



Chapter 05
Construction

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5. Construction

5.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) describes the construction activities associated with the Blanchardstown to City Centre Core Bus Corridor Scheme, hereafter referred to as the Proposed Scheme.

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

The National Transport Authority (NTA) (the Employer for the construction works) shall set out the Employer's Requirements in the Construction Contract including all applicable mitigation measures identified in this EIAR, as well as additional measures required pursuant to conditions attached to any decision to grant approval. Procurement of the contractor will involve the determination that the appointed contractor is competent to carry out the works, including the effective implementation of the mitigation measures. The appointed contractor will be required to plan and construct the Proposed Scheme construction works in accordance with the Employer's Requirements, and the NTA will employ an Employer's Representative team with appropriate competence to administer and monitor the Construction Contract for compliance with the Employer's Requirements.

In order to allow an assessment of the Construction Phase impacts associated with the Proposed Scheme, this Chapter describes the construction phasing and programme as well as the construction activities necessary to undertake the works, including information on the Construction Compounds, construction plant and equipment. This Chapter includes the following information:

- An overview of how the Proposed Scheme is divided into 5 sections is presented in Section 5.2;
- An overview of the construction activities proposed at each section along the Proposed Scheme (i.e., a description of what is proposed to be constructed) is presented in Section 5.3;
- A programme for the Proposed Scheme (i.e., when the sections will be constructed) is presented in Section 5.4;
- A general description of the construction methodology to be carried out at each section (i.e., how the Proposed Scheme will be built) is presented in Section 5.5;
- Information on the plant and equipment (i.e., what machinery will be used to construct the Proposed Scheme) is presented in Section 5.6;
- Information on the Construction Compounds is presented in Section 5.7;
- The temporary traffic management measures, including the staging measures to be carried out (i.e., how the vehicles, cyclists and pedestrians will be impacted and safely catered for, during the works) are presented in Section 5.8; and
- Infrastructure projects and developments which are expected to interface with the construction of the Proposed Scheme are referenced in Section 5.9.

Details of mitigation measures proposed to address potential impacts arising from construction activities are described in Chapter 6 to Chapter 21, as appropriate and are summarised in Chapter 22 (Summary of Mitigation & Monitoring Measures) of this EIAR.

A Construction Environmental Management Plan (CEMP) has also been prepared and is included as Appendix A5.1 in Volume 4 of this EIAR. The CEMP will be updated by the NTA prior to the commencement of the Construction Phase, so as to include any additional measures required pursuant to conditions attached to any decision to grant approval. The CEMP has regard to the guidance contained in the Transport Infrastructure Ireland (TII) (formerly the National Roads Authority) Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (TII 2007), and the handbook published by Construction Industry Research and Information Association (CIRIA) in the United Kingdom, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015). All of the measures set out in the CEMP appended to this EIAR will be implemented in full.

5.2 Construction Phasing

The Proposed Scheme has been divided into five primary sections. The division line between sections has been determined by grouping similar carriageway types together. These sections have been further subdivided into 35 sub-sections, according to the types of construction works required. The sections / sub-sections are:

- **Section 1:** N3 Blanchardstown Junction to Snugborough Road:
 - **Section 1a:** Old Navan Road;
 - **Section 1b:** Blanchardstown Slip Road;
 - **Section 1c:** Blanchardstown Road;
 - **Section 1d:** Blakestown Roundabout;
 - **Section 1e:** Blakestown Roundabout to Blanchardstown Shopping Centre Roundabout 1;
 - **Section 1f:** Blanchardstown Shopping Centre Roundabout 1;
 - **Section 1g:** Blanchardstown Shopping Centre Roundabout 1 to Roundabout 2, including Bus Interchange;
 - **Section 1h:** Blanchardstown Shopping Centre Roundabout 2;
 - **Section 1i:** Blanchardstown Shopping Centre Roundabout 2 to Blanchardstown Road;
 - **Section 1j:** Blanchardstown Shopping Centre Roundabout 2 to Roundabout 3;
 - **Section 1k:** Blanchardstown Shopping Centre Roundabout 3; and
 - **Section 1l:** Blanchardstown Shopping Centre Roundabout 3 to Snugborough Tie In.
- **Section 2:** Snugborough Road to N3 / M50 Junction:
 - **Section 2a:** N3 Dual Carriageway Slip Roads;
 - **Section 2b:** N3 Dual Carriageway;
 - **Section 2c:** N3 Structure Widening; Central Reservation;
 - **Section 2d:** N3 Structure Widening; Mill Road South;
 - **Section 2e:** N3 Structure Widening; Mill Road North;
 - **Section 2f:** Old Navan Road to M50 Roundabout; and
 - **Section 2g:** M50 Roundabout.
- **Section 3:** N3 / M50 Junction to Navan Road / Ashtown Road Junction:
 - **Section 3a:** M50 Roundabout to Railway Station;
 - **Section 3b:** Railway Station to Ashtown Road Roundabout; and
 - **Section 3c:** Ashtown Road Roundabout.
- **Section 4:** Navan Road / Ashtown Road Junction to Navan Road / Old Cabra Road Junction:
 - **Section 4a:** Ashtown Road Roundabout to Baggot Road;
 - **Section 4b:** Baggot Road to Skreen Road;
 - **Section 4c:** Skreen Road to Railway Line; and
 - **Section 4d:** Ratoath Road Junction.
- **Section 5:** Navan Road / Old Cabra Road Junction to Ellis Quay:
 - **Section 5a:** Railway Line to Aughrim Street;
 - **Section 5b:** Aughrim Street to Brunswick Street;
 - **Section 5c:** Blackhall Place;
 - **Section 5d:** Queen Street;
 - **Section 5e:** Brunswick Street North;
 - **Section 5f:** Kings Street North;
 - **Section 5g:** Blackhall Street;
 - **Section 5h:** George's Lane; and
 - **Section 5i:** Offline Sections.

The location of each section / sub-section along the Proposed Scheme is shown in Figure 5.1 in Volume 3 of this EIAR. The construction activities to be carried out at each section / sub-section are described in Section 5.3.

5.3 Overview of Construction Works

The construction activities to be undertaken, and the anticipated duration of the works, in each section / sub-section are described in Section 5.3.1 to Section 5.3.5. The location of each section / sub-section along the Proposed Scheme is shown in Figure 5.1 in Volume 3 of this EIAR. This Section should be read in conjunction with the drawings listed in Table 5.1. These drawings are contained in Volume 3 of this EIAR.

Table 5.1: List of Relevant Drawings

Drawing Series Number	Description
BCIDC-ARP-SPW_ZZ-0005_XX_00-DR-CR-9001	Site Map and Site Location Plan
BCIDC-ARP-GEO_GA-0005_XX_00-DR-CR-9001	General Arrangement
BCIDC-ARP-GEO_HV-0005_XX_00-DR-CR-9001	Mainline Plan and Profile
BCIDC-ARP-GEO_CS-0005_XX_01-DR-CR-9001	Typical Cross Sections
BCIDC-ARP-ENV_LA-0005_XX_00-DR-LL-0001	Landscaping General Arrangement
BCIDC-ARP-PAV_PV-0005_XX_00-DR-CR-9001	Pavement Treatment Plans
BCIDC-ARP-SPW_BW-0005_XX_00-DR-CR-9001	Fencing and Boundary Treatment
BCIDC-ARP-TSM_GA-0005_XX_00-DR-CR-9001	Traffic Signs and Road Markings
BCIDC-ARP-LHT_RL-0005_XX_00-DR-EO-9001	Street Lighting
BCIDC-ARP-TSM_SJ-0005_XX_00-DR-TR-9001	Junction Systems Design
BCIDC-ARP-DNG_RD-0005_XX_00-DR-CD-9001	Proposed Surface Water Drainage Works
BCIDC-ARP-UTL_UD-0005_XX_00-DR-CU-9001	IW Foul Sewer Asset Alterations
BCIDC-ARP-UTL_UE-0005_XX_00-DR-CU-9001	ESB Asset Alterations
BCIDC-ARP-UTL_UG-0005_XX_00-DR-CU-9001	GNI Asset Alterations
BCIDC-ARP-UTL_UW-0005_XX_00-DR-CU-9001	IW Water Asset Alterations
BCIDC-ARP-UTL_UL-0005_XX_00-DR-CR-9001	Telecommunications Asset Alterations
BCIDC-ARP-UTL_UC-0005_XX_00-DR-CU-9001	Combined Existing Utilities Records
BCIDC-ARP-STR_GA-0005_XX_00-DR-CB-9001	Bridges and Major Retaining Structures
BCIDC-ARP-BLD_AR-0005_IN_00-DR-AA-9001	Buildings / Architecture

Further details on the design specifications, with regards to matters such as parking and loading bay widths, signalised junctions, priority junctions, roundabouts, bus stops, accessibility, traffic signals, lighting, utilities, drainage, pavement and landscape design, can be found in the Preliminary Design Guidance Booklet for BusConnects Core Bus Corridors, contained in Appendix A4.1 in Volume 4 of this EIAR.

5.3.1 Section 1: N3 Blanchardstown Junction to Snugborough Road

5.3.1.1 Section 1a: Old Navan Road

Section 1a encompasses a length of approximately 300m (metres) along Old Navan Road, between the Corduff Park carpark and Blanchardstown Road Junction. The construction activities at Section 1a will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture (such as rubbish bins, seats, lighting, benches, planters, bollards, cycle racks, bus stops (including shelters and information displays etc.)) and landscaping works. Vegetation will be removed along Old Navan Road. The expected construction duration will be approximately two months.

5.3.1.2 Section 1b: Blanchardstown Slip Road

Section 1b encompasses a length of approximately 200m along Blanchardstown Bypass slip lane, between Blanchardstown Bypass and Old Navan Road. The construction activities at Section 1b will comprise resurfacing

of the road. Construction activities will also consist of new road markings, and new and amended traffic signal infrastructure. The expected construction duration will be approximately one month.

5.3.1.3 Section 1c: Blanchardstown Road

Section 1c encompasses a length of approximately 1,110m along Old Navan Road, between Blanchardstown Bypass slip lane and Blanchardstown Road North, and along Blanchardstown Road North, and Blanchardstown Road South, between Tolka River and Blakestown roundabout. The construction activities at Section 1c will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A new bus layby and bus driver welfare facility will be provided adjacent to Blanchardstown Shopping Centre, with access / egress from Blanchardstown Road South. A spreadfoot cantilever retaining wall (RW01), approximately 270m in length and maximum 3m in retained height and a miscellaneous retaining wall (RW10) approximately 240m in length and maximum 0.3m in retained height will be constructed at Section 1c. Fencing will be constructed along the southwest side of Old Navan Road, and at discrete sections along both sides of Blanchardstown Road South. Some minor utility diversions and / or protections will be required. Vegetation will be removed along Blanchardstown Road South. The expected construction duration will be approximately eleven months.

5.3.1.4 Section 1d: Blakestown Roundabout

Section 1d is located at Blakestown roundabout. The construction activities at Section 1d will comprise conversion of Blakestown roundabout to a signalised junction, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, new kerbs, additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A boundary wall will be constructed along Blanchardstown Road South. Some minor utility diversions and / or protections will be required. Vegetation will be removed at Blakestown roundabout, and trees will be removed along Blanchardstown Road South. The expected construction duration will be approximately three months.

5.3.1.5 Section 1e: Blakestown Roundabout to Blanchardstown Shopping Centre Roundabout 1

Section 1e encompasses a length of approximately 250m, between Blakestown roundabout and Blanchardstown Shopping Centre roundabout 1. The construction activities at Section 1e will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A boundary wall will be constructed along Millennium Park. Some minor utility diversions and / or protections will be required. Trees will be removed along the central reservation. The expected construction duration will be approximately four months.

5.3.1.6 Section 1f: Blanchardstown Shopping Centre Roundabout 1

Section 1f is located at Blanchardstown roundabout 1. The construction activities at Section 1f will comprise conversion of Blanchardstown roundabout 1 to a signalised junction, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Vegetation will be removed at this junction. The expected construction duration will be approximately two months.

