Chapter 03
Consideration of Reasonable Alternatives

Contents

3. Consideration of Reasonable Alternatives

3.1 Environmental Impact Assessment Directive Requirements

Article 5(1)(d) of Directive 2011/92/EU as amended by Directive 2014/52/EU "the EIA Directive") requires that an Environmental Impact Assessment Report (EIAR) contains '*a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and the main reasons for the option chosen, taking into account the effects of the project on the environment*'.

In addition, Annex IV to the EIA Directive, provides that the EIAR shall include:

> *"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics and an indication of the main reasons of selecting the chosen option, including a comparison of the environmental effects"*

In addition, given the proposed road development for which approval is sought in this instance, section 50(2)(b)(iv) of the Roads Act 1993, as amended ("the Roads Act")states that that the EIAR shall contain the following information:

> '…*a description of the reasonable alternatives studied by the road authority or the Authority, as the case may be, which are relevant to the proposed road development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed road development on the environment*'

Section 50(2)(b)(vi) of the Roads Act also requires that "*any additional information specified in Annex IV* [quoted above] *that is relevant to the specific characteristics of the particular proposed road development or type of proposed road development and to the environmental features likely to be affected*" also be included in the EIAR.

Accordingly, this Chapter of the EIAR describes the reasonable alternatives studied and the main reasons for the selection of the proposed Blanchardstown to City Centre Scheme (hereafter referred to as the "Proposed Scheme" or "proposed development") taking into account the effects on the environment.

It considers the alternatives at three levels:

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

The reasonable alternatives studied which are relevant to the Proposed Scheme and its specific characteristics are described in the subsequent sections of this chapter.

3.2 Strategic Alternatives

3.2.1 GDA Transport Strategy

The Transport Strategy for the Greater Dublin Area 2016-2035 ("GDA Transport Strategy") was prepared by the NTA pursuant to Section 12 of the Dublin Transport Authority Act 2008 and approved by the Minister for Transport, Tourism and Sport in February 2016 in accordance with sub-section 12(13) of that Act.

The GDA Transport Strategy provides a comprehensive framework to guide the development of transport across the Greater Dublin Region over the period of the strategy. Careful consideration was undertaken of the transport requirements across the seven counties of the GDA, and the GDA Transport Strategy then formulated the appropriate transport responses to those requirements.

Various studies and reports were undertaken in the development of the GDA Transport Strategy, including:

- Area-based studies covering the GDA area;
- Demand Management Study;
- Core Bus Network Study;
- Park & Ride Study;
- Transport Modelling Analysis; and
- Environmental reports.

Specifically, a Strategic Environmental Assessment (SEA) was undertaken on the GDA Transport Strategy (NTA 2016). As set out in the Environmental Report, in respect of which the SEA of the GDA Transport Strategy was undertaken, a number of reasonable alternative strategies were devised and assessed, taking into account the objectives and the geographical scope of the strategy. The provisions of the GDA Transport Strategy (including bus-based transport modes), were evaluated for potential significant effects, and measures integrated into the Strategy on foot of SEA recommendations in order to ensure that potential adverse effects were mitigated. In considering the alternative modes on a corridor basis, the environmental assessment undertaken considered that bus-based projects could contribute towards facilitating the achievement of Ireland's greenhouse gas emission targets in terms of emissions per passenger per kilometre.

In addition to direct studies and analyses undertaken as part of the strategy preparation work, the GDA Transport Strategy also took into account prior reports and plans in relation to transport provision. These prior studies included, *inter alia*, the following:

- GDA Cycle Network Plan (2013);
- Bus Rapid Transit – Core Network Report (2012);
- Fingal/North Dublin Transport Study (2015);
- Review of the DART Expansion Programme (2015);
- Various prior Luas studies (including Line B2 (Bray), Line D1 (Finglas), Line F1, and F2 (Lucan and Liberties), and Line E (2008)); and
- Analysis carried out for the 2011 Draft Transport Strategy.

Given the importance of bus transport as the main public transport mode for the overall region, the delivery of an efficient and reliable bus system forms an important element of the GDA Transport Strategy, integrated appropriately with the other transport modes. As Dublin is a low-density city with a large geographic footprint, there are few areas with the size and concentration of population necessary to support rail based public transport, and the bus system remains essential to serve the needs of much of the region.

The bus system has continued to remain an essential element of the public transport infrastructure since the publication of the GDA Transport Strategy. The bus system in the Dublin metropolitan area carried 159 million passengers in 2019 (the last full year before the COVID-19 pandemic), compared with 48 million passengers on Luas and 36 million passengers on the DART and rail commuter services over the same year. Converting to percentage figures, the bus system accounts for 65% of public transport passenger journeys in the Dublin region, roughly two thirds of all public transport passengers, with Luas carrying 20% and DART and commuter rail services delivering the remaining 15%.

The area-based studies referenced above provided an appraisal of existing and future land use and travel patterns, including identifying trends and issues, within eight transport corridors as presented Image 3.1 (Figure 3.8 in the GDA Transport Strategy). These corridors were also divided into Outer Hinterland, Outer Metropolitan, and Inner Metropolitan areas in terms of character.

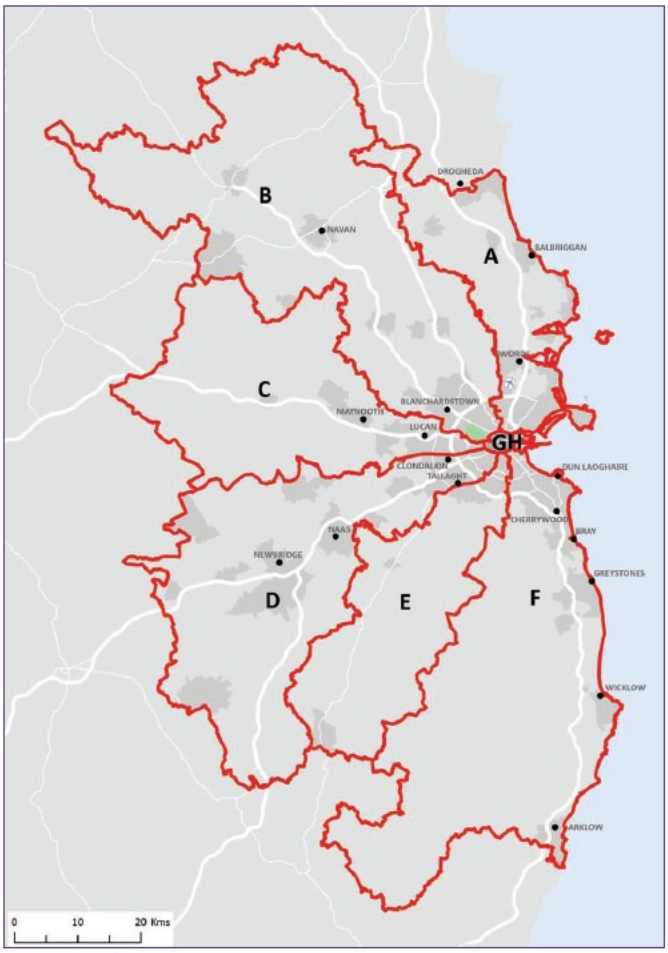

Image 3.1: Transport Strategy Corridors

The development of the GDA Transport Strategy took into account the data and analysis provided through the supporting studies and background information and formulated an overall integrated transport system to serve the needs of the GDA up to 2035. In relation to public transport, the GDA Transport Strategy set out a network of heavy rail, metro, light rail and bus proposals, with those networks combining to serve the overall public transport needs of the region.

The Blanchardstown to City Centre Core Bus Corridor Scheme is largely located in Corridor B in the GDA Transport Strategy which extends from the core City Centre area through to Blanchardstown, Dublin's most populous suburb and the location of strategic employment zones at Ballycoolin, Damastown and the town centre, and onwards towards Navan in County Meath.

Through the work undertaken in the preparation of the GDA Transport Strategy, including its supporting studies, various alternatives to deal with the transport needs which are intended to be addressed by the Proposed Scheme were identified and considered. These are set out in the subsequent sections.

3.2.2 'Do Nothing' Alternative'

The GDA Transport Strategy was developed as the economy was emerging from the post 2008 economic downturn. In turn, the GDA Transport Strategy sets out a number of key challenges and opportunities within the GDA.:

- Suburbanisation and the spread of population, employment and other land uses has continued;
- Arising from the above trend, the mode share of car use continues to increase;
- Car ownership – a key determinant of car use – is likely to increase further, up to saturation levels;
- Cycling has increased significantly in numbers and in mode share;

- Recovery is occurring in public transport use, but not in its mode share;
- Encouraging non-car use for trips to education is a significant challenge;
- There is no spare capacity on the M50 Motorway;
- Protecting and enhancing access to the ports and Dublin Airport is a strategic priority; and
- Current economic growth will mean that within the next few years, overall levels of travel demand are likely to exceed the travel demand experienced in 2006 and 2007.

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.

Ultimately few areas within the GDA have the size and concentration of population to support rail-based public transport. For most transport corridors in Dublin, bus transport represents the most appropriate transport solution.

In terms of the out-workings of a strategic “Do Nothing” Alternative, it should be noted that, currently, the bus network is characterised by discontinuity, whereby corridors have dedicated bus lanes along less than one third of their lengths on average which means that for most of the journey, buses and cyclists are competing for space with general traffic and are negatively affected by the increasing levels of congestion. This lack of segregated space for different road users results in delayed buses and unreliable journey times for passengers. Issues related to frequency, reliability and a complex network have persisted for many years and will continue to do so without further intervention. In the absence of enhanced frequencies, journey time and reliability the ability to attract new passengers is limited, particularly from private car and also impacts on the ability of the bus network to retain passengers and acts as a demotivator to travel by bus. Within the extents of the route of the Blanchardstown to City Centre Core Bus Corridor Scheme, bus lanes are currently provided on approximately 10% and 40% of route outbound and inbound, respectively, of which significant portions of the route are shared with cyclists and or parking lanes, which can in turn impact on bus reliability.

Adopting a Do Nothing approach, to infrastructure improvements, would be likely to result in an exacerbation of the problems arising from discontinuities – such as delayed buses and unreliable journey times. The capacity and potential of the public transport system would remain restricted by the existing deficient and inconsistent provision of bus lanes and the resulting sub-standard levels of bus priority and journey-time reliability. As such, in addition to the continuation of issues relating to existing bus services, future bus services, including the Bus Network Redesign currently being implemented as part of the wider BusConnects Programme, would also suffer from the same lack of journey-time reliability. This would severely impact the attractiveness of public transport as an alternative to private car usage for those who need to travel to/from various locations along the route of the Proposed Scheme.

In addition, without the provision of safe cycling infrastructure, intended as part of the Proposed Scheme, there would also continue to be an insufficient level of safe, segregated provision for cyclists who currently, or in the future would be otherwise attracted to use the route of the Proposed Scheme. Whilst, in the “Do Nothing” Alternative, ongoing improvements may be provided along the route of the existing corridor extents, this is likely to be piecemeal and disconnected without the wide-strategic benefits to be derived from the Proposed Scheme.

In addition, with the “Do Nothing” Alterative, there would not be significant strategic investment in improvements to the pedestrian environment. Rather, improvements would be limited to relatively limited interventions, for example, ongoing maintenance of existing footpaths and adjacent public spaces. The Do Nothing Alternative would not result in improvements to encourage more journeys generally at a local level by active travel, including connecting to and from bus stops for all pedestrians, and in particular improving facilities for the mobility and visually impaired.

For all of these reasons, and having regard to these environmental considerations in particular, a Do Nothing alternative is not considered to be a viable alternative relative to the outcomes which can be realised by the Blanchardstown to City Centre Core Bus Corridor Scheme.

3.2.3 Bus Rapid Transit (BRT) Alternative

Bus Rapid Transit (BRT) has emerged in recent years as an effective, cost efficient and high quality public transport system. As BRT is a relatively new mode of transport, there are various definitions and interpretations as to what BRT comprises and there are many different forms of BRT systems in operation worldwide. Definitions of BRT range from a Quality Bus Corridor (QBC) to being a fully guided, fully segregated bus system.

A Bus Rapid Transit (BRT) – Core Network Report prepared in 2012 (NTA 2012) at feasibility study level, investigated the demand, technical, environmental, and economic feasibility of a proposed core BRT network. The feasibility study recommended that further and more detailed work should proceed on two cross city corridors namely the Blanchardstown to University College Dublin (UCD) corridor and the Malahide Road (Clongriffin) to Tallaght corridor. Further consideration was given to a Blanchardstown to City Centre BRT scheme, which included route option identification and analysis, selection of an Emerging Preferred Route for the corridor and development of the design for the emerging preferred route.

Prior to the completion of these studies, the GDA Transport Strategy identified the development of a number of Core Bus Corridors as BRT schemes, including along Corridor B on the N3 and Navan Road directly into the south of the city centre. These BRT routes formed part of the overall Core Bus Corridor network set out in the GDA Transport Strategy. As design and planning work progressed on the Core Bus Corridors, it became clear that the level of differentiation between the BRT corridors and the other Core Bus Corridors would, ultimately, be limited, and that all the corridors should be developed to a consistent standard, providing a more integrated, legible and coherent overall bus system.

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

Accordingly, it is intended that all of the Core Bus Corridor Infrastructure Works including the Proposed Scheme, will be developed to provide a BRT level of service, rather than establishing a separate mode on some corridors. Consequently the Proposed Scheme as a separate BRT mode was not progressed given the limited differentiation from the CBCs and the advantages identified above of a unified integrated bus system.

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

3.2.4 Light Rail Alternative

The appropriate type of public transport provision in any particular case is predominantly determined by the likely quantum of passenger demand along the particular public transport route.

For urban transport systems, bus- based transport is the appropriate public transport mode for passenger demand levels of up to 4,000 passengers per hour per direction. (UITP 2009). Light rail provision would generally be appropriate to cater for passenger demand of between 3,500 and about 7,000 passengers per hour per direction. Passenger demand levels above 7,000 passengers per hour per direction would generally be catered for by heavy rail or metro modes, which would usually be expected to serve a number of major origins or destinations along a particular corridor. In the case of both the bus and light rail modes, higher levels of passenger demand than the above stated figures can be accommodated under specific conditions.

The development of the GDA Transport Strategy considered the likely public transport passenger demand levels across the region using the NTA's transport model and took into account the other studies referenced above, in addition to studies that had been carried out to investigate a potential light rail scheme within the area of this corridor. Likely passenger flows were identified to be within the capacity of bus transport, without reaching the quantum of passenger demand which would support the provision of higher capacity rail solutions.

