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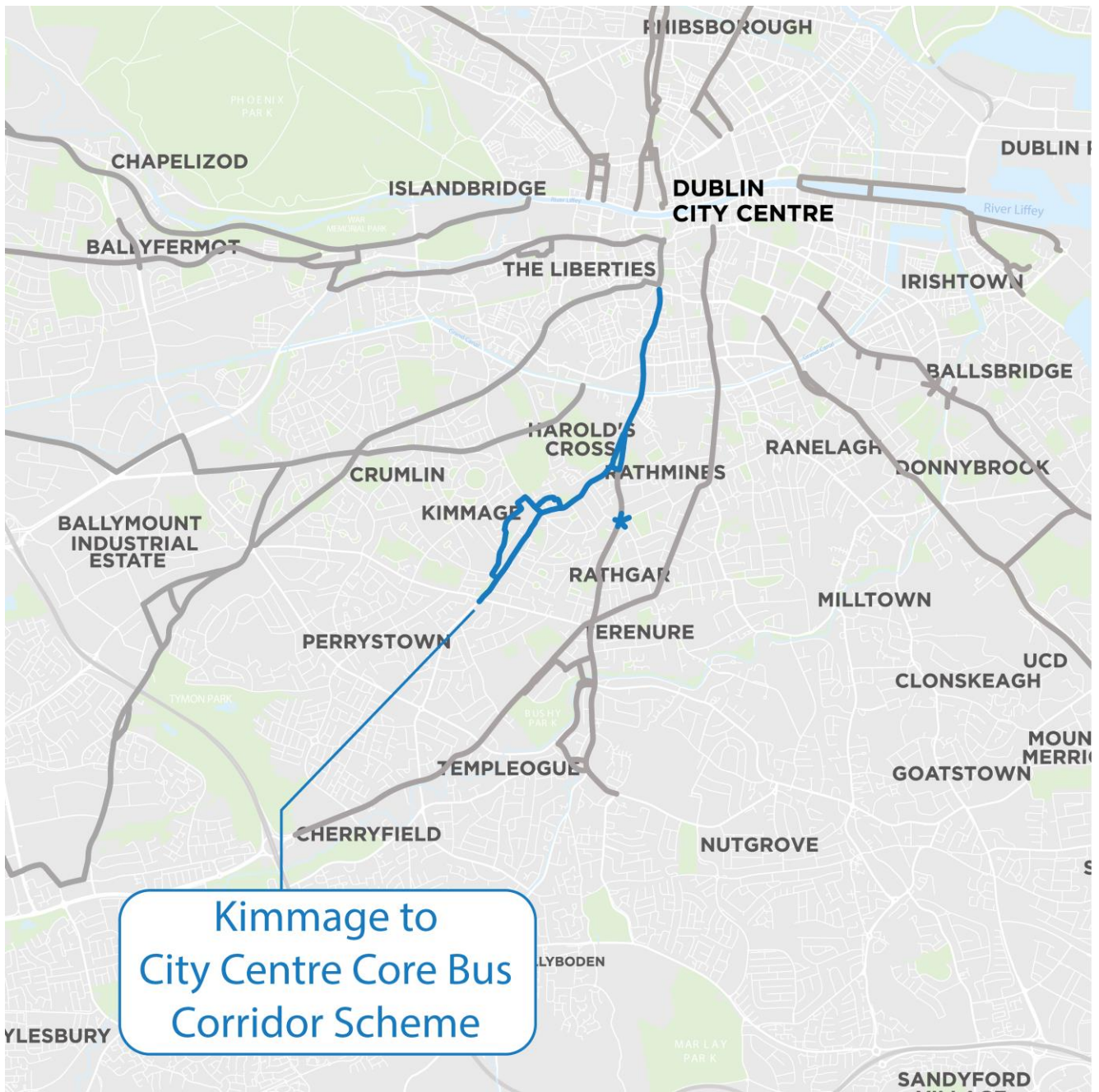
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## 1. Introduction

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

The Proposed Scheme will have an overall length of approximately 3.7km (kilometres) and will be routed along Kimmage Road Lower, Harold's Cross Road, Clanbrassil Street Upper and Lower, and New Street South from the Kimmage Cross Roads to the Patrick Street Junction, predominantly in the Dublin City Council (DCC) administrative area. However, a portion of the Kimmage Cross Roads is located within the administrative area of South Dublin County Council (SDCC). The Proposed Scheme will involve works on existing streets to facilitate pedestrian, cyclist and bus priority as well as the widening of Robert Emmet Bridge over the Grand Canal with the construction of shared user bridges.

The route of the Proposed Scheme is shown in Image 1.



**Image 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 discontinuous and inadequate bus and cycling infrastructure, meaning that for most of the journey, buses and cyclists are competing for space with general traffic, making it less attractive for pedestrians, cyclists, and bus users of these sustainable transport modes.

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

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

The provision of dedicated cycling infrastructure along the Proposed Scheme will make cycling trips safer and more attractive. In this regard, the Proposed Scheme delivers elements of the National Transport Authority (NTA) Greater Dublin Area Cycle Network, 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.

The Proposed Scheme will provide fully segregated cycle tracks in either direction along its entire length, with the exception of within the Bus Gates, where the existing advisory cycle lanes will be retained and not altered as the road conditions will be much enhanced as a result of the reduced general traffic restricted by the Bus Gates. The southernmost portion of the Proposed Scheme is complemented by an offline cycle route, by way of shared quiet street along Poddle Park, Blarney Park, and Mount Argus.

Urban realm upgrades, including widened footpaths, high quality hard and soft landscaping and street furniture will be provided in areas of high activity to contribute towards a safer, more attractive environment for pedestrians. These urban realm upgrades are proposed at the junction of Kimmage Road and Sundrive Avenue and at St. Patrick's Court along Clanbrassil Street Lower.

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

The Proposed Scheme is one of 12 schemes to be delivered under the BusConnects Dublin - Core Bus Corridor Infrastructure Works (hereafter referred to as 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 2**.





**Image 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 Greater Dublin Area Transport Strategy 2022 - 2042.

## 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.

## 1.1 Role of the National Transport Authority

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

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

## 2. Environmental Impact Assessment Process

### 2.1 EIA Process

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

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

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

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

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

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

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



## 3. Need for the Proposed Scheme

### 3.1 Context

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

### 3.2 Project Ireland 2040 - National Development Plan 2021 - 2030

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

### 3.3 Climate Action Plan 2023

The Climate Action Plan 2023 is the second annual update to Ireland's Climate Action Plan 2019. The Climate Action Plan 2023 is the first to be prepared under the Climate Action and Low Carbon Development (Amendment) Act 2021, and following the introduction, in 2022, of economy-wide carbon budgets and sectoral emissions ceilings. The Climate Action Plan 2023 implements the carbon budgets and sectoral emissions ceilings and sets a roadmap for taking decisive action to halve Ireland's emissions by 2030 and reach net zero no later than 2050.

The Climate Action Plan 2023 calls for a significant cut in transport emissions by 2030 in order to meet the sectoral emission ceiling, with the transport sector having an aim of a 50% reduction in emissions by 2030. The 'Avoid' (reduce or avoid the need for travel – land use planning), 'Shift' (Shift to more environmentally friendly modes – public transport, active travel), 'Improve' (Improve the energy efficiency of vehicle technology- vehicle efficiency, clean fuels) approach has been adopted to help achieve these targets. The targets from the previous plan (Climate Action Plan 2021) have been updated to include *'a 20% reduction in total vehicle kilometres, a reduction in fuel usage, and significant increases to sustainable transport trips and modal share'*

One of the key actions to deliver abatement in transport identified in the Climate Action Plan 2023 is the advancement of the BusConnects Programme in five cities (which includes Dublin).

The delivery of the Proposed Scheme will provide the transport infrastructure required to deliver sustainable transport options that will support the key actions set out in the Climate Action Plan 2023. The Proposed Scheme will expand, enhance and connect to pedestrian and cycle networks and will assist in facilitating modal shift. It is clear that the targets set out within the Climate Action Plan 2023 are closely linked to the delivery of key transport infrastructure projects, such as the BusConnects Programme, and therefore, the Proposed Scheme.

### 3.4 Greater Dublin Area Transport Strategy

The Greater Dublin Area Transport Strategy 2022 - 2042 has replaced the previous transport strategy (for the period 2016 to 2035). The overall aim of the strategy is:

*'To provide a sustainable, accessible and effective transport system for the Greater Dublin Area which meets the region's climate change requirements, serves the needs of urban and rural communities, and supports the regional economy'.*

A key focus of the strategy is to enable increased use of other transport modes to meet environmental, economic and social objectives related to emissions, congestion and car dependency. It sets a clear direction towards a 50% reduction in CO<sub>2</sub> (carbon dioxide) emissions within the Greater Dublin Area by 2030.

Similar to the approach adopted under the Climate Action Plan 2023, the Greater Dublin Area Transport Strategy 2022 - 2042 references the 'Avoid', 'Shift' and 'Improve' concept / principles in integrated land use and transport planning and the measures within the Greater Dublin Area Transport Strategy 2022 - 2042 have been categorised under these three headings / themes.

The Greater Dublin Area Transport Strategy 2022 - 2042 considers the road user hierarchy to encourage the use of sustainable transport, with pedestrians and cyclists placed at the top of the hierarchy. Due to the larger number of users that can use public transport, it needs to be prioritised over the private car in the design of the transport networks. The GDA Transport Strategy 2022 - 2042 puts the delivery of BusConnects - Dublin, of which the Proposed Scheme is part, at the heart of its objectives. There is added emphasis on the delivery of public transport, active travel and enhanced accessibility to sustainable modes of transport, all of which the Proposed Scheme will help to deliver.

The Proposed Scheme supports the implementation of the Greater Dublin Area Transport Strategy 2022 - 2042 in regard to improving the active travel 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/urban realm setting along the corridor. This will include the provision of significantly enhanced crossing facilities, and the introduction of new and improved landscaping provisions along the corridor, and complimentary planting regime and streetscape improvements at key locations will also enhance the character of the surrounding built environment along the corridor.