5.3.1.7 Section 1g: Blanchardstown Shopping Centre Roundabout 1 to Roundabout 2, Including Bus Interchange

Section 1g encompasses a length of approximately 350m between Blanchardstown Shopping Centre roundabout 1 and Blanchardstown Shopping Centre roundabout 2. The construction activities at Section 1g will comprise construction of a new Bus Interchange, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Further information on the Bus Interchange construction methodology is provided in Section 5.5.4.2.1. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Some minor utility diversions

and / or protections will be required. Trees and plantings will be removed throughout Section 1g. The expected construction duration will be approximately eleven months.

5.3.1.8 Section 1h: Blanchardstown Shopping Centre Roundabout 2

Section 1h is located at Blanchardstown roundabout 2. The construction activities at Section 1h will comprise conversion of Blanchardstown roundabout 2 to a signalised junction, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Some minor utility diversions and / or protections will be required. Trees and plantings will be removed at this junction. The expected construction duration will be approximately one month.

5.3.1.9 Section 1i: Blanchardstown Shopping Centre Roundabout 2 to Blanchardstown Road

Section 1i encompasses a length of approximately 300m between Blanchardstown Shopping Centre roundabout 2 and Blanchardstown Road South. The construction activities at Section 1i will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A miscellaneous retaining wall (RW11) approximately 16m in length and maximum 0.3m in retained height will be constructed at Section 1i. Some minor utility diversions and / or protections will be required. Vegetation will be removed at Section 1i. Fencing will be constructed along the south side of Section 1i. The expected construction duration will be approximately three months.

5.3.1.10 Section 1j: Blanchardstown Shopping Centre Roundabout 2 to Roundabout 3

Section 1j encompasses a length of approximately 400m between Blanchardstown Shopping Centre roundabout 2 and Blanchardstown Shopping Centre roundabout 3. The construction activities at Section 1j will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Four miscellaneous retaining walls (RW12-1 to RW12-4) approximately 112m in length (in total) and maximum 0.6m in retained height will be constructed at Section 1j. Fencing will be constructed at discrete sections along the south side of Section 1j. Some minor utility diversions and / or protections will be required. Trees and plantings will be removed throughout Section 1j. The expected construction duration will be approximately six months.

5.3.1.11 Section 1k: Blanchardstown Shopping Centre Roundabout 3

Section 1k is located at Blanchardstown roundabout 3. The construction activities at Section 1k will comprise conversion of Blanchardstown roundabout 3 to a signalised junction, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Fencing works are also required. Some minor utility diversions and / or protections will be required. Trees and plantings will be removed at this junction. The expected construction duration will be approximately three months.

5.3.1.12 Section 1l: Blanchardstown Shopping Centre Roundabout 3 to Snugborough Tie In

Section 1l encompasses a length of approximately 100m between Blanchardstown Shopping Centre roundabout 3 and the Snugborough Interchange. The Proposed Scheme is designed to be integrated with the Fingal County Council (FCC) Snugborough Interchange upgrade, which will provide an additional bridge crossing over the N3 alongside the existing bridge and to tie in with the adjoining roads as appropriate. The construction activities at Section 1l will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A miscellaneous retaining wall (RW13) approximately 36m in length and maximum 0.9m in retained height will be constructed at Section 1l. Fencing will be constructed along the northern side of Section 1l. Some minor utility diversions and / or protections will be

required. Vegetation will be removed throughout Section 1l. The expected construction duration will be approximately two months.

5.3.2 Section 2: Snugborough Road to N3 / M50 Junction

5.3.2.1 Section 2a: N3 Dual Carriageway Slip Roads

Section 2a encompasses a length of approximately 350m along the N3 dual carriageway slip roads, between Snugborough Road and the N3 dual carriageway. The construction activities at Section 2a will comprise widening, reconstruction, and resurfacing of the roads, and new kerbs. Construction activities will also consist of new road markings, new street furniture and landscaping works. The existing Tolka River Bridge (BR01) structure will be widened to facilitate the carriageway widening. Further information on the Tolka River Bridge (BR01) construction methodology is provided in Section 5.5.4.1.1. Boundary walls will be constructed at discrete sections along Section 2a. Vegetation will be removed along the exiting N3 slip road. The expected construction duration will be approximately five months.

5.3.2.2 Section 2b: N3 Dual Carriageway

Section 2b encompasses a length of approximately 900m along the N3 dual carriageway, between Snugborough Road and Navan Road. An air quality monitoring station currently located at the junction of Navan Road and the N3 at Wood's End will be relocated by the Environmental Protection Agency (EPA) and FCC in advance of the commencement of construction activities at this section. The construction activities at Section 2b will comprise widening, reconstruction, and resurfacing of the roads and the footpaths, and new kerbs. Construction activities will also consist of additional signage, new road markings, new street furniture and landscaping works. One variable message sign (GY04) will be relocated, one overhead sign gantry modified (GY01) and three overhead sign gantries (GY02, GY07 and GY08) will be constructed, and an existing overhead sign gantry will be removed. Three miscellaneous retaining walls (RW14, RW15 and RW16) approximately 100m in length (in total) and maximum 0.7m in retained height will be constructed at Section 2b. The miscellaneous retaining wall RW16 will form part of a stone boundary wall which will be relocated. Boundary walls will be relocated at other discrete sections, along both sides of the N3 dual carriageway. Noise barriers, located along the N3 dual carriageway, adjacent to Old River Road and Herbert Road will be relocated. Further information on the noise barrier relocation methodology is provided in Section 5.5.4.2.3. Some minor utility diversions and / or protections will be required. Vegetation will be removed at discrete sections along the N3 dual carriageway. The expected construction duration will be approximately thirteen months.

5.3.2.3 Section 2c / Section 2d / Section 2e: N3 Structure Widening

Section 2c, Section 2d and Section 2e are located along the N3 dual carriageway, at the Mill Road Bridge (BR02). The existing Mill Road Bridge (BR02) structure will be widened to facilitate carriageway widening. Further information on the Mill Road Bridge (BR02) construction methodology is provided in Section 5.5.4.1.2.

The construction activities have been split into three separate sections, due to the phasing of the works. The works will be carried out in the following three separate sections:

- **Section 2c:** Central Reservation (existing gap between carriageways will have a structural infill and new carriageway constructed);
- **Section 2d:** Mill Road South (existing bridge will be widened); and
- **Section 2e:** Mill Road North (existing bridge will be widened).

Additionally, a new pedestrian ramp and stair access will be constructed on either side of the Mill Road Bridge, incorporating two retaining walls (RW07-A and RW07-B) approximately 100m and 250m in length and maximum 1.5m and 3.0m in retained height, respectively. The expected construction duration of each individual section will be approximately seven months.

5.3.2.4 Section 2f: Old Navan Road to M50 Roundabout

Section 2f encompasses a length of approximately 650m along Navan Road, between Blanchardstown Bypass and the M50 roundabout, including the section over the N3 from Connolly Hospital access. The construction activities at Section 2f will comprise widening, reconstruction, and resurfacing of the roads and footpaths, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A spreadfoot cantilever retaining wall (RW09) approximately 90m in length and maximum 4m in retained height will be constructed at the N3 embankment adjacent to Castleknock health & leisure centre. Two miscellaneous retaining walls (RW17 and RW18) approximately 107m and 34m in length and maximum 0.9m and 1.3m in retained height, respectively, will be constructed at Section 2f. Some minor utility diversions and / or protections will be required. Trees and plantings will be removed at discrete sections along Section 2f. The expected construction duration will be approximately four months.

5.3.2.5 Section 2g: M50 Roundabout

Section 2g is located at the M50 roundabout, at Junction 6. The construction activities at Section 2g will comprise new road markings, new and amended traffic signal infrastructure. The expected construction duration will be approximately two months.

5.3.3 Section 3: N3 / M50 Junction to Navan Road / Ashtown Road Junction

5.3.3.1 Section 3a: M50 Roundabout to Railway Station

Section 3a encompasses a length of approximately 1,250m along Navan Road, between the M50 roundabout and Navan Road Parkway Railway Station, including the slip roads at Navan Road Parkway Railway Station. The construction activities at Section 3a will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A new section of carriageway (bus lane) approximately 130m in length will be constructed, between the M50 roundabout and Auburn Avenue Junction. Fencing will be constructed along the westbound on-ramp at Navan Parkway. A soil nail wall (RW03) approximately 100m in length and maximum 4m in retained height will be constructed. Two sign gantries (GY03 and GY06) will be modified and one Sign Gantry (GY05) will be retained. Some minor utility diversions and / or protections will be required. Vegetation will be removed at various locations along Section 3a. The expected construction duration will be approximately five months.

5.3.3.2 Section 3b: Railway Station to Ashtown Road Roundabout

Section 3b encompasses a length of approximately 1,000m along Navan Road, between Navan Road Parkway Railway Station and Ashtown Road roundabout, including the slip roads at Navan Road Parkway Railway Station. The construction activities at Section 3b will comprise widening, reconstruction, resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A miscellaneous retaining wall (RW19) approximately 41m in length and maximum 1.3m in retained height will be constructed, and a boundary wall approximately 35m in length will be demolished and relocated. Fencing will be constructed at discrete sections along the southern side of Navan Road. A sign gantry (GY09) will be modified. Some minor utility diversions and / or protections will be required. Vegetation and trees will be removed at various locations along Section 3b. The expected construction duration will be approximately nine months.

5.3.3.3 Section 3c: Ashtown Road Roundabout

Section 3c is located at Ashtown Road roundabout. The construction activities at Section 3c will comprise conversion of Ashtown Road roundabout to a signalised junction, widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works.

Some minor utility diversions and / or protections will be required. Trees will be removed at Ashtown Road roundabout. The expected construction duration will be approximately two months.

5.3.4 Section 4: Navan Road / Ashtown Road Junction to Navan Road / Old Cabra Road Junction

5.3.4.1 Section 4a: Ashtown Road Roundabout to Baggot Road

Section 4a encompasses a length of approximately 1,000m along Navan Road, between Ashtown Road roundabout and Baggot Road, Kinvara Avenue Junction. The construction activities at Section 4a will comprise widening, reconstruction, resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A miscellaneous retaining wall (RW20) approximately 6m in length and maximum 0.3m in retained height will be constructed along Navan Road. Boundary walls and associated gates to properties will be relocated along the northern side of Navan Road. Some of these walls are likely to incorporate retention of private gardens / frontages. A number of driveways will also be regraded. Some minor utility diversions and / or protections will be required. Trees will be removed at multiple locations along Navan Road. The expected construction duration will be approximately twelve months.

5.3.4.2 Section 4b: Baggot Road to Skreen Road

Section 4b encompasses a length of approximately 1,050m along Navan Road, between Baggot Road, Kinvara Avenue Junction and Skreen Road Junction. The construction activities at Section 4b will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A miscellaneous retaining wall (RW21) approximately 35m in length and maximum 0.5m in retained height will be constructed along the northern side of Navan Road. Boundary walls and associated gates to properties and premises will be relocated at a number of locations along both sides of Navan Road. Some of these walls are likely to incorporate retention of private gardens / frontages. A number of driveways will also be regraded. Digipoles / digipanel located along Navan Road will be relocated. Further information on the digipole / digipanel relocation methodology is provided in Section 5.5.4.2.4. Some minor utility diversions and / or protections will be required. Trees will be removed at multiple locations. The expected construction duration will be approximately ten months.

5.3.4.3 Section 4c: Skreen Road to Railway Line

Section 4c encompasses a length of approximately 750m along Navan Road and Old Cabra Road, between Skreen Road Junction and the railway line crossing below Old Cabra Road. The construction activities at Section 4c will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Boundary walls will be relocated at discrete sections along Navan Road. Some minor utility diversions and / or protections will be required. Trees will be removed at multiple locations along Navan Road and Old Cabra Road. The expected construction duration will be approximately six months.

5.3.4.4 Section 4d: Ratoath Road Junction

Section 4d is located at the Navan Road, Ratoath Road, Cabra Road, Old Cabra Road Junction. The construction activities at Section 4d will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, removal of existing traffic islands and construction of new traffic islands, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Some minor utility diversions and / or protections will be required. Trees will be removed at this junction. The expected construction duration will be approximately two months.

