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Greenhills to City Centre

Draft Preferred Route Options Report

November 2020

BUS CONNECTS

SUSTAINABLE TRANSPORT FOR A BETTER CITY.

Project Ireland 2040
Building Ireland's Future

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Glossary of Technical Terms

Signal Controlled Bus Priority - Signal Control Bus Priority uses traffic signals to enable buses to get priority ahead of other traffic on single lane road sections, but it is only effective for short distances. This typically arises where the bus lane cannot continue due to obstructions on the roadway. An example might be where a road has pinch-points where it narrows due to existing buildings or structures that cannot be demolished to widen the road to make space for a bus lane. It works through the use of traffic signal controls (typically at junctions) where the bus lane and general traffic lane must merge ahead and share the road space for a short distance until the bus lane recommences downstream. The general traffic will be stopped at the signal to allow the bus pass through the narrow section first and when the bus has passed, the general traffic will then be allowed through the lights

Bus Gate – A Bus Gate is a sign-posted short length of stand-alone bus lane. This short length of road is restricted exclusively to buses, taxis and cyclists plus emergency vehicles. It facilitates bus priority by removing general through traffic along the overall road where the bus gate is located. General traffic will be directed by signage to divert away to other roads before they arrive at the Bus Gate.

Cycle Lane – A cycle lane is a lane on the carriageway that is reserved either exclusively or primarily for cycling and is separated from general traffic or bus lanes by road markings.

Cycle Track – A cycle track is a separate section of the road dedicated for cycling only. This space will generally be isolated from other vehicular traffic by a physical kerb.

Virtual Bus Priority – This refers to cases where physical bus priority (i.e. bus lanes) is not provided, and instead, bus priority is provided within the general traffic lane through the use of signal controlled priority or bus gates to control the movements of general traffic.

Quiet Street Treatment – Where CBC roadway widths cannot facilitate cyclists without significant impact on bus priority, alternative cycle routes are explored for short distances away from the CBC bus route. Such offline options may include directing cyclists along streets with minimal general traffic other than car users who live on the street. They are called Quiet Streets due to the low amount of general traffic and are deemed suitable for cyclists sharing the roadway with the general traffic without the need to construct segregated cycle tracks or painted cycle lanes. The Quiet Street Treatment would involve appropriate advisory signage for both the general road users and cyclists.

Protected Junctions - Refers to junctions, which provide physical kerb buildouts to protect cyclists through the junction. Due to the inherently complex nature of mixed mode movements at junctions, the provision for cyclists at junctions is a critical factor in managing conflict and providing safe junctions for all road users. As such, this is the preferred layout for signalised junctions as part of the CBC Infrastructure Works.

Greenway – A greenway is a recreational corridor for non-motorised journeys, developed in an integrated manner which enhances both the environment and quality of life of the surrounding area. These routes should meet satisfactory standards of width, gradient and surface condition to ensure that they are both user-friendly and low-risk for users of all abilities.

Executive Summary

Introduction

The purpose of this report is to present an overview of the draft Preferred Route Option (PRO) for the 'Greenhills to City Centre' Core Bus Corridor (CBC) as well as describing the options assessed, and changes made to the scheme since the public consultation in early 2019.

The aim of delivering the Greenhills to City Centre CBC 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 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.

Scheme Overview & Assessment Process

The Greenhills to City Centre CBC commences on Belgard Square West, immediately adjacent the Square Shopping Centre, and is routed along Belgard Square North, Belgard Square East, Old Blessington Road, Main Street Tallaght, Greenhills Road (R819), Ballymount Avenue, Calmount Road, Walkinstown Road (R819), Drimnagh Road (R110), Crumlin Road (R110), Cork Street (R110) and Patrick Street (R137) where it ends at Christchurch Cathedral where it will join the prevailing traffic management regime in the city centre.

Where substantial revisions have been made to the design since the publication of the Emerging Preferred Route (EPR) option in January 2019, options have been assessed using a Multi-Criteria Assessment to determine the draft preferred option. The methodology used is consistent with that carried out during the initial route optioneering work which informed the EPR Option. This additional assessment does not supersede work done during earlier stages but rather complements it and is a direct response to issues raised by the public during the public consultation process. This assessment has also been carried out in the context of more detailed information now available, including topographical survey.

The following list highlights the material scheme changes between the published EPR Option and the draft PRO:

- A bus interchange is proposed on Belgard Square West to facilitate interchange between bus, Luas and the Town Centre.

- On Belgard Square North it is proposed to provide a segregated cycle lane in each direction. This will provide improved cycle access to the Hospital from Belgard Road.
- The route of the CBC has been altered and now passes through Tallaght Village rather than TUD Tallaght. This will require the reopening of Old Greenhills Road to form a new bus only junction with Greenhills Road.
- At Park View the proposed alignment has been altered to allow a northbound, right turn lane to Castletymon Road and also to provide more landscaping space between the proposed road and the adjoining properties. The existing road will continue to be used for southbound buses and cyclists.
- Over the M50 a new bridge is proposed to provide continuous bus lanes and higher quality cycle lanes on Greenhills Road.
- The proposals for Walkinstown Roundabout have been 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.
- A three-lane option with Signal Controlled Priority is proposed along Crumlin Road between the Health Centre and Clonard Road to reduce the impact on properties. To facilitate this arrangement, it is proposed to close the Crumlin Road junctions with both Clonard Road and Bangor Road. Urban Realm improvements will be provided along this section.
- On Patrick Street the design has been altered to retain the tree-lined median. In addition, the junction of Nicoholas Street and High Street is to be remodelled to provide improved facilities for buses, cyclists and pedestrians.
- The proposed alternative cycle route on Kildare Road is now redirected towards the Grand Canal via Clogher Road along which cycle lanes are to be provided.

1. Introduction and Background

1.1 Introduction

The BusConnects Dublin - Core Bus Corridors Infrastructure Works (herein after called the CBC Infrastructure Works) involves the development of continuous bus priority infrastructure and improved pedestrian & cycling facilities on sixteen radial core corridors in the Greater Dublin Area, across the local authority jurisdictions of Dublin City Council, South Dublin County Council, Dún Laoghaire-Rathdown County Council, Fingal County Council, and Wicklow County Council. Overall the CBC Infrastructure Works encompasses the delivery of approximately 230km of dedicated bus lanes and 200kms of cycle tracks along 16 of the busiest corridors in Dublin.

The Transport Strategy for the Greater Dublin Area 2016 – 2035 sets out a network of the bus corridors forming the "Core Bus Network" for the Dublin region. Sixteen indicative radial core bus corridors were initially identified for redevelopment. These corridors had dedicated bus lanes along less than one third of their lengths which meant that for most of the journey, buses and cyclists were competing for space with general traffic and were negatively affected by the increasing levels of congestion. This resulted in delayed buses and unreliable journey times for passengers. Following the completion of feasibility and options studies, the sixteen radial corridors are being progressed, as the following 16 Core Bus Corridors:

- Clongriffin to City Centre Core Bus Corridor;
- Swords to City Centre Core Bus Corridor;
- Ballymun to City Centre Core Bus Corridor;
- Finglas to Phibsborough Core Bus Corridor;
- Blanchardstown to City Centre Core Bus Corridor;
- Lucan to City Centre Core Bus Corridor;
- Liffey Valley to City Centre Core Bus Corridor;
- Clondalkin to Drimnagh Core Bus Corridor;
- Greenhills to City Centre Core Bus Corridor;
- Tallaght to Terenure Core Bus Corridor;
- Kimmage to City Centre Core Bus Corridor;
- Rathfarnham to City Centre Core Bus Corridor;
- Bray to City Centre Core Bus Corridor;
- UCD Ballsbridge to City Centre Core Bus Corridor;
- Blackrock to Merrion Core Bus Corridor; and
- Ringsend to City Centre Core Bus Corridor.

The aim of the CBC Infrastructure Works is to provide enhanced walking, cycling and bus infrastructure on key access corridors in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along these corridors.

The objectives 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.

1.2 Background

In June 2018 the National Transport Authority (NTA) published the Core Bus Corridors Project Report. The report was a discussion document outlining proposals for the delivery of a CBC network across Dublin. The Greenhills to City Centre CBC was identified as one of the sixteen routes proposed along the Core Radial Bus Network. Figure 1-1, below, presents a high-level overview of the proposed radial routes, taken from the National Transport Authority (NTA) Greater Dublin Area Transport Strategy 2016-2035 , with the Greenhills to City Centre CBC highlighted in orange for context.

Figure 1-1: 2035 Core Bus Network

Following this, a public consultation for the sixteen radial CBCs took place on a phased basis from November 2018 until May 2019. As part of this process the 'Greenhills to City Centre Core Bus Corridor CBC Feasibility Study and Options Assessment Report' identified feasible options along the corridor, assessed these options and arrived at an EPR Option. The EPR for this corridor was published in January 2019 with submissions invited from the public to provide comment on the EPR Option proposals and to inform subsequent design stages. A second round of public consultation commenced on 4th March 2020 and ran until the 17th of April 2020 when submissions were once again invited from the public on the draft PRO.

A comprehensive review of feedback received during both public consultations has been undertaken. Based on this review, as well as availability of new information (e.g. topographical survey), alternative options have been considered in a number of areas along the Greenhills to City Centre route which seek to address issues of concern to the public, as well as general refinements to the scheme to

reduce the overall impact of the proposals, while still achieving the objectives of the scheme. This report presents a summary of the issues raised in the public consultations and details the alternative options considered, and assessment of same, in order to identify a draft Preferred Route Option.

1.3 Approach for this Report

This 'Draft Preferred Route Option Report' has been prepared for the Greenhills to City Centre CBC (the CBC), which will build on the previous 'Greenhills to City Centre Core Bus Corridor CBC Feasibility Study and Options Assessment Report'.

The study area and Multi-Criteria Analysis previously prepared are still considered to remain valid unless otherwise indicated within this report. Any additional design work, or optioneering, has been assessed against the previously identified emerging preferred route, and routes discounted in the Feasibility and Options Report.

Any new or additional design developments have been detailed in this report, with updated Concept Design Drawings having been based on feedback received during public consultation, and from further design development and option assessment.

Any new, or additional, design developments that are detailed in this report and accompanying drawings are based on the following;

- Updated topographical survey information;
- Feedback received from engagement and consultation activities that have taken place since the previous Emerging Preferred Route Options were last issued; and
- Further design development and option assessment.

1.4 Report Structure

This report is structured as follows:

- Chapter 2: Planning and Policy Context – This chapter outlines the general background information to the CBC Infrastructure Works. It also outlines the policy context in which the CBC was developed and presents the concept of the CBC network as outlined in the Transport Strategy for the Greater Dublin Area 2016-2035 (NTA 2015) and the CBC Infrastructure Works.
- Chapter 3: Background and Public Consultation – This chapter provides a background to the scheme, including a summary of the first public consultation period.
- Chapter 4: Study Area - This chapter presents the Greenhills to City Centre study area and details some of the potential constraints and opportunities, in addition to existing public transport links and other road user integration.
- Chapter 5: Review of Feasibility and Options Assessment Report – This chapter is a summary of the options assessment that was previously carried out in each section of the 'Greenhills to City Centre Core Bus Corridor CBC Feasibility Study and Options Assessment Report'. An assessment has been made on the validity of the previous options assessment in the context of additional information collected, including through more detailed survey work undertaken and feedback from the public consultation process. Issues arising and material changes resulting from the design development are detailed.
- Chapter 6: Options Assessment – This chapter considers any material change to the previously considered options.
- Chapter 7: Preferred Route – This chapter gives the overall conclusions of the options assessment process and describes the draft PRO proposal.
- Chapter 8: Next Steps - This chapter details the "next steps" in the delivery of the Project.

The Appendices contains background information for this corridor including the Route Feasibility and Options Assessment Report (see Appendix C) and the Emerging Preferred Route Brochure (see Appendix D).

2. Planning and Policy Context

2.1 Introduction

This chapter reviews the proposed Project in the context of national, regional and local transport and planning policy for the BusConnects Greenhills to City Centre CBC, hereafter referred to as "the proposed development".

A summary of the various policies that were introduced to improve transport throughout Dublin and Ireland in general, have been provided. Some specific policy requirements are then detailed in the sections thereafter.

National Policy

- Project Ireland 2040 – National Planning Framework
- Department of Transport: Statement of Strategy (2016 - 2019)
- Smarter Travel: A Sustainable Transport Future (2009 – 2020)
- National Cycle Policy Framework (2009)
- Road Safety Strategy (2013 – 2020)
- Building on Recovery: Infrastructure and Capital Investment (2016 - 2021)
- The Sustainable Development Goals National Implementation Plan (2018-2020)
- Climate Action Plan (2019)

Regional Policy

- Transport Strategy for the Greater Dublin Area (2016-2035)
- Greater Dublin Area Cycle Network Plan
- Regional Spatial and Economic Strategy Eastern and Midlands Region (2019 -2031)
- Dublin City Council Development Plan (2016-2022)

Local Policy

- Draft Tallaght Town Centre Local Area Plan (2020-2026)
- Liberties Greening Strategy
- Francis Street Environment Improvement Scheme
- Meath Street Environment Improvement Scheme
- Dolphins Barn Village Improvement Scheme
- Ballyfermot Rd. Greening Plan

2.2 Project Ireland 2040 – National Planning Framework

Project Ireland 2040 was launched by the Government in February 2018 and includes:

- The National Planning Framework (2018); and
- The National Development Plan (2018- 2027).

Project Ireland 2040 is intended to serve as the blueprint for future development and investment in Ireland. It is a national document that will guide at a high-level strategic planning and development for the country over the next 20+ years, so that as the population grows, that growth is sustainable. It contains city and county development plans, as well as regional strategies, and will become a statutory backed tool to assist in the achievement of more effective regional development.

2.2.1 National Planning Framework

The National Planning Framework now represents the overarching national planning policy document, of direct relevance to the planning functions of regional and planning authorities, including An Bord Pleanála.

The National Planning Framework is the successor to The National Spatial Strategy, published in November 2002 and has a statutory basis. The National Planning Framework is a planning framework to guide development and investment over the coming years.

The National Planning Framework states that the key future growth enablers for Dublin include:

> *"…The development of an improved bus-based system, with better orbital connectivity and integration with other transport networks…"*
>
> *"…Delivery of the metropolitan cycle network set out in the Greater Dublin Area Cycle Network Plan inclusive of key commuter routes and urban greenways on the canal, river and coastal corridors …*"

It is a policy of the National Planning Framework (Objective 74) to secure the alignment of the National Planning Framework and the National Development Plan through delivery of the National Strategic Outcomes.

National Strategic Outcome 4, 'Sustainable Mobility, includes for the delivery of "*key public transport objectives of the Transport Strategy for the Greater Dublin Area (2016-2035) by investing in projects such as New Metro Link, DART Expansion Programme, BusConnects in Dublin*". It also allows for the development of "*a comprehensive network of safe cycling routes in metropolitan areas to address travel needs*".

2.2.2 National Development Plan

The National Planning Plan sets out the investment priorities that will underpin the implementation of the National Planning Framework, through a total investment of approximately €116 billion. This represents a substantial commitment of resources and is expected to move Ireland close to the top of the international league table for public investment.

This level of capital spending will ensure ongoing employment maintenance and creation, with appropriate regional development. It will also provide clarity to the construction sector, allowing the industry to provide the capacity and capability required to deliver the Government's long-term investment plans.

The National Planning Plan also illustrates the commitment to reforming how public investment is planned and delivered. This is being achieved through a decisive shift to integrated regional investment plans, stronger co-ordination of sectoral strategies and more rigorous selection and appraisal of projects to secure value-for-money.

The National Planning Plan states that investment in public transport infrastructure will be accelerated to support the development of an integrated and sustainable national public transport system consistent with the National Planning Framework strategic outcomes of 'Sustainable Mobility' as well as 'Compact Growth'.

It outlines that the programmes and underlying projects proposed for delivery during the period up to 2027 and includes:

> *"Delivery of the full BusConnects programme for all of Ireland's cities (inclusive of ticketing systems, bus corridors, additional capacity, new bus stops and bus shelters etc."*
>
> *"Delivery of comprehensive cycling and walking network for Ireland's cities."*

2.3 Department of Transport: Statement of Strategy (2016 - 2019)

This strategy sets out objectives and actions which are designed to support continuing economic recovery, fiscal consolidation, job creation and social development. It notes that "*Ireland's land transport system – comprising our road and rail networks, together with bus, rail and taxi services – is of fundamental importance to both societal and economic wellbeing*"

The strategy includes an action for *"appropriate public spending and investment in efficient, sustainable, integrated and accessible land transport networks and services".*

The strategy supports the implementation of the Road Safety Strategy (2013-2020) and the remaining safety actions from the National Cycling Policy Framework (2009-2020).

2.4 Smarter Travel: A Sustainable Transport Future (2009 – 2020)

Smarter Travel, A Sustainable Transport Future presents an overall policy framework for sustainable transport in Ireland. The policy sets out a vision, goals and targets to be achieved, and outlines 49 actions that form the basis for achieving a more sustainable transport future. The relevant parts of this policy are set out in the following chapters:

Chapter 4: Actions to Encourage Smarter Travel

> *"Action 4 - The delivery of public transport, cycling and promotion of more sustainable travel patterns generally in many existing urban centres can only be achieved through retrofitting. We will require local authorities to prepare plans to retrofit areas towards creating sustainable neighbourhoods so that walking and cycling can be the best options for local trips, for example to reach local facilities such as shops and schools."*

Chapter 5: Actions to Deliver Alternative Ways of Travelling

> *"Action 12 - Implement more radical bus priority and traffic management measures to improve the punctuality and reliability of bus services and to support more efficient use of bus fleets. This may involve making some urban streets car-free, creating tram-like priorities in others and making greater use of roads/hard shoulders by buses."*

The proposed development will support these actions in providing improvements to pedestrian and cycle amenities along the proposed route, whilst also providing greater reliability for road based public transport.

2.5 National Cycle Policy Framework (2009)

In support of the Smarter Travel: A Sustainable Transport Future Policy, the National Cycle Policy Framework was adopted by Government in 2009 and includes the following statements and commitments, as stated in the Executive Summary:

> *"The mission is to promote a strong cycling culture in Ireland. The vision is that all cities, towns, villages and rural areas will be bicycle friendly. Cycling will be a normal way to get about, especially for short trips. Cycling contributes to improved quality of life and quality of the public realm, a stronger economy and business environment, and an enhanced environment. A culture of cycling will have developed in Ireland to the extent that 10% of all trips will be by bike by 2020."*

Under the Interventions – Planning and Infrastructure chapter, it goes on to state that:

> *"Transportation infrastructure designs need to be cycle friendly."*

"The focus needs to be on […] Reducing volumes of through traffic, especially HGVs, in city and town centres and especially in the vicinity of schools and colleges."

The proposed development will support the objectives of the National Cycling Policy Framework, primarily through the provision of segregated and offline cycling facilities.

2.6 Road Safety Strategy (2013 – 2020)

The Road Safety Authorities Road Safety Strategy (2013-2020) sets out targets to be achieved in terms of road safety in Ireland, with the primary target being defined as follows:

"A reduction of road collision fatalities on Irish roads to 25 per million population or less by 2020 is required to close the gap between Ireland and the safest countries. This means reducing deaths from 162 in 2012 to 124 or fewer by 2020. A provisional target for the reduction of serious injuries by 30% from 472 (2011) to 330 or fewer by 2020 or 61 per million population has also been set."

The Strategy goes on to state that:

"the attractiveness of walking depends strongly on the safety of the infrastructure provided. Collisions involving pedestrians account for 1 in 5 fatalities annually."

"collisions involving cyclists account for 1 in 25 road deaths annually, and many collisions involving cyclists lead to serious head injuries."

The document sets out strategies for engineering and infrastructure that can effectively reduce collisions. The proposed development will support this and thereby help to reduce collisions.

2.7 Building on Recovery: Infrastructure and Capital Investment Plan (2016-2021)

The Capital Plan was published by the Department of Public Expenditure and Reform in September 2015. It presented the findings of a Government-wide review of infrastructure and capital investment policy and outlined the Government's commitment to ensuring that the country's stock of infrastructure is capable of facilitating economic growth.

The plan identifies the need to improve public transport facilities noting:

"It is therefore essential that road, rail and public transport networks are developed and maintained to the standard required to ensure the safe and efficient movement of people and freight. In addition, getting people out of cars and onto public transport has a key role to play in reducing Ireland's carbon emissions, by providing a viable, less polluting alternative to car and road transport for many journeys."

The transport capital allocation in the plan is largely framed by the recommendations and priorities set out in the 2015 Department of Transport, Tourism and Sport (DTTaS) *Strategic Investment Framework for Land Transport,* which centre on:

- maintaining and renewing the strategically important elements of the existing land transport system;
- addressing urban congestion; and
- maximise the contribution of land transport networks to our national development.

The Capital Plan incorporates the following key objectives relevant to the proposed development:

- €3.6 billion of Public Transport Investment including further upgrading of Quality Bus Corridors.

The proposed development is consistent with these recommendations, priorities and objectives as set out in the DTTaS investment framework, and the Capital Plan.

2.8 The Sustainable Development Goals National Implementation Plan (2018-2020)

In September 2015, Transforming Our World, the 2030 Agenda for Sustainable Development (the 2030 Agenda) was adopted by all 193 Members States of the United Nations (UN).

The 2030 Agenda aims to deliver a more sustainable, prosperous and peaceful future for the entire world, and sets out a framework for how to achieve this by 2030. This framework is made up of 17 Sustainable Development Goals (Figure 2-1) which cover the social, economic and environmental requirements for a sustainable future.

Figure 2-1: Sustainable Development Goals

The Sustainable Development Goals National Implementation Plan (2018 – 2020) is in direct response to the 2030 Agenda for Sustainable Development and provides a whole-of-government approach to implement the 17 Sustainable Development Goals.

The Plan also sets out 19 specific actions to implement over the duration of this first Sustainable Development Goals National Implementation Plan.

The proposed development aligns with Goals 9 and 11 as they include the following targets, detailed in Table 2-1:

Table 2-1: Sustainable Development Goals and Targets aligned with the proposed development

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
Target 9.1	Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human wellbeing, with a focus on affordable and equitable access for all.
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable	
Target 11.2	By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

2.9 Climate Action Plan (2019)

The Climate Action Plan was published in November 2019 by the Department of the Taoiseach. This document sets out the strategy of the Irish Government for tackling the climate change crisis and seeks to achieve a zero-carbon energy systems objective for Irish society and in the process, create a resilient, vibrant and sustainable country.

A central pillar of this plan is the role that transport can play in reducing our carbon footprint and improving air quality in our towns and cities. The plan acknowledges that the delivery of improved public transport will lead to a modal shift away from unsustainable transport choices and go a large way to the decarbonization challenge that lies ahead.

BusConnects, and improvements to the bus fleet, are identified in the Climate Action Plan as being a central component of this objective, as noted in the following actions which are extracted from the plan.

> *Implement major sustainable-mobility projects such as DART Expansion, Metro Link, and the BusConnects Programme. BusConnects targets a 50% increase in bus passenger numbers over the lifetime of the project in our major cities.*
>
> *Expand sustainable-travel measures, including a comprehensive cycling and walking network for metropolitan areas of Ireland's cities, with a particular emphasis on safety of cyclists. We shall also expand greenways and develop over 200km of new cycling network under BusConnects.*
>
> *Establish a new fare structure in BusConnects which will encourage flexible use of an integrated public transport network. We committed to transition to Low-Emission Vehicles, including electric buses, for the urban public bus fleet, with no diesel-only purchases from 1 July 2019, and will set a roadmap for all public PSO urban bus fleets to become LEVs by 2035.*

2.10 Greater Dublin Area Transport Strategy (2016-2035)

The NTA published the Greater Dublin Area Transport Strategy, 2016 – 2035 at the beginning of 2016. In advance of preparing the Strategy, the NTA prepared a report on the Core Bus Network for the Dublin Metropolitan Area, which identified those routes upon which there will be a focus on high capacity, high frequency and reliable bus services, and where investment in bus infrastructure should be prioritised and concentrated.

The 'Core Bus Network' would provide continuous bus priority, as far as practicable along core bus routes, which would result in a more reliable and efficient bus service with reduced journey times, thereby increasing the attractiveness of public transport, and resulting in a potential modal shift to a more sustainable mode of transport.

The Greenhills to City Centre CBC is identified as part of BusConnects as shown in Figure 2-2 below as route 9.

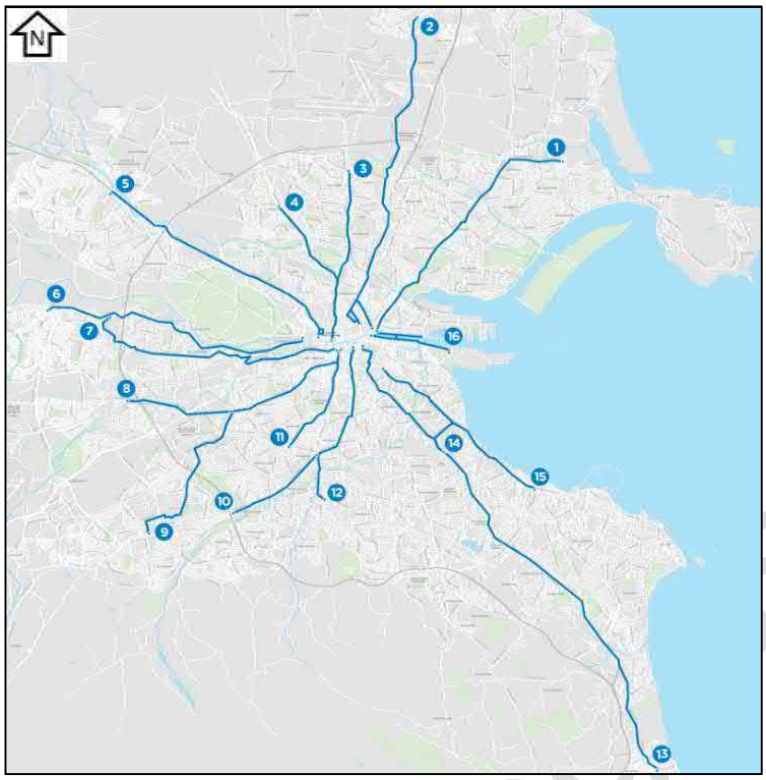


Figure 2-2: Radial Core Bus Corridors

2.11 Greater Dublin Area Cycle Network Plan

The GDA Cycle Network Plan was adopted by the NTA in 2014, following a period of consultation with the public and various stakeholders. This plan forms the strategy for the implementation of a high quality, integrated cycle network for the Greater Dublin Area.

The Greenhills to City Centre Scheme interacts with various existing cycle routes, including primary corridors (A and 8B) in addition to secondary corridors (8C and SO2). The route also interchanges with the Grand Canal Greenway (N10).

During the course of the analysis carried out to identify the preferred CBC, the provision of cycle route facilities was considered at all stages. Therefore, as part of the analysis, any upgrading of infrastructure to provide bus priority also considers the provision of adequate cycling facilities.

2.12 Regional Spatial and Economic Strategy - Eastern and Midlands Regional Assembly (2019 -2031)

The Regional Spatial and Economic Strategy replaces the Regional Planning Guidelines and sets out a 12-year strategic development framework, for the Eastern and Midlands Region, to support the National Planning Framework.

The Regional Spatial and Economic Strategy replaces the Regional Planning Guidelines. The objective of the strategy is to support the implementation of the National Planning Framework – Ireland 2040 and the economic policies and objectives of the Government by providing a long-term planning and economic framework which is consistent with the National Planning Framework . The Regional Spatial and Economic Strategy provides a long-term regional level strategic planning and economic framework for the Eastern and Midlands Region.

The elected members of the East and Midlands Regional Assembly agreed to make the Regional Spatial and Economic Strategy on June 28th, 2019. The Regional Spatial and Economic Strategy includes a Metropolitan Area Strategic Plan for Dublin, as set out in the National Planning Framework. The Metropolitan Area Strategic Plan provides, for the first time, a 12 to 20-year strategic planning and investment framework for the Dublin metropolitan area. The vision of the Dublin Metropolitan Area Strategic Plan was to:

> *"build on our strengths to become a smart, climate resilient and global city region, expanding access to social and economic opportunities and improved housing choice, travel options and quality of life for people who live, work, study in or visit the metropolitan area.*

To achieve the vision, the Metropolitan Area Strategic Plan identified nine Guiding Principles for the sustainable development of the Dublin Metropolitan Area. The proposed development aligns with the Metropolitan Area Strategic Plan under the following principle:

> *"Integrated Transport and Land use – To focus growth along existing and proposed high quality public transport corridors and nodes on the expanding public transport network and to support the delivery and integration of 'BusConnects', DART expansion and LUAS extension programmes, and Metro Link, while maintaining the capacity and safety of strategic transport networks"*

A number of Regional Policy Objectives (RPO) are included in the Regional Spatial and Economic Strategy, which also support the proposed development:

> *RPO 5.2 - Support the delivery of key sustainable transport projects including Metrolink, DART and LUAS expansion programmes, BusConnects and the Greater Dublin Metropolitan Cycle Network and ensure that future development maximises the efficiency and protects the strategic capacity of the metropolitan area transport network, existing and planned.*

> *RPO 8.9: The Regional Spatial and Economic Strategy supports delivery of the bus projects set out in Table 8.3* (Figure 2-3, below) *subject to the outcome of appropriate environmental assessment and the planning process.*

Table 8.3: Bus Projects for the Region
Core Bus Corridors comprising 16 radial routes and 3 orbital routes in Dublin
Regional Bus Corridors connecting the major regional settlements to Dublin
Dublin Metropolitan Bus Network Review
Network reviews for the largest settlements across EMRA, with a view to providing local bus services
Review of bus services between settlements
Review of local bus services throughout EMRA, including services to small towns and villages and the rural transport programme
New interchange and bus hub facilities
New fare structures
Enhanced passenger information
Improvements to bus waiting facilities
Integrated timetabling of bus and rail into a coherent national and regional network.

Figure 2-3: Bus Projects for the Region

2.13 South Dublin County Council Development Plan (2016-2022)

The South Dublin County Council (SDCC) Development Plan includes transport and mobility policies and objectives, to promote the sustainable development of the County, by supporting and guiding national agencies in delivering major improvements to the public transport network, and to ensure existing and planned public transport services provide an attractive and convenient alternative to the car.

The Development Plan recognises that one of the major challenges facing the County during the life of this plan is the need to promote and provide for sustainable transport options, whilst maintaining the effectiveness of the County's road network.

In terms of transport infrastructure, the following overarching policies and objectives as stated in Table 2-2, below were identified in the County Development Plan which are supported by the proposed development.

Table 2-2: SDCC Development Plan Overarching Objectives aligned with the proposed development

Transport and Mobility Policy 1 Overarching	
TM1 Objective 1:	To support and guide national agencies in delivering major improvements to the transport network.
TM1 Objective 2:	To spatially arrange activities around, and improve access to, existing and planned public transport infrastructure and services.
TM1 Objective 3:	To focus on improvements to the local road and street network that will better utilise existing road space and encourage a transition towards more sustainable modes of transport, while also ensuring sufficient road capacity exists for the residual proportion of the trips which will continue to be taken by private vehicle.
TM1 Objective 5:	To balance the needs of road users and the local community with the need to support the development of a sustainable transportation network.
TM1 Objective 6:	To support the delivery of sufficient public transport and road capacity to facilitate sustainable new development in the County.

The County Development Plan outlines the policy of South Dublin County Council to promote the sustainable development of the County by supporting and guiding national agencies in delivering major improvements to the public transport network as shown in Table 2-3 below. This aims to ensure existing and planned public transport services provide an attractive and convenient alternative to the car travel.

Table 2-3: SDCC Development Plan Objectives for Public Transport aligned with the proposed development

Transport and Mobility Policy 2 Public Transport	
TM2 Objective 1:	To secure the implementation of major public transport projects as identified within the relevant public transport strategies and plans for the Greater Dublin Area.
TM2 Objective 2:	To establish future public transport routes that will support the County's medium to long term development, in particular orbital routes
TM2 Objective 3:	To generate additional demand for public transport services through integrated land use planning and maximising access to existing and planned public transport services throughout the network
TM2 Objective 4:	To create an interlinked network that maximises the efficiency of existing services, reduces overall journey times and facilitates easy exchanges between modes and/or routes

These objectives result in South Dublin County Council identifying a number of actions outlined below:

- Work with the NTA to secure the extension and expansion of the Core Bus Network and other bus services to serve new areas of employment, housing and tourism potential, whilst also improving the efficiency and frequency of services within more established areas; and
- Identify opportunities for multi-modal interchange and transport hubs at key locations (such as Centres, cross cutting infrastructure) to increase the efficiency and flow of public transport services.

The County Development Plan identifies the need to re-balance movement priorities towards more sustainable modes of transportation by prioritising the development of walking and cycling facilities within a safe and traffic calmed street environment as indicated in Table 2-4 below.

Table 2-4: SDCC Development Plan Objectives for walking and cycling aligned with the proposed development

Transport and Mobility Policy 3 Walking and Cycling	
TM3 Objective 1:	To create a comprehensive and legible County-wide network of cycling and walking routes that link communities to key destinations, amenities and leisure activities with reference to the policies and objectives contained in Chapter 9 (Heritage, Conservation and Landscape) particularly those that relate to Public Rights of Way and Permissive Access Routes
TM3 Objective 3:	To ensure that all streets and street networks are designed to prioritise the movement of pedestrians and cyclists within a safe and comfortable environment for a wide range of ages, abilities and journey types.

The County Development Plan provides maps of the area indicating the proposed zoning types. From this maps it was been identified that the proposed route interacts with the following items of note:

- Around Greenhills, areas of land have been zoned for regeneration primarily to the west, and for green space primarily to the east; and
- Tallaght Village is zoned for protection and improvement for future development of village centres.

2.14 Dublin City Council Development Plan (2016-2022)

The Dublin City Council (DCC) Development Plan recognises the challenge that transport has in making an important contribution towards achieving a sustainable city. These key challenges for the City are outlined as follows:

- Effective integration of land-use and transportation, and the management of access and mobility;
- Pro-active engagement and collaboration with communities to bring about further modal shift and effective mobility management;
- The expansion of the strategic cycle network along all major water bodies including the River Liffey and the canals;
- Improving the city centre environment for pedestrians through public realm enhancements and through improvement of the strategic pedestrian network;
- Ensuring maximum benefits are achieved from public transport improvements including Luas cross-city and the anticipated Bus Rapid Transit network;
- Managing city centre road-space to best address the competing needs of public transport, pedestrians, cyclists, and the private car; and
- Increasing significantly the existing mode share for active modes, i.e. walking and cycling, and supporting the forthcoming National Policy Framework for Alternative Fuels Infrastructure.

Therefore, sustainable forms of transport such as public transport, walking, and cycling are strongly promoted in this plan, which takes a pro-active approach to influencing travel behaviour and effective traffic management.

Table 2-5: DCC Development Plan Objectives for Modal Change and Active Travel aligned with the proposed development

Movement and Transport: Promoting Modal Change and Active Travel	
MT2:	Whilst having regard to the necessity for private car usage and the economic benefit to the city centre retail core as well as the city and national economy, to continue to promote modal shift from private car use towards increased use of more sustainable forms of transport such as cycling, walking and public transport, and to co-operate with the NTA, Transport Infrastructure Ireland (TII) and other transport agencies in progressing an integrated set of transport objectives. Initiatives contained in the government's 'Smarter Travel' document and in the NTA's draft transport strategy are key elements of this approach.

Table 2-6: DCC Development Plan Objectives for Public Transport aligned with the proposed development

Movement and Transport: Public Transport	
MT3:	To support and facilitate the development of an integrated public transport network with efficient interchange between transport modes, serving the existing and future needs of the city in association with relevant transport providers, agencies and stakeholders.
MT4:	To promote and facilitate the provision of Metro, all heavy elements of the DART Expansion Programme including DART Underground (rail interconnector), the electrification of existing lines, the expansion of Luas, and improvements to the bus network in order to achieve strategic transport objectives.
MT5:	To work with the relevant transport providers, agencies and stakeholders to facilitate the integration of active travel (walking, cycling etc.) with public transport, thereby making it easier for people to access and use the public transport system.
MT6: (i)	To work with Iarnród Eireann, the NTA, TII and other operators to progress a coordinated approach to improving the rail network, integrated with other public transport modes to ensure maximum public benefit and promoting sustainable transport and improved connectivity.

The Dublin City Development Plan sets out policies and objectives to guide how and where development will take place in Dublin over its noted lifetime. Although the plan looks at Dublin City as a whole, for the basis of this report, only sections that pertain to the Greenhills scheme have been further detailed below;

Due to Dublin City sitting within the metropolitan area, the Regional Planning Guidelines settlement strategy includes a strong emphasis on the need to gain maximum benefits from existing assets. Within this plan the inner city, key district centres and Strategic Development and Regeneration Areas (SDRAs) are areas which seeks the social, economic, physical development or rejuvenation of an area with residential, employment and mixed-uses.

Volume 3 of the Dublin City Development Plan provides maps of the Dublin Metropolitan area indicating the proposed zoning. It has been identified that a section of the Greenhills to City Centre CBC, falls across Maps G and E. From these maps it has been identified that the proposed route interacts with the following;

- SDRAs – from Dolphins Barn Road the route borders SDRAs 12 and 16. Further along the route Cork Street passes through SDRA 16.

- Map G – Walkinstown Roundabout, Walkinstown Road, Drimnagh Road, Crumlin Road, to junction with Sundrive Road. Primarily the mapping indicates that the area is zoned for residential development with some neighbourhood and mixed-use developments.
- Map E – Crumlin Road, Dolphins Barn, Cork Street, Dean Street, Patrick Street and Nicholas Street. The mapping identifies various zones over this section of the Preferred Route. In addition to the variety of zoning areas located along this section of the Greenhills CBC route the key features include the improvement of mixed-service facilities, improved recreational amenity areas, consolidation of facilities to provide mixed use residential in the suburban areas and retail/office facilities within the inner city. In addition to this a conservation area is located around the Grand Canal where the Preferred Route crosses at Dolphins Barn, additionally the area along Dolphins Barn and Cork Street falls within a zone of archaeological interest. There are several listed structures also identified along Cork Street, Patrick Street and Nicholas Street.

2.15 The Aim of the Bus Connects Core Bus Corridor Infrastructure Works

The aim of the CBC Infrastructure Works is to provide enhanced walking, cycling and bus infrastructure on key access corridors in the Dublin region, which will enable and deliver efficient, safe, and integrated sustainable transport movement along these corridors. These works are fundamental to addressing the congestion issues in the Dublin region with the population due to grow by 25% by 2040, bringing it to almost 1.55m.

Across Dublin, 67% of public transport journeys each day are made by bus, carrying three and four times the number of passengers that travel on the Luas or Dart and commuter rail. The popularity of cycling to work has also increased in popularity, up by 43% since 2011. Through the development of continuous bus priority and segregated cycle tracks the CBC can meet the growing demand for fast, reliable, punctual and convenient bus journeys in and out of the city centre, and safe cycling facilities for this growing numbers of cyclists.

2.16 The Core Bus Corridor Objectives

The objectives 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.

3. Background and Public Consultation

3.1 Existing Bus Services

The Greenhills Corridor is made up of two distinct sections, the inner section from the City Centre to Walkinstown Road, via Cork Street and Crumlin Road, and an outer section south of Walkinstown Road. Figure 3-1 indicates the number of primary bus routes using these sections, including the following Dublin Bus routes:

- Route 27 – Clarehall to Jobstown – 10-minute frequency – Operates 100% of the corridor.
- Route 77a – City West to Ringsend – 20-minute frequency – Operates >75% of the corridor.
- Route 151 – Docklands to Foxborough – 20-minute frequency – Operates > 50% of the corridor.

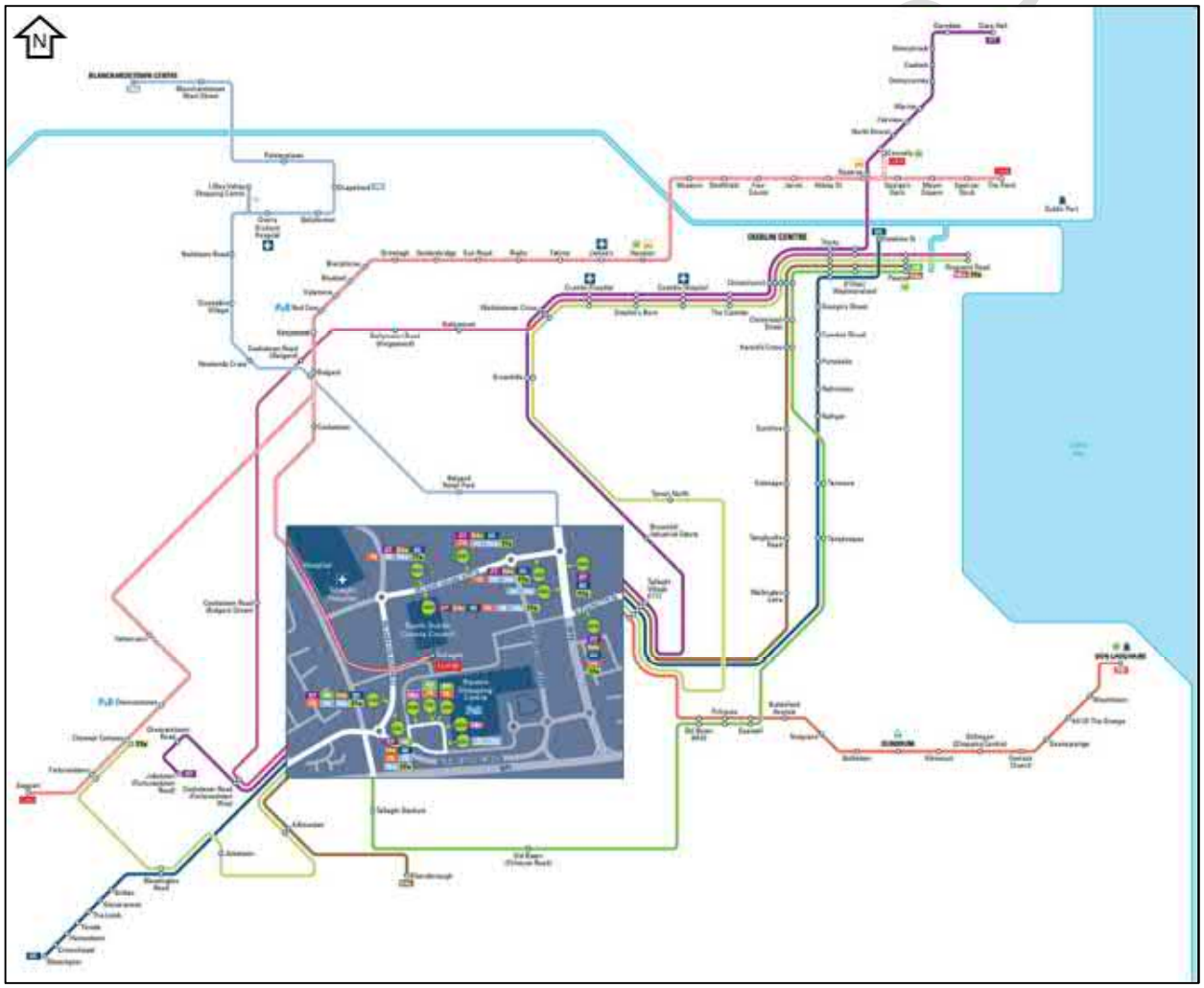


Figure 3-1: Bus Routes serving Tallaght Town Centre

The inner section of the corridor can typically have buses running at less than 5-minute frequency, with the outer section running at between 5 and 10 minute frequency depending on the time of day, making this a particularly busy bus corridor, and likely to be the busiest that does not have continuous bus priority facilities over its full length.

Route 27 is the primary high frequency route on the corridor, operating from Fortunestown Road (in Tallaght) to Templeview Avenue (adjacent to Clare Hall). The route is one of the longest in the City, with 87 bus stops and a typical travel time of over 90 minutes. The route is busy throughout the day

as it serves many employment zones (e.g. Ballymount), health facilities (e.g. Crumlin Children's Hospital) and education facilities (Technology University of Dublin Tallaght). Currently the route has high quality bus priority facilities over most of its routing north of the City Centre, but less to the south where the reliability of the journey time deteriorates substantially. Figure 3-2, Figure 3-3 and Figure 3-4 uses information obtained from the bus routes Automatic Vehicle Location (AVL) data over a typical period in 2019. This illustrates that there is a very large variation (blue line) in journey times on Greenhills Road, north of Tallaght Town Centre, where there are currently little, or no bus priority measures. The other location where there is a noticeable variation in bus journey speeds is on Patrick Street as buses approach the city centre.