To inform the preparation of the previous Transport Strategy for the Greater Dublin Area 2016 – 2035, the NTA prepared the Core Bus Network Report 2015 for the Dublin Metropolitan Area, which identified those routes on which there needed to be a focus on high capacity, high frequency and reliable bus services, and where investment in bus infrastructure should be prioritised and concentrated. There are three main bus corridors in the south-central Dublin area with varying degrees of bus priority linking outer suburbs to the City Centre. These are the Rathfarnham-Terenure-Rathgar-Rathmines on the eastern side, the Kimmage corridor (the Proposed Scheme) in the middle, and the Tallaght-Greenhills-Walkinstown-Crumlin corridor on the western side.

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

The Greater Dublin Area Transport Strategy 2022 - 2042 states that subject to obtaining statutory planning approvals, the NTA will proceed to implement the 12 Core Bus Corridors as set out in the BusConnects Programme (which includes the Proposed Scheme). They will facilitate faster and more reliable bus journeys on the busiest bus corridors in the Dublin region, making the overall bus system more convenient and useful for more people. 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, the Greater Dublin Area Transport Strategy 2022 - 2042 states that key elements of the Cycle Network Plan for the Greater Dublin Area will be delivered as part of the Core Bus Corridor schemes. The Proposed Scheme supports the implementation of the 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. The 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.

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 Greater Dublin Area Strategy 2022 - 2042 and will allow the city to grow sustainably into the future, which would not be possible in the absence of the Proposed Scheme.

## 4 Consultation

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

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

The non-statutory consultation process assisted in:

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

These consultations are briefly described below.

### 4.1 Emerging Preferred Route Option Consultation

The Emerging Preferred Route public consultation phase for the Proposed Scheme occurred from 26 February 2019 to the 31 May 2019.

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

At the initiation of the public consultation process, a Community Forum was established with the aim of facilitating communication between community representatives, elected representatives, and the BusConnects Infrastructure team. Community Forum meetings took place, 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 Preferred Route Option Consultations

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

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

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

### **4.3 Consultation with Prescribed Bodies and Other Consultees**

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

During the development of the EIAR, prescribed bodies (including the Department of Communications, Climate Action and the Environment, the Department of Transport, DCC, SDCC, the Heritage Council, and the Office of Public Works) 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 2019 through to the Autumn of 2021. This engagement has overlapped with the public consultations (in May 2019, March 2020 and November 2020). A letter drop was also carried out in Summary 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. Since September 2021, further engagements have taken place with affected property owners to track changes of ownership, and in response to enquiries, with some site meetings arranged where necessary. In February 2023 all known affected owners and occupiers of properties were contacted by letter to refresh the information in preparation for the Proposed Scheme planning application.

### **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 local resident groups and with business interests on / adjacent to the route. Similar to the Community Forum meetings, such events facilitated discussion on the design for the Proposed Scheme and attendees were given the opportunity to ask questions of the BusConnects Infrastructure team and to provide feedback.

## 5 Alternatives Considered

### 5.1 Strategic Alternatives

The Proposed Scheme has been developed following careful consideration of alternatives. The Transport Strategy for the Greater Dublin Area 2016 - 2035, and its associated Strategic Environmental Assessment, considered several strategic options relevant to the Proposed Scheme. The Greater Dublin Area Transport Strategy 2022-2042 replaces the prior transport strategy for the period between 2016 and 2035.

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

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

The NTA carried out a review of the existing transport network and future forecasts of travel demand in Dublin. This review was further broken down into an assessment of existing and future land use and travel patterns and identified trends and issues within eight transport corridors. Based on these assessments, the most practical set of transport service proposals was set out for each of the eight corridors, combining to form the overall integrated transport system for the Greater Dublin Area up to 2035 in the Transport Strategy 2016 – 2035 for the Greater Dublin Area.

Through the work undertaken in the preparation of the Transport Strategy for the Greater Dublin Area 2016 - 2035, 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 Transport Strategy for the Greater Dublin Area 2016 - 2035 has concluded that light rail / metro alternatives would not be justified by the predicted level of demand and land use requirements. The challenges outlined in the Transport Strategy for the Greater Dublin Area 2016 - 2035 and identified need for BusConnects Dublin as determined in the preparation of that prior strategy remain, and the evidence from the detailed corridor studies undertaken in the preparation of the prior strategy is still valid and robust.

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 **Route Selection Report** was concluded in 2018, setting out the initial route options and concluding with the identification of an Emerging Preferred Route;
2. A first round of non-statutory **Public Consultation** was undertaken on the Emerging Preferred Route from 26 February 2019 to 31 May 2019;
3. Development of **Draft Preferred Route Option** (April 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder engagement and the availability of additional design information, the design of the Emerging Preferred Route evolved with further alternatives considered;
4. A second round of non-statutory **Public Consultation** was undertaken on the Draft Preferred Route Option from 4 March 2020 to 17 April 2020. Due to the introduction of COVID-19 restrictions, some planned in-person information events were cancelled, leading to a decision to hold a third consultation later in the year;
5. Further development of an updated **Draft Preferred Route Option** was undertaken subsequent to the second round of public consultation, which took account of submissions received, continuing stakeholder engagement and additional design information;
6. A third round of non-statutory **Public Consultation** was undertaken on the updated Draft Preferred Route Option from 04 November 2020 to 16 December 2020; and
7. Finalisation of **Preferred Route Option**. Informed by feedback from the overall public consultation process, continuing stakeholder engagement and the availability of additional design information, the Preferred Route Option, being the Proposed Scheme, was finalised.

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

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

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

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

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

*'The Kimmage to City Centre Core Bus Corridor commences on the R817 Kimmage Road Lower at the junction with Terenure Road West and Fortfield Road and is routed via the R817 along Kimmage Road Lower to R137 Harold's Cross Road, and then along the R137 through Harold's Cross Road, Clanbrassil Street Upper & Lower and New Street South where it will join the Greenhills Core Bus Corridor at Kevin Street Upper junction. Priority for buses is provided along the entire route, consisting primarily of dedicated bus lanes in both directions, with alternative measures proposed at particularly constrained locations along Kimmage Road Lower. Due to constraints throughout an alternative route along the same corridor is proposed for cycle tracks.'*

### 5.3 Design Alternatives

Following the completion of the public consultation process in relation to the Emerging Preferred Route, various amendments were made to the scheme proposals to address some of the issues raised during the consultations, including incorporating suggestions and recommendations from local residents, community groups, and stakeholders, and / or arising from the availability of additional information. These amendments were incorporated

into the designs and informed a draft Preferred Route Option. Alternatives considered during the development of the draft Preferred Route Option included:

- A Bus Gate at Ravensdale Park (north of the Kimmage Cross Roads) to allow for bus priority without having to widen the road, which would require land take along R817 Kimmage Road Lower;
- The previously mentioned Bus Gate with its resulting low traffic flows and shared use of the road with low traffic speeds (30 kilometres per hour) alongside a parallel cycle route along the River Poddle to the west, rather than including cycle tracks, which would require widening of the road along R817 Kimmage Road Lower;
- A direct cycle route along R137 Harold's Cross Road with limited land take required, rather than an indirect cycle route via Greenmount Lane and Our Lady's Hospice;
- A more direct cycle route along the R137 on Clanbrassil Street and New Street South, rather than a cycle route through the Portobello area to the east of R137 Clanbrassil Street;
- Cycle / pedestrian bridges on both sides of the existing Robert Emmet Bridge, rather than widening of the existing concrete arch bridge. This will provide the better overall facility for cyclists and pedestrians;
- Amendments to bus stop locations, with some bus stops to be relocated or removed to achieve better spacing between stops, while also ensuring that each stop is placed in the best location to serve the surrounding neighbourhoods;
- Additional public parking with 22 spaces at the entrance to Our Lady's Hospice in Harold's Cross; and
- Alternative access arrangements at Gordon's Fuels (adjacent to Robert Emmet Bridge on R137 Clanbrassil Street Upper).

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 Preferred Route Option were relatively small scale.

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

## 6 Description of the Proposed Scheme

The Proposed Scheme will be approximately 3.7km in length and will commence on R817 Kimmage Road Lower at the junction with the R818 on Terenure Road West and Kimmage Road West, and R817 Fortfield Road. The Proposed Scheme will continue along R817 Kimmage Road Lower towards the City Centre, via the R137 on Harold's Cross Road, Clanbrassil Street Upper and Lower and New Street South, predominantly in the DCC administrative area. However, a portion (approximately 20m) of the Kimmage Cross Roads is located within the administrative area of SDCC.

Priority for buses will be provided along the entire route, consisting primarily of dedicated bus lanes in both directions, where feasible, with alternative measures proposed at particularly constrained locations such as much of R817 Kimmage Road Lower, Harold's Cross Park West and short sections of R137 Clanbrassil Street Upper and Lower in alternate directions. Bus priority will be assisted by the implementation of four Bus Gates. The southernmost Bus Gate is proposed just north of the junction of R817 Kimmage Road Lower and Ravensdale Park, the second Bus Gate further north, is proposed at the southern end of Harold's Cross Park, while a third is proposed at the northern end of Harold's Cross Park. These Bus Gates will preclude through-traffic over a 2km stretch of the route of the Proposed Scheme, securing bus priority by deflecting through-traffic off this route while also ensuring enhanced amenity for local residents with the creation of a quieter street (existing parking arrangements will remain unchanged). Local traffic will be diverted via Sundrive Road on the western side or Larkfield Avenue on the eastern side. The fourth proposed Bus Gate is proposed at the junction of Harold's Cross Road and Kenilworth Park with the aim of reducing entry movements of general traffic at the junction from 5-arms to 4-arms, which will simplify the signal operations to enable the provision of a southbound right-turn signal stage for the diversion route from the R817 Kimmage Road Lower at Harold's Cross Park. It will also benefit the orbital bus movements in the westbound direction on the current bus routes 18 and 83.

Segregated cycle tracks will be provided in either direction along the entire length of the Proposed Scheme, with the exception of within the Bus Gates, where the existing advisory cycle lanes will be retained and not altered, as the road conditions will be much enhanced as a result of the reduced general traffic restricted by the Bus Gates. A secondary cycle route will also be designated along the southern section of the Proposed Scheme, routed along Poddle Park and Blarney Park, between Kimmage Road Lower and Sundrive Road. From Sundrive Road, cyclists will be able to proceed to Kimmage Road Lower via a new connection to Mount Argus Way and Mount Argus View where a proposed steel boardwalk structure will be provided beside the River Poddle at the Stone Boat feature. At Robert Emmet Bridge over the Grand Canal, two new cycle / pedestrian bridge structures are proposed on either side of the existing arch bridge to provide footpaths and the northbound cycle track outside of the narrow bridge width.