5.3.5 Section 5: Navan Road / Old Cabra Road Junction to Ellis Quay

5.3.5.1 Section 5a: Railway Line to Aughrim Street

Section 5a encompasses a length of approximately 950m along Old Cabra Road and Prussia Street, between the railway line crossing below Old Cabra Road, and Aughrim Street. The construction activities at Section 5a will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A low height boundary wall will be relocated along Prussia Street, approximately 20m in length. Some minor utility diversions and / or protections will be required. Trees will be removed at multiple locations along Old Cabra Road. The expected construction duration will be approximately ten months.

5.3.5.2 Section 5b: Aughrim Street to Brunswick Street

Section 5b encompasses a length of approximately 400m along Manor Street and Stoneybatter, between Aughrim Street and Brunswick Street. The construction activities at Section 5b will comprise widening, reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Parallel parking and new loading bays will be constructed. Some minor utility diversions and / or protections will be required. A small number of trees will be removed along Manor Street. The expected construction duration will be approximately four months.

5.3.5.3 Section 5c: Blackhall Place

Section 5c encompasses a length of approximately 390m along Stoneybatter and Blackhall Place, between Brunswick Street and Ellis Quay. The construction activities at Section 5c will comprise reconstruction, and resurfacing of the roads and the footpaths, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. The expected construction duration will be approximately four months.

5.3.5.4 Section 5d: Queen Street

Section 5d encompasses a length of approximately 360m along Queen Street, between King Street North and Ellis Quay. The construction activities at Section 5d will comprise reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. The expected construction duration will be approximately four months.

5.3.5.5 Section 5e: Brunswick Street North

Section 5e encompasses a length of approximately 175m along Brunswick Street North, between Manor Street Junction and extending just beyond George's Lane Junction. The construction activities at Section 5e will comprise reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture. Some minor utility diversions and / or protections will be required. The expected construction duration will be approximately two months.

5.3.5.6 Section 5f: King Street North

Section 5f encompasses a length of approximately 190m along King Street North, between Blackhall Place and extending just beyond Queen Street Junction. The construction activities at Section 5f will comprise reconstruction, and resurfacing of the roads and the footpaths, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A loading bay will be introduced along the northern side of King Street North. The expected construction duration will be approximately two months.

5.3.5.7 Section 5g: Blackhall Street

Section 5g encompasses a length of approximately 150m along Blackhall Street, between Blackhall Place and Queen Street. The construction activities at Section 5g will comprise reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. The expected construction duration will be approximately two months.

5.3.5.8 Section 5h: George's Lane

Section 5h encompasses a length of approximately 80m along George's Lane, between Brunswick Street North and King Street North. The construction activities at Section 5h will comprise reconstruction, and resurfacing of the roads, footpaths, and cycle tracks, and new kerbs. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. A tree will be removed on George's Lane. This is a heavily urbanised area with house and shop entrances along the extent, and as such, the programme has been marginally elongated to facilitate less intensive works. The expected construction duration will be approximately three months.

5.3.5.9 Section 5i: Offline Sections

Section 5i encompasses a length of approximately 250m altogether and is made up of multiple small, isolated, sections of works adjacent, but not directly along the Proposed Scheme. The offline sections are listed as follows:

- Ashtown Gate Road, Castleknock Road, Blackhorse Avenue Junction;
- Ratoath Road, Swilly Road Junction;
- Annamoe Road, Annamoe Terrace Junction;
- North Circular Road, Cabra Road Junction;
- Charleville Road;
- Monck Place;
- Aughtim Place;
- Cowper Street; and
- Phibsborough.

The construction activities at Section 5i will comprise reconstruction, and resurfacing of the roads, footpaths, and cycle tracks. Construction activities will also consist of additional signage, new road markings, new and amended traffic signal infrastructure, new street furniture and landscaping works. Some minor utility diversions and / or protections will be required. The expected construction duration of each individual section will vary between approximately one month and three months.

5.4 Construction Programme

A programme for the Proposed Scheme is provided in Table 5.2. The total Construction Phase duration for the overall Proposed Scheme is estimated at approximately 24 months. However, construction activities in individual sections will have shorter durations as outlined in Section 5.3. The programme identifies the approximate duration of works at each section.

Construction works to be carried out on lands associated with the Blanchardstown Shopping Centre, on sections between the start of the Scheme and the junction with Snugborough Road may be carried out under a separate contract. The timing of these works will be within the period indicated on the construction programme for Sections 1a to 1l, in Table 5.2.

The location of each section / sub-section along the Proposed Scheme is shown in Figure 5.1 in Volume 3 of this EIAR.

Table 5.2: Construction Programme

Section Ref.	Approximate Construction Duration	Approximate Length (m)	Year 1				Year 2			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Section 1a	2 months	300								
Section 1b	1 month	200								
Section 1c	11 months	1,110								
Section 1d	3 months	Junction								
Section 1e	4 months	250								
Section 1f	2 months	Junction								
Section 1g	11 months	350								
Section 1h	1 month	Junction								
Section 1i	3 months	300								
Section 1j	6 months	400								
Section 1k	3 months	Junction								
Section 1l	2 months	100								
Section 2a	5 months	350								
Section 2b	13 months	900								
Section 2c	7 months	Structure								
Section 2d	7 months	Structure								
Section 2e	7 months	Structure								
Section 2f	4 months	650								
Section 2g	2 months	Junction								
Section 3a	5 months	1,250								
Section 3b	9 months	1,000								
Section 3c	2 months	Junction								
Section 4a	12 months	1,000								
Section 4b	10 months	1,050								
Section 4c	6 months	750								
Section 4d	2 months	Junction								
Section 5a	10 months	950								
Section 5b	4 months	400								
Section 5c	4 months	390								
Section 5d	4 months	360								
Section 5e	2 months	175								
Section 5f	2 months	190								
Section 5g	2 months	150								
Section 5h	3 months	80								
Section 5i	1 month to 3 months (individually)	250 (total)								

In order to achieve the overall programme duration, it will for the most part, be necessary to work on more than one section / sub-section at any one time. The programme has been prepared with a view to providing as much separation as practicable between sections under construction at any given time. This has been done in order to

minimise traffic disruption and facilitate the ease of movement of sustainable modes, bus services and goods along the Proposed Scheme.

5.5 Construction Methodology

This Section provides an outline of how each element of the Proposed Scheme infrastructure will be constructed. It should be read in conjunction with the phasing set out in Section 5.3 and Section 5.4, and also with the traffic management stages set out in Section 5.8.

5.5.1 Pre-Construction

The NTA will prepare the Construction Contract documents, which will include all applicable mitigation measures identified in this EIAR, as well as any additional measures required in any conditions attached to An Bord Pleanála's decision, should they grant approval.

The preparations will also include the need for additional investigative survey works (such as ground investigation and slit trenching to confirm the location of existing utilities) to supplement the information in the Construction Contract documents. Any such additional investigative survey works that could be deemed to be construction activities will follow the requirements of the CEMP, where necessary.

The NTA will also serve notices on impacted landowners in accordance with the requirements of the Compulsory Purchase Order (CPO) process to ensure necessary lands are available for the construction works.

5.5.2 Preparatory and Site Clearance Works

Additional preparations will be required prior to commencing the road and street upgrade works, to confirm the construction methodology, such as additional investigative survey works (such as confirmatory invasive species surveys, ground investigation and slit trenching to confirm the location of existing utilities).

There will be elements of preparatory works, including establishing the Construction Compounds, the installation of fencing and signage, vegetation clearance and treatment of non-native invasive species, demolition works (e.g., such as boundary walls) etc. required in preparation for the main construction activities.

5.5.2.1 Land Acquisition and Boundary Treatment

Condition surveys of properties adjacent to the Proposed Scheme that the works have the potential to affect will be undertaken prior to works commencing. Liaison with impacted landowners will be carried out in advance of commencement of boundary works to properties.

Boundary works will be commenced where both permanent and temporary land acquisition is required to ensure that sufficient space is available to construct the Proposed Scheme. Boundary treatments will be carried out on a section-by-section basis (with sections / sub-sections defined in Section 5.3), and in line with the traffic management stages set out in Section 5.8.3.

This will be a mixture of boundary walls / fencing along industrial / commercial land, railings along parks and temporary boundaries, as required. Any land temporarily acquired from a landowner will only be utilised for the purposes of undertaking boundary works or accommodation works related to the land in question.

Any lands acquired temporarily to facilitate construction work will be returned to landowners on completion of the works. Existing boundary walls or fencing being relocated will be constructed to match the existing conditions, unless otherwise agreed. The removal of trees, vegetation, lawns, paving etc will be minimised in so far as practicable.

5.5.2.2 Fencing

Fencing will be erected on a section-by-section basis (with sections / sub-sections defined in Section 5.2), and in line with the traffic management stages set out in Section 5.8.3.

5.5.2.3 Construction Traffic Management Measures and Signage

Prior to commencing the construction works described below within a sub-section of the Proposed Scheme, temporary traffic management measures will be installed. The temporary traffic management measures, including measures for pedestrians, cyclists, public transport users, general traffic, proposed lane closures, road closures and diversions are discussed in detail in Section 5.8. Temporary traffic management signage will be put in place in accordance with the requirements of the Department of Transport's Traffic Signs Manual, Chapter 8, Temporary Traffic Measures and Signs for Roadworks (hereafter referred to as the Traffic Signs Manual) (Department of Transport, Tourism and Sport 2019). Further information is also provided in the Construction Traffic Management Plan (CTMP) in Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.5.2.4 Tree Protection

Trees to be retained within and adjoining the works areas will be suitably protected as necessary as per the British Standards Institution (BSI) British Standard (BS) 5837:2012 Trees in Relation to Design, Demolition and Construction (BSI 2012). Trees identified for removal will be removed in accordance with 'BS 3998:2010 Tree Work. Recommendations' (BSI 2010). The location of trees to be retained, and trees to be removed is shown on the Landscaping General Arrangement Drawings (BCIDC-ARP-ENV_LA-05_XX_00-DR-LL-0001).

A suitably qualified arborist will be appointed by the contractor to monitor tree protection, and tree removal related activities. The design has been developed to ensure removal of trees has been minimised in so far as practicable. Where necessary, protective fencing will be erected, and mitigation measures will be put in place, prior to construction works commencing in the immediate vicinity.

Works required within the root protection area of trees to be retained will follow the arboricultural methodology included in Appendix A17.1 Arboricultural Method Statement in Volume 4 of this EIAR. Further information on mitigation measures with regards to the removal, and protection of trees is provided in Chapter 12 (Biodiversity) and further information on the assessment of tree removal with regards to landscape and visual impact is provided in Chapter 17 (Landscape (Townscape) & Visual) of this EIAR.

5.5.2.5 Vegetation Clearance and Treatment of Non-Native Invasive Species

Vegetation (e.g., hedgerows, scrub, grassland) clearance and treatment of non-native invasive species (e.g., Japanese knotweed, Himalayan balsam, Giant hogweed) will be undertaken within the Proposed Scheme boundary, where necessary.

A suitably qualified specialist will be appointed by the contractor to monitor vegetation clearance, and treatment of non-native invasive species. Prior to construction, confirmatory invasive species surveys will be undertaken by the specialist to re-confirm the presence and / or extent of species within the footprint of the Proposed Scheme. Further information with regards to pre-construction ecological surveys and restrictions are provided in Chapter 12 (Biodiversity) of this EIAR. Vegetation identified for removal will be removed in accordance with BS 3998:2010 Tree Work. Recommendations (BSI 2010) and best arboricultural practices as detailed and monitored by the specialist. The Invasive Species Management Plan (ISMP) for the control of invasive plant species on the Proposed Scheme is included in Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.5.2.6 Archaeological Investigations

The NTA will procure the services of a suitably qualified archaeologist as part of its Employer's Representative team administering and monitoring the works. In addition, a suitably qualified archaeologist will be appointed by the contractor to monitor archaeological and cultural heritage matters during construction, to acquire any licenses / consents required to conduct the work, and to supervise and direct the archaeological measures associated with the Proposed Scheme in accordance with the Employer's Requirements. In the event of archaeological features

or material being uncovered during the Construction Phase, all machine work will cease in the immediate area to allow the archaeologist time to inspect and record any such material. Further information on archaeological management is included in Section 15.5 in Chapter 15 (Archaeological & Cultural Heritage) of this EIAR.