Section 3.2.1 sets out various studies undertaken for the GDA Transport Strategy. Arising from these studies and the specific assessment and transport modelling work undertaken for the GDA Transport Strategy, it was concluded that the Luas Cross City would be extended northwards to serve the Finglas Area and that a bus-based transport system would be the proposed public transport solution along the N3 and Navan Road directly into the south of the city centre. It was considered that there would be insufficient demand to justify the provision of a light rail alternative, particularly given the low to medium density nature of development in this corridor.

Environmentally, In comparison to the CBC proposal and similar to the BRT alternative, the light rail alternative would be more impactful in terms of construction impacts, including flora and fauna, heritage, air and noise. Light rail requires continuous unbroken physical lane infrastructure to achieve high-priority. This would involve significantly more land take and potentially involve demolition of buildings at pinch-points. In the case of the bus-based transport solution, bus-priority can be achieved through short lengths at pinch-points by the use of signal-control priority.

3.2.5 Metro Alternative

As highlighted above, when considering the appropriate transport systems to meet the expected transport demand, Metro systems are a higher capacity form of light rail, generally designed for peak hour passenger numbers exceeding about 7,000 passengers per hour per direction, and often catering for multiples of that level.

Given the consideration of light rail provision, and the level of likely public passenger use along this overall corridor assessed in the transport modelling work, the development of the GDA Transport Strategy identified that a metro solution would not be economically justified within the area covered by this corridor (Corridor B).

In addition, the development of an underground metro would not remove the need for additional infrastructure to serve the residual bus needs of the area covered by the Proposed Scheme, nor would it obviate the need to develop the cycling infrastructure required along the route of the Proposed Scheme.

Environmentally, in comparison to the CBC proposal, the metro alternative would be more impactful in terms of construction impacts, including flora and fauna, heritage, air and noise. Metro systems require unbroken physical lane infrastructure to achieve high-priority. This would involve significantly more land take and potentially involve demolition of buildings at pinch-points. In the case of the bus-based transport solution, bus-priority can be achieved through short lengths at pinch-points by the use of signal-control priority.

3.2.6 Heavy Rail Alternative

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

For those reasons, new heavy rail projects running at surface level are rarely developed in built-up urban areas. Instead, underground rail links, including metro schemes, are deployed to avoid the severe impacts that would accompany a new surface rail line. In comparison to the CBC proposal, the heavy rail alternative would be more impactful in terms of construction impacts, including flora and fauna, heritage, air and noise. Heavy rail requires unbroken physical lane infrastructure to achieve high-priority. This would involve significantly more land take and potentially involve demolition of buildings at pinch-points.

The appropriate locations for new heavy rail provision were carefully considered in the development of the GDA Transport Strategy. Having regard to the level of likely public passenger use (demand) along the overall corridor of the Proposed Scheme assessed in the transport modelling work, the GDA Transport Strategy did not consider that a new heavy rail solution would be required along this corridor and would not be economically justifiable.

In relation to underground provision, the issue was considered as part of the metro analysis, given the similarity of underground heavy rail and underground metro schemes. Similar to the metro alternative (Section 3.2.5), the provision of an underground heavy rail solution would not remove the need for additional infrastructure to serve the residual bus needs of the area covered by the Proposed Scheme, nor would it obviate the need to develop the cycling infrastructure required along the route of the Proposed Scheme.

In addition to a potential new heavy rail solution, the potential DART Maynooth Line which is contained within the broader corridor was considered as part of the development of the GDA Strategy. In 2015, the NTA carried out a review of the key transport infrastructure projects that were proposed to support the growth of the Greater Dublin Region. This included a review of the DART Expansion Scheme which included DART Underground, the Fingal/North Dublin Study and a study of the orbital movements around Dublin all designed to inform the GDA Transport Strategy. Image 3.2 below shows the various projects in the DART Expansion Programme.

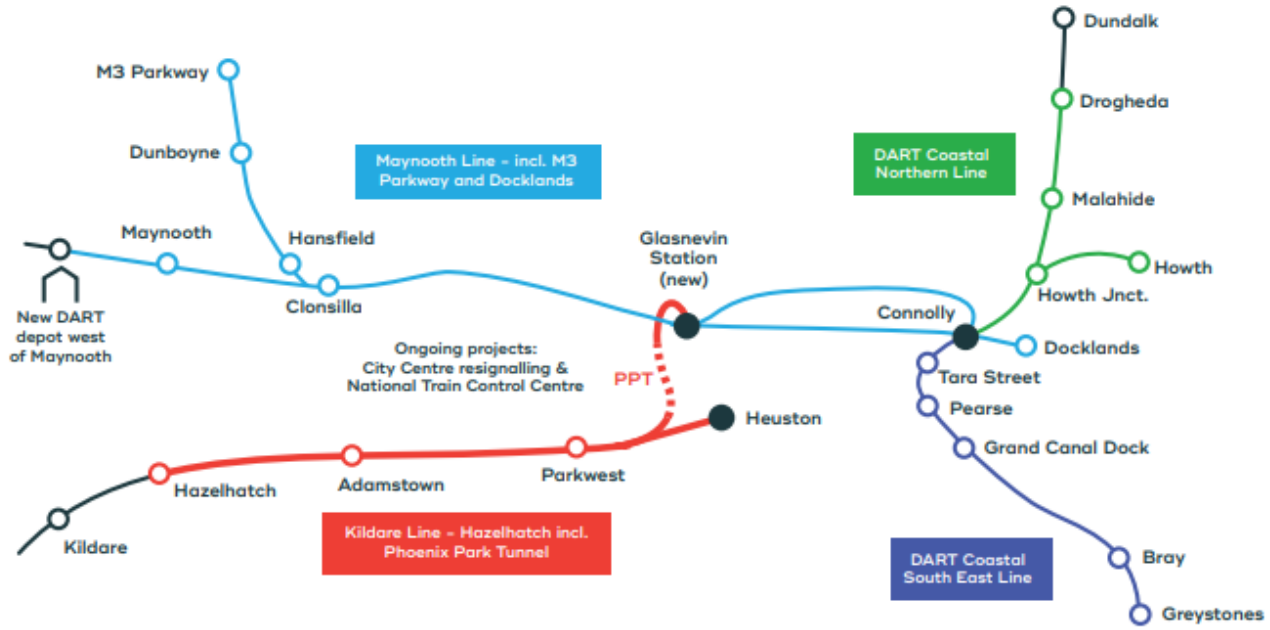

Image 3.2: DART Expansion Programme (Source: Irish Rail Website)

Accordingly, the GDA Transport Strategy included the upgrade of the DART Maynooth Line, as part of a phased delivery of DART Expansion, supplemented with the light rail expansion through the implementation of Luas Cross City line northwards, with a higher quality bus solution along this GDA Transport Strategy Corridor-B as the appropriate public transport configuration.

Environmentally, the combination of a rail upgrade involving limited construction works and the Proposed Scheme to achieve high-quality bus priority and safer cycling and walking infrastructure represents a balanced strategy by limiting the overall construction impact while enhancing the capacity for sustainable people-movement options.

3.2.7 Demand Management Alternative

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

Demand management can take many different forms from restricting car movement or car access through regulatory signage and access prohibitions, to parking restrictions and fiscal measures (such as tolls, road pricing, congestion charging, fuel/vehicle surcharges and similar). All of these approaches discourage car use through physical means or by adding additional costs to car use such that it becomes more expensive and alternative modes become more attractive. A key success factor of demand management is greater use of alternative travel modes, in particular public transport.

However, in the case of Dublin, the existing public transport system does not currently have sufficient capacity to cater for large volumes of additional users. In the case of the bus system, the increasing levels of traffic congestion over recent years prior to the COVID-19 pandemic added to bus delays and means that additional bus fleet and driver resources have been utilised simply to maintain existing timetables, rather than adding overall additional

capacity. The objective of the GDA Transport Strategy is to significantly increase the capacity, and subsequent use, of the public transport system, focussing on the overall BusConnects Programme in the case of the bus system, the DART+ Programme in the case of heavy rail, and the Luas/Metro programme in the case of light rail.

Congestion is a significant contributor to GHG emissions and the related negative environmental impacts associated with poor air quality, noise levels, and related health and quality of life consequences. Demand management measures need to be associated with positive environmental benefits that can be achieved when commuters change modes to high-quality public transport, walking, and cycling that can help reduce GHG emissions and bring associated health benefits. The objective of the GDA Transport Strategy to significantly increase the capacity, and subsequent use of these alternative modes requires that the necessary physical infrastructure is necessary to deliver the efficiencies to make the mode-shift attractive and environmentally beneficial.

In advance of a significant uplift in overall public transport capacity in the Dublin metropolitan area, the implementation of major demand management measures across that area would be unsuccessful. Effectively constraining people from making journeys by car and requiring them to use other modes, without those modes having the necessary capacity to cater for such transfer, would not deliver an effective overall transport system. Instead, the capacity of the public transport system needs to be built up in advance of, or in conjunction with, the introduction of major demand management measures in the Dublin metropolitan area. This is especially true in the case of the bus system where a major increase in bus capacity through measures such as the Proposed Scheme would be required for the successful implementation of large-scale demand management initiatives.

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

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

3.2.8 Technological Alternatives

Technological advances have opened up new areas of potential in the delivery of transport infrastructure. Driverless trains and smart highways are two examples. Some of these initiatives, such as driverless trains, are now in use. Technological advancements relating to car use have the potential to improve road safety by reducing potential for driver error and with the use of global positioning systems to be guided to the most efficient route. A shift to electric vehicles will help reduce GHG emission impacts, but road space is limited and three typical cars (electric or otherwise) still take the same road space for up to 12 occupants that a typical double-deck bus requires to carry up to 90 occupants. The environmental impact of continuing to build more road space for low-occupancy vehicles is unsustainable from both the construction environmental impact and operational environmental impact perspectives. Despite advancements in road-user technology road congestion is not reducing as populations grow, and old inner-city areas of Dublin do not have space to add more car lanes.

The shift to hybrid and ultimately electric buses will reduce both noise and air-quality impacts. The evolution of bike-share schemes and advancements in electric bike technology means that cycling is increasing in attractiveness and for longer distances. This attractiveness is only for the few however if cycling infrastructure in the form of safe segregated facilities is not available.

While road construction is costly and has a negative GHG impact there are little advancements in construction technology that present any viable alternatives when conversion of road infrastructure involves reconfiguration of lanes for bus priority, safer segregated cycle tracks and improved pedestrian facilities, or even more significantly for rail-related infrastructure. Road right-of-way space is still shared with multiple underground and overhead utilities that may require to be relocated, and road materials require to be resilient to minimise maintenance frequencies.

Ultimately, however, alternatives have to be able to accomplish the objectives of the project in a satisfactory manner, and should also be feasible including in terms of technology and other relevant criteria. In this context, there is no evidence that such developments will displace the need for mass transit, which is essential to the operation of a modern city. Accordingly, the need to improve the overall bus system will still remain.

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

3.3 Route Alternatives

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

1) A **Route Options Assessment** (Blanchardstown Town Centre to the Liffey Quays (Ellis Quay) CBC Route Options Assessment (AECOM/ROD, 2018)) was concluded in 2018, setting out the initial route options and concluding with the identification of an Emerging Preferred Route;
2) A first round of non-statutory **Public Consultation** was undertaken on the Emerging Preferred Route from 14 November 2018 to 29 March 2019;
3) Development of **Draft Preferred Route Option** (April 2019 to March 2020). Informed by feedback from the first round of public consultation, stakeholder and community engagement and the availability of additional design information, the design of the Emerging Preferred Route evolved with further alternatives considered;
4) A second round of non-statutory **Public Consultation** was undertaken on the Draft Preferred Route Option from 4 March 2020 to 17 April 2020. Due to the introduction of COVID-19 restrictions, some planned in-person information events were cancelled, leading to a decision to hold a third consultation later in the year;
5) Further development of an Updated **Draft Preferred Route Option** was undertaken subsequent to the second round of public consultation, which took account of submissions received, continuing stakeholder engagement and additional design information;
6) A third round of non-statutory **Public Consultation** was undertaken on the Updated Draft Preferred Route Option from 04 November 2020 to 16 December 2020; and
7) Finalisation of **Preferred Route Option**. Informed by feedback from the overall public consultation process, continuing stakeholder engagement and the availability of additional design information, the Preferred Route Option, being the Proposed Scheme, was finalised.

Alternative route options have been considered in a number of areas during the iterative design of the Proposed Scheme, such as the location of offline cycle routes and the road layout in constrained locations. The iterative development of the Proposed Scheme has also been informed by a review of feedback and new information received during each stage of public consultation and as data, such as topographical surveys, transport and environmental information was collected and assessed. In addition, the potential for climate impact was considered in all phases of the design process for the Proposed Scheme. As the design progressed climate was indirectly affected in a positive way by refining the design at each stage through reducing the physical footprint of the scheme coupled with the inclusion of technological bus priority measures.

Key environmental aspects have been considered during the examination of reasonable alternatives in the development of the Preferred Route Option for the Proposed Scheme. Environmental specialists have been involved in the iteration of key aspects of the Proposed Scheme with the engineering design team.

The following key environmental aspects were considered:

- **Archaeological, Architectural and Cultural Heritage** – there is the potential for impacts on archaeological, architectural and cultural heritage when providing CBC infrastructure. The assessment had regard to Record of Monuments and Places (RMP), Record of Protected Structures (RPS), Sites of Archaeological or Cultural Heritage and buildings listed on the National Inventory of Architectural Heritage (NIAH) adjacent to the corridor;

- **Flora and Fauna** - Provision of CBC infrastructure could have negative impacts on flora and fauna, for example, through construction of new infrastructure through green field sites;
- **Soils and Geology** - Construction of CBC infrastructure has the potential to negatively impact soils and geology. For example, through land acquisition and ground excavation. There is also the potential to encounter ground contamination from historical industries;
- **Hydrology** - Provision of CBC infrastructure may include aspects (for example structures) with the potential to impact on hydrology;
- **Landscape and Visual** - Provision of CBC infrastructure has the potential to negatively impact on the landscape and visual aspects of the area, for example, by the removal of front gardens or green spaces or the altering of streetscapes, character and features;
- **Noise, Vibration and Air** - Provision of CBC infrastructure (e.g., the construction activities), has the potential to negatively impact on noise, vibration and air quality;
- **Land Use and the Built Environment** - This criterion assesses the impact of each option on land use character, and measured impacts which would prevent land from achieving its intended use, for example through land acquisition, removal of parking spaces or severance of land; and
- **Climate** – Construction works involve negative GHG emissions impacts, while operational efficiencies of public transport, walking and cycling through modal shift from car usage has the potential to reduce GHG impacts.

