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1. Introduction

This document is the Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) for the Tallaght / Clondalkin 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 who will use the corridor.

The Proposed Scheme which has a total length of approximately 15.5km is comprised of two main alignments in terms of the route it follows; namely the Tallaght to City Centre section and the Clondalkin to Drimnagh section.

The Tallaght to City Centre section begins at the junction of Blessington Road / Cookstown Way and is routed along Belgard Square West, Belgard Square North, Belgard Square East and Blessington Road to the junction of R819 Greenhills Road and Bancroft Park. From here the Proposed Scheme is routed along the R819 Greenhills Road to Walkinstown Roundabout via new transport link roads; in the green area to the east of Birchview Avenue / Treepark Road, in the green area to the south of Ballymount Avenue and in the green area to the east of Calmount Road. From Walkinstown Roundabout the Proposed Scheme is routed along the R819 Walkinstown Road to the junction with R110 Long Mile Road and Drimnagh Road. The shared spine with the Clondalkin to Drimnagh section commences at this junction and the Proposed Scheme is routed along the R110 to the junction of Dean Street and Patrick Street via Drimnagh Road, Crumlin Road, Dolphins Barn, Cork Street, St. Luke's Avenue and Dean Street. From here the Proposed Scheme is routed along the R137 via Patrick Street to the junction at Winetavern Street and Christchurch Place where the Proposed Scheme terminates within the City Centre.

The Clondalkin to Drimnagh section begins at the junction of New Nangor Road and Woodford Walk and is routed along the R134 New Nangor Road, R810 Naas Road, R112 Walkinstown Avenue and the R110 Long Mile Road to the junction of Walkinstown Road and Drimnagh Road where it is routed towards the City Centre along the shared spine section as described above.

In addition to the primary corridor, an alternative cycle route of approximately 3.9km in length is proposed along Bunting Road, St. Mary's Road, Kildare Road and Clogher Road to link into the Grand Canal cycle route at Parnell Road.

The route of the Proposed Scheme is presented in **Image 1.1** and General Arrangement drawings of the Proposed Scheme are appended to this NTS.

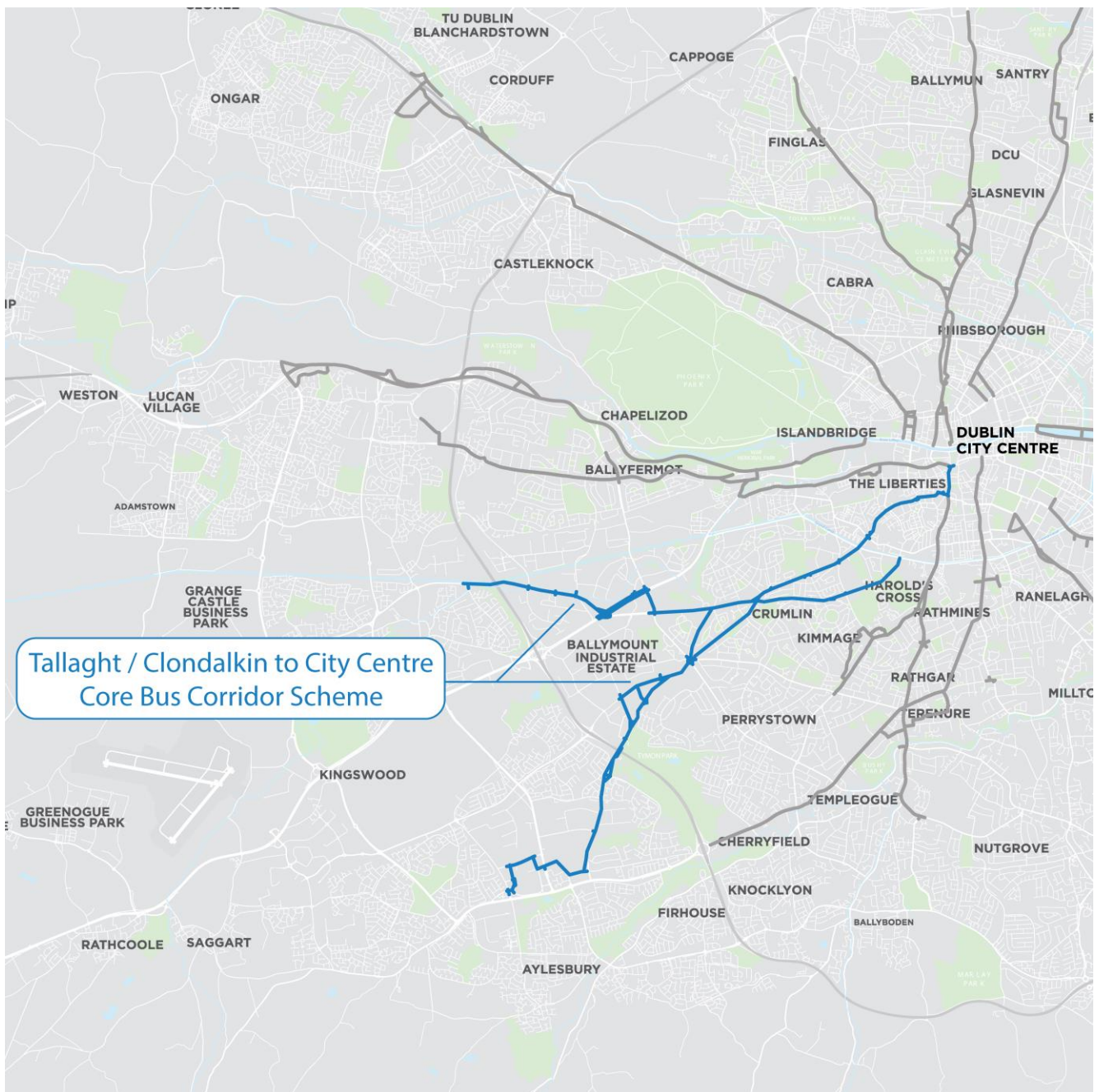


Image 1.1: Route of the Proposed Scheme

The Proposed Scheme will significantly enhance travel by public transport by providing bus priority as well as improved pedestrian and cycling infrastructure on both the Tallaght to City Centre section and the Clondalkin to Drimnagh section. Currently, these access corridors are characterised by traffic congestion along certain sections, and bus lanes and cycling infrastructure are only provided intermittently. As such, buses and cyclists are competing for space with the general traffic, impacting on the attractiveness 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 significant benefits for cyclists and pedestrians. The scheme design has been developed having regard to the relevant accessibility guidance and universal design principles so as to provide access for all users.

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

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

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

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



Image 1.2: CBC Infrastructure Works

It is envisaged that the CBC Infrastructure Works, once completed, will deliver the radial Core Bus Corridors identified in the NTA’s Transport Strategy for the Greater Dublin Area 2022-2042 (referred to as the GDA Transport Strategy) (NTA 2022).

1.1 Aims and Objectives

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

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

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

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

The outcomes achieved from delivering the Proposed Scheme will be:

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

1.2 Role of the National Transport Authority (NTA)

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

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

2. Environmental Impacts Assessment Process

2.1 EIA Process

Environmental Impact Assessment 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 effects 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 do not currently have the capacity for more traffic. Therefore, enhanced sustainable transport options are needed. Without intervention, traffic congestion will lead to longer and less reliable pedestrian, cycle, and bus journeys throughout the region and this will affect the quality of people's lives. On the other hand, sustainable transport infrastructure helps create more sustainable communities and healthier places, while also stimulating our economic development. It contributes to good health and well-being when delivered effectively.

3.2 Project Ireland 2040 - National Development Plan 2021-2030

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

3.3 Climate Action Plan 2023

Climate Action Plan 2023 is the second annual update to Ireland's Climate Action Plan 2019. This plan 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 plan 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.

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 Plan 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 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 CO2 emissions within the Greater Dublin Area by 2030.

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

The Transport Strategy 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 Dublin BusConnects, 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 Transport Strategy 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 Greater Dublin Area Transport Strategy (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 corridor on the eastern side, the Kimmage corridor in the middle and the Tallaght-Greenhills-Walkinstown-Crumlin corridor on the western side.

The Core Bus Network study included recommended routes from Clondalkin to the City Centre and from Greenhills to the City Centre on the basis of the need to serve significant demand along the Tallaght-Greenhills-Walkinstown-Crumlin 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 Dublin Bus Connects 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 Transport Strategy 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 maximize 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 Transport Strategy 2022 - 2042 and allow the city to grow sustainably into the future, which would not be possible in the absence of the Proposed Scheme.

4. Consultation

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

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

The non-statutory consultation process assisted in:

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

These consultations are briefly described below.

4.1 EPR Option Consultation

The EPR public consultation phase for the Proposed Scheme occurred from 23 January 2019 to 30 April 2019.

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

At the initiation of the public consultation process, a Community Forum was established with the aim of facilitating communication between community representatives, elected representatives and the BusConnects Infrastructure team. Community Forum meetings took place, where the Community Forum was provided with an update on the design for the Proposed Scheme and given the opportunity to ask questions of the project team and provide feedback.

4.2 PRO Consultations

The draft PRO 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 cancelled. In deference to the submissions which had already been received, the decision was made not to cancel the consultation.

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

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

4.3 Consultation with Prescribed Bodies and Other Consultees

In addition to the public consultation on the Proposed Scheme, the NTA 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 the Environment, Climate and Communications, the Department of Transport, South Dublin County Council, Dublin City Council and the Heritage Council) and relevant non-statutory consultees were provided with a report outlining the proposed approach to the environmental assessment and were invited to comment. Feedback from this consultation was also used to inform the EIAR and the preliminary design proposals.

4.4 Consultation with Landowners

There has been ongoing engagement with landowners whose properties will be impacted, or potentially affected, as the design development for the Proposed Scheme has progressed, from the earliest stages of the project in 2018 through to March 2023. This engagement has overlapped with the public consultations (in March 2020 and December 2020). A letter drop was also carried out in Summer 2020 to request access to properties to undertake more detailed surveys. Most recently, during December 2022 and January 2023, letters have been issued to properties likely to be the subject of the Proposed Scheme Compulsory Purchase Order (CPO) process seeking to engage with them to ascertain ownership details. 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.

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

5. Alternatives Considered

5.1 Strategic Alternatives

The Proposed Scheme has been developed following careful consideration of alternatives. The GDA Transport Strategy 2016 - 2035, and its associated Strategic Environmental Assessment, considered several strategic options relevant to the Proposed Scheme. The Transport Strategy for the Greater Dublin Area 2022-2042 (Transport Strategy) replaces the prior transport strategy for the period 2016 to 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 GDA is particularly high, with the number of cars on the road increasing and significant daily traffic delays. Without intervention, potential impacts could worsen for the region, including:

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

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

Through the work undertaken in the preparation of the GDA Transport Strategy 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 GDA Transport Strategy 2016 - 2035 has concluded that new heavy rail and light rail/metro alternatives would not be justified by the predicted level of demand. The challenges outlined in the GDA Transport Strategy 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.

It should be noted that the initial route selection comprised of two separate sections (i) the Tallaght (Greenhills) to City Centre section and (ii) the Clondalkin to Drimnagh section. However, as a result of careful consideration

of the alternative route options, these two sections have now been combined in a single route as the Proposed Scheme. The principal reasons for combining the Tallaght to City Centre section and the Clondalkin to Drimnagh section into the Proposed Scheme include: their geographical association, functional interdependence and the fact that the Clondalkin to Drimnagh section joins the Tallaght to City Centre section at the junction of the R110 Long Mile Road and R819 Walkinstown Road and shares the remaining section of the route from that junction to the City Centre.

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

1. **Feasibility and Options Reports** which were associated with the Proposed Scheme (Greenhills to City Centre Core Bus Corridor Options Study – Volume 1: Feasibility and Options Assessment – Main Report and Clondalkin to City Centre Core Bus Corridor – CBC Feasibility Study and Options Assessment Report – Volume 1) were concluded in 2017 and 2018, setting out the initial route options and concluding with the identification of an EPR;
2. A first round of non-statutory **Public Consultation** was undertaken on the EPR from 14 November 2018 to 31 May 2019;
3. Development of **Draft PRO** (May 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder and community engagement and the availability of additional design information, the design of the EPR evolved with further alternatives considered;
4. A second round of non-statutory **Public Consultation** was undertaken on the Draft PRO from 4 March 2020 to 17 April 2020. 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 PRO** 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 PRO from 4 November 2020 to 16 December 2020; and
7. Finalisation of **PRO**. Informed by feedback from the overall public consultation process, continuing stakeholder engagement and the availability of additional design information, the PRO, being the Proposed Scheme, was finalised.

The initial route alternatives considered covered a wide network of roads between Tallaght and Dolphin's Barn and between R136 Outer Ring Road and Drimnagh.

These were narrowed down using a high-level qualitative method based on professional judgement and a general appreciation for existing physical conditions / constraints, including environmental considerations, within the study area.

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

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

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

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

(Tallaght) Greenhills to City Centre Core Bus Corridor:

'The CBC commences on Belgard Square West at the junction with Cookstown Way, just west of Tallaght Town Centre. The preferred route continues along Belgard Square West before turning right onto Belgard Square North. At the junction with Belgard Road, buses would continue straight through the junction and into the IT Tallaght campus grounds. Buses would follow the existing road through the campus exiting at the existing IT Tallaght junction on Greenhills Road.'

Once on Greenhills Road, buses would continue north along the existing Greenhills Road alignment to a point just south of the Castletymon Road junction, where it is proposed to avail of the South Dublin County Council objective to realign Greenhills Road to the west of the Parkview housing estate for a length of approximately 500m.

Beyond this, buses would once again follow the existing Greenhills Road alignment as far as a point approximately 250m north of the existing Ballymount Industrial Estate entrance on Greenhills Road. At this location it is again proposed to implement the South Dublin County Council objective to create a new road link which would connect Greenhills Road to Ballymount Avenue allowing buses to directly serve the industrial estate. Access to and from Greenhills Road at this location would be closed to traffic. Buses would continue along Ballymount Avenue before turning right onto Calmount Road.

Calmount Road is currently a cul-de-sac but it is proposed as part of this scheme to extend Calmount Avenue to meet Greenhills Road. Once on Greenhills Road, buses would continue northbound through Walkinstown Roundabout and onto Walkinstown Road.

Buses would then turn right onto Drimnagh Road continuing onto Crumlin Road as far as the Grand Canal. At the canal, buses would continue straight onto Dolphin's Barn, Cork Street, and St. Luke's Avenue.

At the junction with The Coombe, buses would turn right onto The Coombe before turning left onto Patrick Street. Buses would continue straight along Patrick Street and Nicholas Street, before turning right onto Christchurch Place where the route ends.

Outbound services running along the CBC would take the same route to return to Tallaght.'

Clondalkin to City Centre Core Bus Corridor:

'The preferred route commences to the east of the R134 New Nangor Rd / R113 Fonthill Road junction. The route then continues east to southeast along the New Nangor Road to the R134 New Nangor Rd / Naas Rd / R110 Long Mile Road junction.

From the aforementioned junction, the CBC continues in an easterly direction along the Long Mile Road and Drimnagh Road where it merges with the Greenhills to City Centre CBC in the vicinity of the Drimnagh Rd / Walkinstown Rd junction.

Outbound CBC services would follow the same route as the inbound CBC services.'

5.3 Design Alternatives

Following the completion of the public consultation process in relation to the EPR, various amendments were made to the scheme proposals to address some of the issues raised in submissions, including incorporating suggestions and recommendations from 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 PRO.

Several changes to the design were made based on feedback received during the second and third rounds of public consultation and dialogue with stakeholders, the following list highlights the material scheme changes between the published EPR Option and the PRO:

Tallaght to City Centre Core Bus Corridor:

- Section 1: Tallaght to Ballymount:
 - A bus interchange on Belgard Square West to facilitate interchange between bus, Luas and the Town Centre, on Belgard Square North;
 - A segregated cycle lane in each direction on Belgard Square North for improved cycle access to the Hospital from Belgard Road;
 - Route alteration to pass through Tallaght village rather than TUD Tallaght, which will require the reopening of Old Greenhills Road to form a new bus-only junction with R819 Greenhills Road; and

- At Parkview, the proposed alignment has been altered to allow general traffic to remain on the existing R819 Greenhills Road with a sustainable bus/cycle link road proposed in the green area parallel to Birchview Avenue and Treepark Road for both inbound and outbound bus services.
- Section 2: Ballymount to Crumlin:
 - Over the M50, two new single span pedestrian/cycle bridges are proposed to provide continuous bus lanes and higher quality cycle lanes on R819 Greenhills Road;
 - At Ballymount, the new link road connecting Ballymount Avenue and R819 Greenhills Road will be provided with a junction on the southern end of Ballymount Avenue which will allow direct access to eastern section of R819 Greenhills Road from Ballymount Avenue; and
 - Walkinstown Roundabout altered to include a segregated two-way cycle track around the junction. This will reduce conflicts with pedestrians and allow the cyclists to take the shortest route around.
- Section 3: Crumlin to Grand Canal:
 - A three-lane option with signal-controlled priority is proposed along R110 Crumlin Road between Raphoe Road and the Health Centre to reduce the impact on properties. To facilitate this arrangement, it is proposed to restrict access at the R110 Crumlin Road junctions with both Clonard Road and Bangor Drive to one-way only southbound. Urban realm improvements will be provided along this section; and
 - The proposed alternative cycle route on Kildare Road is redirected towards the Grand Canal via Clogher Road along with cycle lanes.
- Section 4: Grand Canal to Christchurch:
 - On R137 Patrick Street, the design has been altered to retain the tree-lined median. In addition, the junction of R137 Nicholas Street and R810 High Street is to be remodelled to provide improved facilities for buses, cyclists and pedestrians.