5.5.2.7 Ground Investigations

Prior to construction localised confirmatory ground investigations will be undertaken to verify the results of the assessments undertaken and reported in this EIAR.

Information on the specific ground investigations conducted along the Proposed Scheme have been outlined in Chapter 14 (Land, Soils, Geology & Hydrogeology) of this EIAR.

5.5.2.8 Air Quality Monitoring Station Relocation

An EPA / FCC air quality monitoring station, currently located at the junction of Navan Road and the N3 dual carriageway at Wood's End. The provision of the scheme at this location will result in the requirement to relocate the station. The monitoring station will be relocated as close as possible to its current location by the contractor in advance of the commencement of construction works. The relocation point will be determined in consultation with the EPA and FCC in advance of any works in the area.

5.5.2.9 Construction Compounds

As part of preparatory works, the Construction Compounds will be set up, which will include installation of the necessary facilities including the site office, welfare facilities, etc. Controlled access to the Construction Compounds will be implemented, fencing will be erected, and lighting will be installed. The Construction Compounds will be secured with Closed-Circuit Television (CCTV), to ensure safe storage of all material, plant and equipment. Further information on the Construction Compounds is included in Section 5.7.

5.5.2.10 Lighting

The majority of the Proposed Scheme route is already artificially lit. However temporary lighting will be required at times along the Proposed Scheme at certain locations during the Construction Phase, as necessary. Where it is necessary to disconnect public lighting during the construction works or to undertake works outside of daylight hours where existing lighting is low, appropriate temporary lighting will be provided. Temporary lighting will also be installed at the Construction Compounds for the duration of the Construction Phase.

The standard of temporary lighting installed during the Construction Phase will meet the standard of the existing carriageway and will be appropriate to the speed and volume of traffic during construction. Temporary construction lighting will generally be provided by tower mounted floodlights, which will be cowled and angled downwards to minimise spillage of light from the site.

New permanent lighting and upgrades to the existing lighting infrastructure are also proposed as part of the Proposed Scheme's lighting strategy, the details of which are addressed in Section 4.6 (Key Infrastructure Elements) in Chapter 4 (Proposed Scheme Description) of this EIAR.

5.5.2.11 Demolition

In some locations along the Proposed Scheme, items, such as walls, gates, fencing, lighting poles, bus stops, etc. will need to be removed or demolished. Demolition of structures will be carried out in a controlled manner, under supervision. All plant and equipment will be maintained in good working order and inspected in accordance with manufacturers recommended intervals. Demolition works areas will be appropriately hoarded and signposted. Best practice industry standard working methods will be used to minimise the generation of dust, noise and other environmental effects resulting from the demolitions as described in Chapter 7 (Air Quality) and Chapter 9 (Noise & Vibration) of this EIAR.

The impacts of materials arising from the Proposed Scheme demolitions are assessed in Chapter 18 (Waste & Resources) of this EIAR. Measures for managing demolition materials are included in the Construction Demolition Resource Waste Management Plan (CDRWMP) in Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.5.3 Road and Street Upgrades

5.5.3.1 General

The Proposed Scheme will be constructed in a manner which will minimise, as much as practicable, any disturbance to residents, businesses and road users. Road and street upgrade works will be completed in a Staged manner, as described in Section 5.8.3, whereby traffic of all modes will be managed to ensure construction can continue while ensuring the safety of all road users, and personnel, and maintaining flow of all modes of traffic wherever practicable.

5.5.3.2 Parking and Access

When roads and streets are being upgraded, there will be some temporary disruption / alterations to on-street and off-street parking provision, and access to premises in certain locations along the Proposed Scheme. Local arrangements will be made on a case-by-case basis to maintain continued access to homes and businesses affected by the works, at all times, where practicable. Details regarding temporary access provisions will be discussed with residents and business owners prior to construction starting in the area. The duration of the works will vary from property to property, but access and egress will be maintained at all times. The location of temporary land acquisition, proposed gates, and the relocation of existing gates are shown in the Fencing and Boundary Treatment Drawings (BCIDC-ARP-SPW_BW-0005_XX_00-DR-CR-9001) in Volume 3 of this EIAR.

Access will be maintained for emergency vehicles along the Proposed Scheme, throughout the Construction Phase.

5.5.3.3 Earthworks

Topsoil and subsoil will be excavated as part of the Proposed Scheme; for foundations, bus stop shelters, signs, public lights, traffic signal poles, tree pits etc. This topsoil and subsoil may be temporarily stored at the Construction Compounds for reuse where practicable, in line with the principles of circular economy. The Proposed Scheme will aim to minimise the amount of materials brought onto the Proposed Scheme in so far as practicable. The acceptability of earthworks material for reuse will be determined, by testing and analysis, to determine if materials meet the specific engineering standards for their proposed end-use.

All earthworks will be managed having regard to the Guidelines for the Management of Waste from National Road Construction Projects (TII 2017), and Number 10 of 1996 – Waste Management Act, 1996, as amended (hereafter referred to as the Waste Management Act). The management of materials is discussed in Chapter 18 (Waste & Resources) of this EIAR. The overall estimated quantities of demolition, excavation, and reuse materials for the Proposed Scheme are outlined respectively in Table 18.8, Table 18.9 Table 18.13 in Chapter 18 (Waste & Resources) of this EIAR. The overall estimated quantities of imported materials for the Proposed Scheme are outlined in Table 19.10 in Chapter 19 (Material Assets) of this EIAR.

5.5.3.4 Cellars

Excavations within the City Centre will be minimal, thereby reducing the risk of interference with existing cellars along the Proposed Scheme. At certain locations, cellars extend outwards from buildings into adjoining footpaths or streets. Cellars have been identified at Section 5a, Section 5b, Section 5c, Section 5d, Section 5e and Section 5f. Building condition surveys will be completed immediately prior to any works. However, it is not anticipated that proposed works will impact directly on any cellars.

5.5.3.5 Drainage

Adjustment or upgrade works will be required to service chambers and manholes, gullies, etc. Access manholes located in the footpaths will be lowered or raised to match the proposed carriageway levels, where the carriageway will be widened into the existing footways.

Specific controls and mitigation measures will be put in place to manage runoff and minimise pollution to receiving water bodies during the Construction Phase of the Proposed Scheme. Further information with regards to drainage, and drainage design is included in Chapter 4 (Proposed Scheme Description), Chapter 13 (Water), Chapter 19 (Material Assets) and the Surface Water Management Plan (SWMP) in Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.5.3.6 Utility Works

Realignment, upgrade or replacement of utilities and services will be required in conjunction with, or to accommodate the Proposed Scheme. Any such works to utilities and services will be along or immediately adjacent to the Proposed Scheme. A list of utility and service works along the Proposed Scheme is provided in Chapter 19 (Material Assets) of this EIAR.

Utilities and services, including overhead and underground, comprise amongst others:

- Water mains;
- Storm water and foul sewers;
- Fuel pipelines;
- Electricity ducts and cabling;
- Gas mains;
- Telecommunications and TV ducting and cabling; and
- Traffic signalling ducting and cabling.

The existing overhead utilities and services will be located and recorded prior to the commencement of works. Any relocation of existing overhead lines will be coordinated to ensure interruption to the existing network is minimised.

Proposed utility works are based on available records, and preliminary site investigations. Prior to excavation works being commenced, localised confirmatory surveys will be undertaken to verify the results of the pre-construction assessments undertaken and reported in this EIAR.

Areas to be excavated for utility trenches will first be traced for live services using established scanning techniques. Where necessary, trenches excavated for utility diversions will be supported to ensure that the sides of the excavation are secure. Each of the different utilities will be re-laid at a location, depth and spacing in accordance with the appropriate standards, and the trench then backfilled.

5.5.3.7 Pavement and Carriageway Works

This Section describes the pavement and carriageway works to be completed along the Proposed Scheme, including construction, or alterations to the carriageway, kerbs, roundabouts, parking and loading bays, footpaths, cycle tracks, cycle lanes, bus stops (island, shared landing area, inline, layby) etc. The following options outline the pavement construction / reconstruction scenarios required along the Proposed Scheme:

- Where the existing road surfacing is showing signs of deterioration, the existing pavement will be replaced (i.e., road pavement and surfacing will be removed and replaced to similar levels as existing);
- Where the quality of the existing road pavement is poor or where the existing road will be widened, full depth road foundation and pavement reconstruction will be carried out; and
- In some instances, road overlay (i.e., the addition of new pavement / road surfacing material), with no excavation, will be provided.

The proposed pavement treatment along the Proposed Scheme is provided in the Pavement Treatment Plans Drawings (BCIDC-ARP-PAV_PV-0005_XX_00-DR-CR-9001) in Volume 3 of this EIAR.

Existing asphalt / bituminous layers will be removed using road planers, with planings being recycled where possible, as is common practice. Following this, existing lower courses of road make-up or ground will be excavated in layers using mechanical excavators in order to segregate materials for reuse, recycling or disposal, as appropriate, with materials being transported using lorries. The new or rehabilitated pavement will then be constructed from formation level, in coordination with the installation of street furniture assets. Plant used in construction of the new road make-up will be excavators, rollers, dumpers, and lorries, as detailed in Section 5.6. Specialist road paving machines will be used to lay bituminous layers. Road markings and reflective road studs will also be installed.

The choice of materials will include unbound or hydraulically bound granular materials for the foundation, hydraulically bound materials, hot or cold bituminous mixtures for base and binder layers and natural stone or concrete paving units, bituminous mixtures or concrete materials for the surface. Specialist products such as high friction surfacing treatments will also be applied to the surface of the pavement where appropriate.

5.5.3.8 Traffic Signal Junctions

During the works, the existing traffic signals will remain in operation, supplemented as necessary by temporary traffic signals, until such time as the new signals become operational.

The existing signalised junctions along the Proposed Scheme will be upgraded to provide bus priority, enhanced pedestrian crossings and segregated cycling facilities. In general traffic signals will be replaced, and additional dedicated signals will be provided for buses, cyclists and pedestrians. Extensive underground works will be required to provide additional ducts for traffic signal electrical and telecommunication cables, as described in Section 5.5.3.6, with associated chambers and control boxes above ground. Additional traffic monitoring equipment will be provided, including CCTV cameras and other detectors.

5.5.3.9 Ancillary Road Furnishings

Street furniture such as rubbish bins, signage, seats, lighting, benches, bollards, cycle racks and bus stops (including shelters and information displays etc.) will be installed.

5.5.3.10 Landscaping

Where vegetation, grassed areas and hedgerows are disturbed during the works, these will be reinstated, and replaced, where practicable. New trees will be planted in suitable tree pits where necessary, at various locations as shown in the Landscaping General Arrangement Drawings (BCIDC-ARP-ENV_LA-05_XX_00-DR-LL-0001) in Volume 3 of this EIAR.

5.5.4 Structural Works

5.5.4.1 Principal Structures

The principal structural works which form part of the Proposed Scheme are summarised in Table 5.3. Further details are provided in Section 5.5.4.1.1 to Section 5.5.4.1.4. Further information on the structures along the Proposed Scheme is provided in the Bridges and Major Retaining Structures Drawings (BCIDC-ARP-STR_GA-0005_XX_00-DR-CB-9001) in Volume 3 of this EIAR.