3.3.1 Initial High Level Route Alternatives

The Route Options Assessment identified feasible options along the corridor, assessed these options and arrived at the Emerging Preferred Route, which then formed the basis of the first non-statutory public consultation. A summary of the process is described below.

The Route Options Assessment used a two-stage assessment process to determine the Emerging Preferred Route Option, comprising:

- Stage 1 – an initial high-level route options assessment, or ‘sifting’ process, which appraised routes in terms of ability to achieve scheme objectives and whether they could be practically delivered. The assessment included consideration of the potential high level environmental constraints as well as other indicators such as land take; and
- Stage 2 - Routes which passed the Stage 1 assessment were taken forward to a more detailed qualitative and quantitative assessment. All route options that progressed to this stage were compared against one another using a detailed Multi-Criteria Analysis in accordance with the Department of Transport Document “Common Appraisal Framework for Transport Projects and Programmes”.

The study area for the corridor, as shown in Image 3.3, was divided into three Study Area Sections to simplify the assessment process:

- Study Area Section (SAS) 1 – Blanchardstown to M50 East;
- Study Area Section (SAS) 2 – M50 East to Cabra; and
- Study Area Section (SAS) 3 – Cabra to the Liffey Quays (Ellis Quay).

Image 3.3: Study Area Sections (SAS)

Further discussion on the route options assessment process for each Study Area Section is provided in Section 3.3.2. The potential for cumulative impacts as a result of the Proposed Scheme is assessed in Chapter 21 (Cumulative Impacts & Environmental Interactions).

At the start of the Stage 1 assessment, an initial 'spiders web' of potential route options that could accommodate a Core Bus Corridor was identified for each Study Area Section, as shown in:

- Image 3.4: Study Area Section (SAS) 1 – Blanchardstown to M50 East, 90 route sections assessed;
- Image 3.5: Study Area Section (SAS) 2 – M50 East to Cabra, 53 route sections assessed; and
- Image 3.6: Study Area Section (SAS) 3 – Cabra to River Liffey, 85 route sections assessed.

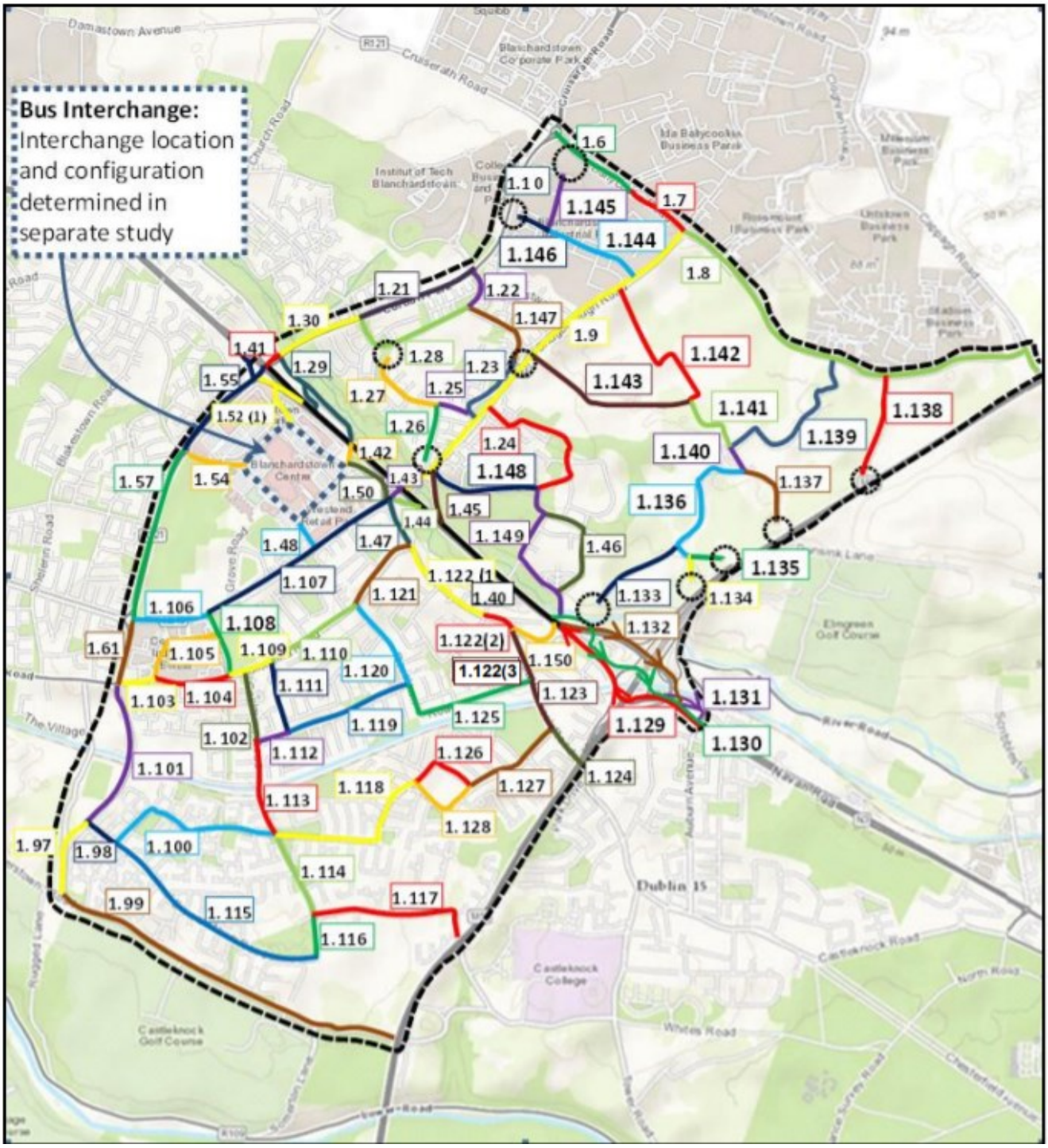

Image 3.4: Study Area Section 1 (SAS 1) (Blanchardstown to M50 East) Spiders Web of Route Options (90 route sections assessed) extracted from (Blanchardstown Town Centre to the Liffey Quays (Ellis Quay) CBC Route Options Assessment). Figure 5.2 from Route Options Assessment (AECOM/ROD, 2018).

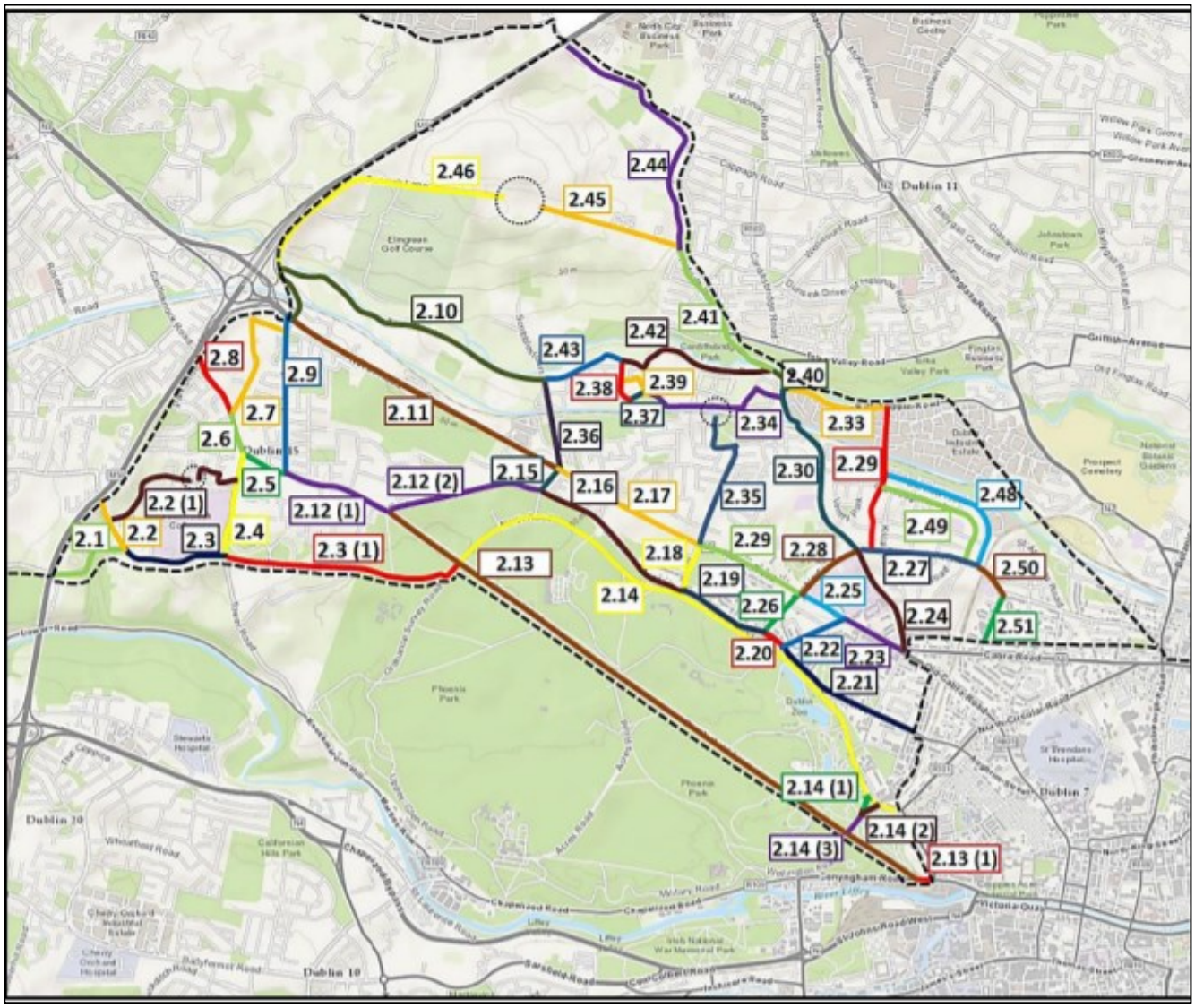

Image 3.5: Study Area Section 2 (SAS 2) (M50 East to Cabra) Spiders Web of Route Options (53 route sections assessed) extracted from (Blanchardstown Town Centre to the Liffey Quays (Ellis Quay) CBC Route Options Assessment). Figure 5.4 Route Options Assessment (AECOM/ROD, 2018).

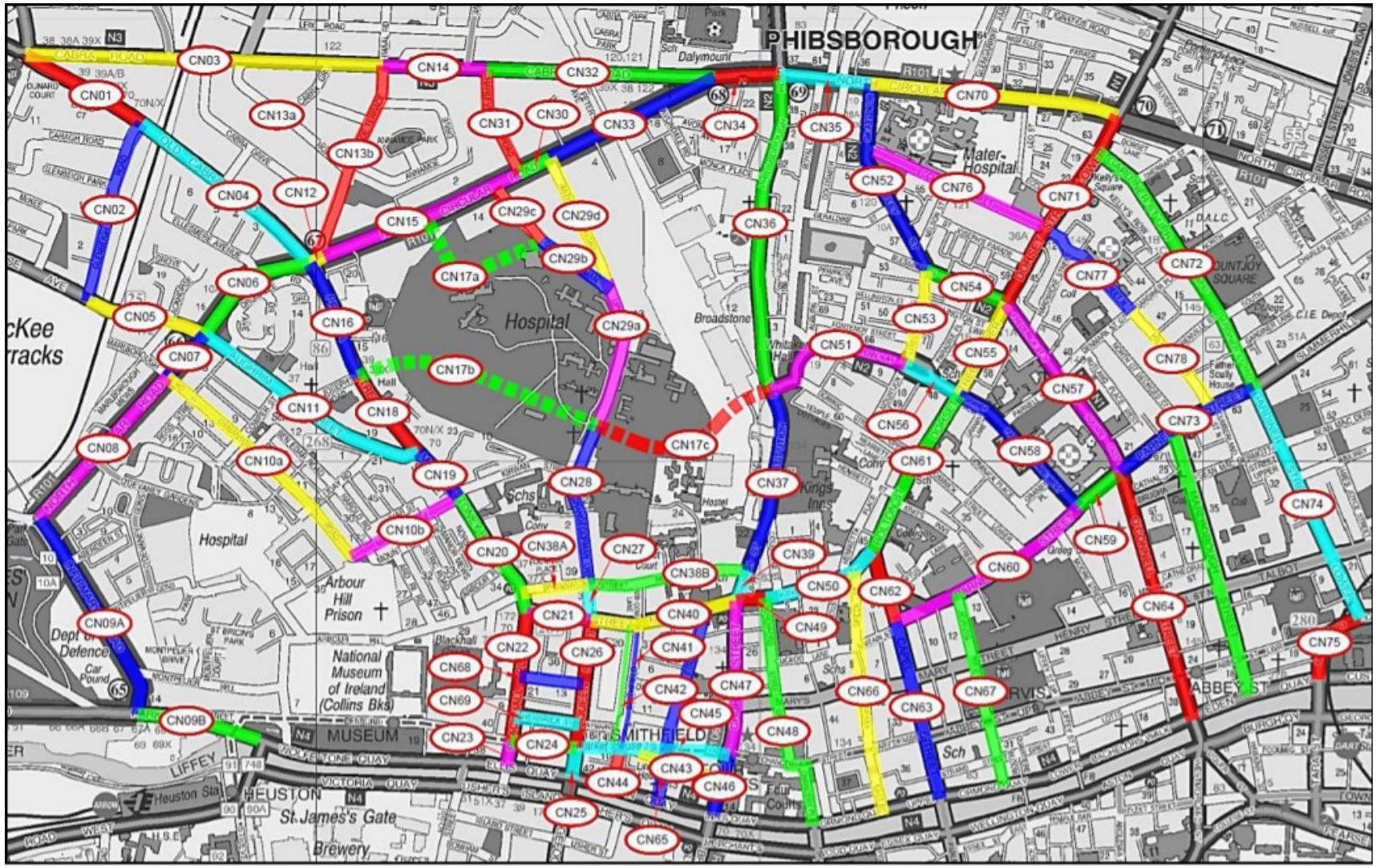

Image 3.6: Study Area Section 3 (SAS 3) (Cabra to Liffey Quays) Spiders Web of Route Options (85 route sections assessed) extracted from (Blanchardstown Town Centre to the Liffey Quays (Ellis Quay) CBC Route Options Assessment). Figure 5.6 Route Options Assessment (AECOM/ROD, 2018).