Clondalkin to Drimnagh Core Bus Corridor:

The Clondalkin to Drimnagh section between R136 Outer Ring Road and Woodford Walk has been omitted with the Proposed Scheme commencing at the junction of Woodford Walk and New Nangor Road.

- Section 5: Woodford Walk (R113) / New Nangor Road (R134) to Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction:
 - Provide a grade-separated pedestrian and cyclist crossing at the R134 New Nangor Road / R110 Long Mile Road / R810 Naas Road junction in order to reduce conflicts with vehicular traffic.
- Section 6: Long Mile Road / Naas Road / New Nangor Road junction to Drimnagh:
 - Confirmation of corridor routing via the Kylemore Luas Station (R810 Naas Road and R112 Walkinstown Avenue).

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 which has a total length of approximately 15.5km is comprised of two main alignments in terms of the route it follows; namely the Tallaght to City Centre section and the Clondalkin to Drimnagh section. An additional offline cycling facility approximately 3.9km in length runs from Walkinstown Roundabout to Parnell Road (Grand Canal).

The Tallaght to City Centre section begins at the junction of Blessington Road / Cookstown Way and is routed along Belgard Square West, Belgard Square North, Belgard Square East and Blessington Road to the junction of R819 Greenhills Road and Bancroft Park. From here the Proposed Scheme is routed along the R819 Greenhills Road to Walkinstown Roundabout via new transport link roads; in the green area to the east of Birchview Avenue / Treepark Road, in the green area to the south of Ballymount Avenue and in the green area to the east of Calmount Road. From Walkinstown Roundabout the main Core Bus Corridor is routed along the R819 Walkinstown Road to the junction with R110 Long Mile Road and Drimnagh Road. The shared spine with the Clondalkin to Drimnagh section commences at this junction and the Proposed Scheme is routed along the R110 to the junction of Dean Street and Patrick Street via Drimnagh Road, Crumlin Road, Dolphins Barn, Cork Street, St. Luke's Avenue and Dean Street. From here the Proposed Scheme is routed along the R137 via Patrick Street to the junction at Winetavern Street and Christchurch Place where the Proposed Scheme terminates within the City Centre. An offline cycle facility is proposed to facilitate cycling between Walkinstown Roundabout and Parnell Road (Grand Canal) via Bunting Road, Kildare Road and Clogher Road.

The Clondalkin to Drimnagh section begins at the junction of New Nangor Road and Woodford Walk and is routed along the R134 New Nangor Road, R810 Naas Road, R112 Walkinstown Avenue and the R110 Long Mile Road to the junction of Walkinstown Road and Drimnagh Road where it is routed towards the City Centre along the shared spine section as described above.

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

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

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

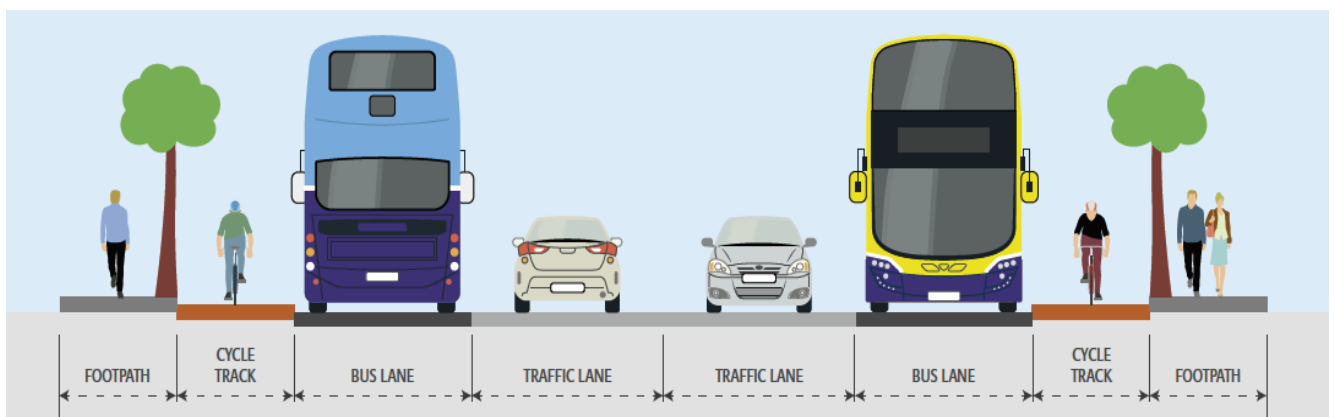


Image 6.1: Typical BusConnects Road Layout

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

- The number of pedestrian signal crossings will increase by 34% from 135 to 181 as a result of the Proposed Scheme;
- The proportion of segregated cycle facilities will increase from 17.2% on the existing corridor to 93% on the Proposed Scheme (offline cycling facility length included);
- The proportion of the route having bus priority measures will increase from 34% on the existing corridor to 94% on the Proposed Scheme.

The Proposed Scheme is described in the following geographical sections:

- Section 1: Tallaght to Ballymount;
- Section 2: Ballymount to Crumlin;
- Section 3: Crumlin to Grand Canal;
- Section 4: Grand Canal to Christchurch;
- Section 5: Woodford Walk (R113) / New Nangor Road (R134) to Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction; and
- Section 6: Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction to Drimnagh.

6.1 Section 1: Tallaght to Ballymount

The Proposed Scheme commences at the junction of Old Blessington Road / Cookstown Way to facilitate access to the proposed bus interchange on Belgard Square West. General traffic will also be permitted to access the Square Shopping Centre from this junction via Belgard Square South due to Belgard Square West being restricted to buses, cyclists and other authorised vehicles. Bus traffic across Old Blessington Road will be controlled by signal-controlled priority maintaining a similar arrangement to the existing scenario for orbital services heading towards the bus interchange.

It is proposed to change the existing Belgard Square South roundabout to a fully signalised junction with improved pedestrian facilities. The section of Belgard Square West from Belgard South to Old Blessington Road and immediately north of Old Blessington Road is proposed to be a bus only route and will no longer be a through route for general traffic. A Bus Interchange will be developed on Belgard Square West which will allow for interchange with the red line Luas and serve as the terminus for several buses including the A3, F1, D5 spine routes, W2, W4, W6, S6 orbital routes and 71, 85, L44 local routes. This will also act as the focal point for other through bus routes in the area. Access to Tallaght Cross West / Broadfield Hall and neighbouring developments will still be permitted from via Belgard Square North and the northern section of Belgard Square West.

The proposed Tallaght Bus Interchange will greatly improve transport links to the area and cater for greater public access. It will become an important new focal point in the community. The interchange is an "island" type layout with four sedum green roofs to soften the view from local apartments above. It will have eight independently usable alighting / boarding bays with an inbound bus layby for buses passing through the interchange. Pedestrian movement by passengers and shoppers is accommodated within and across the interchange island. The Bus Interchange design will require land take and will integrate with the adjacent shopping centre, the proposed South Dublin County Council public realm development and the wider Tallaght area.

It is proposed to change the roundabout junction on Belgard Square North at the Tallaght Hospital Entrance to a fully signalised junction to accommodate new bus, cycle and pedestrian facilities. The roundabout junctions at Belgard Square East will also be replaced with new signalised junction arrangements. It is proposed to upgrade the existing cycle facilities and associated junctions on Belgard Square North to provide segregated cycle tracks to and from Tallaght Hospital. This proposed amendment may impact on the existing trees and shrubs along Belgard Square North and require localised land acquisition on a currently undeveloped site. The recently constructed signalised junction at the Cookstown Link Road and right-turn filter lane on Belgard Square North will be accommodated in the Proposed Scheme.

From Belgard Square East the route continues via Blessington Road and Main Road to Greenhills Road (R819). To avoid traffic congestion on Greenhills Road it is proposed for buses to use the Old Greenhills Road alignment and create a new bus only junction at the location of the existing cul-de-sac opposite Bancroft Park Road, to facilitate bus only turn movements to Greenhills Road (R819). This will aid the bus in avoiding congestion at the

Main Road / Greenhills Road (R819) junction. Stone paving will be used in the area and localised planting will be implemented to retain the character of the existing cul-de-sac treatment.

Between the Old Greenhills Road and the junction with Mayberry Road, along the Greenhills Road (R819), it is intended to provide one bus lane, one traffic lane and a cycle track in each direction. Raised table side entry treatments and protected junctions have been proposed along this section where practical to improve pedestrian and cycle facilities. To accommodate this road cross section, it is proposed to acquire additional land on both the west and east side of the existing Greenhills Road (R819). A bus gate has been proposed along this section to minimise impacts to the existing mature trees and the stone wall on the western verge north of the TUD entrance on Greenhills Road (R819). The Airton Road / Greenhills Road (R819) junction has been upgraded to provide improved facilities for buses, cyclists and pedestrians.

To improve the operation of the existing junction and minimise land take, it is proposed to introduce a southbound right turn ban from the Greenhills Road (R819) to the entrance to Harvey Norman / Costa carpark and a northbound right turn ban from the Greenhills Road (R819) to Hibernian Industrial Estate. Southbound access to Harvey Norman / Costa car park via Greenhills Road (R819) will be maintained via the entrance off Airton Road. Northbound access to Hibernian Industrial Estate will be achieved via the entrance opposite Broomhill Road.

A low height retaining wall will be required to the south of Broomhill Road to accommodate the proposed road boundary cross section.

Between Mayberry Road and Tymon Lane, it is proposed to reconfigure the local road network. South Dublin County Council had previously identified this section of Greenhills Road for upgrade through the provision of new roads under their current County Development Plan. The Proposed Scheme seeks to align with the principles of the South Dublin County Council proposals with a significantly reduced cross section that caters for sustainable modes only (i.e., bus / cycling / pedestrian) to minimise impacts on the adjacent properties and surrounding environment. General traffic will remain on the existing Greenhills Road. Bus Priority signaling will be used to prioritise bus movements in the outbound direction via the new approximately 620m long sustainable link road that will run parallel to Birchview Avenue and Treepark Road. Inbound D5 spine services and X47 services from Castletymon Road will also be provided with a priority bus only link that adjoins the new link road. As part of the proposal, improved cycling facilities including new two-way cycling and pedestrian links will be incorporated to improve access to Tymon Park and surrounding amenities. Significant new landscaping and Sustainable Drainage Systems enhancements will also be provided in these areas.

As outlined in the GDA Cycle Network Plan, this Section of the corridor will provide access with the proposed secondary routes SO6 and 9C at Belgard Square South / Belgard Square West and aligns with primary route SO5 on the Blessington Road and primary route 8B on Greenhills Road (R819). The proposed Dodder Greenway can be accessed at Tymon Park south of the R819 / M50 overbridge.

6.2 Section 2: Ballymount to Crumlin

The existing M50 bridge crossing will be retained. Two new single span pedestrian / cycle bridges are proposed to be located adjacent to the existing bridge to maintain priority for buses on the existing bridge and to provide high quality cycle / pedestrian facilities over the M50 in both directions. The pedestrian / cycle bridges will be steel warren truss type structures and will be positioned immediately parallel to the existing structure. Additional land acquisition on both sides of the M50 will be required to facilitate the construction of the pedestrian / cycle bridges.

Two sustainable link roads will be constructed in the Ballymount area due to the existing width constraints within the existing Greenhills Road (R819) to the east of the M50. The existing Ballymount Road Upper connection to Greenhills Road will be closed to vehicular traffic and a new 220m long link road to the south of Ballymount Avenue will provide a connection to Greenhills Road (R819). New retaining walls and earth embankments will be required at this location to facilitate the new road construction. It is proposed to widen the existing Ballymount Avenue and Calmount Road for dedicated bus and cycle tracks and connect Calmount Road to Greenhills Road. The existing Greenhills Road (R819) will be retained for local access and cycling facilities with a cul-de-sac treatment to the northern end where a new approximately 250m long sustainable transport link road will be constructed in the green area to the east of Calmount Road. New retaining walls and earth embankments will be required at this location to facilitate the new road construction. To maintain access for local businesses along the Greenhills Road (R819) in this area a small roundabout will be constructed with a new approximately 90m long

link road to connect Greenhills Road with Calmount Avenue. Accessible ramps and stairs will be provided to mitigate against the steep gradient on Calmount Avenue where it joins to Greenhills Road.

Between Calmount Road and Walkinstown Roundabout, it is proposed to maintain one bus lane, one traffic lane and a cycle track inbound with one traffic lane and a cycle track outbound along the Greenhills Road (R819).

The layout of Walkinstown Roundabout has been designed to provide enhanced cycle and pedestrian connectivity around this busy junction as well as improving safety for pedestrians, cyclists, bus and general traffic. A two-way segregated cycle track has been proposed around the junction to allow cyclists to adopt the most direct route around the roundabout (i.e., both directions) and to reduce interactions with motor vehicles. Parallel pedestrian / cyclist raised table crossings have been implemented on all arms to improve pedestrian and cyclist safety. Set back crossings have been used on all arms to promote pedestrian / cyclist desire lines with consideration for vehicle exit lane storage off the roundabout. Cycle detection loops have also been implemented on the two-way segments on approach to the crossings to help promote cycling journey time efficiencies and minimise delays for cyclists crossing multiple arms of the junction. The number of general traffic entry lanes / flares, circulation lanes and angle of entry have been reconfigured to promote safer vehicle movements. Landscaping proposals and revised parking arrangements are also proposed to enhance the area. City bound cyclists will be directed to the offline cycle route on Bunting Road and St. Mary's Road, providing a more direct route linking Walkinstown Roundabout with Kildare Road..

As outlined in the GDA Cycle Network Plan, this Section of the corridor will align with primary route 8B on the R819 M50 overbridge as far as Tymon Park entrance and secondary route 8A on Ballymount Avenue, Calmount Road and Greenhills Road (R819) to Walkinstown Roundabout.

6.3 Section 3: Crumlin to Grand Canal

On Walkinstown Road (R819) between Walkinstown Roundabout and the Long Mile Road (R110), it is proposed to provide one bus lane and one general traffic lane in each direction with minimum land take impacting properties on Walkinstown Road (R819) maintaining sufficient front driveway boundary setback lengths for a car to be parked. To accommodate this cross section, land acquisition will be required along the Walkinstown Road (R819). Land acquisition is proposed on the western side of the Walkinstown Road (R819) between Walkinstown Roundabout and Kilnamanagh Road. Between Kilnamanagh Road and Long Mile Road (R110), land acquisition is proposed on the eastern side of Walkinstown Road (R819). It is proposed to introduce a southbound right turn ban for general traffic from Walkinstown Road (R819) to Kilnamanagh Road to improve the efficiency of the junction and minimise bus delays. Kilnamanagh Road will remain accessible from the Walkinstown Road (R819) via Walkinstown Drive. It is also proposed to introduce a right turn ban for northbound right turning traffic from the Walkinstown Road (R819) to the southern entrance of the SuperValu supermarket (Walkinstown Shopping Centre) during peak hours to improve the operation of the junction and reduce bus delays. Entry to the shopping centre will be possible via the alternative car park entrance.

City bound cyclists will have an alternative segregated cycle route along Bunting Road (GDA Cycle Route 8A) and St. Mary's Road providing a more direct route linking Walkinstown Roundabout with Kildare Road.

It is proposed to upgrade the junction at Drimnagh Road (R110) / Walkinstown Road (R819) to enhance pedestrian and cycling facilities. To improve the safety of cycle facilities and reduce vehicle speeds, the existing left turn slip lane to the Walkinstown Road (R819) has been removed and additional planting and urban realm enhancements have been proposed. Proposals for parking adjacent to shop frontage on the Long Mile Road (R110) has been revised, with the existing perpendicular parking converted to a parallel parking layout. To accommodate the proposed revised grading arrangements for the junction a retaining wall structure has been proposed to the northern side of the Drimnagh Road (R110) at the interface with Slievebloom Park cul-de-sac.

On Drimnagh Road (R110) it is proposed to maintain one bus lane, one general traffic lane and one cycle track in each direction. The junction at Kildare Road, Saint Mary's Road and Drimnagh Road has been revised to provide improved cycle and pedestrian facilities. This will provide improved cycle connectivity between the Drimnagh Road (R110) and the proposed offline cycle route via Kildare Road.

On Crumlin Road (R110) bus priority will be maintained by incorporating Signal Controlled Priority and managing the flow of traffic in both directions along the Crumlin Road (R110). Widening of the road corridor here for

dedicated bus and traffic lanes in both directions is not feasible due to the size of the front gardens and gradient constraints between the road level and front doors. The proposed arrangement requires the closure of Clonard Road and Bangor Drive for direct access onto Crumlin Road to facilitate traffic management within this portion of the Crumlin Road (R110) such that bus priority can be maintained, one-way access from the Crumlin Road (R110) onto Clonard Road and Bangor Drive will be possible. Egress and access for Bangor Drive and Clonard Road can be achieved via Windmill Road and Old County Road.

Due to width restrictions in the area of Crumlin Road (R110) there is insufficient space to provide dedicated cycle facilities. Therefore, it is proposed to provide an alternative cycle route along Kildare Road and Clogher Road.

The alternative cycle route will include segregated cycle track over most of its length either through the addition of kerbs to the existing cycle lanes or the construction of new kerbed cycle track. On Clogher Road, between Sundrive Road and Kildare Road, the narrow cross-section prevents the provision of dedicated cycle facilities. Therefore, it is proposed to provide a bus / cycle gate at the junction of Clogher Road / Sundrive Road to reduce the amount of traffic on this road and making it suitable for designating as a Quiet Street.