Table 5.3: Principal Structures

Structure Name	Structure Reference	Section Reference
Tolka River Bridge	BR01	Section 2a
Mill Road Bridge (including Pedestrian Ramps)	BR02 (including RW07-A and RW07-B)	Section 2c Section 2d Section 2e

Structure Name	Structure Reference	Section Reference
Retaining Walls	RW01	Section 1c Section 1i
	RW07-A	Section 3d
	RW07-B	Section 2e
	RW09	Section 2f
	RW03	Section 3a
Sign Gantries	GY01	Section 2b
	GY02	Section 2b
	GY03	Section 3a
	GY04	Section 2a
	GY05	Section 3a
	GY06	Section 3a
	GY07	Section 2b
	GY08	Section 2b
	GY09	Section 3b

5.5.4.1.1 Tolka River Bridge (BR01)

The southern end of the Tolka River Bridge will be widened in order to facilitate the additional lanes proposed for the N3 dual carriageway. The existing Tolka River Bridge comprises a single 13m span bridge. There is an existing maintenance access path under the bridge, however no works to this access path are proposed. The original corrugated steel arch culvert was previously widened at the southern end, using precast reinforced concrete (RC) beams.

The bridge will be further widened using a similar approach of precast concrete beams, supported on a new abutment. For the duration of the works, the N3 dual carriageway westbound slip road will be reduced to a single lane. Access to the temporary working area around the bridge structure will be from the N3 dual carriageway westbound slip road.

Initially vegetation and site clearance will be carried out. Once the access from N3 dual carriageway westbound slip road to the temporary working area is provided, demolition of the southern section of the existing Tolka River Bridge, and the existing wingwall will be undertaken. The demolition will be carried out by mechanical means including the use of cutting, hydraulic breakers and potentially hydro-demolition. Demolition will be carried out in accordance with the measures set out in Section 5.5.2.11. Material generated from the demolition will be managed in accordance with the measures identified in Chapter 18 (Waste & Resources) of this EIAR.

Sheet piling will be installed on the land side of the existing gabion baskets to minimise the risk of any construction materials washing into the river and to retain the existing bank during excavation works for the bridge foundations. The sheet piles will be driven and installed in accordance with Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters (IFI 2016). Consultation was undertaken (in June of 2021) with IFI and they have confirmed that the works are deemed out-of-channel. Environmental mitigation measures including netting beneath bridge deck adjacent to widening works, and silt curtains and silt busters will be installed within the temporary working area, to mitigate potential impacts associated with surface water runoff on the River Tolka. The appointed contractor will provide site hoarding of 2.4m height between the sheet piles and the watercourse to mitigate potential impacts associated with protected species (Otter and Kingfisher). The hoarding will be installed to retain the existing maintenance access path under the bridge. Installation of sheet piles will then take place.

After the sheet piling is installed, the excavation works will commence for the abutment foundations. Excavations will be completed to the required level and will be upfilled with imported aggregate to the underside of the foundation. The foundation and abutment walls will be constructed and backfilled in accordance with the design. Foundations for the bridge widening will be supported on piles. Percussive and driven piling techniques will be avoided to mitigate impacts on the surrounding environment. In situ rotary bored piles will be installed to support the bridge foundations. A drill rig will be used for boring lined holes to a predetermined depth as per the design, with the holes filled with reinforced concrete. A reinforced concrete foundation pad will be constructed on top of

the piles This will be undertaken by placing formwork, then steel reinforcement followed by the concrete pour. After the concrete has cured, the formwork will be removed.

Following completion of the foundations, the sheet piling will be removed. Once the foundations have been constructed, the remaining elements will be completed as follows:

- Break out area of existing bridge (to allow for structurally tying in of existing bridge deck to new bridge deck);
- Construct abutments – as with the foundations, these will be reinforced concrete, and will be constructed by placing formwork, then steel reinforcement followed by the concrete pour;
- Install bridge beams – precast reinforced concrete beams which will be delivered to site on lorries, and lifted into place (probably out-of-hours) using a large mobile crane;
- Construct reinforced concrete bridge deck ;
- Construct reinforced concrete wingwalls and masonry cladding;
- Construct reinforced concrete retaining wall and masonry cladding on new widened section of the bridge;
- Waterproof and backfill abutments, wingwalls and retaining walls;
- Construct parapet edge beams and install steel parapet;
- Complete bridge deck waterproofing;
- Place backfill to structure; and
- Construct pavement, footpaths and finishes.

Once the structure is completed, the access will be removed from the adjacent slip road and the temporary working area will be reinstated to the existing profile and in accordance with working within the Streamside Zone by IFI in the Planning for Watercourses in the Urban Environment Guidelines (IFI 2020).

With the N3 dual carriageway westbound slip road reduced to a single lane, the majority of works will be carried out during normal working hours as stated in Section 5.10.3. Some works will be carried out at night-time under full slip road closure, including works to remove the existing bridge deck at the tie-in to the widened section, and bridge beam lifts.

5.5.4.1.2 Mill Road Bridge (BR02) and Pedestrian Ramps (RW07-A and RW07-B)

The existing Mill Road Bridge will be widened to the north and south, in order to facilitate the additional lanes proposed for the N3 dual carriageway. The existing Mill Road Bridge consists of twin bridges of single 14m span RC, integral with portal abutment walls.

The widening will be completed to both ends of the bridges, with the abutment walls, foundations and bridge decks being extended, widening the existing structure. Pedestrian access ramps will also be constructed on both sides of the Mill Road Bridge. The sequencing of works for this structure will be undertaken as follows:

- Central Reservation Works;
- Mill Road South and Mill Road North Works; and
- Pedestrian Ramp Works.

Prior to all demolition and construction works at this location, environmental mitigation measures including silt curtains and silt busters will be installed within the temporary working area, to mitigate potential impacts associated with surface water runoff on the River Tolka. Given that Mill Road will be closed, all works will be undertaken during working hours as stated in Section 5.10.2.

Mill Road will be closed to vehicular traffic for the duration of the construction works, between Herbert Road and Edmund Rice College. For the majority duration of the works pedestrian access will be maintained through Mill Road however, for specific works such as bridge beam lifts, pedestrian access will be closed. These works will be undertaken at night. Further information on traffic management measures at Mill Road is provided in Section 5.8.

5.5.4.1.2.1 Central Reservation Works

Traffic on the N3 dual carriageway will be reduced to two lanes in each direction, with traffic realigned to the verges, as described in Section 5.3.2, maximising the working area in the central reservation. This traffic management arrangement will provide sufficient room in the N3 central reservation for structural works.

Works will commence with demolition of the central sections of the existing bridge. These will be removed by mechanical means including the use of cutting, hydraulic breakers and potentially hydro-demolition. Demolition will be carried out in accordance with the measures set out in Section 5.5.2.11. Once the demolition works are completed, the deck construction works will commence. Falsework will be installed over the Mill Road, for construction of the in-situ RC deck.

5.5.4.1.2.2 Mill Road South and Mill Road North Works

During this element of work, traffic on the N3 dual carriageway will be reduced to two lanes in each direction, with traffic realigned to run tightly along the newly constructed central reservation. This traffic management arrangement will provide sufficient room in the N3 verges for structural widening works.

Works will commence with the demolition of the existing parapet and edge beam on the northern and southern edges of the bridge. These will be removed by mechanical means including the use of cutting, hydraulic breakers and potentially hydro-demolition. Demolition will be carried out in accordance with the measures set out in Section 5.5.2.11. Once the demolition works are completed, the widening works will be constructed in the following sequence:

- Abutments;
 - Diversion / temporary protection of services;
 - Excavation for foundation construction;
 - Construction of in-situ RC spread pad footing. As rock is approximately 1m below existing ground level, no piling of foundations will be required;
 - Construction of in-situ RC abutment stem;
- Deck Construction;
 - Construction of in-situ RC deck with falsework over Mill Road;
- Wingwalls;
 - Construction of in-situ wingwalls with sculptured finish;
- Finishes;
 - Backfill of abutment and wingwalls;
 - Construction of RC parapet edge beam and installation of parapet;
 - Waterproofing of bridge deck;
 - Kerbing, footpaths, pavement on deck; and
 - Cobble / paving underneath bridge widening.

5.5.4.1.2.3 Pedestrian Ramp Works (RW07-A and RW07-B)

To the south of the N3 dual carriageway, a pedestrian ramp will be constructed to the east of Mill Road (RW07-A). These works will be carried out simultaneously with the Mill Road Bridge (BR02) widening. The southern access works will be divided into three sections:

- Southern approach ramp: The southern access will involve underpinning or temporary supporting of the adjacent wall during excavation and construction of the new approach ramp. Extensive surveys of the existing wall will be required in advance of construction works commencing to inform the construction method. Access for these works will be from Mill Road with lane closures required for tie-in works.
- Pedestrian ramp adjacent to N3: The pedestrian ramp will be constructed with access from the N3 dual carriageway. Initially the area will be excavated to formation level. The retaining walls will then be constructed with the areas backfilled to finished level as the walls are being constructed.

- Stepped access: The stepped access will be constructed from the bottom, up, with access to the works from both Mill Road and the N3.

To the north of the N3 dual carriageway, a pedestrian ramp will be constructed to the west of Mill Road (RW07-B). These works will be carried out simultaneously with the Mill Road Bridge (BR02) widening. The pedestrian access ramp will be constructed in close proximity to an existing foul sewer pumping station which is being retained as part of the works. Any services connecting to the pumping station, in the line of the proposed works will be diverted by the appointed contractor prior to commencement of the works. Due to the position of the pumping station, a construction access lane will be constructed to the north of the pumping station. The access ramp will be constructed from the bottom up, completing the retaining walls in sequence as the works progress. The works will be completed with plant and equipment positioned at the bottom of the slope for the lower walls and on the N3 dual carriageway for the walls higher up the slope. Once the access ramp is completed, the area at the bottom of the slope will be reinstated to its existing profile.

5.5.4.1.3 Retaining Walls

Retaining walls with a retained height greater than 1.5m are classed as principal structures. There are five principal retaining walls along the Proposed Scheme, as detailed in Table 5.4.

Table 5.4: (Principal) Retaining Walls along the Proposed Scheme

Structure Reference	Structure Type	Details	Chainage (m)	Length (m)	Max Retained Height (m)	Section Reference
RW01	Spreadfoot Cantilever Wall	Retains vegetated berm adjacent Blanchardstown Road South.	Blanchardstown Road South 453 to A0040	270	3.0	Section 1c Section 1i
RW07-A	Spreadfoot Cantilever Wall	To service bus stop on southern side of N3. Includes ramp and stair access.	A1604 to A1653	100	1.5	Section 2d
RW07-B	Spreadfoot Cantilever Wall	To service bus stop on northern side of N3. Includes ramp and stair access.	A1540 to A1609	250	3.0	Section 2e
RW09	Spreadfoot Cantilever Wall	Retains N3 embankment adjacent Junction 6 Castleknock health and leisure centre.	A2219 to A2305	90	4.0	Section 2f
RW03	Soil Nail Wall	Retains cut slope to accommodate widening for bus stop.	A2926 to A3027	100	4.0	Section 3a

Retaining walls are typically installed to cater for level differences between the road and adjoining lands. RW07-A and RW07-B are the pedestrian ramps at Mill Road and these ramp structures include principal retaining walls.

Retaining walls will generally be constructed of reinforced concrete, with railing and clad as required, with suitable materials depending on the local environs. Retaining walls will generally be constructed by first isolating the site of the retaining wall using fencing, as appropriate, to the location. The existing ground will then be stripped to formation level. Existing services will be diverted as required to enable wall construction. A side slope will be battered back to enable construction. Blinding will be installed at formation level. Formwork and reinforcing steel for the wall will be fixed in place. Then concrete will be poured in sections and formwork removed after initial curing of concrete. After a sufficient curing period the area behind the wall will be backfilled.

5.5.4.1.4 Sign Gantries

There are nine sign gantries along the Proposed Scheme; one gantry to be retained without modifications, four gantries to be modified, two gantries to be replaced and two new gantries to be constructed, as detailed in Table 5.5.

Prior to construction works commencing the appointed contractor will inspect the position and condition of the gantry foundations and evaluate whether new foundations need to be constructed and / or relocated. Gantry foundations will be constructed during the verge and central reservation phases of construction and the steelwork and signage will be installed during out-of-hours works under a carriageway closure.