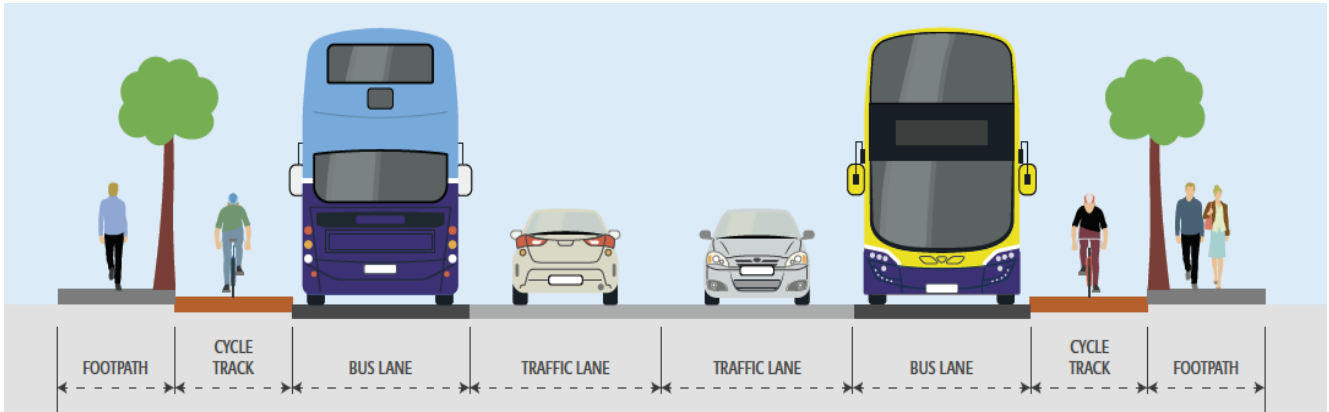
Pedestrian facilities will be upgraded, and additional controlled and uncontrolled crossings will be provided at side roads, road crossings and at junctions. In addition, urban realm works will be undertaken at key locations with high quality materials, planting and street furniture provided to enhance the pedestrian experience. Examples of such works can be seen at the junction of Kimmage Road and Sundrive Avenue and at St. Patrick's Court along Clanbrassil Street Lower.

The Proposed Scheme includes for localised modifications along Derravaragh Road at the junctions of Corrib Road, Aideen Drive and Neagh Road, and Aideen Avenue and Mount Tallant Avenue. These localised modifications are required to control the flow of traffic and prevent rat-running during the operation of the Bus Gates.

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

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

A typical BusConnects road layout is shown in **Image 6.1**.



**Image 6.1: Typical BusConnects Road Layout**

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

- The number of pedestrian signal crossings will increase from five to nine (+80%) as a result of the Proposed Scheme;
- The proportion of segregated cycle facilities will increase from 0% on the existing corridor to 47% on the Proposed Scheme; and
- The proportion of the route having bus priority measures will increase from 15% on the existing corridor to 100% on the Proposed Scheme.

The Proposed Scheme is described in the following geographical sections:

- Section 1 - Lower Kimmage Road from Kimmage Cross Roads to the Junction with Harold's Cross Road;
- Section 2 - Harold's Cross Road from Harold's Cross Park to Grand Canal; and
- Section 3 – Clanbrassil Street Upper and Lower and New Street from the Grand Canal to the Patrick Street Junction.

## 6.1 Section 1 – Lower Kimmage Road from Kimmage Cross Roads to the Junction with Harold's Cross Road

This section of the Proposed Scheme will be approximately 2.2km long and will commence on R817 Kimmage Road Lower at the KCR Junction with R818 Kimmage Road West, R817 Fortfield Road and R818 Terenure Road West. The Proposed Scheme will proceed along R817 Kimmage Road Lower in a north-eastern direction generally and will conclude at the junction with R137 Harold's Cross Road at the northern end of Harold's Cross Park.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with dedicated bus lanes in either direction over a length of 260m northbound, and 200m southbound from the KCR Junction to where a southern Bus Gate is proposed just north of the R817 Kimmage Road Lower and Ravensdale Park Junction. This Bus Gate will operate in tandem with a northern Bus Gate at Harold's Cross Park to preclude through-traffic over the intervening 2km length of this section, to R137 Harold's Cross Road at Harold's Cross Park. The Bus Gates will operate at peak times to secure bus priority by deflecting through-traffic off this route, while ensuring enhanced amenity for local residents with the development of a quieter street (with existing parking arrangements unchanged) than currently exists. Local traffic access will be diverted via Sundrive Road on the western side or Larkfield Avenue on the eastern side.

The provision of the southern Bus Gate at the Ravensdale Park Junction will be complemented by a number of traffic management measures on adjoining residential streets to prevent through-traffic or 'rat-running' as follows:

- Near the southern Bus Gate, Poddle Park to the west will be closed to through-traffic, except for cyclists, at the junction with Ravensdale Park;
- To the east of the southern Bus Gate, Derravaragh Road will be closed to through-traffic, except for cyclists, at the southern side of the junction with Corrib Road; and
- For southbound traffic diverted by the proposed southern Bus Gate, improvements will be made to the junction of R137 Harold's Cross Road and Kenilworth Park by way of the provision of a southbound right-turn to facilitate local access to R817 Kimmage Road Lower from the north. This will require adjustment to the junction for efficient traffic operation, and a westbound Bus Gate from Kenilworth Square will simplify the signal staging.

Segregated cycle tracks will be provided in either direction along the southern sub-section of the Proposed Scheme that precedes the Bus Gate at the Ravensdale Park Junction. After this point, the existing advisory cycle lanes will be retained and not altered, as the road conditions will be much enhanced as a result of the reduced general traffic restricted by the Bus Gate.

A secondary cycle route will also be designated, in parallel to R817 Kimmage Road Lower, along Poddle Park, Bangor Road, and Blarney Park to Sundrive Road. From Sundrive Road, cyclists will be able to proceed via a new connection to Mount Argus Way and Mount Argus View where a proposed steel boardwalk structure will be provided beside the River Poddle at the Stone Boat feature.

At Harold's Cross Park south, it will be necessary to remove the existing footpath on the northern side of the street adjoining the park over a length of 50m so as to accommodate road widening for two-way traffic on the access route between the proposed Bus Gates to Mount Jerome Cemetery and Mount Argus Road. Most pedestrians walk through the park when it is open during the day. At other times there is the alternative footpath along the southern side of the street. The alternative to this proposal would be to remove the five on-street parking spaces in front of houses for which there is no other parking available nearby.

## **6.2 Section 2 – Harold's Cross Road from Harold's Cross Park to Grand Canal**

This section of the Proposed Scheme will commence at the junction of R817 Kimmage Road Lower and R137 Harold's Cross Road at the northern end of Harold's Cross Park and will proceed north for a distance of 400m, to the Grand Canal at Robert Emmet Bridge.

Priority for buses will be provided along the entire length of this section of the Proposed Scheme, with retention and minor extension of the existing dedicated bus lanes along R137 Harold's Cross Road. In the northbound direction, the existing bus lane will be extended by 60m to the stop line at the junction with R111 Parnell Road at the northern end. Left-turning general traffic will not be permitted in the bus lane, and there will be a separate signal stage for the bus only before the general traffic lane green signal. This will avoid any conflicts between left-turning traffic from the right-hand lane that will cross in front of the bus lane. To accommodate this revised signal control arrangement, the existing right-turn movement into R111 Grove Road will be prohibited and all general traffic will use the right-hand lane only. The number of right-turning vehicles is low, and these can instead turn right at Leonard's Corner into R811 South Circular Road, 300m further north. It is likely that traffic from the Kimmage direction and further south will change route away from R817 Kimmage Road Lower due to the proposed Bus Gates and may instead join the orbital route along the Grand Canal further west at Clogher Road.

In the southbound direction, the existing bus lane will be extended by 35m at the northern end, and by 95m at the southern end so that there will be a continuous bus lane over the full 400m length.

New segregated 1.5m wide cycle tracks will be provided in both directions along R137 Harold's Cross Road. Wider 2m cycle tracks are not feasible in the constrained context of the street as described below.



Between Harold's Cross Park and the entrance to Our Lady's Hospice (a distance of 85m) there is on-street parking in indented bays with 10 spaces on the western side in front of No. 66 to 84 Harold's Cross Road, and seven spaces on the eastern side in front of No.75 to 85 Harold's Cross Road. The existing 10 parking spaces on the western side of the street will be removed to accommodate the proposed northbound cycle track. The existing seven parking spaces on the eastern side of the street will be retained. To compensate for the loss of the 10 on-street parking spaces, it is proposed to provide a new public car park with 22 spaces on the grounds of Our Lady's Hospice where there is a lawn area just inside the entrance. There will be a net additional 12 parking spaces available in this car park for the other residents along R137 Harold's Cross Road where there is a general shortage of parking in the local area.

To accommodate the proposed cycle tracks, road widening will be required of typically 2m over a length of 120m from the entrance to Our Lady's Hospice on the western side to the junction of Mount Drummond Avenue on the eastern side. There is a pinch-point between the hospice entrance and the gate of St. Clare's School on the opposite eastern side, where the distance between buildings is just 19m, and the public road width is 17.2m wide at the narrowest point. The proposed road cross-section will be 18m wide to include two 3m bus lanes, two 3m traffic lanes, two 2m footpaths and two 1.5m cycle tracks. Widening of approximately 0.8m will be required on the eastern side to achieve the 18m width. This will involve encroachment into a garden area at the front of a sheltered housing development operated by Focus Ireland, that is 2.6m wide at that location. It will also be necessary to set back the most northerly of the four gate pillars at the entrance to Our Lady's Hospice, which will be re-erected with the existing cut granite stone materials.