At the Crumlin Road / Herberton Road / Sundrive Road junction, it is proposed to modify the existing layout and kerb alignments to provide improved pedestrian crossing facilities. On Crumlin Road (R110) between Herberton Road and Dolphin Road it is proposed to maintain one bus lane and one general traffic lane in each direction. There is insufficient road width on this section to provide dedicated cycle tracks, with the proposed route along Clogher Road providing an alternative route.

On Crumlin Road (R110) between Cooley Road and Dolphin Road the posted speed limit will be reduced to 30 kph from 50 kph with raised tables installed at side road junctions to improve pedestrian accessibility. At the Crumlin Road (R110) junction with Dolphin Road / Parnell Road (R111) on-road cycle lanes will be provided within the fully signalised junction and existing right turn bans will be maintained.

As outlined in the GDA Cycle Network Plan, this section of the corridor will provide access to secondary routes SO3 (R818 Cromwellsfort Road), SO4 (St. Peter's Road (R112) and Walkinstown Avenue (R112)) and 7E (Ballymount Road Lower). It will align with secondary route 8A on Bunting Road, secondary route 8C on Long Mile Road (R110), Drimnagh Road (R110), Kildare Road and Clogher Road as far as Parnell Road (R111) / Grand Canal primary route SO1 / N10. Junctions within this section will be upgraded to provide enhanced cycle facilities, where feasible.

6.4 Section 4: Grand Canal to Christchurch

Between Dolphin Road and South Circular Road (R811), it is intended to provide one bus lane, one general traffic lane and one cycle track in each direction along the R110. The proposed South Circular Road junction design takes into account the Dolphins Barn Public Realm improvement plan that is being implemented by Dublin City Council (DCC).

Between South Circular Road (R110) and Ardee Street it is proposed to have one bus lane, one general traffic lane and one cycle track in each direction. It is also intended to upgrade the Ardee Street junction with improved pedestrian facilities. It is proposed to modify the Kevin Street / Dean Street junction to facilitate improved cycle facilities. Bus priority from St. Luke's Avenue will be maintained with through Signal Controlled Priority as there is insufficient road corridor width on Dean Street to provide continuous bus lanes.

The Dean Street / Patrick Street junction will be upgraded to provide enhanced cycling and pedestrian facilities with the conversion of the existing left turn slip lane on the northwestern corner of the junction to a cycle bypass facility to provide efficiencies for left turning cyclists on the corridor. A controlled crossing will be implemented to manage the pedestrian and cyclist interaction at the cycle bypass.

The future proposed Kimmage to City Centre Core Bus Corridor Scheme will also join the route here on the southern arm via New Street. The design proposals allow for connection to both existing arrangement and future proposed arrangement under the Kimmage to City Centre Core Bus Corridor Scheme.

Between Dean Street and Bride Road, it is proposed to have one bus lane, one general traffic lane and one cycle track in each direction. Between Bride Road and Christchurch Place it is proposed to have one bus lane and one cycle track in each direction with two traffic lanes inbound and one traffic lane outbound.

The Proposed Scheme terminates at the junction of Christchurch Place and Winetavern Street where the Proposed Scheme ties into the DCC contra flow bus lane arrangement, providing connectivity to and from the Quays.

The future proposed Liffey Valley to City Centre Core Bus Corridor Scheme will also join the route here on the western arm via High Street. The design proposals allow for connection to both existing arrangement and future proposed arrangement under the Liffey Valley Scheme.

As outlined in the GDA Cycle Network Plan, this Section of the corridor will align with primary route 8 on R110 Dolphin's Barn Street, Cork Street and St. Luke's Avenue and link with primary route 7 at R108 High Street and Christchurch Place. It will align with secondary route 9B on R137 Patrick Street and Nicholas Street. Junctions within this section will be upgraded to provide enhanced cycle facilities where feasible.

6.5 Section 5: Woodford Walk (R113) / New Nangor Road (R134) to Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction

The junction at Woodford Walk / New Nangor Road (R134) will be upgraded with removal of the existing left turn slip lanes, provision of enhanced cycling and pedestrian facilities and improved connectivity to the existing Grand Canal Greenway including the removal of the existing kissing gate.

Between Woodford Walk / New Nangor Road (R134) junction and the approach to the M50 overbridge, a bus lane, general traffic lane and cycle track will be provided in both directions. A continuous footway will be provided along the outbound side of the New Nangor Road (R134). On the inbound side of the New Nangor Road (R134), no footway is proposed beyond the Woodford Walk junction as pedestrians will be directed to the parallel Grand Canal Greenway.

It is proposed to widen the existing R134 carriageway at the M50 bridge to provide a three-lane arrangement. A continuous inbound bus lane has been proposed to mitigate against any potential queuing that may occur from the upgraded Riverview Business Park junction. Bus priority on the outbound bus lane is facilitated by a bus priority signal on the approach to the M50 overbridge. The inbound footway on the New Nangor Road (R134) is re-introduced on the approach to the Nangor Road Business Park junction with a new pedestrian and cycle link connection to the Grand Canal Greenway to the east of the M50 overbridge.

Between the New Nangor Road (R134) / Riverview Business Park junction and New Nangor Road (R134) / Killeen Road junction it is proposed to widen the existing R134 carriageway to accommodate enhanced bus, cycle and pedestrian facilities along the corridor. This will require localised land acquisition on both the southern and northern boundaries to the existing carriageway. Localised modifications to the Cammock River headwall at the New Nangor Road (R134) / Oak Road junction will also be required.

The existing roundabouts and junctions along this portion of the New Nangor Road (R134) will be upgraded to cycle protected signalised junctions with the provision of large segregation islands proposed where practicable in consideration of the heavy goods vehicle movements in the area. Removal of left turn slip lanes and improved pedestrian crossing facilities are also proposed.

Raised table crossings are proposed at the interface of the existing HGV entrances (Diageo Baileys and Toyota Ireland) on the northern side of the New Nangor Road (R134) to improve the existing crossing arrangements.

At the Killeen Road junction the existing outbound bus bypass facility will be modified to accommodate the revised junction arrangements. A new two-way cycle facility will provide connection to the proposed cycle bridge at the New Nangor Road (R134) / Naas Road (R810) junction and also linking to the proposed two-way cycle track on the northern side of the Naas Road (R810), thus enhancing the accessibility of the existing Killeen Road cycle tracks that link to the Grand Canal Greenway and Park West whilst also reducing the need for cycle crossings on

the R134. A proposed inbound right turn ban from the New Nangor Road (R134) towards Killeen Road will be implemented to facilitate bus priority in this section through lane reallocation. Alternative access to Killeen Road from the New Nangor Road (R134) is available via Willow Road / Knockmitten Lane. The existing peak hour right turn ban from Killeen Road to the New Nangor Road (R134) is proposed to be retained with the provision of inbound bus signals to allow for continuous bus priority during the right turn movements from Killeen Road.

Between Killeen Road junction and the Naas Road (R810) junction land acquisition and new retaining walls will be required along the northern boundary to facilitate enhanced bus, cycle, and pedestrian infrastructure.

At the New Nangor Road (R134) / Naas Road (R810) junction a new pedestrian and cycling bridge with accessible ramps and stairs on all approaches to the junction has been proposed to provide increased pedestrian and cycling safety, permeability and accessibility at this junction. This will require land acquisition and boundary treatment on the periphery of the existing road boundary to accommodate the proposed bridge and ancillary ramp structures. A proposed continuous inbound bus lane with dedicated left turn bypass facility will provide enhanced bus priority between the New Nangor Road (R134) and the Naas Road (R810). This will require land acquisition and boundary modifications including new retaining structures in conjunction with the new bridge access ramps and steps. A new bus lane is proposed within the junction for the outbound buses heading towards New Nangor Road (R134) to improve bus priority along the corridor. As a result, the general traffic lane allocation from the Long Mile Road (R110) will be revised to two straight ahead lanes towards the New Nangor Road (R134) and two left turn lanes towards the Naas Road (R810).

As outlined in the GDA Cycle Network Plan, this section of the corridor aligns with the proposed Primary Route 7B / N10 until cyclists re-join New Nangor Road beyond the M50 overbridge. The route also aligns with Secondary Route 8C2 along its extents.

6.6 Section 6: Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction to Drimnagh

The Proposed Scheme is routed along the Naas Road (R810) until the junction with Walkinstown Avenue (R112), generally maintaining the existing lane provision of one bus lane and two traffic lanes in each direction with a proposed segregated two-way cycle track on the inbound direction and segregated one way cycle track on the outbound direction. The existing left turn slip lane towards the Kylemore Road (R112) is to be removed and the inbound left turn movement will be banned, with traffic diverted via Old Naas Road / John F Kennedy Drive in order to access Kylemore Road (R112). This arrangement allows for improved bus facilities and passenger interchange with the Kylemore Luas Stop. Right turning buses from Naas Road (R810) towards Walkinstown Avenue (R112) will have a layby bus stop with a bus priority signal to complete the right turn movement through the junction. Through services / coaches along the Naas Road (R810) will have a layby bus stop adjacent to the Old Naas Road junction. An inline bus stop for the corridor spine services and offline layby bus stop for coaches is provided on the outbound section of the Naas Road (R810). Localised land acquisition and widening will be required to accommodate the arrangement for the outbound bus stops.

The junction of Naas Road (R810) / Walkinstown Avenue (R112) is being reconfigured to provide enhanced pedestrian and cyclist facilities. Existing pedestrian routes are maintained along Naas Road with raised table crossings at key entrances along this section of the corridor to improve pedestrian priority.

From the Naas Road (R810) the Proposed Scheme is routed along the Walkinstown Avenue (R112), with one bus lane, one general traffic lane, cycle track and footpath in each direction. A grass verge is provided to segregate the outbound cycle track from the carriageway and to retain the existing mature trees along this section of the corridor. Land acquisition will be required on the eastern boundary to accommodate the revised cross section.

The junction of Walkinstown Avenue (R112) / Long Mile Road (R110) is being reconfigured to provide enhanced pedestrian and cyclist facilities. The westbound approach to the junction on Long Mile Road is also being altered, with a bus gate being provided for improved priority for right turning buses into Walkinstown Avenue.

The existing bus and traffic lane provision is generally maintained along the Long Mile Road (R110) until the junction with Slievebloom Park, at which point the Proposed Scheme joins the Tallaght section. The junction with Slievebloom Park is proposed to be upgraded to a signalised junction with improved pedestrian and cycle facilities. Existing footway provisions have largely been maintained, with raised tables proposed at side roads and new

raised crossing proposed adjacent to schools in order to improve pedestrian accessibility and safety. Cycle tracks are provided in both directions.

As outlined in the GDA Cycle Network Plan, this section of the corridor aligns with the proposed Secondary Route 7D, the proposed Secondary Route S04 and the proposed Secondary Route 8C.

7. Construction

The Construction Phase for the Proposed Scheme is anticipated to take approximately 36 months to complete. It will be constructed based on individual sectional completions that will individually have shorter durations ranging between two weeks and ten 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; and
 - Demolition of items such as walls, gates, fencing, lighting poles and bus stops.
- 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;
 - Implementation of any road closures or diversions;
 - Works to cellars, if required;
 - Adjustment or upgrades to drainage;
 - Realignment, upgrades, replacement or protection of utilities and services;
 - Construction of structures, including:
 - Tallaght Bus Interchange;
 - Greenhills Road Pedestrian and Cycle Bridges;
 - Naas Road Pedestrian and Cycle Bridge; and
 - Retaining Walls.
 - Construction of pavement, including general traffic carriageways, changing roundabouts to signalised junctions, bus lanes, improvements covering existing and new bus stops, on-road cycle tracks, off-road cycle tracks, traffic islands, off-line parking and loading bays, etc.;
 - Construction of road furnishings (including street furniture, signage, lighting, bus stops (shelters, CCTV and information displays) and communication systems); and
 - Boundary treatment and landscaping.
- Construction site decommissioning, including the removal of all construction facilities and equipment.

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

- Construction Compound TC1: at the western end of Old Blessington Road, adjacent to the junction with the N81 Tallaght bypass;
- Construction Compound TC2: R819 Greenhills Road, immediately south of the junction of Bancroft Park and R819 Greenhills Road;
- Construction Compound TC3: R819 Greenhills Road, between Birchview Avenue and R819 Greenhills Road;
- Construction Compound TC4: R819 Greenhills Road, between Treepark Road and R819 Greenhills Road;
- Construction Compound TC5: R819 Greenhills Road, to the north of Tymon Lane, south-east of the M50 Motorway;

- Construction Compound TC6: R819 Greenhills Road, outside Tallaght Truck Dismantlers, north-east of the M50 Motorway;
- Construction Compound TC7: R819 Greenhills Road, between Ballymount Avenue and R819 Greenhills Road;
- Construction Compound TC8: Bunting Park, along Bunting Road;
- Construction Compound TC9: R110 Crumlin Road, immediately west of the junction of Rafter's Road and the R110 Crumlin Road;
- Construction Compound TC10: R110 Crumlin Road, immediately east of the junction of Rutland Avenue and the R110 Crumlin Road;
- Construction Compound TC11: Dean Street / R137 Patrick Street;
- Construction Compound TC12: Between R134 New Nangor Road and Killeen Road; and
- Construction Compound TC13: R110 Long Mile Road, south of the New Nangor Road / Naas Road / Long Mile Road junction.

Construction Compound TC1 will be located at the green area at the western end of Old Blessington Road, adjacent to the junction with the N81 Tallaght bypass, as shown in Image 7.1.

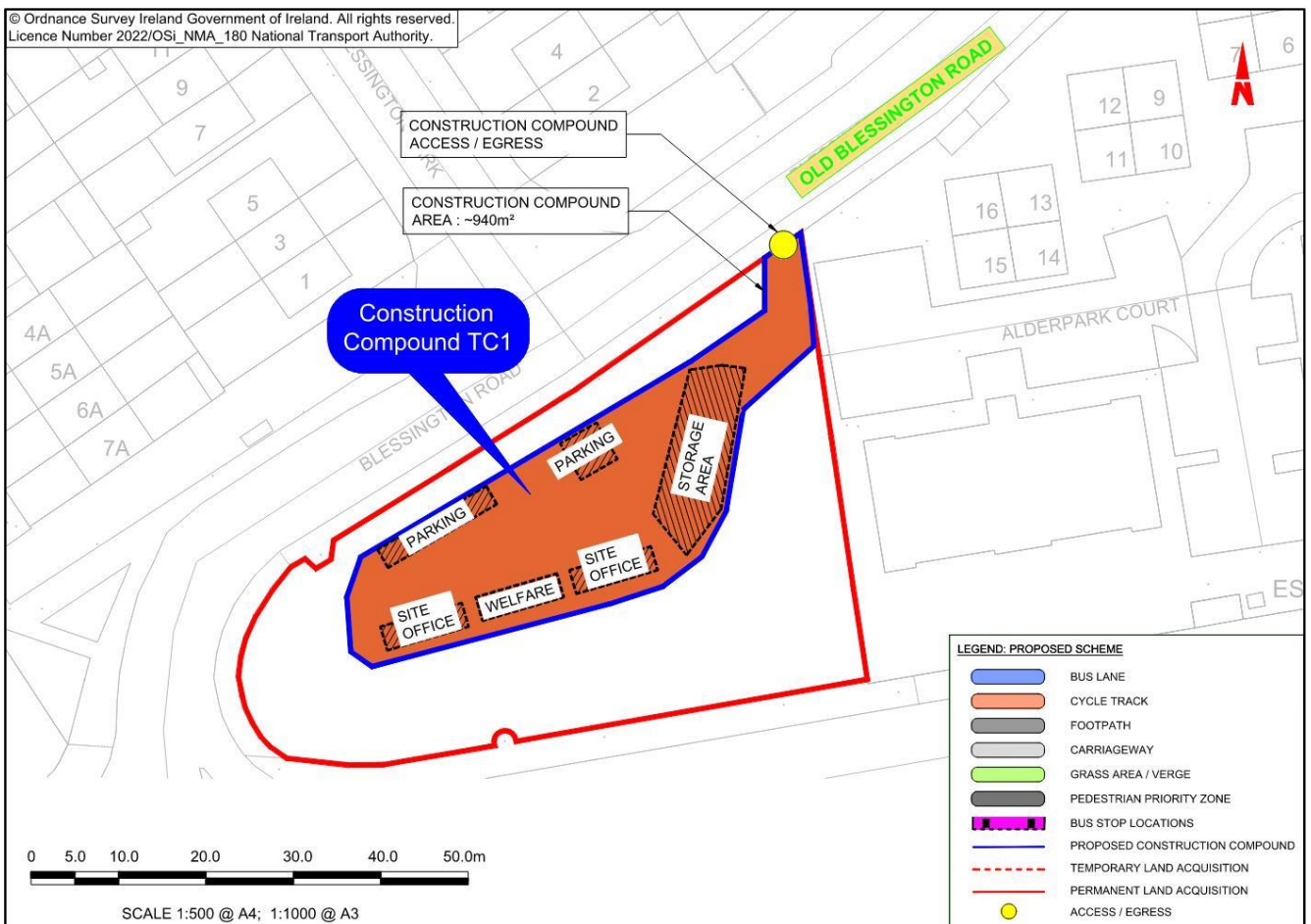


Image 7.1: Location and Extent of Construction Compound TC1

Construction Compound TC2 will be located at a green area on the east side of the R819 Greenhills Road, immediately south of the junction with Bancroft Park, as shown in Image 7.2.