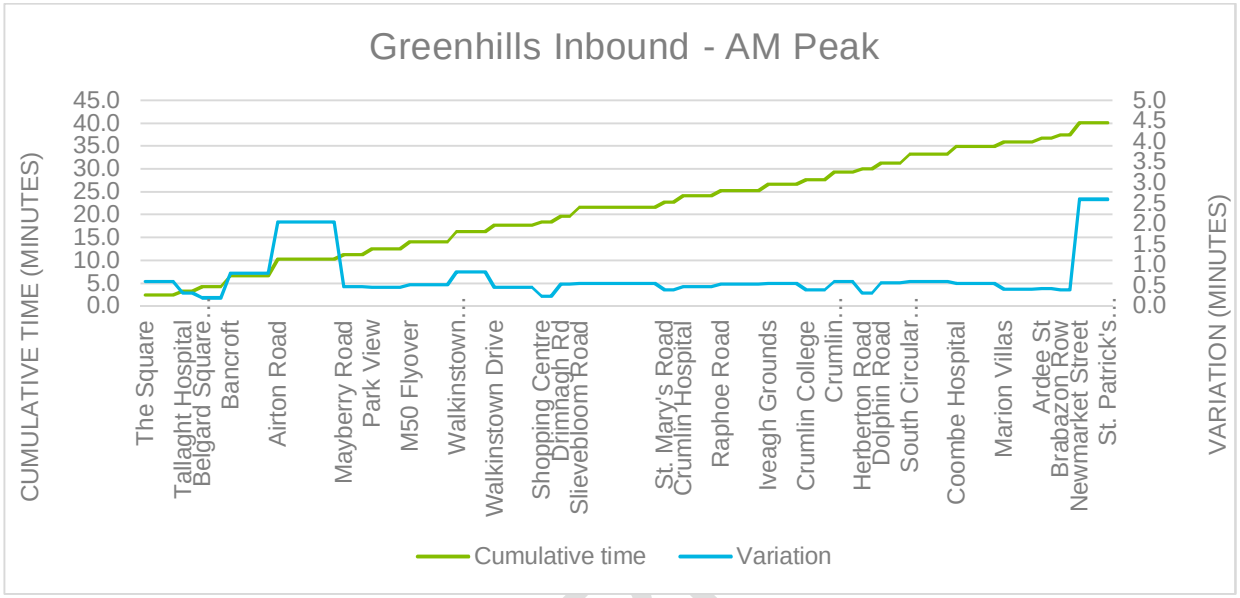


Figure 3-2: Greenhills to City Centre Inbound AVL AM Peak Times for Buses

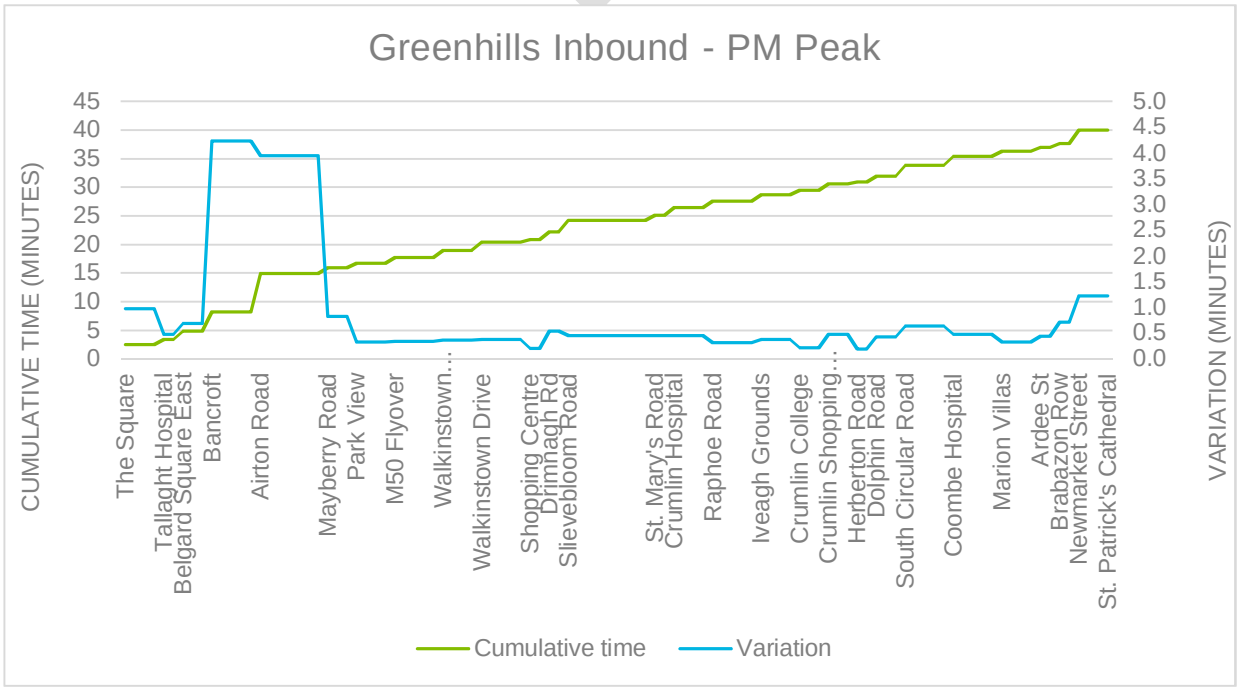


Figure 3-3: Greenhills to City Centre Inbound AVL PM Peak Times for Buses

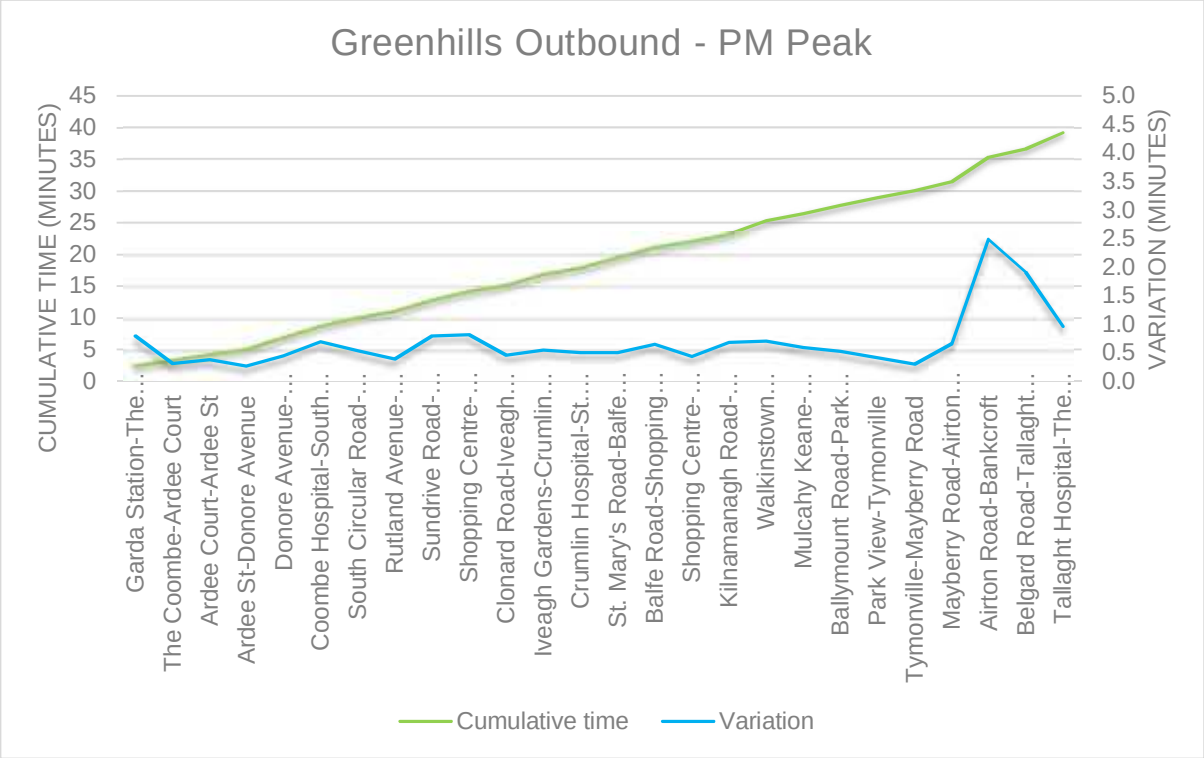


Figure 3-4:Greenhills to City Centre Inbound AVL PM Peak Times for Buses

3.2 Dublin Area Revised Bus Network

In 2017, the NTA began work on reviewing the Dublin Area Bus Network, in collaboration with bus operators and other stakeholders (incl. local authorities). Jarrett Walker and Associates, a transport planning practice with specific expertise in bus network redesign, was appointed to provide advice and technical support. The "Dublin Area Bus Network Redesign" project was launched by the NTA, which looked at the existing bus network and the radial Core Bus Network identified in the GDA Transport Strategy. The output from the Bus Network Review was published and available for public comment in August 2018 and again in October 2019.

Table 3-5 indicates the final output from this study and illustrates that the D-Spine (D1,D2,D3,D4,D5) runs from the City Centre to the South West, serving areas along the Greenhills Corridor. From the City Centre to Drimnagh Road/ Walkinstown Road junction, Routes D1 to D5 will follow the same corridor, with bus headways of less than 5 minutes envisaged. West of the Drimnagh Road/ Walkinstown Junction the D spine will follow CBC08 to Clondalkin (D1 and D3). To the south of the same junction Routes D2,D4 and D5 will follow the Greenhills corridor to Tallaght, with frequencies of approximately 5 minutes envisaged.

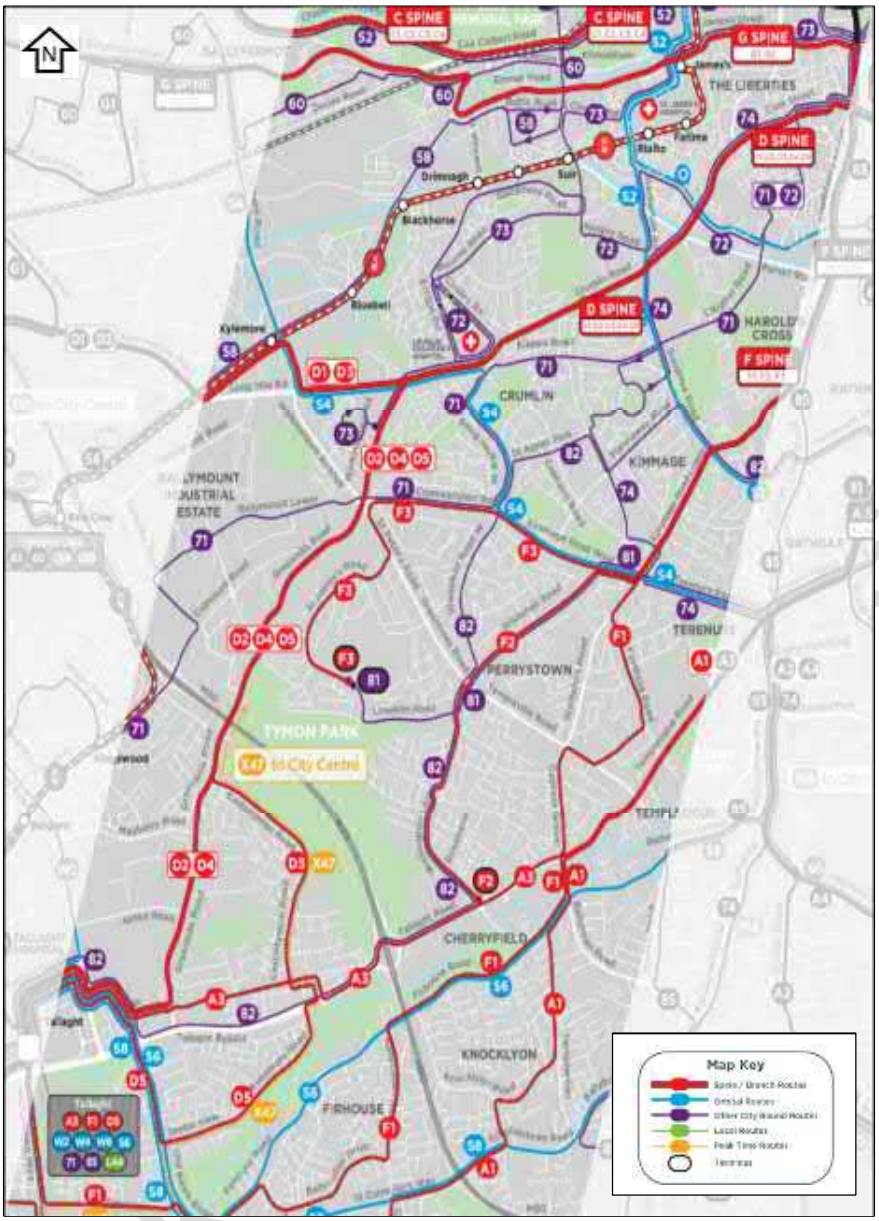


Figure 3-5: Revised Bus Network – South West Quadrant.

3.3 Design Development

The Greenhills to City Centre CBC Feasibility and Options Study was undertaken by appointed consultants ARUP, with the resulting findings published as the Emerging Preferred Route and detailed in the Feasibility and Options Assessment Report published in January 2018. This previous report and the Concept Scheme drawings are available on the BusConnects website. Following publication of the report a public consultation was held in the first half of 2019. The public consultation period consisted of the introduction of Community Forum Groups where key stakeholders and interested parties from communities could engage in open communications and dialogue, in addition to one to one meetings and public consultation days where members of the community had the opportunity to review the Emerging Preferred Route design and engage with the designers and client.

In June 2019 AECOM (in association with Mott MacDonalds) were appointed to take the design of the Greenhills corridor through the planning process. This has involved reviewing the current designs, taking on board feedback from the public consultation and undertaking further analysis to ensure that the preferred routing is optimum for this corridor.

A second round of public consultation was held in March 2020 which included design developments undertaken by the AECOM design team.

The outcome of both public consultation is summarised in section 3.4 and 3.6 below, the received submissions where reviewed and taken on board in the development of the Emerging Preferred Route to the Preferred Route Option.

3.4 1st Public Consultation – Emerging Preferred Route

Following the conclusion of the public consultation period on the 31st of May 2019, the NTA and the design team considered all feedback received and undertook a review of the proposed design. A summary report was produced with details of the submissions received along with responses to these issues. The document was published and is available on the BusConnects website.

The submissions received provide a wide spectrum of views, with many of the views raising concern with the overall scheme or specific elements. The following points where extracted to summarise the core observations raised in the consultation responses;

- Rerouting of existing bus services;
- Environmental concerns;
- Issues during construction;
- Cycling safety;
- Pedestrian safety;
- Security;
- Impact on local businesses;
- Integration;
- Non-compliance with design standards and planning documentation;
- Walkinstown Cross design issues;
- Loss of parking facilities;
- Route and design issues;
- Loss (property value, revenue, loss of function, privacy etc..);
- Traffic calming issues;
- Disability issues;
- Financing the scheme; and
- Some suggestions and new ideas.

3.5 Development of Preferred Route Option

Following this 1st Public Consultation, and the availability of new information (such as topographical surveys, utilities information etc), additional design optioneering has been undertaken during the development of the Preferred Route Option and assessed against the previously identified Emerging Preferred Route options and the options listed in the Feasibility and Options Assessment Report multi-criteria analysis. The below points summarise the key changes made to the scheme based on the following;

- Feedback from public consultations, one to one meetings, and community forum meetings;
- Further design development resulting from the availability of more detailed information, such as topographical surveys; and
- Additional option development and assessment.

The key route developments are summarised below;

- Route amended to exclude use of Technology University of Dublin (Tallaght) campus roads;
- Continued use of Greenhills Road for southbound buses at Park View;
- The addition of a second bridge over the M50 at Greenhills Road to maintain continuity of bus priority;
- The use of bus priority signals and a bus lane in one direction only on Crumlin Road; and
- Extension of cycle facilities along Clogher Road and join into the Canal Way Cycle Route (rather than using Sundrive Road).

3.6 2nd Public Consultation – Preferred Route Option

In March 2020 the Preferred Route Option was published with a second round of public consultation taking place between the 4th of March 2020 through to the 17th of April 2020. While this public consultation was completed, due to the Covid-19 Emergency, the NTA took the decision that there will be a further public consultation regarding the CBC schemes to be held later in the year. However, some feedback was received and has been reviewed by the design team with some additional changes proposed before the 3rd round of public consultation.

Five submissions were received from this public consultation with both positive and negative feedback received. The following points summarises the core observations raised:

- Cyclist issues;
- Bus stop conflicts;
- Pedestrian crossings;
- Impact on businesses;
- Reduced road capacity; and
- Suggestions or other ideas

The further route development of this corridor is as follows:

- The junction of Greenhills Road/ Ballymount Avenue is to be opened and signalised to allow access to Greenhills Road from the south.

It must be noted that there is continuous consultation with various stakeholders including individual landowners, community forums etc and feedback has been taken on board for the Preferred Route Option and will be a continuous process for the next phase of the design.

4. Study Area

4.1 Introduction

In the previously completed Feasibility and Options Assessment Report, the study area was taken to consider roads within 500m of the existing bus corridor. The study area also took into consideration the presence of other existing transport infrastructure services such as other adjacent CBCs and the Luas Red Line.

4.2 Study Area Sections

Due to the size of the study area and the vast quantity of information that would need to be reviewed the area was divided into 4 sub sections as shown in Figure 4-1.

Section 1 takes in Tallaght to Ballymount area the main arterial route of this CBC is the Greenhills Road. The route crosses the M50 where it will diverge from the Greenhills Road towards Ballymount Industrial Estate.

Section 2 starts at where the CBC diverges away from the Greenhills Road towards Ballymount Industrial Estate. The route continues to take in the area of Walkinstown Road up to its intersection with the Crumlin Road.

Section 3 starts where Walkinstown Road and Crumlin Road intersect, this area covers the entire Crumlin Road area up to Dolphins Barn Road where the CBC crosses the Grand Canal.

Section 4 finally covers the area from where the route crosses the Grand Canal at Dolphins Barn Road, along Cork Street and onto Patrick Street where it concludes on Nicholas Street at the intersection with Christchurch Place.

Following the first public consultation it was determined that the study area for the scheme does not need to be amended and therefore remains as shown and described in the Feasibility and Options Assessment Report.

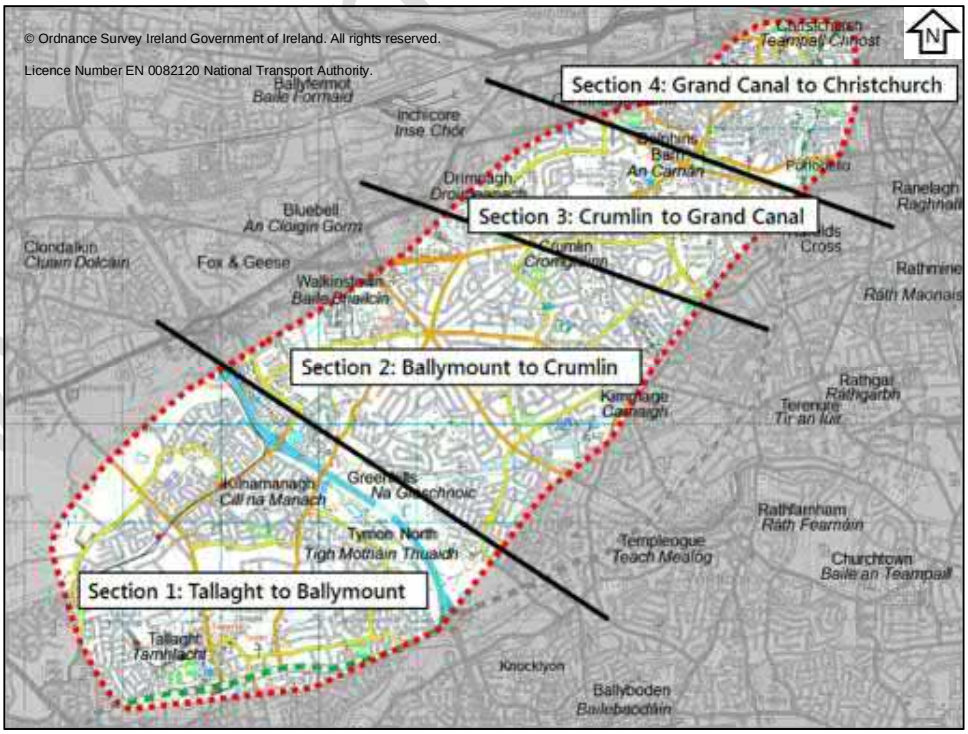


Figure 4-1: Study Area

4.3 Physical Constraints and Opportunities

As the study area has not altered from the previously published Feasibility and Options Assessment Report the noted potential constraints and opportunities within the report remain valid. The potential constraints identified include;

- The M50 motorway, with existing overpasses located at Ballymount (Greenhills Road);
- Grand Canal (including protected structures);
- Luas Red Line;
- Existing and committed future development along the route;
- Existing protected monuments within the study area;
- Significant numbers of street trees and other natural features along the potential route options within the study area;
- The existing urban and sub-urban roads and street network, including parking and servicing of business at some locations;
- Limited availability of land in urban and suburban areas; and
- Public parks including Tymon Park and Bancroft Park.

A potential opportunity within this study area includes:

- Land previously set aside for the previously approved (SDCC Part 8 Approval 2007) road alignment upgrade of Greenhills Road, from Mayberry Road through to Walkinstown.

4.4 Integration with Existing and Proposed Public Transport Network

One of the key objectives of the proposed CBC scheme is to enhance interchange between the various modes of public transport operating in the city and wider metropolitan area, both now and in the future. The Emerging Preferred Route Option was developed to provide improved existing, or new, interchange opportunities with other transport services, including:

- The Luas Red Line at the Square Tallaght;
- Existing bus services at numerous locations along the route, for example at the Square Tallaght, where orbital routes such as the 75 (to Dun Laoghaire) start and the 18 (Palmerstown to Sandymount) on Drimnagh Road or other radial route such as the 151, to Foxborough Estate, Lucan;
- Future orbital bus routes the Tallaght Interchange (image from the Bus Network Review) will become a critical location which will allow passengers from the Greenhills Corridor access a much wider area of west and south Dublin. Examples include Tallaght to Dundrum/UCD (S6), Tallaght to Liffey Valley (W2), Tallaght to Blanchardstown (W4), Tallaght to Maynooth (W6), Tallaght to Dun Laoghaire (S8), UCD to Liffey Valley (S4), Sandymount to Heuston Station (S2). Or most Radial Routes in the City Centre, but in particular the F and G spine which this corridor interfaces with as it approached the City Centre; and
- Future plans for a DART Underground Station at Christchurch.

4.5 Combability with Other Road Users

A key objective of the proposed scheme is to improve pedestrian and cyclist facilities along the route. In general, segregated facilities should be proposed for these modes. Where it is considered impractical to construct pedestrian or cycle facilities along a section of the CBC route, such facilities will need to be provided along a suitable alternative route.

Where segregated cycle facilities cannot be provided along the corridor and there is no suitable routing alternative, it may be possible for cyclists to share the bus lane with other vehicles. However, such proposals need careful consideration and design to ensure the safety of cyclists, with additional mitigation measures, such as speed restrictions for vehicles in bus lanes being applied.

General traffic flow and local access will generally be maintained along the CBC corridor although it is inevitable that there will be impacts on traffic capacity along the route associated with the reallocation of road space to CBC priority and cycle facilities and the introduction of turning movement restrictions. However, reductions in traffic carrying capacity of the road network need to be considered in the context of the overall planned significant increase in quality and level of service (including increased people moving capacity provision) on the CBC route once implemented.

5. Review of Feasibility and Options Assessment Report

5.1 Introduction

Following a comprehensive review of the potential route options within the study area a 2-stage assessment process was used to narrow down the number of routes available to one optimal route per study area. These routes, in the four study areas, then converged to form the overall Emerging Preferred Route which was presented at public consultation for information and feedback.

As part of the consultation process the preparation of the Feasibility and Options Assessment Report served to give the public a greater insight to how the process took place in addition to providing a transparency to the process of elimination used to determine the optimal route, given the information available and best engineering judgement.

This chapter provides a summary of the outcome of the options assessment also outlines the main material changes. These are: changes as a result of the topographical survey, changes due to public consultation (first and second rounds) and community engagement, inconsistencies in the previous assessment, areas in the previous assessment that require clarification and additional option assessment and development.

5.2 Assessment Methodology

The development of the Emerging Preferred Route Option during the Feasibility and Options Assessment Stage was carried out in 2 stages.

The first stage was a high-level route options assessment or 'sifting' process which appraised several potentially viable route options, which has been further detailed in section 5.2.1 below.

The second stage was a more detailed analysis of the remaining routes that where progressed through the sifting stage. This stage involves a multi-criteria analysis to individually assess the merits of each proposed route against each set criterion. Details of this stage can be found in section 5.2.2.

For the purposes of this report a review of the Stage 1 and 2 assessments was carried out on the Feasibility and Options Assessment Report results. In order to determine the most suitable corridor all previous discounted routes have been reviewed against design changes and updates, which are detailed in Section 6 of this report.

5.2.1 Stage 1 – Route Options Assessment – Sifting Stage

A 'spider's web' of route options was produced that could accommodate the objectives of the CBC for each study area as shown in Figure 5-1.

As part of the sifting process each of the route options where assessed using a high level qualitive method, based on professional judgement and general appreciation for existing constraints and conditions within the study area that could be ascertained from available surveys and site visits. This exercise screened and assessed technically feasible route options, based on distinct, project specific objectives. In addition to being assessed on their individual merits, routes were also screened relative to each other allowing some routes to be ruled out if more suitable alternatives existed.

This assessment stage focused on engineering constraints together with a desktop study, identifying high level environmental constraints and population catchment analysis.

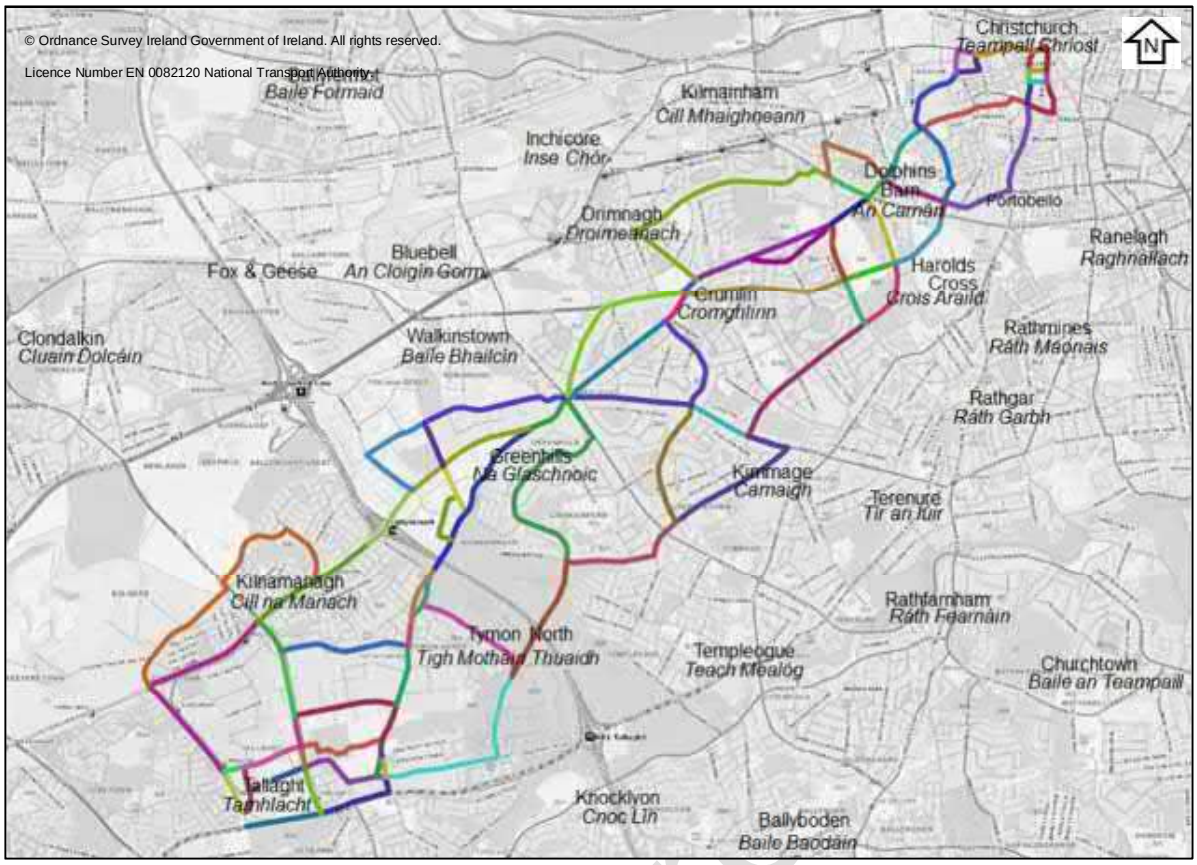


Figure 5-1: Spiders Web of Route Options

5.2.2 Stage 2 – Route Options Assessment – Detailed Assessment

Following completion of Stage 1, the remaining potentially viable options where progressed to Stage 2 of the assessment process. This process involved a more detailed qualitative and qualitive assessment using criteria established to compare the route options. The 'Common Appraisal Framework for Transport Projects and Programmes' published by the DTTaS, March 2016, requires schemes to undergo a multi-criteria analysis under the following criteria:

- Economy;
- Integration;
- Accessibility and social inclusion;
- Safety;
- Environment; and
- Physical activity.

Physical Activity was scoped out of the multi-criteria assessment at this stage. As all route options carried forward, promote physical activity equally as a result it is not considered to be a key differentiator between route options.

Table 5-1 presents a summary of the CBC assessment criteria and sub criteria used as part of the Stage 2 detailed route options assessment process. With options compared and ranked against each other based as per Table 5-2.

Table 5-1: Assessment Criteria

Assessment Criteria	Assessment Sub-Criteria
1. Economy	1.a. Capital Cost
	1.b. Transport Reliability and Quality (Journey Time)
2. Integration	2.a. Land Use Integration
	2.b. Residential Population and Employment Catchments
	2.c. Transport Network Integration
	2.d. Cycle Network Integration
3. Accessibility & Social Inclusion	3.a. Key Trip Attractors (Education/Health/Commercial/Employment)
	3.b. Deprived Geographic Areas
4. Safety	4.a. Road User Safety
5. Environment	5.a. Archaeology and Cultural Heritage
	5.b. Architectural Heritage
	5.c. Flora & Fauna
	5.d. Soils and Geology
	5.e. Hydrology
	5.f. Landscape and Visual
	5.g Air Quality
	5.h. Noise & Vibration
	5.i. Land Use Character

Table 5-2: Assessment Ranking

Assessment Ranking	Description
	Significant advantages over the other options
	Some advantages over the other options
	Neutral compared to other options
	Some disadvantages over other options
	Significant disadvantages compared to other options

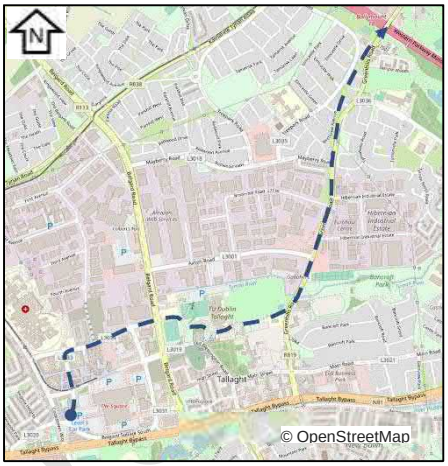
Following the application of the multi-criteria assessment the Emerging Preferred Route was carried forward to the 1st Public Consultation.

5.3 Study Area Section 1 – Tallaght to Ballymount

5.3.1 EPR Option

Belgard Square South to Greenhills Road:

This section of the Emerging Preferred Route ran from Belgard Square West to Greenhills Road. Following the two-stage assessment undertaken in the Feasibility and Options Assessment Report it was determined that the optimum option was the route through the Technology University Dublin (TUD), Tallaght Campus. This was primarily on the basis that there is potentially a journey time advantage by passing through the Campus.



Parkview:

From Greenhills Road there were various options proposed for the route around the Parkview area and across the M50. Using the two-stage assessment it was determined that it would be best suited to provide a new alignment around Parkview for the corridor in line with the South Dublin County Council County Development Plan Roads Objectives for this area.

5.3.2 Areas Identified for Re-Examination

Following the public consultation feedback and design updates the following areas were identified for re-examination as part of this report:

- The route option through TUD, is now considered unsuitable in the context of the restrictions on vehicle movements through the campus at certain times of the day and the significant realignment of the existing roads within the campus that would be required to facilitate high frequency bus movements. As part of the Preferred Route design all previously discounted options where reviewed and the outcomes of such are presented in Section 6.
- At the proposed Parkview/ Castletymon Road junction the absence of a right turn lane for traffic accessing Castletymon Road from the Tallaght direction may result in delays to traffic that may also impact on bus operations at this location. For this reason, the layout was re-examined to ascertain how a right turn lane can be incorporated into the scheme; this will be presented in Section 6.
- The Emerging Preferred Route as detailed in the Feasibility and Options Assessment Report originally indicated that the structure over the M50 was to remain as is with the bus lanes stopped on each side and controlled by a bus priority signal. However, following design developments it has been concluded that the loss of priority for buses at this location introduces a delay which impacts on the overall performance of the corridor. An additional bridge is now proposed to provide continuous priority in both directions and also to provide higher quality pedestrian and cycle facilities across the M50.

5.4 Study Area Section 2 – Ballymount to Crumlin

5.4.1 EPR Option

Ballymount to Walkinstown:

Following assessments undertaken as part of the Feasibility and Options Assessment Report it was determined that the optimum route from Ballymount to Walkinstown was via Ballymount Avenue and Calmount Road, which is in line with the South Dublin County Council County Development Plan Objectives for the area.

Walkinstown Roundabout:

The Feasibility and Options Assessment Report provided an in-depth assessment of various junction options taking into consideration multiple factors such as traffic movement counts, traffic management and junction operations. From this assessment and the application of the MCA it was determined that the modified dual lane roundabout was the optimum solution for this location.

Walkinstown to Crumlin:

The Feasibility and Options Assessment Report assessed 3 route options with variations of cycling and priority bus infrastructure applications resulting in 10 options being assessed. It was determined from the MCA that the optimum option was the provision of bus lanes in each direction with existing cycling infrastructure along Drimnagh Road being utilised. No cycling provisions was proposed for Walkinstown Road, with an alternative cycle route via Bunting Road proposed.

5.4.2 Areas Identified for Re-Examination

Table 5-2 indicates the results of the multi-criteria assessment undertaken as part of the Feasibility and Options Assessment Study for the preferred route options for each section between Ballymount and Crumlin. Following the initial public consultation and review of the previous assessment no changes are proposed to the Emerging Preferred Route for the Ballymount to Crumlin section. No rating has changed for any of these options, as such they are being taken forward as the Preferred Route Option for this section of the Greenhills corridor.

Table 5-2: Ballymount to Crumlin Assessment Summary for Preferred Route Options.

Assessment Criteria	Ballymount BW2	Walkinstown Cross Option 1	Walkinstown Rd WC1b
Economy			
Integration			
Accessibility & Social Inclusion			
Safety			
Environment			

The proposed route from Ballymount to Crumlin meets the scheme objectives and is the Preferred Route Option for the Walkinstown area for the following reasons:

- It delivers end-to-end bus lanes providing improved journey time reliability;
- It delivers a high-quality cycle route from Ballymount to Crumlin, via upgraded facilities at Walkinstown Roundabout and cycle facilities along Bunting Road; and
- It is consistent with and delivers road links which are included as objectives in the South Dublin County Council County Development Plan 2016 – 2022.

Design changes for cycle facilities at Walkinstown Roundabout are proposed as part of the design development stage. Similarly, on Bunting Road the design of the segregated cycle lanes has been modified to avoid removal of trees along this street. Both of these design changes do not impact on the route selection and therefore have no impact on the outcome of this report.

5.5 Study Area 3 – Crumlin to Grand Canal

5.5.1 EPR Option

Following the analysis of multiple options for Study Area 3, from Crumlin to Grand Canal, it was determined from the MCA that the Emerging Preferred Route would have bus lanes in each direction along Crumlin Road with the provision of cycle facilities along Kildare Road, Clogher Road and returning to Crumlin Road via Sundrive Road. At the junction of Sundrive Road and Crumlin Road, cyclists would re-join the Crumlin Road and utilise the existing bus and cycling infrastructure.

5.5.2 Areas Identified for Re-Examination

Following feedback from the public, and a review of the original design (using additional topographical survey information), it is necessary to reconsider the proposed widening along this section of the corridor as the impact on the residents and the engineering challenges associated with maintaining *access-for-all* to each building (due to gradients of driveways), it is no longer considered a viable option. The outcome of the review will be outlined in Section 6.

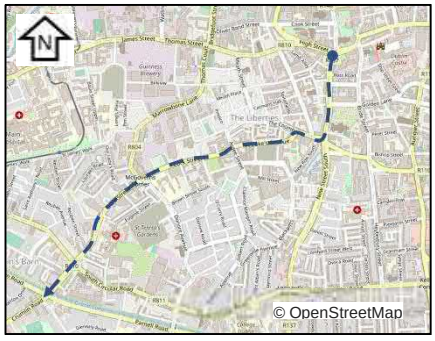
In addition, feedback suggested that consideration be given to continuing the cycle facilities along Clogher Road to the Grand Canal rather than returning to Crumlin Road at Sundrive Road. The outcome of this review will also be presented in Section 6.

5.6 Study Area 4 – Grand Canal to Christchurch

5.6.1 EPR Option

Dolphins Barn, Cork Street between Grand Canal and Patrick Street:

Following the Stage 1 Sift only one route emerged as a viable option between the Grand Canal and Patrick Street, as such Cork Street was identified as the optimum route for this corridor. It is proposed to upgrade cycle facilities and maintain the existing bus priority lanes along this section of the corridor.



Patrick Street and Nicholas Street:

The Emerging Preferred Route indicated that bus and cycle lanes, in each direction, would be provided along Patrick Street and Nicholas Street. The feasibility stage design indicated that this would require the removal of the central median or cyclists using the bus lanes as shared facilities.

5.6.2 Areas identified for re-assessment

No changes are proposed to the Emerging Preferred Route for the Grand Canal to Christchurch section of the corridor. However, the availability of more accurate topographical survey information has enabled the design to be optimised to allow the retention of the central median (and trees) and the provision of bus and cycle lanes along Patrick Street and Nicholas Street. This reduces the negative environmental aspects of the EPR scheme and therefore clearly distinguishes this route from the other available options considered during Feasibility and Options Assessment Report Stage. Table 5-3 indicates a summary of the results of the MCA undertaken as part of the Feasibility and Options Study, with the environmental rating updated considering the new information. It is therefore proposed to take the current Emerging Preferred Route, for the section between Grand Canal and Christchurch, forward as the Preferred Route Option for this Section of the Greenhills corridor.

Table 5-3: City Centre Route Options Assessment Summary - Revised.

Assessment Criteria	Patrick Street GC1a (Modified)		GC1b	GC1c	GC2
Economy					
Integration					
Accessibility & Social Inclusion					
Safety					
Environment					

Revised Rating
Original Rating

5.7 Summary

In reviewing the Emerging Preferred Route, it can be determined that modifications to the route should be considered for Study Areas 1 and 3. The outcome of this review will be outlined in the following Section 6.

For Study Area 2 and 4 the Emerging Preferred Route Option are considered the optimum routing and should be taken forward as the Preferred Route Option. Figure 5-2 indicates the section of the Emerging Preferred Route Option in green which are now confirmed as the Preferred Route Option for the Greenhills to City Centre Corridor.

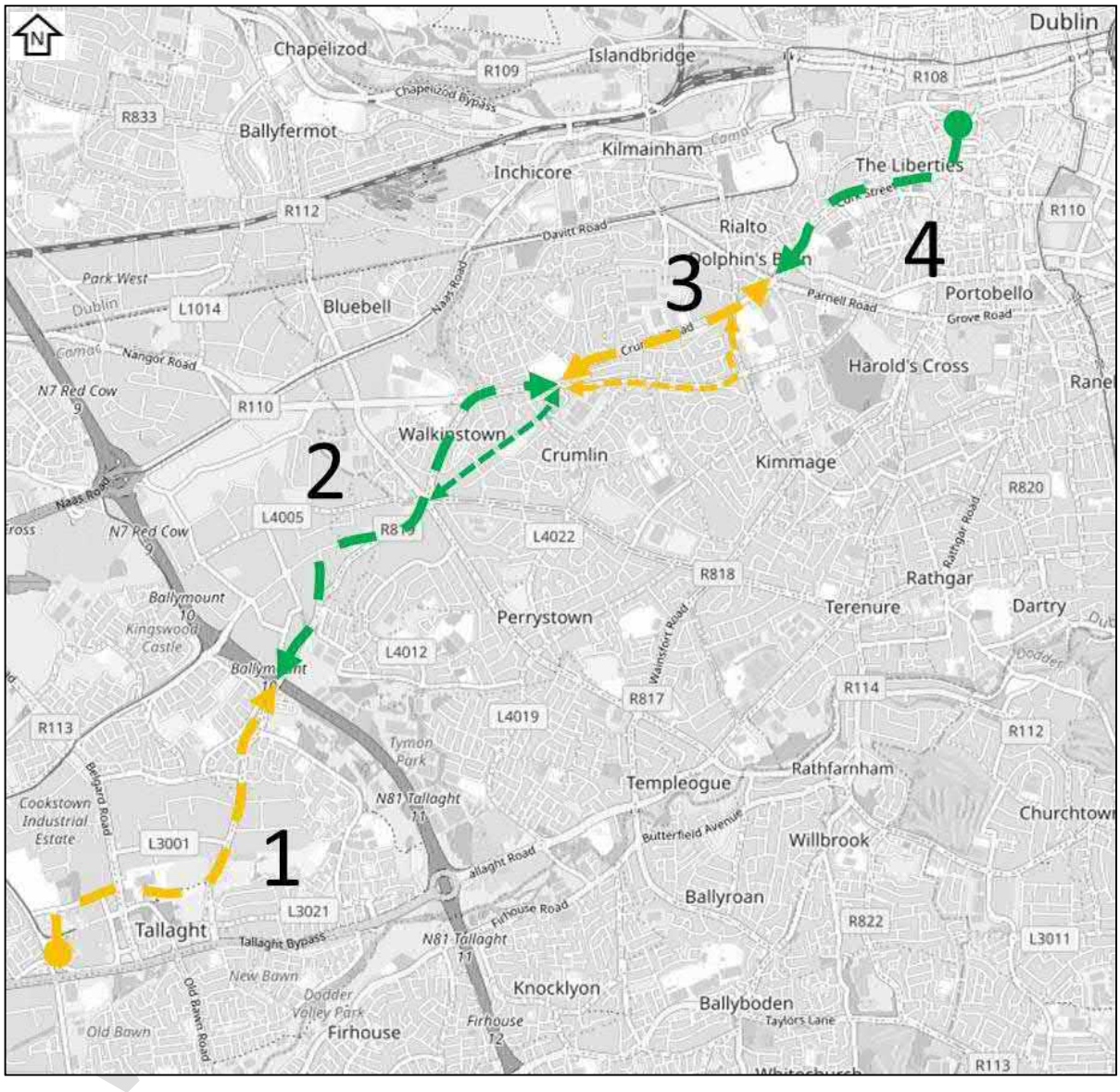


Figure 5-2: Emerging Preferred Route, highlighting sections that are confirmed in green

(Source: © OpenStreetMap Contributors)

6. Options Assessment

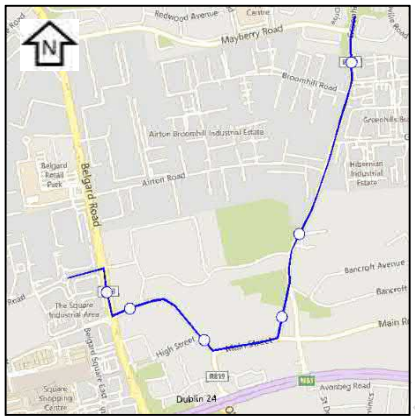
6.1 Section 1 - Tallaght to Ballymount

6.1.1 Introduction

In the Feasibility and Options Assessment Report the Emerging Preferred Route from Tallaght to Ballymount has broadly been maintained for the sections along both Belgard Square West and North, however the previous preferred route would see the CBC make use of the existing through road at the TUD campus (BG2). Following public consultation feedback, review of more detailed topographical information, and the required agreements for permanent access through the campus it was concluded that this part of the route required review, and a more advantageous route chosen to be taken forward as the Preferred Route Option.