The proposed road widening will be on the eastern side of the street, north of St. Clare's School, with encroachment into the front gardens of 15 houses at No. 33 to 61 Harold's Cross Road and at the entrance to St. Clare's School. These houses are arranged in three terraces of four houses at each end, and a middle terrace of six houses, with the fifteenth property on the corner of Mount Drummond Avenue. The front gardens of the northern and southern terraces of houses are 5.5m long, and these will be reduced by the proposed 2m road widening to 3.5m long. The houses are set at a higher level at about 0.6m above the street level with a short set of steps on the path to the front door. There are no driveways, and residents with cars park on side streets nearby. Accommodation works will be required in the gardens behind the new boundary wall to provide replacement steps or ramps.

There is no on-street parking along this section of R137 Harold's Cross Road, north of Our Lady's Hospice, and this gives rise to difficulties for the residents to receive deliveries or for loading and unloading activities. To address this problem, it is proposed to provide an indented parking bay with four spaces in front of the middle terrace of houses at No. 43 to 53 Harold's Cross Road, which is setback from the adjoining terraces by an additional 3.5m, with 9m long front gardens. The parking bay will encroach by a further 2.5m into these gardens, which will be shortened by 4.5m to 4.5m long.

Four small street trees will be removed in the road widening on the eastern side and these will be replaced by a larger number of new trees at the proposed parking bay, and at the junction of Mount Drummond Avenue which will be narrowed at the corners to provide a shorter crossing for pedestrians, where four new on-street parking spaces will be provided in a revised junction layout with R137 Harold's Cross Road.

North of Mount Drummond Avenue, the existing road is wider at typically 20m wide between boundaries, which can accommodate the proposed 18m wide cross-section, with wider footpaths of up to 3m. This additional space will enable Island Bus Stops to be provided.

The street width reduces to 18m at the junction of Armstrong Street, 60m south of the junction with the R111 on Parnell Road and Grove Road at the Grand Canal. It narrows further to less than 18m over the final 20m to the corner of R111 Parnell Road, where road widening is proposed with encroachment into the garden space at the Fottrell House office building on the south-western side of the junction.



### **6.3 Section 3 – Clanbrassil Street Upper and Lower and New Street South from the Grand Canal**

Section 3 of the Proposed Scheme will be approximately 1km long and will commence at Robert Emmet Bridge over the Grand Canal on R137 Clanbrassil Street Upper and will proceed through to the Leonard's Corner Junction at R811 South Circular Road, and then along the R137 on Clanbrassil Street Lower and New Street South, until it reaches the junction with R110 Kevin Street Upper and R137 Patrick Street.

At Robert Emmet Bridge over the Grand Canal, two new cycle / pedestrian bridge structures are proposed on either side of the existing arch bridge to provide footpaths and the northbound cycle track outside of the narrow bridge width.

Priority for buses will be provided mainly with dedicated bus lanes for most of the length, apart from short sections where bus lanes cannot be accommodated within the narrow street and signal controlled bus priority will be provided at the key junction of Leonard's Corner on R811 South Circular Road.

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

## 7 Construction

The Construction Phase for the Proposed Scheme is anticipated to take approximately 18 months to complete. It will be constructed based on individual sectional completions that will individually have shorter durations typically ranging between three to 15 months.

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

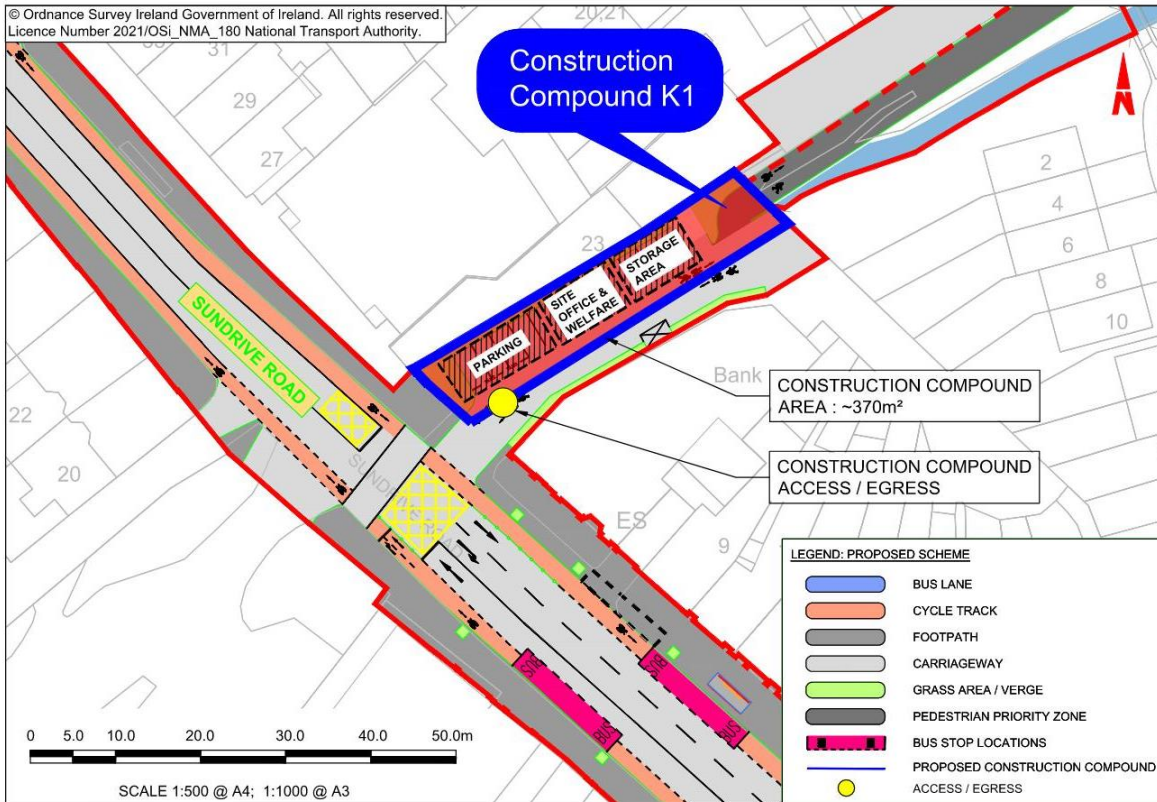
- Site preparation and clearance works, including:
  - Land acquisition where temporary or permanent land take is required;
  - Installation of fencing and signage;
  - Protection of trees and vegetation to be retained;
  - Vegetation clearance and treatment of non-native invasive plant species;
  - Archaeological investigations;
  - Ground investigations;
  - Set up of Construction Compounds;
  - Installation of temporary lighting;
  - Demolition of items such as walls, gates, fencing, lighting poles and bus stops; and
  - Archaeological monitoring, ground investigations, the removal of vegetation and boundaries at properties where land take is required, demolition works and set up of Construction Compounds).
- Road and street upgrades, including:
  - Excavation of the road surface;
  - Disruption / alterations to parking / loading provisions and access to premises;
  - Implementation of pedestrian and cyclist safety measures;
  - Temporary alternations to public transport services;
  - Implementation of any road closures or diversions;
  - Works to cellars;
  - Adjustment or upgrades to drainage;
  - Realignment, upgrades, replacement or protection of utilities and services;
  - Construction of pavement, including general traffic carriageways, bus lanes, on-road cycle tracks, off-road cycle tracks, off-line bus stops, bus terminals, traffic islands, off-line parking and loading bays;
  - Upgrades of road furnishings (including street furniture, signage, lighting, bus stops (shelters, CCTV and information displays) and communication systems); and
  - Boundary treatment and landscaping.
- Structural Works, including:
  - Construction of pedestrian boardwalk at Mount Argus;
  - Construction of footbridge west of Robert Emmet Bridge;
  - Construction of footbridge east of Robert Emmet Bridge;
  - Construction of retaining wall on the northern approach to Robert Emmet Bridge;
  - Construction of ramp on the eastern approach to Robert Emmet Bridge; and
  - Demolition of 32A Clanbrassil Street Upper (residential unit adjacent to Gordon's Fuels).
- Construction site decommissioning, including the removal of all construction facilities and equipment.

Three Construction Compounds for the Proposed Scheme will be located at land adjacent to the Proposed Scheme at a number of locations. The Construction Compounds will be located at the following sites:

- Construction Compound K1 at Sundrive;
- Construction Compound K2 at Our Lady's Hospice; and

- Construction Compound K3 at St. Patrick’s Court on Clanbrassil Street Lower.

Construction Compounds will be used as the primary location for the storage of materials, plant and equipment, site offices, worker welfare facilities and limited car parking. The Construction Compounds will be secured to ensure the safe storage of all on-site materials and machinery. Temporary fencing will be erected and site security will be employed. The Construction Compounds are shown in **Image 7.1** to **Image 7.3**.