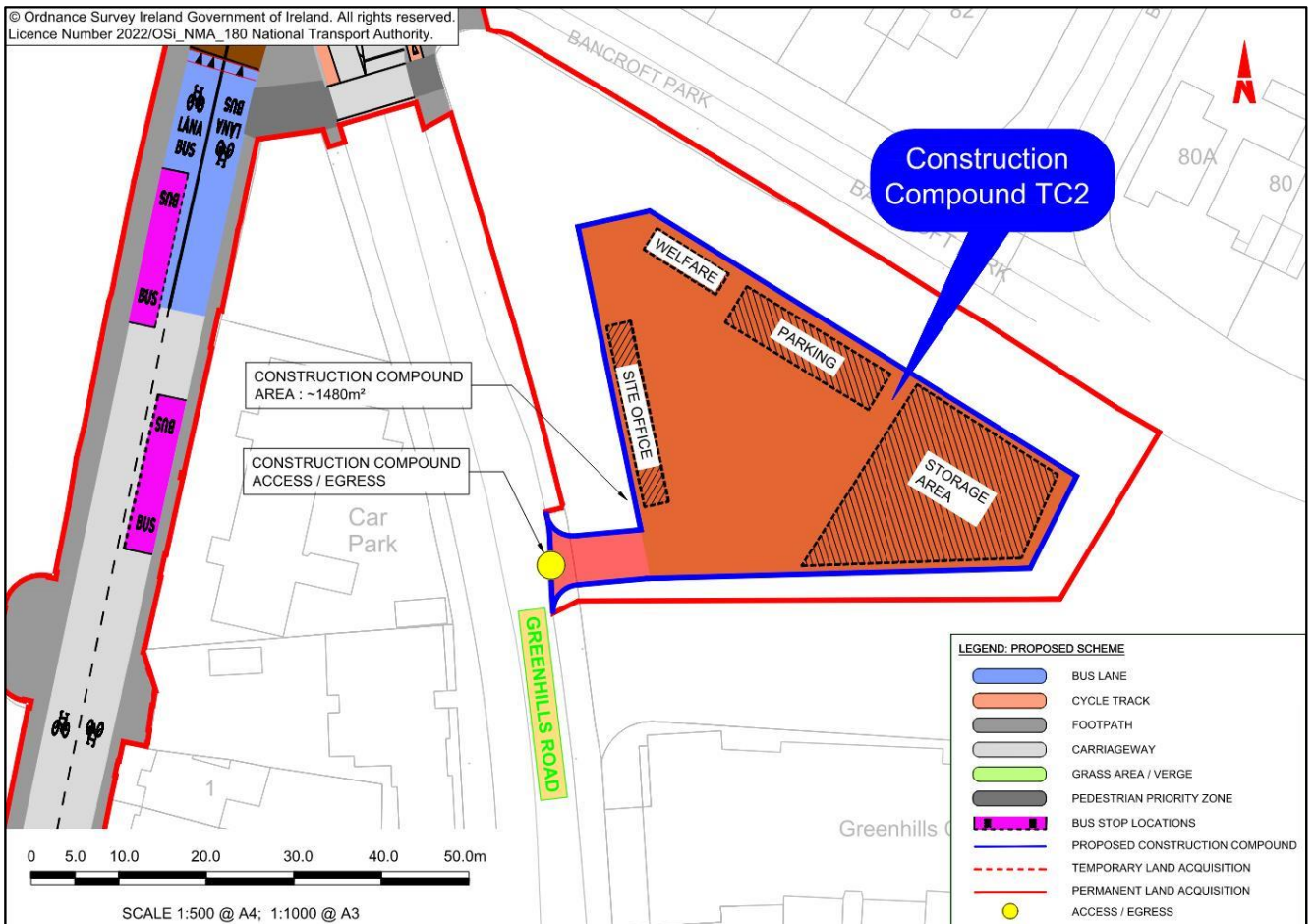


Image 7.2: Location and Extent of Construction Compound TC2

Construction Compound TC3 will be located at a green space between Greenhills Road and Birchview Avenue, which will ultimately form part of the permanent works, as shown in Image 7.3.

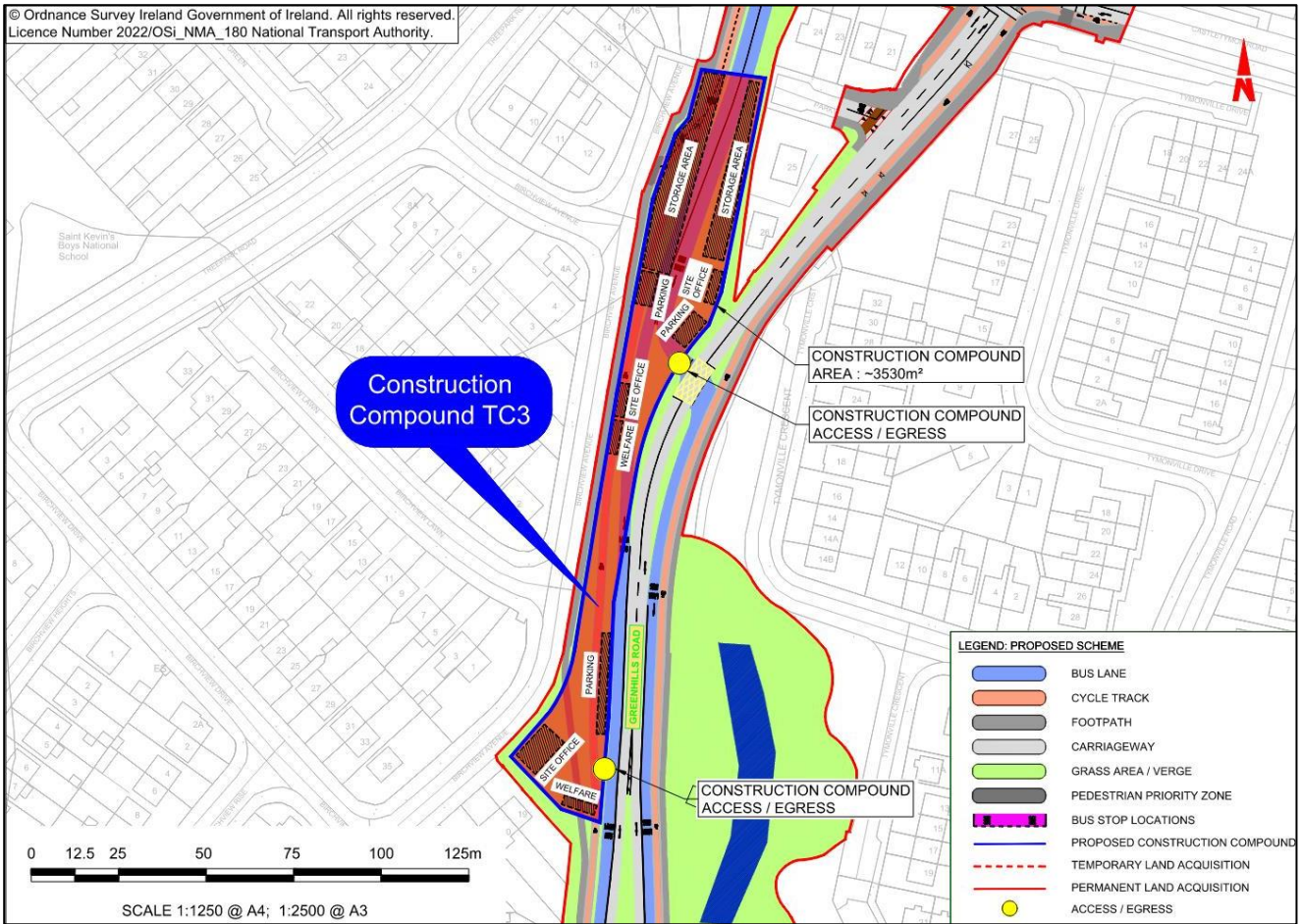


Image 7.3: Location and Extent of Construction Compound TC3

Construction Compound TC4 will be located at a green space between Greenhills Road / Treepark Road, which will ultimately form part of the permanent works, as shown in Image 7.4.

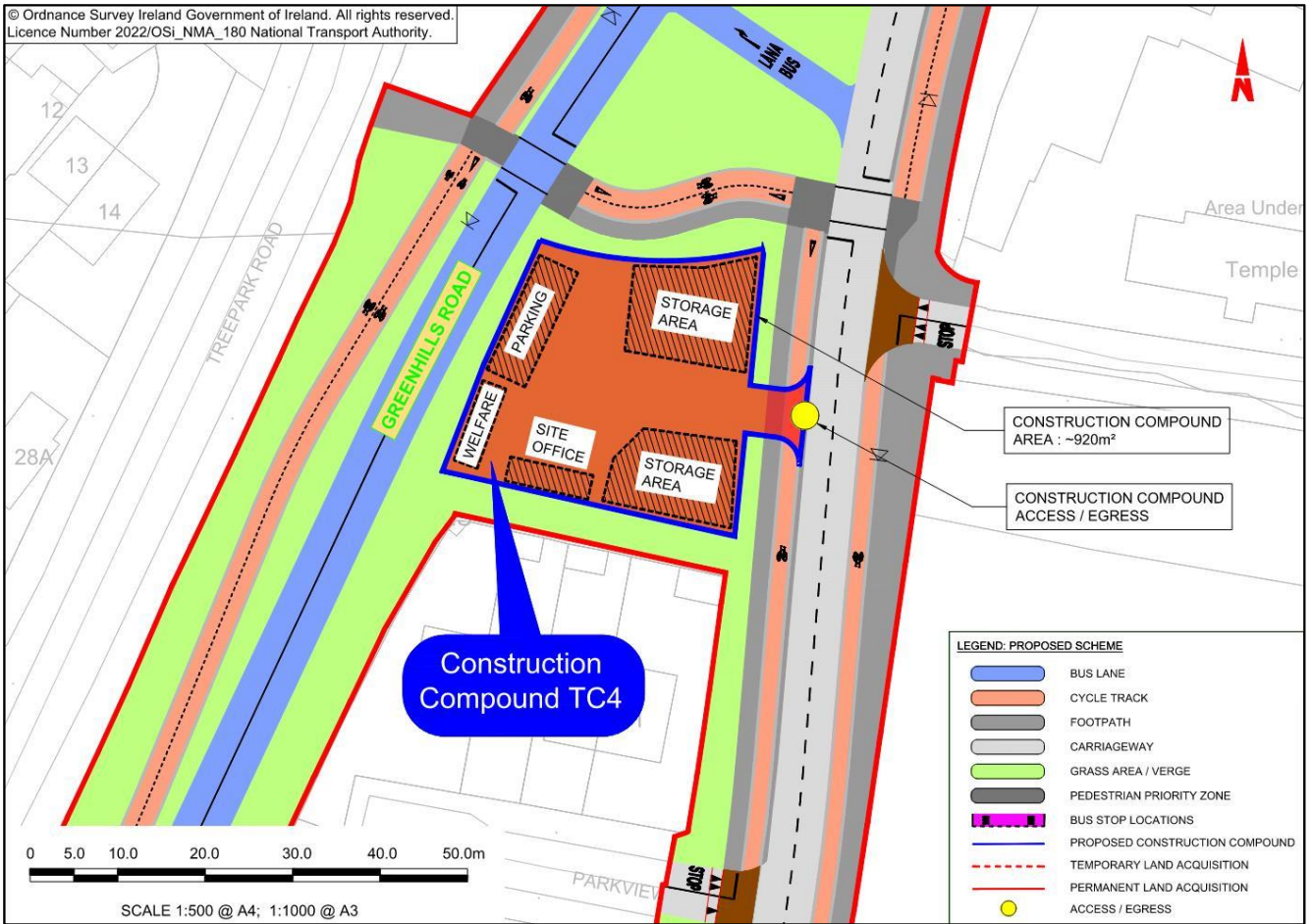


Image 7.4: Location and Extent of Construction Compound TC4

Construction Compound TC5 will be located at a green space along Greenhills Road, to the north of Tymon Lane, as shown in Image 7.5.

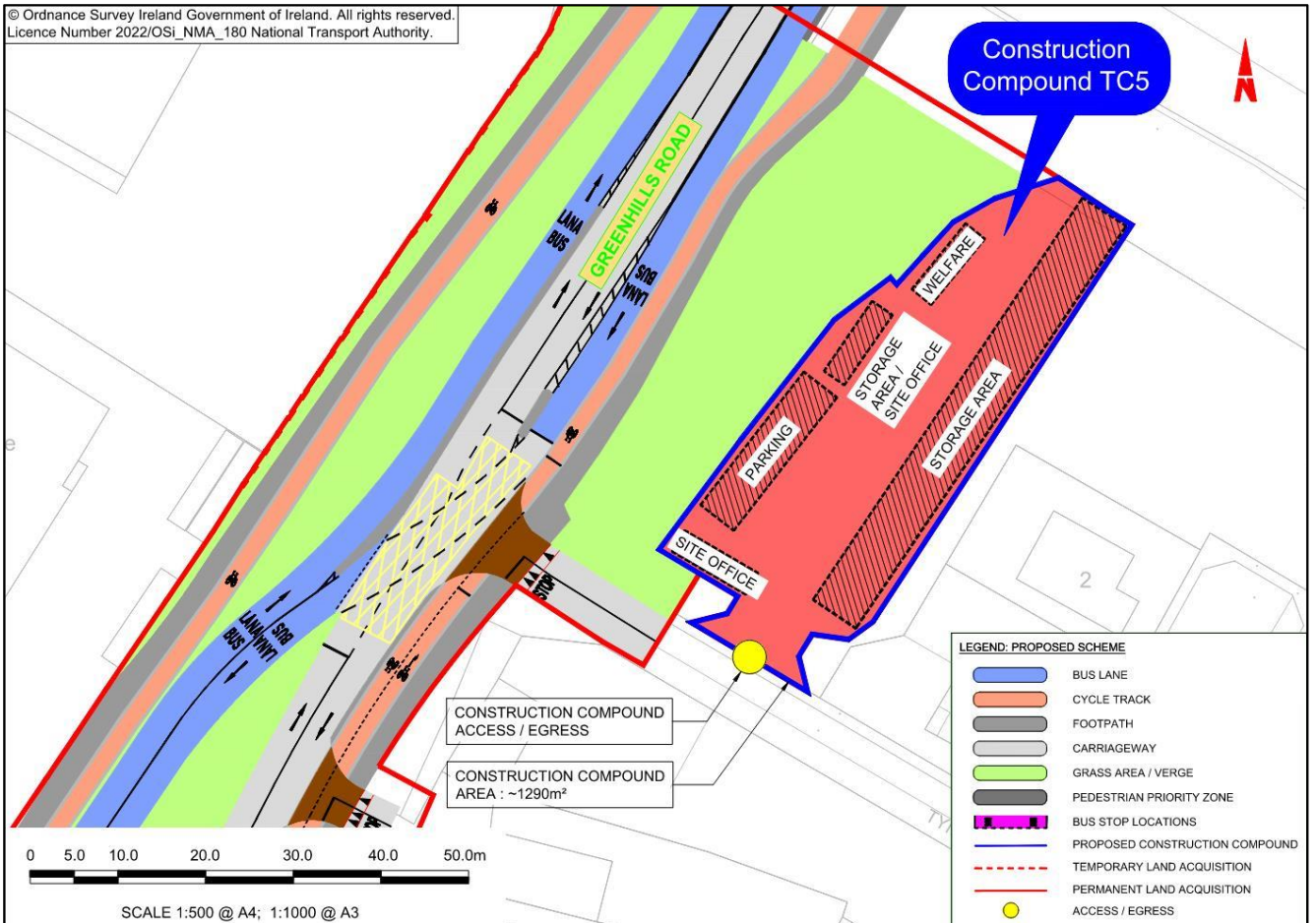


Image 7.5: Location and Extent of Construction Compound TC5

Construction Compound TC6 will be located at a green space along R819 Greenhills Road, outside Tallaght Truck Dismantlers north-east of the M50 Motorway, as shown in Image 7.6.