6.1.2 Route Options – Belgard Square West to Greenhills Road

As the scheme area and extents have not changed the previously considered options where therefore re-assessed and considered as potential Preferred Route Options.



BG1 (Via Town Centre)

Route option BG1 utilises Belgard Road, Old Blessington Road, and Main Street towards Tallaght, the route would see the introduction of a priority bus junction at the junction of Greenhills Road and Old Greenhills Road. The CBC would then continue along Greenhills Road towards Ballymount.

BG2 (Via TUD)

Route option BG2, was the EPR routing for the 1st public consultation stage. It follows a similar routing to BG1 but passes through the TUD Campus rather the Main Street. However the extensive work that would be required within the campus (not previouslt considered) and the requirement to have 24hour/365day access makes this route option difficult to deliver.

BG3 (via Airton Road)

Route Option BG3 routes the buses to the north, to bypass both the Town Centre and TUD utilising the Airton Road to gain access to the Greenhills Road.

BG4 (Via Mayberry Lane)

Route Option BG4 utilises Belgard Road through to Mayberry Road and onto Greenhills Road towards Ballymount. This route serves the employments zones on Belgard Road, however bypasses Tallaght Town Centre.

BG5 (Town Centre, Via Belgard Square East)

Further assessments carried out on the above previously considered options also highlighted the following new route option. For the purposes of naming convention, it has been called Route Option BG5 and is described below.

Inbound: BG5 would commence on Belgard Square North where it would turn right onto Belgard Square East and progress onto Old Blessington Road where the route will follow that of BG1. The proposed route travels along Old Blessington Road and through the existing bus gate to Main Street. The route turns onto Old Greenhills Road, which is currently a cul-de-sac with local access. A bus gate would be provided to restrict access between Greenhills Road and Old Greenhills Road to buses only. The remainder of this route travels along Greenhills Road. This routing generally follows quiet route traffic routes, avoiding the most congested roads reducing the bus journey time.

Outbound: The outbound routing would follow the same roads as the inbound routing, again avoiding the most congested routes in the area.

Route Sections:

Figure 6-1 illustrates the indicative scheme design for this route option. The location of each junction is also indicated through numbers 1-8.

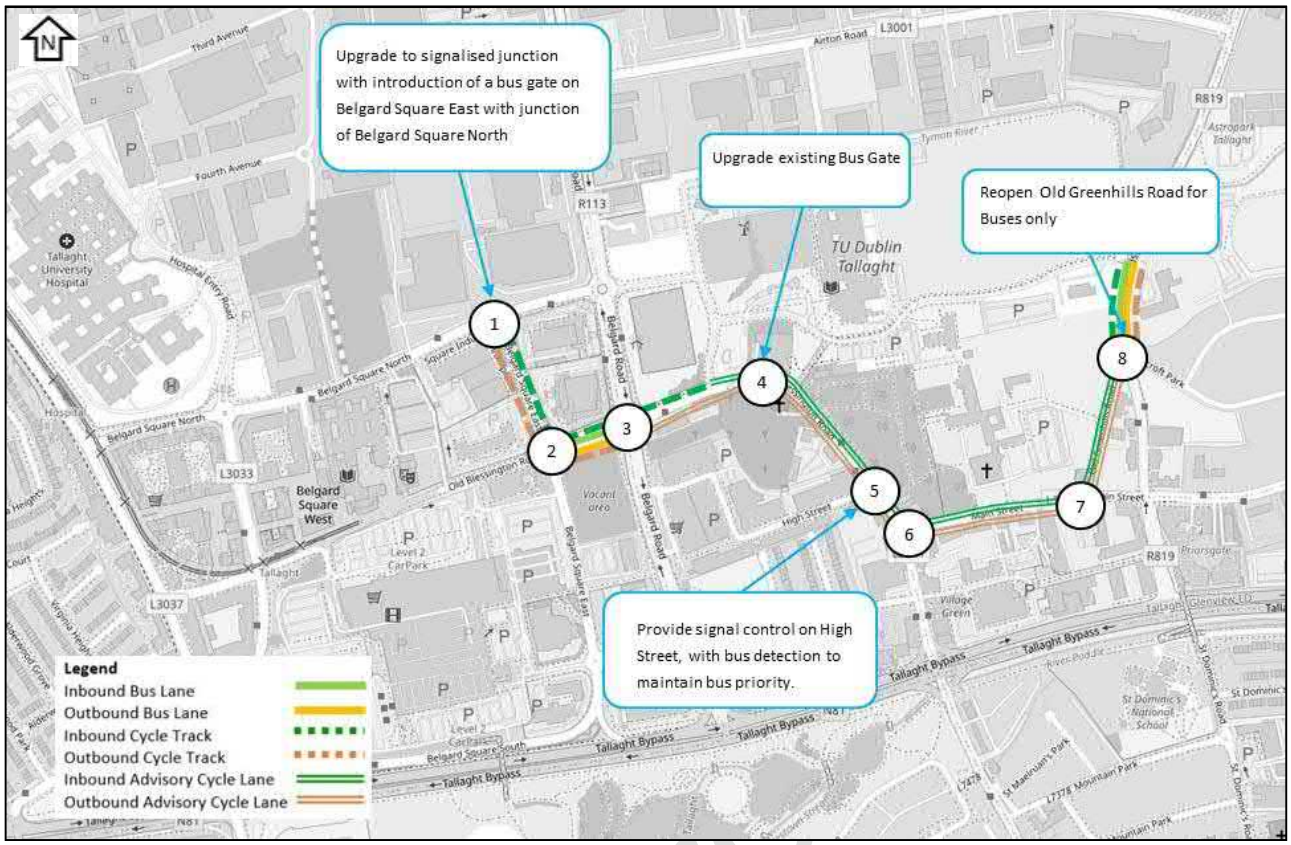


Figure 6-1: Route Option BG5 Indicative Scheme Design (Source: © OpenStreetMap Contributors)

As an alternative to BG1 in this option the route uses Belgard Square East rather than the congested Belgard Road to gain access to the Old Blessington Road. Traffic congestion will be avoided by installing a bus gate on the north end of Belgard Square East, effectively making this road access to the existing businesses only. On the initial section of the Old Blessington Road bus lanes will be provided to bypass any congestion at the Belgard Road junction. This route would allow buses access Tallaght Town Centre with limited interference from general traffic.

The remainder of the route from Old Blessington Road to Greenhills Road is the similar to that described in option BG1 provided in the previously published Options and Feasibility Report, with addition of a set of signals at High Street to control the flow of traffic out of the retail centre so as bus priority can be maintained. In general, this route option uses the existing road cross-section apart from the section between Belgard Square East and Belgard Road, which is indicated in the cross section below.

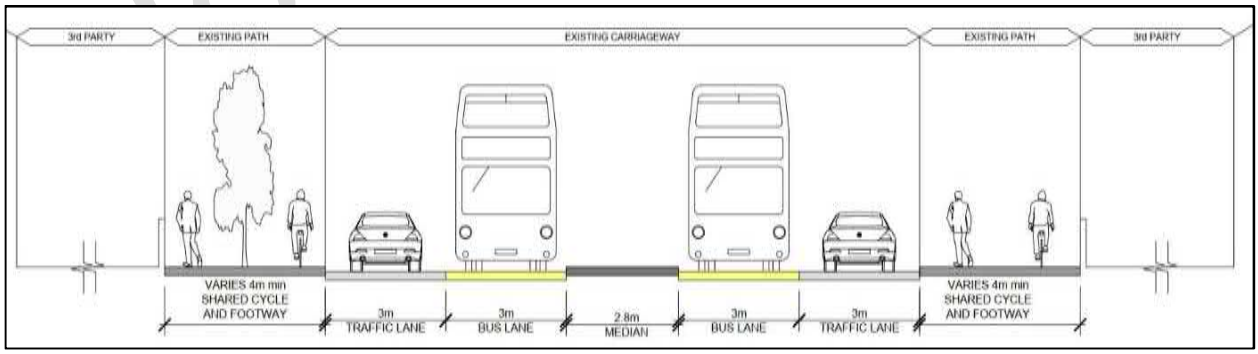


Figure 6-2: BG5 Cross Section Old Blessington Road (between Junctions 2 and 3).

6.1.3 Options Assessment – Belgard Square West to Greenhills Road

Details of the revised Stage 2 route options assessment undertaken for the Belgard Square North to Greenhills Road Section is summarised in Table 6-1, using the criteria as set out in Table 5-1: Assessment Criteria. The detailed MCA Tables are provided in Appendix A, Table A1.

Table 6-1: Revised Options Assessment Section 1

Assessment Criteria	BG1	BG2	BG3	BG4	BG5
Economy					
Integration					
Accessibility & Social Inclusion					
Safety					
Environment					
Overall Rating					

Following reassessment of the various route options it is concluded that BG5 has sufficient advantages over the other route options, particularly in the context that BG2 is challenging to deliver. While the other routes are less expensive, they serve relatively low-density employment areas and as a result have a lower effective catchment areas. The additional priority provided for buses on the approach to Old Blessington Road with option BG5, and the realignment of the route away from mature trees on Greenhills Road gives this route option an advantage over BG1 and is therefore the optimum routing in this area.

6.1.4 Route Options – Parkview

The Emerging Preferred Route proposals for the route north of Mayberry Road is to follow a new road alignment, with bus and cycle lanes in each direction, through the green area between Parkview and Treepark Road. This route is identified as a Road Objective in the South Dublin County Council County Development Plan and has a previously approved alignment (SDCC Part 8, 2007). The existing Greenhills Road, passing Parkview, is to be downgraded to a cul-de-sac on each side of Castletymon Road. However, at the proposed Parkview/ Castletymon Road junction on the Emerging Preferred Route alignment, no right turn lane, for traffic accessing Castletymon Road from Tallaght, has been provided, which may impact on bus operations at this location . As Castletymon Road is an important local distributor road, serving a number of schools and other local services the option of prohibiting this right turn movement is not appropriate, therefore alternative options that facilitate this right turning movement are required and has been reassessed. Following a review of the design the alternative option outlined, PV3 in line with the previous assessment, emerged and was assessed against the current Emerging Preferred Route proposal (PV2), Figure 6-3 indicates the alignment and cross-section of the EPR (PV2).

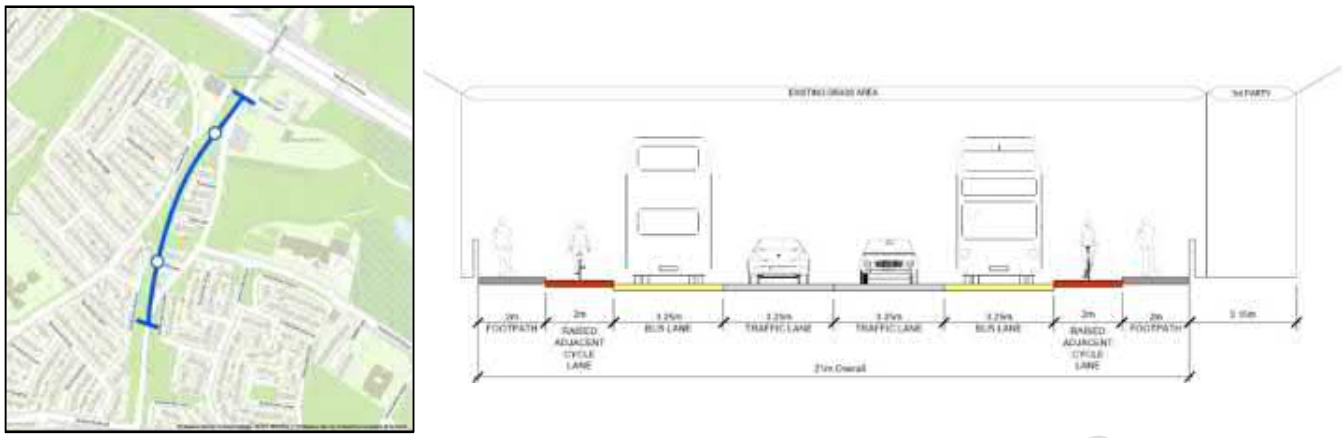


Figure 6-3: Existing EPR Routing at Park View and Typical Cross-Section (PV2).

PV3 New Greenhills alignment + reuse of old alignment for buses/cycles.

Figure 6-4 illustrates the indicative scheme for this route option. Effectively the new road alignment is narrower over much of its length, but the southbound bus and cycle lane removed. At the new junction the space made available by this diversion is used to provide a dedicated right turn lane to Castletymon Road. The southbound bus and cycle lane would follow the existing road alignment and use the existing road cross-section and would require no road widening.

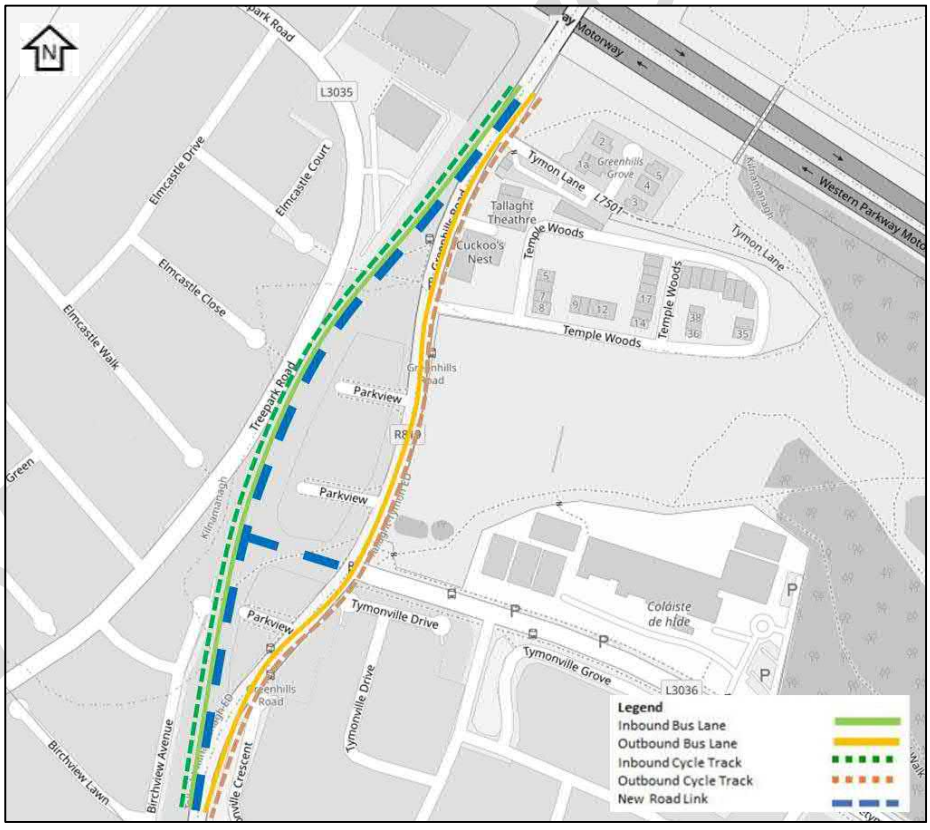


Figure 6-4: Route Option PV3 Indicative Scheme Design

(Source: © OpenStreetMap Contributors)

This option would require less overall construction and would provide a higher capacity junction, with a marginal, if any, decrease in quality of bus and cycle priority facilities. Figure 6-5 indicates the proposed layout of the new link through the green area.

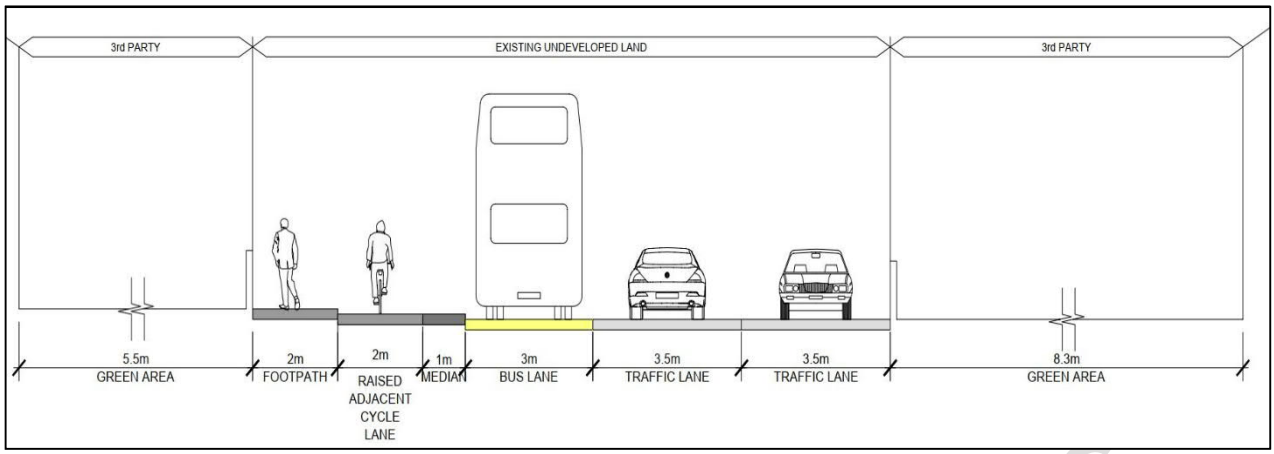


Figure 6-5: PV3 Cross Section of new link on Greenhills Road.

6.1.5 Options Assessment – Parkview

Details of the Stage 2 route options assessment undertaken for the Parkview Area is summarised in Table 6-2. The detailed multi-criteria assessment tables are provided in Appendix A, Table A2. The two options being compared are the current Emerging Preferred Route (PV2) and a revised layout which uses both the new road alignment and the existing roadway (PV3).

Table 6-2 : Revised Options Assessment Section 1

Assessment Criteria	PV2	PV3
Economy		
Integration		
Accessibility & Social Inclusion		
Safety		
Environment		

Based on the assessment undertaken, route option PV3 is rated marginally higher than the current Emerging Preferred Route proposals, route option PV3 is therefore the Preferred Route Option for the Parkview area for the following reasons:

- PV3 will have less of an impact on the area as it takes up less green space and can avoid some of the existing mature trees and hedgerows while achieving more in terms of junction capacity; and
- It maintains full access to the 3 schools on Castletymon Road as well as recreational facilities along this important local distributor road.

6.1.6 Preferred Route – Section 1 Tallaght to Ballymount

Following reassessment of the various route options it is concluded that the Preferred Route Option for Section 1 is as follows and as indicated in Figure 6-6:

- Belgard Square West to Greenhills Road, via Belgard Square North, Old Blessington Road, Main Street and Old Greenhills Road.
- Greenhills Road; and

- New road alignment at Parkview, with existing Greenhills Road to be used by southbound buses and cyclists.

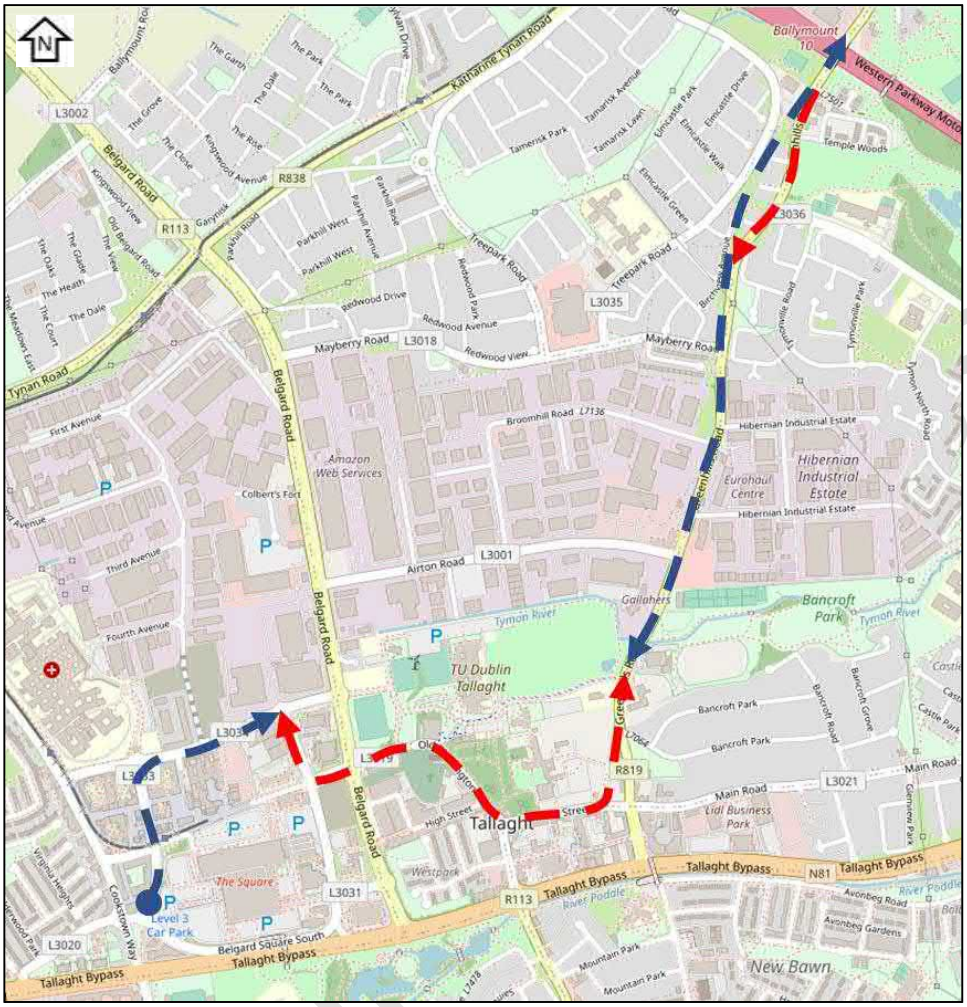


Figure 6-6: Preferred Route Option for Study Area 1 (Source: © OpenStreetMap Contributors)

The following design changes have also been identified for this section and summarised below:

- A bus interchange is proposed on Belgard Square West to facilitate interchange between Spine, Orbital and Local bus routes. This proposal is additional to the original concept design.
- On Belgard Square North it is proposed to provide a segregated cycle lane in each direction by setting back the existing wide footpaths and some limited additional land take. This will provide improved cycle access to the Hospital from Belgard Road.
- At Airton Road and all other junctions along the route, the cycle lane on the outside of a left turn slip lanes have been removed and replaced with a segregated route through the junction.
- Over the M50 a new bridge is proposed to provide continuous bus lanes and higher quality cycle lanes on Greenhills Road.

6.2 Section 3: Crumlin to Grand Canal

6.2.1 Introduction

Following the first round of public consultation, where concerns were raised by residents and examining new information that was available to the design team (i.e. a more detailed topographical survey) it was concluded that the EPR proposals for the Crumlin Road would have a significantly negative impact on the residential properties along the length of the street with driveways being reduced to below the desirable minimum lengths for the vehicles using them and potentially challenging gradients from the driveway to the front doors due to the gradients that would be formed by reducing the driveway length. As a result, a review of the options for this section was undertaken. This has involved revisiting the options that were previously discounted.

Feedback received also suggested that the cycle route could be extended to the Grand Canal, via Clogher Road, rather than returning to Crumlin Road. The primary reason given is that the suggested routing (via Clogher Road) is on cyclist's desire lines and that more cyclists would be attracted to the alternative route (Kildare/Clogher Road) if a higher quality facility to the Grand Canal was provided.

6.2.2 Route Options

In the Feasibility and Options Assessment Report ten route options were assessed in detail using the multi-criteria process used throughout this study. This concluded that the optimum routing of the Greenhills Corridor is along Crumlin Road rather than any other route option. This assessment concluded that the following 3 routes offer the most benefits over other options:

CG1b - Option CG1b included a bus and traffic lane in each direction and would require widening and land take along Crumlin Road. This was the Emerging Preferred Route that was taken forward to Public Consultation. Figure 6-7 Indicates a typical cross section for this option.

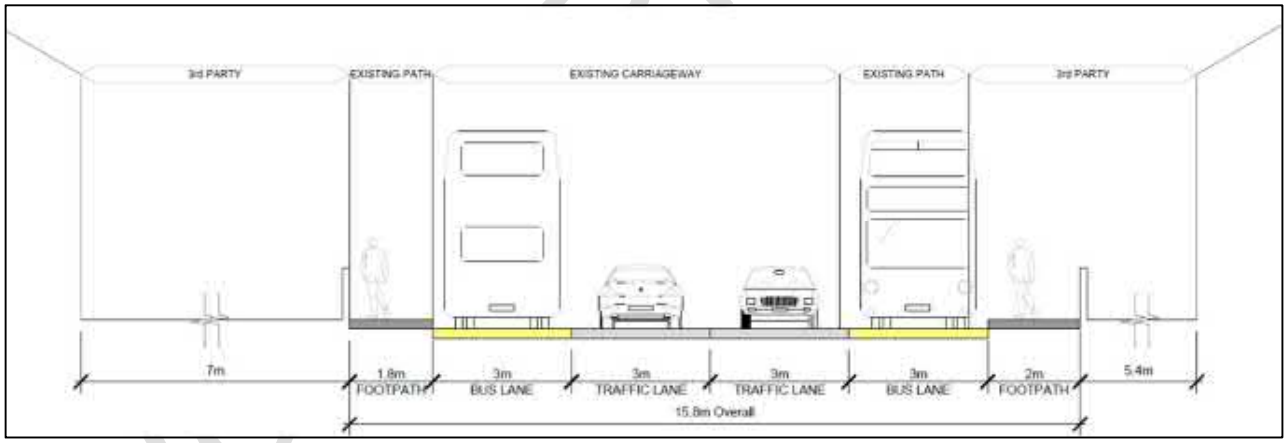


Figure 6-7: G1b Typical Cross Section for Crumlin Road.

CG1c – Option CG1c uses the existing carriageway width to provide an additional bus lane in one direction only (by removing the advisory cycle lanes). This option uses bus priority signals and queue management to provide buses with priority through this 1.4km section. The bus would share traffic lanes for approximately 1km of this section. Figure 6-8 Indicates the scheme design for this option.

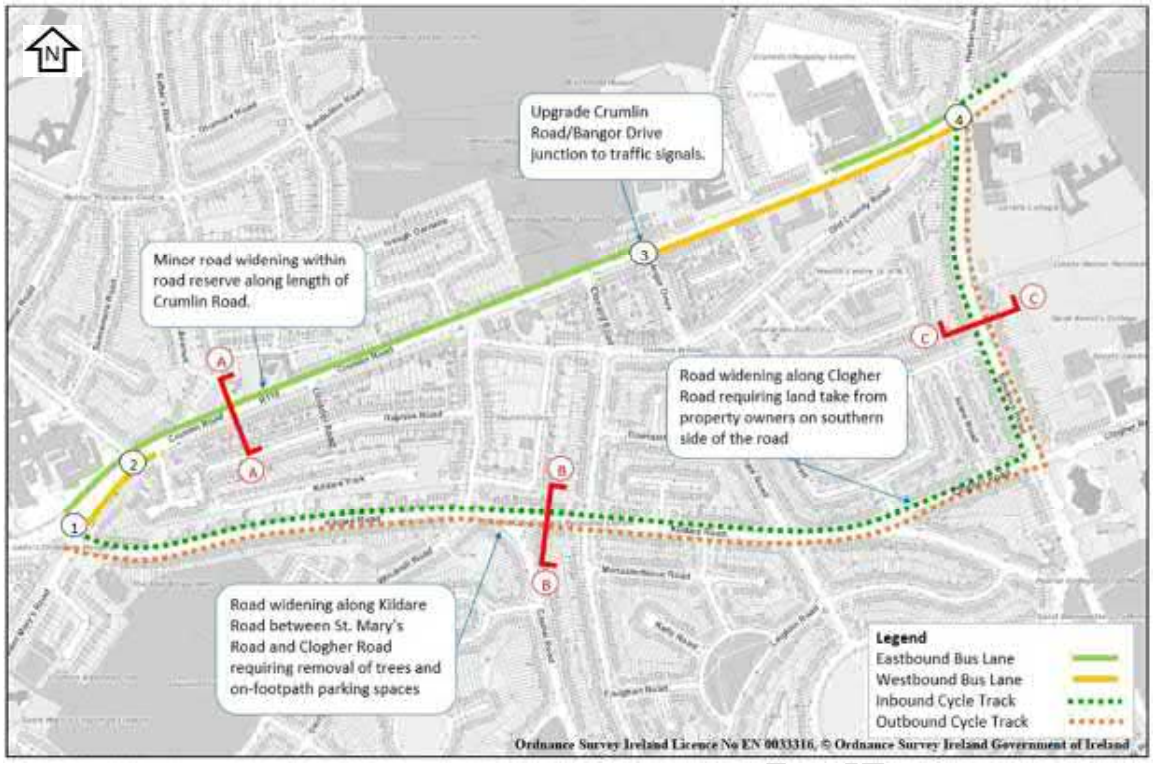


Figure 6-8: Route Option CG1c Indicative Scheme Design

CG1d – Option CG1d is a combination of the two previous options with extensive road widening proposed, but the section with the most challenging cross-section in terms of impacts on residents removed. This results in bus lanes over 80% of the corridor, and 100% in the inbound direction. Figure 6-9 Indicates the scheme design for this option.

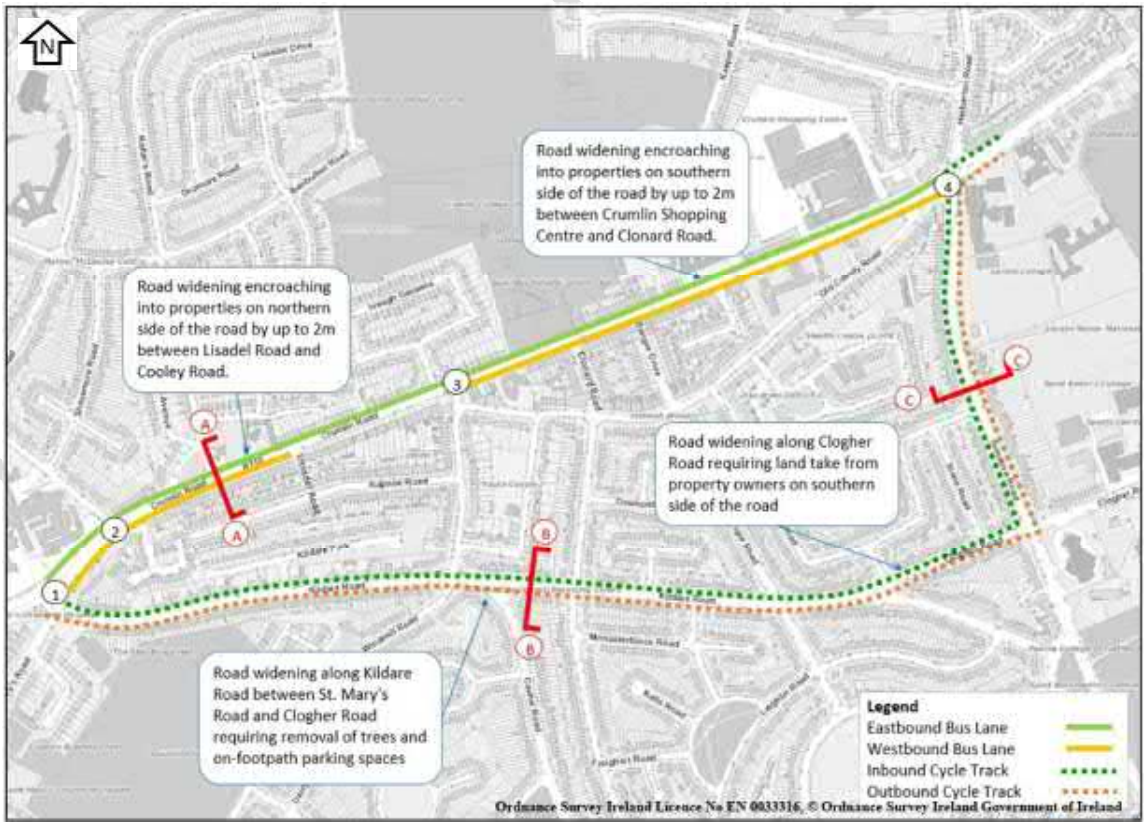


Figure 6-9: Route Option CG1d Indicative Scheme Design

All 3 of these options proposed an alternative cycle route via Kildare Road, Clogher Road and Sundrive Road.

While CG1b emerged as the preferred option with both CG1c and CG1d were rated lower, but not significantly so. Taking cognisance of the feedback during the initial public consultation and new information available CG1c and CG1d were revaluated and a further variation on these was developed and is presented as CG1e below.

CG1e - Partial Bus Lanes in Each Direction, alternative cycle lanes along Kildare Road/Clogher Road

Figure 6-10 illustrates the indicative scheme design for this route option. The location of cross-section (red bar) and junctions referenced in subsequent sections describing this route option are also presented in this figure.

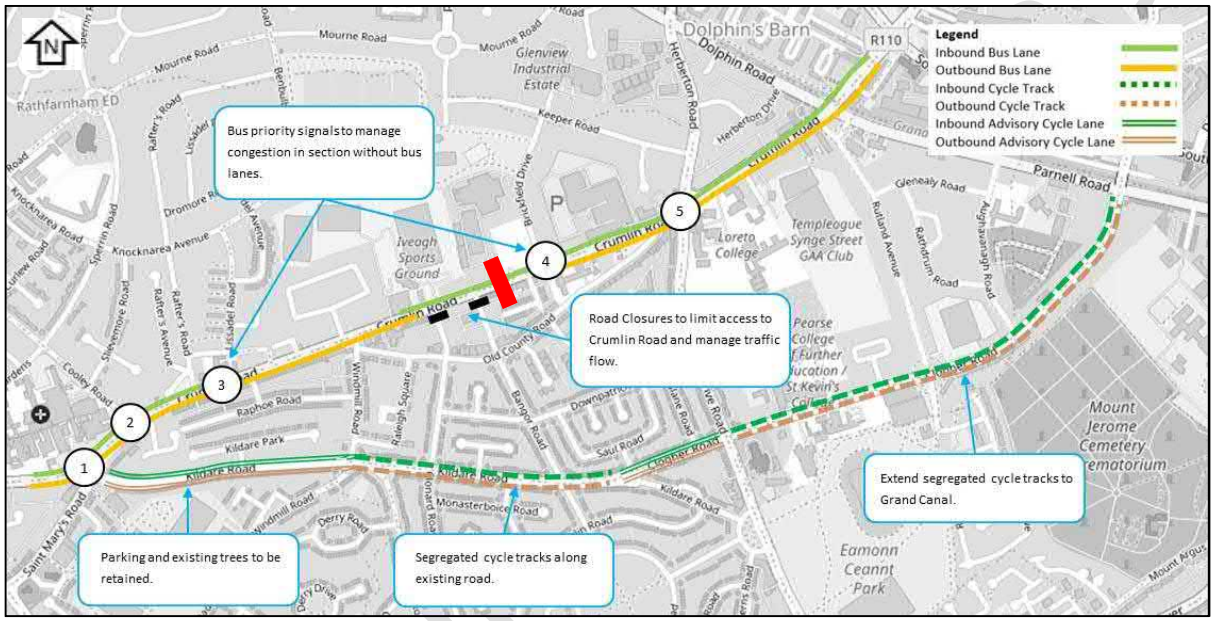


Figure 6-10: Route Option CG1e Indicative Scheme Design

(Source: © OpenStreetMap Contributors)

As was illustrated with CG1c it is possible to provide one additional lane along Crumlin Road without the need for land acquisition by removing the existing on-road cycle lanes and narrowing all lanes to 3m in width. The third lane could be allocated to buses in one direction. For CG1e this space was utilised by splitting the bus lane in each direction in shorter sections, so as the bus is only sharing with general traffic for no more than 300m. this allows the traffic entering these sections to be managed more efficiently using bus priority signals. While the same effective design as CG1c the shorter lengths of shared lane, and a small amount of widening of non-residential properties, results in bus lanes over approximately 80% of this section, which is similar to Route Option CG1d.

Bus priority signals and queue relocation would be complemented with additional traffic management measures to restrict the amount of traffic entering from side roads, which would have potential to contribute to queuing in the area managed by queue relocation signals on Crumlin Road. This would encompass the following measures:

- Closure of Clonard Road/ Crumlin Road junction and conversion to a pocket park; and
- Closure of Bangor Drive/ Crumlin Road junction and conversion to a pocket park.

Alternative routes are available for all traffic currently making the manoeuvres listed above.

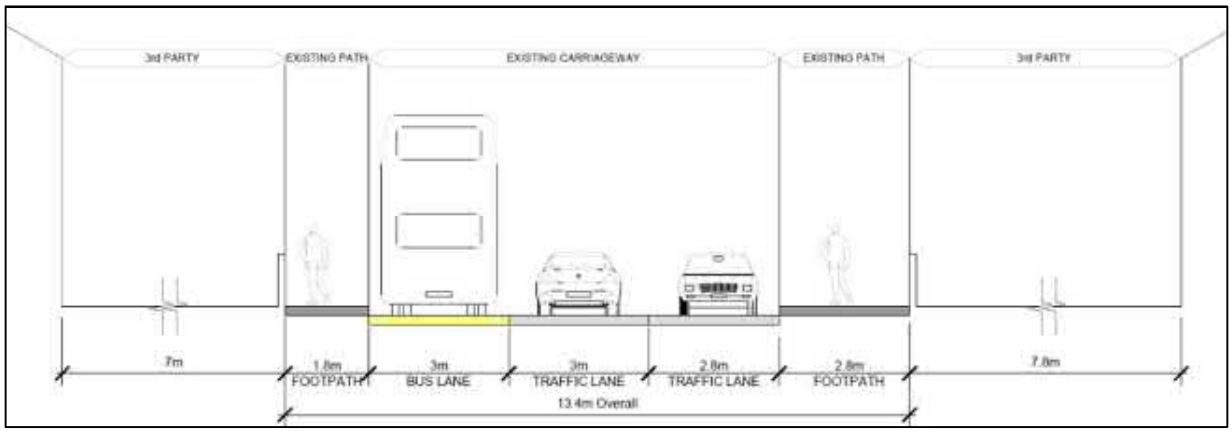


Figure 6-11: CG1e Typical Cross Section for Crumlin Road.

Unlike the previous options the cycle route is now proposed to be extended along Clogher Road to the Grand Canal, where it will join the Grand Canal Cycleway which is under development. This route will consist of segregated cycle lanes on the existing carriageway. It is not proposed to remove trees as part of this proposal.

There are 5 signalised junctions along this route option, 3 of which would require upgrading to facilitate bus priority, and 2 new signalised bus priority gates to allow the bus to leave the bus lanes and to control the amount of traffic in the shared section. The location of these junctions are presented in Figure 6-10 and discussed below.

1. Crumlin Road/Kildare Road: Bus lanes are already provided to the stop line on Crumlin Road in each direction and as such only minor works are required;
2. Crumlin Road/Cooley Road: Adjustments to the junction layout may be required to facilitate bus lanes on approach to the junction. There may also be a possible requirement to relocate/provide new signal equipment;
3. Crumlin Road (at Ardscoil Éanna) eastbound bus gate: traffic flow into the following shared section of Crumlin Road will be managed by these signals;
4. Crumlin Road (at HSE) westbound bus gate: traffic flow into the following shared section of Crumlin Road will be managed by these signals; and
5. Crumlin Road/Sundrive Road: Adjustments to the junction layout may be required to facilitate bus lanes on approach to the junction. There is also a possible requirement to relocate/provide new signal equipment.

Route Options Assessment

Details of the Stage 2 route options assessment undertaken for the Crumlin to Grand Canal study area is presented in Appendix A, Table A3. The resulting relative ranking of route options against the scheme assessment sub-criteria is summarised in Table 6-3.

Table 6-3: Revised Options Assessment Section 1

Assessment Criteria	CG1b	CG1c	CG1d	CG1e
Economy				
Integration				
Accessibility & Social Inclusion				
Safety				
Environment				

This indicates that the options are relatively similar overall with the only significant differentiator is the amount of land take required and resulting impact on the environmental ratings. Where CG1e is a noticeable improvement to the other 3 options is in regard to the extension of the cycle facilities along Clogher Road to Grand Canal, which reduces environmental impacts associated with the other routing. Option CG1e therefore better meets the scheme objectives and is the Preferred Route Option for the Crumlin area for the following reasons:

- It delivers high proportion of bus lanes over this 1.4km section (with a lower levels of land take), providing improved journey time reliability;
- It integrates better with existing bus routes;
- It delivers cycle facilities along a parallel route; and
- Is cost effective in comparison to other options.

6.2.3 Preferred Route – Section 3 Crumlin to Grand Canal

Following reassessment of the various route options it is concluded that the Preferred Route Option for Section 3 is as follows and indicated in Figure 6-1:

- Crumlin Road from Drimnagh Road to Parnell Road; and
- An alternative cycle route along Kildare Road and Clogher Road to Parnell Road.

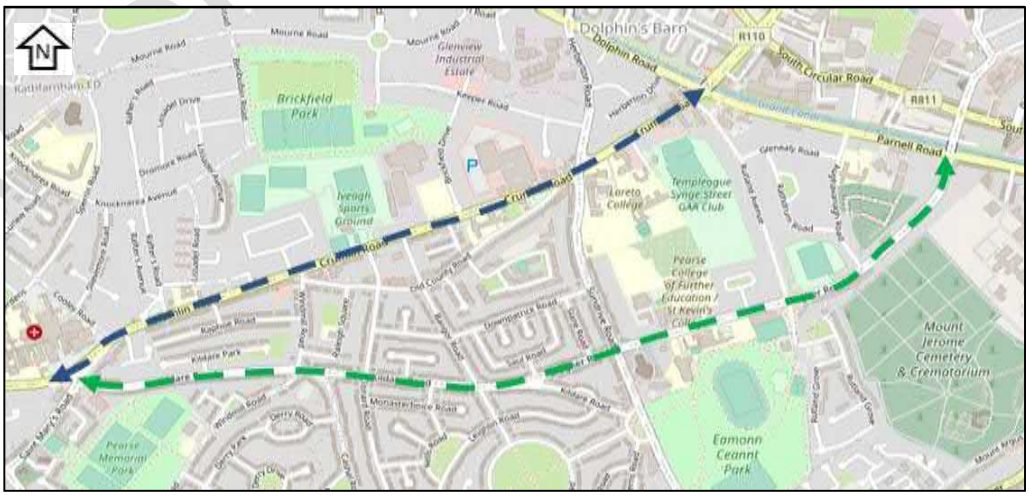


Figure 6-12: Preferred Route Option for Study Area 1 (Source: © OpenStreetMap Contributors)

7. Preferred Route Option

7.1 Introduction

Chapter 5 presented the sections of the Emerging Preferred Route that is recommended to be taken forward as the Preferred Route Option and it also identified sections which need further appraisal. Chapter 6 outlined the proposed changes and the additional appraisal that was undertaken for the Greenhills to City Centre CBC. Following this additional appraisal, the Preferred Route Option for each section has been joined together to form an end-to-end Preferred Route Option. This Chapter summarises and describes the Preferred Route Option and the preferred route scheme design. The updated preferred route option scheme design drawings are included in D.

7.2 Preferred Route Description

The 11km Greenhills to City Centre CBC begins at a new bus interchange at the Square Shopping Centre and continues to Dublin City Centre via Tallaght Town Centre, Ballymount, Walkinstown Cross, Drimnagh, Crumlin, Dolphins Barn and the Coombe. In addition to the primary corridor a 4km alternative cycle route is provided between Walkinstown and the Grand Canal along Bunting Road, Kildare Road and Clogher Road. The following section outlines a more detailed description of the corridor.