**Image 7.1: Location and Extent of the Construction Compound K1**

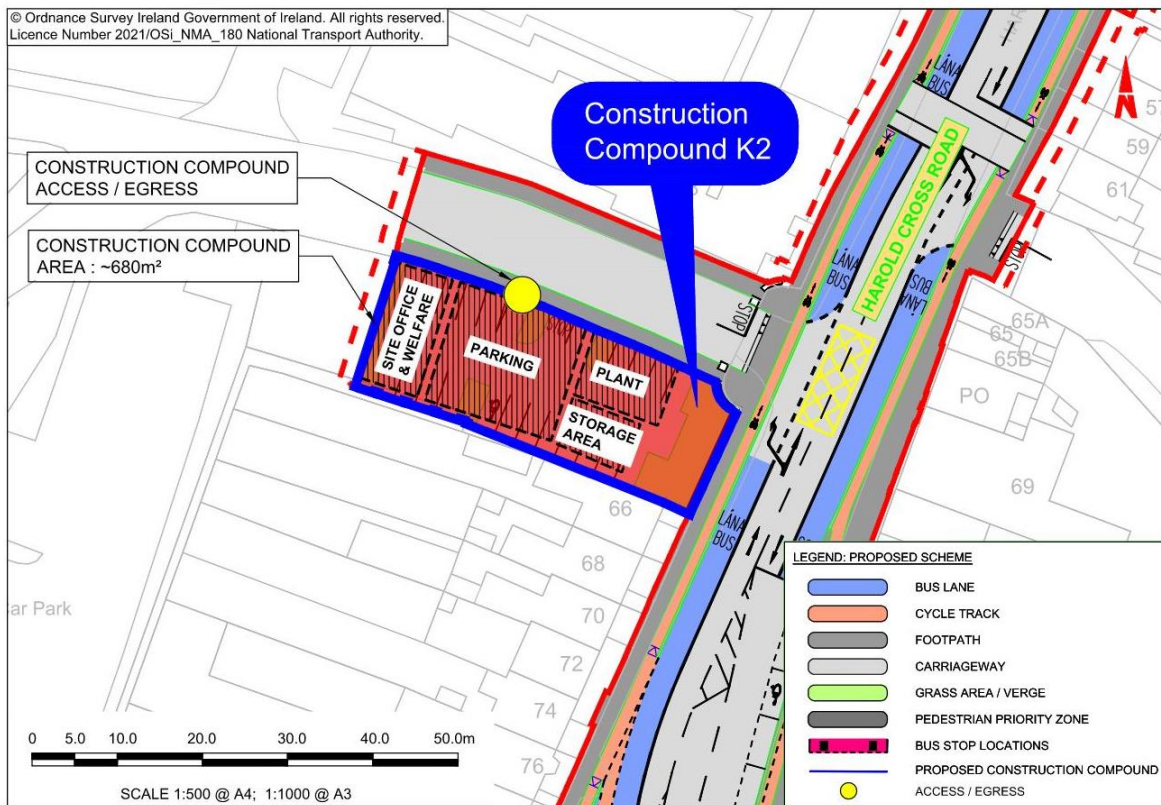


Image 7.2: Location and Extent of the Construction Compound K2

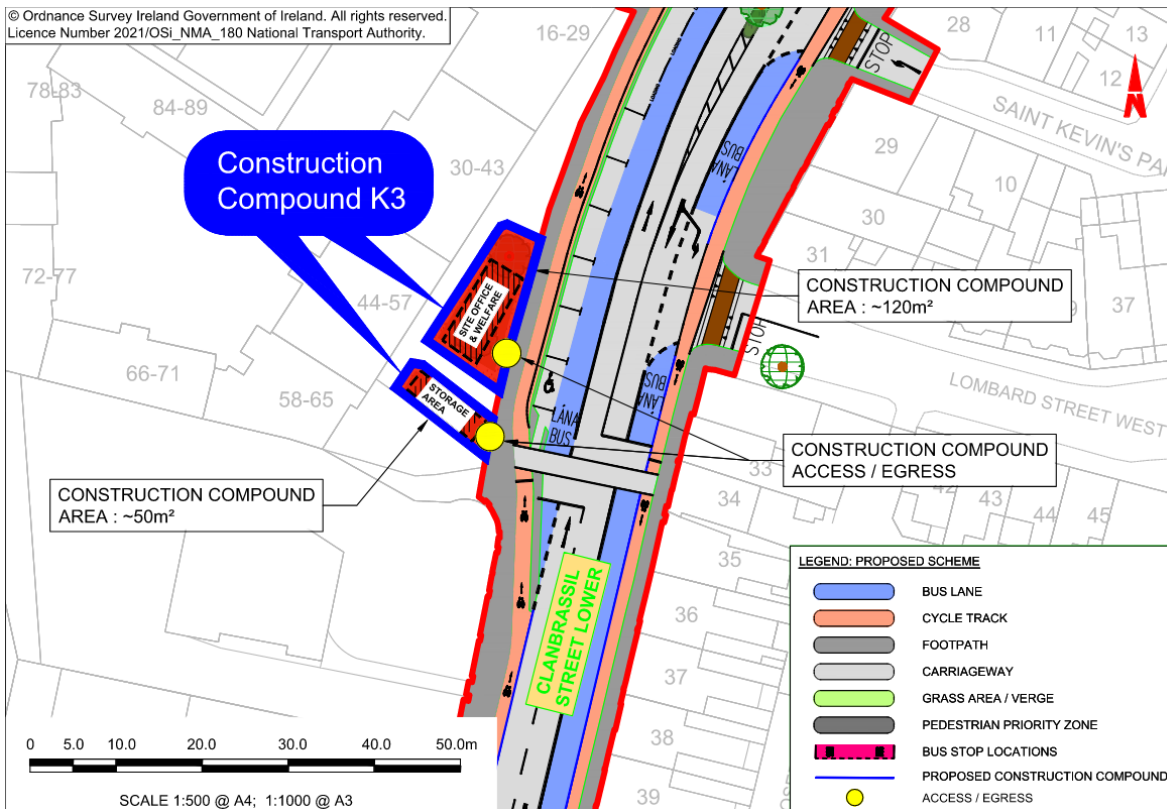


Image 7.3: Location and Extent of the Construction Compound K3

## **7.1 Construction Environmental Management Plan**

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

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

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

## **7.2 Construction Traffic Management Plan**

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

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

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

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

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



## 8 Environmental Impacts and Mitigation

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

The design of the Proposed Scheme has been developed to a stage where all potential environmental impacts can be identified, and a fully informed EIA 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 pursuant to conditions attached to any decision to grant approval are adhered to. Procurement of the construction contractor will involve the determination that the appointed contractor is competent to carry out the works, including the effective implementation of the mitigation measures. The appointed contractor will be required to plan and construct the Proposed Scheme 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.

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

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

### 8.1 Traffic & Transport

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

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

- The assessment of physical changes:
  - **Pedestrian Infrastructure:** The changes to the quality of the pedestrian infrastructure as a result of the Proposed Scheme;
  - **Cycling Infrastructure:** The changes to the quality of the cycling infrastructure as a result of the Proposed Scheme;



- **Bus Infrastructure:** The changes to the quality of the bus infrastructure as a result of the Proposed Scheme; and
- **Parking / Loading:** The changes to the availability of parking and loading as a result of the Proposed Scheme.
- The modelling-based assessment:
  - **People Movement:** An assessment has been carried out to determine the potential impact that the Proposed Scheme will have on the projected volume of people (by mode – walking, cycling, bus and general traffic) moving along the Proposed Scheme during the Operational Phase;
  - **Bus Performance Indicators:** The changes to the projected journey times and reliability for buses as a result of the Proposed Scheme; and
  - **General Traffic:** The direct and indirect impacts on general traffic using the Proposed Scheme and surrounding road network.

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

The assessment concluded that the impact during the Construction Phase will be Negative, Slight, and Temporary in nature.

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

- **Pedestrian Infrastructure:** Overall, the improvements to the quality of the pedestrian infrastructure along the Proposed Scheme will improve along all sections. The scale of improvements are as follows:
  - Positive, Significant and Long-Term along Section 1 and 2; and
  - Positive, Moderate and Long-Term along Section 3.
- **Cycling Infrastructure:** Overall, the improvements to the quality of the cycling infrastructure along the Proposed Scheme will improve along all sections. The scale of improvements are as follows:
  - Positive, Moderate and Long-Term along Section 1 and 2; and
  - Positive, Very Significant and Long-Term along Section 3.
- **Bus Infrastructure:** The results of the assessment demonstrate that the improvements to the quality of the bus infrastructure across the Proposed Scheme will vary as follows:
  - Positive, Very Significant and Long-Term along Section 1 and 3; and
  - Positive, Moderate and Long-Term along Section 2.
- **Parking and Loading:** Given the nature of the loss in parking and the availability of alternative spaces, the impact is expected to have the following impacts:
  - Negative, Slight and Long-Term along Section 1, 2 and 3.
- **People Movement:** Overall, it is anticipated that the increases to the total number of people travelling through the Proposed Scheme will have a Positive, 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; and
- **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, Slight to Profound, 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 an attractive alternative 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.

Although it is recognised that there will be some negative impacts for general traffic and parking / loading availability, the Proposed Scheme has been designed with the relevant traffic and transport guidelines. The assessment demonstrates that there will be no significant deterioration in the general traffic environment in the study area as a consequence of meeting the scheme objective of providing enhanced sustainable mode priority along the direct study area.

Given that the Proposed Scheme results in a positive impact for walking, cycling, bus and people movement, mitigation and monitoring measures have not been considered beyond those already incorporated as part of the Proposed Scheme. The impacts to general traffic and parking / loading, including mitigation measures are incorporated into the Proposed Scheme and no further mitigation measures are considered to be required.

Additional analysis undertaken using the Proposed Scheme transport 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 may occur as a result of the Proposed Scheme.

The existing air quality along the Proposed Scheme generally meets National and European Union air quality standards. However, the annual mean concentrations of NO<sub>2</sub> (Nitrogen dioxide) are above the relevant national air quality limit value objective at one receptor; with one exceedance modelled on R137 Patrick Street.

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

Air quality impacts associated with Construction Phase traffic and changes in traffic flows have also been assessed. The assessment concluded that Construction Phase traffic emissions will be Neutral overall in the study area, with no substantial or moderate adverse effects expected as a result of the Construction Phase of the Proposed Scheme. Due to the nature of such impacts, no specific Construction Phase mitigation measures for construction traffic as required. The assessment identifies a generally Neutral and Short-Term impact on air quality as a result of the Construction Phase of the Proposed Scheme.

No mitigation measures are required during the Operational Phase as the assessment identified that the majority of modelled receptors are predicted to experience either negligible or beneficial impacts on air quality in the vicinity of the Proposed Scheme. In 2043, all modelled receptors are expected to have ambient air quality in compliance with the ambient air quality values for the Do Minimum and the Do Something scenarios. The assessment concludes that the overall impact on air quality along the Proposed Scheme during the Operational Phase is Neutral and Long-Term.

### 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 in recent years have negatively impacted on the climate, through the release of greenhouse gases.

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

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

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

The Proposed Scheme is estimated to result in total Construction Phase greenhouse gas emissions of approximately 2.962kt (kilotonnes) of embodied CO<sub>2eq</sub> (carbon dioxide equivalent) for materials over the approximate 18-month construction period, equivalent to an annualised total of 0.033% of the 2030 Transport Emissions Ceiling or 0.005% of Ireland's non-Emission Trading Scheme 2020 target.