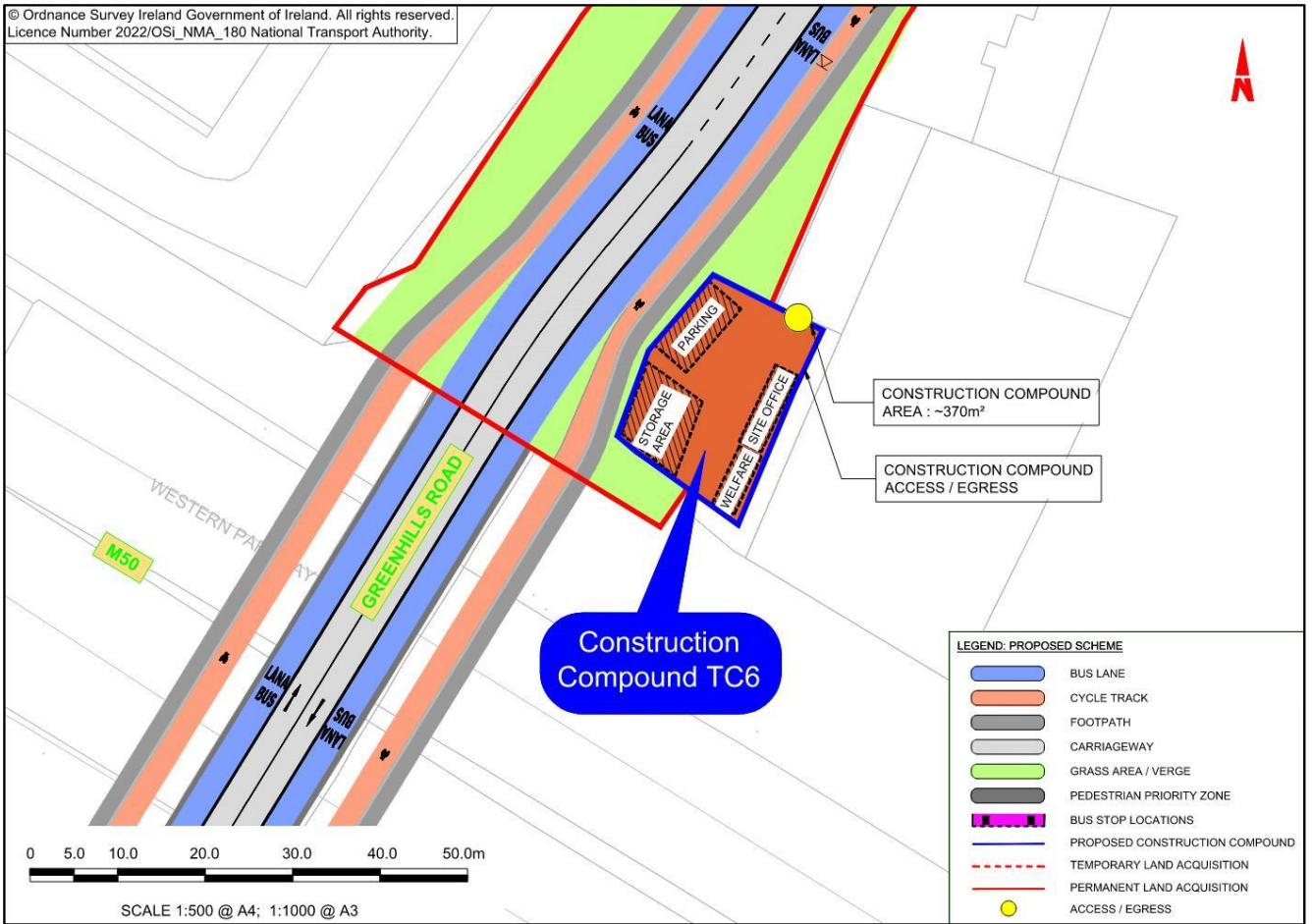


Image 7.6: Location and Extent of Construction Compound TC6

Construction Compound TC7 will be located in the vacant land between Greenhills Road and Ballymount Avenue, which will ultimately form part of the permanent works, as shown in Image 7.7.

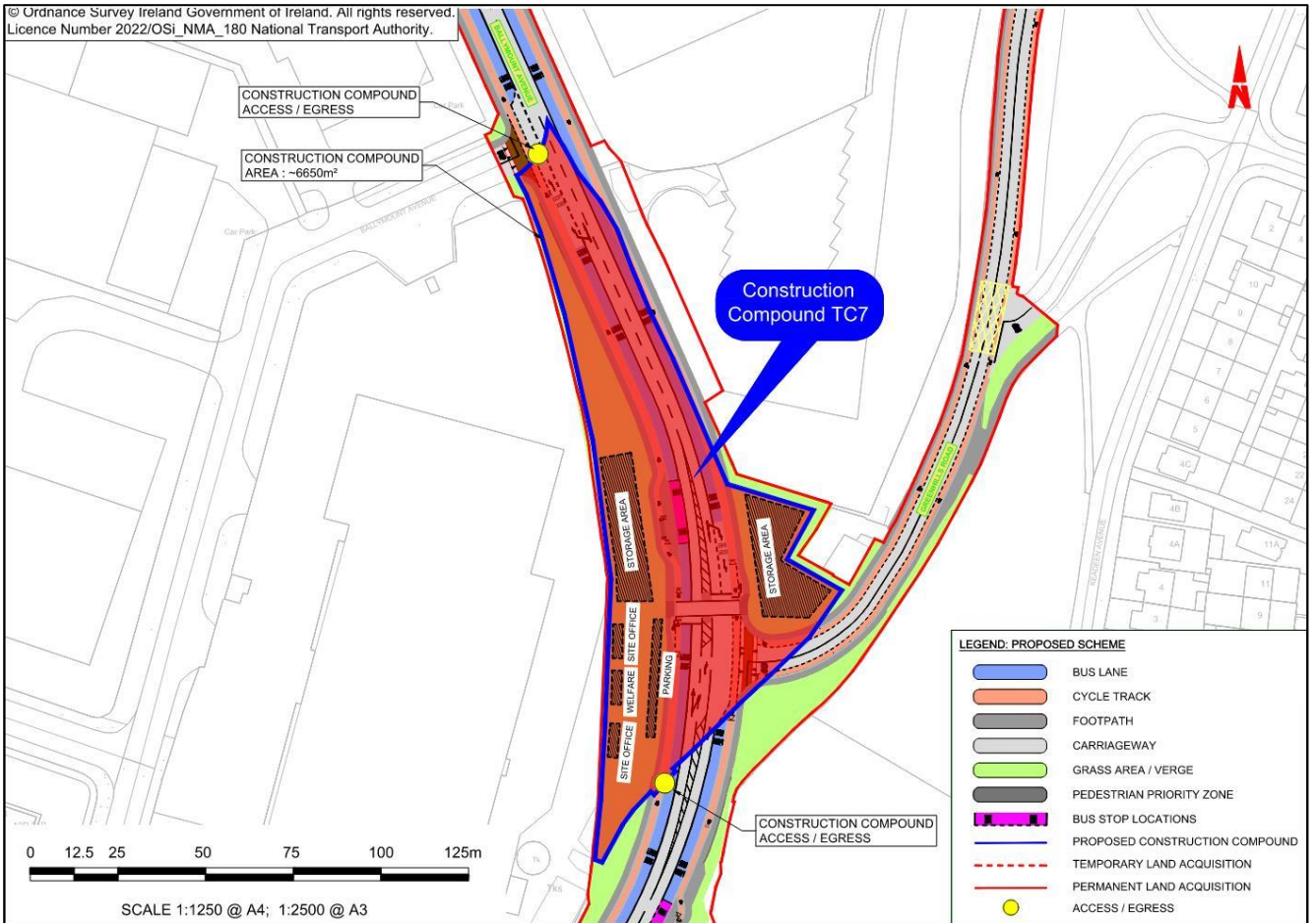


Image 7.7: Location and Extent of Construction Compound TC7

Construction Compound TC8 will be located at Bunting Park along Bunting Road, as shown in Image 7.8.

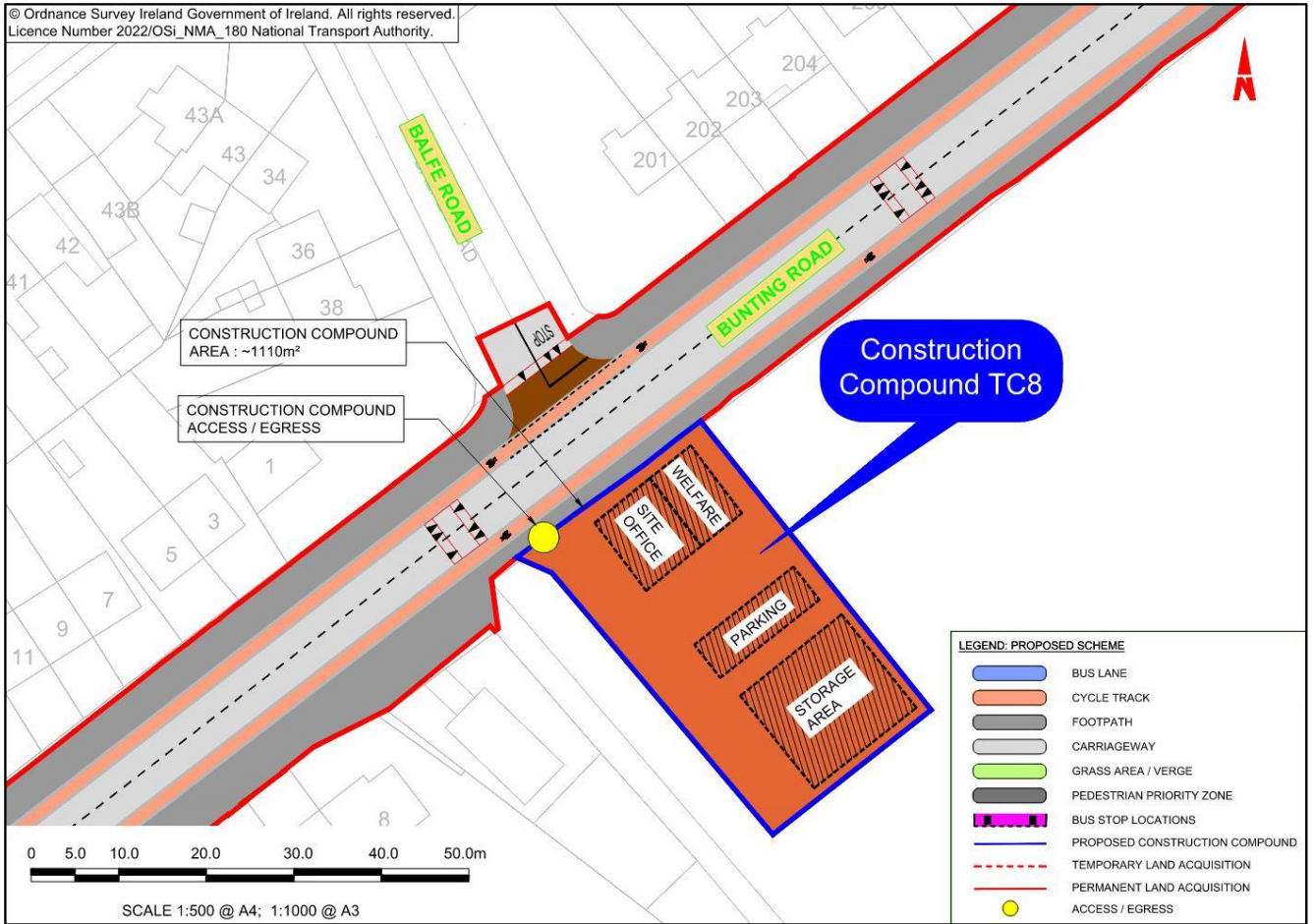


Image 7.8: Location and Extent of Construction Compound TC8

Construction Compound TC9 will be located at the green space on the north side of Crumlin Road at the junction with Rafter's Road, as shown in Image 7.9.

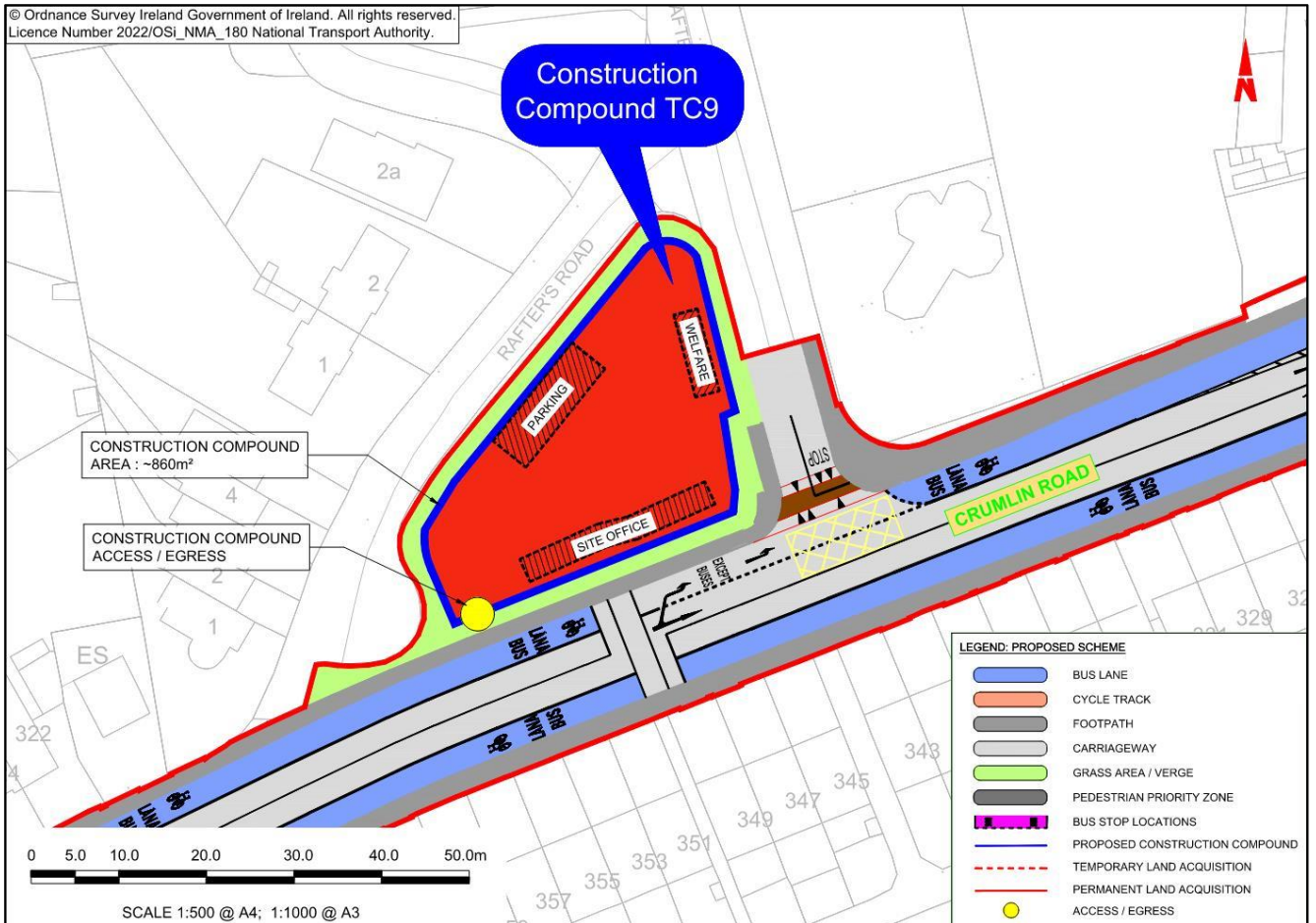


Image 7.9: Location and Extent of Construction Compound TC9

Construction Compound TC10 will be located adjacent to the green space on the south side of Crumlin Road at the junction with Rutland Avenue, as shown in Image 7.10.

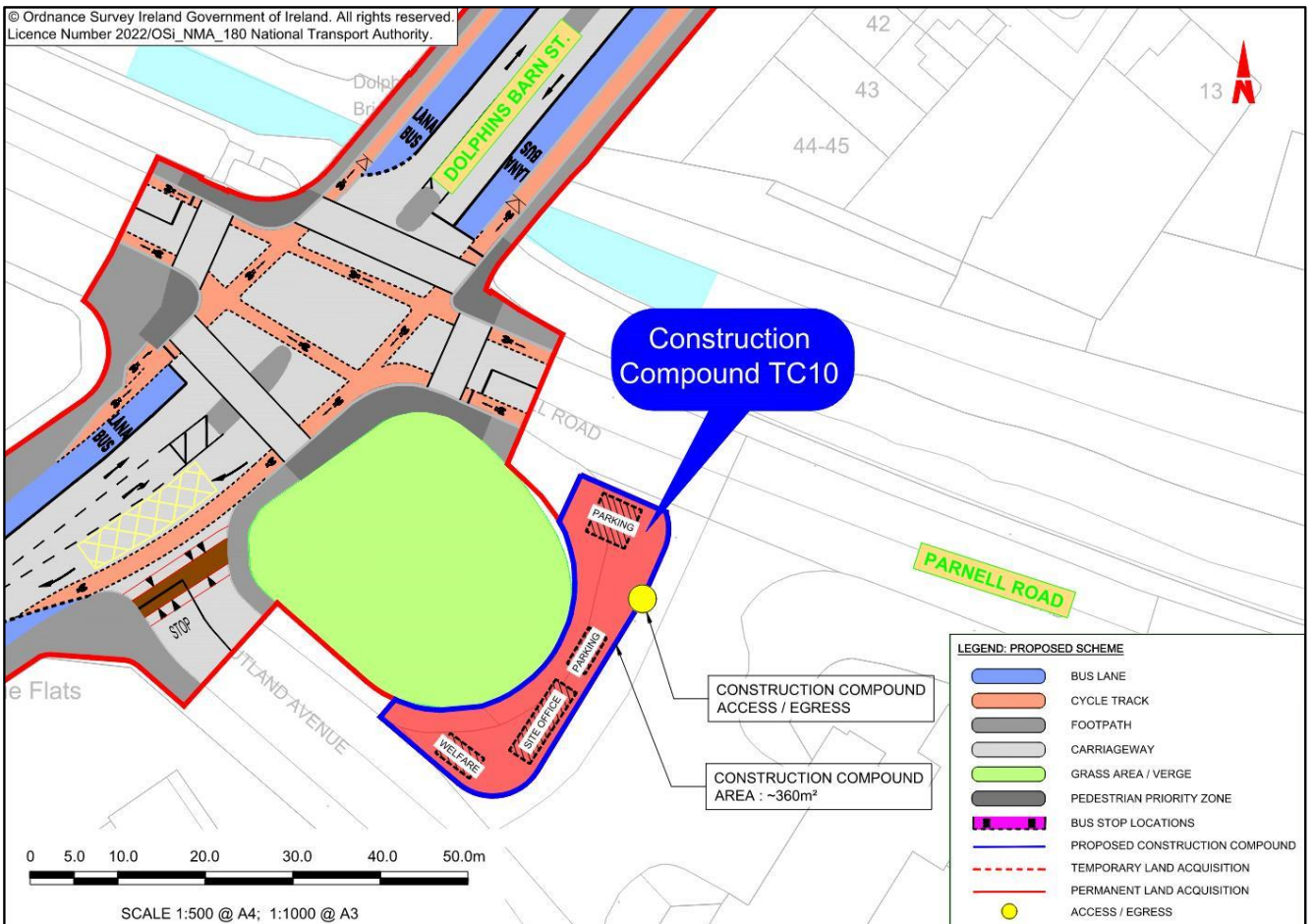


Image 7.10: Location and Extent of Construction Compound T10

Construction Compound TC11 will be located at Dean Street / Patrick Street, as shown on Image 7.11.