7.2.1 Section 1: Tallaght to Ballymount

The Greenhills to City Centre CBC commences at the existing roundabout junction on Belgard Square South. It is proposed to change the roundabout to a fully signalised junction with improved pedestrian facilities, and providing an alternative access route to the Square Shopping Centre. Belgard Square West is intended to be a bus only route and will no longer be a through route for general traffic. The revised scheme now indicates a bus interchange that will act as the focus for all bus routes in the area. Between Belgard Square South and Tallaght Cross West / Broadfield Hall access to and from these buildings and neighbouring developments will still be permitted from Belgard Square West. Bus traffic across Old Blessington Road will be controlled by signal controlled priority.

It is proposed to change the roundabout junction on Belgard Square North at the Tallaght Hospital Entrance and Cookstown Way to a fully signalised junction to accommodate new bus lanes and improved cycle and pedestrian facilities. The roundabout junctions at Belgard Square East will also be replaced with new signalised junction arrangements. However, the revised scheme no longer includes the change of the Belgard Road roundabout as the corridor now follows Belgard Square East. 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.

From Belgard Square East it is proposed to provide an alternative CBC route from the Emerging Preferred Route which diverts around TUD Tallaght via Blessington Road and Main Street to Greenhills Road. This route largely aligns with the existing bus route for the area and minimises impacts on the existing TUD campus infrastructure and operational procedures. A change to avoid traffic congestion on Greenhills Road is for buses to use the Old Greenhills Road alignment and create a new junction with signal controlled priority at the location of the existing cul-de-sac, to facilitate bus only turn movements to the R819 Greenhills Road. This will aid the bus in avoiding congestion at the Main Street/ Greenhills Road junction, however it will negatively impact on the recently introduced landscaped area.

Between the Old Greenhills Road and the junction with Mayberry Road, along the Greenhills Road, it is intended to provide one bus lane, one traffic lane and a cycle track in each direction. To accommodate this road cross section, it is proposed to acquire additional land along this section on both the west and east side of the existing Greenhills Road. This proposed realignment has been altered from the previous scheme to minimise impacts to the existing mature trees and the stone wall on the western verge north of the TUD entrance on Greenhills Road. At the Airton Road junction the

road alignment has also been altered to improve facilities for cyclists and to make use of space that has already been setback for future road widening.

To improve the operation of the existing junction and minimise land take, it is proposed to introduce a right turn ban from Greenhills Road to the entrance to Harvey Norman store and right turn ban from the Greenhills Road to Hibernian Industrial Estate. Access from Harvey Norman to Greenhills Road will be maintained at this junction. Right turning vehicles for Harvey Norman will be directed to the Airton Road junction. At this junction, vehicles will be able to turn right and access the Harvey Norman store from this road. Right turning vehicles for the Hibernian Industrial Estate will be directed to the next junction (at Agnelli Motor Park) where full access will be maintained.

Between Mayberry Road and Tymon Lane, it is proposed to undertake major changes to the local road network. South Dublin County Council had identified this section of Greenhills Road for upgrade under their current County Development Plan and received Part 8 Planning Approval in 2007 for the upgrade. At Parkview the EPR has been altered to provide a right turn traffic lane at the junction with Castletymon Road, which will maintain easy access to the many schools and recreational facilities along this road. The revised proposal also makes use of the existing Greenhills Road, reducing the area required for the proposed road alignment through the green area at Parkview.

7.2.2 Section 2: Ballymount to Crumlin

The existing M50 bridge crossing will be retained, however, the cross-section constraints limits the priority that can be provided for both bus and cyclists. Having reviewed the expected operation of the corridor it has been concluded that an additional bridge is required to maintain priority for buses and to provide high quality cycle facilities over the M50 in both directions. This bridge will be similar to the current bridge 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 this bridge.

The existing Ballymount Road Upper/Greenhills Road junction adjacent to the existing petrol station is proposed to be closed. Traffic heading for the M50 will be able to do so via the new junction and link road between Greenhills Road and Ballymount Avenue. The new road will tie back into the existing road networks at Calmount Road. The junction between Ballymount Avenue and Calmount Road will be upgraded from a roundabout to a signalised junction with improved pedestrian and cycle facilities. The bus route will be directed down Calmount Road. The existing road is intended to be widened to incorporate bus and cycle lanes in both directions. It is proposed to connect Calmount Road to Greenhills Road with a new link road at Calmount Avenue. While this was the only connection to the Greenhills Road in the EPR it is now proposed to maintain access at the Tymon Park end of Greenhills Road as well to facilitate easier access to this road from Tallaght.

Between Calmount Road and Walkinstown Roundabout, it is proposed to maintain one bus lane, one traffic lane and a cycle track in each direction. The Emerging Preferred Route design for Walkinstown Roundabout has been revised to improve cycle and pedestrian connectivity around this busy junction. A two-way segregated cycle track has been proposed around the junction to allow cyclists to follow the quickest route and to reduce interactions with motor vehicles.

7.2.3 Section 3: Crumlin to Grand Canal

On Walkinstown Road between Walkinstown Roundabout and the Long Mile Road, it is proposed to provide one bus lane and one general traffic lane in each direction. There is insufficient space to accommodate dedicated cycle lanes on this section of road. To accommodate this cross section, it is proposed to utilise land take to the west of the Walkinstown Road between Walkinstown Avenue and Kilnamanagh Road. Between Kilnamanagh Road and Long Mile Road, the land acquisition will be on the eastern side of Walkinstown Road. It is proposed to introduce a right turn ban from Walkinstown Road to Kilnamanagh Road. Kilnamanagh Road will remain accessible from Walkinstown Road through Walkinstown Drive. It is also intended to introduce a right turn ban for right turning traffic from Walkinstown Road to the southern entrance of the SuperValu supermarket.

To accommodate cyclists an alternative cycle route is proposed along Bunting Road and St. Marys Road providing a quiet route linking Walkinstown Roundabout with Kildare Road.

It is proposed to upgrade the junction at Drimnagh Road and Walkinstown Road to enhance pedestrian and cycling facilities. To improve the safety of cycle facilities and reduce vehicle speeds

the existing left turn slip lane to Walkinstown Road has been removed and converted to public plaza area. Parking adjacent to shop frontage on Drimnagh Road has been reviewed, with the existing perpendicular parking converted to a safer, but lower capacity, parallel parking layout.

On Drimnagh Road it is proposed to maintain one bus lane, one general traffic lane and one cycle track in each direction. To allow this revised cross section some limited land take from property may be required. 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 Drimnagh Road and the proposed alternative cycle route via Kildare Road.

On Crumlin Road it is proposed to alter the Emerging Preferred Route design from four lanes (2 bus and 2 traffic lanes) to three lanes (2 traffic lanes and 1 bus lane). Bus priority will be maintained by incorporating Signal Controlled Priority and managing the flow of traffic in both directions along Crumlin Road. This revision is required due to the size of the front gardens and gradient constraints between the road level and front doors of some of the residents which may have resulted in some houses not being *Accessible to All* should the road have been widened. As a result, less land acquisition is required on this section of the corridor. The proposed arrangement requires the closure of Clonard Road and Bangor Drive to facilitate traffic management within this portion of Crumlin Road such that bus priority can be maintained. Access to 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 there is insufficient space to provide dedicated cycle lanes. Therefore, it is proposed to provide an alternative cycle route along Kildare Road and Clogher Road.

In order to improve road safety, and reduce the traffic flow, on Kildare Road it is intended to introduce a bus only link in both directions at the junction of Kildare Road/ Clonard Road. This will prohibit through traffic; however, buses, taxis and cyclists' movements will remain unrestricted along Kildare Road. Eastbound traffic would be directed along Clonard Road, through Downpatrick Road on to Bangor Drive. Westbound traffic would also be directed up Clonard Road onto the Old County Road.

A change from the EPR proposals is that the alternative cycle route will now continue along Clogher Road to the Grand Canal, rather than returning to Crumlin Road. This will provide improved connectivity to the proposed Grand Canal cycle route at Parnell Road.

At the junction between Crumlin Road/Herberton Road/ Sundrive Road, it is proposed to modify the existing layout to improve the kerb alignments and provide improved pedestrian crossing facilities. On the Crumlin Road 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.

7.2.4 Section 4: Grand Canal to Christchurch

Between Dolphin Road and South Circular Road, it is intended to provide one bus lane, one general traffic lane and one cycle track in each direction. The previously proposed left turn ban at the South Circular Road junction has been reviewed and removed as it would determinately impact on local access. The proposals now include a landscaped area to the front of the shops, to the east of the junction, in line with the previously approved Part 8 proposals for this location.

Between South Circular Road 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 way facilities. There is currently insufficient road width on Dean Street to facilitate bus lanes but bus priority from St. Luke's Avenue will be maintained with through Signal Controlled Priority.

Between Dean Street and Christchurch Place it is proposed to have one bus lane, one general traffic lane and one cycle track in each direction. The cross section has been revised from the Emerging Preferred Route to maintain the central median and retain the existing median trees.

7.3 Carbon

In developing the Draft PRO, consideration has been given to the carbon generated by the scheme during construction. Many of the changes made to the scheme design since the EPR proposal have resulted in a change in the construction carbon generated by the scheme. Notable changes that reduced carbon include the following:

- The revised alignment of the Greenhills Road at Park View that makes use of the existing road alignment in order to reduce the new road cross-section;
- Retention of existing kerb line along Crumlin Road, significantly reducing the construction works on this section; and
- Retention of the existing median on Patrick Street along with the existing trees within the median.

A change that will generate an increase in carbon is the addition of a bridge over the M50 on Greenhills Road.

Construction carbon will continue to be considered and assessed as part of the evolving scheme design and the preparation of the supporting EIAR documentation

7.4 Summary

The Preferred Route is approximately 11km long from end to end. The updated concept scheme design drawings show the extent of the infrastructure proposed to deliver this CBC and the length of the primary interventions are summarised in Table 7-1 below.

Table 7-1 Summary of Bus and Cycle Interventions on the Greenhills to City Centre CBC.

Intervention	Existing (km)	Proposed (km)
Bus Priority		
Bus Lanes		
Inbound	2.8	8.0
Outbound	2.1	7.6
Virtual Bus Lanes		
Inbound	0	0.9
Outbound	0	0.7
Total Bus Priority (both directions)	**4.9**	**17.2 (+251%Change)**
Cycle Facilities		
Cycle Lanes – Segregated		
Inbound	0.9	9.6
Outbound	0.7	8.9
Cycle Lanes – Non-segregated		
Inbound	8.6	1.9
Outbound	8.3	2.6
Total Cycle Facilities (both directions)	**18.5**	**23.0 (+24%Change)**

8. Next Steps

This report has identified a Preferred Route Option for the bus infrastructure along this Core Bus Corridor for which an updated concept design has been developed.

The next project stage (the development of a Preliminary Design) will further refine and update the concept design along the route taking into account any further feedback from the 3rd round of public consultation. Further account will be taken of likely public transport service levels, particularly the bus service patterns and any changes to the overall bus network which may arise from the separate bus network review process. The proposals will be amended, if and as required, to integrate any resultant changes. The Preliminary Design will define the final practically achievable scheme for the CBC, considering more detailed studies of constraints, impacts and environmental assessment required at a local level.

This Preliminary Design will form the basis of the planning consent process for the scheme, which will require a development consent application to be made directly to An Bord Pleanála, due to the nature and extent of the proposed works.

Appendix A – Multi-Criteria Analysis Tables

A1 Tallaght Route Options Assessment

Assessment Criteria	**Assessment Sub-Criteria**	Route Option BG1 (Main Street)	Route Option BG2 (TUD)	Route Option BG3 (Airton Road)	Route Option BG4 (Mayberry Road)	Route Option BG5 (Main Street Alternative)
Economy (Cost Assessment and Transport Economic Indicators)	Capital Cost	**Total Capital Cost €€€€** - Widen Belgard Road between Main Street and Belgard Square North to facilitate bus lanes and raised adjacent cycle lanes in each direction; - Signalise Old Greenhills Road/Main Street junction to allow buses to exit from old Greenhills Road; - New bus gate at Old Greenhills Road/Greenhills Road junction; and - Widen Greenhills Road to provide bus lanes and raised adjacent cycle lanes in each direction. Land Acquisition 5,700sqm Private Land 3,490sqm Public Land 5 Properties affected	**Total Capital Cost €€€€** - Widen Belgard Road between Main Street and Belgard Square North to facilitate bus lanes and raised adjacent cycle lanes in each direction; - Signalise Old Greenhills Road/Main Street junction to allow buses to exit from old Greenhills Road; - New bus gate at Old Greenhills Road/Greenhills Road junction; and - Widen Greenhills Road to provide bus lanes and raised adjacent cycle lanes in each direction. Land Acquisition 5,700sqm Private Land 3,490sqm Public Land 5 Properties affected	**Total Capital Cost €€€** - Widen Belgard Road between Belgard Square North to facilitate bus lanes and raised adjacent cycle in each direction; - Widen Airton Road (removing verge and trees) to facilitate bus lanes and raised adjacent cycle lanes in each direction; and - Widen Greenhills Road to provide bus lanes and raised adjacent cycle lanes in each direction. Land Acquisition 3,400sqm Private Land 6,980sqm Public Land 3 Properties affected	**Total Capital Cost €** - Widen Belgard Road between Belgard Square North to facilitate bus lanes and raised adjacent cycle lanes in each direction; - Widen Mayberry Road to facilitate bus lanes in each direction; and - Widen Greenhills Road to provide bus lanes and raised adjacent cycle lanes in each direction. Land Acquisition 0sqm Private Land 12,274sqm Public Land 0 Properties affected	**Total Capital Cost €€€€** - New Bus Gale at the northern end of Belgarde Square East; - Upgrade cycle lanes on Belgard Square East and replace one traffic lane in each direction with bus lane (between Belgard Square East and Belgard Road; - Signalise Old Blessington Road/ High Street Junction; - Signalise Old Greenhills Road/Main Street junction to allow buses to exit from Old Greenhills Road; - New bus gate at Old Greenhills Road/Greenhills Road junction; and - Widen Greenhills Road to provide bus lanes and raised adjacent cycle lanes in each direction. Land Acquisition 5,700sqm Private Land 3,490sqm Public Land 5 Properties affected
	Rank					

	Transport Reliability and Quality of Service	Journey Time: 5-6 mins Length: 2.0 km No.of Junctions: 5 Bus lanes are provided along approximately 30% of this route option. However, the presence of the bus gate at the western end of Main Street restricts the flow of traffic through the village. Lack of bus lanes through this section would affect reliability of services running along it.	Journey Time: 4-5 mins Length: 1.6 km No.of Junctions: 3 Bus lanes are provided along approximately 60% of this route option. While no bus lanes are provided through the TUD campus, the flow of traffic through the campus is only permitted outside of peak hours meaning buses would likely not be delayed through this section. Furthermore, through traffic is discouraged outside of peak hours through the use of speed ramps on the campus roads. As a result, this route option is considered to have good journey time reliability.	Journey Time: 4-5 mins Length: 1.7 km No. of Junctions: 3 Bus lanes are provided along the full length of this route option resulting in good journey time reliability of bus services.	Journey Time: 4 - 5 mins Length: 2.0 km No. of Junctions: 3 Bus lanes are provided along the full length of this route option resulting in good journey time reliability of bus services.	Journey Time: 6-7 mins Length: 2.0 km No.of Junctions: 6 Bus lanes are provided along approximately 30% of this route option. The presence of the bus gate at the northern end of Belgard Square East and western end of Main Street restricts the flow of traffic through these sections providing a high level of priority. Lack of bus lanes through this section would affect reliability of services running along it.
	Rank					
Integration	Land Use Integration	This route option continues to serve Tallaght Village centre and support local business growth. There is potential to support development along Greenhills Road.	This route option has potential to support development along Greenhills Road. This route option also serves TUD directly.	This route option has potential to support development along Greenhills Road. This route option also serves Broomhill Industrial Estate directly.	This route option has potential to support development along Belgard Road. And enhance integration with existing uses along Kilnamanagh Road.	This route option directly serves Tallaght Village centre and support local business growth. There is potential to support development along Greenhills Road.
	Rank					
	Residential Population and Employment Catchments	**Residential Population Catchments** - 5 minute walk catchment of approximately 2,600 - 10 minute walk catchment of approximately 8,500 - 15 minute walk catchment of approximately 16,200	**Residential Population Catchments** - 5 minute walk catchment of approximately 1,800 - 10 minute walk catchment of approximately 6,700 - 15 minute walk catchment of	**Residential Population Catchments** - 5 minute walk catchment of approximately 1,600 - 10 minute walk catchment of approximately 4,300 - 15 minute walk catchment of approximately 10,300	**Residential Population Catchments** - 5 minute walk catchment of approximately 2,900 - 10 minute walk catchment of approximately 7,200 - 15 minute walk catchment of approximately 12,000	**Residential Population Catchments** - 5 minute walk catchment of approximately 2,600 - 10 minute walk catchment of approximately 8,500 - 15 minute walk catchment of approximately 16,200

		Employment catchments 10 minute walk catchment of approximately 13,900	approximately 13,500 **Employment catchments** 10 minute walk catchment of approximately 11,800	**Employment catchments** 10 minute walk catchment of approximately 9,100	**Employment catchments** 10 minute walk catchment of approximately 9,100	**Employment catchments** 10 minute walk catchment of approximately 13,900
	Rank					
	Transport Network Integration	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. Potential for interchange with other Dublin Bus Services on N81 corridor. There would be no impact on general traffic.	This route coincides with portions of existing bus route 27. Route does not provide any opportunities for interchange with other public transport services. There would be no impact on general traffic.	This route coincides with portions of existing bus routes 27 and 76a. Route does not provide any opportunities for interchange with other public transport services. There would be no impact on general traffic.	This route coincides with portions of existing bus routes 27 and 76a. Route does not provide any opportunities for interchange with other public transport services. There would be no impact on general traffic.	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. Potential for interchange with other Dublin Bus Services on N81 corridor. There would be no impact on general traffic.
	Rank					
	Cycling Integration	This route option is identified in the GDA Cycle Network Plan as forming parts of primary cycle route S05 and 8B. The section of S05 along Belgard Road and the section of 8B along Greenhills Road can be delivered as part of this scheme. However, the section of route S05 through Tallaght Village could not be delivered. Dedicated cycle facilities are only provided on the Belgard Road and Greenhills Road sections of this route (in combination with bus priority measures) with cyclists sharing with general traffic along Main Street.	This route option is identified in the GDA Cycle Network Plan as a minor greenway through ITT and forms part of primary cycle route 8B. The section of 8B along Greenhills Road can be delivered as part of this scheme. Dedicated cycle facilities only provided on the Greenhills Road section of this route. Cyclists share with general traffic for approximately half of the route section through the ITT campus. However the campus roads are low speed low volume roads and as such this is considered to be an	This route option is identified in the GDA Cycle Network Plan as forming part of primary routes S05 and 8B as well as a feeder route along Airton Road. The section of S05 along Belgard Road and the section of 8B along Greenhills Road can be delivered as part of this scheme. Dedicated cycle facilities can be provided along the entire route section.	This route option is identified in the GDA Cycle Network Plan as forming part of primary routes S05 and 8B as well as a feeder route along Airton Road. The section of S05 along Belgard Road and the section of 8B along Greenhills Road can be delivered as part of this scheme. Dedicated cycle facilities can be provided along the entire route section.	This route option is identified in the GDA Cycle Network Plan as forming parts of primary cycle route S05 and 8B. The section of 8B along Greenhills Road can be delivered as part of this scheme. However, the section of route S05 through Tallaght Village could not be delivered. Dedicated cycle facilities are only provided on Greenhills Road sections of this route (in combination with bus priority measures) with cyclists sharing with general traffic along Main Street.

			acceptable provision for cyclists in this area.			
	Rank					
Accessibility & Social Inclusion	Key Trip Attractors	Retail - Village Green retail area - Tallaght Main Street - Abberly Square Retail Area Leisure - Tallaght Athletics Club - Leisureplex Employment - Broomhill Industrial Estate - Hibernian Industrial Estate Education - TUD Tallaght - Priory Institute	Leisure - Tallaght Athletics Club Employment - Broomhill Industrial Estate - Hibernian Industrial Estate Education - TUD Tallaght - Priory Institute	Retail - Belgard Retail Park Leisure - Tallaght Athletics Club Employment - Broomhill Industrial Estate - Monarch Industrial Estate - Hibernian Industrial Estate	Retail - Kilnamanagh Shopping Centre - Belgard Retail Park - Aldi (Belgard Road) Employment - Broomhill Industrial Estate - Broomhill Business Park - Belgard Industrial Estate - Monarch Industrial Estate	Retail - Village Green retail area - Tallaght Main Street - Abberly Square Retail Area Leisure - Tallaght Athletics Club - Leisureplex Employment - Broomhill Industrial Estate - Hibernian Industrial Estate Education - TUD Tallaght - Priory Institute
	Rank					
	Deprived Geographic Areas	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.
	Rank					
Safety	Road and Pedestrian Safety	No. of Junctions: 6 4 turn movements required in the inbound direction (3 left and 1 right), and 4 turn movements required in the outbound direction (1 left and 3 right).	No. of Junctions: 6 3 turn movements required in the inbound direction (2 left and 1 right), and 3 turn movements required in the outbound direction (1 left and 2 right).	No. of Junctions: 4 3 turn movements required in the inbound direction (2 left and 1 right), and 3 turn movements required in the outbound direction (1 left and 2 right).	No. of Junctions: 4 3 turn movements required in the inbound direction (2 left and 1 right), and 3 turn movements required in the outbound direction (1 left and 2 right).	No. of Junctions: 8 5 turn movements required in the inbound direction (4 left and 1 right), and 5 turn movements required in the outbound direction (1 left and 4 right).
	Rank					

Environment	Archaeology and Cultural Heritage	The route passes through the Area of Archaeological Potential surrounding Tallaght Village. There are 12 sites either along or adjacent to the route which are recorded on the Record of Monuments and Places. Nine of these are located within the St. Maelruain's Church of Ireland Complex and burial ground, 2 are along Blessington Road and 1 along the southern end of Greenhills Road in the vicinity of the junction with the Old Greenhills Road. However, as there are no works proposed along this section of the route there are unlikely to be impacts on the identified sites.	No Recorded Monuments were identified along the route or within the vicinity of the route. The route passes through the Area of Archaeological Potential surrounding Tallaght Village. Minor road works will be required at the entrance to ITT and to convert the speed ramps to bus friendly raised tables. Cognisance will need to be given to the potential for archaeology features during these works.	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.	The route passes through the Area of Archaeological Potential surrounding Tallaght Village. There are 12 sites either along or adjacent to the route which are recorded on the Record of Monuments and Places. Nine of these are located within the St. Maelruain's Church of Ireland Complex and burial ground, 2 are along Blessington Road and 1 along the southern end of Greenhills Road in the vicinity of the junction with the Old Greenhills Road. However, as there are no works proposed along this section of the route there are unlikely to be impacts on the identified sites.
	Rank					
	Architectural Heritage	Route passes through the Tallaght Village Conservation Area. There are 3 Protected Structures and 4 sites recorded on the National Inventory of Architectural Heritage, along the route located within the St. Maelruain's Church of Ireland Complex and at The Priory on the southern section of Greenhills Road However, as there are no works proposed along this section of the route there are unlikely to be impacts on the identified sites.	No protected structures or sites of architectural heritage merit were identified along the route or within the vicinity of the route.	No protected structures or sites of architectural heritage merit were identified along the route or within the vicinity of the route.	No protected structures or sites of architectural heritage merit were identified along the route or within the vicinity of the route.	Route passes through the Tallaght Village Conservation Area. There are 3 Protected Structures and 4 sites recorded on the National Inventory of Architectural Heritage, along the route located within the St. Maelruain's Church of Ireland Complex and at The Priory on the southern section of Greenhills Road However, as there are no works proposed along this section of the route there are unlikely to be impacts on the identified sites.

	Rank					
	Flora and Fauna	The route does not cross any site of International, European or National conservation value. The route crossed the Poddle River which appears to be culverted beneath the R819. Loss of verge along Belgard Road. No works are proposed through Tallaght village so there is no impact to trees in the area. Approx. 4-5 metres of land-take would be required along the western verge of Greenhills Road which would result in loss of mature trees opposite Westpark Fitness (during subsequent analysis it was felt these had a significant value). Such areas could be used for roosting or foraging by bats. From this location northwards to Mayberry Road there would be loss of hedgerows which may be of ecological interest, amenity grassland and scrub.	The route does not cross any site of International, European or National conservation value. The route crossed the Poddle River which appears to be culverted beneath the R819. Minor road works will be required at the entrance to ITT and to convert the speed ramps to bus friendly raised tables however it is unlikely that there will be an impact to trees or amenity grassland in the area. Approx. 4-5 metres of land-take would be required along the western verge of Greenhills Road which would result in loss of mature trees opposite Westpark Fitness. Such areas could be used for roosting or foraging by bats. From this location northwards to Mayberry Road there would be loss of hedgerows which may be of ecological interest, amenity grassland and scrub.	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers. Loss of verge along Belgard Road There are treelines of value along Airton Road which would be impacted by land-take for road widening. These are considered to be of ecological value. There would be loss of hedgerows along Greenhills Road which may be of ecological interest, amenity grassland and scrub.	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers. There are hedgerows and treelines of value along Mayberry Road which would be impacted by landtake for road widening. These are considered to be of ecological value. There would be loss of hedgerows along Greenhills Road which may be of ecological interest, amenity grassland and scrub.	The route does not cross any site of International, European or National conservation value. The route crossed the Poddle River which appears to be culverted beneath the R819. Loss of verge along Belgard Road. No works are proposed through Tallaght village so there is no impact to trees in the area. Approx. 4-5 metres of land-take would be required along the western verge of Greenhills Road which would result in loss of young trees to the front of Westpark Fitness. From this location northwards to Mayberry Road there would be loss of hedgerows which may be of ecological interest, amenity grassland and scrub.
	Rank					
	Soils and Geology	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give

		rise to potential contamination.	rise to potential contamination.	that could give rise to potential contamination.	that could give rise to potential contamination.	rise to potential contamination.
	Rank					
	Hydrology	This route crosses over the Poddle River which appears to be culverted beneath the R819.	This route crosses over the Poddle River which appears to be culverted beneath the R819.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route crosses over the Poddle River which appears to be culverted beneath the R819.
	Rank					
	Landscape and Visual	Makes use of existing road corridors. Loss of verge and some trees along part of Belgard Road. No works required through historic centre of Tallaght village and no loss of trees. No works proposed within the Tallaght village Architectural Conservation Area. Development plan objective to protect and preserve Trees and Woodlands at location opposite Westpark Fitness. Loss of verge, green space and scrub along Greenhills Road.	Makes use of existing road corridors. Minor works required in ITT Campus and no loss of trees. Development plan objective to protect and preserve Trees and Woodlands at location opposite Westpark Fitness. Loss of verge, green space and scrub along Greenhills Road section of route.	Makes use of existing road corridors with no particular landscape and visual sensitivities. Loss of verge and some trees along part of Belgard Road. Loss of strong tree-lined corridor all along the length of Airton Road. Loss of verge, green space and scrub along Greenhills Road section of route.	Makes use of existing road corridors. Loss of verge and some trees along part of Belgard Road. Loss of strong treelined/landscaped corridor all along the length of Mayberry Road. Passes though residential area along Mayberry Road.	Makes use of existing road corridors. Loss of verge and some trees along part of Belgard Road. No works required through historic centre of Tallaght village and no loss of trees. No works proposed within the Tallaght village Architectural Conservation Area. Development plan objective to protect and preserve Trees and Woodlands at location opposite Westpark Fitness. Loss of verge, green space and scrub along Greenhills Road.
	Rank					
	Air Quality	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in pollutant concentrations at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in pollutant concentrations at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in pollutant concentrations at these receptors.	Traffic would be closer to a large number of residential sensitive receptors to the north and south of the length of Mayberry Road due to road widening. This may result in a relative increase in pollutant concentrations at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in pollutant concentrations at these receptors.

	Rank					
	Noise & Vibration	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in noise at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in noise at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in noise at these receptors.	Traffic would be closer to a large number of residential sensitive receptors to the north and south of the length of Mayberry Road due to road widening. This may result in a relative increase in noise at these receptors.	Traffic would be closer to a small number of residential sensitive receptors in the vicinity of the Greenhills Road/Mayberry Road junction due to road widening. This may result in an increase in noise at these receptors.
	Rank					
	Land Use Character	Route has a relatively small impact on existing land use. Land acquisition is taken from both public and private open space and would not impact on its existing or future use.	Route has a relatively small impact on existing land use. Land acquisition is taken from both public and private open space and would not impact on its existing or future use.	Route has a relatively small impact on existing land use. Land acquisition is taken from both public and private open space and would not impact on its existing or future use.	Route has a relatively small impact on existing land use. Land acquisition is taken from both public and private open space and would not impact on its existing or future use.	Route has a relatively small impact on existing land use. Land acquisition is taken from both public and private open space and would not impact on its existing or future use.
	Rank					

A2 Park View Options Assessment

Assessment Criteria	**Assessment Sub-Criteria**	Route Option PV2 (current EPR)	Route Option PV3 (using Greenhills Road southbound)
Economy (Cost Assessment and Transport Economic Indicators)	Capital Cost	**Total Capital Cost €** - New section of road catering for traffic lanes, bus lanes and raised adjacent cycle lanes in each direction including tie in with existing alignment; and - New junction to facilitate relocated Castletymon Road/Greenhills Road junction.	**Total Capital Cost €** - New section of road catering for traffic lanes, eastbound bus lanes and raised adjacent cycle lanes including tie in with existing alignment; - New junction to facilitate relocated Castletymon Road/Greenhills Road junction, including right turn lane; - Westbound bus and cycle lane using the existing Greenhills Road.
	Rank		
	Transport Reliability and Quality of Service	Journey Time: 1 – 2 mins Length: 0.46 km No. of Junctions: 1 Bus lanes are provided along the full length of this route option thereby ensuring journey time and timetable reliability. Lack of right turn lane at junction has the potential to impact on reliability of both car and journey times.	Journey Time: 1 – 2 mins Length: 0.46 km No. of Junctions: 1 (in each direction) Bus lanes are provided along the full length of this route option thereby ensuring journey time and timetable reliability. Right turn lane will reduce likelihood of traffic using bus lane to bypass the junction.
	Rank		
Integration	Land Use Integration	This route serves an area which is largely developed, with limited scope for further development. There is however potential to facilitate redevelopment of the Cuckoo's Nest site. Route would deliver new road links which are included as development plan objectives.	This route serves an area which is largely developed, with limited scope for further development. There is however potential to facilitate redevelopment of the Cuckoo's Nest site. Route would deliver new road links which are included as development plan objectives.
	Rank		
	Residential Population and Employment Catchments	**Residential Population Catchments** - 5 minute walk catchment of approximately 1,600 - 10 minute walk catchment of approximately 4,000 - 15 minute walk catchment of approximately 7,400 **Employment catchments** 10 minute walk catchment of approximately 2,400	**Residential Population Catchments** - 5 minute walk catchment of approximately 1,600 - 10 minute walk catchment of approximately 4,000 - 15 minute walk catchment of approximately 7,400 **Employment catchments** 10 minute walk catchment of approximately 2,400
	Rank		
	Transport Network Integration	This route does not currently coincide with any bus routes but would result in the routes 27 and 77a being rerouted to this route. There is no potential for interchange with orbital bus routes or other public transport modes. There would be no impact on general traffic.	This route does not currently coincide with any bus routes but would result in the routes 27 and 77a being rerouted to this route. There is no potential for interchange with orbital bus routes or other public transport modes. There would be no impact on general traffic.

	Rank		
	Cycling Integration	This route option would provide an alternative equivalent route for primary cycle route 8B. Raised adjacent cycle lanes would be provided for the length of this route option.	This route option would provide an alternative equivalent route for primary cycle route 8B. Raised adjacent cycle lanes would be provided for the length of this route option.
	Rank		
Accessibility & Social Inclusion	Key Trip Attractors	Leisure - Tymon Park - Tallaght Theatre Education - Coláiste de hÍde	Leisure - Tymon Park - Tallaght Theatre Education - Coláiste de hÍde
	Rank		
	Deprived Geographic Areas	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally below average' to 'disadvantaged'.	Route option does not directly serve any RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from 'marginally above average' to 'disadvantaged'.
	Rank		
Safety	Road and Pedestrian Safety	No. of Junction: 1 No turn movements required in either direction.	No. of Junction: 1 No turn movements required in either direction.
	Rank		
Environment	Archaeology and Cultural Heritage	There are no Recorded Monuments or sites of archaeological and cultural heritage merit identified along or within the immediate vicinity of the proposed new route. There are a number of RMP sites located within the Elmcastle Walk estate and one RMP site along Treepark Road. The zone of archaeological interest for these sites extends close to, but is not impacted by the proposed route.	There are no Recorded Monuments or sites of archaeological and cultural heritage merit identified along or within the immediate vicinity of the proposed new route. There are a number of RMP sites located within the Elmcastle Walk estate and one RMP site along Treepark Road. The zone of archaeological interest for these sites extends close to, but is not impacted by the proposed route.
	Rank		
	Architectural Heritage	No protected structures or sites of architectural heritage merit were identified along the route or within the vicinity of the route.	No protected structures or sites of architectural heritage merit were identified along the route or within the vicinity of the route.
	Rank		
	Flora and Fauna	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers. There will be some loss of verge and trees along the southern extent of the route north of the junction with Mayberry Road which may be of ecological value. Requires realignment of the existing road through the green area between the Parkview and Birchview Avenue residential developments. Some trees and hedgerows will be lost.	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers. There will be some loss of verge and trees along the southern extent of the route north of the junction with Mayberry Road which may be of ecological value. Requires realignment of the existing road through the green area between the Parkview and Birchview Avenue residential developments. While some trees and hedgerows will be lost, less than that would be required for PV2.

	Rank		
	Soils and Geology	In general there is minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination. The route will encroach into the Greenhills Esker Geological Heritage Site in Kilnamanagh, Tymon North, which is a ridge comprising sand and gravel.	In general there is minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination. The route will encroach into the Greenhills Esker Geological Heritage Site in Kilnamanagh, Tymon North, which is a ridge comprising sand and gravel.
	Rank		
	Hydrology	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.
	Rank		
	Landscape and Visual	Requires realignment of the existing road through the green area between the Parkview and Birchview Avenue residential developments. This will have a direct impact on public open space. Passes adjacent to the residential area of Birchview Avenue and Tree Park Road.	Requires realignment of the existing road through the green area between the Parkview and Birchview Avenue residential developments. This will have a direct impact on public open space. Passes adjacent to the residential area of Birchview Avenue and Tree Park Road.
	Rank		
	Air Quality	Traffic will be brought closer to residential sensitive receptors along Treepark Road, Birchview Avenue, and residences along the western extent of Parkview Estate. This may result in an increase in pollutant concentrations at these receptors. However, residences in Tymonville Crescent, Tymonville Drive and the eastern extent of Parkview Estate will likely experience reduced pollutant concentrations as a result of the diversion of traffic.	Traffic will be brought closer to residential sensitive receptors along Treepark Road, Birchview Avenue, and residences along the western extent of Parkview Estate. This may result in an increase in pollutant concentrations at these receptors. However, residences in Tymonville Crescent, Tymonville Drive and the eastern extent of Parkview Estate will likely experience reduced pollutant concentrations as a result of the diversion of traffic.
	Rank		
	Noise & Vibration	Traffic will be brought closer to residential sensitive receptors along Treepark Road, Birchview Avenue, and residences along the western extent of Parkview Estate. This may result in an increase in noise emissions at these receptors. However, residences in Tymonville Crescent, Tymonville Drive and the eastern extent of Parkview Estate will likely experience reduced noise emissions as a result of the diversion of traffic.	Traffic will be brought closer to residential sensitive receptors along Treepark Road, Birchview Avenue, and residences along the western extent of Parkview Estate. This may result in an increase in noise emissions at these receptors. However, residences in Tymonville Crescent, Tymonville Drive and the eastern extent of Parkview Estate will likely experience reduced noise emissions as a result of the diversion of traffic.
	Rank		
	Land Use Character	Route has a moderate impact on existing land use as it runs through an open green area.	Route has a moderate impact on existing land use as it runs through an open green area.
	Rank		

A3 Crumlin Road Options Assessment

Assessment Criteria	**Assessment Sub-Criteria**	Route Option CG1b (Crumlin Road – Bus Lanes in Each Direction)	Route Option CG1c (Crumlin Road – Partial Bus Lanes in Each Direction)	Route Option CG1d (Crumlin Road – Partial Bus Lanes in Each Direction Alternative)	Route Option CG1e (Crumlin Road – Partial Bus Lanes and cycle lanes along Clogher Road)
Economy (Cost Assessment and Transport Economic Indicators)	Capital Cost	**Total Capital Cost €€€** - Road widening on Crumlin Road and associated works (drainage, services etc.) to facilitate bus lanes in each direction - Boundary works to impacted properties - Modify Crumlin Road/Kildare Road junction to facilitate widened carriageway - Modify Sundrive Road/Crumlin Road junction to facilitate widened carriageway - Modify Cooley Road/Crumlin Road junction to facilitate widened carriageway - Provision of improved pedestrian facilities along route - Provide raised adjacent cycle facilities along Kildare Road Land Acquisition 1,790 sqm Private Land 2,800 sqm Public Land 102 Properties affected	**Total Capital Cost €** - Minor local widening / kerb realignment works at some locations along Crumlin Road to facilitate an additional lane - Upgrade Crumlin Road/Bangor Drive junction to traffic signals - Minor upgrades to Sundrive Road/Crumlin Road junction - Minor upgrades to Kildare Road/Crumlin Road junction - Minor upgrades to Cooley Road/Crumlin Road junction - Provide raised adjacent cycle facilities along Kildare Road Land Acquisition 330 sqm Private Land 1,300 sqm Public Land 27 Properties affected	**Total Capital Cost €€** - Road widening along Crumlin Road between Crumlin Shopping Centre and Windmill Road - Road widening along Crumlin Road between Lissadel Road and Cooley Road - Minor local widening / kerb realignment works between Lissadel Road and Windmill Road - Minor upgrades to Sundrive Road/Crumlin Road junction - Upgrade Crumlin Road/Windmill Road junction to traffic signals - Minor upgrades to Kildare Road/Crumlin Road junction - Minor upgrades to Cooley Road/Crumlin Road junction - Provide raised adjacent cycle facilities along Kildare Road Land Acquisition 1,120 sqm Private Land 1,300 sqm Public Land 60 Properties affected	**Total Capital Cost €** - Road widening adjacent to Rafters Road, Iveagh Grounds, and EHB. - Minor local widening / kerb realignment works at some locations along Crumlin Road to facilitate an additional lane - Road Closures of Clonard Road and Bangor Drive - Upgrades to Sundrive Road/Crumlin Road junction - Minor upgrades to Kildare Road/Crumlin Road junction - Provide raised adjacent cycle facilities along Kildare Road and Clogher Road Land Acquisition 346 sqm Private Land 380 sqm Public Land 10 Properties affected
	Rank				
	Transport Reliability and Quality of Service	Journey Time: 3 - 4 mins Length: 1.4 km No. of Junctions: 3 Bus lanes are provided along approximately 100% of this route option.	Journey Time: 4 - 5 mins Length: 1.4 km No. of Junctions: 4 Bus lanes are provided along approximately 50% of this route option. A single bus lane along the road would be	Journey Time: 4 - 5 mins Length: 1.4 km No. of Junctions: 3 Bus lanes are provided along approximately 85% of this route option.	Journey Time: 4 - 5 mins Length: 1.4 km No. of Junctions: 5 Bus lanes are provided along approximately 80% of this route option.

			provided, which would provide priority along approximately half of the route in each direction. Traffic signal priority measures could be utilised to minimise delays to buses along the sections of the route without bus lanes and maintain journey time and timetable reliability		
	Rank				
Integration	Land Use Integration	This route serves an area which is largely developed, with limited scope for further development. As the surrounding area is high density, the route provides good integration with land use.	This route serves an area which is largely developed, with limited scope for further development. As the surrounding area is high density, the route provides good integration with land use.	This route serves an area which is largely developed, with limited scope for further development. As the surrounding area is high density, the route provides good integration with land use.	This route serves an area which is largely developed, with limited scope for further development. As the surrounding area is high density, the route provides good integration with land use.
	Rank				
	Residential Population and Employment Catchments	**Residential Population Catchments** - 5 minute walk catchment of approximately 3,000 - 10 minute walk catchment of approximately 11,400 - 15 minute walk catchment of approximately 27,700 **Employment catchments** 10 minute walk catchment of approximately 6,300	**Residential Population Catchments** - 5 minute walk catchment of approximately 3,000 - 10 minute walk catchment of approximately 11,400 - 15 minute walk catchment of approximately 27,700 **Employment catchments** 10 minute walk catchment of approximately 6,300	**Residential Population Catchments** - 5 minute walk catchment of approximately 3,000 - 10 minute walk catchment of approximately 11,400 - 15 minute walk catchment of approximately 27,700 **Employment catchments** 10 minute walk catchment of approximately 6,300	**Residential Population Catchments** - 5 minute walk catchment of approximately 3,000 - 10 minute walk catchment of approximately 11,400 - 15 minute walk catchment of approximately 27,700 **Employment catchments** 10 minute walk catchment of approximately 6,300
	Rank				
	Transport Network Integration	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. There is no potential for interchange with orbital bus routes or other public transport modes. There would be no impact on general traffic.	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. There is no potential for interchange with orbital bus routes or other public transport modes. There would be a minor impact on general traffic as a result of this option due to the proposed use of queue relocation which may result in additional delays to traffic. Furthermore, a number of turn bans are proposed to minimise	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. There is no potential for interchange with orbital bus routes or other public transport modes. There would be a minor impact on general traffic as a result of this option due to the proposed use of queue relocation which may result in additional delays to traffic. Furthermore, a number of turn bans are proposed to minimise	This route coincides with portions of existing bus routes 27, 54a, 65, 75 and 77a. There is no potential for interchange with orbital bus routes or other public transport modes. There would be a minor impact on general traffic as a result of this option due to the proposed use of queue relocation which may result in additional delays to traffic. Furthermore, a number of road closures are proposed to minimise the amount of traffic