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

The Proposed Scheme will be an enabler to allow for further reductions in car mode share with corresponding transfer to public transport, walking and cycling modes. This can be achieved through signal optimisation, increased bus frequency, further growth in cycling and demand management measures. A greater increase in sustainable mode share will in turn lead to further reductions in greenhouse gas emissions, beyond those reported in the above assessment. The Proposed Scheme has the potential to reduce greenhouse gas emissions equivalent to the removal of approximately 16,580 and 20,849 car trips per weekday from the road network in 2028 and 2043 respectively. This represents a significant contribution towards the increased use of lower-carbon modes and reduction in the percentage of total journeys that are made by private car (modal share) from over 70% (today) to just over 50% in 2030 as outlined in the Government's Climate Action Plan 2023.

The maintenance greenhouse gas emissions associated with the Operational Phase of the Proposed Scheme are predicted to generate 0.069kt of CO<sub>2eq</sub> over the predicted 60-year lifespan. Following the implementation of mitigation, this impact is predicted to be Negligible and Permanent.

The operational traffic CO<sub>2</sub> emissions associated with the Operational Phase of the Proposed Scheme is predicted to be Negligible and Permanent.

Overall, when the carbon emissions associated with the maintenance phase and the Operational Phase are combined, the net greenhouse gas emissions will be Positive, Significant and Permanent. Thus, the residual impact from the Operational Phase traffic as a result of the Proposed Scheme will be Positive, Significant and Permanent.

The CBC Infrastructure Works (including the Proposed Scheme) will also support the delivery of government strategies outlined in the Climate Action Plan 2023 and the 2021 Climate Act by enabling sustainable mobility and delivering a sustainable transport system, aligning with aims to provide enhanced walking, cycling and bus infrastructure on key access corridors in the Dublin Region. This will subsequently enable and deliver integrated

sustainable transport movement along these corridors. The CBC Infrastructure Works will provide connectivity and integration with other public transport services leading to more people availing of public transport.

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

## **8.4 Noise 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 sources such as pedestrian movements, car horns, retail / commercial activities, etc. 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 potential impacts assessed for the Construction Phase included the generation of noise and vibration from demolition, piling, 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 to reduce noise as well as noise monitoring at sensitive receptors close to the working areas. Monitoring of vibration at identified sensitive buildings, where proposed works have the potential to be at or exceed the limit values.

Following the application of mitigation measures, noise impacts associated with the Construction Phase will be of Negative, Not Significant to Moderate and Temporary impact during all key Construction Phases during daytime periods.

During evening periods, noise impacts associated with the Construction Phase will be Negative, Moderate to Significant and Temporary for the majority of scheduled works within 20m of works activity. As per Design Manual for Roads and Bridges (DMRB) Noise and Vibration in cases of moderate to major magnitude of impacts, the duration of works determines the overall significance rating. As part of the mitigation measures, the durations advised in the DMRB Noise and Vibration will be followed, where feasible, to reduce overall significance of effects (i.e., scheduling works to occur for periods of less than 10 days / nights over 15 consecutive day / night periods and less than 40 days over six consecutive months where significant effects are identified). Once the construction noise limits and duration of works is considered in line with the DMRB Noise and Vibration, all key Construction Phase residual noise levels will be Not Significant, whilst meeting the scheme objectives.

The assessment has indicated that the use of standard construction activities can operate comfortably within the recommended vibration limits for standard residential and other light-framed building. With the adoption of best practice methodologies, vibration impacts at the most sensitive premises can be adequately mitigated to within acceptable levels relating to disturbance, whilst meeting the scheme objectives.

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.

During the Design Year (2043), increased traffic noise levels will occur along a small number of roads adjacent to the Proposed Scheme as a result of traffic re-distribution during daytime periods. During the long-term phase, noise impacts are calculated as Positive, Moderate and Long-Term impact to Negative, Not Significant to Slight and Long-Term impact along the surrounding road network off 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 12 community areas: Clogher Road, Donore Avenue, Francis Street, Harold's Cross, Harrington Street, Rathgar, Kimmage Manor, Meath Street and Merchants Quay, Mount Argus, Templeogue, Terenure, and Whitefriar Street.

The Proposed Scheme travels through two distinct areas of character along its length. The majority of the Proposed Scheme travels through the community areas of Mount Argus and Harold's Cross (with a very small section at the beginning of the Proposed Scheme being situated in the community area of Templeogue also) where the character of the area is mostly residential in nature, however some small commercial premises also exist, particularly at the junction of Kimmage Road Lower and Sundrive Road (in the community area of Mount Argus) and along Harold's Cross Road (in the community area of Harold's Cross). The remaining sections of the Proposed Scheme are located within the community areas of Harrington Street and Francis Street, where the character is more urbanized and there are a larger proportion of commercial properties that line the route of the Proposed Scheme.

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 residual significant impacts on any community areas from an amenity or land acquisition or accessibility stand-point during the Construction Phase of the Proposed Scheme. However, the following localised negative impacts are expected during construction:

- A Negative, Moderate / Significant and Short-Term impact on the amenity of community and commercial receptors situated along the Proposed Scheme between Lower Kimmage Road and the Grand Canal;
- A Negative, Moderate and Short-Term impact on amenity of community and commercial receptors along the Proposed Scheme between the Grand Canal and Patrick Street (including at the Maldron Hotel (Kevin Street));
- A Negative, Moderate and Short-term impact on No. 01-21 Mount Argus Square (No. 21 residential properties) and No. 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59 and 61 Harold's Cross Road (No. 15 dwellings) as a result of temporary land acquisition;
- A Negative, Significant and Short-Term impact on Gordon's Fuels as a result of temporary land acquisition; and
- A Negative, Moderate and Short-Term impact on the accessibility of cyclists, bus users, and private vehicles in the community areas of Mount Argus, Harold's Cross, Harrington Street and Francis Street.

Similar to the Construction Phase, the assessment concluded that there will be no negative residual significant impacts on any community areas from an amenity and land acquisition perspective during the Operational Phase. However, the following localised negative impacts as a result of land acquisition are anticipated during the Operational Phase:

- A Negative, Profound and Long-Term impact on 32A Clanbrassil Street Upper.

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 most businesses whose workers live along the corridor. This is illustrated by the positive impacts reported within the community areas directly located along the Proposed Scheme:

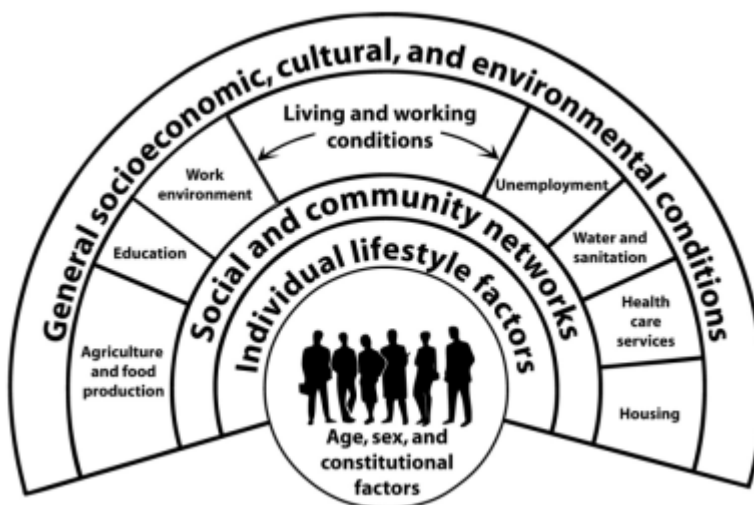
- Pedestrian accessibility: Positive, Slight to Very Significant and Long-Term impact;
- Cyclist accessibility: Positive, Slight to Very Significant and Long-Term impact;
- Bus user accessibility: Positive, Moderate to Very Significant and Long-Term; and
- Private vehicle accessibility: Positive, Slight to Profound and Long-Term.

In respect to business viability for individual commercial receptors along this length of the Proposed Scheme, the assessment concluded that there would be a Negative, Moderate and Long-Term impact the Circle K Filling Station along Kimmage Road Lower only.

Overall, the improvements / impacts of the Proposed Scheme 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 newt) and reptiles.

The Proposed Scheme does not overlap with any sites of European importance (European site). The nearest European site with a hydrological connection (connection by water) to the Proposed Scheme is South Dublin Bay and River Tolka Estuary Special Protection Area (SPA), followed by the South Dublin Bay Special Area of Conservation (SAC).

The main habitats within the Proposed Scheme include: buildings and artificial surfaces, scattered trees and parkland, treelines, scrub, canals, depositing lowland rivers, amenity grassland and flower beds and borders. The study identified:

- No protected plant species, within the footprint of the Proposed Scheme;
- No areas of third schedule, non-native invasive species within the footprint of the Proposed Scheme;
- Four bat species (Leisler's bat, common pipistrelle bat, Soprano pipistrelle bat, and an unidentified pipistrelle species);
- A potential roost feature (location where bats rest) at one location within the footprint of the Proposed Scheme along the boundary of the proposed Construction Compound K2 at Our Lady's Hospice;
- No evidence of badger were found during multidisciplinary surveys;
- No otter signs were found during multidisciplinary surveys, although otter have been recorded within 1km of the Proposed Scheme at various locations;
- No evidence of amphibians or reptiles; and
- A total of 63 breeding bird species and 41 wintering bird species (identified through desk study).

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;
- Demolition of existing retaining walls;
- 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 pre-construction checks for protected species, retaining trees identified as containing potential roost features for bats (insofar as possible), protections against surface water runoff, and planting new street trees, hedgerows and species-rich grasslands. Invasive species management will be implemented to mitigate any risk of the Proposed Scheme contributing to the spread of invasive species during the Construction Phase.

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

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

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

- Planting of treeline, hedgerow and grassland habitats within the Proposed Scheme, as outlined in the design, will provide suitable habitats for breeding birds and foraging / commuting habitat for bats;
- The implementation of sustainable drainage measures will prevent habitat degradation; and
- Routine maintenance works will be mindful of any non-native invasive species within the Proposed Scheme corridor.

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

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

## 8.8 Water

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

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

- Poddle\_010, which flows towards Dublin City Centre via Mount Argus Park, and is partially by way of an underground culvert, outflowing to the River Liffey; and
- Grand Canal Main Line (Liffey and Dublin Bay) which is an artificial waterbody (AWB), primarily used for recreation and was constructed in the 18th century, shortly before the Royal Canal. The Royal Canal is 132km long and runs from the River Liffey in Dublin to Shannon Harbour on the River Shannon, with a number of branch lines along its length.