Table 5.5: Sign Gantries along the Proposed Scheme

Structure Reference	Structure Type	Existing / New	Chainage (m)	Section Reference
GY01	Overhead Sign Gantry	Modify / Replace Existing	A1439	Section 2b
GY02	Overhead Sign Gantry	Replace Existing	A1745 to A1799	Section 2b
GY03	Overhead Sign Gantry	Modify / Replace Existing	A2988	Section 3a
GY04	Variable Message Sign	Replace Existing	A1316	Section 2a
GY05	Overhead Sign Gantry	Retain Existing	A2818	Section 3a
GY06	Overhead Sign Gantry	Modify / Replace Existing	A3316	Section 3a
GY07	Overhead Sign Gantry	New	A1765	Section 2b
GY08	Overhead Sign Gantry	New	A1311	Section 2b
GY09	Overhead Sign Gantry	Modify/Replace Existing	A3916	Section 3b

5.5.4.2 Miscellaneous Structural Works

The miscellaneous structural works which form part of the Proposed Scheme are summarised in Table 5.6.

Table 5.6: Miscellaneous Structures

Structure Name	Structure Reference	Section Reference
Bus Interchange and Bus Driver Welfare Facility	Bus Interchange	Section 1g
	Bus Driver Welfare Facility	Section 1c
Miscellaneous Retaining Walls	RW10	Section 1c
	RW11	Section 1i
	RW12-1	Section 1j
	RW12-2	Section 1j
	RW12-3	Section 1j
	RW12-4	Section 1j
	RW13	Section 1l
	RW14	Section 2b
	RW15	Section 2b
	RW16	Section 2b
	RW17	Section 2f
	RW18	Section 2f
	RW19	Section 3b
RW20	Section 4a	
RW21	Section 4b	
Noise Barriers		Section 2b
Digipoles / Digipanel		Section 4b

5.5.4.2.1 Bus Interchange and Bus Driver Welfare Facility

Within the Blanchardstown Shopping Centre, a new Bus Interchange is proposed, at Section 1g, with access / egress to the Bus Interchange between Blanchardstown Shopping Centre Roundabout 1 and Roundabout 2. Canopies will be constructed at the Bus Interchange to provide protection for users, and a bus driver welfare facility will be provided, adjacent to the proposed bus layover spaces on Blanchardstown Road South, with access / egress from Blanchardstown Road South (Section 1c).

The Bus Interchange will provide six new covered waiting areas, with seating, adjacent to the bus stops, accessed from a central pedestrian area. Roof canopies of two heights will be installed. The canopies comprise of a concrete

clad steel frame supported on circular columns. Drainage from each roof will be directed through the columns to a below ground rainwater drainage system, eased by the presence of green rooves incorporated into the roof of each canopy. Up-lighting on the canopies will be provided.

The Bus Interchange works will be undertaken in the following sequence:

- Site Clearance and Excavation;
- Utility Diversions;
- Drainage and Service Ducting;
- Structural works – prepare and pour the structure foundations and concrete columns. Once completed, the structural steelwork, glass, aluminium panels and sedum / green roof will be installed;
- Kerbs and Paved Area works;
- Street Furniture; and
- Finishing works – pulling of cabling, and installation and commissioning of the mechanical and electrical infrastructure.

All works will be completed during working hours with the exception of the final surfacing works which will be completed out-of-hours.

A bus driver welfare facility will be constructed adjacent to Blanchardstown Road South, consisting of a single storey pitched roof structure with canteen, shower and bathroom facilities.

5.5.4.2.2 Miscellaneous Retaining Walls

Retaining walls with a retained height less than 1.5m are classed as miscellaneous retaining walls. There are 15 miscellaneous retaining walls along the Proposed Scheme, as detailed in Table 5.7. Retaining walls are typically installed to cater for level differences between the road and adjoining lands. Retaining walls will be constructed as described in Section 5.5.4.1.3.

Table 5.7: (Miscellaneous) Retaining Walls along the Proposed Scheme

Structure Reference	Chainage (m)	Length (m)	Max Retained Height (m)	Section Reference
RW10	Blanchardstown Road South 305 to 543	241	0.3	Section 1c
RW11	A140 to A156	16	0.3	Section 1i
RW12-1	A229 to A255	27	0.5	Section 1j
RW12-2	A269 to A293	24	0.6	Section 1j
RW12-3	A302 to A326	25	0.6	Section 1j
RW12-4	A339 to A375	36	0.4	Section 1j
RW13	A703 to A741	36	0.9	Section 1l
RW14	A1475 to A1545	66	0.7	Section 2b
RW15	A1793 to A1801	8	0.5	Section 2b
RW16	A1854 to A1880	26	0.4	Section 2b
RW17	A2205 to A2310	107	0.9	Section 2f
RW18	A2308 to A2342	34	1.3	Section 2f
RW19	A3939 to A3979	41	1.3	Section 3b
RW20	A5542 to A5548	6	0.3	Section 4a
RW21	A6658 to A6693	35	0.5m	Section 4b

5.5.4.2.3 Noise Barriers

Existing noise barriers, currently located along the N3 dual carriageway, northbound, adjacent to Old River Road and Herbert Road will be relocated to facilitate the provision of the Proposed Scheme. These barriers will be relocated to the back of the proposed verge. The noise barriers existing length, height and coverage will be maintained to provide the same protection to receptors.

5.5.4.2.4 Digipoles / Digipanel

Existing digital advertising panels, currently located at Belvedere sports ground and Cabra Garda Station will be relocated to facilitate the provision of the Proposed Scheme. The digital advertising panels will be relocated as close as practicable to their current location by the appointed contractor. The digital advertising panels to be relocated are at the following locations:

- Navan Road – Belvedere sports ground – Outbound footpath; and
- Navan Road – Cabra Garda Station – Inbound footpath.

5.5.5 Construction Site Decommissioning

On completion of construction, all construction facilities and equipment such as plant, materials, temporary signage, laydown areas, and the Construction Compounds etc. will be removed. The areas which were occupied by the Construction Compounds will be reinstated – refer to the Landscaping General Arrangement Drawings (BCIDC-ARP-ENV_LA-05_XX_00-DR-LL-0001) in Volume 3 of this EIAR.

5.6 Construction Plant and Equipment

In order to assess a reasonable worst case Construction Phase impact scenario, with regards to air quality and noise and vibration, an estimate of construction plant and equipment that will be necessary to construct the Proposed Scheme has been prepared. The estimated peak daily numbers of principal items of plant and equipment working within a section is indicated in Table 5.8. It should be noted that these are peak daily numbers.

The appointed contractor will select and utilise plant and equipment in a manner that ensures Construction Noise Thresholds, as defined in Chapter 9 (Noise & Vibration) of this EIAR, are not exceeded. Refer to Chapter 7 (Air Quality) and Chapter 9 (Noise & Vibration) of this EIAR for the Construction Phase air quality and noise and vibration assessments, and associated mitigation measures.

Table 5.8: Estimated Peak Daily Plant and Equipment Numbers

Plant / Equipment	Plant and Equipment Numbers per Section																																			
Type	1a	1b	1c	1d	1e	1f	1g	1h	1i	1j	1k	1l	2a	2b	2c	2d	2e	2f	2g	3a	3b	3c	4a	4b	4c	4d	5a	5b	5c	5d	5e	5f	5g	5h	5i	
Lorry	6	6	10	4	8	4	8	2	8	8	2	8	8	12	3	3	3	8	8	8	8	4	8	8	8	4	8	8	10	10	10	10	10	10	10	
Backhoe Mounted Hydraulic Breaker	4	4	2	4	2	4	2	2	4	4	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
8t (tonne) Excavator	2	2	3	2	3	2	3	1	2	2	1	2	2	4	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
13t (Rubber Wheeled) Excavator	3	3	4	2	3	2	4	1	3	3	1	3	3	3	2	2	2	3	3	3	3	2	3	3	3	2	3	3	3	3	3	3	3	3	3	
16t (Rubber Wheeled) Excavator	2	2	2	1	2	1	2	1	2	2	1	2	2	3	2	2	2	2	2	2	2	1	2	2	2	1	2	2	3	3	3	3	3	3	3	
6t Dumper	4	4	4	2	4	2	4	2	4	4	2	4	4	4	2	2	2	4	4	4	4	2	4	4	4	2	4	4	4	4	4	4	4	4	4	
Road Planer	2	2	2	1	2	1	2	1	1	2	1	1	1	1	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Road Sweeper	2	2	2	1	2	1	2	1	1	2	1	1	1	1	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
Asphalt Paver	2	2	2	1	2	1	2	1	1	2	1	1	1	2	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Asphalt Roller	2	2	3	1	3	1	3	1	2	3	1	2	2	3	-	-	-	2	2	2	2	1	2	2	2	1	2	2	2	2	2	2	2	2	2	2
3t Roller	2	2	2	3	2	3	2	2	2	2	2	2	2	2	-	-	-	2	2	2	2	3	2	2	2	3	2	2	2	2	2	2	2	2	2	2
50t Crane	-	-	-	-	-	-	2	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150t Crane	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HIAB Lorry	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Piling Rig	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Concrete Barrier Extruding Machine	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Concrete Pump	-	-	-	-	-	-	1	-	-	-	-	-	-	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

5.7 Construction Compounds

In order to construct the Proposed Scheme, the appointed contractor will require Construction Compounds from which they can manage the delivery of the Proposed Scheme.

5.7.1 Construction Compound Locations

The location of the Construction Compounds in relation to the Proposed Scheme are shown in Figure 5.1 in Volume 3 of this EIAR. The Construction Compound locations have been selected due to the amount of available space, their relative locations near to the majority of the Proposed Scheme major works and access to the National and Regional Road network. Refer to Chapter 6 (Traffic & Transport) of this EIAR for an assessment of the construction traffic.

The Construction Compound BL1 will be located in Corduff Park, in an existing car park along the Old Navan Road, as shown in Image 5.1. The area of Construction Compound BL1 is approximately 1,200m² (metres squared).

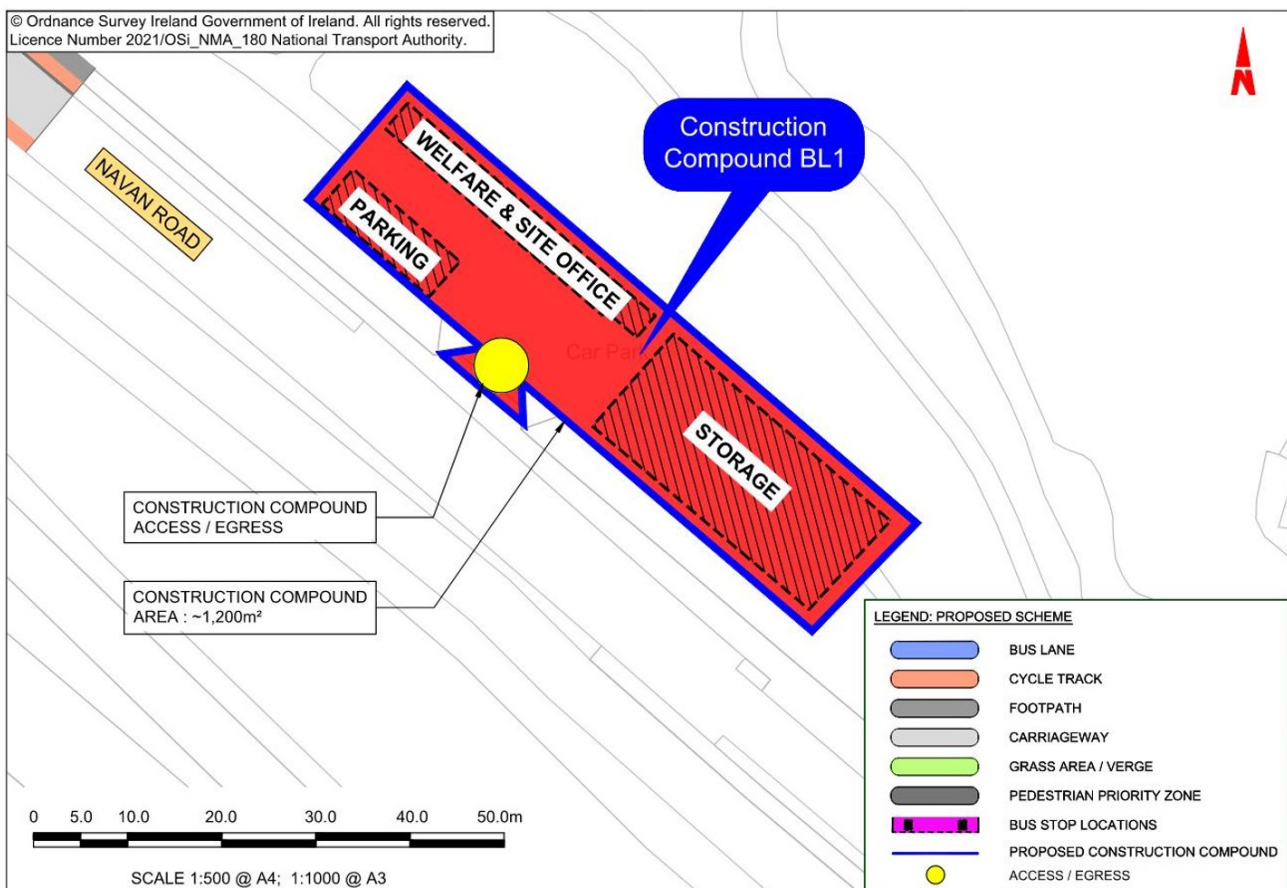


Image 5.1: Location, Extent and Layout of Construction Compound BL1

The Construction Compound BL2 will be located at Junction 6, Castleknock, west of the M50, as shown in Image 5.2. The area of Construction Compound BL2 is approximately 1,400m².