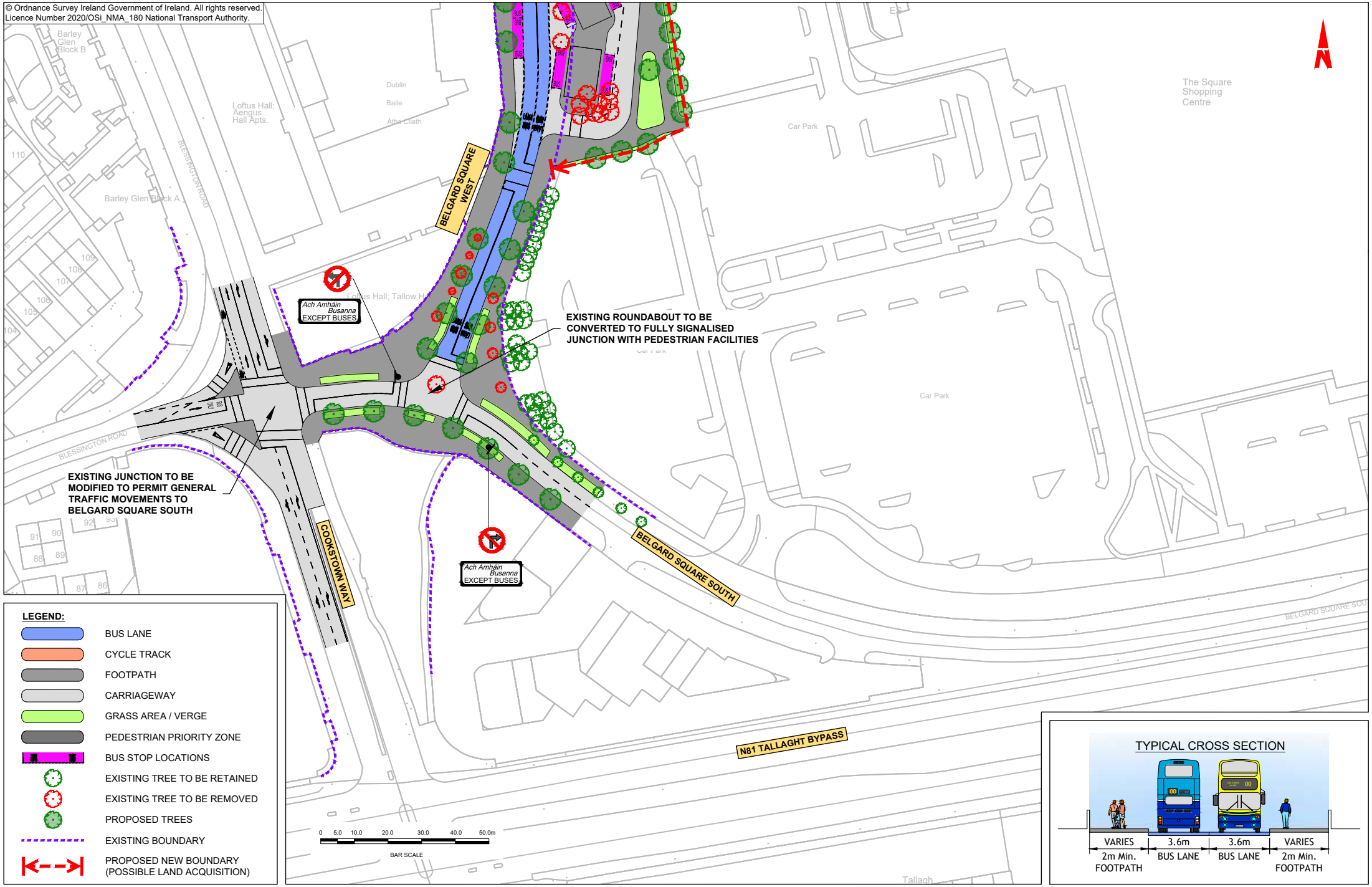
			the amount of traffic entering the area being managed by queue relocation signals.	the amount of traffic entering the area being managed by queue relocation signals.	entering the area being managed by queue relocation signals.
	Rank				
	Cycling Integration	This route option is identified in the GDA Cycle Network Plan as forming part of primary cycle route 8, and secondary cycle route 8A. For this route option, no dedicated cycle facilities would be provided along Crumlin Road. Primary route 8 would be rerouted to Kildare Road and Sundrive Road and delivered as part of this scheme. Raised adjacent cycle facilities would be provided along Kildare Road and Sundrive Road.	This route option is identified in the GDA Cycle Network Plan as forming part of primary cycle route 8, and secondary cycle route 8A. For this route option, no dedicated cycle facilities would be provided along Crumlin Road. Primary route 8 would be rerouted to Kildare Road and Sundrive Road and delivered as part of this scheme. Raised adjacent cycle facilities would be provided along Kildare Road and Sundrive Road.	This route option is identified in the GDA Cycle Network Plan as forming part of primary cycle route 8, and secondary cycle route 8A. For this route option, no dedicated cycle facilities would be provided along Crumlin Road. Primary route 8 would be rerouted to Kildare Road and Sundrive Road and delivered as part of this scheme. Raised adjacent cycle facilities would be provided along Kildare Road and Sundrive Road.	This route option is identified in the GDA Cycle Network Plan as forming part of primary cycle route 8, and secondary cycle route 8A. For this route option, no dedicated cycle facilities would be provided along Crumlin Road. Primary route 8 would be rerouted to Kildare Road and Clogher Road and delivered as part of this scheme. Raised adjacent cycle facilities would be provided along Kildare Road and Clogher Road.
	Rank				
Accessibility & Social Inclusion	Key Trip Attractors	Hospital - Crumlin Hospital Retail - Old County Road - Crumlin Road Leisure - Crumlin Bowling Club - The Star, Crumlin - St. James' Gate FC Education - Loreto College - Crumlin College of Further Education	Hospital - Crumlin Hospital Retail - Old County Road - Crumlin Road Leisure - Crumlin Bowling Club - The Star, Crumlin - St. James' Gate FC Education - Loreto College Crumlin College of Further Education	Hospital - Crumlin Hospital Retail - Old County Road - Crumlin Road Leisure - Crumlin Bowling Club - The Star, Crumlin - St. James' Gate FC Education - Loreto College Crumlin College of Further Education	Hospital - Crumlin Hospital Retail - Old County Road - Crumlin Road Leisure - Crumlin Bowling Club - The Star, Crumlin - St. James' Gate FC Education - Loreto College Crumlin College of Further Education
	Rank				
	Deprived Geographic Areas	The route serves a number of areas in the Dublin South West Inner City RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from disadvantaged to marginally above average.	The route serves a number of areas in the Dublin South West Inner City RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from disadvantaged to marginally above average.	The route serves a number of areas in the Dublin South West Inner City RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from disadvantaged to marginally above average.	The route serves a number of areas in the Dublin South West Inner City RAPID area. In terms of the HP Deprivation Index, the route serves areas ranging from disadvantaged to marginally above average.
	Rank				
Safety	Road and Pedestrian Safety	No. of Junction: 4	No. of Junction: 5	No. of Junction: 5	No. of Junction: 4

		No turn movements required in either direction.	No turn movements required in either direction.	No turn movements required in either direction.	No turn movements required in either direction.
	Rank				
Environment	Archaeology and Cultural Heritage	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.	No Recorded Monuments or sites of archaeological and cultural heritage merit were identified along the route or within the vicinity of the route.
	Rank				
	Architectural Heritage	There are no Protected Structures along the route. There are 40 sites recorded on the National Inventory of Architectural Heritage. In total 34 of these are located on the northern side of Crumlin Road and include a number of residences associated with the Iveagh Gardens estate, Ardscoil Éanna and Sundrive Garda Station. The remaining 6 sites are located along the southern side of Crumlin Road and include the Epilepsy Ireland building, AIB building, Crumlin Health Centre (3 No.) and Loreto School. The proposed route may require land-take from the recorded buildings along the southern side of Crumlin Road (approx. 1m) and as such would have a negative impact on these buildings.	There are no Protected Structures along the route. There are 40 sites listed on the National Inventory of Architectural Heritage. In total 34 of these are located on the northern side of Crumlin Road and include a number of residences associated with the Iveagh Gardens estate, Ardscoil Éanna and Sundrive Garda Station. The remaining 6 sites are located along the southern side of Crumlin Road and include the Epilepsy Ireland building, AIB building, Crumlin Health Centre (3 No.) and Loreto School. However, as no widening is required for this option it is not considered that there will be an impact to these heritage features.	There are no Protected Structures along the route. There are 40 sites recorded on the National Inventory of Architectural Heritage. In total 34 of these are located on the northern side of Crumlin Road and include a number of residences associated with the Iveagh Gardens estate, Ardscoil Éanna and Sundrive Garda Station. The remaining 6 sites are located along the southern side of Crumlin Road and include the Epilepsy Ireland building, AIB building, Crumlin Health Centre (3 No.) and Loreto School. Road widening to the north of Crumlin Road between Lissadel Road and Cooley Road has the potential to negatively impact on the grounds of Ardscoil Éanna. Land-take to the south of Crumlin Road between the Shopping Centre and Clonard Road has the potential to negatively impact on the grounds of Crumlin Health Centre.	There are no Protected Structures along the route. There are 40 sites listed on the National Inventory of Architectural Heritage. In total 34 of these are located on the northern side of Crumlin Road and include a number of residences associated with the Iveagh Gardens estate, Ardscoil Éanna and Sundrive Garda Station. The remaining 6 sites are located along the southern side of Crumlin Road and include the Epilepsy Ireland building, AIB building, Crumlin Health Centre (3 No.) and Loreto School. However, limited widening is required for this option it is therefore considered that impacts will be minimised.were identified along the route or within the vicinity of the route.
	Rank				
	Flora and Fauna	The route does not cross any site of International, European or National conservation value. The route does not traverse any	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers.	The route does not cross any site of International, European or National conservation value. The route does not traverse any streams or rivers.	The route does not cross any site of International, European or National conservation value. The route does not traverse any

		streams or rivers. There are no trees along Crumlin Road. There are intermittent trees along Kildare Road and Sundrive Road that are unlikely to be of ecological value given their distances from each other.	There are no trees along Crumlin Road. There are intermittent trees along Kildare Road and Sundrive Road that are unlikely to be of ecological value given their distances from each other.	There are no trees along Crumlin Road. There are intermittent trees along Kildare Road and Sundrive Road that are unlikely to be of ecological value given their distances from each other.	streams or rivers. There are no trees along Crumlin Road. There are intermittent trees along Kildare Road and Clogher Road which will be unaffected by this proposal.
	Rank				
	Soils and Geology	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination.	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination.	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination.	Minimal potential for impacts to soils and geology and no evidence of historic industries or gravel pits that could give rise to potential contamination.
	Rank				
	Hydrology	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.	This route does not cross or run adjacent to any rivers or streams so diversion works or construction of bridges or culverts is not required.
	Rank				
	Landscape and Visual	Makes use of existing road corridors. Increase from 2 to 4 lanes. There would be some loss of amenity space at the Guinness sports facility. The proposed route would require land-take from some of the sensitive buildings (approx. 1m) and as such would potentially have a small negative impact on these buildings.	Makes use of existing road corridors. Loss of approximately 50 trees to accommodate raised adjacent cycle lanes on Kildare Road and Sundrive Road. There would be no loss of amenity space at the Guinness sports facility.	Makes use of existing road corridors. Loss of approximately 50 trees to accommodate raised adjacent cycle lanes on Kildare Road and Sundrive Road. There would be some loss of amenity space at the Guinness sports facility.	Makes use of existing road corridors. There would be some loss of amenity space at the Guinness sports facility. Pocket parks to be created at the ends of Clogher Road and Bangor Drive. No trees are to be removed on alternative cycle route.
	Rank				
	Air Quality	Traffic would be closer to a number of residential sensitive receptors along Crumlin Road due to road widening. This may result in an increase in pollutant concentrations at these receptors.	All proposed works would remain within the existing road corridor therefore it is not considered that air quality would change.	Traffic would be closer to some residential sensitive receptors along Crumlin Road due to road widening. This may result in an increase in pollutant concentrations at these receptors.	Most of the proposed works would remain within the existing road corridor therefore it is not considered that air quality would change significantly.
	Rank				
	Noise & Vibration	Traffic would be closer to a number of residential sensitive receptors along Crumlin Road due to road widening. This may	All proposed works would remain within the existing road corridor therefore it is not	Traffic would be closer to some residential sensitive receptors along Crumlin Road due to road widening. This	Most of the proposed works would remain within the existing road corridor therefore it is not

		result in an increase in noise and vibrations at these receptors.	considered that noise levels would change.	may result in an increase in noise and vibrations at these receptors.	considered that noise levels would change significantly.
	Rank				
	Land Use Character	Route has a substantial impact on existing land use. Loss of large part of front gardens for 75 property owners along Crumlin Road. In addition there is a loss of large part of front gardens for 27 property owners along Clogher Road to facilitate raised adjacent cycle lanes. Informal on-footpath and on-street parking spaces would be removed (approximately 150 spaces), footpath width would be reduced, and trees (approximately 50 no.) would be removed resulting in a change to the Kildare Road character and potentially impacting on its use.	Route has a substantial impact on existing land use. Loss of large part of front gardens for 27 property owners along Clogher Road to facilitate raised adjacent cycle lanes. Informal on-footpath and onstreet parking spaces would be removed (approximately 150 spaces), footpath width would be reduced, and trees (approximately 50 no.) would be removed resulting in a change to the Kildare Road character and potentially impacting on its use.	Route has a substantial impact on existing land use. Loss of large part of front gardens for 33 property owners along Crumlin Road to facilitate bus lanes and for 27 property owners along Clogher Road to facilitate raised adjacent cycle lanes. Informal on-footpath and on-street parking spaces would be removed (approximately 150 spaces), footpath width would be reduced, and trees (approximately 50 no.) would be removed resulting in a change to the Kildare Road character and potentially impacting on its use.	Route has an impact on existing land use where widening is taking place, although this is relatively minor on Crumlin Road. On Kildare Road and Clogher Road, it is proposed to work within the existing carriageway, retaining trees and parking where possible, therefore the land use character will remain as is.
	Rank				

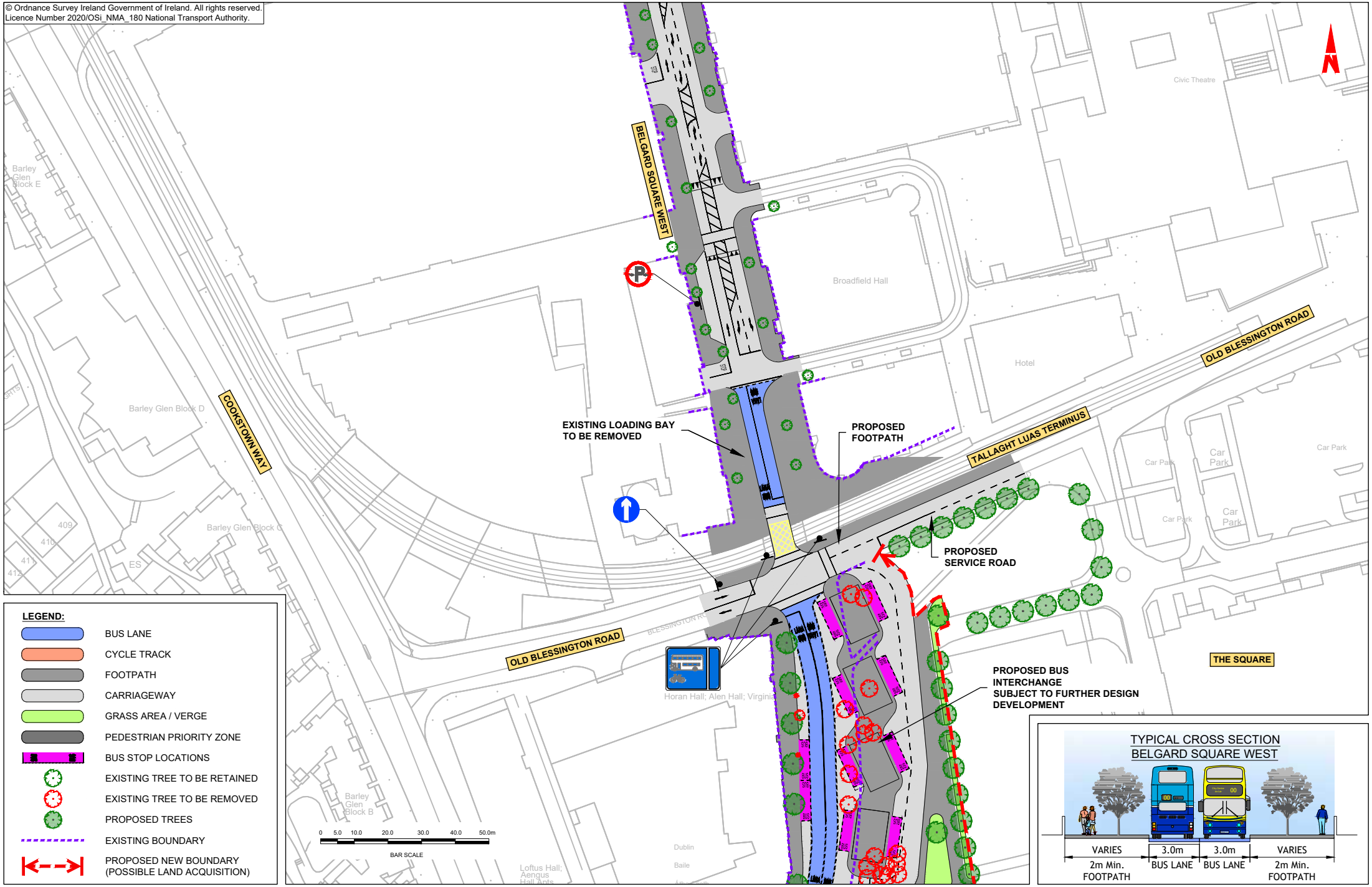
Appendix B – Preferred Route Option Drawings for Greenhills to City Centre CBC



LEGEND:

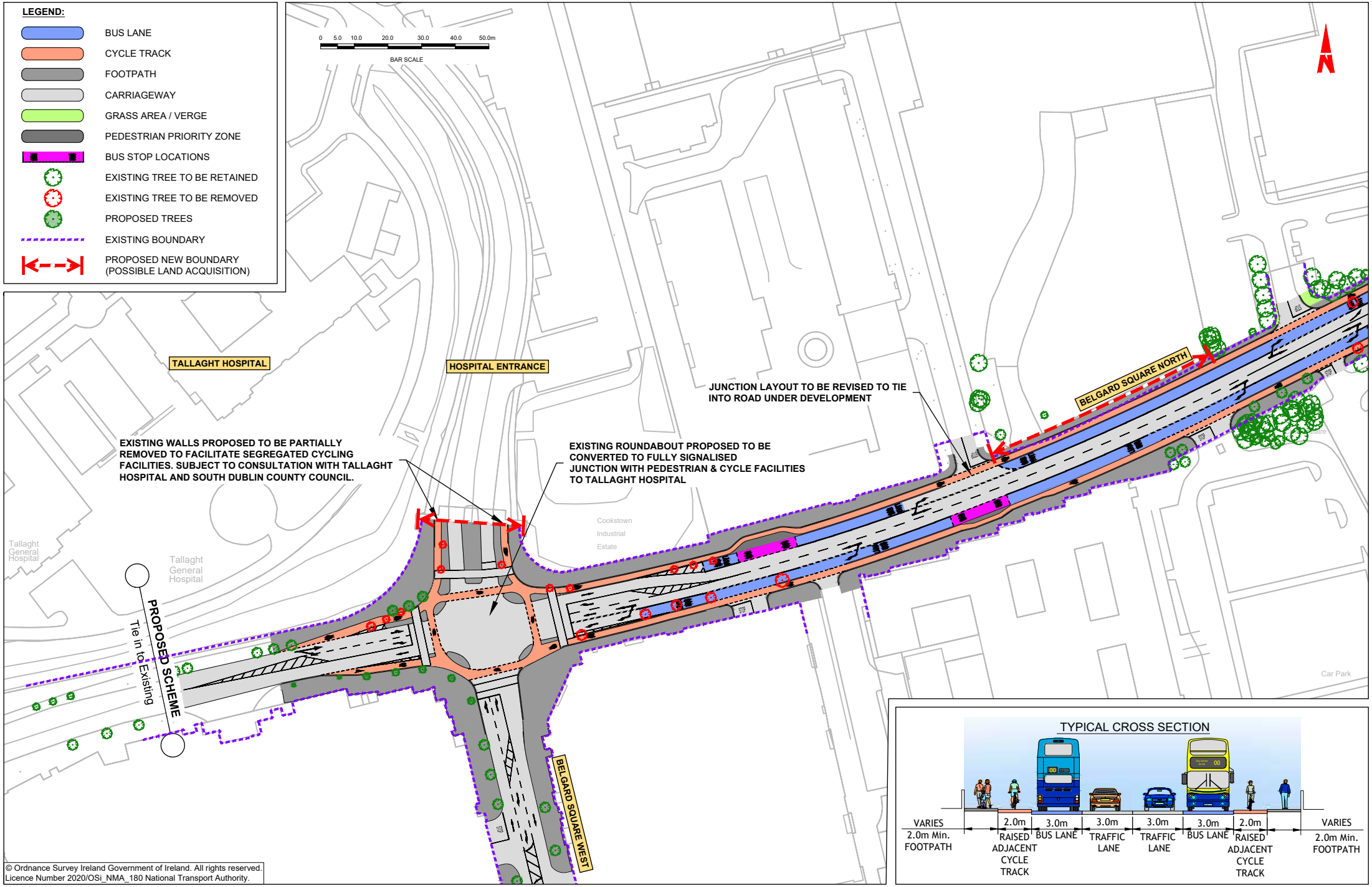
- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

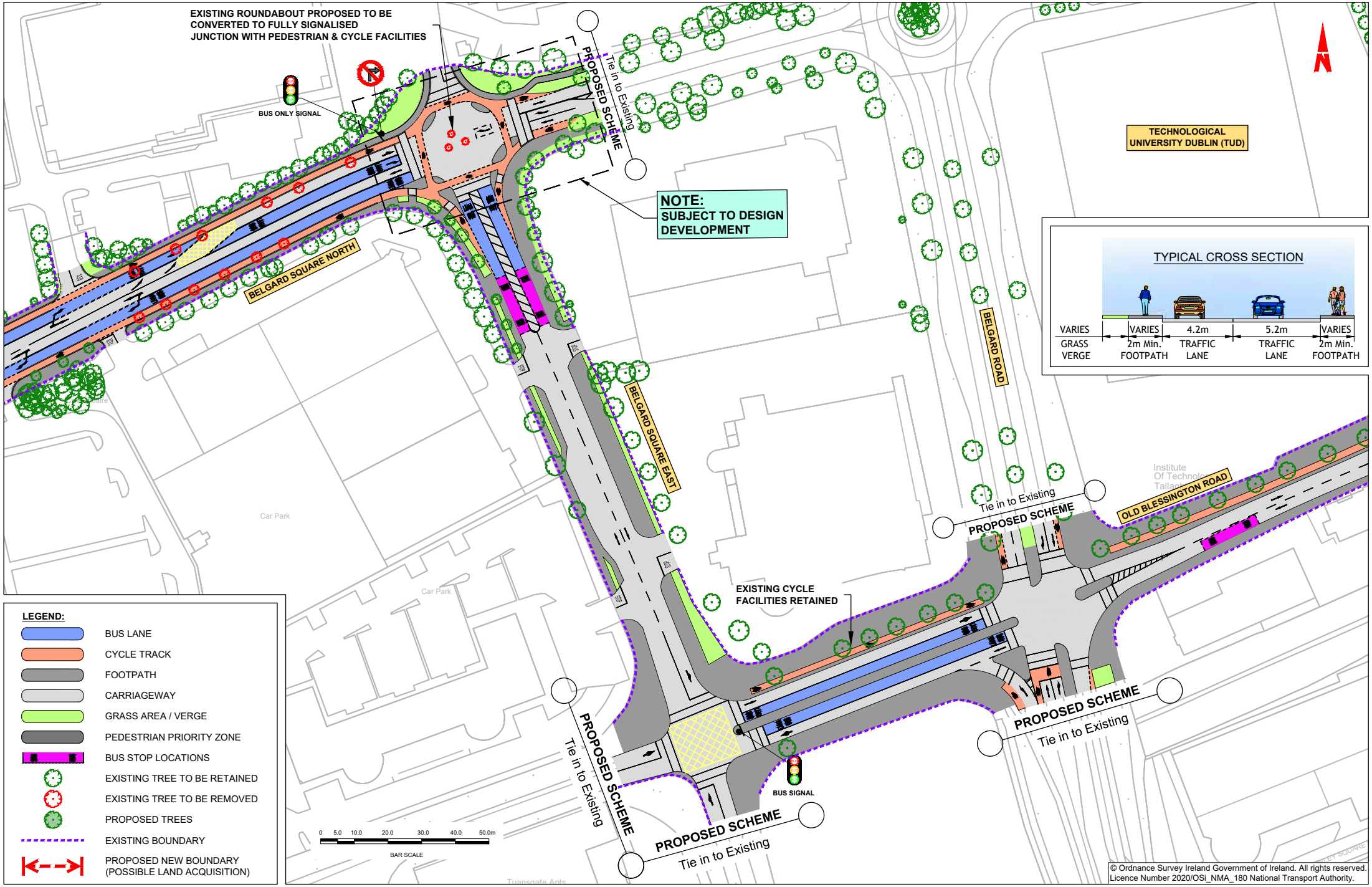
TYPICAL CROSS SECTION

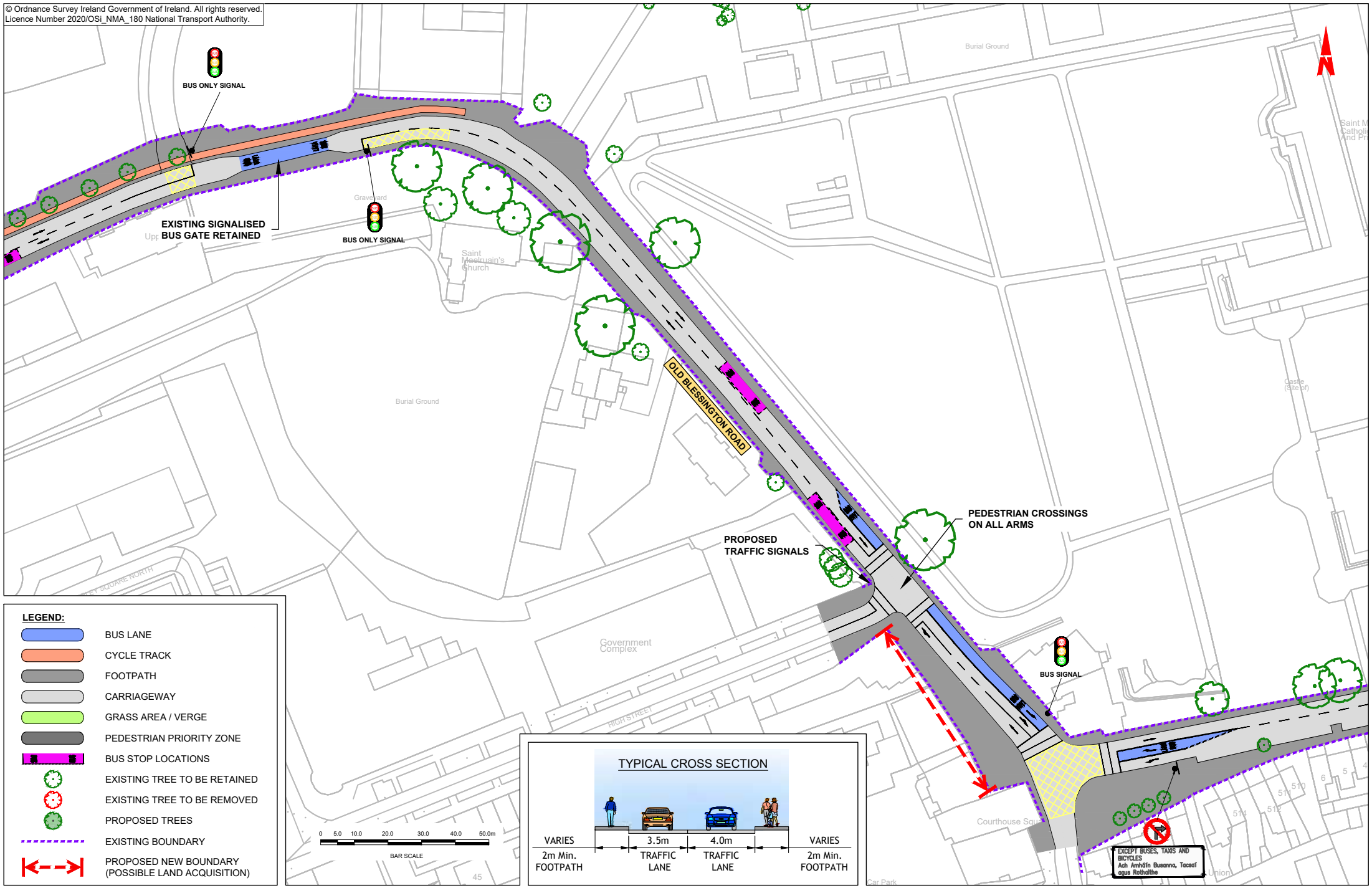


LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)







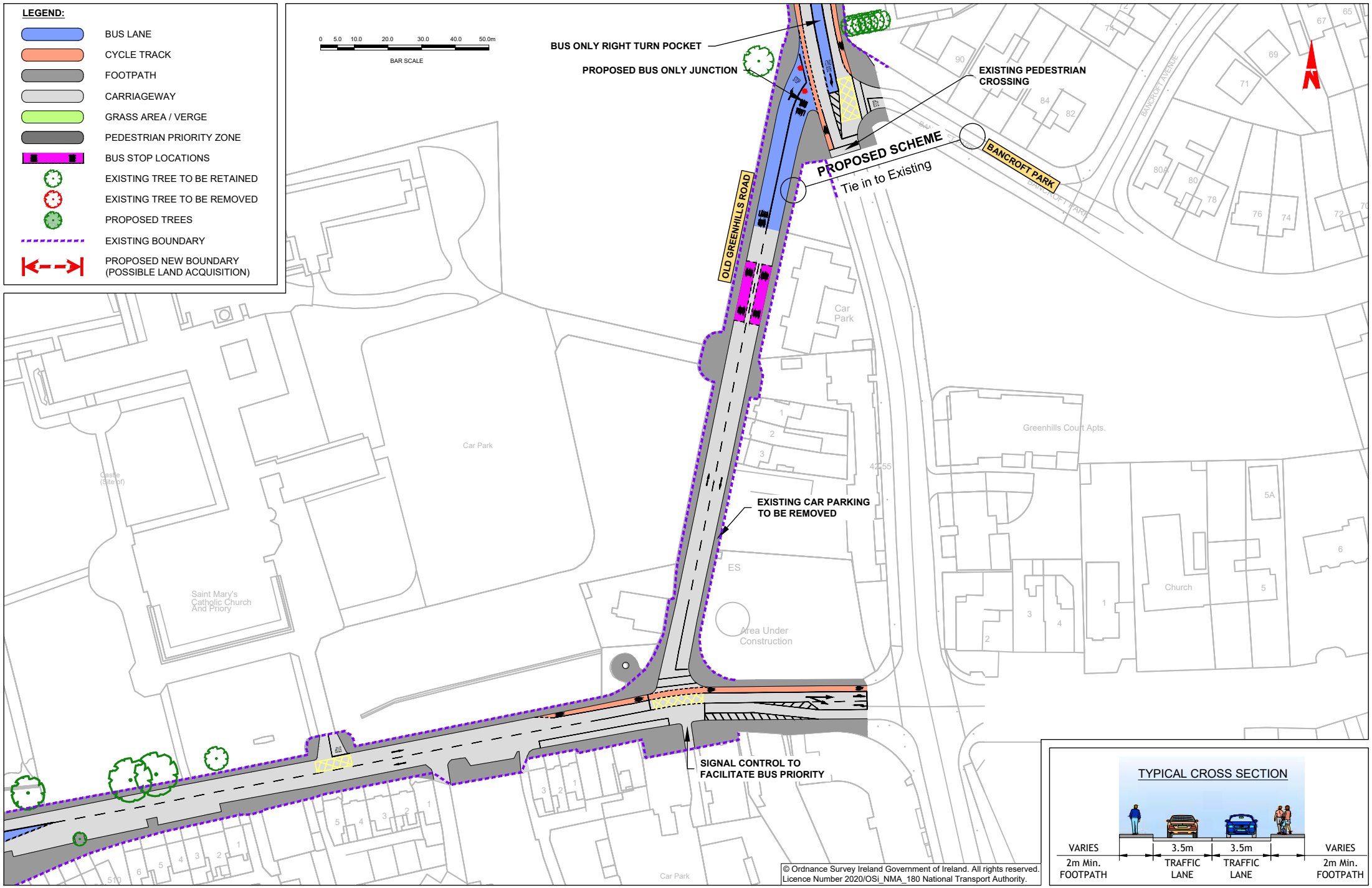
LEGEND:

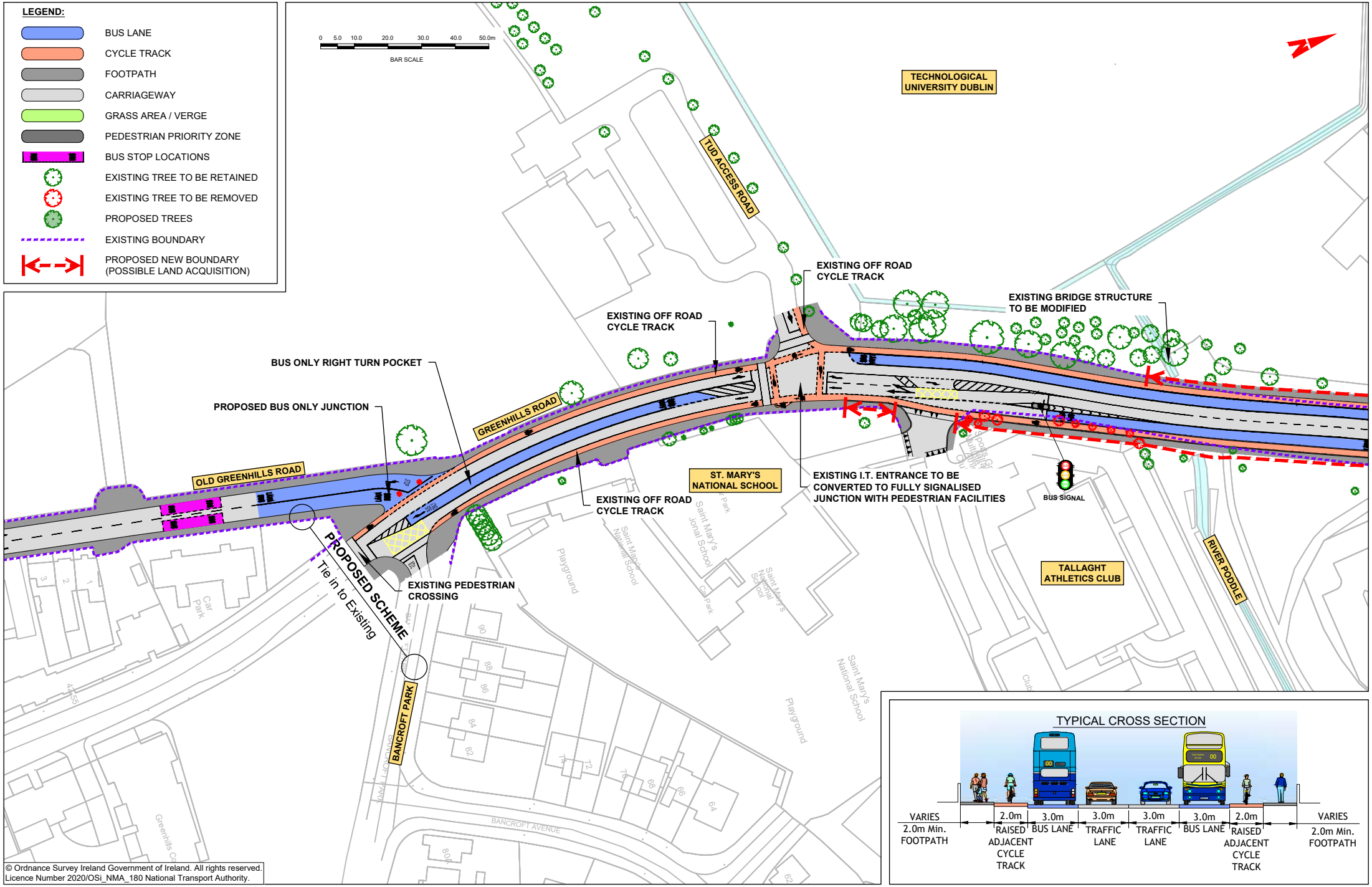
- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

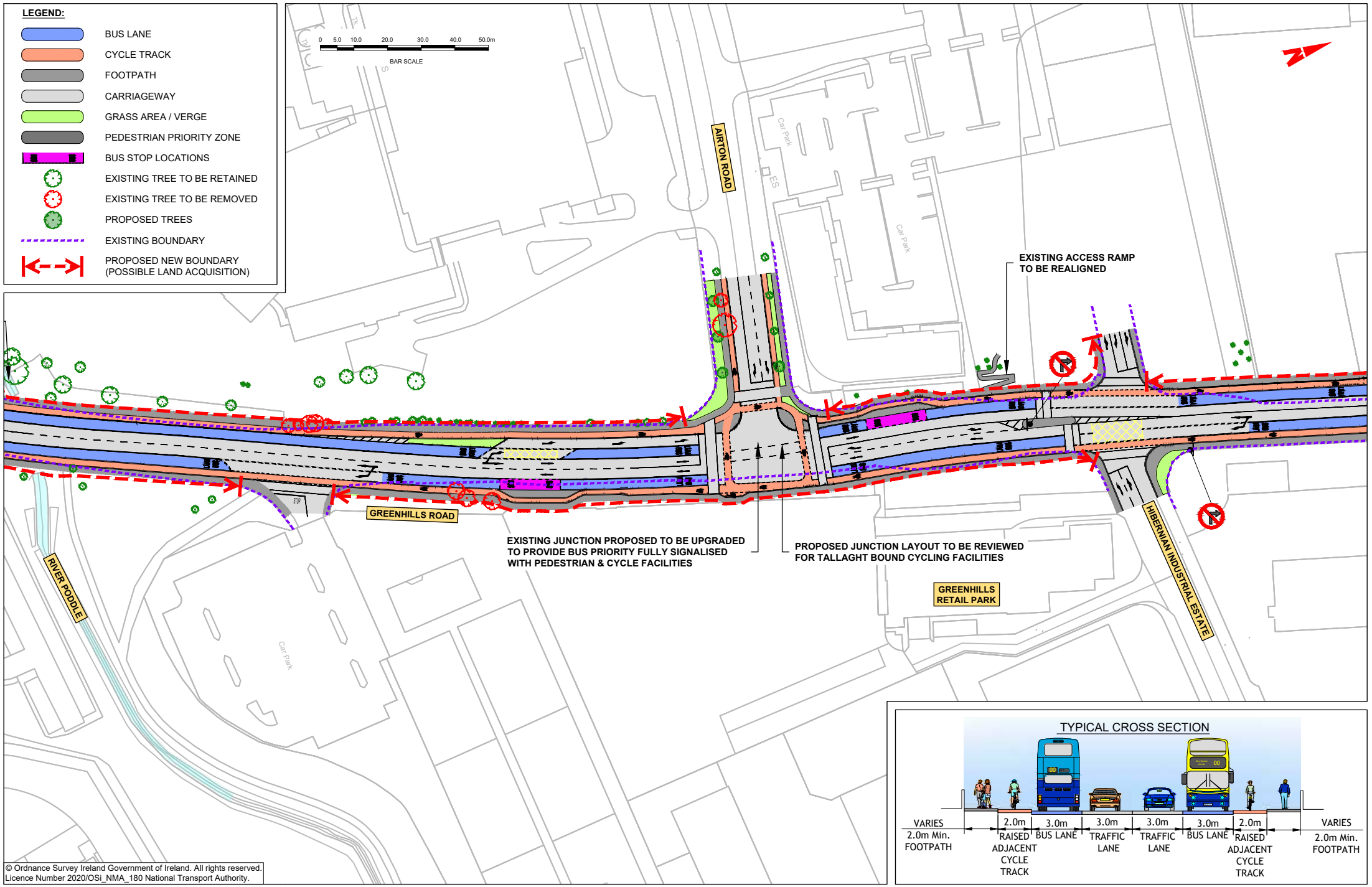
0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE

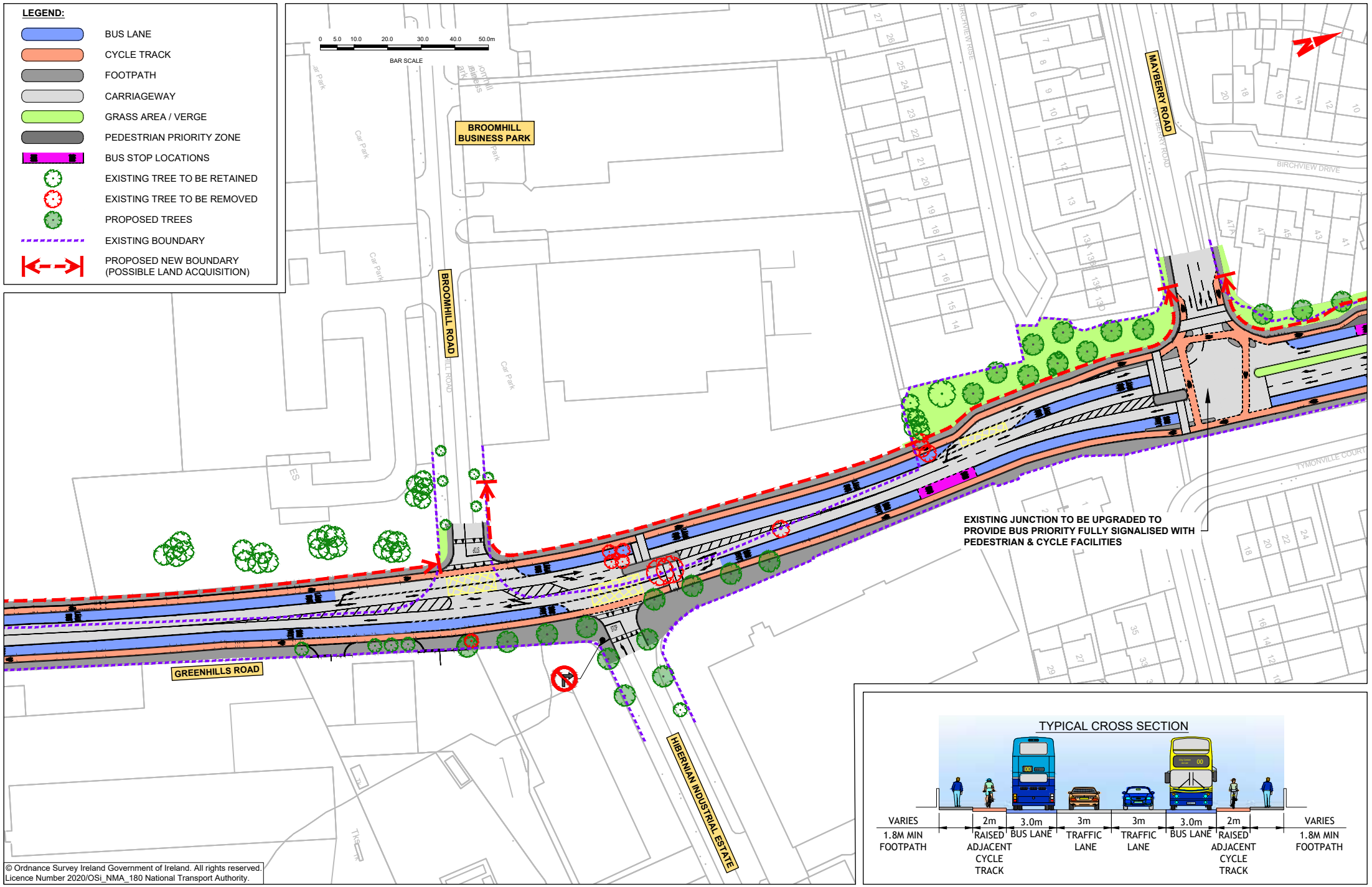
TYPICAL CROSS SECTION

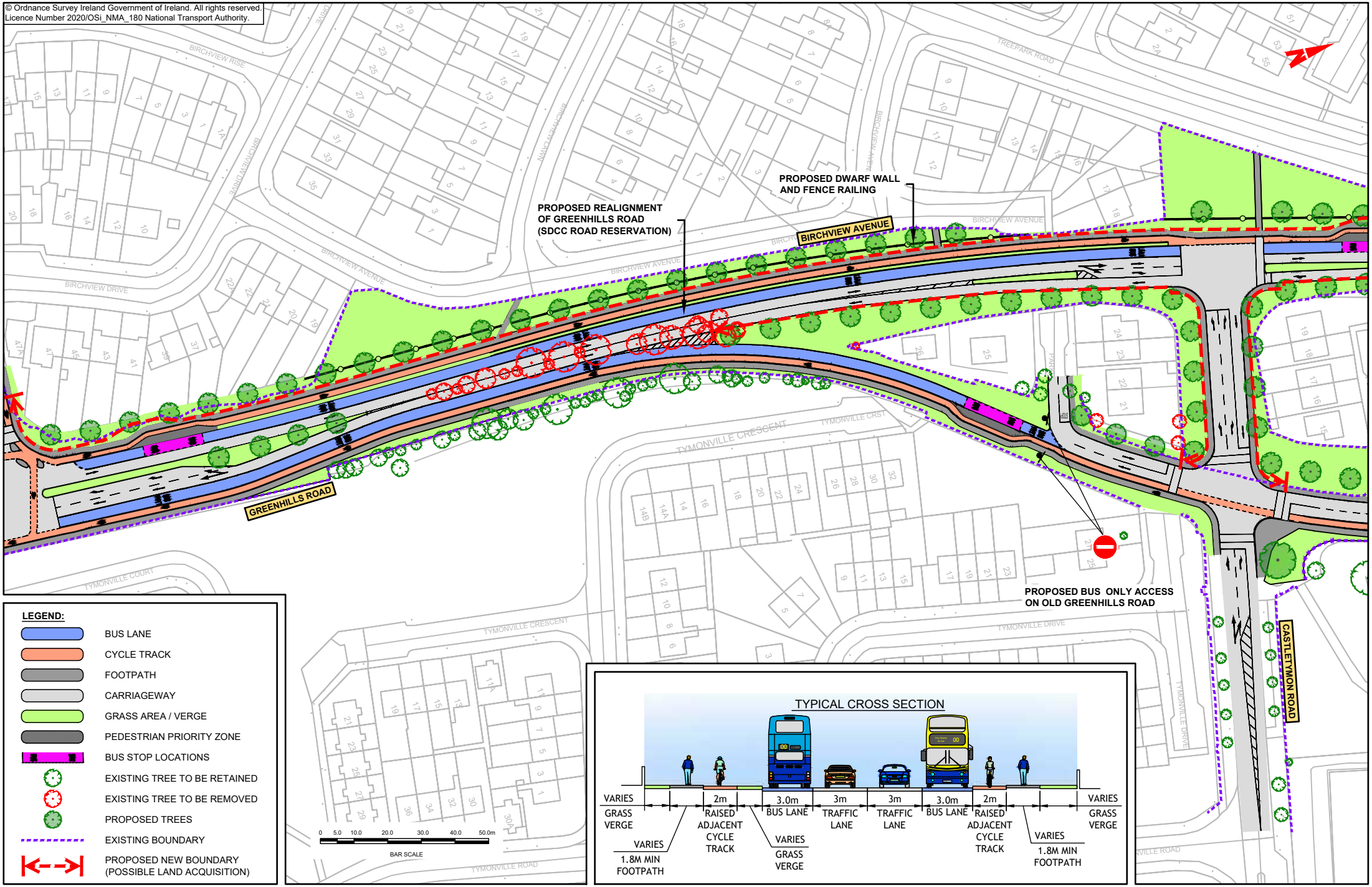
VARIES	3.5m	4.0m	VARIES
2m Min. FOOTPATH	TRAFFIC LANE	TRAFFIC LANE	2m Min. FOOTPATH