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

- Poddle\_010: Poor status, At Risk of Not Achieving Good Status;
- Grand Canal Main Line (Liffey and Dublin Bay): Good Ecological Potential (Not At Risk of achieving Good Status).

The surface water along the Proposed Scheme corridor currently drains into a surface water or combined system which discharges into the Poddle\_010 and to combined sewer and on to Ringsend wastewater treatment plant. The main existing pressure on water quality relates to urban runoff and overflows from the foul and combined sewer network.

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

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

During the Construction Phase, the water quality of the Poddle\_010 and Grand Canal Main Line could potentially be impacted by surface water runoff containing fine sediments, accidental spillages and accidental leakages of construction materials via surface water system connections. There is also the potential to disrupt local drainage networks if they are required to be diverted to allow construction works to take place.

Surface water management is addressed in the CEMP, which details control and mitigation measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase of the Proposed Scheme. These include a requirement for an environmental incident response plan; the control of runoff of fine sediments; the management of storage of materials / fuels; management of batching and use of concrete; and the management of vehicles and plant. Additionally, site-specific measures are proposed to avoid or reduce negative impacts related to proposed works to construct a pedestrian boardwalk over the Poddle\_010 adjacent to the Stoneboat as well as the construction of new cycle / pedestrian bridges on either side of Robert Emmet Bridge over the Grand Canal.

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

The impacts assessed during the Operational Phase include the potential surface water impacts associated with areas of impermeability and traffic displacement. During the Operational Phase, the design of the Proposed

Scheme will ensure that there will be no net increase in surface water runoff rates to any of the connected water bodies, using a combination of sustainable drainage systems in the form of oversized pipe, tree pits, permeable paving and infiltration trenches, which also reduce the potential risks to water quality from routine road contaminants.

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

## **8.9 Land, Soils, Geology 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 of a proportion of a Geological Heritage Area;
- Loss or damage of a proportion of an aquifer; and
- Change to groundwater regime.

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

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

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

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

## **8.10 Archaeological and Cultural Heritage**

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

Harold's Cross (RMP DU018-050) and Kimmage saw significant development in the 18<sup>th</sup> and 19<sup>th</sup> centuries as historic suburbs of south Dublin. This growth was associated with the River Poddle which formed a focus point for industrial development in these areas with mills and quarries located on either side of the river. The Proposed Scheme will also be located within the boundaries of the medieval city of Dublin. A key archaeological feature along the River Poddle is the '*Tongue*' or '*Stone Boat*' which is a wedge-shaped weir (RMP DU018-043003) now reconstructed. This was built in an attempt to regulate the quantity of water reaching the historic city. The Proposed Scheme crosses the Zone of Archaeological Potential (ZAP) for the City Watercourse (RMP DU022-003001 and DU018-04304) as well as the Historic City of Dublin along its route at Kimmage Cross Roads / Kimmage Road Lower and Clanbrassil Street Lower respectively.

One National Monument has the potential to be impacted by the Proposed Scheme. The northern-most portion of the Proposed Scheme from the junction with Lombard Street West, on Clanbrassil Street Lower, New Street South and Kevin Street Upper lies within the ZAP for the Historic City of Dublin (RMP DU018-020). The extent of the ZAP on Clanbrassil Street coincides with the location of possible medieval city defences, however the precise location of these defenses is uncertain and has not been revealed to date through excavation or upgrading of the road in this location.

In order to examine the archaeological potential of the Proposed Scheme, a study area measuring 50m on either side of the red-line boundary was established and tailored to the urban and suburban streetscape (Figure 15.1, Volume 3 of this EIAR). Within this area there are four zones of archaeological potential, two of which are associated with the historic watercourse, the River Poddle. The settlement at Harold's Cross and the Historic City of Dublin also have zones of archaeological potential associated with them. Within the Proposed Scheme, there are a further two recorded monuments associated with the watercourse, a mill race and a weir (the stone boat) and within the historic city, a mill and house, recorded through archaeological investigations and historic mapping. There are four sites on the Dublin City Industrial Record, and one cultural heritage asset within the Proposed Scheme.

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

- Pavement construction, repairs and reconstruction works;
- Road resurfacing works;
- Piling; and
- Any excavations of soil, including landscaping works; and 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 during and prior to construction. As such, with the implementation of such mitigation measures, no significant residual impacts are expected during the Construction Phase.

There will be no negative residual significant Operational Phase impacts as a result of the Proposed Scheme and, as such, no mitigation is required. However it is considered there will be a Positive, Moderate and Long-term impact on the site of the Stoneboat due to the improved accessibility and visibility of it from the provision of the proposed pedestrian boardwalk at this location as part of the Proposed Scheme. Interpretative signage will also be provided to further inform the public of its presence and historical background.

## **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 any previously unrecorded features.

The study area had a rich industrial history and previously contained quarries and mills along the River Poddle, and what is now Kimmage Road Lower, Poddle Park and Mount Argus Road in the 18<sup>th</sup> and 19<sup>th</sup> centuries.

There was some residential development Kimmage Road Lower in the mid 19<sup>th</sup> century but this development increased by the early 20<sup>th</sup> century. Kimmage witnessed the large scale residential development in the 1930s and 1940s. Country houses and estates in Kimmage were built in the 18<sup>th</sup> or early 19<sup>th</sup> century and included Brook Lawn which was located at Ravensdale Park and houses around Harold's Cross Village.

Harold's Cross Village developed in the late 18<sup>th</sup> and early 19<sup>th</sup> century around the green area in the centre of the village. Harold's Cross Green was a meeting point for members of the Society of United Irishmen including Robert Emmet who led the abortive rebellion in 1803. He is commemorated on a plaque on the Grand Canal Bridge which was rebuilt and renamed Robert Emmet Bridge in his honour in the 1930s.

The houses on Clanbrassil Street Lower are predominantly early to mid-19<sup>th</sup> century, 1880s and early 20<sup>th</sup> century. The area retains some buildings of interest which include Atkinson House which was built in 1860 as an 'Asylum for Aged Females'. Kevin Street Upper also formed part of the medieval suburbs of Dublin City and, although it was also affected by the road widening of the 1980s, it retains important buildings such as a Dutch Billy which was built c.1730 and a number of protected structures associated with St. Patrick's Cathedral. Dean Street contains two protected structures at number 1 Dean Street, built around 1825, and 77 Francis Street built around 1830. Numbers 2 to 4 Dean Street are included in the National Inventory of Architectural Heritage. The main feature is St Patrick's Cathedral which was built around 1220 to 1260 and largely rebuilt between 1860 and 1865.

There are two Conservation Areas, two Architectural Conservation Areas, 27 National Inventory of Architectural Heritage features, six features on the Record of Monuments and Places and 77 features on the Record of Protected Structures within the Proposed Scheme. The Proposed Scheme will also pass through 16 townlands, six parishes and three baronies.

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 historic kerbing and / or street furniture (i.e. lamp posts, post boxes etc.) due to land take, construction works to pavements, changes in the layout of footpaths and landscaping works;
- Indirect impacts as a result of the potential for accidental damage to protected 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 accidental 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 amenity value during the Construction Phase.

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

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

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

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 which have been carefully considered), as well as impacts



- on the setting of these resources due to traffic changes. New paving, new tree planting and landscaping will generally have a positive impact on the historic environment and character of streets along the Proposed Scheme; and
- Impacts where the Proposed Scheme requires physical changes to, or the repositioning of, heritage features.

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

## 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 in the preparation of photomontages.

The Proposed Scheme will run from the outer residential suburbs of Kimmage and Harold's Cross through the inner city suburbs of the R811 South Circular Road and R137 Clanbrassil Street Upper and Lower to the south-west City Centre area around St. Patrick's Cathedral. The outer section of the Proposed Scheme will closely follow the corridor of the River Poddle, much of which has been culverted, but sections of which are still exposed through the tree-lined open spaces of Poddle Park and Mount Argus Park. The Proposed Scheme will pass through the urban node of Harold's Cross, with its mixed-use streetscapes, historic public park and Mount Jerome Cemetery and its protected structures (Mount Jerome House; the mortuary chapel; the gate lodge and its gates, piers and original railings). The Proposed Scheme will follow the historic alignment of R137 Harold's Cross Road across the Grand Canal at Robert Emmet Bridge and on to the urban streetscape of R137 Clanbrassil Street Upper leading to the city landmark of St. Patrick's Cathedral.

Consideration of the potential landscape (townscape) and visual impacts have been important in defining the Proposed Scheme design. The Proposed Scheme has undergone iterative design development with the aim of minimising potential negative impacts as far as practicable and this has also helped define suitable improvements to the urban realm.

Examples of design changes that have been incorporated into the Proposed Scheme design, and which have led to a reduction in predicted landscape and visual impacts include:

- Retainment of the existing median and street trees along Clanbrassil Street Lower and New Street South;
- A proposed cycle track through Poddle Park, at the southern end of Kimmage Road Lower, towards the River Poddle Cycleway route has been removed and instead cycle tracks will be provided on public roads outside the park thereby removing all impacts on Poddle Park; and
- Access for Gordon's Fuels adjacent to Robert Emmet Bridge on Clanbrassil Street Upper was modified to provide a shared laneway from the north beside Mullen Scrap instead of a new ramp beside the canal, which would have encroached into the premises to a much greater degree and reduce the operational capacity of the yard area for the business (Gordon's Fuels), and any potential future development.

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

- Site mobilisation and establishment, fencing and hoarding of Construction Compounds and works areas, including within private areas / gardens;
- Site demolition, including the demolition of 32A Clanbrassil Street Upper (residential unit adjacent to Gordon's Fuels), removal of boundaries, kerbs, verges, surfaces, landscape areas, trees and plantings, including boundary fences, walls and plantings within private areas / gardens;
- Site activity and visual disturbance from general construction works and the operation of construction machinery both within the site and at the Construction Compounds;
- Construction works involving diversion of existing underground / overground services and utilities, provision of new services and utilities, drainage features and connections, etc.;

- Site activity and construction works involved in the construction of new carriageways, kerbings, footpaths and cycle tracks, bus stops and signage, reinstatement of boundaries / provision of new boundaries and landscape reinstatement works / provision of new landscape, etc.; and
- Decommissioning of works areas and the Construction Compounds.

