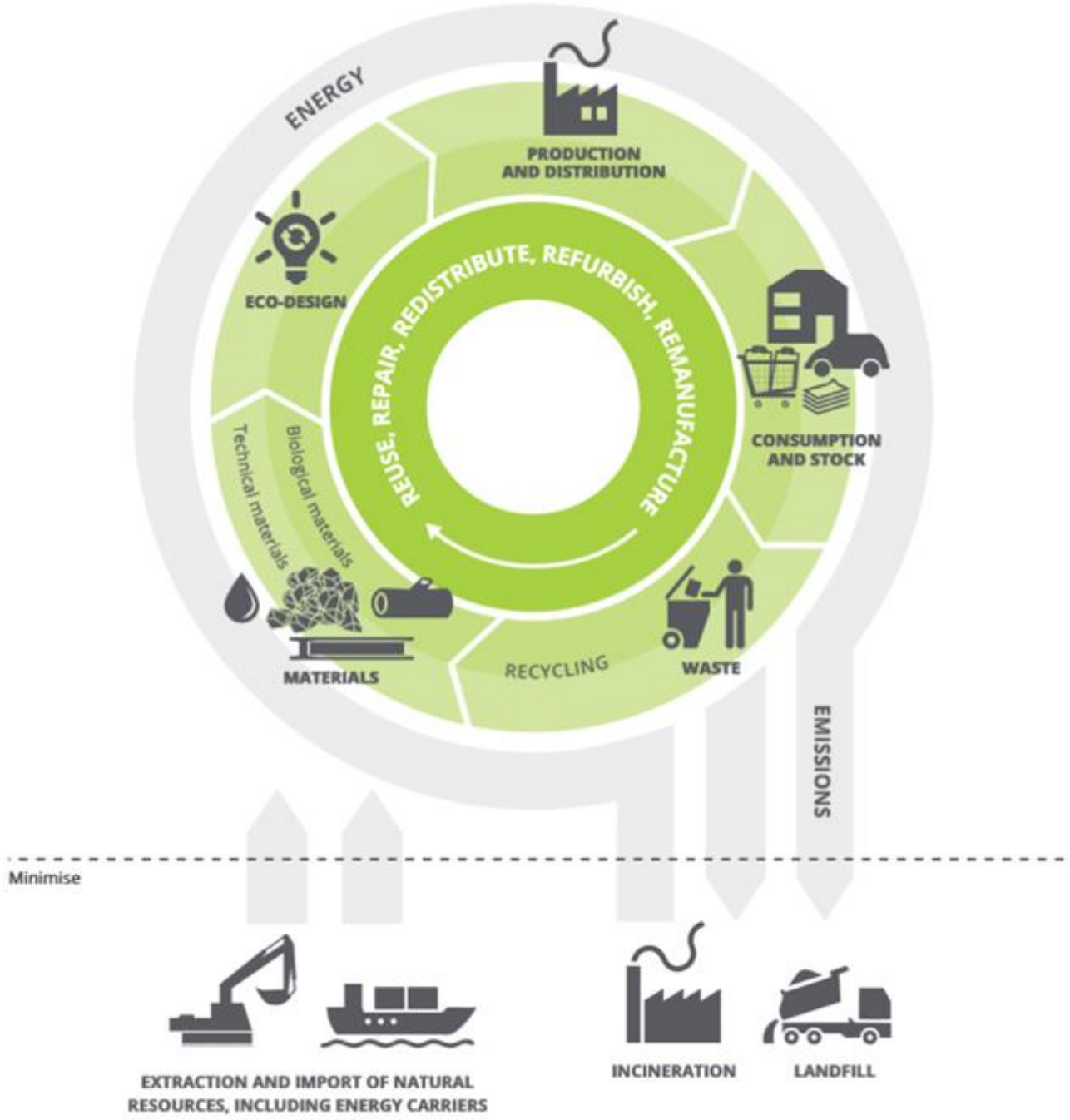

Image 8.2: The Circular Economy Model

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 reconstruction of cycleways, pathways, road widening and public realm improvements;
- Removal of trees, concrete kerbs, walls, fences and gates;
- Removal of small retaining walls;
- Removal of street furniture, including traffic lights, bus stops and landscaping works;
- Boundary walls, fences, and gates as required;
- 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 1,600 tonnes of demolition waste that will be generated as a result of the Proposed Scheme is equivalent to 0.02% 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 75,000 tonnes. and is equivalent to 0.76% 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 6,000 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

The 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; and
- Raw materials that are required to be imported for the Proposed Scheme.