The initial “spider’s ”web” was narrowed down having considered existing physical conditions/constraints within the study area. This exercise examined and assessed technically-feasible route options, based upon specific objectives. In addition to being assessed on their individual merits, routes were also assessed relative to each other enabling some routes to be ruled-out if more suitable alternatives existed.

The Stage 1 assessment considered engineering constraints, high-level environmental constraints and an analysis of population catchments. Numerous links forming part of the “spider’s web” were not brought forward to the Stage 2 assessment due to space constraints, lack of appropriate adjacent linkages to form a coherent end-to-end route, unsuitability of particular routes, the need for significant land take from residential properties in addition to other factors. For example, between Blanchardstown Town Centre and Snugborough Road (R483) (Section No. 1.48) as shown in Image 3.7, which is the entrance to a major town centre with segregated cycle lanes and a tree-lined street, was not advanced to Stage 2 assessment. The Stage 1 assessment identified that widening would be required to provide optimum bus facilities. The Stage 1 assessment identified this section as having limited scope to widen. Section 1.48 was therefore not considered a viable route and did not progress to Stage 2 assessment.

Arising from consideration of the various permutations possible in respect of the “spider’s web”, a reduced number of coherent end-to-end options were identified for further assessment. In arriving at these options, those links which failed the initial sifting stage were removed as well as those links that were disconnected and could not clearly form part of the end-to-end options. Options which passed the Stage 1 assessment for each Study Area Section are presented in the following images (extracted from Route Options Assessment (AECOM/ROD, 2018)):

- Image 3.7: Study Area Section (SAS) 1 – Blanchardstown to M50 East, 49 of the 90 route sections assessed passed Stage 1 Assessment;
- Image 3.8: Study Area Section (SAS) 2 – M50 East to Cabra, 13 of the 53 route sections assessed passed Stage 1 Assessment; and
- Image 3.9: Study Area Section (SAS) 3 – Cabra to River Liffey, 54 of the 85 route sections assessed passed Stage 1 Assessment.

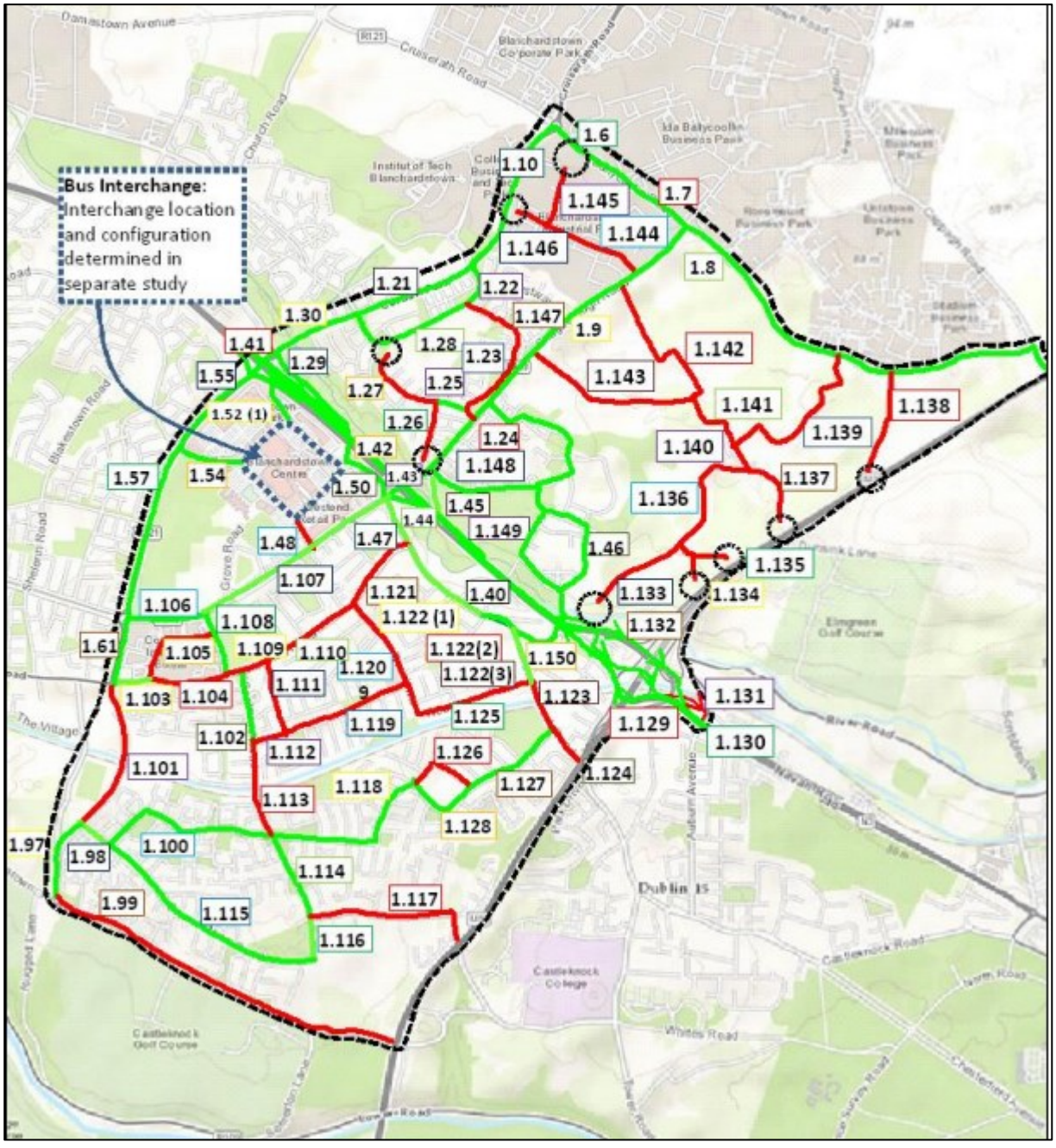

Image 3.7: Study Area Section 1 (SAS 1) (Blanchardstown to M50 East) Route Options Sections (in green) which passed Stage 1 Assessment. Figure 5.3 Route Options Assessment (AECOM/ROD, 2018).

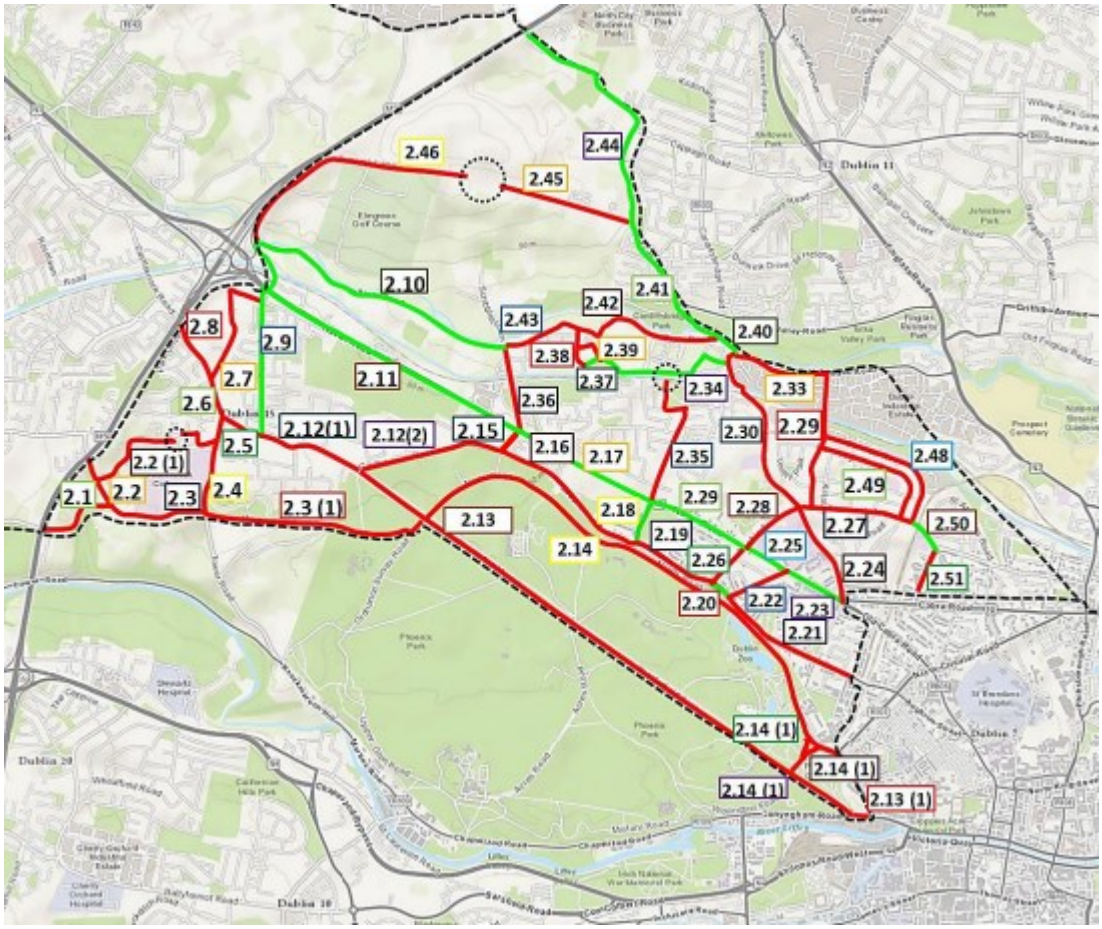

Image 3.8: Study Area Section 2 (SAS 2) (M50 East to Cabra) Route Options Sections (in green) which passed Stage 1 Assessment. Figure 5.5 Route Options Assessment (AECOM/ROD, 2018).

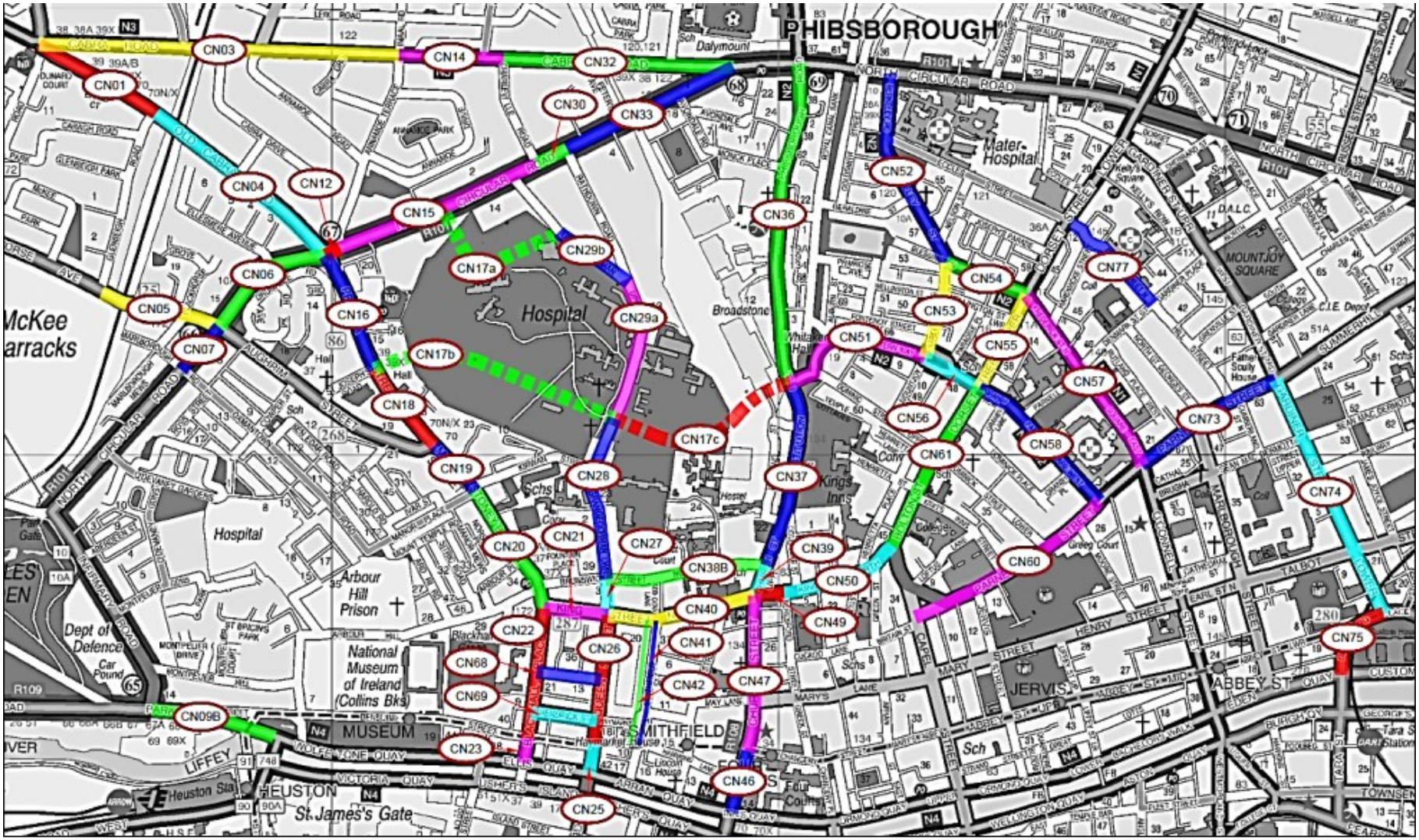

Image 3.9: Study Area Section 3 (SAS 3) (Cabra to Liffey Quays) Route Options Sections (all colours) which passed Stage 1 Assessment. Figure 5.7 Route Options Assessment (AECOM/ROD, 2018).

3.3.2 Stage 2 – Route Options Assessment

Following completion of Stage 1 initial appraisal, the remaining reasonable alternatives options were progressed to Stage 2 of the assessment process. This process involved a more detailed qualitative and quantitative assessment using criteria established to compare the route options.