Construction of the Proposed Scheme will require land acquisition (temporary and / or permanent) from a number of properties along its route, namely:

- Our Lady's Hospice, Harold's Cross Road (land take required for the construction of a permanent car park, with loss of one tree);
- Nos. 14-26 Harold's Cross Road (Focus Ireland housing), on the west side of Harold's Cross Road (land take of a portion of private gardens with established boundary walls is required for corridor widening);
- Nos. 33-61 Harold's Cross Road, on the east side of Harold's Cross Road (land take of a portion of private gardens with established boundary walls, pedestrian entrance gates and stepped accesses is required for corridor widening);
- Fottrell House Offices, on the west side of Harold's Cross Road (land take of a portion of landscape area enclosed with brick wall and railings is required for junction widening); and
- 32A Clanbrassil Street Upper (residential unit adjacent to Gordon's Fuels) (land acquisition of a residential unit to facilitate corridor widening and associated works at this location).

In addition to the above, substantial works are proposed at Robert Emmet Bridge over the Grand Canal, including changes to footpaths and the construction of a new cycle / pedestrian bridge on the west side of the bridge, coupled with another footbridge on the eastern side. The new bridges will require works on the banks of the Grand Canal, including construction of supporting piers. These works will require changes to the existing towpath as well as the removal of six existing trees (four trees on southwest side of Robert Emmet Bridge on Parnell Road and two trees on the north-eastern side along Windsor Terrace).

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

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

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

- Negative, Moderate / Significant and Temporary / Short-Term residual impacts are anticipated on the Kimmage Road Lower from Kimmage Cross Roads to the Junction with Harold's Cross Road;
- Negative, Significant and Temporary / Short-Term residual impacts are anticipated on the Harold's Cross Road from Harold's Cross Park to the Grand Canal section; and
- Negative, Moderate and Temporary / Short-Term residual impacts are anticipated on the Clanbrassil Street Upper and Lower, and New Street South from the Grand Canal to the Patrick Street Junction.

In addition to these impacts, a range of Negative, Moderate to Profound and Temporary / Short-Term residual impacts are predicted on the streetscape characteristics of Conservation Areas, amenity designations, and residential and non-residential properties.

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

- Alterations in the physical and visual character of 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.

The Proposed Scheme will also provide a range of landscape measures during the Operational Phase such as additional tree planting, new ornamental planting, formalisation of parking areas and improved paving schemes, which will enhance the streetscape and the setting of historic buildings.

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

It is expected that there will be Positive, Moderate and Long-Term residual impacts on townscape and streetscape character along the length of the Proposed Scheme (i.e. within its three separate sections).

In addition, a Neutral, Moderate and Long-Term residual impact is predicted on the Grand Canal amenity designation, while a Negative, Moderate / Significant and Long-Term residual impact is reported on residential properties along Harold's Cross Road (i.e. Nos. 14-26 Harold's Cross Road (west side) and Nos. 33-61 Harold's Cross Road (east side) as well as a Negative, Profound, and Permanent residual impact on 32A Clanbrassil Street Upper, where the residence was demolished during the Construction Phase and permanent land take is required to facilitate the Proposed Scheme.

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

In the Operational Phase, negative significant residual effects will remain for properties experiencing permanent land acquisition and / or the loss of trees, particularly within the section of the Proposed Scheme along Harold's Cross Road and Clanbrassil Street Upper. However, from a townscape and streetscape standpoint, there will be positive effects for all sections of the Proposed Scheme as the Proposed Scheme will provide for substantial improvements in the urban realm, which will provide positive long-term effects for the landscape (townscape) and visual character. The Proposed Scheme will also provide for a significantly enhanced level of service for public transport and improved pedestrian / cycle connectivity.

### 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: A Simplified Model of the Circular Economy for Materials and Energy**

In Ireland, the most recently available published data records that 8.2 million tonnes of construction and demolition waste was generated in 2020. This represented a decrease of 0.6 million tonnes from 2019 (EPA 2022). Of this waste, 7 million tonnes were comprised of soil and stones and these make up 84% 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 3.2 million tonnes of municipal waste and recycled 30% of this waste in 2020.

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

- Construction and reconstitution of cycleways, pathways, road widening and urban realm improvements;
- Removal of trees, concrete kerbs, walls, fences and gates;
- Removal of small retaining walls;
- Demolition of house at Gordons Fuels at Clanbrassil Street Upper;
- Piling at the new structures at Clanbrassil Street Upper, Grand Canal, and the Stoneboat Boardwalk;
- Construction of footbridges at Robert Emmet Bridge;
- Modifications to signalised junctions;
- New street furniture, including traffic lights and bus stops, and landscaping works;
- Boundary walls, fences and gates will be removed and reconstructed where required;
- Minor utility diversions and / or protections will be 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 580 tonnes of demolition waste that will be generated as a result of the Proposed Scheme is equivalent to 0.005% 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 27,000 tonnes, and is equivalent to 0.23% 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 increase by approximately 2,031 tonnes. The predicted impact of operational construction and demolition waste will be Adverse, Not Significant, and Long-Term.

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



## 8.14 Material Assets

This material assets assessment was considered in terms of:

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

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

Existing material assets within the Proposed Scheme include:

- Electricity Supply Board electricity lines (high, medium and low voltage) and associated infrastructure;
- Gas Networks Ireland gas mains (high, medium and low pressure) and associated infrastructure;
- Irish Water drinking water mains and associated infrastructure;
- Irish Water sewer lines (foul and combined sewers) and associated infrastructure;
- Local Authority surface water drainage network and associated infrastructure;
- Eir, Enet and Virgin Media telecommunications lines and associated infrastructure;
- Local Authority traffic signal ducting; and
- The Grand Canal.

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

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

- Construction of new footbridge structures on either side of Robert Emmet Bridge across the Grand Canal, which will require some demolition works and piling in order to construct the structures;
- Construction Compounds will require electricity to power temporary office and welfare facilities and for temporary lighting which will be required to be supplied via a connection to the grid network or a generator;
- Construction Compounds will require a water supply for welfare facilities and spraying to prevent dust, wherever necessary;
- Construction Compounds will require telecommunications access;
- The diversion of electricity lines in areas where there will be interfaces with the Proposed Scheme works;
- The diversion of underground water mains where there will be interfaces with the Proposed Scheme works;
- Upgrade works required to the surface water drainage network to accommodate for new road layouts and increased hardstanding;
- The diversion of gas infrastructure where there will be interfaces with the Proposed Scheme works; and
- Importation of construction materials including concrete, metals, cement, road surface materials and landscaping materials. The amount of materials required for the Proposed Scheme will only represent a small proportion of the Irish quantities manufactured per year.

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



All possible precautions will be taken to avoid unplanned disruptions to any 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 structures and demolition works in proximity to the Grand Canal at Robert Emmet Bridge have been designed to minimise the impact on these features in so far as possible. Any disruption to these waterways, which are not anticipated, will be planned in consultation with Waterways Ireland, and all Waterways Ireland requirements will be adhered to during the works. Where works are to take place adjacent to and above the canal, precautions will be implemented by the appointed contractor to protect the bridge, banks and waterway from damage.

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

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

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

- Risk of gas explosion due to striking underground gas mains during excavation works;
- Risk of encountering unknown contaminated ground and mobilisation during construction / hazardous pipe materials (i.e. asbestos pipes) and potential damage to brittle pipes during construction;
- Risk of pollution event leading to environmental damage to watercourses or groundwater, particularly associated with the potential release of silt to the aquatic environment;
- Risk of excavation works leading to subsidence of land / encountering unstable ground during construction; and
- Risk of spread of non-native invasive species during construction works, particularly during site clearance.

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

Appropriate mitigation measures will be implemented during the Construction Phase, including the implementation of a Construction Environmental Management Plan and Environmental Incident Response Plan. With the application of these mitigation measures, there are no remaining identified incidents or major accidents and / or disaster 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;
- NTA website – for details of major transport programmes. This included a review of the NTA's Transport Strategy for the Greater Dublin Area 2016 – 2035 and Greater Dublin Area Transport Strategy 2022 - 2042;
- 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.

The results of the modelling showed that with the Construction Traffic Management Plans for all schemes in place at the same time, there would be significant traffic displacement across the Dublin area. The large cumulative increase of traffic on local roads had the potential to generate a significant adverse impacts of traffic congestion along with the risk of generating air quality and noise impacts. A revised construction scenario was developed which is based on four schemes which cannot be constructed concurrently with adjoining schemes. This scenario was developed to minimise potential significant impacts on traffic, air quality and noise.

The Landscape (Townscape) and Visual assessment identified the potential for temporary indirect cumulative townscape and visual effects to occur as a result of other projects in conjunction with the Proposed Scheme should the construction periods either overlap or follow on within a short timeframe with the Proposed Scheme. Effects would be reduced or negligible if this is not the case. In most cases the potential impacts are likely to be localised and contained, due to enclosing effect of the surrounding built form.

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

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

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

The only other significant operational cumulative impacts identified over and above the standalone scheme relate to human health. It was assessed that the proposals for SDCC planning application SD228/0008, the Lucan Luas, DART+ Programme South West, DART+ Tunnel Element (Kildare Line to Northern Line), Greater Dublin Area Cycle Network Plan, new bus interchange facility north of Liffey Valley Shopping Centre and the other Core Bus Corridor schemes are complementary and could have a cumulative beneficial effect by encouraging active travel and increased use of public transport through offering a choice of routes. Due to the substantial size of overall population with the opportunity to benefit from the proposals, the effect is assessed as Positive, Significant and Long-Term for health.

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

In brief, the Proposed Scheme will address sustainable mode transport infrastructure deficits while contributing to an overall integrated sustainable transport system as proposed in the Greater Dublin Area Transport Strategy. It will increase the effectiveness and attractiveness of bus services operating along the corridor and will result in more people availing of public transport due to the faster journey times and reliability improvements which the Proposed Scheme 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.

## 9 What Happens Next?

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

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

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

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

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