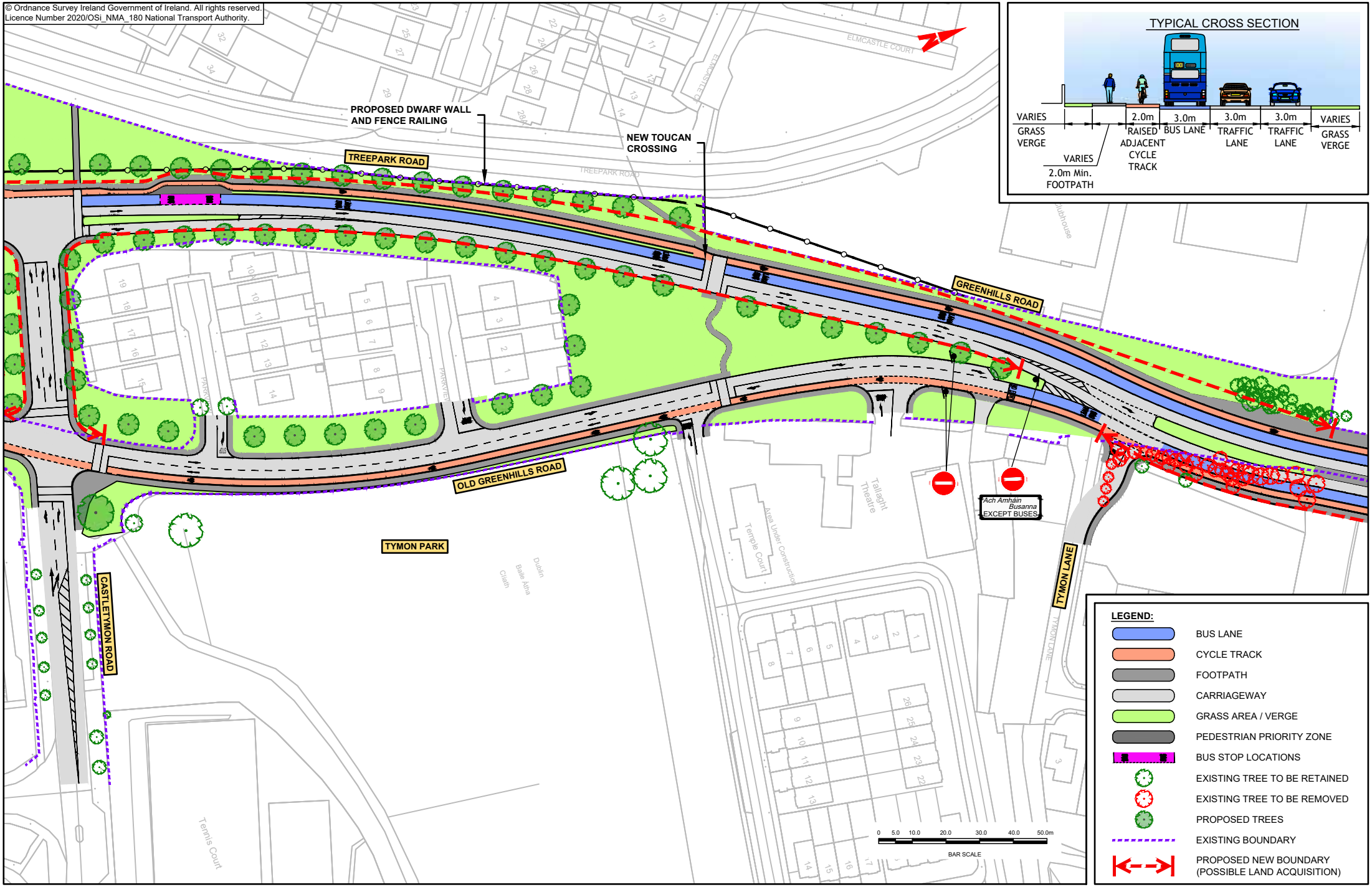


LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE



LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
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- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
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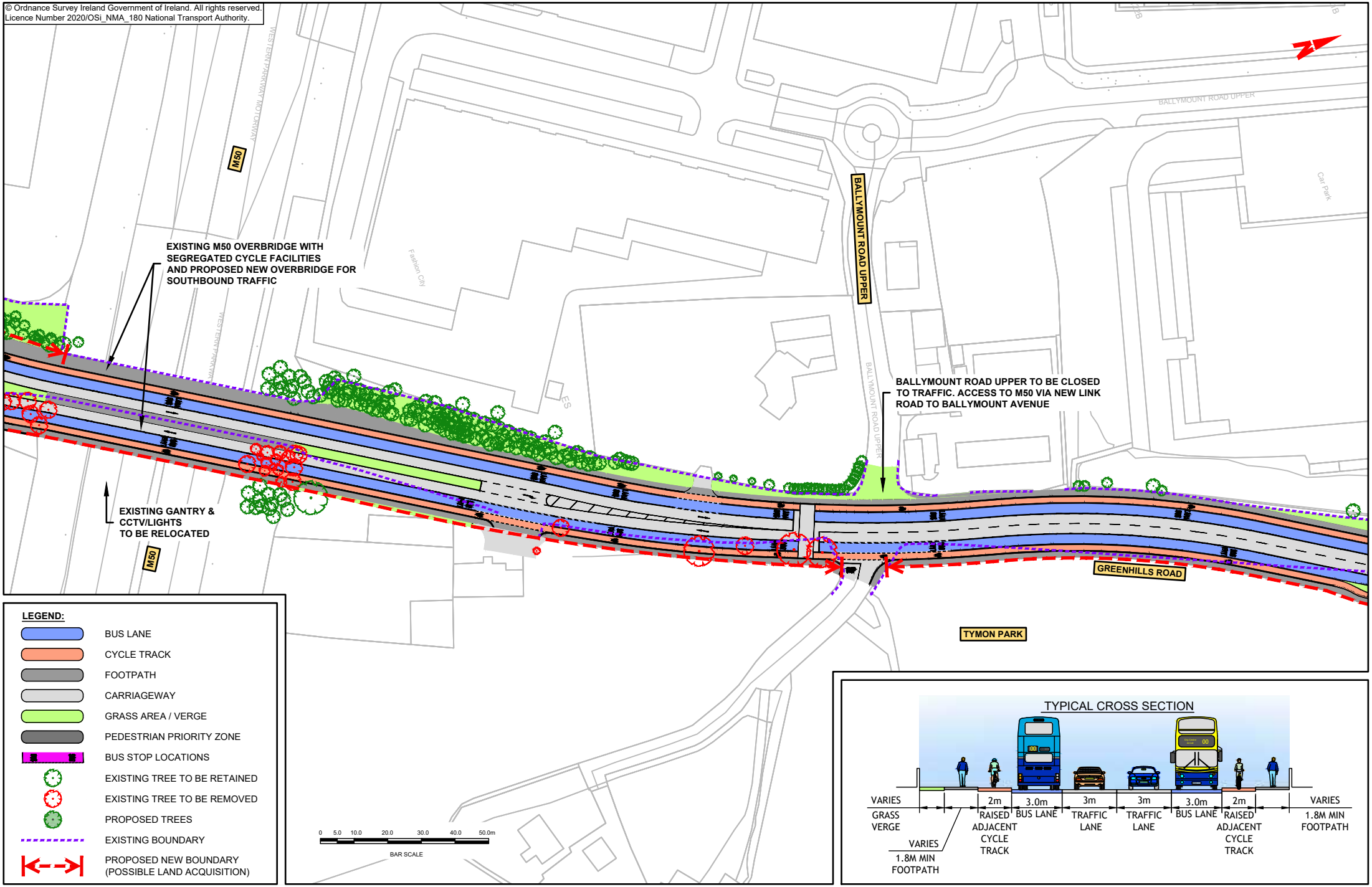
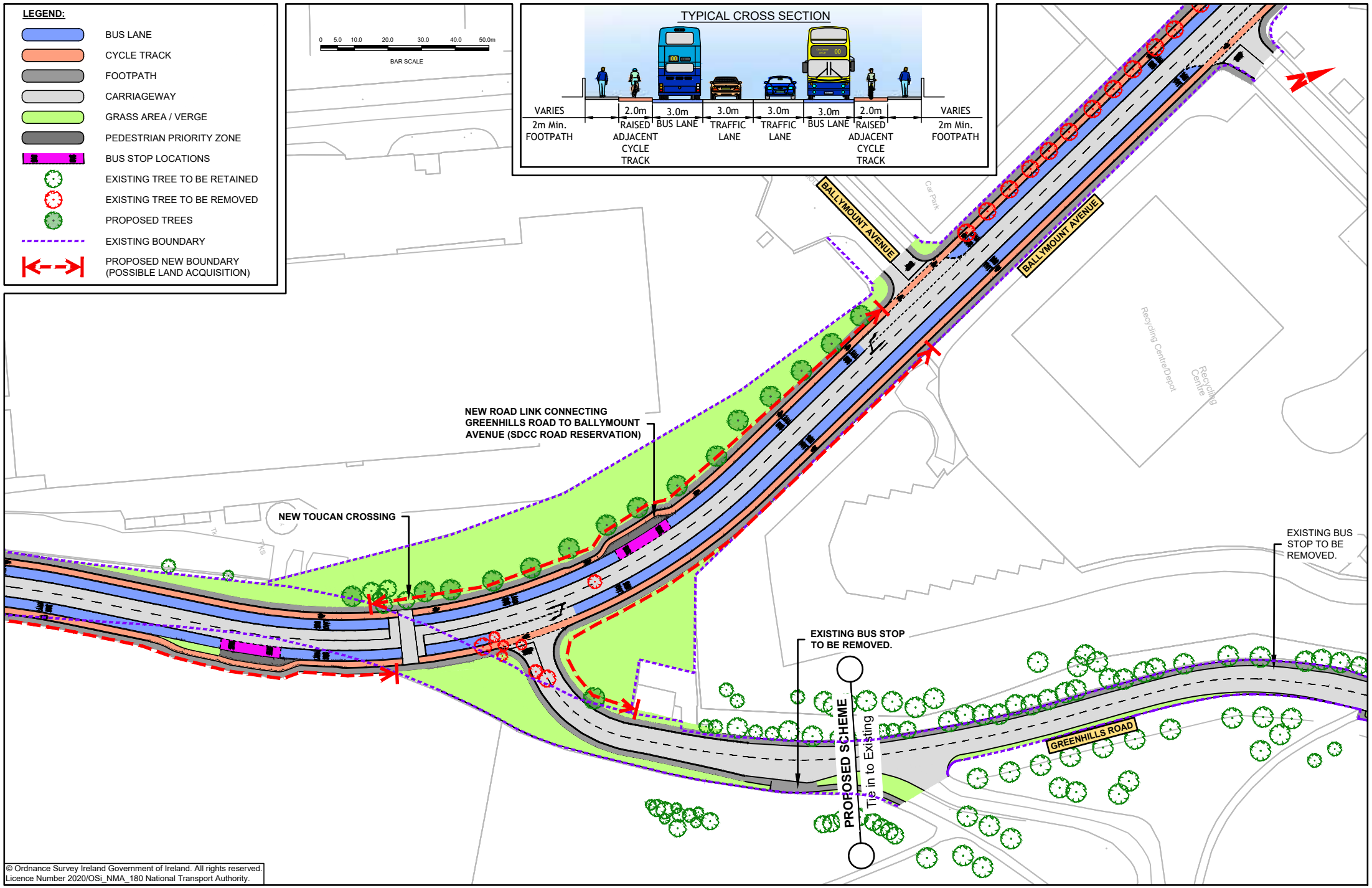
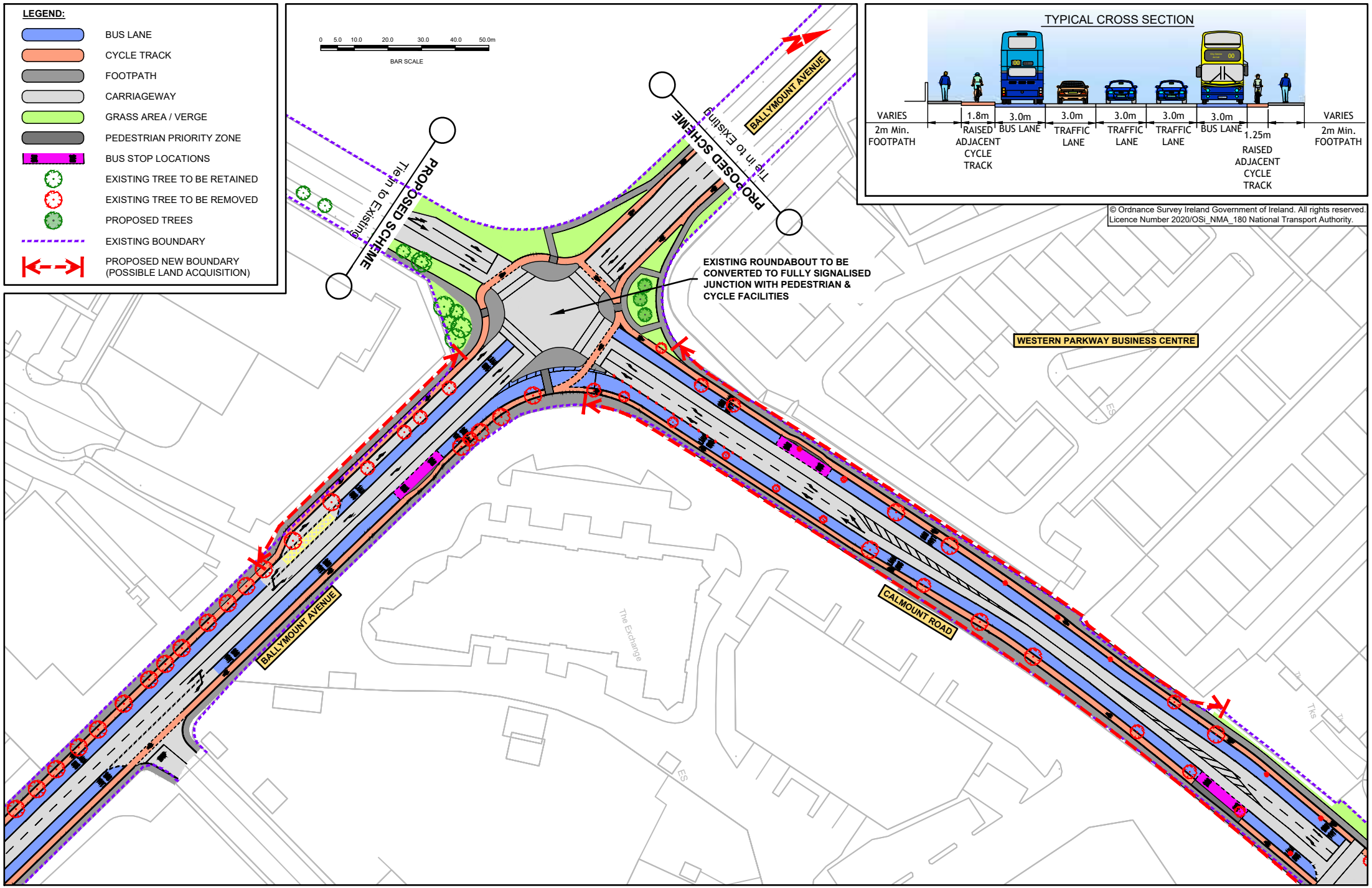
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)






LEGEND:
BUS LANE
CYCLE TRACK
FOOTPATH
CARRIAGEWAY
GRASS AREA / VERGE
PEDESTRIAN PRIORITY ZONE
BUS STOP LOCATIONS
EXISTING TREE TO BE RETAINED
EXISTING TREE TO BE REMOVED
PROPOSED TREES
EXISTING BOUNDARY
PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)
0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE
TYPICAL CROSS SECTION
VARIES 2m Min. FOOTPATH
1.8m RAISED ADJACENT CYCLE TRACK
3.0m BUS LANE
3.0m TRAFFIC LANE
3.0m TRAFFIC LANE
3.0m TRAFFIC LANE
3.0m BUS LANE
1.25m RAISED ADJACENT CYCLE TRACK
VARIES 2m Min. FOOTPATH
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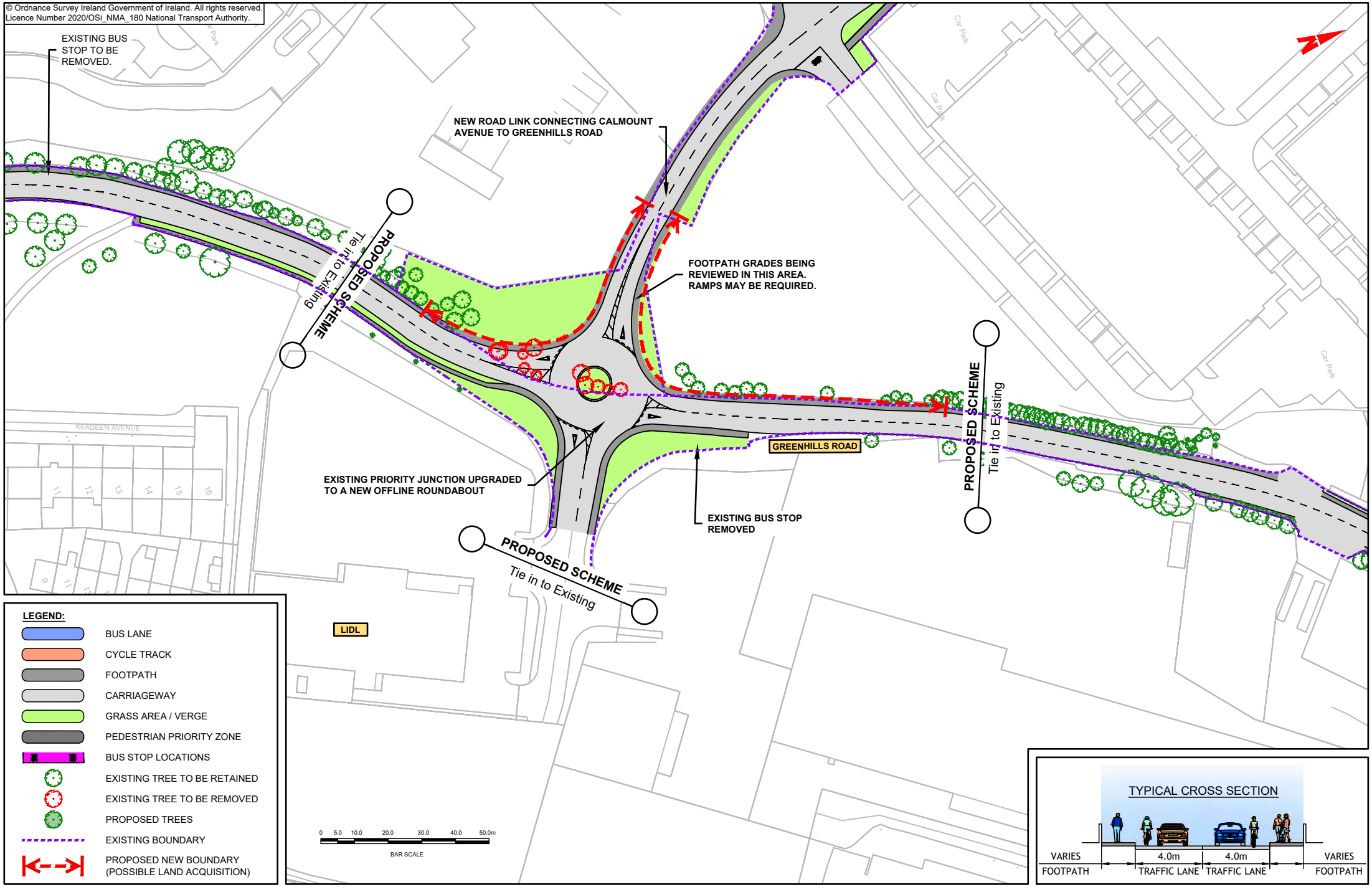
PROPOSED SCHEME
Tie in to Existing
PROPOSED SCHEME
Tie in to Existing
BALLYMOUNT AVENUE
EXISTING ROUNDABOUT TO BE CONVERTED TO FULLY SIGNALISED JUNCTION WITH PEDESTRIAN & CYCLE FACILITIES
WESTERN PARKWAY BUSINESS CENTRE
BALLYMOUNT AVENUE
CALMOUNT ROAD
The Exchange



LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
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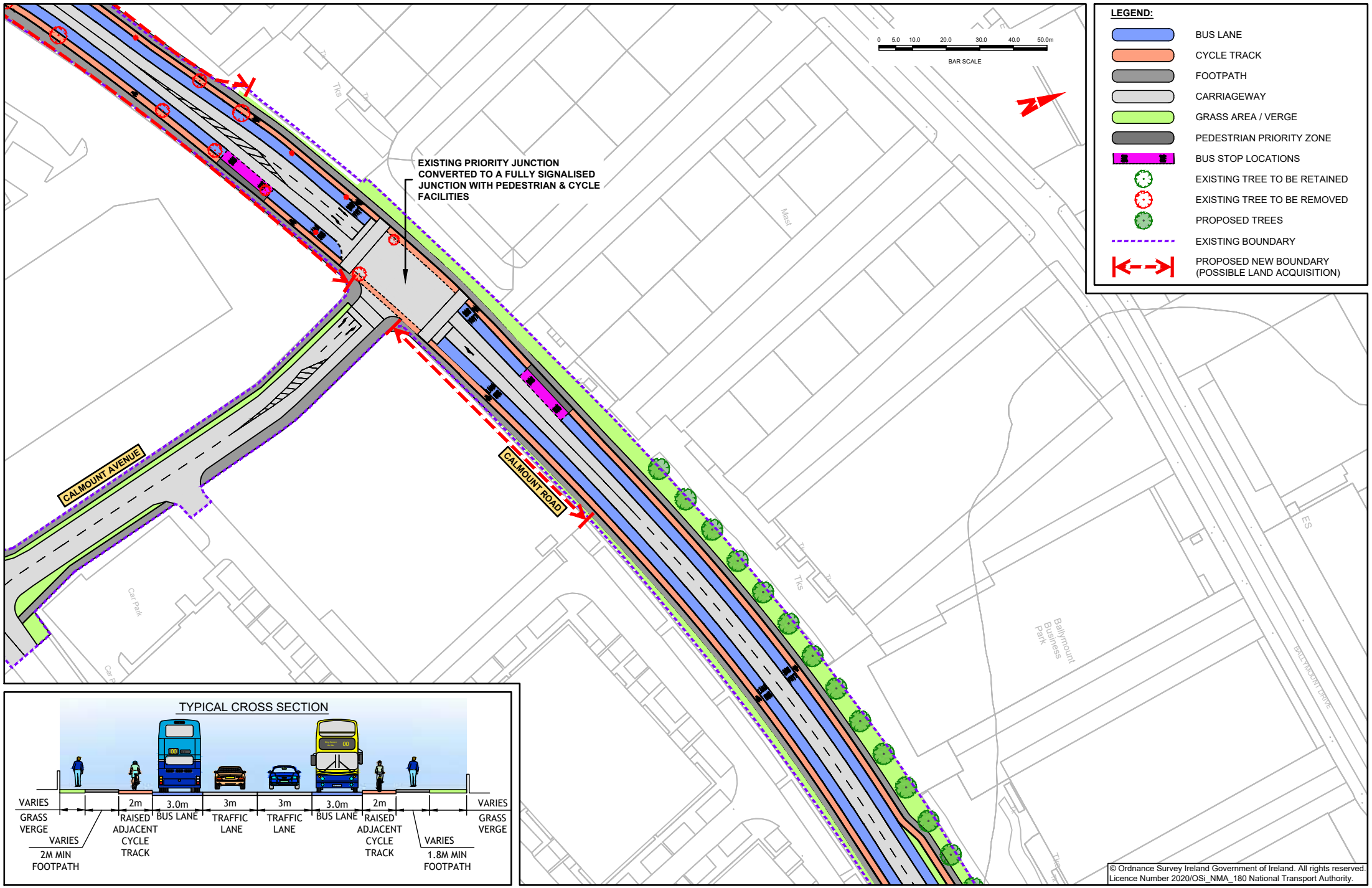
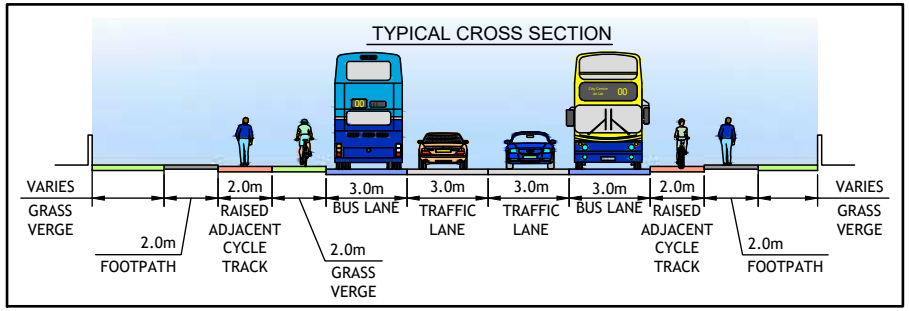




CALMOUNT ROAD

GREENHILLS ROAD

NEW ROAD EXTENSION CONNECTING CALMOUNT ROAD TO GREENHILLS ROAD (SDCC ROAD RESERVATION)

PROPOSED NEW ENTRANCE TO PROPERTY

FOOTPATH GRADES BEING REVIEWED IN THIS AREA. RAMPS MAY BE REQUIRED.

EXISTING GREENHILLS ROAD CLOSED TO TRAFFIC - PEDESTRIAN & CYCLE ACCESS ONLY. LOCAL DIVERSION VIA NEW LINK ROAD AT CALMOUNT AVENUE.

PROPOSED SCHEME

Tie in to Existing

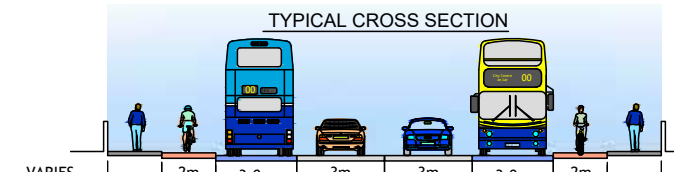
NEW VEHICLE TURNING AREA

LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

0 5.0 10.0 20.0 30.0 40.0 50.0m

BAR SCALE



EXISTING SHED/BUILDING
MAY POTENTIALLY BE IMPACTED
FROM ROAD WIDENING

EXISTING SHED/BUILDING
MAY POTENTIALLY BE IMPACTED
FROM ROAD WIDENING

GREENHILLS ROAD

LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
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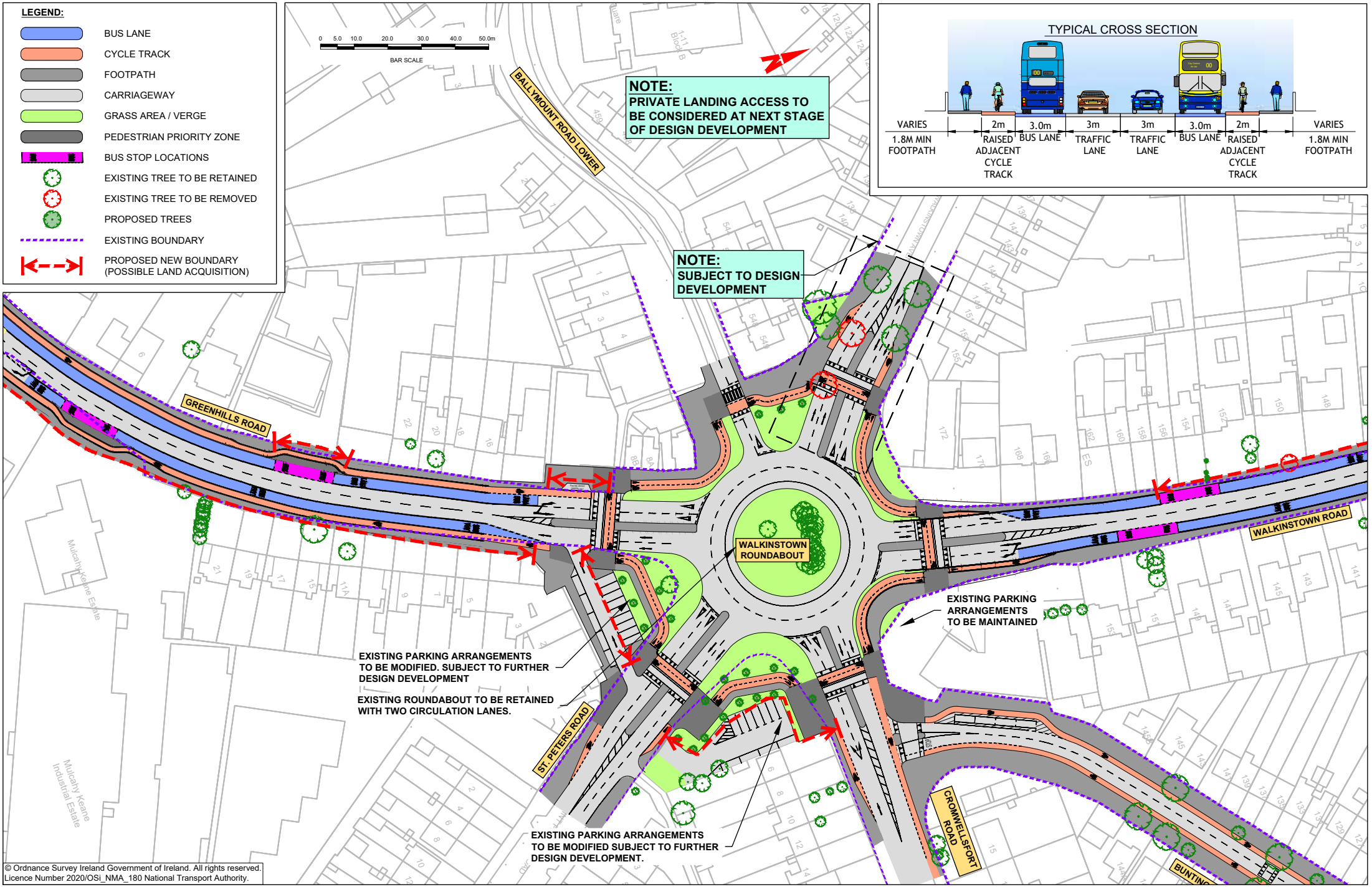
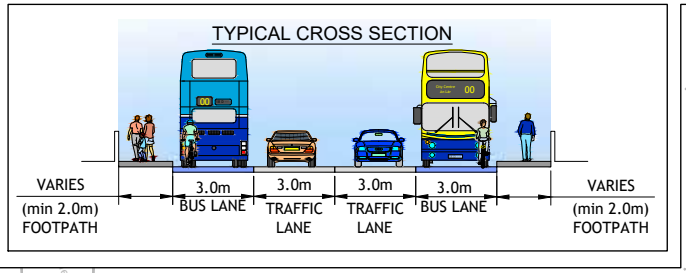
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE





WALKINSTOWN DRIVE

WALKINSTOWN ROAD

THOMAS MOORE ROAD

BUNTING ROAD

0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE

LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

Clondalkin to Drimnagh CBC

PROPOSED SCHEME

EXISTING PARKING ARRANGEMENTS TO BE MODIFIED. SUBJECT TO FURTHER DESIGN DEVELOPMENT

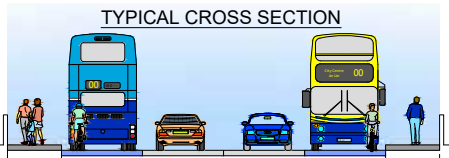
LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

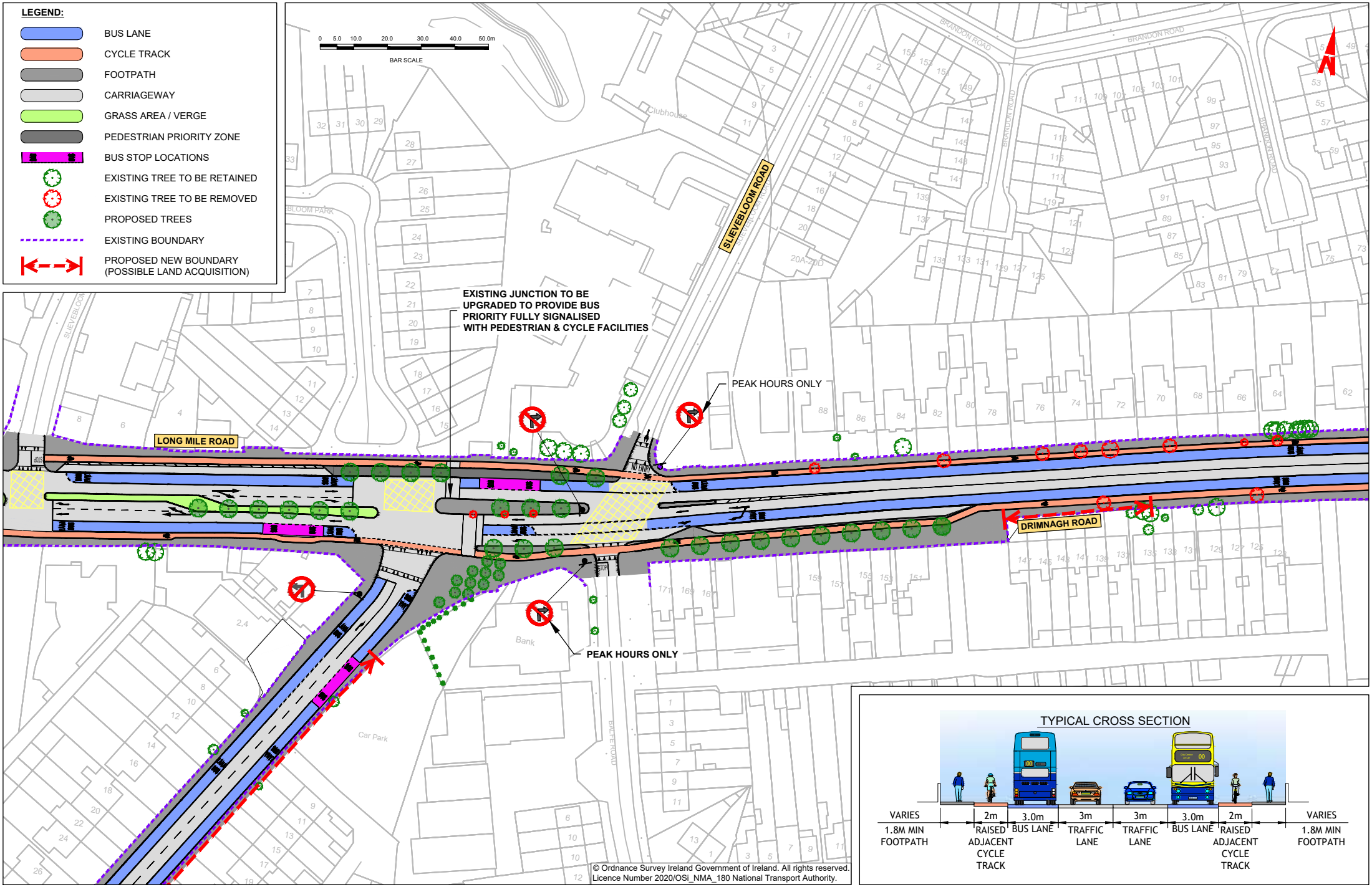
0 5.0 10.0 20.0 30.0 40.0 50.0m

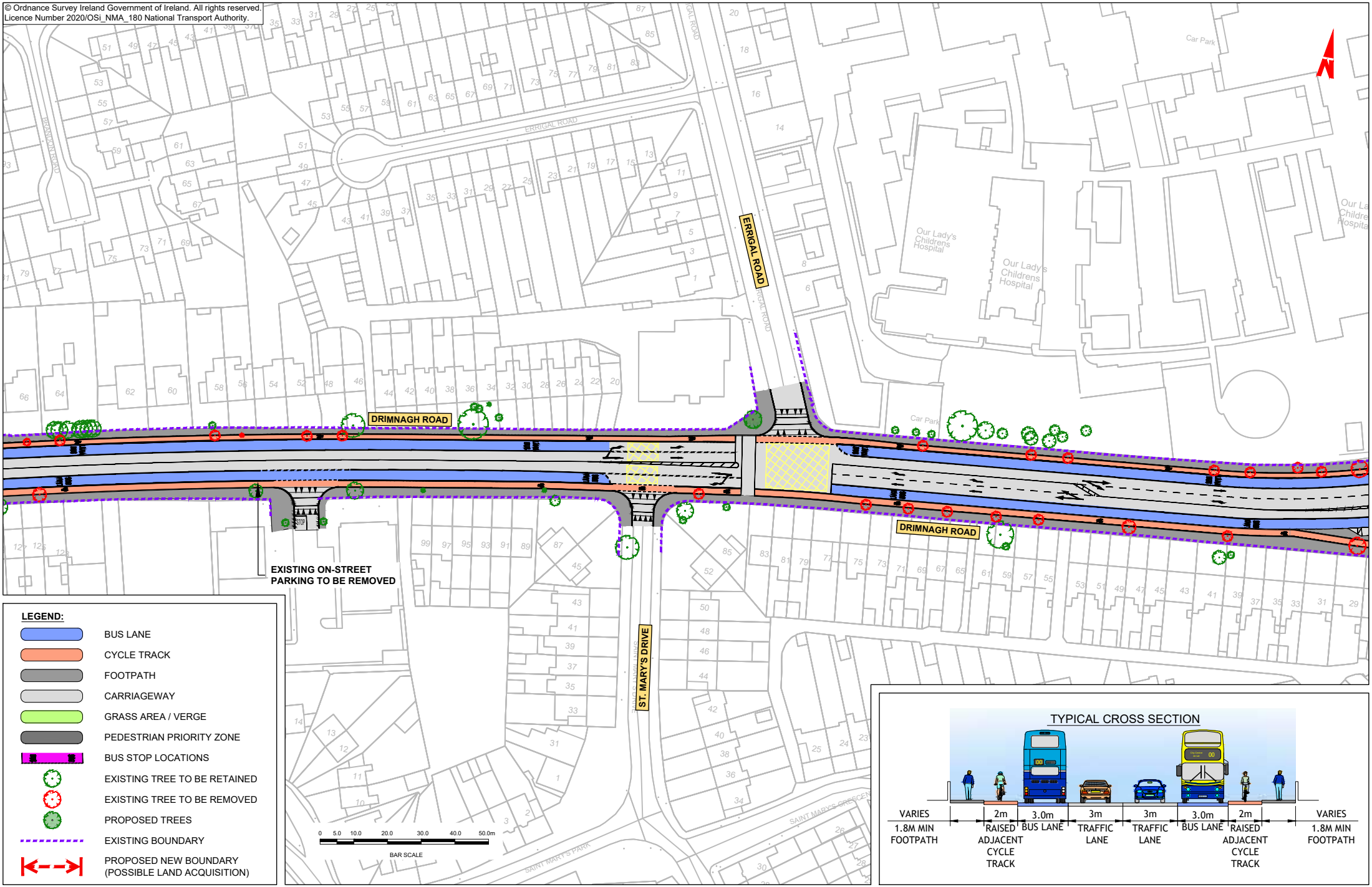
BAR SCALE

TYPICAL CROSS SECTION



VARIES (min 2.0m) FOOTPATH | 3.0m BUS LANE | 3.0m TRAFFIC LANE | 3.0m TRAFFIC LANE | 3.0m BUS LANE | VARIES (min 2.0m) FOOTPATH



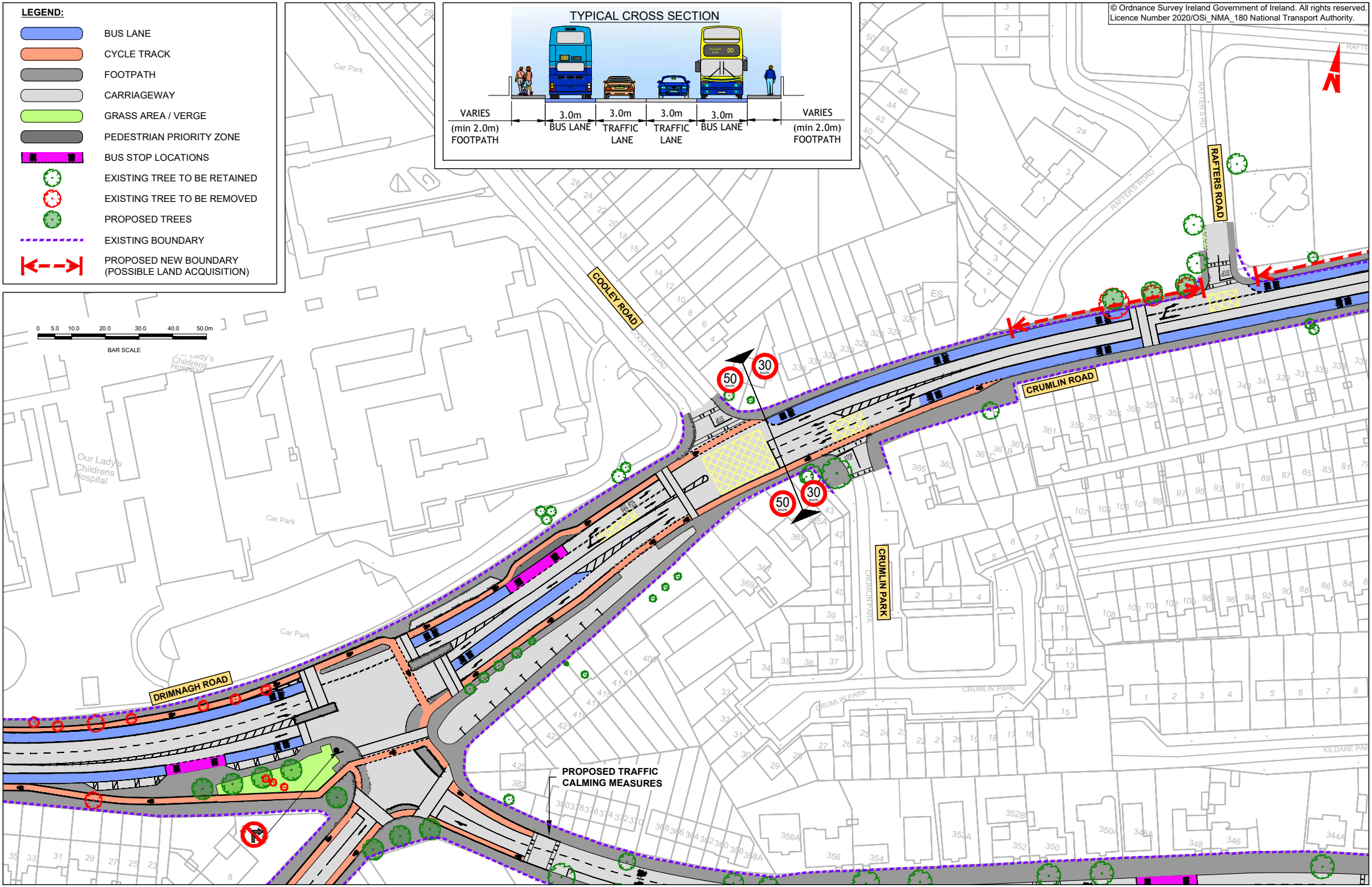


LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

TYPICAL CROSS SECTION

VARIES	2m	3.0m	3m	3m	3.0m	2m	VARIES
1.8M MIN FOOTPATH	RAISED ADJACENT CYCLE TRACK	BUS LANE	TRAFFIC LANE	TRAFFIC LANE	BUS LANE	RAISED ADJACENT CYCLE TRACK	1.8M MIN FOOTPATH