The indicative scheme for each route option was evaluated using a multi-criteria assessment. The 'Common Appraisal Framework for Transport Projects and Programmes' published by the Department of Transport, Tourism and Sport (DTTAS), March 2016, requires schemes to undergo a 'Multi-Criteria Analysis' (MCA) which evaluated the route options under the assessment criteria set out below:

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

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

- **Archaeological, Architectural and Cultural Heritage** – there is the potential for impacts on archaeological, architectural and cultural heritage when providing CBC infrastructure. The assessment had regard to Record of Monuments and Places (RMP), Record of Protected Structures (RPS), Sites of Archaeological or Cultural Heritage and on buildings listed on the National Inventory of Architectural Heritage (NIAH) adjacent to the corridor;
- **Flora and Fauna** - The provision of CBC infrastructure could have negative impacts on flora and fauna, for example, through construction of new infrastructure through green field sites;
- **Soils and Geology** - Construction of infrastructure necessary for the provision of the CBC has the potential to negatively impact on soils and geology. For example, through land acquisition and ground excavation. There is also the potential to encounter ground contamination from historical industries;
- **Hydrology** - The provision of CBC infrastructure may include aspects (for example structures) with the potential to impact on hydrology;
- **Landscape and Visual** - Provision of CBC infrastructure has the potential to negatively impact on the landscape and visual aspects of the area, for example, by the removal of front gardens or green spaces or the altering of streetscapes, character and features;
- **Noise, Vibration and Air** - Provision of CBC infrastructure (e.g., the construction activities), has the potential to negatively impact on noise, vibration and air quality along a scheme. For example, through construction works. The impact was quantified on whether the road is moving closer to a sensitive receptor, for example road widening or new realignment; and
- **Land Use and the Built Environment** - This criterion assesses the impact of an option on land use character, and measured impacts which would prevent land from achieving its intended use, for example, through land acquisition, removal of parking spaces or severance of land.

Route options were compared based on a five-point scale, ranging from having significant advantages to having significant disadvantages over other route options. Route options could also be considered neutral when no apparent advantages or disadvantages are identified across all scheme options. Using the same Study Area Sections as Stage 1 Assessment (see Image 3.3), the Stage 2 Assessment involved combining shorter route sections which passed the Stage 1 assessment, to form longer end-to-end potential routes within each SAS.

3.3.2.1 Study Area Section (SAS) 1: Route Options Assessment

Following the Stage 1 sifting process, nine viable route options were considered further for SAS 1 as follows and shown in Image 3.10:

- Route Option 1A: N3 with connection via R121;

- Route Option 1B: N3 with connection via Snugborough Road;
- Route Option 1C: Waterville Park with connection via Snugborough Road;
- Route Option 1D/1D(2): Blanchardstown Industrial Park with connection via R121;
- Route Option 1E: Waterville Park (north) with connection via Snugborough Road;
- Route Option 1F: Blanchardstown Road South with connection via R121;
- Route Option 1G: Millennium Park with connection via R121;
- Route Option 1H: Ballycoolin Road with connection via R121; and
- Route Option 1J: Blanchardstown Village option with connection via Navan Road/Blanchardstown Village.

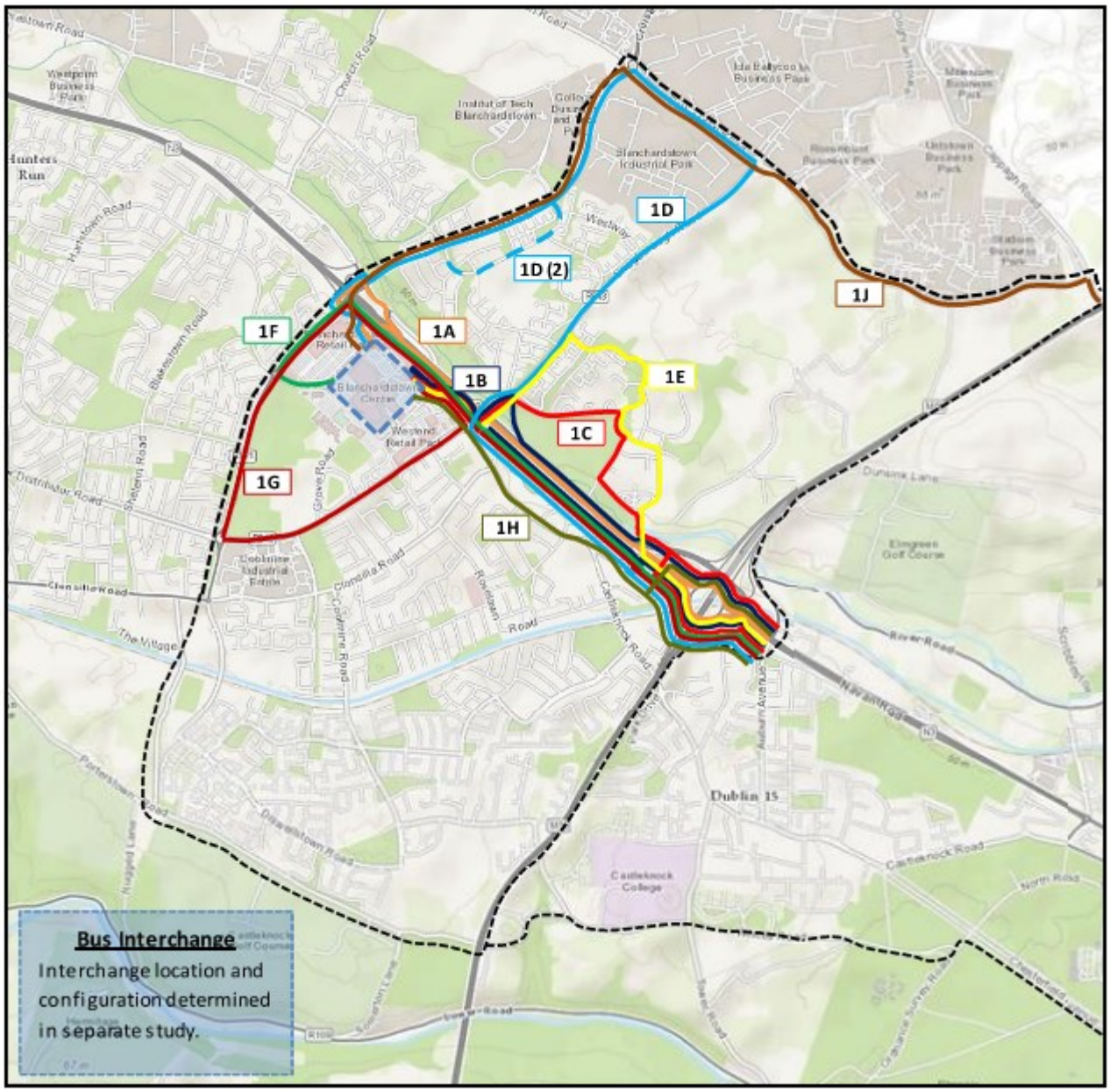

Image 3.10: SAS 1 – Preliminary Route Options. Figure 6.1 Route Options Assessment (AECOM/ROD, 2018).

Directness (i.e. linearity), is considered central to network planning as indicated in the Dublin Area Bus Network Redesign Choices Report (2017) which states: "*Where a bus can reach major destinations by running in straight lines (rather than weaving in and out of neighbourhoods), bus service is faster, and less expensive to operate, and less frustrating for customers*".

Bus infrastructure should therefore aim to be as direct as reasonably possible, minimising delays and detours. The purpose of this sift was to assess each route option's directness, to avoid circuitous patterns thus improving the reliability and effectiveness of the proposed network. Optimising the route in this manner confers an advantage in terms of attractiveness and comfort to passengers when compared with indirect or circuitous patterns. This is particular important for the retention of bus users and attracting new users.

The preliminary route options in SAS 1 can be categorised by the three primary junctions, which facilitate the connection to Blanchardstown Town Centre. These junctions are R121 (Crowne Plaza), Snugborough Road and Navan Road (Blanchardstown Village).

From the nine viable route options, the route options which best met the project and linearity objectives at each of these junctions were carried forward to create final route options to be assessed through the multi-criteria assessment (MCA). The confirmed final route options taken forward to MCA are listed below:

- Route 1A (Junction - R121/Crowne Plaza);
- Route 1B (Junction - Snugborough Road); and
- Route 1H (Junction – Navan Road/Blanchardstown Village).

The final route options are shown in Image 3.11

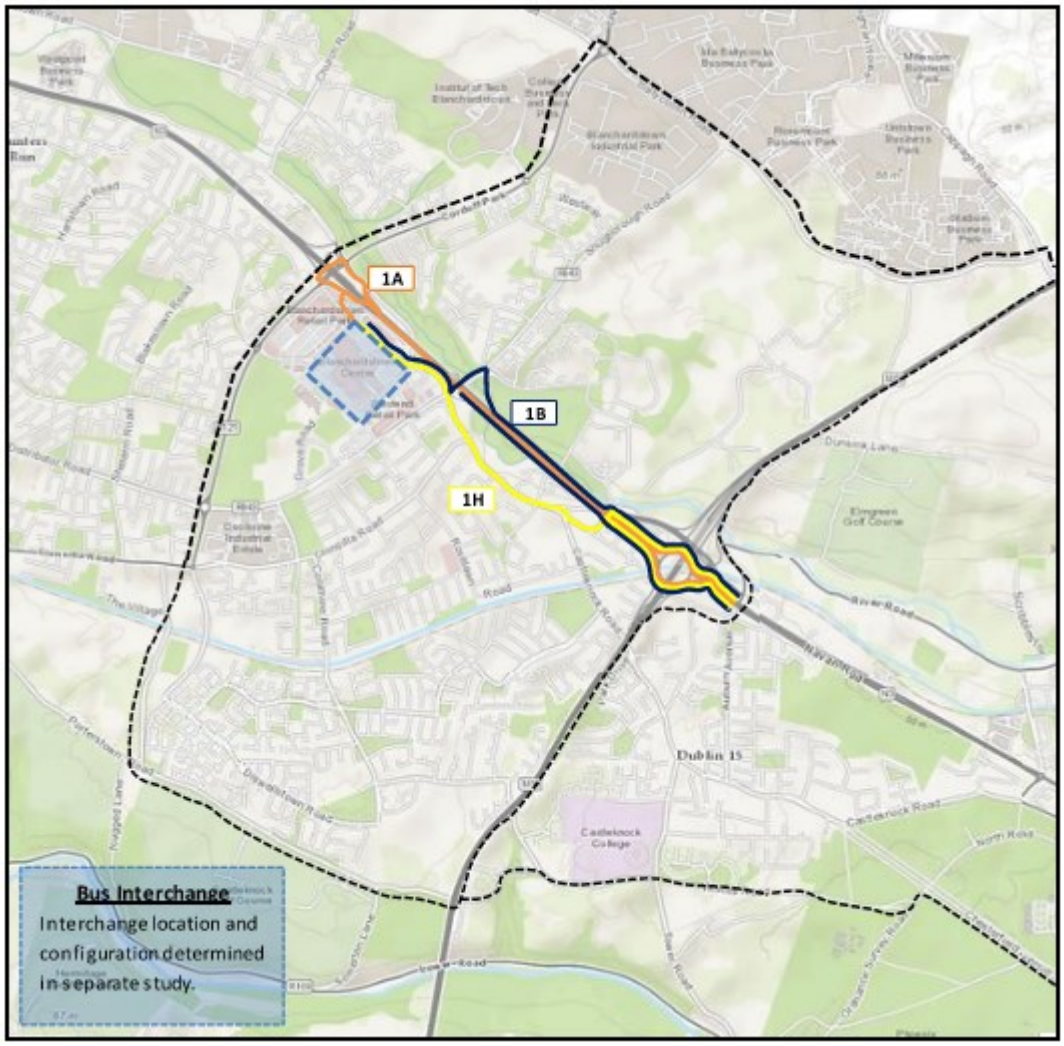

Image 3.11: SAS 1 – Final Route Options. Figure 6.2 Route Options Assessment (AECOM/ROD, 2018).

From the three final route options identified in SAS 1, the Stage 2 MCA considered slight variations using different design concepts to identify the following scheme options:

- Route 1A would connect R121 Junction at Blanchardstown Road South to the N3/M50 roundabout (junction 6) via the N3/Navan Road. Two sub-options (known as scheme options 1A1 and 1A2) were considered for this route option, both providing continuous bus lanes and traffic facilities on the inbound and outbound sections of the N3 Navan Road. Scheme Option 1A1 would require widening and land take including the provision of new structures and embankment construction. Scheme Option 1A2 would reduce the number of traffic lanes to allow for continuous bus lanes avoiding the need for private land take and only require widening into the verge/hard shoulder in places.
- Route 1B is similar to Route 1A however Route 1B would connect Blanchardstown Town Centre to the N3/M50 roundabout (junction 6) via the N3/Navan Road from the Snugborough Junction. Two sub-options (known as scheme options 1B1 and 1B2) were considered for this scheme option which are similar to the sub-options considered for Route 1A, albeit on a shorter section of the N3 Navan Road between Snugborough Junction and N3/M50 roundabout (junction 6).
- Route 1H would connect Blanchardstown Town Centre to the N3/M50 roundabout (junction 6) via the N3/Navan Road and Main Street (Blanchardstown Village). Two sub-options (known as scheme options 1H1 and 1H2) were considered for this scheme option. Scheme Option 1H1 proposals would incorporate exclusive bus facilities for the majority of both the inbound and outbound carriageways from Blanchardstown Town Centre to the Dunsink Lane/Auburn Avenue junction via Blanchardstown Village. Scheme Option 1H2 proposals would incorporate a variation to the 1H1. Segregated bus lanes would be provided in both directions along the N3 section of the route. Between the Navan Road/N3 junction and Blanchardstown Shopping Centre, a shared bus and cycle lane would be provided in the inbound direction. In the outbound direction, a shared bus and cycle lane would be provided where possible to avoid lane take.

Each scheme option was evaluated using a multi-criteria assessment (MCA) with one of the primary criteria being ‘Environment’, under which there was a number of sub-criteria which each scheme option was considered against comparatively.

In terms of potential Archaeological and Cultural Heritage, and Architectural Heritage impacts, the extent of works were unlikely to impact on heritage resources and all scheme options were considered neutral when compared against each other.

With regard to Flora and Fauna, scheme options 1A1 and 1B1 require widening into and land take from high amenity grassland and were therefore considered a disadvantage when compared to other options. Scheme options 1H1 and 1H2 would impact on existing trees on Main Street (Blanchardstown Main Street) and were therefore considered a disadvantage when compared to the other options. Scheme options 1A2 and 1B2 do not require widening and would not result in significant impacts on Biodiversity and therefore these options were ranked as advantageous in comparison to other options.