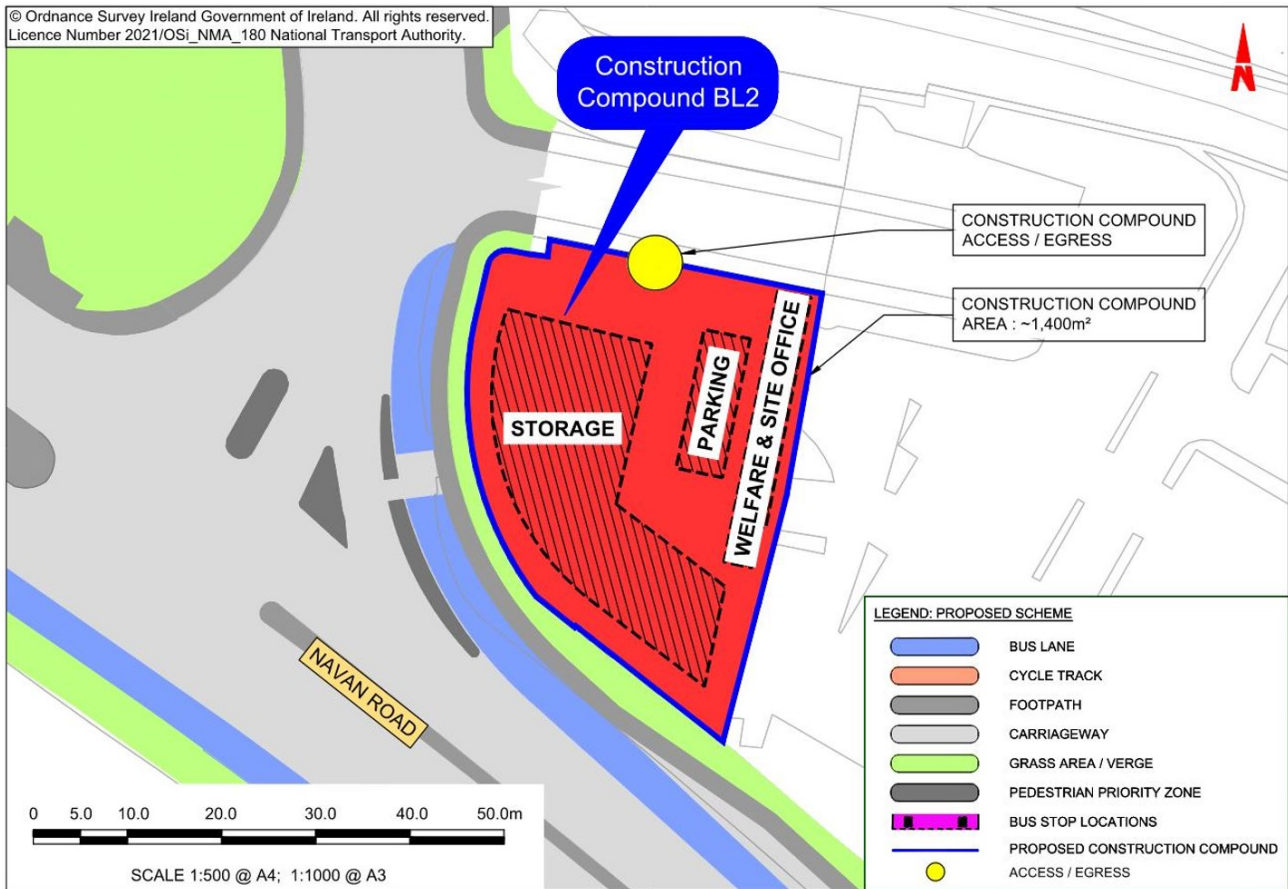


Image 5.2: Location, Extent and Layout of Construction Compound BL2

The Construction Compound BL3 will be located along the R147, east of the M50, as shown in Image 5.3. The Construction Compound will be divided by the Navan Road slip road, and a proposed road as part of the Proposed Scheme. The area of Construction Compound BL3 is approximately 5,200m².

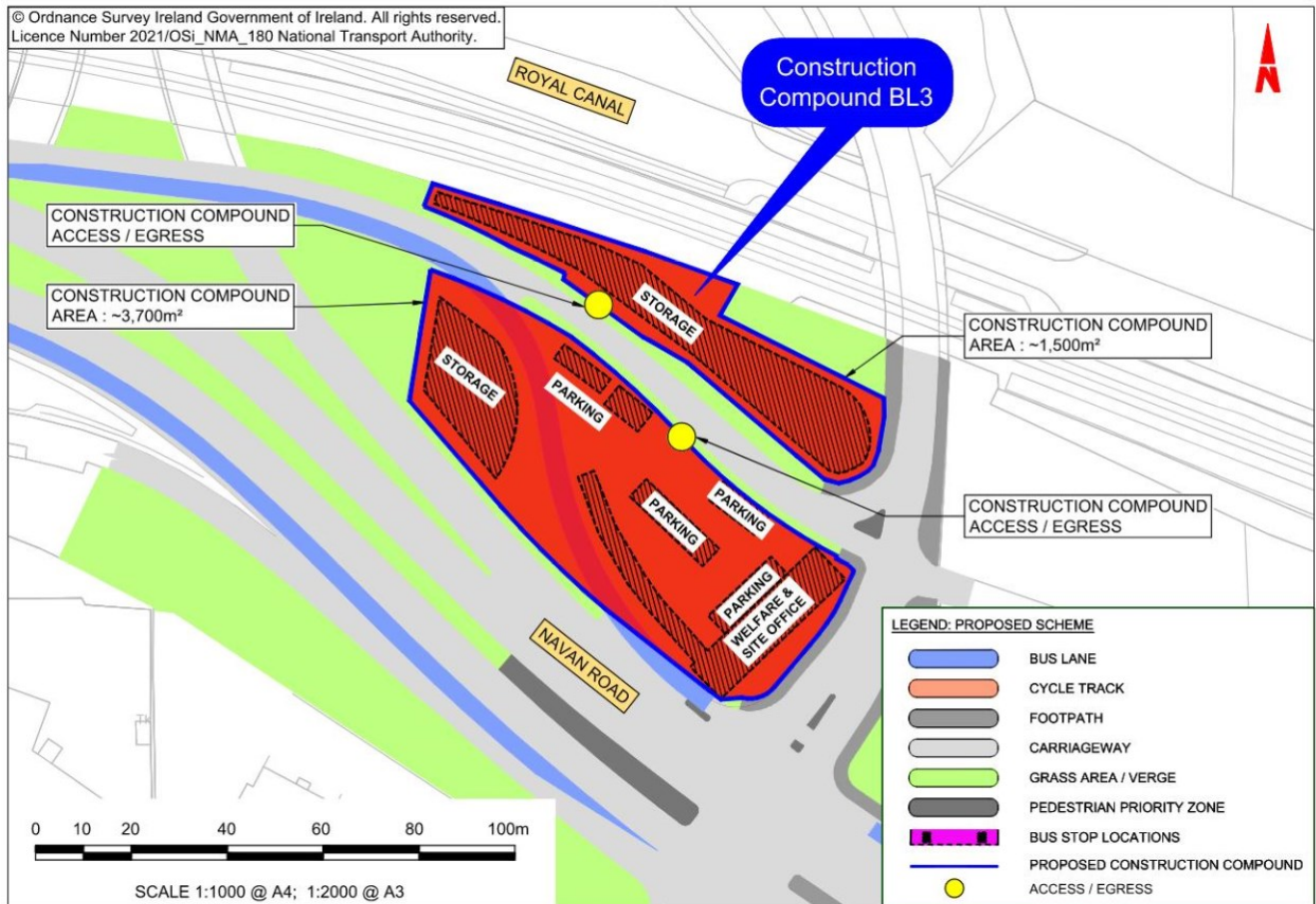


Image 5.3: Location, Extent and Layout of Construction Compound BL3

5.7.2 Construction Compound Activities

As shown in Image 5.1, Image 5.2 and Image 5.3, the Construction Compounds will contain a site office and welfare facilities for NTA personnel and contractor personnel. Limited car parking will be allowed at the Construction Compounds, in line with the principles of the Construction Stage Mobility Management Plan (CSMMP), as described in Appendix A5.1 CEMP in Volume 4 of this EIAR, which will be prepared by the appointed contractor. Materials such as topsoil, subsoil, concrete, rock etc., will be stored at the Construction Compounds for reuse, as necessary. Items of plant and equipment, described in Section 5.6, will also be stored within the Construction Compounds.

All necessary authorisations, under the Waste Management Act, as amended, will be obtained prior to undertaking temporary storage. Certain materials will be reused where practicable, primarily excavated material. Further information on the reuse of material within the Proposed Scheme is included in Chapter 18 (Waste & Resources) of this EIAR. Further information on the air quality and noise and vibration assessments, and associated mitigation measures at the Construction Compound is included in Chapter 7 (Air Quality) and Chapter 9 (Noise & Vibration) of this EIAR.

5.7.3 Construction Compound Services

The Construction Compounds will be fenced off, lit (during working hours) and secured with CCTV, as described in Section 5.5.2.9. Temporary lighting, including security lighting will be required at the Construction Compounds, as described in Section 5.5.2.10. Access to the Construction Compounds will be restricted to site personnel and authorised visitors only.

The Construction Compounds will be engineered with appropriate services. Water, wastewater, power, and communications connections will be organised by the appointed contractor. At work areas along the Proposed Scheme, where permanent provisions (for the duration of the construction programme) are not practicable, appropriate temporary provisions will be made including the use of generators if required. Temporary welfare facilities will need to be used, for example, portable toilets in the vicinity of works. Wastewater from temporary welfare facilities will be collected and disposed of to a suitably licenced facility.

Appropriate environmental management measures will be implemented at the Construction Compounds, for example, to minimise the risk of fuel spillage, and to ensure that the Construction Compounds and the approaches to it are appropriately maintained. Further information on the air quality, noise and vibration and water related mitigation measures that will be implemented is included in Chapter 7 (Air Quality), Chapter 9 (Noise & Vibration) and Chapter 13 (Water) of this EIAR.

Following completion of the construction works, the Construction Compound areas will be cleared and reinstated to match pre-existing conditions.

5.8 Construction Traffic Management

The CTMP has been prepared to facilitate the assessment of the potential impacts on traffic and transport along the Proposed Scheme. The CTMP includes details of the temporary traffic management measures that will be implemented during the construction of the Proposed Scheme.

The staging of construction and associated temporary traffic management measures has considered the receiving environment when developing the schedule of works.