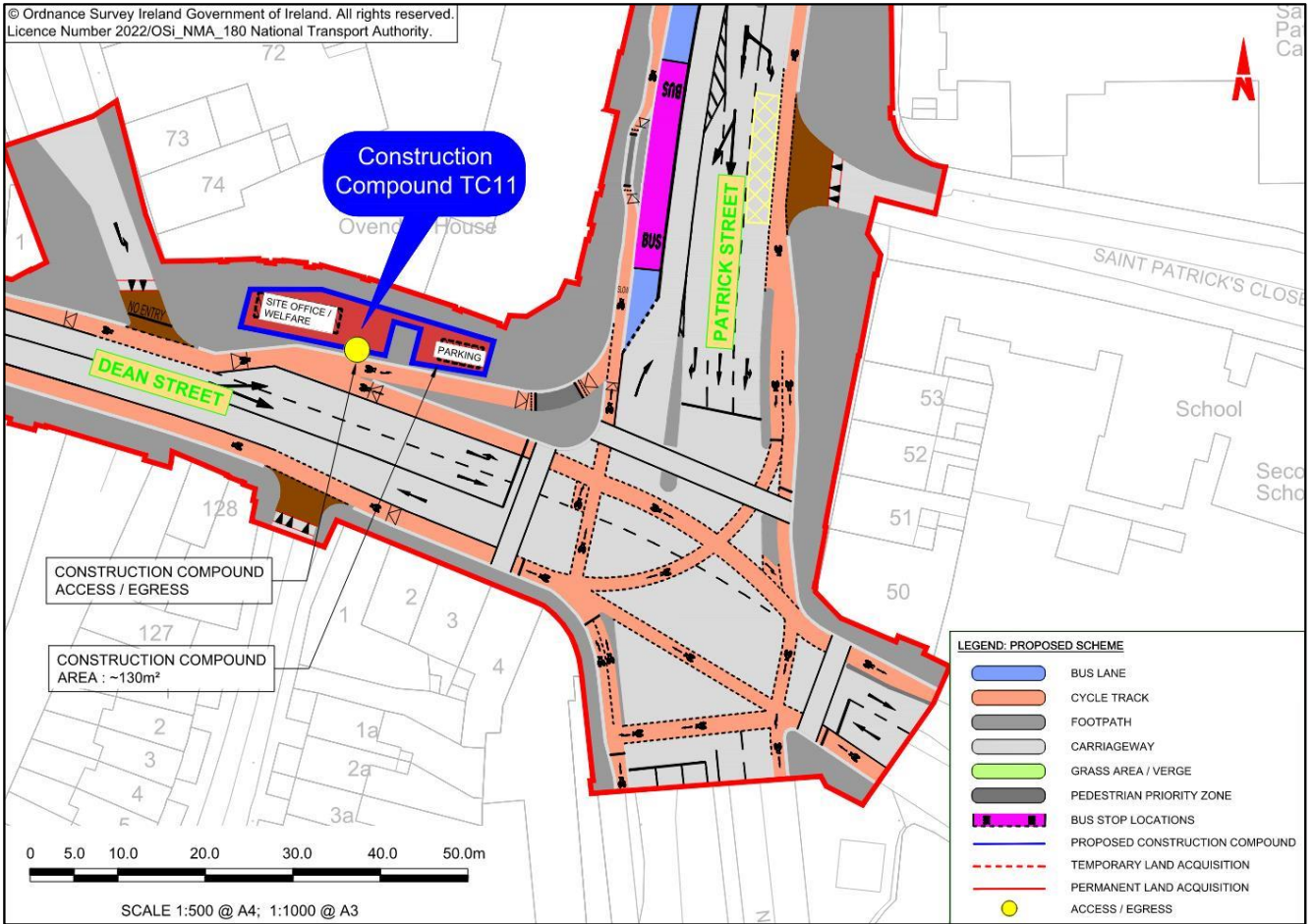


Image 7.11: Location and Extent of Construction Compound TC11

Construction Compound TC12 will be located along the R110 Long Mile Road, south of the New Nangor Road / Naas Road / Long Mile Road junction, as shown in Image 7.12.

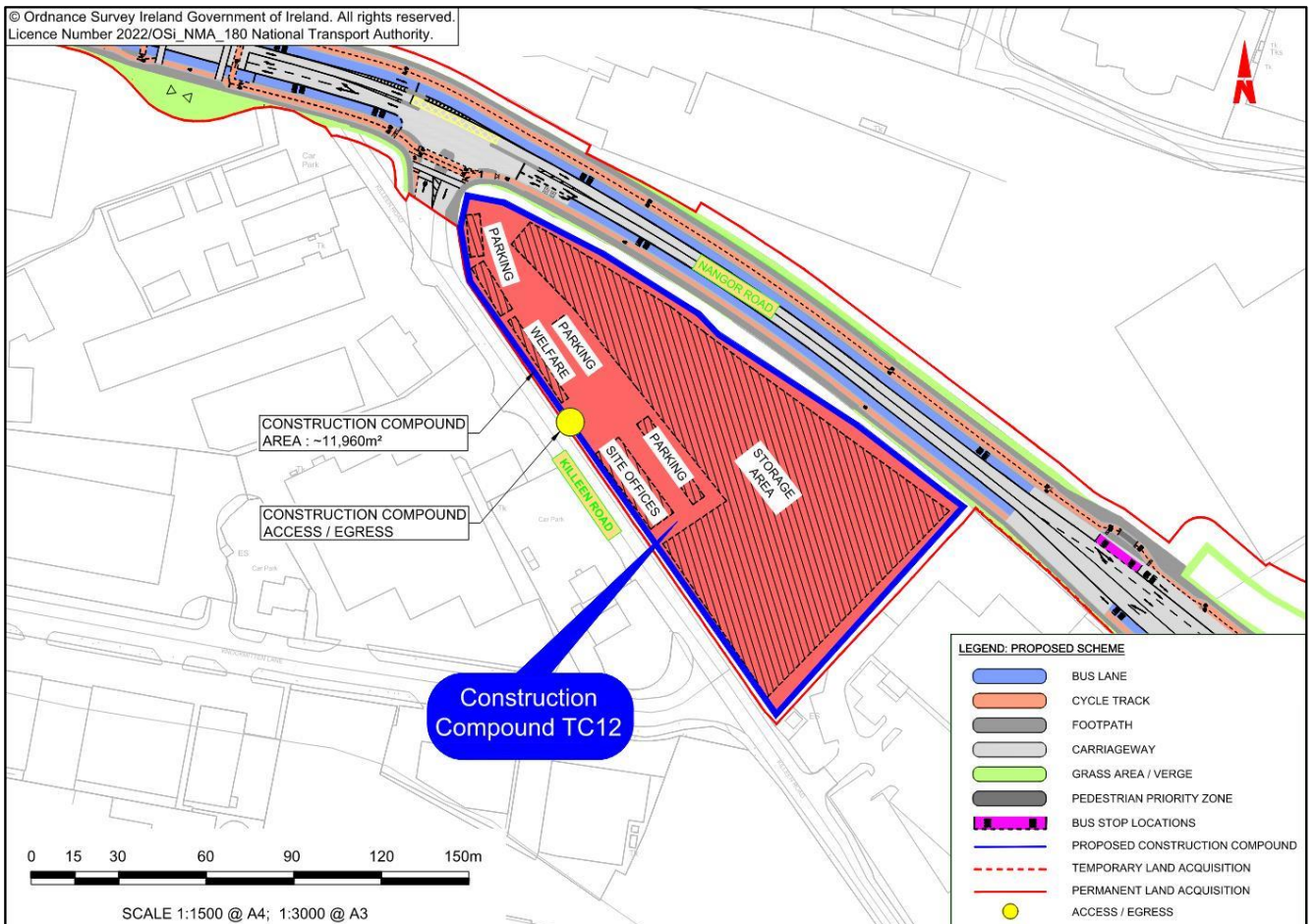


Image 7.12: Location and Extent of Construction Compound TC12

Construction Compound TC13 will be located along the Long Mile Road, south of the New Nangor Road / Naas Road / Long Mile Road junction, as shown in Image 7.13.

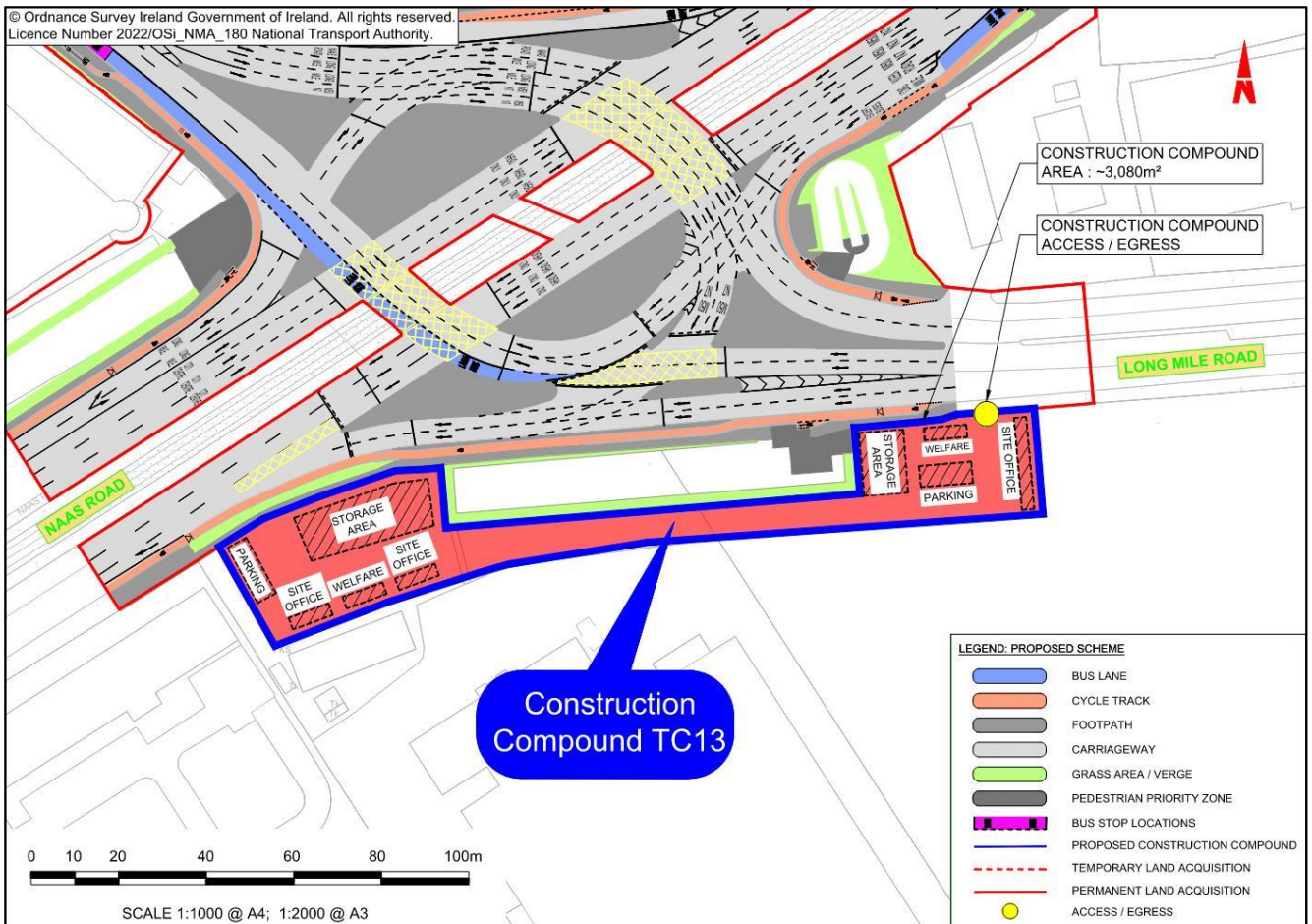


Image 7.13: Location and Extent of Construction Compound TC13

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 material and machinery. Temporary fencing will be erected, and site security will be employed.

7.1 Construction Environmental Management Plan

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

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

The CEMP has regard to the guidance contained in the TII Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan, and the handbook published by Construction Industry

Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015).

7.2 Construction Traffic Management Plan

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

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

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

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

The works will be completed on a sectional basis along the corridor such that no areas will experience an extended period of construction disruption over the approximate 36-month duration. NTA will facilitate pro-active communication of the scheduled planned works by the appointed contractor to ensure that impacted individuals, businesses and communities are kept aware of upcoming likely temporary disruptions.

8. Environmental Impacts and Mitigation

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

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

As outlined in Section 7.1, the NTA (the Employer for the construction works) shall set out the Employer's Requirements in the Construction Contract including all applicable mitigation measures identified in this EIAR, as well as additional measures required pursuant to conditions attached to any decision to grant approval. 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 construction works in accordance with the Employer's Requirements, and the NTA will employ an Employer's Representative team with appropriate competence to administer and monitor the Construction Contract for compliance with the Employer's Requirements.

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

- Traffic & Transport;
- Air Quality;
- Climate;
- Noise & Vibration;
- Population;
- Human Health;
- Biodiversity;
- Water;
- Land Soils Geology & Hydrogeology;
- Archaeological & Cultural Heritage;
- Architectural Heritage;
- Landscape (Townscape) & 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 traffic modelling.

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

- The assessments of physical changes:
 - **Pedestrian Infrastructure:** The changes to the quality of the pedestrian infrastructure as a result of the Proposed Scheme;
 - **Cycling Infrastructure:** The changes to the quality of the cycling infrastructure as a result of the Proposed Scheme;
 - **Bus Infrastructure:** The changes to the quality of the bus infrastructure as a result of the Proposed Scheme; and
 - **Parking / Loading:** The changes to the availability of parking and loading as a result of the Proposed Scheme.
- The modelling-based assessment addresses:
 - **People Movements:** 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 that will occur for the general traffic conditions on the Proposed Scheme and surrounding road network.

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

The assessment concludes that the impact during the Construction Phase will be negative, slight to moderate, and temporary in nature, and with the application of the proposed mitigation measures, the impact on traffic and transport will not be significant.

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

- **Pedestrian Infrastructure:** Overall, the improvements to the quality of the pedestrian infrastructure will have a Positive, Very Significant and Long-term effect in Section 1 and Section 2, a Positive, Significant and Long-term effect in Section 4, Section 5 and Section 6 and a Positive, Moderate and Long-term effect in Section 3 of the Proposed Scheme;
- **Cycling Infrastructure:** Given the quality of the cycling infrastructure along the Proposed Scheme, the improvements will have a Positive, Significant and Long-term effect in Section 2, Section 3, Section 5 and Section 6 and a Positive, Moderate and Long-term effect in Section 1 and Section 4;
- **Bus Infrastructure:** The results of the assessment demonstrate that the improvements to the quality of the bus infrastructure will have a Positive, Very Significant and Long-term effect in Section 1, Section 2 and Section 4, a Positive, Significant and Long-term effect in Section 3 and Section 5 and a Positive, Moderate and Long-term effect in Section 6 of the Proposed Scheme;
- **Parking and Loading:** Given the nature of the loss in parking and the availability of alternative spaces in the indirect study area, the impact is expected to have a Negative, Slight and Long-term effect in Section 1, Section 2, Section 3, Section 4 and Section 6 and a Negligible and Long-term effect in Section 5 of the Proposed Scheme;

- **People Movements:** Overall, it is adjudged that the Proposed Scheme will have a Positive, Very Significant and Long-term effect on the sustainable movement of people along the corridor;
- **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, Very 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, Moderate and Long-term effect, whilst the impact of the redistributed general traffic along the surrounding road network will have a Negative, Slight and Long-term effect. Thus overall, there will be no significant deterioration in the general traffic environment in the area.

The Proposed Scheme will deliver positive impacts to the quality of pedestrian, cycling and bus infrastructure during the Operational Phase, improving people movement in line with the scheme objectives. These improvements will help to provide 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 and outlined within this assessment to take cognisance of 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 objectives 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 movements, 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.

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

8.2 Air Quality

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

The existing air quality along the Proposed Scheme meets National and European Union air quality standards. No monitoring locations recorded an exceedance in the annual mean limit value for Nitrogen dioxide (NO₂).

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 and short term overall in the study area.

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

No mitigation measures are required during the Operational Phase as the assessment identifies a generally neutral impact on air quality in the vicinity of the Proposed Scheme. The number of receptors where an exceedance of the NO₂ limit value is predicted reduces from 24 in the Do Minimum scenario to 12 as a result of the Proposed Scheme. In 2043, all receptors are expected to have ambient air quality in compliance with the ambient air quality standards for the Do Something (and Do Minimum) scenario. There are no substantial or moderate adverse effects expected as a result of the Operational Phase of the Proposed Scheme.