All scheme options were considered neutral when compared against one another under the Soils and Geology sub-criterion, given none presented any appreciable impacts.

In terms of Hydrology, scheme options 1A1 and 1B1 require roadbridge widening and have the potential for minor impacts on the River Tolka during construction and were therefore considered a disadvantage when compared to other options.

With regard to Landscape and Visual it was considered that scheme options 1H1 and 1H2 would have the potential to impact on the streetscape and where therefore considered a disadvantage when compared to other options.

With regard to Air Quality, Noise and Vibration, scheme options 1A2 and 1B2 were considered to have the potential to increase congestion and therefore were considered a disadvantage when compared to other options. Scheme options 1H1 and 1H2 are located in closer proximity to residential areas and therefore were considered a disadvantage when compared to other options. Scheme options 1A1 and 1B1 were not considered to result in significant impacts and therefore these options were ranked as advantageous in comparison to other options.

In terms of Land Use Character, scheme options 1H1 and 1H2 would require the removal of on-street parking in Blanchardstown Village. All other scheme options would not impact on parking and were ranked as advantageous in comparison to scheme options 1H1 and 1H2.

Scheme option 1B1 (Image 3.12) was identified as the preferred option for this section. With regard to the consideration of the Environment criterion, scheme option 1B1 was considered to have some advantages in terms of Air Quality and Noise and Vibration when compared to the other scheme options.

Notwithstanding that the MCA identified disadvantages in environmental criteria with scheme option 1B1 (hydrology, flora and fauna) when compared other scheme options, it offered the shorted journey time, scored the highest in terms of Lane Use Integration (with the Fingal County Council Snugborough Interchange Scheme) and it scored the highest in Traffic Network Integration (least potential to impact on existing traffic lanes). Overall, scheme option 1B1 scored highest and was therefore brought forward into the Emerging Preferred Route.

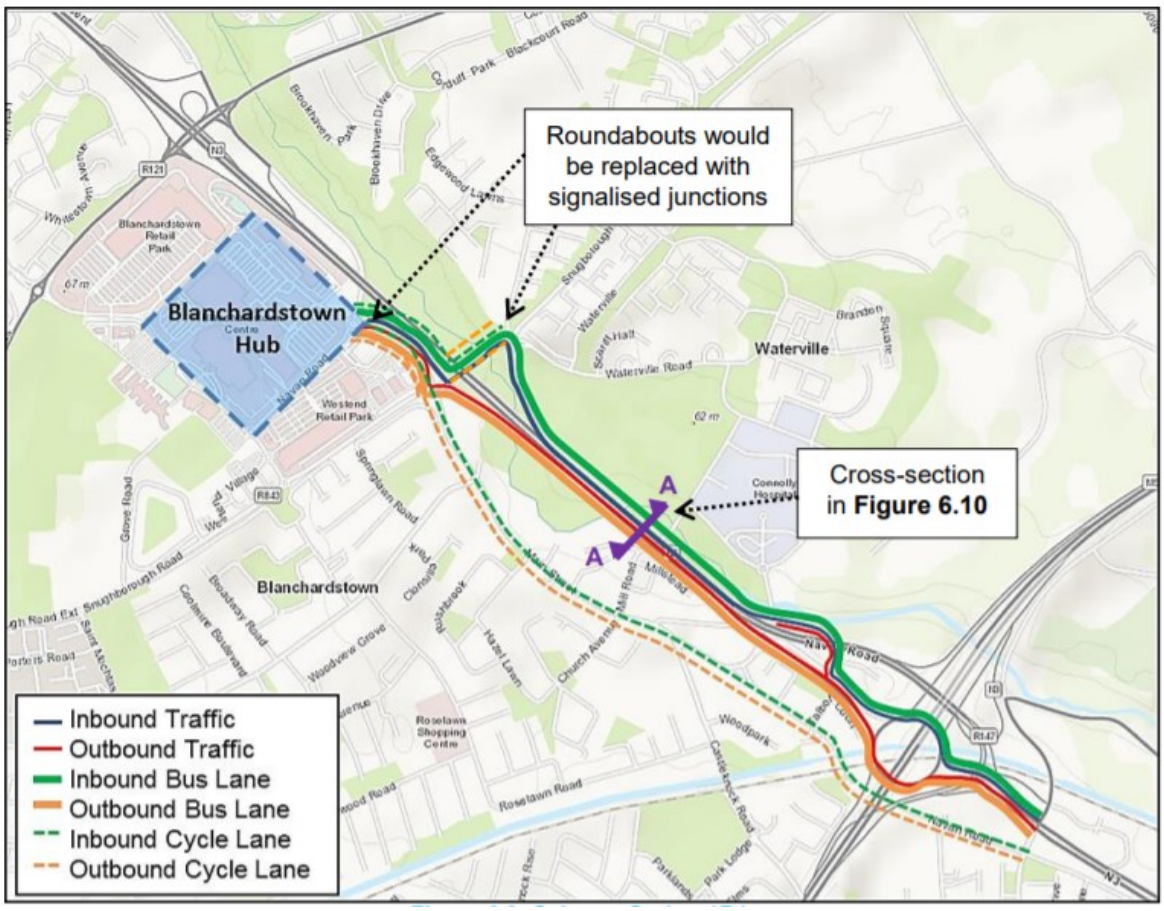

Image 3.12: Scheme Option 1B1 (Figure 6.9 Route Options Assessment (AECOM/ROD, 2018))

3.3.2.2 Study Area Section (SAS) 2: Scheme Options Assessment

Following the Stage 1 sifting process for SAS2, the remaining route sections were combined to form one possible continuous route option (Route 2A) between the M50 Junction 6 and the Old Cabra Road junction along Navan Road. The emerging route option is shown in Image 3.13.

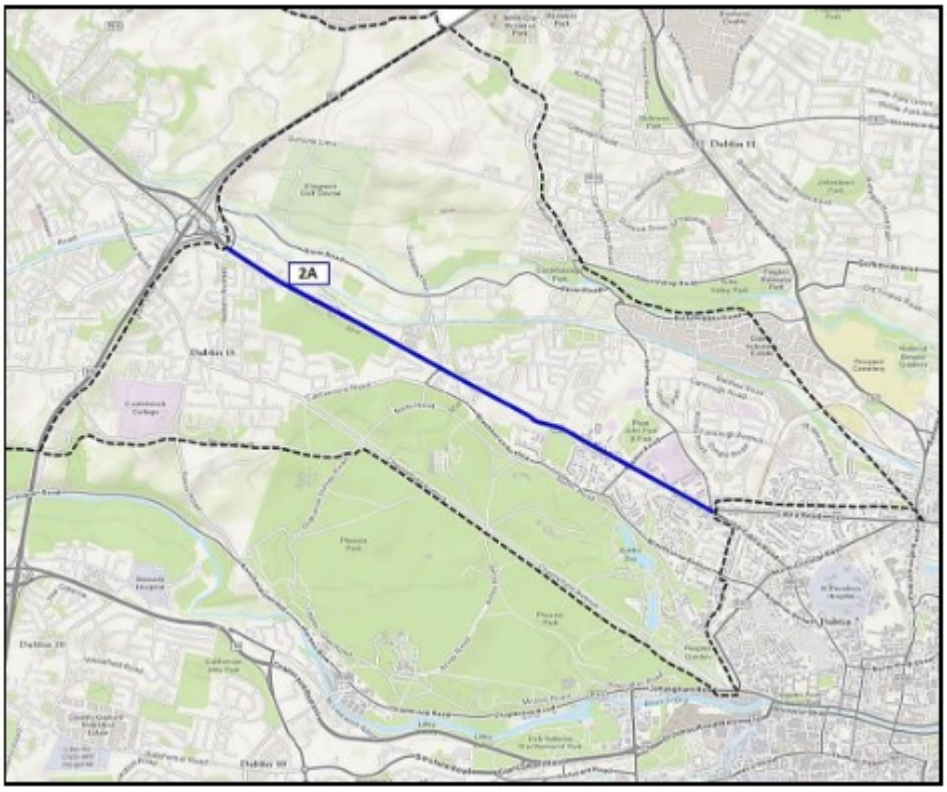

Image 3.13: SAS 2 – Route Options. Figure 6.19 Route Options Assessment (AECOM/ROD, 2018)

Route 2A was explored using different design concepts to identify potential scheme options. The three resulting scheme options (2A1, 2A2 and 2A3) are detailed below.

Scheme Option 2A1 proposals (Image 3.14) would incorporate traffic and segregated bus/cyclist facilities on both the inbound and outbound carriageways for the entirety of Navan Road. To facilitate this, widening of the existing carriageway would be required along the majority of the route between Halfway House Roundabout and Cabra Road junction, with land take required in places. Removal of on-street parking and existing trees adjacent to the carriageway would also be required to facilitate carriageway widening.

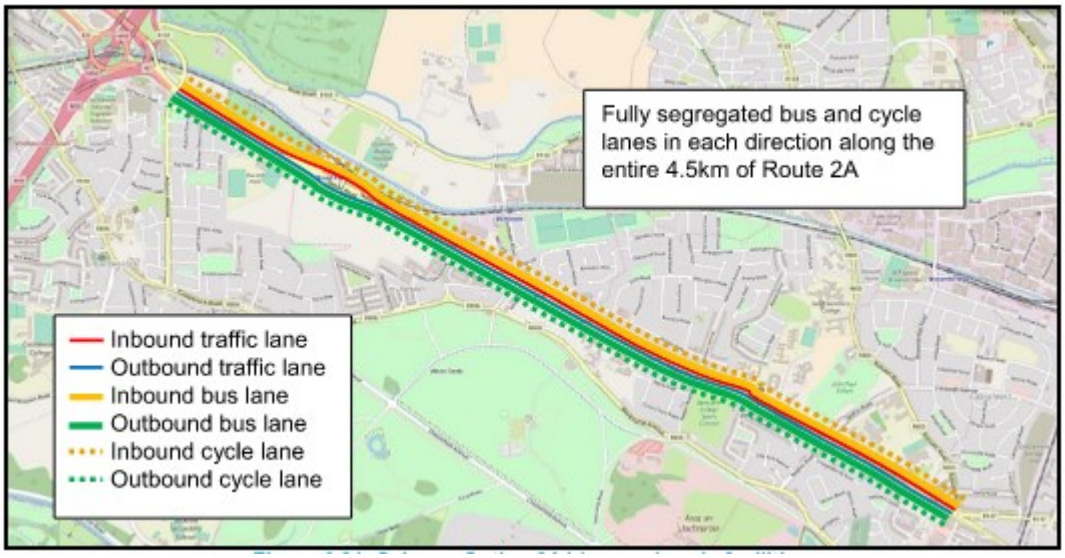

Image 3.14: Scheme Option 2A1 bus and cycle facilities. Figure 6.21 Route Options Assessment (AECOM/ROD, 2018).

The Scheme Option 2A2 proposal (Image 3.15) would incorporate a variation to 2A1. Segregated bus and cycle lanes would be provided along the majority of the 4.5km route; however, buses would mix with cyclists for a total 250m in the inbound direction and 630m in the outbound direction. Carriageway widening would be required between Halfway House Roundabout and Cabra Road junction, but no land take would be required. Removal of on-street parking and existing trees adjacent to the carriageway would also be required to facilitate carriageway widening.

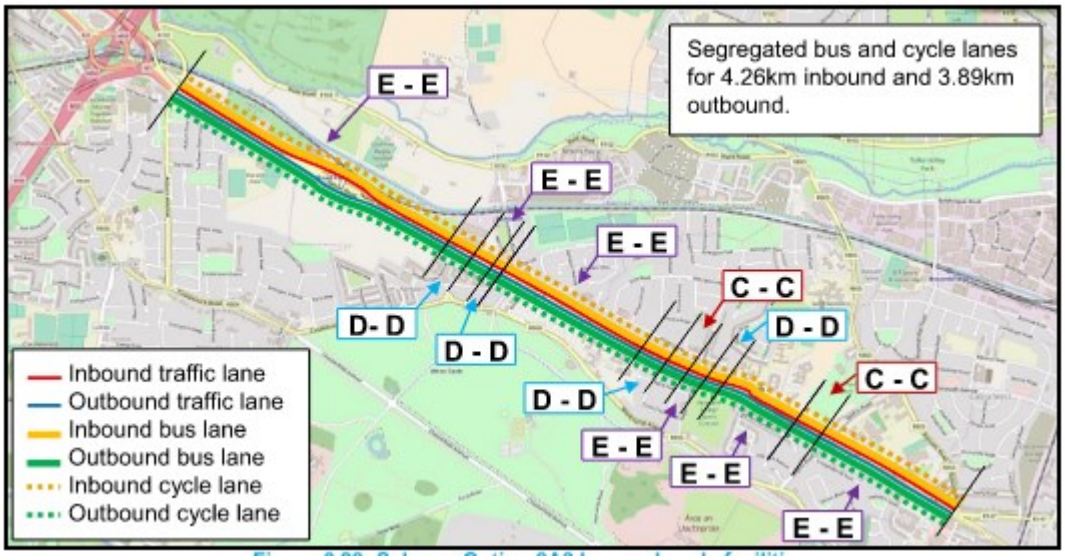

Image 3.15: Scheme Option 2A2 bus and cycle facilities. Figure 6.23 Route Options Assessment (AECOM/ROD, 2018).

The Scheme Option 2A3 (Image 3.16) proposal would be akin to Scheme Option 2A1 in terms of traffic and bus infrastructure; the difference being that 2A3 proposes a two-way cycle track on one side of the road rather than inbound/outbound lanes either side of the road (as per 2A1). To facilitate continuous segregated bus lanes and a two-way cycle track, widening of the existing carriageway would be required along the majority of the route between Halfway House Roundabout and Cabra Road junction, with land take required in places. Removal of on-street parking and existing trees adjacent to the carriageway would also be required to facilitate carriageway widening.