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

Existing material assets within the site of 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;
- Manmade transport infrastructure;
- Eir, Enet and Virgin Media telecommunications lines and associated infrastructure;
- Local Authority traffic signal ducting; and
- The Aviation Fuel Pipeline between Dublin Port and Dublin Airport (assumed to be in place at the time of construction of the Proposed Scheme).

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:

- The Construction Compound 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;
- The Construction Compound will require a water supply for welfare facilities and spraying to prevent dust;
- The Construction Compound 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;
- The diversion of telecommunications infrastructure where there will be interfaces with the Proposed Scheme works;
- Importation of construction materials including concrete, metals, cement, road surface materials and landscaping materials. The amount of materials required for the Proposed Scheme will represent less than one percent 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 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 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 several 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. 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 downloadable list of planning applications sent from Local Authorities;
- National Transport Authority website – for details of major transport programmes. This included a review of the NTA's GDA Transport Strategy;
- Project Ireland 2040, which combines the National Development Plan and National Planning Framework. and its interactive mapper;
- 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 effects 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 project 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.

Regarding air quality, as the cumulative traffic effects will be broadly in line with those of the scheme in isolation, no significant cumulative air quality effects are identified. 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 be neutral.

The construction of a wide range of projects in Ireland over the construction period of BusConnects Dublin - Core Bus Corridors Infrastructure Works will result in the generation of embodied carbon. These developments 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 emissions compared to a scenario without the Core Bus Corridor Schemes. 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.

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.

There will be local-scale significant effects on biodiversity associated with the Proposed Scheme in combination with other projects, but the scale of the impacts is not significantly different from the localised impacts of the Proposed Scheme assessed in isolation.

Similarly, local scale impacts from combinations of developments with the Proposed Scheme may impact on visual amenity for nearby receptors. The protection of retained landscape elements, such as mature trees, will help to reduce the significance of these localised impacts.

Waste has been assessed to understand the potential contribution of the Proposed Scheme in cumulation with regional levels of waste on the waste handling capacity. Construction of projects within the region will produce construction and demolition waste, a proportion of which will be sent for recycling, further treatment or disposal to landfill. The construction phase impact of the Proposed Scheme has been assessed as not significant short-term and adverse. Considering therefore the likely potential for waste generation from other projects, the opportunities to divert waste from off-site treatment and the amount of inert, non-hazardous and hazardous waste treatment capacity likely to be available in the region in the coming years over the time period for the delivery of the Proposed Scheme, it is considered that there will be no likely significant cumulative effects as a result of the construction of the Proposed Scheme in combination with the construction of other projects.

No other significant cumulative effects in the Construction Phase are predicted for other environmental topics.

In operation, there will be a long-term profound positive cumulative impact 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 provide for enhanced integration and efficiencies for all public transport modes by facilitating substantial increases in public transport average network wide travel speeds.

The BusConnects Core Bus Corridors will provide an attractive alternative to private car travel, encouraging more travel by more sustainable modes. Supported by the Proposed Scheme and other projects planned under the GDA Transport Strategy, a greater share of travel demand will be by sustainable modes (public transport, walking and cycling). The Proposed Scheme in combination with the other 11 Core Bus Corridor Schemes will result in reductions in capacity for general traffic along its route. Compared to a scenario without the Core Bus Corridors, a reduction in carbon dioxide-equivalent emissions of 1.2% is predicted in the Opening Year resulting in a positive and significant impact on climate. This impact is predicted to reduce to neutral in 2043.

The Proposed Scheme in combination with the other Core Bus Corridor schemes 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 Proposed Scheme has the potential to reduce GHG 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 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 2021 Climate Action Plan (CAP) (DCCAE 2021). It is concluded that, cumulatively, the Core Bus Corridor Infrastructure Works will make a significant contribution to carbon reduction.

The air quality and noise and vibration Operational Phase assessments identify no additional significant adverse cumulative impacts over and above the standalone scheme impacts.

Operational Phase cumulative impacts on health are predicted to be positive, very significant and long-term, promoting greater physical activity, access to services (including health services), and a greater uptake in the use of bus services.

No likely significant operational cumulative impacts on landscape and visual receptors were identified in the assessment.

The predicted impact of the generation of operational waste associated with the maintenance of the infrastructure will be positive (on the basis that less material will be generated and less overall maintenance will be required compared to a scenario without the Core Bus Corridor Schemes), not significant and long-term. It is therefore considered that the Operational Phase waste arising from the Proposed Scheme considered in combination with the types of waste arising from other projects will not give rise to likely significant cumulative effects.

No other significant cumulative effects on other environmental topics are predicted during the Operational Phase.

Significant impact 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 considered 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. These potential interactions have been incorporated into the relevant assessments.

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: https://clongriffinscheme.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 https://clongriffinscheme.ie/.

Submissions or observations may 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.

The Board 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