8.3 Climate

Climate is defined as the average weather over a period of time, whilst climate change is a significant change to the average weather. Climate change is a natural phenomenon but in recent years human activities, through the release of GHGs, have impacted on the climate.

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 are also assessed as part of the assessment. Construction traffic and the embodied carbon (i.e., the total energy required to make / produce and product of 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 27,763 tonnes embodied CO_{2eq} for materials over the approximate 36-month construction period, equivalent to an annualised total of 0.024% of Ireland's non-ETS 2020 target and 0.154% of the 2030 Transport Emission Ceiling.

Following the application of the 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 18,420 and 44,230 car trips per weekday from the road network in 2028 and 2043 respectively. This has the effect of a reduction in total vehicle kilometres, a reduction in fuel usage, and increases to sustainable transport trips and modal share in accordance with the 2023 Climate Action Plan (CAP) (DCCA 2022).

The maintenance GHG emissions associated with the Operational Phase of the Proposed Scheme is predicted to generate 1,131kt CO_{2eq} over the predicted 60-year lifespan. Following the implementation of mitigation, this impact is predicted to be negligible and permanent.

The operational traffic greenhouse gas 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 negligible and permanent. Thus, the residual impact from Operational Phase traffic as a result of the Proposed Scheme will be negligible and permanent.

The CBC Infrastructure Works will also support the delivery of government strategies outlined in the 2023 Climate Action Plan and the 2021 Climate Act by enabling sustainable mobility and delivering a sustainable transport system, aligning with the 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, BusConnects will provide an attractive alternative to private car travel, encouraging more passenger travel by more sustainable modes. As a result, a greater share of the demand will be by sustainable modes (public transport, walking and cycling).

8.4 Noise & Vibration

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

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

The potential impacts assessed for the Construction Phase included the generation of noise and vibration from utility diversions, road resurfacing, road widening and new road construction works. Construction traffic routes were also assessed as part of the assessment.

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

For the duration of the Construction Phase, appropriate mitigation and monitoring 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. The monitoring of vibration at identified sensitive buildings, where proposed works have the potential to be at or exceed the vibration limit values.

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

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

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 only. During this long term phase, residual impacts are calculated as indirect, positive, imperceptible to moderate and long-term to indirect, negative, slight and long-term.

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 22 community areas: Killinarden, Tallaght Oldbawn, Springfield, Tallaght Dodder, Tallaght Village, Tallaght Tymon, Kilnamanagh, Greenhills, Walkinstown, Crumlin, Mourne Road, Clogher Road, Dolphins Barn, Rialto, Donore Avenue, Francis Street, Meath Street and Merchants Quay, Clondalkin, Deansrath, Sruleen, Bawnogue and Bluebell.

The Tallaght Section of the Proposed Scheme is routed through the suburban community areas of Tallaght Village, Tallaght Tymon, Kilnamanagh, Greenhills, Walkinstown, Crumlin, Mourne Road, Clogher Road and Dolphins Barn before crossing the Grand Canal into Dublin City Centre. Once past the Grand Canal, the Proposed Scheme is in the community areas of Donore Avenue and Francis Street before finishing in Meath Street and Merchants Quay. The Tallaght Section of the Proposed Scheme will run through residential and mixed residential / commercial suburban areas in Tallaght, Walkinstown and Crumlin, as well as more commercial / industrial areas in Tallaght and Greenhills. North of the Grand Canal the area becomes increasingly urban in character.

The Clondalkin Section of the Proposed Scheme is almost entirely commercial and industrial in nature, passing from Clondalkin through the Western Industrial Estate and John F. Kennedy Industrial Estate in the community area of Bluebell. The Clondalkin Section of the Proposed Scheme only becomes more residential in nature where it links with the Tallaght Section in Walkinstown.

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 businesses ability to operate successfully;
- Temporary and permanent land acquisition from residential properties, community facilities and commercial businesses including reduction of front gardens, 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 significant impacts on the community areas during the Construction Phase. Localised negative, moderate and short-term community accessibility impacts are predicted for cyclists and private vehicles during the construction phase.

In addition, positive, moderate to very significant and long-term impacts are expected on walkers, cyclists and bus users in the community areas of Tallaght Village, Walkinstown, Crumlin and Dolphins Barn, during the Operational Phase. Access to community facilities and commercial businesses via private vehicles is expected to be a positive, moderate impact on change in access along the Proposed Scheme and a negative, moderate impact on change in access in the surrounding road network.

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

8.6 Human Health

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

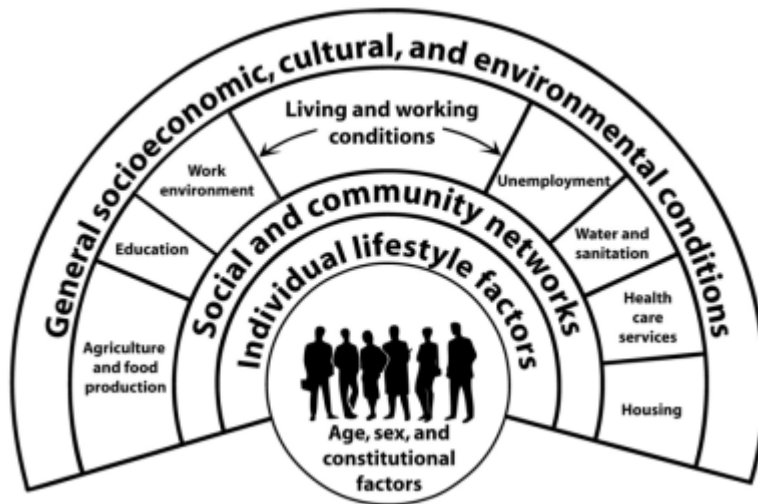


Image 8.1: Wider Determinants of Health (Source: Dahlgren and Whitehead 1991)

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 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 would 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 to the nearby residential population as a result of noise associated with the construction works. During the day there is risk of sleep disturbance due to construction noise for shift workers. Mitigation measures to control and limit noise associated with the construction works are included in the EIAR.

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

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

The Proposed Scheme does not overlap with any European site. The nearest European site to the Proposed Scheme is Glenasmole Valley SAC, which is located approximately 2.9km away. The Proposed Scheme is also hydrologically connected to South Dublin Bay and River Tolka Estuary SPA, as well as South Dublin Bay SAC. These European sites are located approximately 6.5km downstream of the point at which the River Poddle discharges into the Liffey Estuary Upper.

There are eight European sites located in Dublin Bay which are downstream of the Proposed Scheme: South Dublin Bay SAC, North Dublin Bay SAC, Howth Head SAC, Rockabill to Dalkey Island SAC, Dalkey Islands SPA, Howth Head Coast SPA, North Bull Island SPA and South Dublin Bay and River Tolka SPA. European sites will be hydrologically connected to the Proposed Scheme via the River Camac, River Poddle, Grand Canal, River Dodder, the Liffey Estuary Upper and Liffey Estuary Lower. In addition, the Rye Water Valley / Carton SAC is located upstream of the Proposed Scheme and is hydrologically connected to the Proposed Scheme via the River Liffey.

The main habitats within the Proposed Scheme include mixed broadleaf woodland, hedgerows, treelines, scrub, flower beds and borders, grassland, buildings and artificial surfaces and water features, in particular the River Camac and the Grand Canal.

The assessment identified:

- Three bat species (Leisler's bat, Common pipistrelle bat, Soprano pipistrelle bat);
- Potential Roost Features (locations where bats rest) in four trees which are located within the scheme boundary. All four trees will be retained in the Proposed Scheme;
- No evidence of badgers;
- A potential otter slide was noted in riparian vegetation along the northern side of the Grand Canal;
- No evidence of amphibians or reptiles; and
- A total of 84 breeding bird species and 44 wintering bird species.

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

- Site preparation and clearance;
- Construction Compound development;
- Removal of existing boundaries, pavements, lighting columns, bus stops, and signage;
- Protection and / or diversion of buried services;
- Road construction for new link roads and dedicated bus route;
- Road widening, pavement reconstruction, and kerb improvements;
- Reconfiguration of traffic lanes throughout;
- Reconnection of existing and new drainage infrastructure into the existing surface water drainage infrastructure;
- Installation of new bus stops and junction / roundabout modifications;
- Provision of new structures (bridges, retaining walls etc.)
- Temporary and permanent land take;
- Property boundary reinstatement, signage replacement;
- Relocation of and / or installation of lighting columns;
- Reinstatement of temporary land acquisitions; and
- Landscaping and tree planting.

A range of mitigation measures will be implemented to avoid or reduce negative impacts on biodiversity during the Construction Phase, including retaining groups of trees identified to contain potential roost features for bats, where practicable, and planting new street trees. A Surface Water Management Plan will be implemented to ensure that measures are taken to protect surface waters and biodiversity associated with surface water. 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 be not significant beyond the local level.

The impacts on biodiversity assessed for the Operational Phase include the presence and operation of traffic on roads within the Proposed Scheme, the introduction of new lighting (albeit typically low-level LED lighting) in previously unlit areas, routine maintenance works and an overall increase in impermeable area.

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

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 adversely affect the integrity of any European site.

8.8 Water

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

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

- Dodder_040, the most upstream segment of this water body, is a small tributary of the main channel. Much of its course represents a straightened planform, indicating some form of modification.
- Poddle_010 contains the main segment of the River Poddle and the River Tymon and joins the Liffey Estuary Upper at R148 Wellington Quay. It is highly culverted and a high sensitivity water body.
- Camac_040 is a significant tributary of the River Liffey. The river Camac rises in the west of Dublin City and flows through Saggart, Clondalkin, Inchicore and Kilmainham before entering the Liffey Estuary Upper from a discharge point under Heuston Station.
- Grand Canal Main Line (Liffey and Dublin Bay) is an artificial waterbody, primarily used for recreation. Constructed in the 18th century, the Grand Canal traverses the country from Dublin to Shannon for approximately 131km.
- Liffey Valley Estuary Upper is a transitional waterbody and is within the Liffey Nutrient Sensitive Area. It is fed by the Camac_040, Liffey_190 and Poddle_010 and flows into Liffey Estuary Lower before reaching Dublin Bay.

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

- Dodder_040: has a poor status; is At Risk;
- Poddle_010: has a poor status; is At Risk;
- Camac_040: has a poor status; is At Risk;
- Grand Canal Main Line (Liffey and Dublin Bay): has a good ecological potential; is unassigned for its risk categorisation; and
- Liffey Estuary Upper: has a Good status; is At Risk.

The surface water along the Proposed Scheme corridor currently drains into a surface water system which discharges into the Camac_040, Poddle_010, Dodder_040 and combined sewers which are directed to Ringsend WwTP. 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 parts of the Proposed Scheme will be in Flood Zone A where the risk of flooding is high.

The impacts assessed during the Construction Phase include 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 three identified waterbodies could potentially be impacted by surface water runoff containing fine sediments, accidental spillages and accidental leakages of construction materials via surface water system connections. There is also the potential for disruption to local drainage networks if they 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, and the management of vehicles and plant. Additionally, site specific measures are proposed to avoid or reduce negative impacts, where necessary, including at Construction Compound locations, for the widening of the R134 and modifications to the headwall of the Camac_040 where it is culverted under the R134 / Oak Road roundabout.

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

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

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

8.9 Land, Soils, Geology & Hydrogeology

The land, soils and geology and hydrogeology assessment involved 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 and brown mineral soils 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. Moving away from the City Centre there are also marine, agricultural, and forested areas in the region.

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 with potential sources outlined and assessed.

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

- Loss or damage of topsoil;
- Excavation of potentially contaminated ground;
- Loss of future quarry or pit reserves;
- Loss or damage / contamination of parts of an aquifer; and
- Change to groundwater 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 significant 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 to be taken in the event of any accidental spillages and this will reduce the potential for any impact.

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

8.10 Archaeological & Cultural Heritage

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

The Proposed Scheme is routed along existing roads, through a heavily developed suburban and urban landscape. It will pass through a zone of archaeological potential associated with the historic village of Tallaght. Tallaght was a significant ecclesiastical settlement founded in the early medieval period. From this point, the Proposed Scheme will follow existing roads through the dense suburbs of Greenhills, Kilnamanagh, Walkinstown and Crumlin. After crossing the canal, it continues along the line of existing streets through a zone of archaeological potential in Dublin's historic core. The Clondalkin to Drimnagh section commences c. 585m north-east of another zone of archaeological potential: Clondalkin village, which has its origins as an important early medieval ecclesiastical settlement. The Proposed Scheme will follow the New Nangor Road, which was constructed in the late 20th century, running parallel to the Grand Canal before crossing the M50 Motorway and heading south-eastwards to Drimnagh, where it passes the medieval Drimnagh Castle.

The landscape within the much of the study area for the Proposed Scheme was significantly altered in the 18th century with the construction of the Grand Canal and the associated industries that sprang up along its length (such as mills and factories). Nonetheless, it remained predominantly rural until the 20th century, forming part of the agricultural lands surrounding the city, populated by small villages (such as Tallaght and Clondalkin) and farmsteads, with the occasional country villa or small estate. Milling predominated along the Camac River, as well as the River Poddle and City Watercourse. The Dublin to Naas Road (N7), which runs through the study area, has long been one of the principal routeways out of Dublin City.

The large-scale suburban development evident today is, for the most part, a product of the 20th century. There was some nascent residential growth in the earlier 20th century, with some small terraces established south of Clondalkin and along the Dublin to Naas Road. The most significant growth was at Drimnagh and Crumlin in the 1930s, however, when new housing estates were constructed as part of Dublin Corporation's ambitious plans for Dublin's new suburbs. This pattern continued with large areas of housing created in Walkinstown in the 1940s and 1950s and around Tallaght, Greenhills and Clondalkin in the later 20th century.

There are three National Monuments, 31 archaeological heritage features on the Records of Monuments and Places / Sites and Monuments Record (not also considered to be National Monuments), three non-designated archaeological sites, and two cultural heritage sites (not otherwise designated) that have the potential to be impacted within the Proposed Scheme.

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

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

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

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

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

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

8.11 Architectural Heritage

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

The Tallaght village area has its origins as a medieval settlement with a number of churches being constructed. It was one of the most important ecclesiastical manors in County Dublin throughout the Middle Ages. By the 16th century it was the archbishop's principal residence outside the city. By 1326, the archbishops had founded a borough. The street pattern of the medieval borough consisted of Main Street, which expanded west to form a marketplace. The centre of the old village is within an architectural conservation area. Protected structures and historic buildings are located along Blessington Road, Main Street and Greenhills Road. These include St. Basil's Training Centre, an old rubble wall, the 19th century Cuckoo's Nest Pub and a 15th century tower house in the former demesne of Tymon Castle. Other buildings of interest are predominantly 19th and 20th century, including Tallaght Racing Pigeon Club, Kilnamanagh House, Greenhills Lodge, 5-6 The Cottages, Chetwind and workers cottages at 1-2 Greenhills Road, 458-459 and 544-549 Ballymount Road Lower.

Crumlin has its origins in the medieval period. The St. Agnes Road architectural conservation area is located at the junction of Agnes Road and Bunting Road. It contains St. Mary's Church of Ireland church, built in 1817 and adjoined by a presbytery, and a second 20th century St. Mary's Church of Ireland church. The old village of Crumlin was located on the old route from Dublin to Blessington in Wicklow in the 18th and 19th centuries. A milestone located on Walkinstown Road is associated with the old road. 19th and early 20th century buildings include Melville House, a former school house, Ardscoil Éanna on Crumlin Road, 248 Crumlin Road, 55 to 69 Crumlin Road and workers cottages on Kildare Road and 1-2 Rafter's Road (NIAH 50080189). The Iveagh Gardens Housing Scheme, built by the Iveagh Trust in 1935, and the associated Iveagh sports grounds are located further along Crumlin Road. Crumlin is mainly characterised by mid-20th century housing developments when the area was developed as a garden suburb. The development of Crumlin as a suburb was accompanied by the construction of religious, institutional, civic and social buildings, including Scoil Muire Og, Loreto Primary School, Crumlin Road, the Allied Irish Bank at 219 Crumlin Road, the former Star Cinema, the Crumlin Health Centre and St. Bernadette's Church on Clogher Road. The largest complex is Our Lady's Children's Hospital Crumlin Our Lady's Children's Hospital, Crumlin Road, and the accompanying chapel, which were built in the 1960s.

The Proposed Scheme crosses the Grand Canal at Camac Bridge, built in 1791. Dolphin's Barn is medieval in origin and is known for its brick fields which operated until the 1940s. Dolphin's Barn Road contains a number of protected structures, including the Church of Our lady of Dolours and a number of late 19th or early 20th century houses and shops on the corner of South Circular Road.

Cork Street was a Highway in 1603. Most of the surviving architectural heritage buildings date from the early 18th century onwards, with most replaced or refaced subsequently. Numerous sites of industrial significance have been identified in addition to religious institutional buildings such as the convent at 22 Cork Street, the former fever hospital, the Former James Weir Home and houses at 112 and 116 Cork Street. The main feature of interest on St Luke's Avenue is the Church of St. Nicholas Without, a Church of Ireland church, built 1715-1716.

Dean Street is also of medieval origin, forming part of the Coombe in 1260. It lies on the edge of the Thomas Street architectural conservation area, with 1 Dean Street being a protected structure. St Brigid's Convent and a large number of recorded monuments, which are largely house sites, are located on the street. The buildings on the corner of Francis Street are also protected.