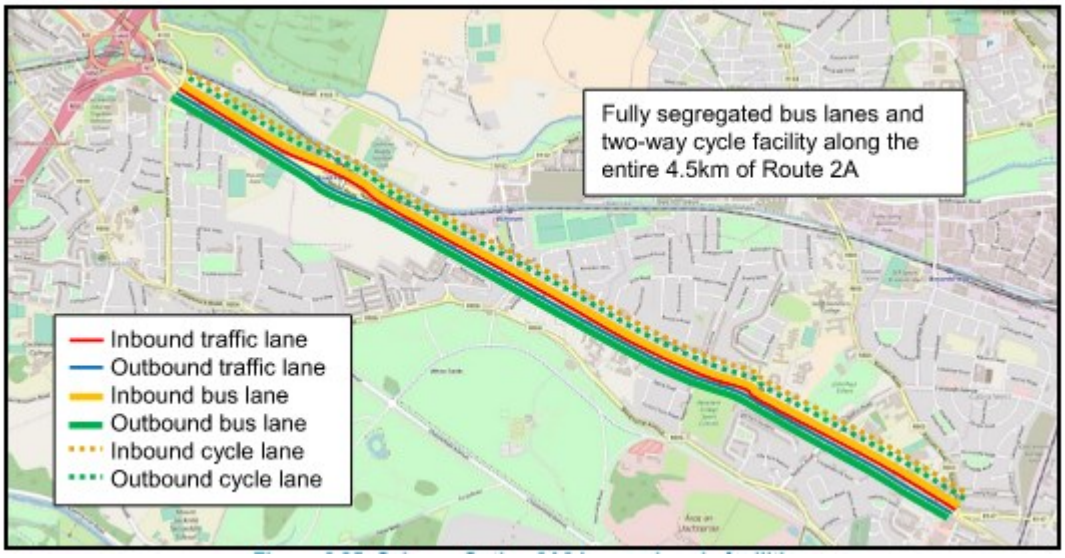

Image 3.16: Scheme Option 2A3 bus and cycle facilities. Figure 6.25 Route Options Assessment (AECOM/ROD, 2018).

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

All three scheme options (2A1, 2A2 and 2A3) scored neutral across the majority of environmental sub-criterions. Given the similarity in the environmental baseline and the scheme options assessed, similar impacts were anticipated under each environmental sub-criterion for Archaeology and Cultural Heritage, Architectural Heritage, Soils and Geology, Hydrology, Landscape and Visual, Air Quality, Noise and Vibration and Land Use Character.

In terms of Flora & Fauna, all scheme options had the potential to impact on trees however scheme options 2A1 and 2A3 would require tree loss beyond the road boundary and were ranked as a disadvantage in comparison to scheme option 2A2.

Scheme option 2A2 also had disadvantages in terms of Capital Cost due to the land-acquisition required for the provision of fully segregated cycle lanes. Notwithstanding that scheme options 2A1 and 2A3 have greater potential to impact existing trees along the route and beyond the road boundary, the MCA identified scheme option 2A1 as scoring highest in terms of Road Safety and Cycle Network Integration when compared to scheme options 2A2 and 2A3. Scheme option 2A1 was identified as the preferred option for this section and was brought forward into the Emerging Preferred Route.

3.3.2.3 Study Area Section (SAS) 3: Scheme Options Assessment

Following the Stage 1 sifting process for SAS 3, the remaining route options were combined to form seven possible continuous route options between the R147 Cabra Road Junction and the bridge crossings on the River Liffey. These preliminary routes options are listed below and shown in Image 3.17.

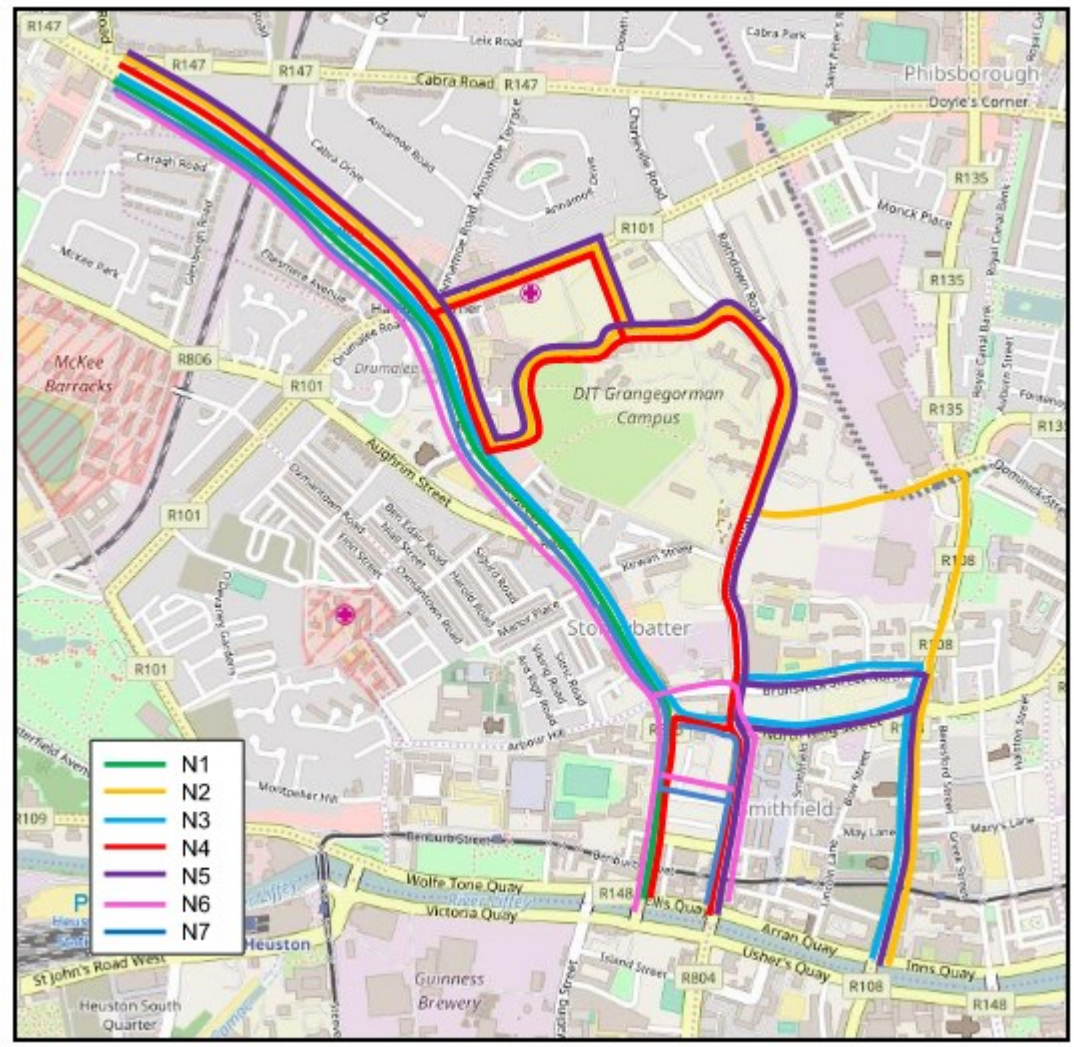

Image 3.17: SAS 3 – Route Options. Figure 6.27 Route Options Assessment (AECOM/ROD, 2018).

The seven route options for SAS 3 included:

- Route option N1: would commence at Old Cabra Road at the junction with the Navan Road, running straight along Prussia Street and through Stoneybatter. Beyond Stoneybatter the route will follow a one-way system between Queen Street and Blackhall Place via King Street.
- Route option N2: would commence at the Old Cabra Road to the junction with North Circular Road. At this point the CBC route can pass through the Grangegorman campus from the north via North Circular Road or from the west via Prussia Street. Both routes join the existing service route through the campus and exit to Grangegorman Lower where it meets Rathdown Road/Grangegorman Upper. The route continues along Grangegorman Road Lower, through the proposed service route to interface with the Broadstone Luas Depot. The route will then continue southbound to the Liffey via Constitution Hill and Church Street.
- Route option N3: would commence at Old Cabra Road at the junction with the Navan Road, running straight along Prussia Street and through Stoneybatter. At Blackhall Place the route turns east, diverging into a one-way gyratory system between Brunswick Street North and King Street before merging on Church Street to the Quays.
- Route option N4: would commence at the Old Cabra Road to the junction with North Circular Road. At this point the CBC route can pass through the Grangegorman campus from the north via North Circular Road or from the west via Prussia Street. Both routes join the existing service route through the campus and exit to Grangegorman Lower where it meets Rathdown Road/Grangegorman Upper. Beyond George's Lane, the route can either continue two-way along Blackhall Place, or follow a one-way system between Queen Street and Blackhall Place via King Street.

- Route option N5: would commence at the Old Cabra Road to the junction with North Circular Road. At this point the route passes through the Grangegorman campus from the north via North Circular Road or from the west via Prussia Street. Both routes join the existing service route through the campus and exit to Grangegorman Lower where it meets Rathdown Road/Grangegorman Upper. The route continues along Grangegorman Road Lower and forms a one-way system between North Brunswick Street and North King Street to Queen Street or Church Street.
- Route option N6: would commence at Old Cabra Road at the junction with the Navan Road, running straight along Prussia Street and through Stoneybatter. Beyond Stoneybatter the southbound route will follow a short one-way system between Queen Street and Blackhall Street via Brunswick Street North before joining back with Blackhall Place towards the Quays. Northbound will continue straight along Blackhall Place to Stoneybatter.
- Route option N7: would commence at Old Cabra Road at the junction with the Navan Road, running straight along Prussia Street and through Stoneybatter. Beyond Stoneybatter the route will follow Queen Street to the Quays. The northbound route will follow a short one-way diversion to Blackhall Place via Blackhall Street towards Stoneybatter.

A scheme option was designed along each of the seven route options to prioritise bus and cycle infrastructure where possible. Each scheme option was evaluated using a multi-criteria assessment (MCA) with one of the primary criteria being 'Environment', under which there was a number of sub-criteria which each scheme option was considered against comparatively.

All seven scheme options (which correspond with the route options N1, N2, N3, N4, N5, N6 and N7) scored neutral across the majority of environmental sub-criterions. Due to the similarity in the environmental baseline, similar environmental impacts were anticipated for Architectural Heritage, Flora and Fauna, Soils and Geology, Hydrology, Air Quality and Noise and Vibration.

In terms of Archaeology and Cultural Heritage, scheme options N1, N2, N3, N6 and N7 through Stoneybatter traverse through a higher percentage of zones of archaeological potential and were considered to have some disadvantages in comparison to scheme options N4 and N5.

The Landscape and Visual impact of constructing scheme options N2, N4 and N5 and the rerouting of all bus services through Grangegorman Campus is identified as a disadvantage when compared to other scheme options. Scheme options N1, N3, N6 and N7 were considered to be advantageous in comparison due to bus services already operating through the routes.

In terms of Land Use Character, scheme options N1, N3, N6 and N7 through Stoneybatter are considered to have some advantages in comparison to other scheme options as no change of land use is required. Routes (N2, N4 and N5) through Grangegorman would require land take and would significantly increase vehicular volumes due to rerouting of bus services and these scheme options are therefore considered to have some disadvantages.

Overall, in terms of environmental criteria, the only criterion which is considered as a disadvantage for scheme option N1 is Archaeology and Cultural Heritage due to the scheme option traversing a zone of archaeological potential. When considering other non-environmental sub-criteria, scheme option N1 has the lowest capital cost compared to the other scheme options and lower associated operation and maintenance costs. Furthermore, the Transport Reliability and Quality, Cycle Integration and access to Key Trip Attractors for scheme option N1 is considered more advantageous than other options. Overall, Route Option N1 was identified as the preferred option for this section and was brought forward into the Emerging Preferred Route.

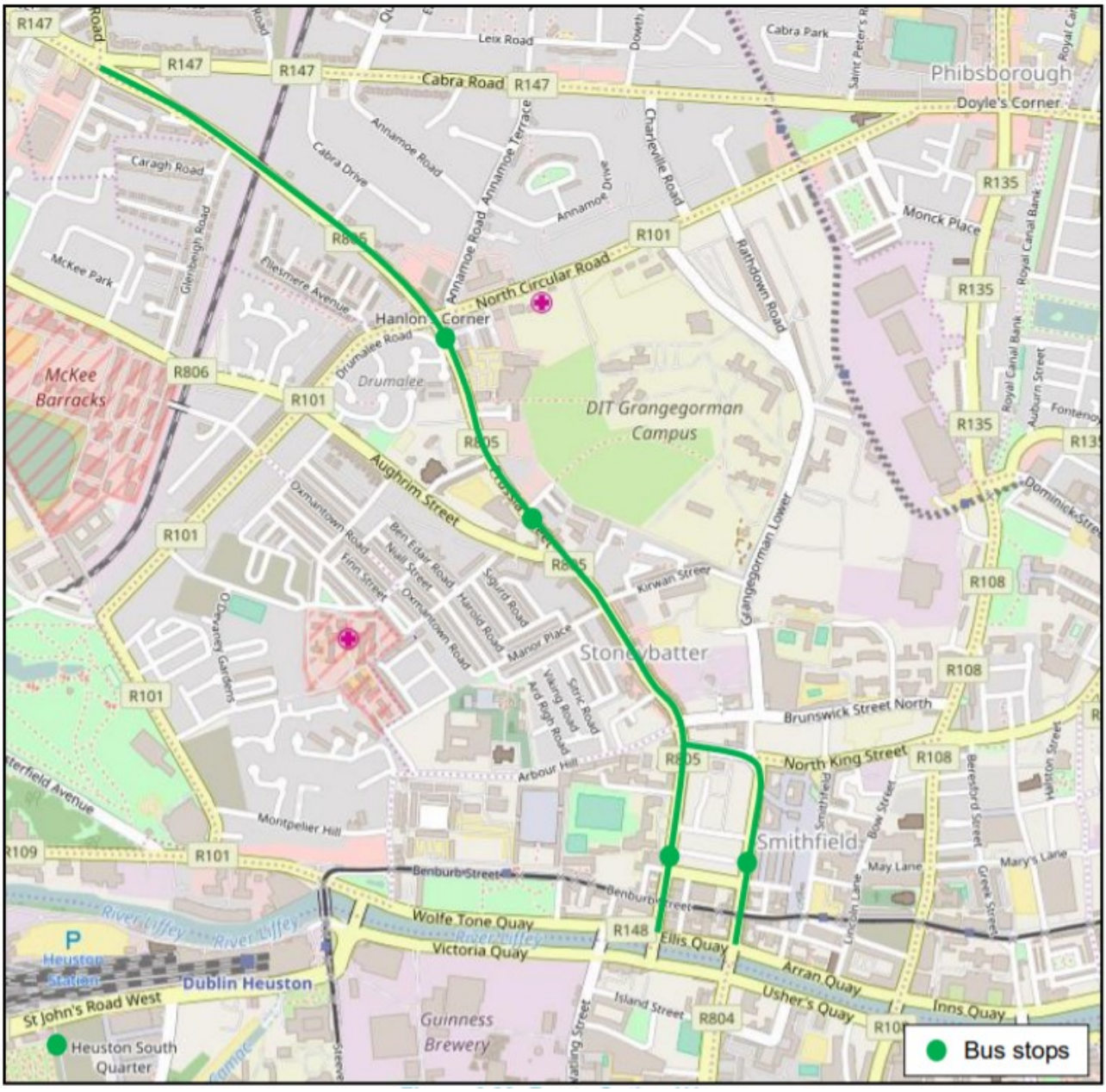

Image 3.18: SAS 3 – Scheme Option N1. Figure 6.28 Route Options Assessment (AECOM/ROD, 2018).