LEGEND:
BUS LANE
CYCLE TRACK
FOOTPATH
CARRIAGEWAY
GRASS AREA / VERGE
PEDESTRIAN PRIORITY ZONE
BUS STOP LOCATIONS
EXISTING TREE TO BE RETAINED
EXISTING TREE TO BE REMOVED
PROPOSED TREES
EXISTING BOUNDARY
PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)
TYPICAL CROSS SECTION
VARIES (min 2.0m) FOOTPATH
3.0m BUS LANE
3.0m TRAFFIC LANE
3.0m TRAFFIC LANE
3.0m BUS LANE
VARIES (min 2.0m) FOOTPATH
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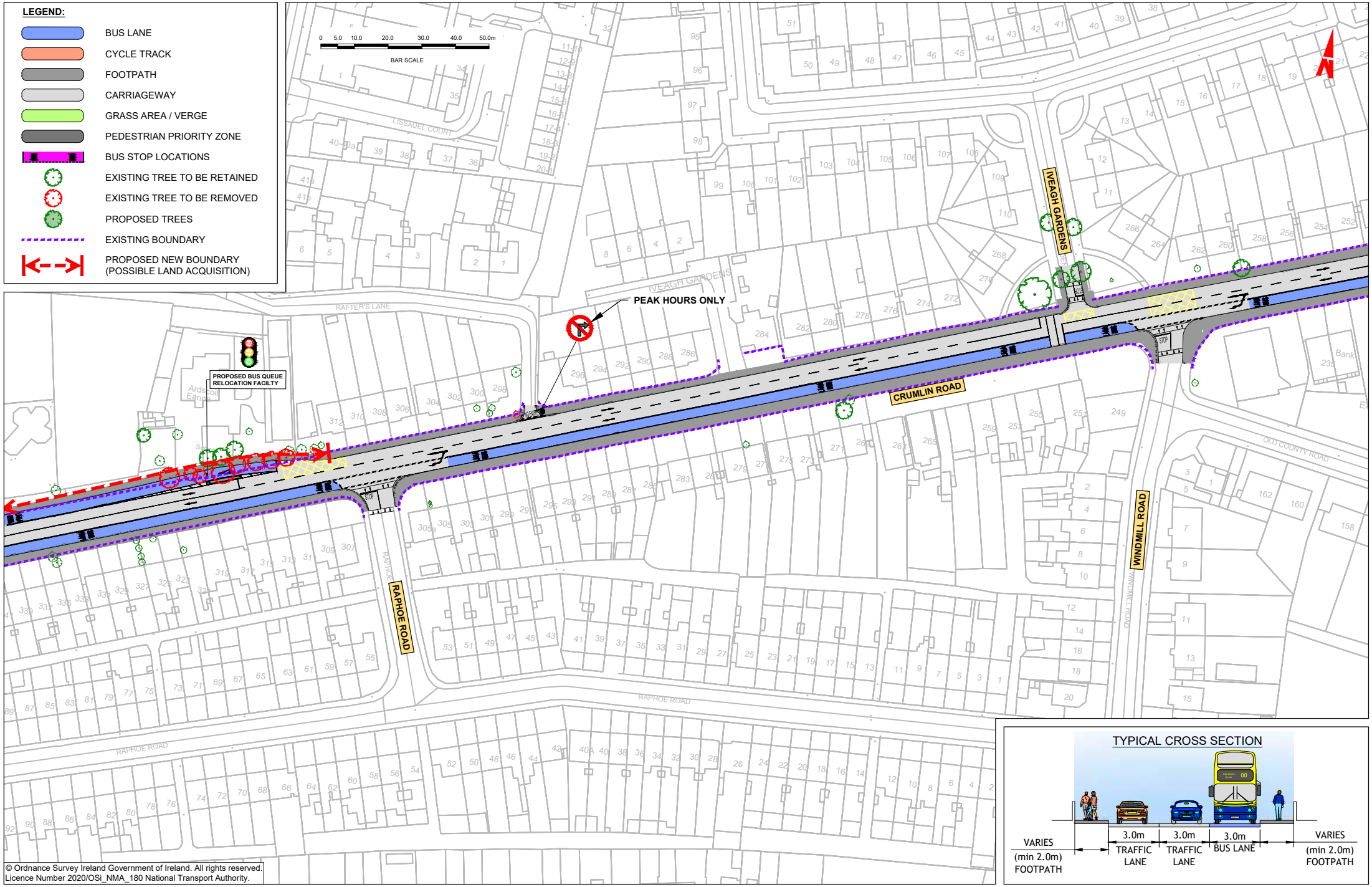
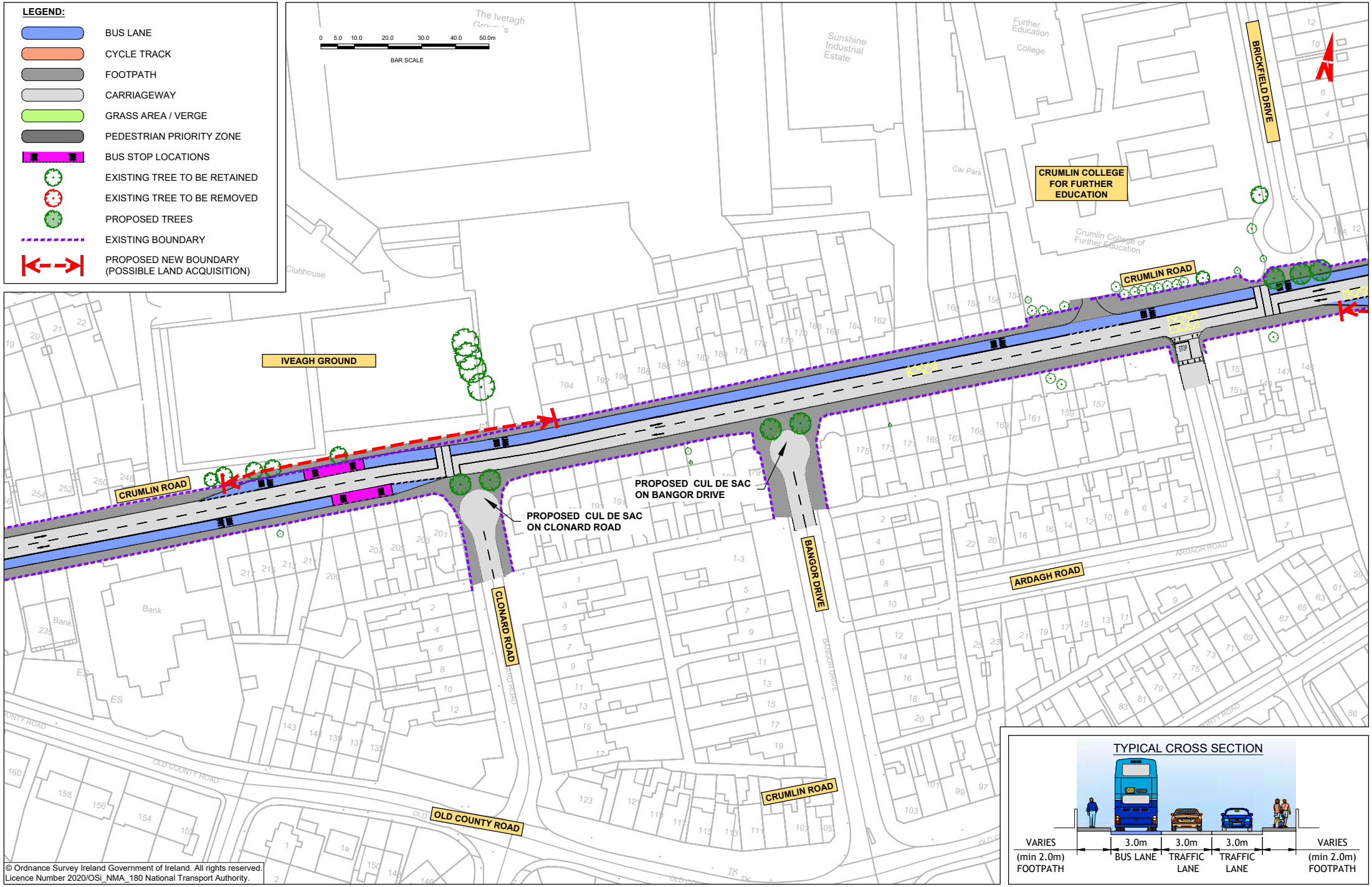
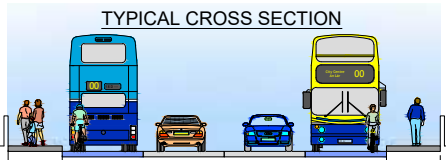
0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE
COOLEY ROAD
RAFTERS ROAD
CRUMLIN ROAD
CRUMLIN PARK
DRIMNAGH ROAD
PROPOSED TRAFFIC CALMING MEASURES
50
30
Our Ladys Childrens Hospital
Car Park





TYPICAL CROSS SECTION



VARIES (min 2.0m) FOOTPATH	3.0m BUS LANE	3.0m TRAFFIC LANE	3.0m TRAFFIC LANE	3.0m BUS LANE	VARIES (min 2.0m) FOOTPATH

CRUMLIN SHOPPING CENTRE

PROPOSED BUS QUEUE RELOCATION FACILTY

HERBERTON ROAD

OLD COUNTY ROAD

SUNDRIVE ROAD

PROPOSED SCHEME
Tie in to Existing

Crumlin Shopping Centre

Health Centre

Loreto College

BAR SCALE 0 5.0 10.0 20.0 30.0 40.0 50.0m

LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
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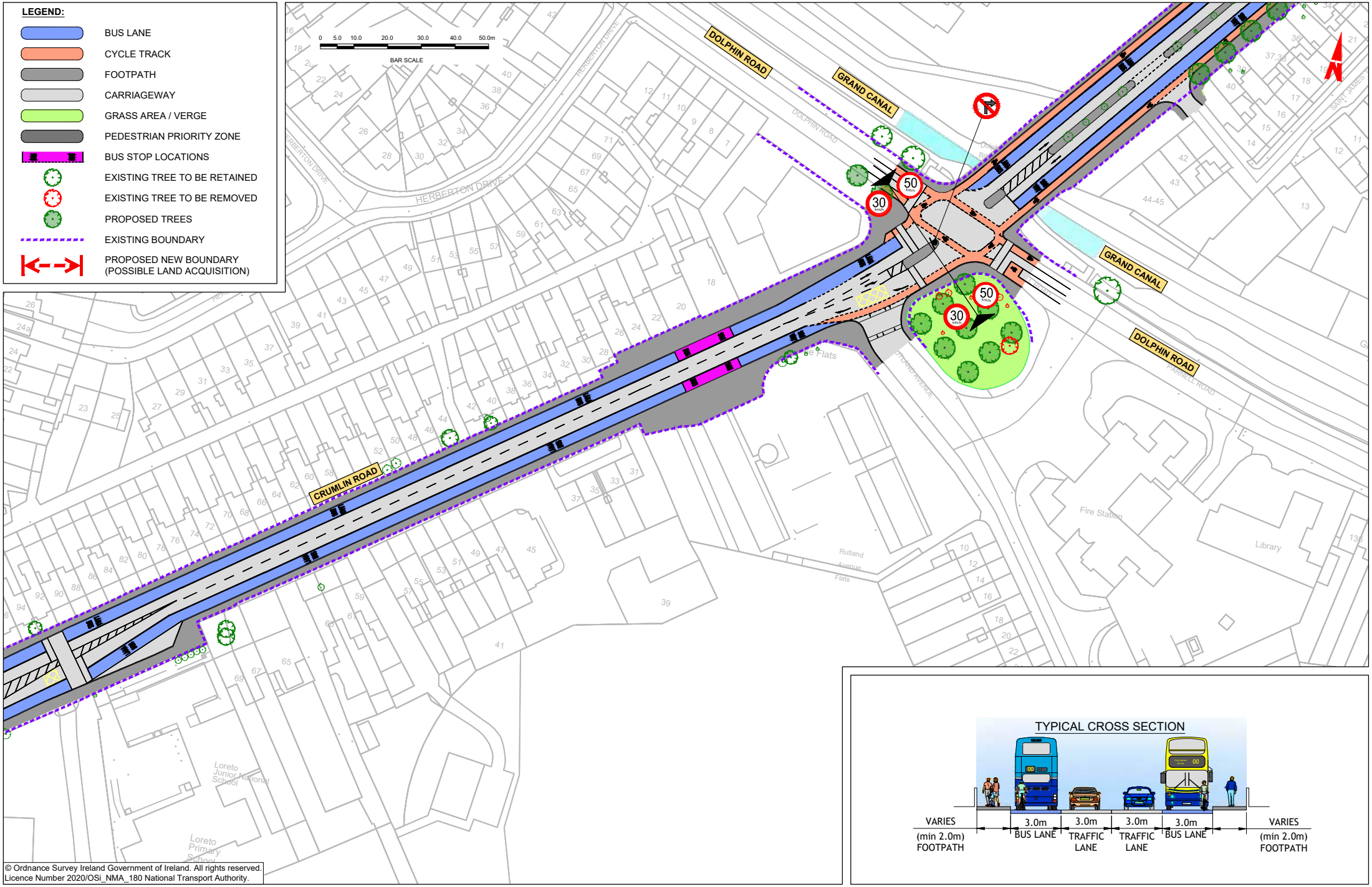

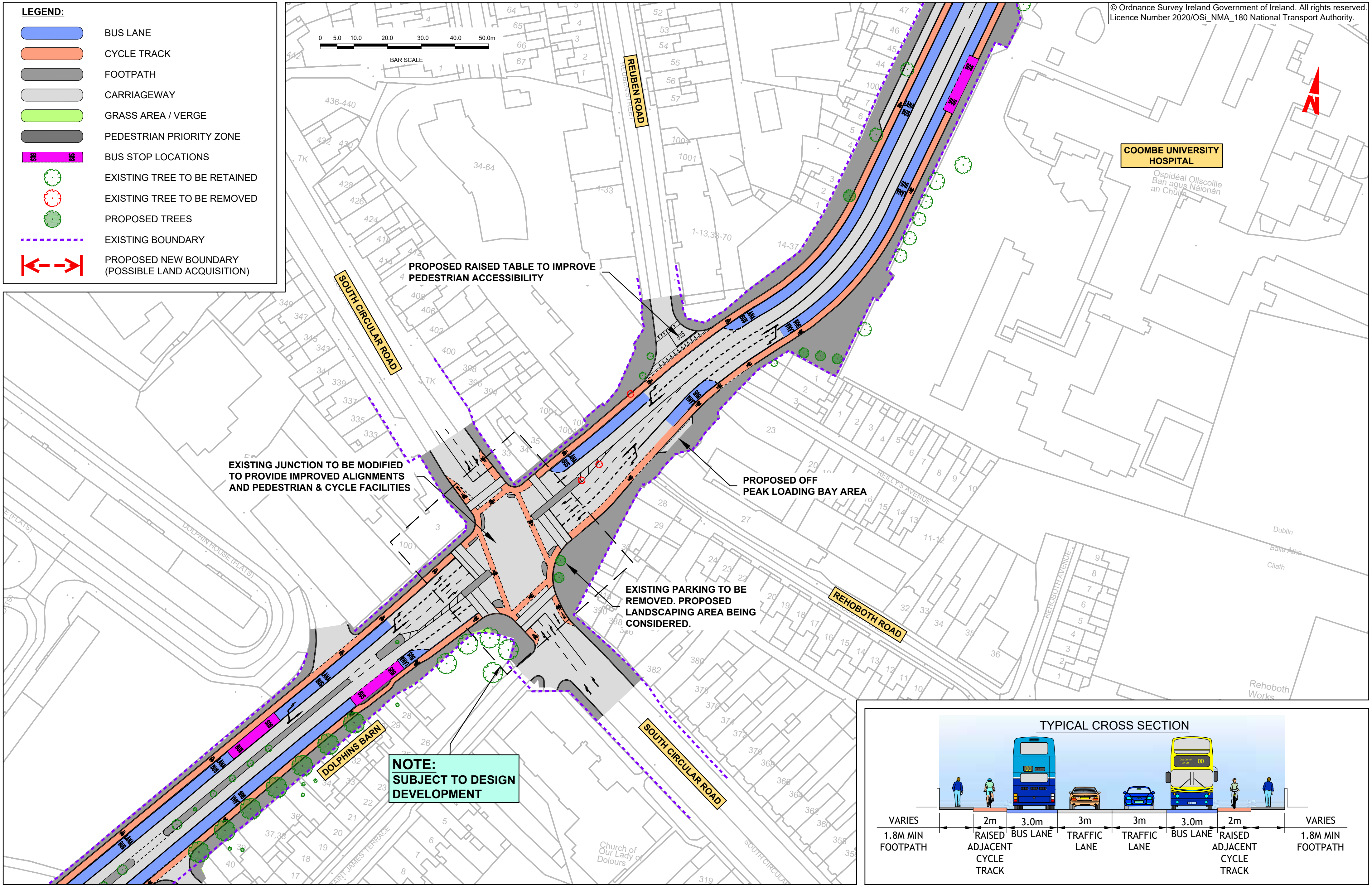

LEGEND:
BUS LANE
CYCLE TRACK
FOOTPATH
CARRIAGEWAY
GRASS AREA / VERGE
PEDESTRIAN PRIORITY ZONE
BUS STOP LOCATIONS
EXISTING TREE TO BE RETAINED
EXISTING TREE TO BE REMOVED
PROPOSED TREES
EXISTING BOUNDARY
PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)
0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE
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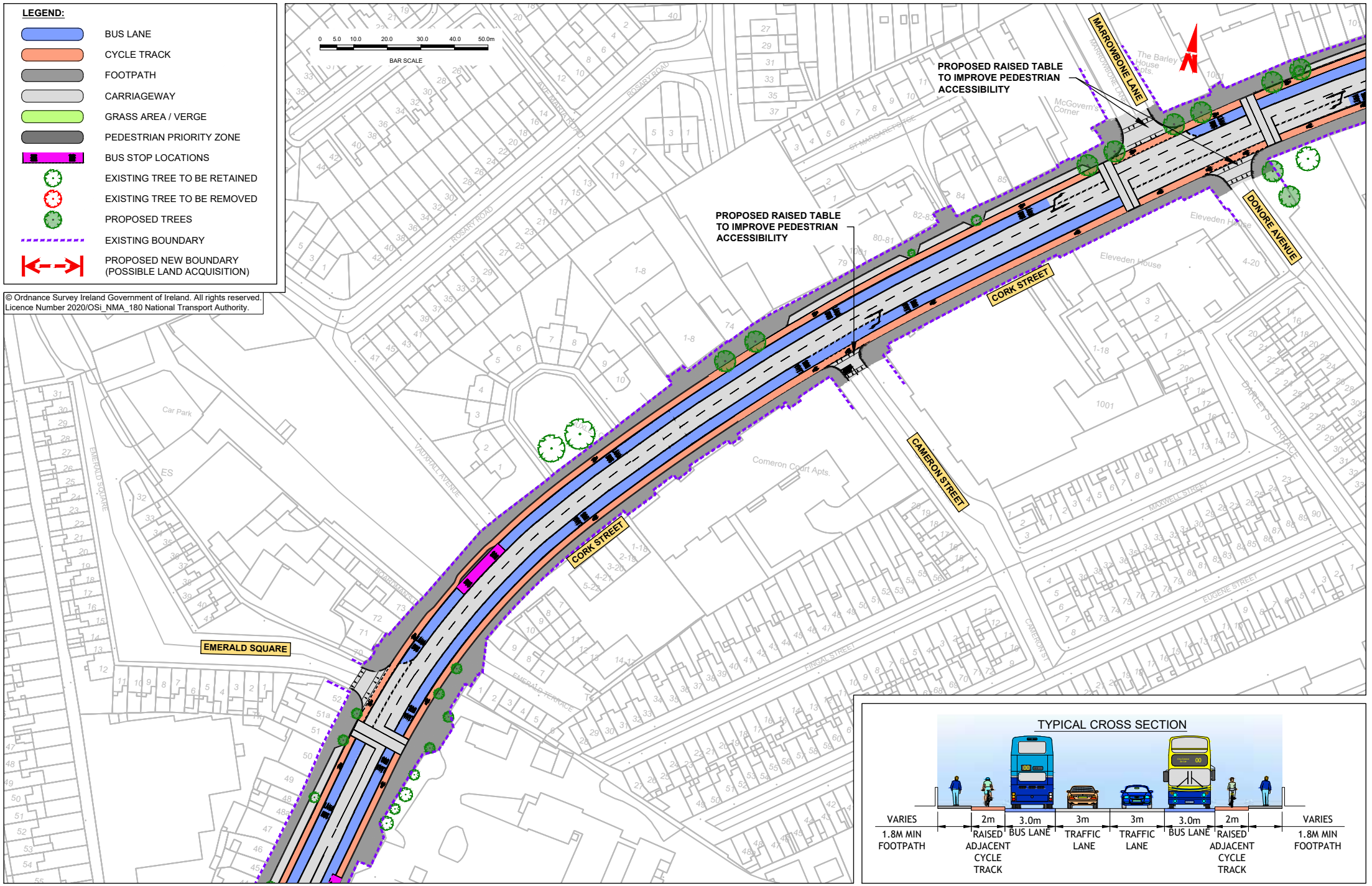
REUBEN ROAD
SOUTH CIRCULAR ROAD
COOMBE UNIVERSITY HOSPITAL
Ospidéal Ollscoille Ban agus Naíonán an Chúim
PROPOSED RAISED TABLE TO IMPROVE PEDESTRIAN ACCESSIBILITY
EXISTING JUNCTION TO BE MODIFIED TO PROVIDE IMPROVED ALIGNMENTS AND PEDESTRIAN & CYCLE FACILITIES
PROPOSED OFF PEAK LOADING BAY AREA
EXISTING PARKING TO BE REMOVED. PROPOSED LANDSCAPING AREA BEING CONSIDERED.
REILLY'S AVENUE
REHOBOTH ROAD
REHOBOTH AVENUE
DOLPHIN HOUSE (FLATS)
DOLPHINS BARN
SOUTH CIRCULAR ROAD
Church of Our Lady of Dolours
Rehoboth Works
Dublin Baile Átha Cliath
NOTE:
SUBJECT TO DESIGN DEVELOPMENT
TYPICAL CROSS SECTION
VARIES 1.8M MIN FOOTPATH
2m RAISED ADJACENT CYCLE TRACK
3.0m BUS LANE
3m TRAFFIC LANE
3m TRAFFIC LANE
3.0m BUS LANE
2m RAISED ADJACENT CYCLE TRACK
VARIES 1.8M MIN FOOTPATH


LEGEND:
BUS LANE
CYCLE TRACK
FOOTPATH
CARRIAGEWAY
GRASS AREA / VERGE
PEDESTRIAN PRIORITY ZONE
BUS STOP LOCATIONS
EXISTING TREE TO BE RETAINED
EXISTING TREE TO BE REMOVED
PROPOSED TREES
EXISTING BOUNDARY
PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)
0 5.0 10.0 20.0 30.0 40.0 50.0m
BAR SCALE
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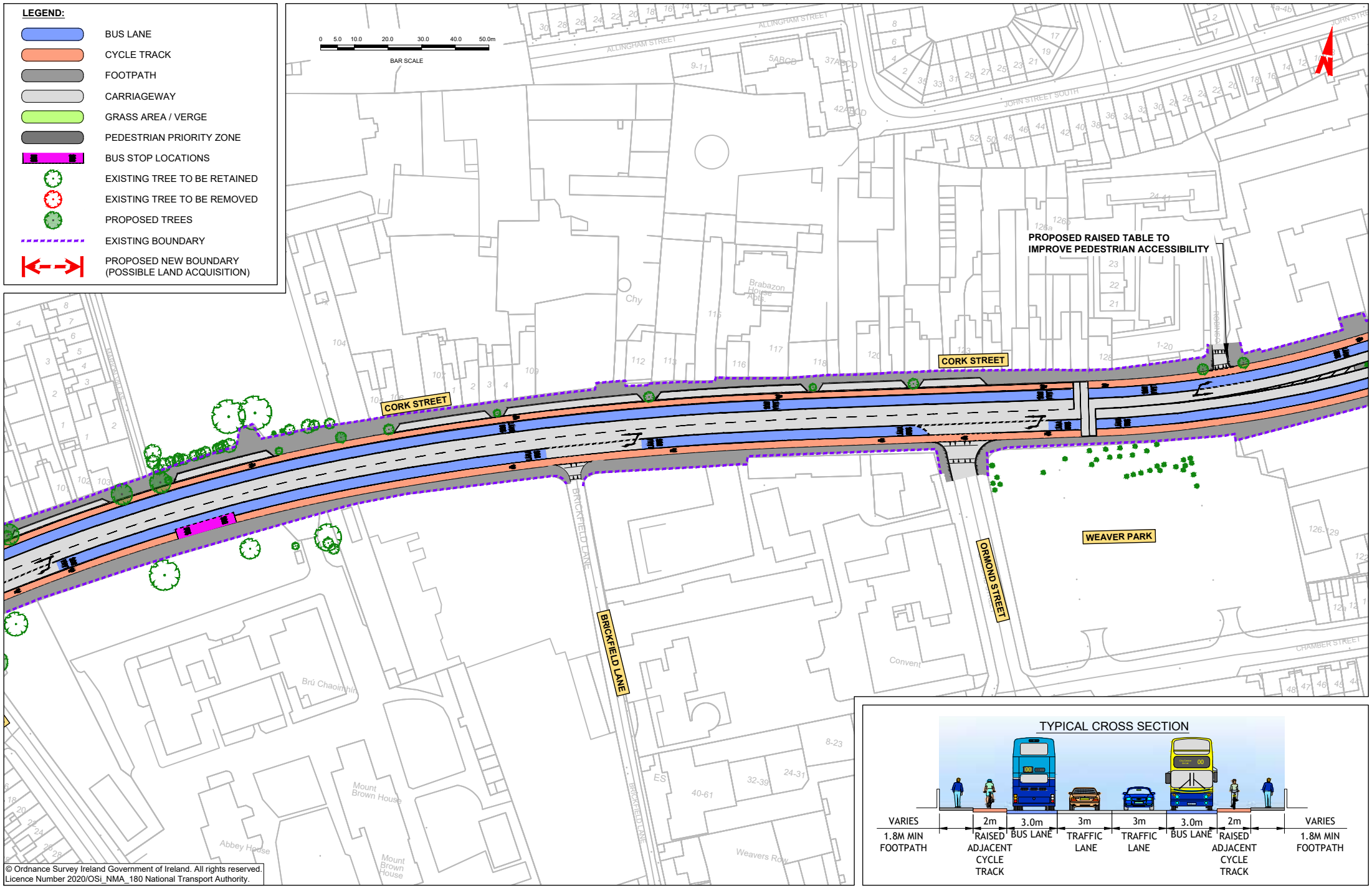
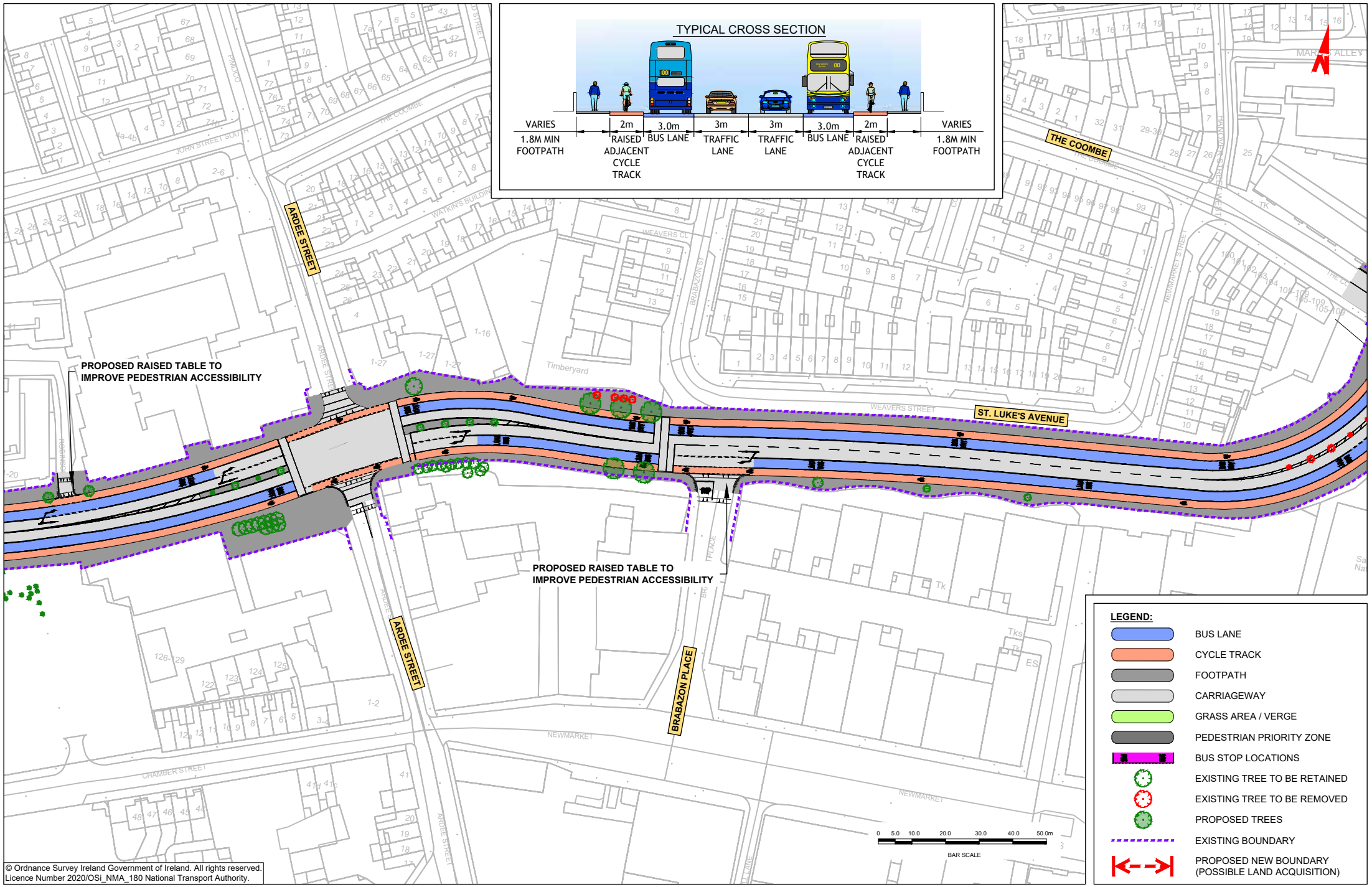
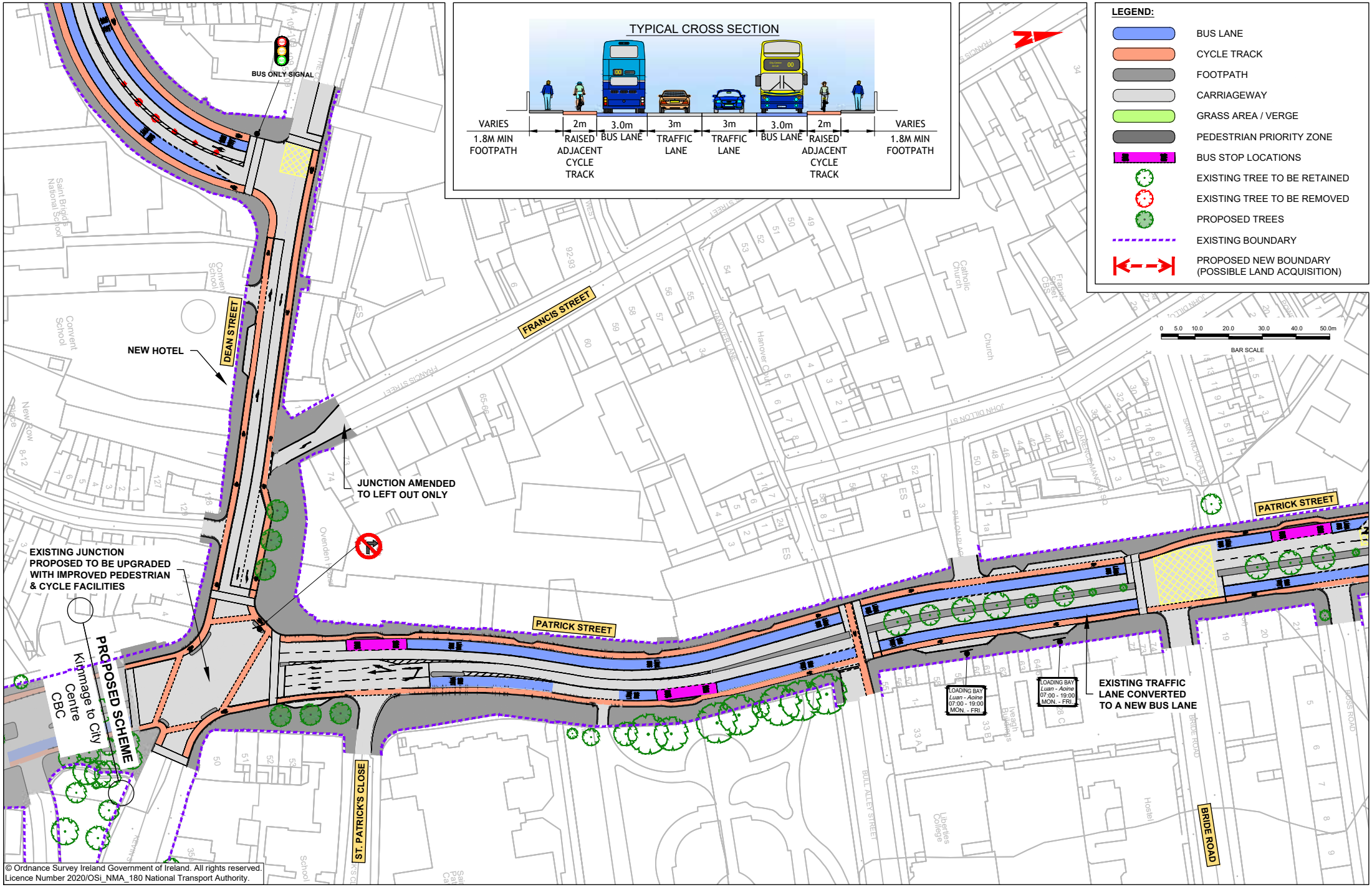
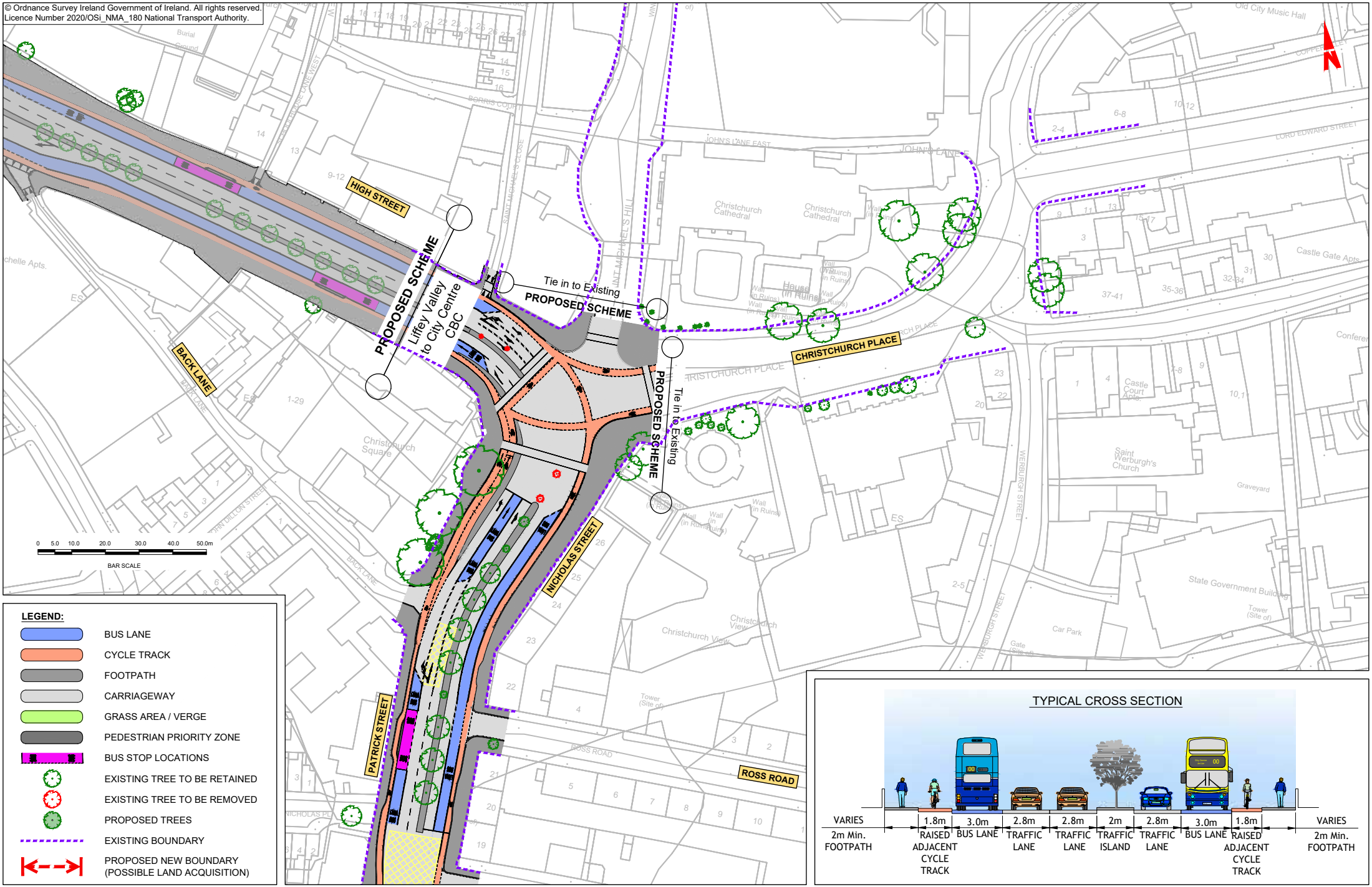
PROPOSED RAISED TABLE TO IMPROVE PEDESTRIAN ACCESSIBILITY
PROPOSED RAISED TABLE TO IMPROVE PEDESTRIAN ACCESSIBILITY
MARROWBONE LANE
DONORE AVENUE
CORK STREET
CAMERON STREET
CORK STREET
EMERALD SQUARE
TYPICAL CROSS SECTION
VARIES
1.8M MIN FOOTPATH
2m
RAISED ADJACENT CYCLE TRACK
3.0m
BUS LANE
3m
TRAFFIC LANE
3m
TRAFFIC LANE
3.0m
BUS LANE
2m
RAISED ADJACENT CYCLE TRACK
VARIES
1.8M MIN FOOTPATH





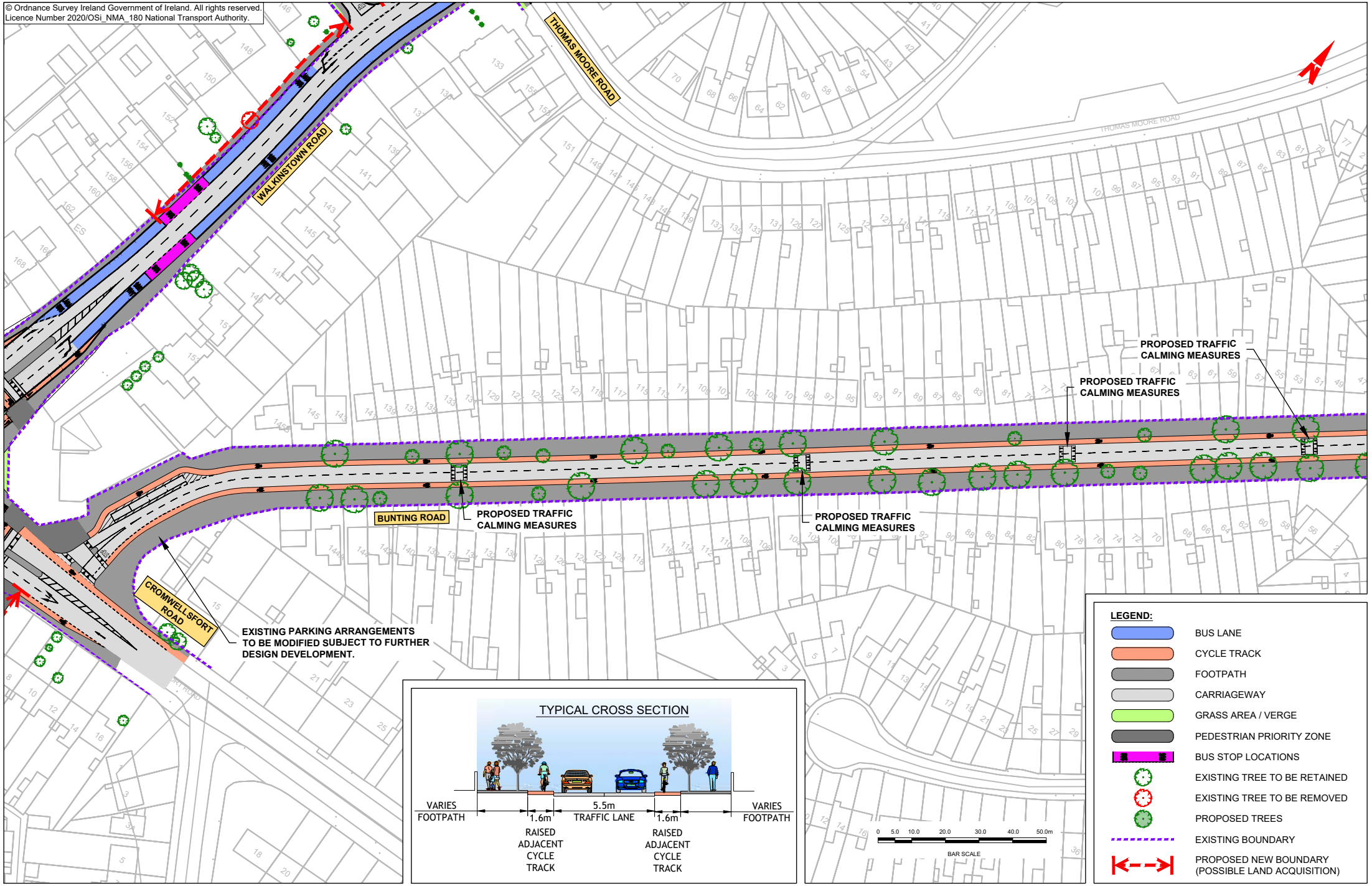


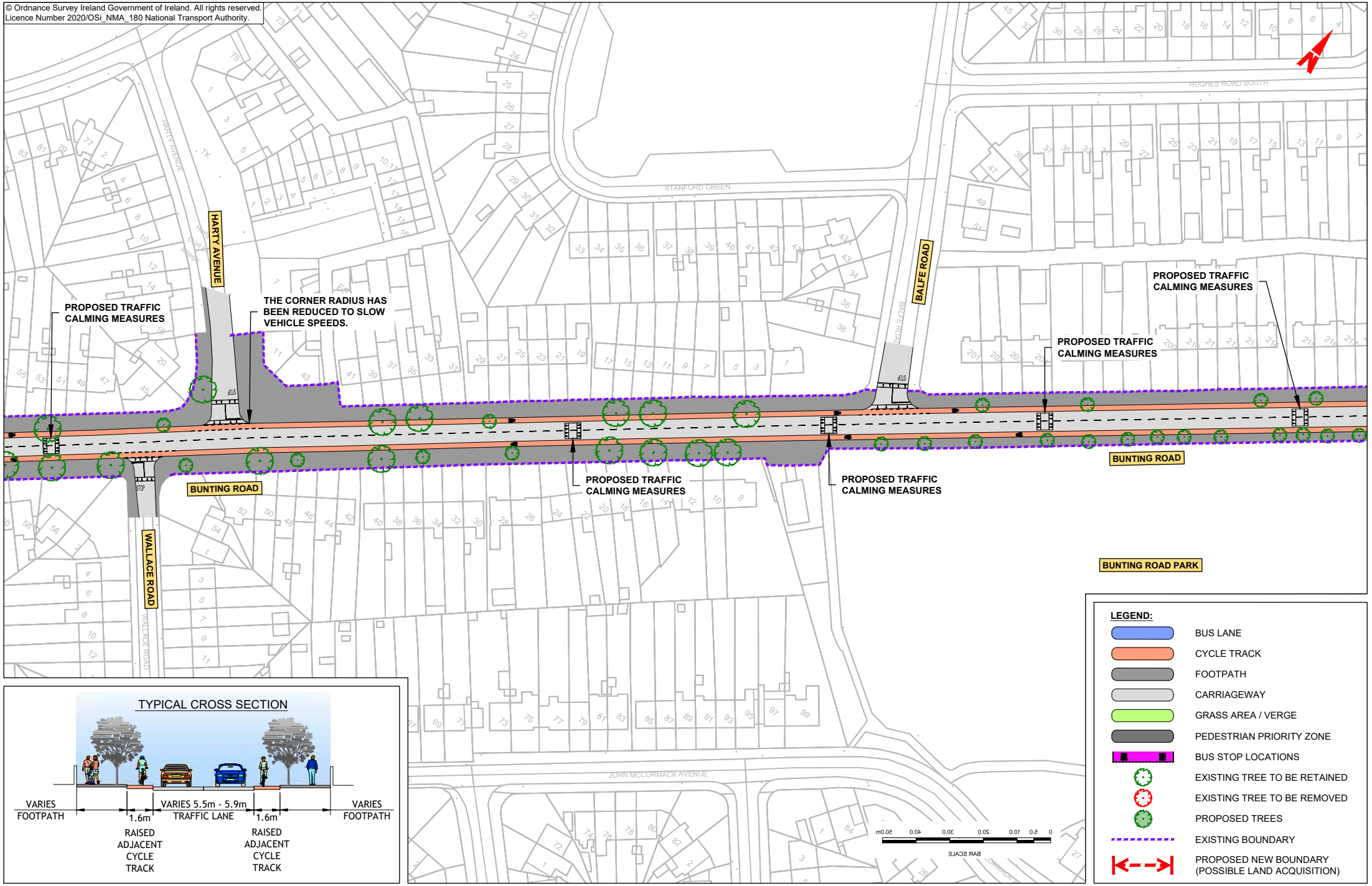


LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
- GRASS AREA / VERGE
- PEDESTRIAN PRIORITY ZONE
- BUS STOP LOCATIONS
- EXISTING TREE TO BE RETAINED
- EXISTING TREE TO BE REMOVED
- PROPOSED TREES
- EXISTING BOUNDARY
- PROPOSED NEW BOUNDARY (POSSIBLE LAND ACQUISITION)