Patrick Street and Nicholas Street are also of medieval origin. Patrick Street contains a number of protected structures, mainly business premises at 51-53 and the Iveagh Trust apartments and associated Baths. The most significant however is Saint Patrick's Cathedral and Park. Saint Patrick's Cathedral was built c.1220-1260, with a number of subsequent modifications made. The nearby Christ Church Cathedral was built in c.1170 and rebuilt in c.1875.

Clondalkin has its origins as an important early medieval ecclesiastical settlement. Drimnagh Castle is located to the north of the Long Mile Road. Drimnagh Castle and Demesne dates from the 13th century and is associated with the Barnwall family who added to the castle in the 14th or 15th, 17th, 18th and 19th centuries. The castle and grounds formed part of a Demesne landscape. Milling predominated along the Camac River, but the study area

also contained a number of quarries one of which was located on the Naas Road where the Motor Distributors Building now stands. The landscape within the study area was significantly altered in the 18th century with the construction of the Grand Canal in 1756 and the associated industries that sprang up along its length such as mills and factories. The 8th lock of the Canal lies within the study area. The environs of the Proposed Scheme were largely agricultural up until the 20th century when the industrial estate was built. The only building of architectural heritage interest in the industrial estate is the Motor Distributors Building on the corner of the Naas Road and Walkinstown Avenue which was built c.1950.

Four institutional buildings were constructed next to Drimnagh Castle, on the Long Mile Road in the mid-20th century. A number of schools and a convent were built within the demesne in the 1950s. These included Meanscoil Iognaid Ris, Drimnagh Castle, Christian Brothers Secondary School and Convent, Drimnagh Castle Primary school, and the Sisters of Charity Assumption Junior National School. This institutional development corresponded with the development of the suburbs of Drimnagh and Crumlin in the mid-20th century.

The Clondalkin to Drimnagh section of the Proposed Scheme converges with the Tallaght to City Centre section of the Proposed Scheme at the Halfway House Pub, Walkinstown Road, which is a mid to late-19th century public house.

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

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

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

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

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

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

Once the mitigation measures have been applied, there will be no significant residual impacts on the architectural heritage resource as a result of the Construction and Operational Phase of the Proposed Scheme.

8.12 Landscape (Townscape) & Visual

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

Along the section of the Proposed Scheme from Tallaght to Ballymount the townscape is made up of a range of modern urban development and business parks transitioning to traditional village street through historic settlement in Tallaght, becoming outer city suburbs with areas of large scale commercial and suburban residential along R819 Greenhills Road. The corridor is bordered by multi-story developments on land west of Belgard Road. East of Belgard Road is traditional village street with a range of generally one- and two-storey residential, community and institutional lands. Along the section is a mix of mature and young tree planting with a major area of open space at Bancroft Park and Tymon Park.

From Ballymount to Crumlin the area is characterised by outer city suburbs, residential, business / industrial lands east of M50. Streetscape along the section is bordered by suburban roads, framed with open space and major areas of business and industrial land use. There is a range of landscapes including large open spaces at Tymon Park and large business / industrial areas interspersed with residential areas.

From Crumlin to Grand Canal the townscape is composed of core outer city residential suburbs linking Walkinstown and Crumlin. The route is partially enclosed by primary suburban residential streets, framed by traditional two-storey properties with enclosed front gardens onto the road corridor. There are attractive residential estates at Iveagh Gardens leading to a major junction fronting Crumlin Hospital. Amenities along the section include open spaces at Bunting Park, William Pearse Park, Eamon Ceannt Park and Iveagh Gardens and the Grand Canal.

From Grand Canal to Christchurch the townscape character can be described as a historic city access route leading to core urban streetscapes and historic City Centre. Some sections consist of historic / heritage streetscape, with modern infill development. Key city buildings along corridor are notably from R137 Patrick Street to Christchurch Place. Median Street trees along R137 Patrick Street / Nicholas Street. Protected Views are located along R137 Patrick Street towards Christchurch with protected structures bordering along the route in places.

From Woodford Walk (R113) / New Nangor Road (R134) to Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction the route is framed by the Grand Canal, residential and open space lands west of M50 and major areas of business and industrial land use east of M50. The route is very busy road corridor and has a major junction at Naas Road. Conservation areas are solely the Grand Canal corridor. Amenities in the areas consist of open space at Grand Canal, Woodford and Yellow Meadows.

From the Long Mile Road (R110) / Naas Road (R810) / New Nangor Road (R134) junction to Drimnagh the character is very busy major road infrastructure and LUAS rail line. Large business / industrial areas line the border the route along with institutional lands lined with trees at Drimnagh. Protected Structures are located at the MDL premises on R112 Walkinstown Avenue and at Drimnagh Castle.

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

- Site mobilisation and establishment, fencing and hoarding of the Construction Compounds and works areas – including within private areas / gardens;
- Site demolition, including removal of boundaries, kerbs, verges, surfaces, landscape areas, trees, and plantings – including boundary fences, walls, and plantings within private areas / gardens;
- Site activity and visual disturbance from general construction works and the operation of construction machinery both within the site and at the Construction 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 cycleways, bus stops and signage, reinstatement of boundaries / provision of new boundaries and landscape reinstatement works / provision of new landscape, etc.; and

- Decommissioning of construction works areas and Construction Compounds.

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

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

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

With the implementation of the proposed mitigation measures, it is expected that there will be moderate to very significant, negative, temporary to short-term impacts on all townscape sections of the scheme during construction. There will be moderate, negative, short-term streetscape / visual impacts on Architectural Conservation Areas, Residential Conservation Areas, protected structures, amenity designations, preserved views, trees and vegetation and properties in temporary acquisition. There will also be slight to significant, negative, short-term landscape and visual impacts on Conservation Areas, properties fronting the scheme with minimal direct contact, and trees and vegetation.

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

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

Alterations in the road corridor and changes in traffic, pedestrian and cycle movements will be features of the Proposed Scheme. Changes in road corridors, including in traffic signalisation, signage, and in carriageway allocation and traffic movements are a common and regular aspect of active road and traffic management in urban roads and streets. Therefore, such aspects may be considered as a dynamic part of the receiving streetscape environment. Therefore, these changes may be considered part and parcel of on-going or regular changes that may be expected to occur, and do occur, from time to time in any urban streetscape environment and such changes are considered as a low or negligible magnitude of change.

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 townscape and visual impacts. Nevertheless, the Proposed Scheme will give rise to some degree of townscape and visual effect, 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 Compounds, return of temporary acquisition areas, and for replacement or additional tree and other planting where possible along the Proposed Scheme.

In the Operational Phase residual effects will remain for properties experiencing permanent land acquisition. For the open spaces at Birchview / Parkview / Treepark there will be negative moderate to significant long-term effects on the residential area. There will be positive long-term effects for sections of streetscape at Walkinstown Roundabout, from the Ballymount to Christchurch and from the Woodford Walk / New Nangor Road junction to the junction of Long Mile Road / Naas Road / New Nangor Road. The Proposed Scheme will also provide for a significantly enhanced level of service for public transport and for pedestrian / cycle connectivity. Likewise, the Proposed Scheme provides for improvements in the urban realm, which will provide positive long-term effects for the townscape and visual character in areas such as Kildare Road to Clogher Road.

8.13 Waste & Resources

The 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. This 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.

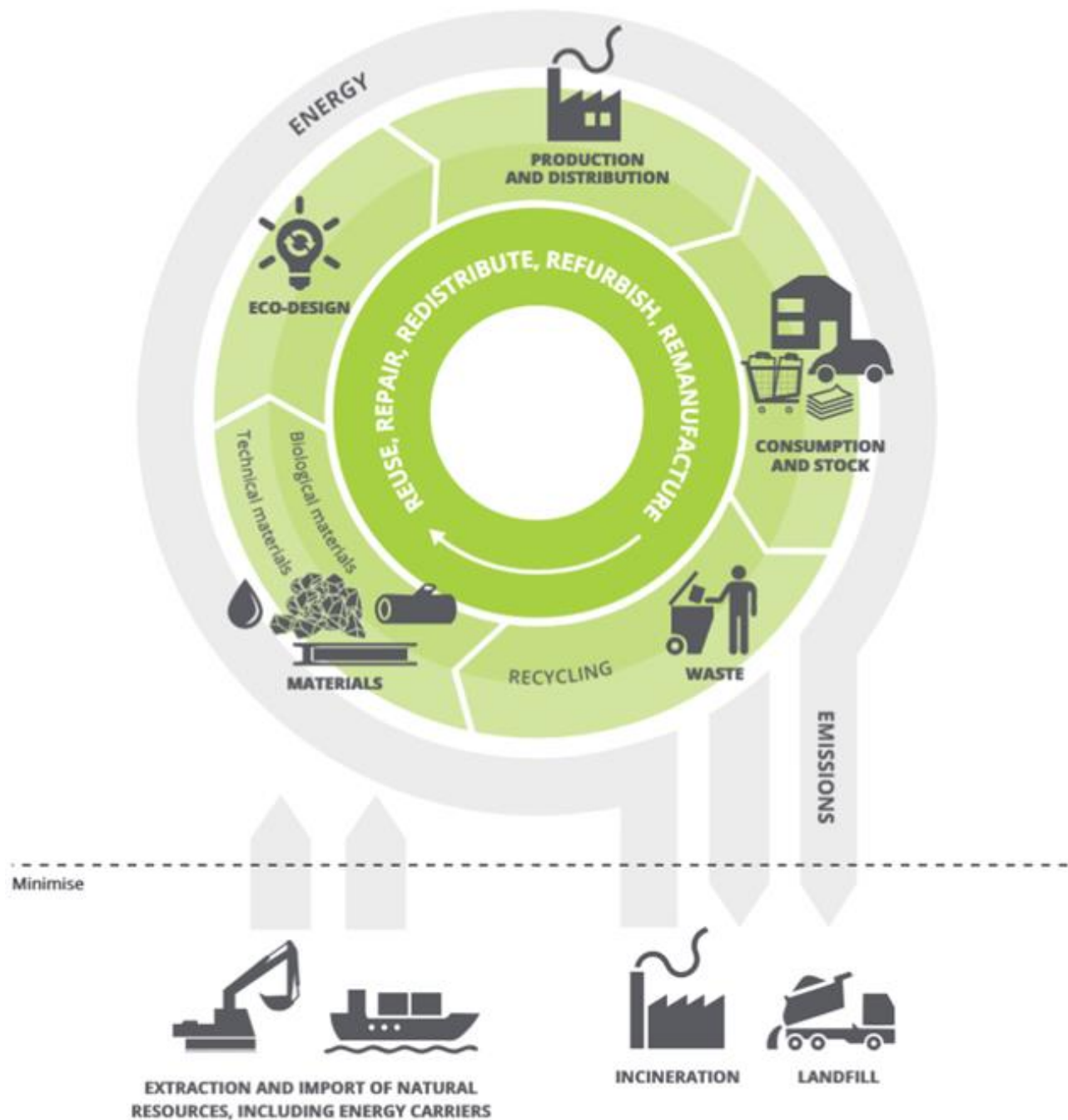


Image 8.2: A Simplified Model of the Circular Economy for Materials and Energy (European Environment Agency (EEA) 2016)

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. Of this waste, 7.0

million tonnes comprised 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;
- Removal of roundabouts and modification to signalised junctions;
- New street furniture, including traffic lights and bus stops, and landscaping works;
- Removal of boundary walls, fences and gates;
- New pedestrian / cycle bridges;
- 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 the appointed contractor through the implementation of a Construction and Demolition Resource and Waste Management Plan.

The approximately 5,480 tonnes of demolition waste that will be generated as a result of the Proposed Scheme is equivalent to 0.05% 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 253,000 tonnes and is equivalent to 2.16% 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 Authorities 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 14,500 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

The material assets assessment was considered in terms of:

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

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

Existing material assets within the 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, GNI Telco and Virgin Media telecommunications lines and associated infrastructure;
- Local Authority traffic signal ducting;
- Dark fibre lines and associated infrastructure;
- The Luas Red Line;
- The M50 Motorway; 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:

- The 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;
- The Construction Compounds will require a water supply for welfare facilities and spraying to prevent dust, wherever necessary;
- The Construction Compounds will require telecommunications access;
- The diversion of electricity lines in areas where there will be interfaces with the Proposed Scheme works;
- The diversion of underground watermains where there will be interfaces with the Proposed Scheme works;
- Upgrade works required to the surface water drainage network to accommodate for new road layouts and increased hardstanding;
- The diversion of gas infrastructure where there will be interfaces with the Proposed Scheme works;
- The diversion of telecommunications 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 represent less than one percent of the Irish quantities manufactured per year.

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

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

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

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

With the implementation of the proposed mitigation measures there will be no significant residual impacts on material assets as a result of the 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;
- The requirement for telecommunications connections at bus stops which contain real time passenger information, to allow the buses and the real time information to sync up with each other.

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

8.15 Risk of Major Accidents and / or Disasters

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

The risk assessment:

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

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

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

For the Construction Phase, there were several risks that were deemed low and were not considered further. The following medium level risks were identified for the Construction Phase:

- Risk of gas explosion due to contact with / damage to gas mains, or release of trapped gas under pavements that accumulates due to local gas leaks;
- Risk of structural damage / collapse;
- Risk of contamination event leading to environmental damage to watercourses or groundwater, particularly associated with the potential release of silt to the aquatic environment;
- Risk of ground collapse / instability due to excavation works leading to subsidence of land, or encountering unstable ground during construction;
- Risk of major road traffic accident resulting from a collision between construction traffic and public traffic, pedestrians and cyclists;
- Risk of spread of non-native invasive species during construction works, particularly during site clearance; and
- Risk of disruption to emergency response vehicles (fire, ambulance and Garda).

No high risks were identified for the Construction Phase.

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 Response Plan and an Environmental Incident Response Plan. With the application of these mitigation measures, there are no remaining identified incidents or major accidents and / or disasters risk events that present a level of risk that would lead to significant impacts or environmental effects.

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

8.16 Cumulative Impacts and Environmental Interactions

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

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

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

- An Bord Pleanála website – for details of strategic infrastructure developments and strategic housing developments;
- Local Authority websites and the development plans – for details of allocations and areas for regeneration;
- National Planning Application Database – for downloadable list of planning applications sent from Local Authorities;
- National Transport Authority website – for details of major transport programmes. This included a review of the NTA's Transport Strategy for the Greater Dublin Area;
- 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 schemes. Traffic modelling of this scenario identified the potential for large cumulative impacts on local road traffic. 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 projects and major developments which could directly interface with the Proposed Scheme with regard to traffic and transport.

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

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

With regards to construction traffic noise, and on the basis of the realistic worst-case scenario for construction traffic, a small number of roads will experience cumulative effects on noise and vibration over and above the effects of the Proposed Scheme in isolation. The roads experiencing cumulative effects from construction traffic noise are the same roads experiencing construction traffic noise impacts when the Proposed Scheme is considered in isolation. All traffic noise impacts are considered temporary in nature.

With regard to Biodiversity, the construction of the Proposed Scheme in combination with other projects, will not give rise to cumulative impacts higher than the predicted residual impacts identified for the Proposed Scheme on its own.

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.

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.

No new additional significant adverse air quality impacts are identified in the cumulative operational scenario compared with the standalone scenario.

The Core Bus Corridor Infrastructure Works will also support the delivery of government strategies outlined in the 2023 CAP and the 2021 Climate Act by enabling sustainable mobility and delivering a sustainable transport system. The Core Bus Corridor Infrastructure Works will provide connectivity and integration with other public transport services leading to more people availing of public transport, helping to further reduce GHG emissions.

The Core Bus Corridor Infrastructure Works achieves the project objectives in supporting the delivery of an efficient, low carbon and climate resilient public transport service, which supports the achievement of Ireland's emission reduction targets. The Proposed Scheme, in combination with other Core Bus Corridor Schemes, has the potential to reduce GHG emissions equivalent to the removal of approximately 105,500 and 209,100 car trips per weekday from the road network in 2028 and 2043, respectively. This has the effect of a reduction in total vehicle kilometres a reduction in fuel usage, and increases to sustainable transport trips and modal share in accordance with the 2023 Climate Action Plan (CAP) (DCCA 2022). It is concluded that, cumulatively, the Core Bus Corridor Infrastructure Works will make a significant contribution to carbon reduction.

The potential changes in traffic noise due to the cumulative Operational Phase traffic impacts have been assessed and compared with those assessed for the standalone Proposed Scheme. The assessment has concluded that during the year of opening, 2028, there will be more moderate impacts experienced during the short to medium term when compared to the standalone Proposed Scheme. One road will also be subject to a moderate to significant impact during the short to medium term when compared to the standalone Proposed Scheme. During the design year, 2043, traffic volumes are lower than the year of opening along the surrounding road network which result in lower calculated impacts along the same identified roads. Furthermore, the Noise and Vibration impact assessment notes that there will be an additional overall reduction in noise emissions due to a reduction in engine noise associated with the future fleet of electric vehicles.

The Landscape (Townscape) and Visual assessment identified that while the implementation of the planned mitigation will assist in reducing cumulative effects and protecting retained features of value, there remains potential for moderate, significant, negative, short term cumulative effects for seven other major projects in conjunction with the Proposed Scheme. Medium and long-term cumulative effects are expected to be moderate or significant and positive.

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 the Greater Dublin Area Cycle Network Plan and the other 11 Core Bus Corridor schemes and the Proposed Scheme 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

cumulative effects are assessed as positive, significant and long-term for health for the Greater Dublin Area Cycle Network Plan and positive, very significant and long-term for the other 11 Core Bus Corridor Schemes.

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

9. What Happens Next?

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

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

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

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

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