3.3.3 Cycling Options

Consideration of alternative cycling route options was fundamental in the process of defining the Emerging Preferred Route.

Scheme Option 1B1, which was identified as the preferred option for SAS 1 (see Section 3.3.2.1) and brought forward into the Emerging Preferred Route consisted of segregated cyclist facilities being provided through Blanchardstown Village (Main Street and Old Navan Road) as per the Greater Dublin Area (GDA) Cycle Network Plan (primary cycle route 5 and secondary cycle route 4A).

Scheme Option 2A1, which was identified as the preferred option for SAS 2 (see Section 3.3.2.2) and brought forward into the Emerging Preferred Route included proposals to incorporate segregated cyclist facilities on both the inbound and outbound carriageways for the entirety of this section (Auburn Avenue/Navan Road (R147) Junction to Navan Road/Old Cabra Road Junction). The concept of re-routing cyclists along Blackhorse Avenue was considered to provide more space for buses and traffic along Navan Road. However, Navan Road is recognised as primary route 4A in the GDA Cycle Network Plan and therefore provision for cyclists must be

provided. As a result, the option of re-routing cyclists via Blackhorse Avenue was not considered a suitable option and not taken forward.

Scheme Option N1, which was identified as the preferred option for SAS 3 (see Section 3.3.2.3) and brought forward into the Emerging Preferred Route, aligns with primary route 4D of the GDA Cycle Network Plan.

3.3.4 Emerging Preferred Route

Informed by the appraisal of options as set out in earlier sections, the EPR was identified. The EPR is summarised as follows:

'The Blanchardstown to City Centre Core Bus Corridor (CBC) commences on the north side of the South Blanchardstown Road junction with the N3. The corridor proceeds on the R121 Blanchardstown Road South into the Blanchardstown Shopping Centre. From a new terminus to the north-west of Blanchardstown Shopping Centre the CBC is routed onto the N3 Navan Road via the Snugborough Road junction, and follows the N3 and Navan Road as far as the junction with the Old Cabra Road. From here the CBC is routed along Old Cabra Road, Prussia Street and Manor Street to the junction with North Brunswick Street. The CBC is then routed via Blackhall Place as far as the junction with Ellis Quay and Arran Quay, where it will join the prevailing traffic management regime on the North Quays. Priority for buses is provided along the entire route, consisting primarily of dedicated bus lanes in both directions, with alternative measures proposed at particularly constrained locations.'

A public consultation on this Emerging Preferred Route was undertaken from 14 November 2018 to 29 March 2019, providing feedback which was then meaningfully considered in the further development of the scheme proposal.

Following the Emerging Preferred Route consultation, the design of the scheme was further developed through to the Draft Preferred Route Option. This process is described in Section 3.4.1.

3.4 Design alternatives

3.4.1 Development of the Draft Preferred Route Option

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

This additional design development took account of:

- New and updated topographical survey information;
- Output from engagement and consultation activities on the Emerging Preferred Route and Draft Preferred Route Option proposals;
- Further design development and options assessment; and
- Changes in the extent of the scheme.

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

3.4.1.1 Alternatives Considered at Draft PRO Stage

Amongst the alternative options considered during the development of the Draft PRO are the following:

- Between R147 Navan Road/Ashtown Road Junction and Navan Road/Ratoath Road Junction, two options were considered:
    - The first option would provide a four lane carriageway with two bus lanes and two general traffic lanes in both directions with one-way cycle tracks; and
    - The second option would provide a four-lane carriageway, with intermittent three-lane sections on two short sections of the route. The single lane arrangement would be controlled by bus priority signals. One way cycle tracks are proposed on both sides of the road adjacent to the footpath.

  In terms of environment, both options are considered neutral in terms of potential impacts on Archaeology and Cultural Heritage, Architectural Heritage, Flora and Fauna, Soils, Geology and Hydrology, Air Quality, Noise and Vibration. The only environmental sub-criteria which the second option performs better than the first option is under Landscape and Visual as the first option requires more land acquisition.

  However, the first option significantly outperforms the second option in non-environmental sub-criteria such as Economy, Integration and Safety. The first option was identified as the preferred option as it best aligned with the objectives for the Proposed Scheme and provided fully segregated bus and cycle facilities in both directions while maintaining access for general traffic. Whilst the first option has a higher capital cost, it performs significantly better in respect of transport quality and reliability with a journey time saving of 1.5 minutes (inbound and outbound) when compared to the second option. The first option is the preferred option as it is considered to provide segregated bus priority, aligns with the GDA Cycle Network Plan and meets the desirable Proposed Scheme cross-section, notwithstanding that it has a disadvantage in terms of environmental sub-criterion Landscape and Visual.
- Between Navan Road/Ratoath Road and Prussia Street (Park Shopping Centre), two options were considered:
    - The first option would introduce a bus gate at the northern end of Old Cabra Road (at its junction with Navan Road), and a section of northbound bus lane on Old Cabra Road south of Glenbeigh Road – which would effectively remove the ability of through-traffic to travel between Stoneybatter and Navan Road in both directions along the Old Cabra Road. Cycle-lanes in each direction are proposed on Old Cabra Road from Navan Road to Prussia Street; and
    - The second option would introduce a bus gate at the northern end of Old Cabra Road and a second bus gate north of Cabra Drive which would restrict general traffic through-route. A two-way cycle-track would be provided on the eastern side of Old Cabra Road from Navan Road to Prussia Street.

  In terms of environment, the first option performs better in terms of landscape and visual as it requires less land take. Furthermore, the first option retains a tree line in the central reserve at the Ratoath Road junction and has a greater scope for public realm improvements at this location which is considered to be an urban focal point.

  In addition to the environmental benefits, the first option outperforms the second option in terms of Economy and Cycle Integration. The second option has a greater capital cost option due to significant land acquisition and infrastructure costs required to deliver a pedestrian bridge over the railway at Old Cabra Road. The first option also aligns with the cycle network. Overall, the first option was identified as the preferred option to be taken forward.

3.4.2 Consideration following Preferred Route Option Consultation

The Draft Preferred Route Option was published in March 2020 and a second round of public consultation occurred between 10 March 2020 to 17 April 2020. Due to COVID-19 restrictions in mid-March 2020, the planned Public Information Events were impacted. There was a total of 49 submissions received during this second round of public consultation.

A number of changes to the design were made based on feedback received during the second round of public consultation and dialogue with stakeholders. However, the changes made to the Draft Preferred Route Option were relatively small scale and no further option assessments using the MCA described in Section 3.4.1 were required.

Key changes for the Proposed Scheme implemented in the design of the Updated Draft PRO include:

- The previously proposed two-way cycle track westbound along the R147 Navan Road to Auburn Avenue Junction is modified with cyclists routed from the R147 to an on-street ‘Quiet Street’ cycle route along Castleknock Manor. This reduces the need for land take in this area and thereby has advantages from

an environmental viewpoint as existing trees between Castleknock Manor and the R147 Navan Road will be retained, apart from a localised area

- At the Navan Road roundabout at Ashtown Road, the EPR Option proposed modifying the existing roundabout to a signal-controlled crossroads. The Draft PRO proposes to modify the roundabout to become a signal-controlled roundabout which retains the existing trees on the central island.
- A northbound bus lane on Blackhall Place (at its junction with King Street North) would be provided – and all general traffic would have to turn right into King Street North. Northbound traffic would need to travel via George's Lane and Brunswick Street North to reach Manor Street. Traffic signals at the Brunswick Street North/Blackhall Place junction would enable the flow of northbound traffic to be controlled and limited – thus giving priority to buses.

3.4.3 Further consideration following Preferred Route Option Consultation

Arising from the limitations imposed on public engagement during the March / April 2020 consultation process due to COVID-19 restrictions, it was decided that an additional round of public consultation would be conducted in November 2020, prior to finalising the Preferred Route Option.

A third round of non-statutory public consultation on the Draft PRO took place from the 04 November 2020 to 16 December 2020, being held virtually due to the continuing effect of the COVID-19 pandemic and associated Irish Government restrictions. There was a total of 583 submissions received during the round of public consultation.

Virtual consultation rooms were developed and published, offering a 'call-back' facility along with descriptions, supporting documentation and mapping of the Draft Preferred Route Option as well as information on all revisions, if any, made since the second round of non-statutory in March 2020. Submissions were accepted through the virtual consultation rooms, by email or by post.

Arising from the feedback received during this consultation process, a number of design amendments were identified and incorporated into the scheme proposals. The key changes included in the updated design of the Draft Preferred Route Option include the following:

- The proposed layout at Mulhuddart junction has been changed, with cycle tracks modified and bus lanes removed from the N3 Overbridge at this location. Cycle tracks are now proposed on the nearside of the carriageway and cycle crossings alongside pedestrian crossings to minimise conflict between cyclists and motorists. The layout for Blanchardstown Road South has also been modified with the removal of the eastbound bus lane and provision of a bus layover;
- At the Navan Road/Ashtown Road junction, the scheme design modifies the junction from a roundabout as shown in the Draft Preferred Route Option, to a signal-controlled crossroads. This junction option is generally consistent with the Emerging Preferred Route proposed layout and a change from the proposed signal-controlled roundabout shown in the November 2020 public consultation drawings;
- Kirwan Street general traffic (which is westbound only) are proposed to be limited to 'left-turns only' at its junction with Manor Street (to reduce the opportunity for rat-running by northbound through traffic via Grangegorman Lower to Aughrim Street and beyond); and
- A two-way cycle track is proposed along the eastern side of Queen Street from King Street to Ellis Quay/Aaron Quay, with two southbound traffic lanes from George's Lane to Blackhall Street, and a reduction to one traffic lane from Blackhall Street to Ellis Quay/Arran Quay.

3.4.4 Specific Design Alternatives

No major scheme design alternatives were considered to the Proposed Scheme following the Draft Preferred Route Option consultation. However, specific design alternatives which required a further level of consideration either in micro-location or in design form included the following. For the Proposed Scheme, the micro-design of the pedestrian ramps at Mill Road is set out below.

3.4.4.1 Mill Road Pedestrian Ramps/Steps

The Proposed Scheme includes new pedestrian ramps between the N3 Dual Carriageway and Mill Road. Pedestrian ramp access will be provided to the north and south of the N3 Dual Carriageway to new bus stop

locations. These proposals will enhance the public transport access for pedestrians along Mill Road, Edmund Rice College and Connolly Hospital.

In the Updated Draft Preferred Route Option (November 2020), the pedestrian ramps on the north side of the N3 Dual Carriageway (RW07A) were identified on the eastern side of Mill Road (Option 1). The baseline environment to the east of Mill Road is in close proximity to the River Tolka and Alluvial Woodland which is a priority habitat of international importance. The baseline environment to the west of Mill Road includes an existing Irish Water pumping station and an archaeological monument (RMP: DU013-035: Mill - unclassified). The Fingal County Council (FCC) Local Development Plan 2017-2023 Objective WQ05 (FCC 2017) identifies a 30m wide riparian buffer on either side of all watercourses outside urban centres. As part of consultation on the Updated Draft PRO, on 29 January 2021, Fingal County Council (FCC) raised concerns that the location of pedestrian ramps to the east of Mill Road would result in the loss of significant ecological habitat.

Following design optioneering by the BusConnects Infrastructure team, the pedestrian ramps to the north of the N3 Dual Carriageway (RW07A) were relocated from east of Mill Road to the west of Mill Road (Option 2). The design of the pedestrian ramp incorporates artificial lighting into the structure to avoid impacts on protected species.

Overall, both the options (east or west of Mill Road) for the pedestrian ramps to the north of the N3 Dual Carriageway (RW07A) have the potential for adverse environmental impacts due to the proximity of the River Tolka. However, the western side of Mill Road (Option 2) contains less dense woodland and there is a larger distance between the preferred location for RW07A and the embankment of the River Tolka than the distance available on the eastern side of Mill Road.

3.5 Conclusion

The Proposed Scheme has been the subject of a systematic and comprehensive assessment of alternatives during the course of its development, informed by extensive engagement with residents, businesses, public representatives and the general public.

As described in this Chapter, a significant range of alternatives have been considered at three levels:

- Strategic level, particularly with regard to the GDA Transport Strategy;
- Route alternatives; and
- Design alternatives, incorporating detailed local level design development.

The assessment of alternatives took account of environmental impacts, alongside other relevant factors including the economy, safety and accessibility, at appropriate stages.

It is considered that the examination of alternatives presented in this Chapter meets and exceeds the requirements of the EIA Directive and Section 50(2)(b)(iv) of the Roads Act (as amended), which states that an EIAR must contain '*a description of the reasonable alternatives studied by the road authority or the Authority, as the case may be, which are relevant to the proposed road development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the proposed road development on the environment*'.

The Proposed Scheme is described in full in Chapter 4 (Proposed Scheme Description).

3.6 References

FCC (2017). Fingal County Council (FCC) Local Development Plan 2017-2023).

NTA (2016). Transport Strategy for the Greater Dublin Area 2016 – 2035.

NTA (2018) Blanchardstown Town Centre to the Liffey Quays (Ellis Quay) CBC Route Options Assessment May 2018 [Online] Available from:

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NTA (2019). Blanchardstown to City Centre Core Bus Corridor Emerging Preferred Route. Public Consultation January 2019 [Online] Available from:

https://busconnects.ie/media/1932/05-blanchardstown-to-city-centre-report-on-cbc-public-consultation.pdf

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https://busconnects.ie/media/2093/05-blanchardstown-to-city-centre-preferred-route-301020fa-web.pdf

Directives and legislation

Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment

Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment

S.I. No. 279/2019 - European Union (Roads Act 1993) (Environmental Impact Assessment) (Amendment) Regulations 2019

S.I. No. 296/2018 – European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018