TYPICAL CROSS SECTION





TYPICAL CROSS SECTION

LEGEND:

- BUS LANE
- CYCLE TRACK
- FOOTPATH
- CARRIAGEWAY
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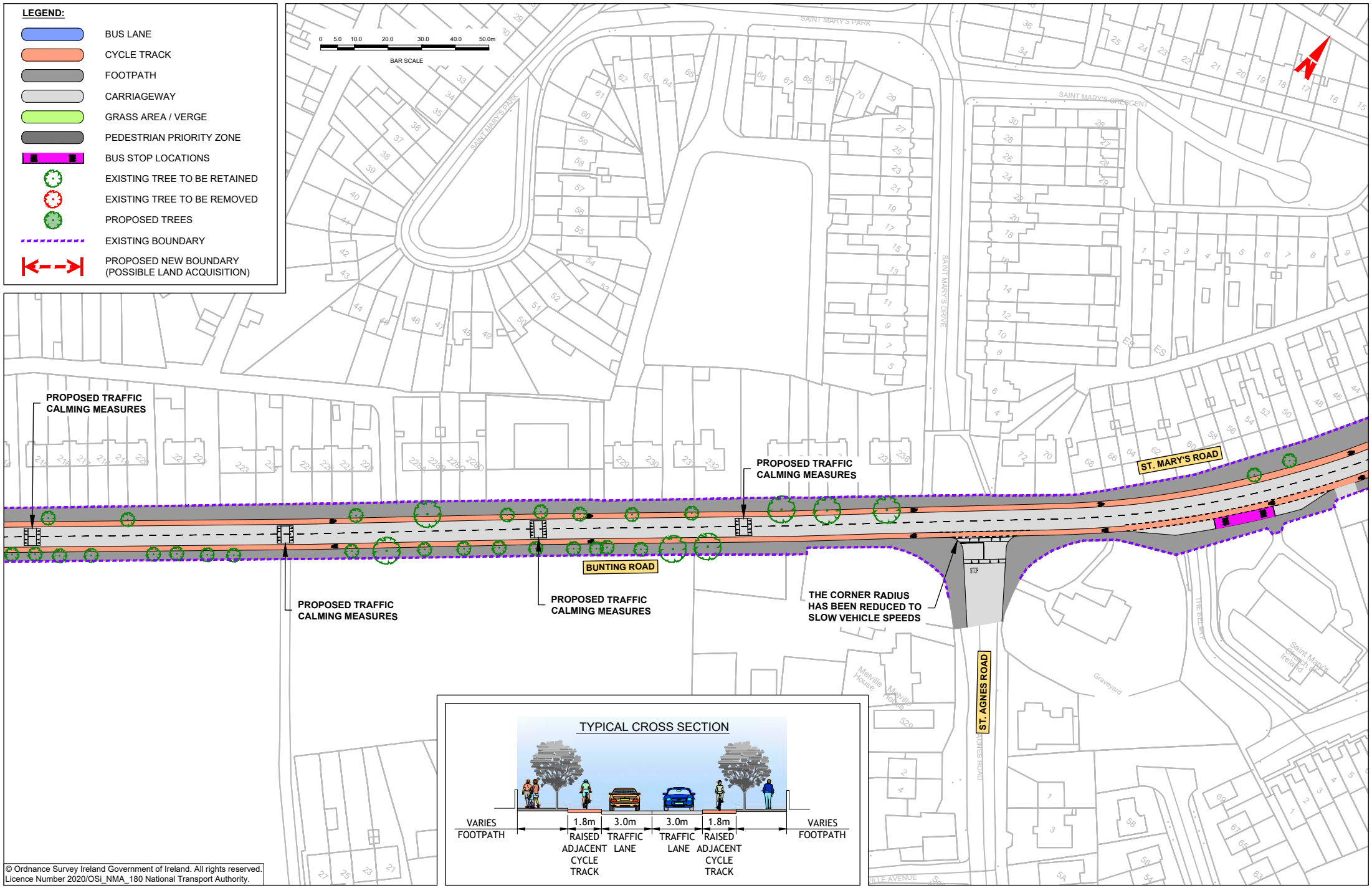

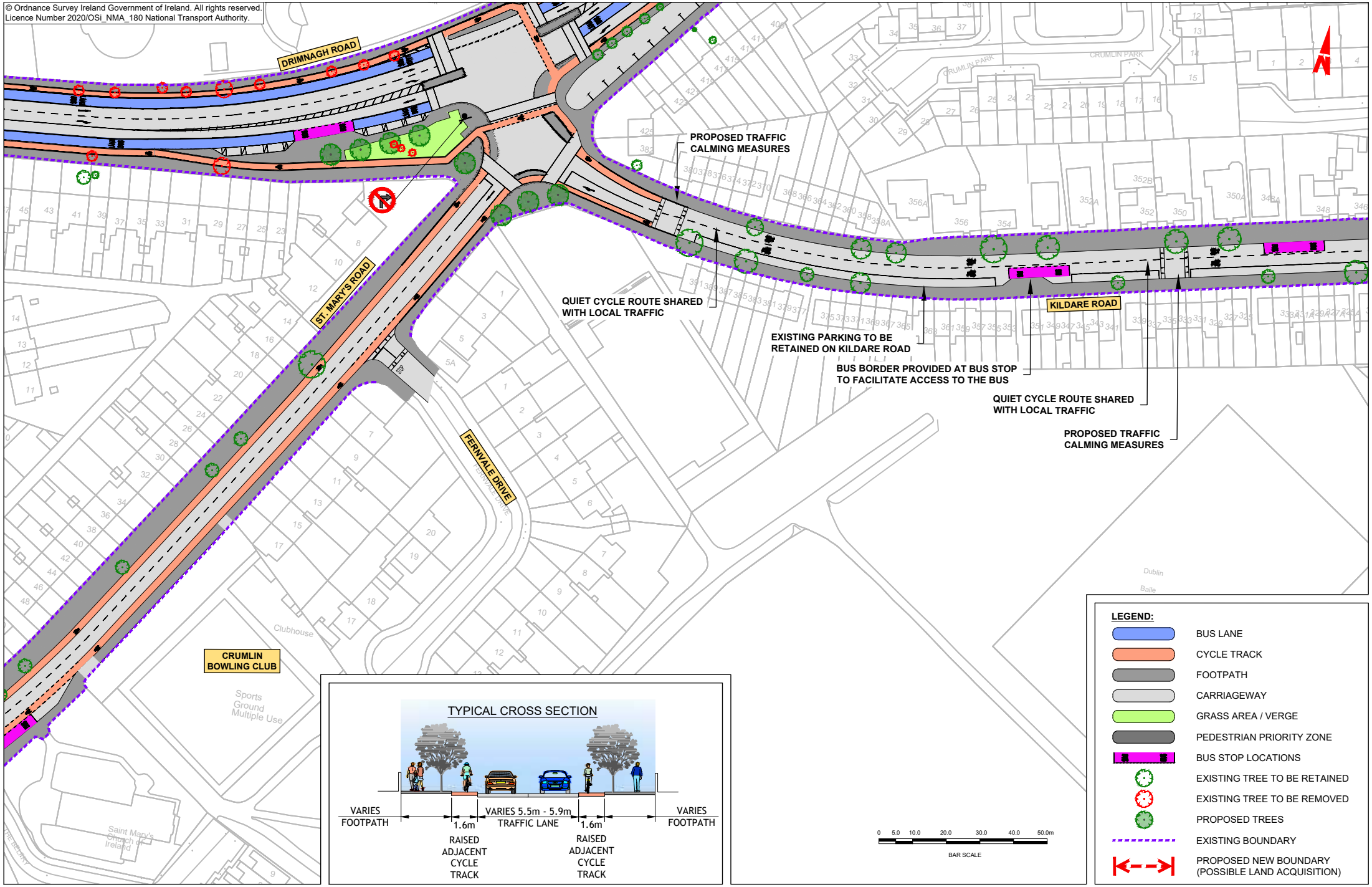

TYPICAL CROSS SECTION

BAR SCALE

0 5.0 10.0 20.0 30.0 40.0 50.0m

LEGEND:

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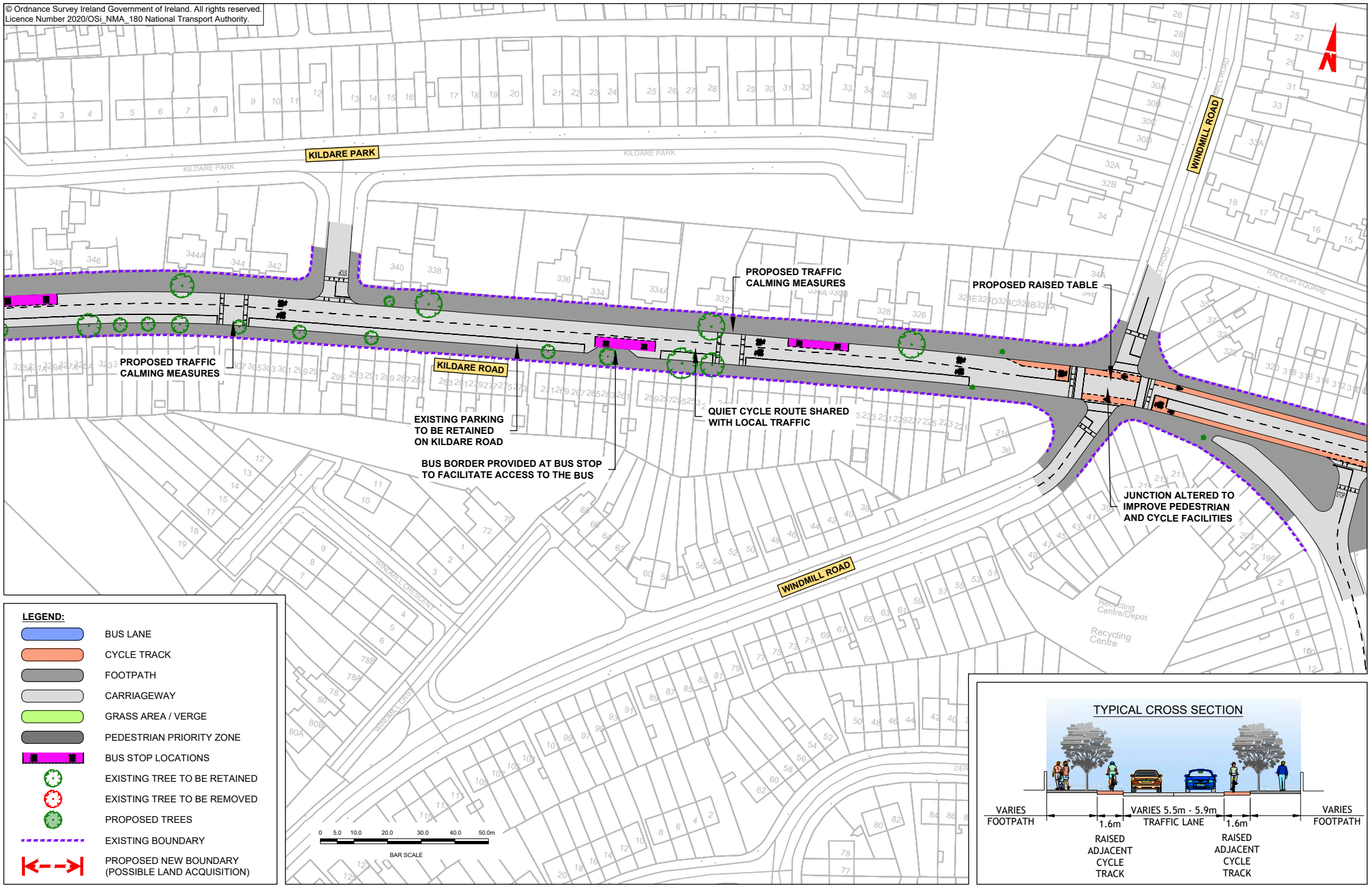

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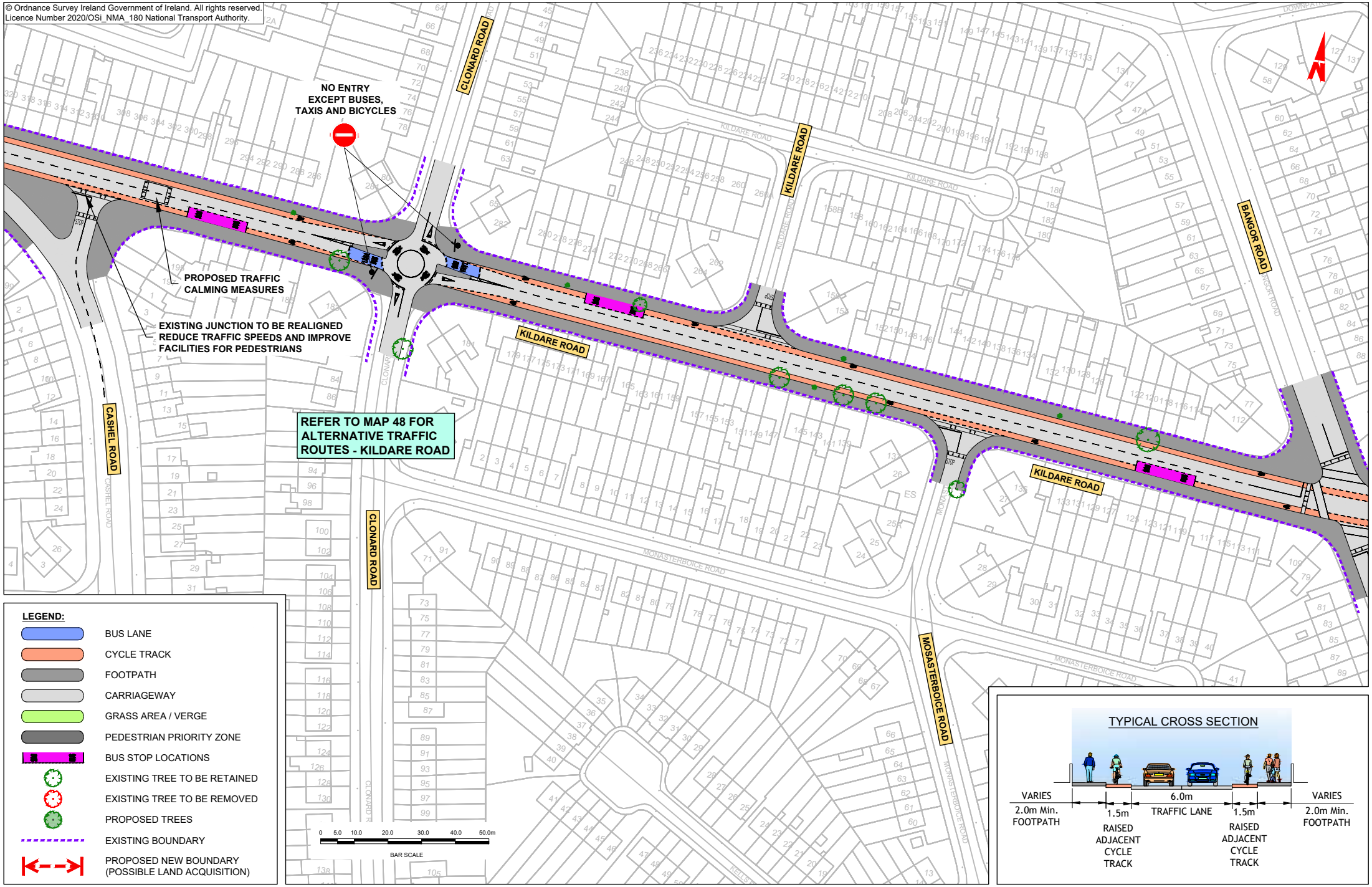
TYPICAL CROSS SECTION



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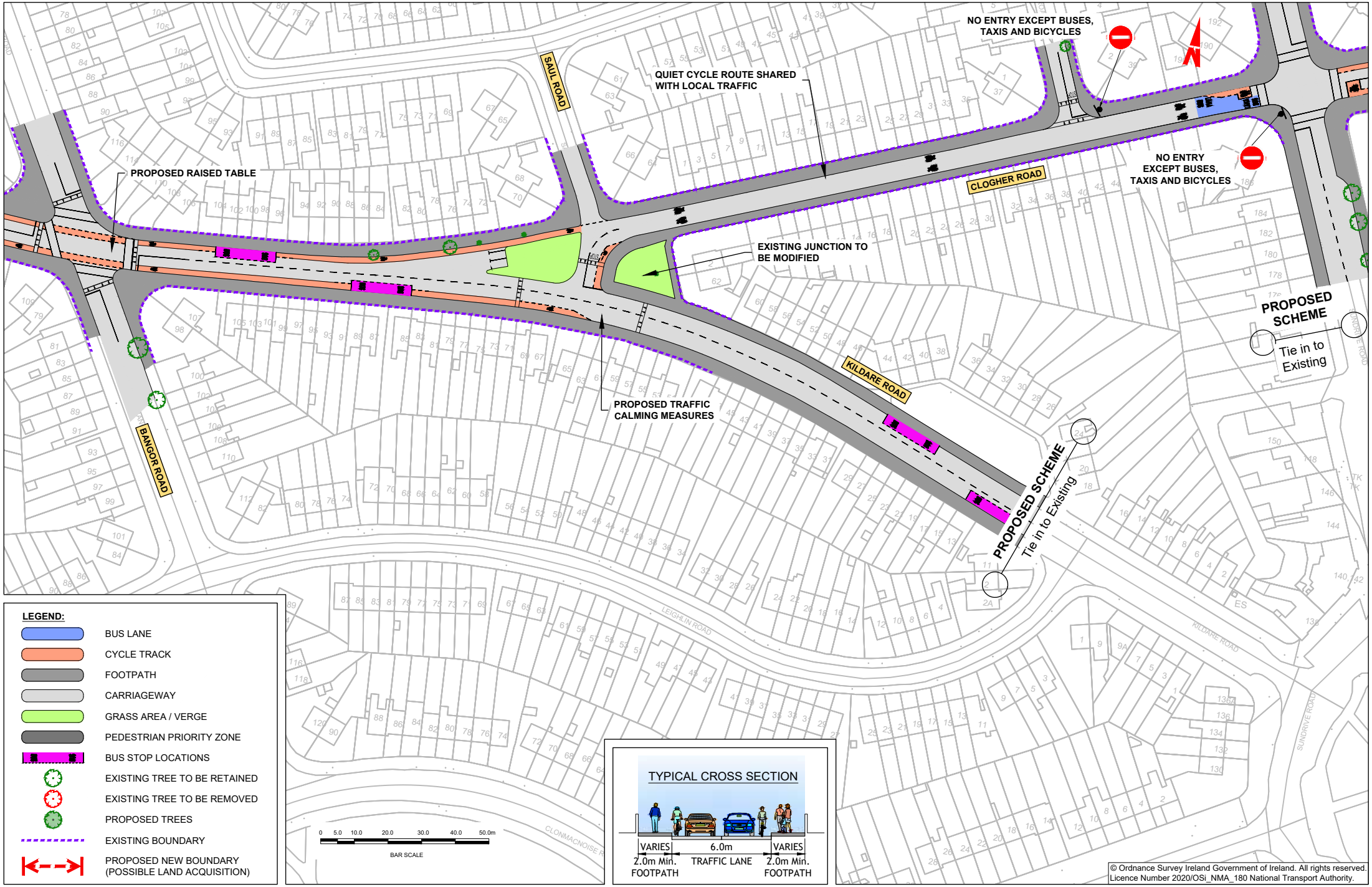
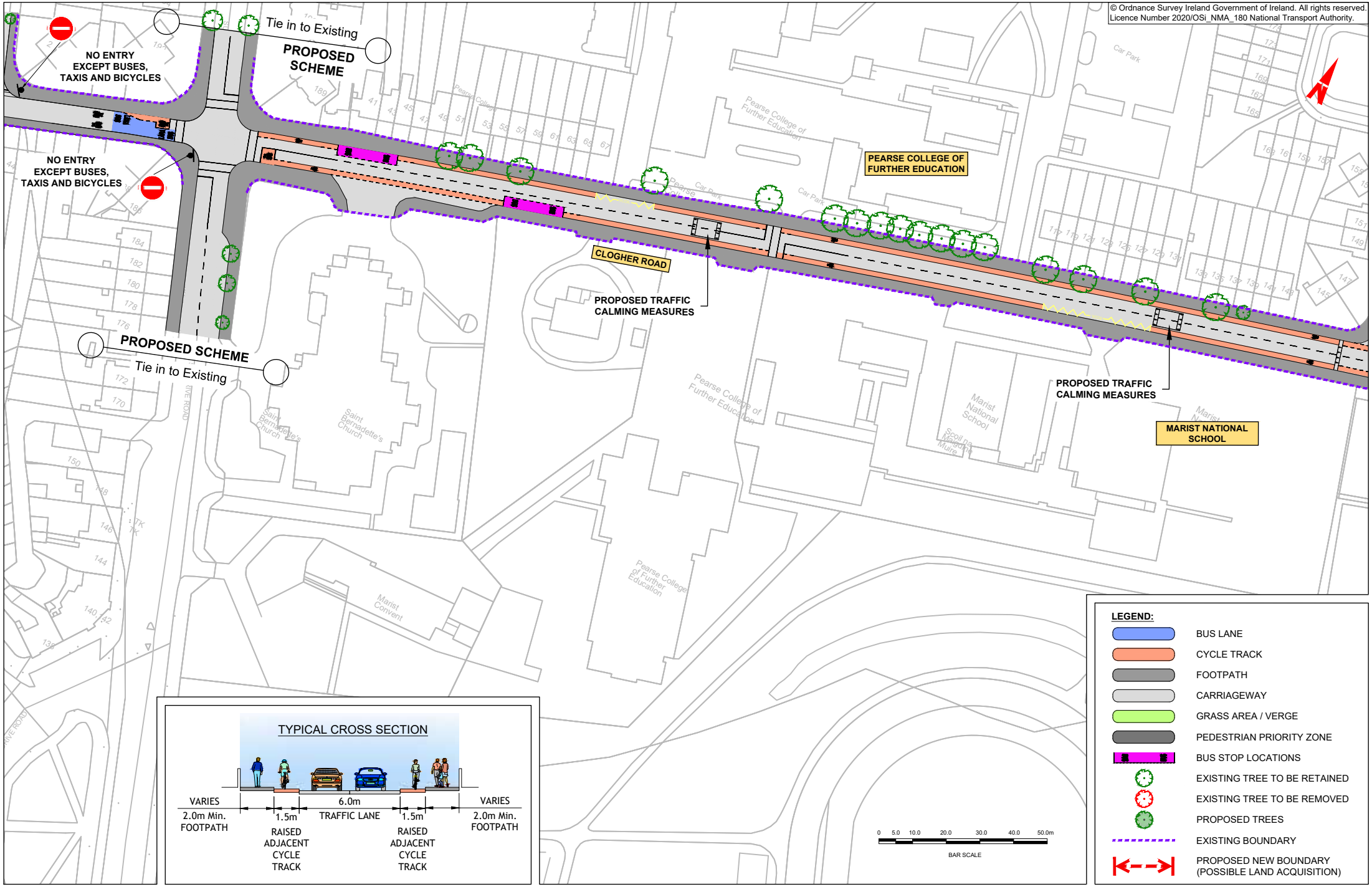
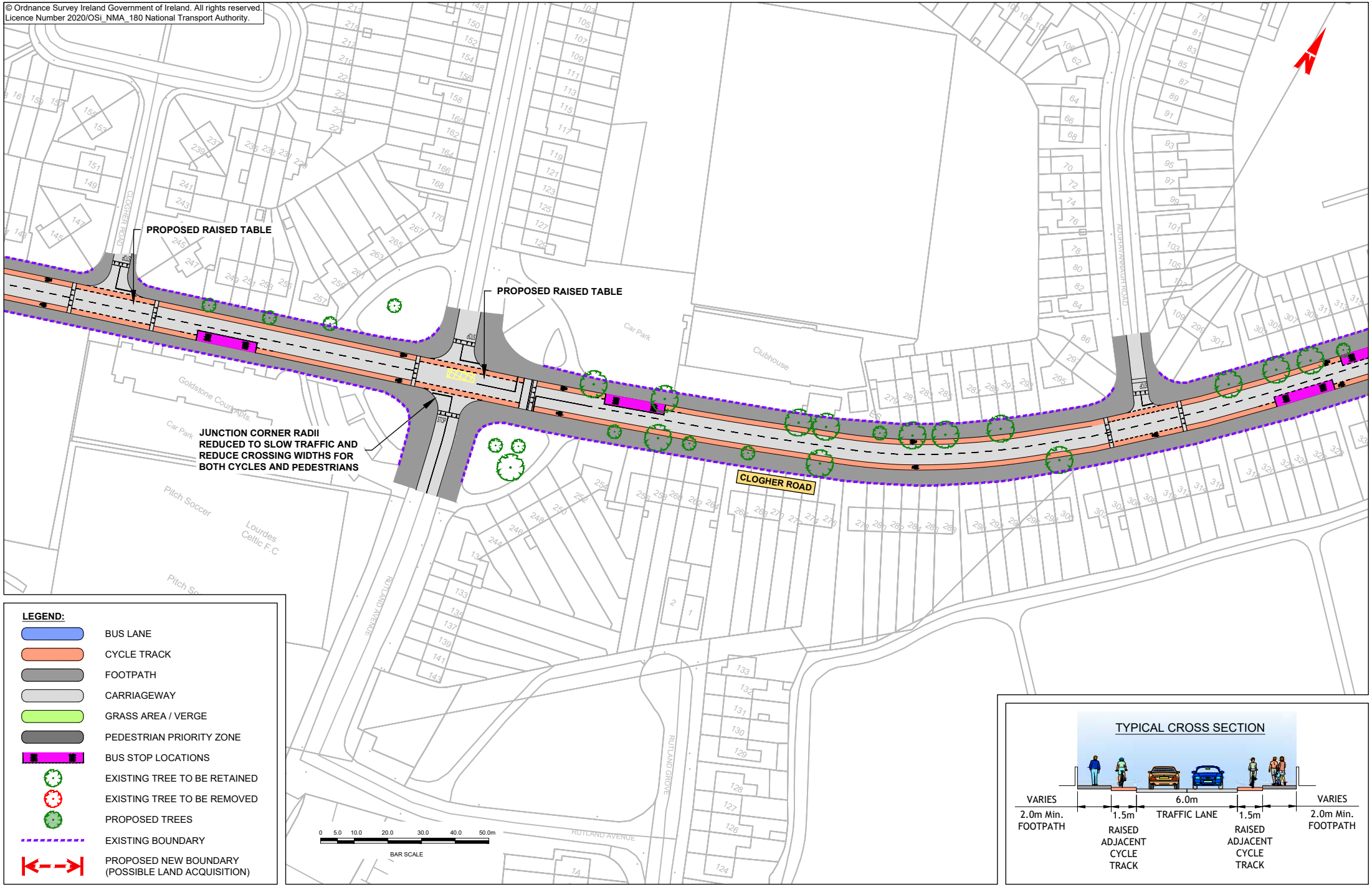
TYPICAL CROSS SECTION







LEGEND:

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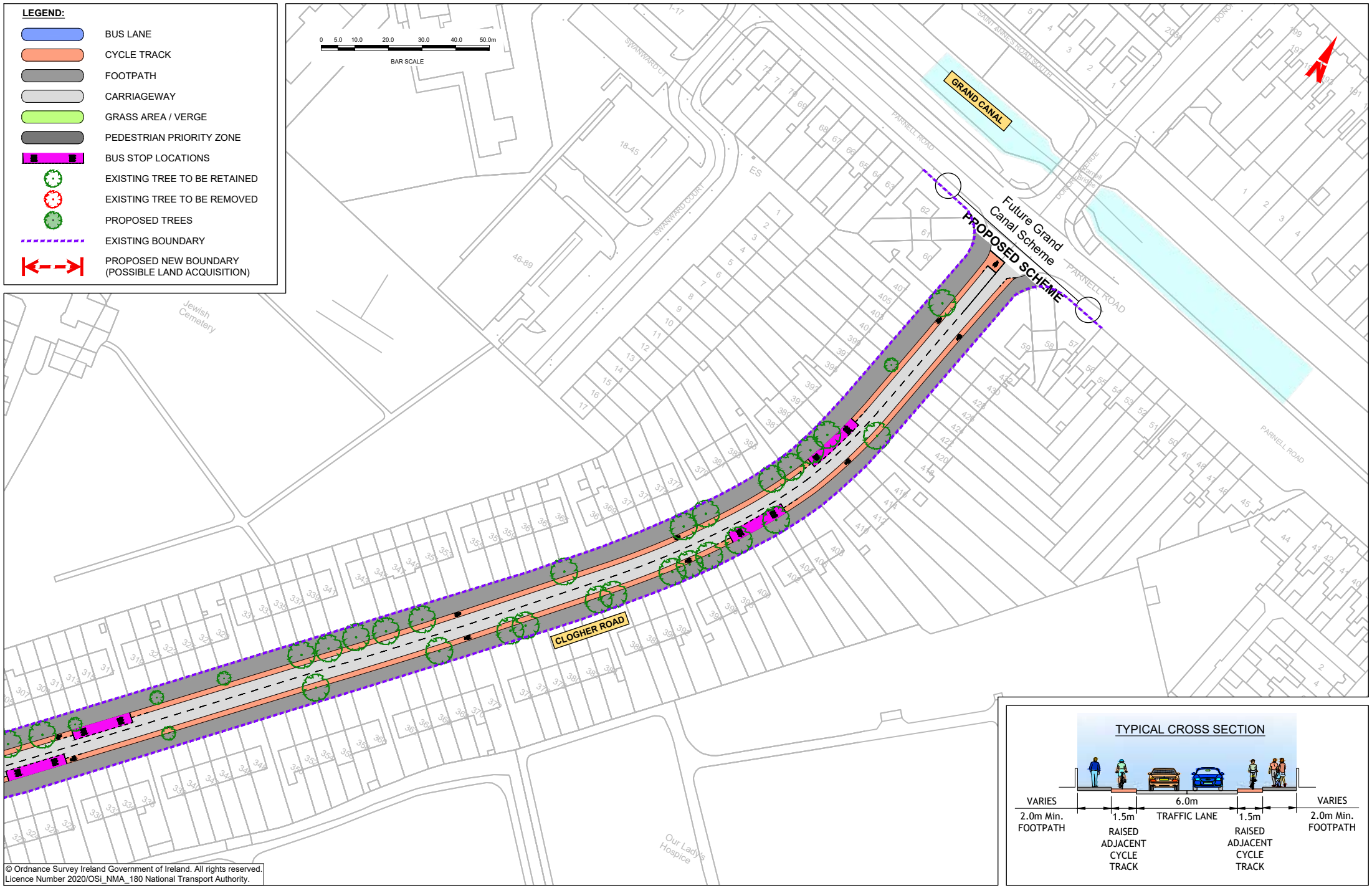
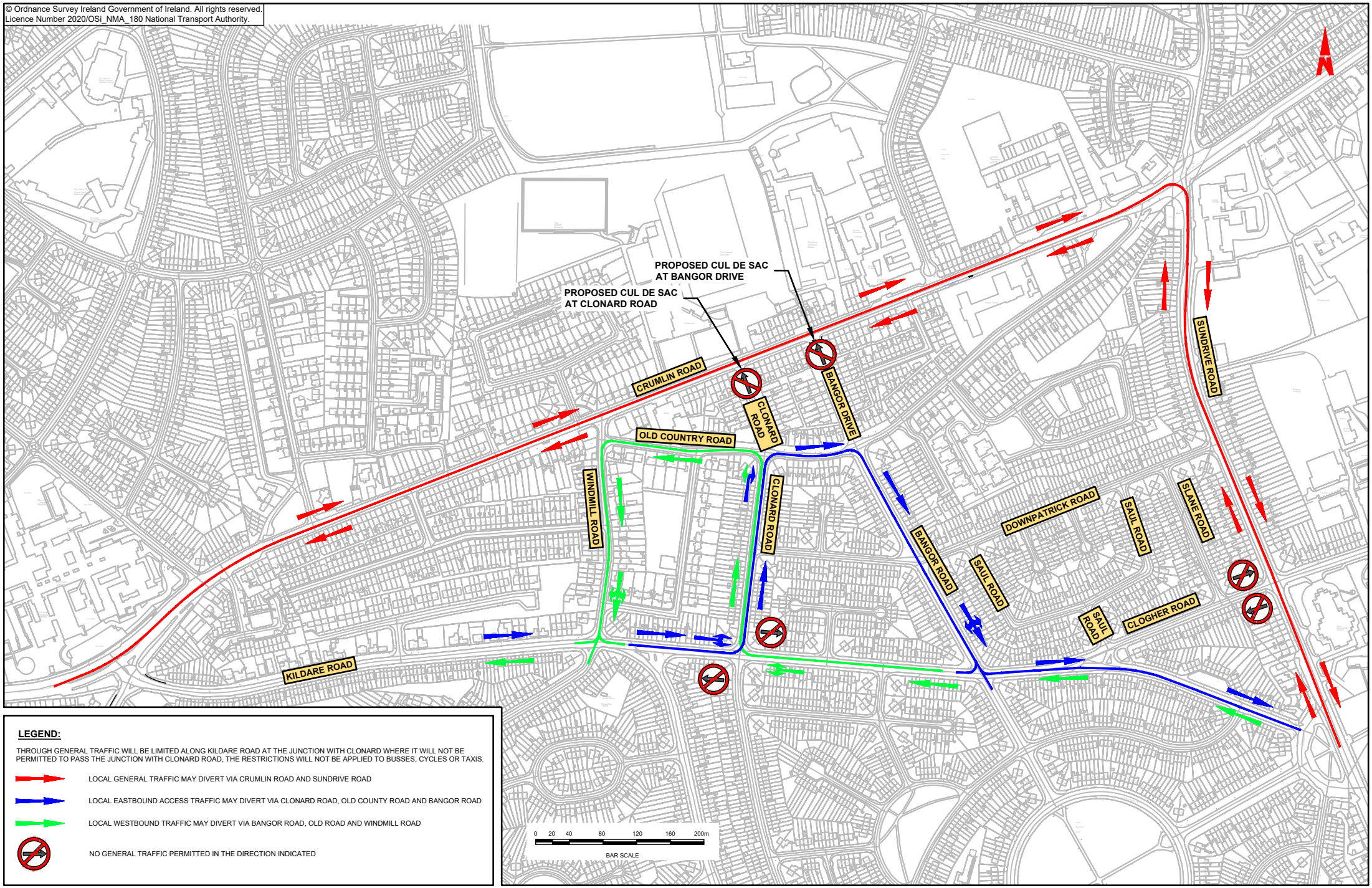
TYPICAL CROSS SECTION

VARIES	1.5m	6.0m	1.5m	VARIES
2.0m Min. FOOTPATH	RAISED ADJACENT CYCLE TRACK	TRAFFIC LANE	RAISED ADJACENT CYCLE TRACK	2.0m Min. FOOTPATH





LEGEND:

THROUGH GENERAL TRAFFIC WILL BE LIMITED ALONG KILDARE ROAD AT THE JUNCTION WITH CLONARD WHERE IT WILL NOT BE PERMITTED TO PASS THE JUNCTION WITH CLONARD ROAD, THE RESTRICTIONS WILL NOT BE APPLIED TO BUSSES, CYCLES OR TAXIS.

- LOCAL GENERAL TRAFFIC MAY DIVERT VIA CRUMLIN ROAD AND SUNDRIVE ROAD
- LOCAL EASTBOUND ACCESS TRAFFIC MAY DIVERT VIA CLONARD ROAD, OLD COUNTY ROAD AND BANGOR ROAD
- LOCAL WESTBOUND TRAFFIC MAY DIVERT VIA BANGOR ROAD, OLD ROAD AND WINDMILL ROAD
- NO GENERAL TRAFFIC PERMITTED IN THE DIRECTION INDICATED

Appendix C – Emerging Preferred Route Feasibility and Options Assessment Report

The EPR Feasibility and Options Assessment Report for the Greenhills to City Centre CBC is available on the NTA BusConnects Website, it can be accessed by clicking the links below:

- Volume 1 - Feasibility and Options Assessment Main Report Issue 1

  https://busconnects.ie/media/1434/volume-1-feasibility-and-options-assessment-main-report-issue-1.pdf

- Volume 2 - Feasibility and Options Assessment Appendices Issue 1

  https://busconnects.ie/media/1435/volume-2-feasibility-and-options-assessment-appendices-issue-1.pdf

- Volume 3 - Feasibility and Options Assessment Drawings Issue 1

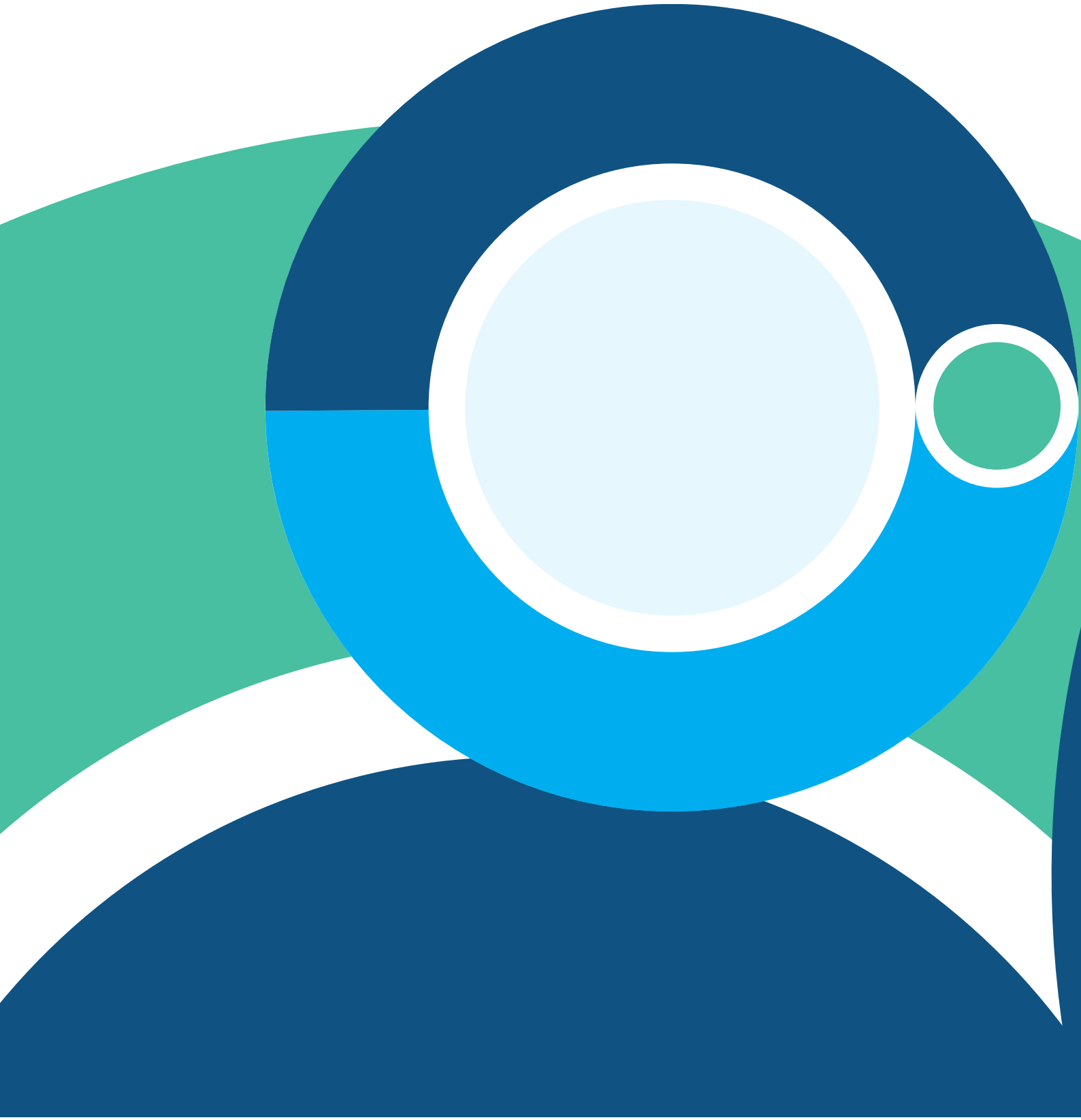
  https://busconnects.ie/media/1436/volume-3-feasibility-and-options-assessment-drawings-issue-1.pdf

Appendix D – EPR Public Consultation Brochure

The Emerging Preferred Route Public Consultation Brochure and Drawings from January 2019 are available from the NTA BusConnects Website, and can be accessed by clicking on the links below:

- Greenhills to City Centre CBC, Emerging Preferred Route Public Consultation, January 2019.

  https://busconnects.ie/media/1450/9-busconnects-cbc-greenhills-to-city-centre-040119-fa.pdf



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Jacobs ARUP SYSTRA