The CTMP has given due consideration to facilitate the maximum practicable movement of people during the Construction Phase through implementing the following hierarchy of transport mode users:

- Pedestrians;
- Cyclists;
- Public Transport; and
- General Traffic.

Access will be maintained for emergency vehicles along the Proposed Scheme, throughout the Construction Phase.

The construction traffic management measures have been developed in accordance with the Traffic Signs Manual (Department of Transport, Tourism and Sport 2019). Construction traffic management measures are summarised in Section 5.8.1 to Section 5.8.4, with further details (such as routing of construction vehicles, timings of material deliveries, etc.) included in the CTMP in Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.8.1 Pedestrian and Cyclist Provisions

The measures set out in Section 8.2.8 of the Traffic Signs Manual (Department of Transport, Tourism and Sport 2019) will be implemented, wherever practicable, to ensure the safety of all road users, in particular pedestrians (including able-bodied pedestrians, wheel-chair users, mobility impaired pedestrians, pushchair users) and cyclists. Therefore, where footpaths or off-road cycle tracks are affected by construction, a safe route will be provided past the works area, and where practicable, provisions for matching existing facilities for pedestrians and cyclists will be made.

5.8.2 Public Transport Provisions

Existing public transport routes will be maintained throughout the duration of the Construction Phase of the Proposed Scheme (notwithstanding potential for occasional road closures / diversions as discussed in Section 5.3). Wherever practicable, bus services will be prioritised over general traffic. However, the temporary closure of sections of existing dedicated bus lanes will be required to facilitate the construction of new bus priority infrastructure that is being developed as part of the Proposed Scheme. Some existing bus stop locations will need

to be temporarily relocated to accommodate the works. In such cases, bus stops will be safely accessible to all users and all temporary impacts on bus services will be determined in consultation with the NTA and the service providers.

5.8.3 General Traffic Provisions

The roads and streets along the Proposed Scheme, will remain open to general traffic wherever practicable during the Construction Phase. However lane closures, road closures and diversions will be necessary to facilitate construction.

Where roundabouts are converted to signalised junctions, construction will follow a simple phased closure, break out, and new junction construction process which will allow for traffic to continue to use the junction as it is being upgraded.

Two-way traffic will generally be maintained along the Proposed Scheme, however in circumstances where there is not sufficient road width to allow two-way traffic (e.g. reduced lane width), single lane traffic controlled by a stop / go system of temporary traffic lights will be implemented during the day with priority provided to traffic travelling towards the City Centre during the morning, and this will be reversed during the afternoon where appropriate. Lane closures and route diversions will supplement this system if traffic volumes are heavy. Short delays may occur outside of the AM and PM peaks, for example, as a result of vehicles accessing the works.

For most of the Proposed Scheme, the existing carriageway width is sufficient to maintain full width two-way traffic throughout the works. However, where the carriageway width is restricted, at various sections throughout the Proposed Scheme, the construction works will be split into traffic management stages as described in Section 5.8.3.1 to Section 5.8.3.5. Please note, all images within this Section are drawn looking towards the City Centre.

5.8.3.1 Section 1: N3 Blanchardstown Junction to Snugborough Road

For works at Blanchardstown Shopping Centre, no traffic management restrictions will be undertaken during the months of December, and the first half of January. Delivery access to the Blanchardstown Shopping Centre will be maintained throughout the works at Blanchardstown Shopping Centre.

5.8.3.1.1 Section 1a: Old Navan Road

The works at Section 1a will be undertaken in three traffic management phases:

- Stage 1 – Construction works on the southern side, traffic reduced to a single lane in each direction, and realigned to the north, as shown in Image 5.4;
- Stage 2 – Construction works on the northern side, traffic reduced to a single lane in each direction, and realigned to the south, as shown in Image 5.5; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic realigned to the south.

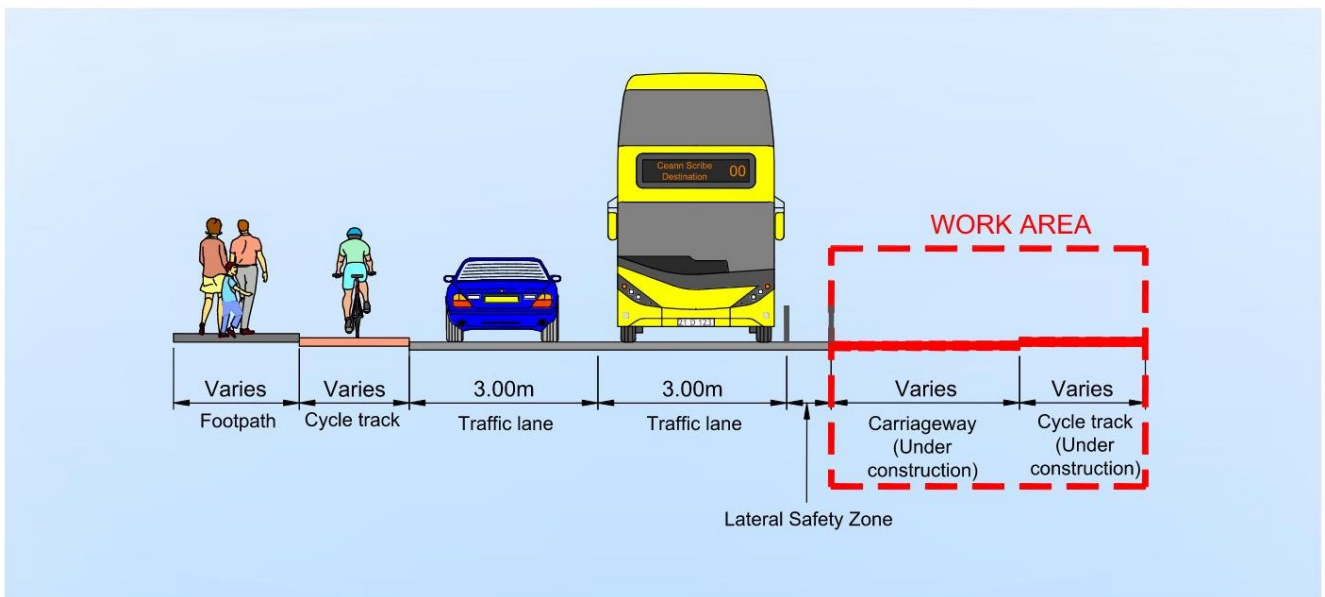


Image 5.4: Traffic Management Cross Section, Section 1a – Stage 1

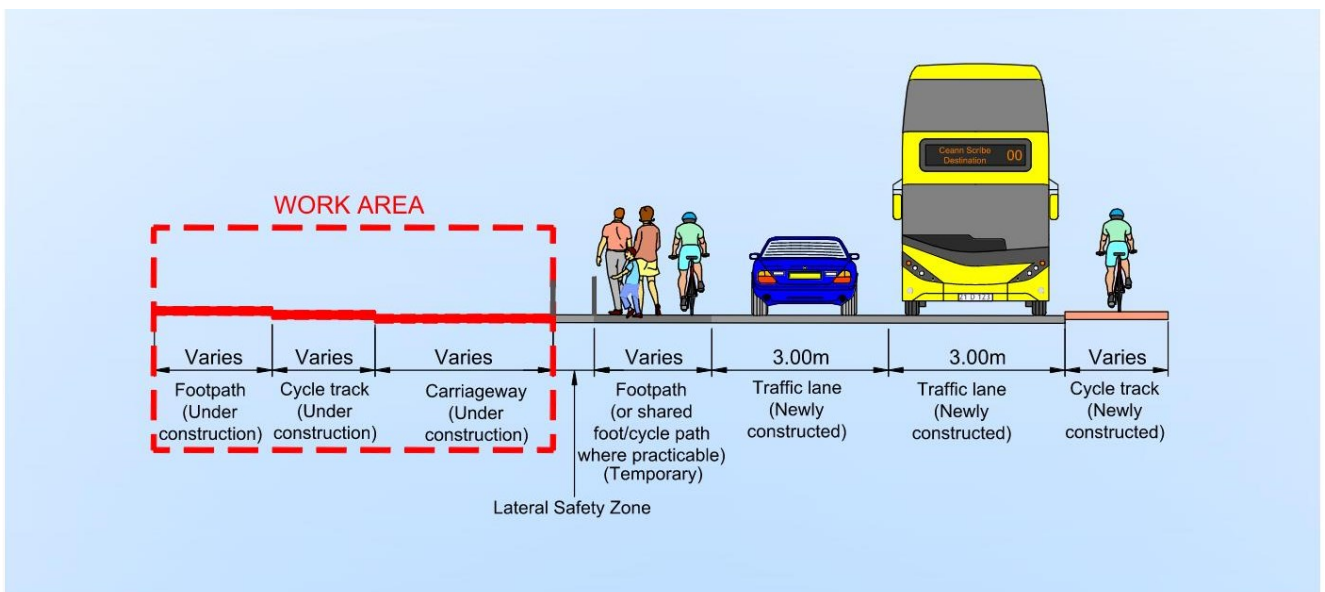


Image 5.5: Traffic Management Cross Section, Section 1a – Stage 2

5.8.3.1.2 Section 1b: Blanchardstown Slip Road

The works at Section 1b will be undertaken in three traffic management stage:

- Stage 1 – Construction works on the southern side, traffic reduced to a single lane, and realigned to the north, as shown in Image 5.6;
- Stage 2 – Construction works on the northern side, traffic reduced to a single lane, and realigned to the south, as shown in Image 5.7; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

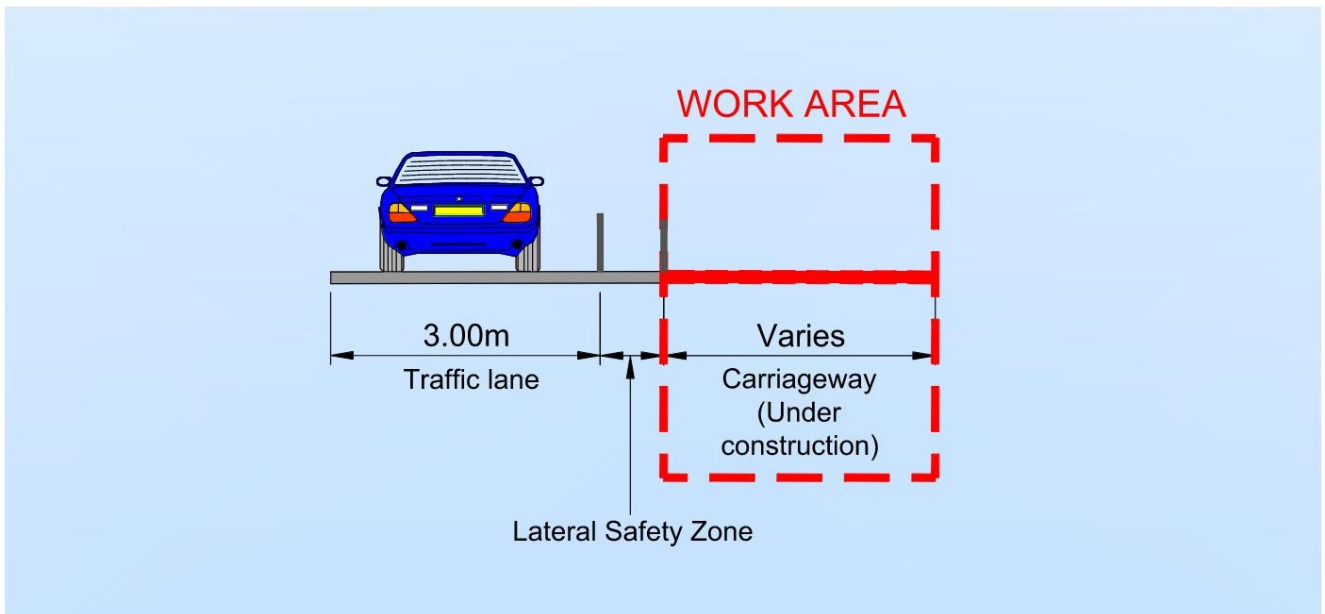


Image 5.6: Traffic Management Cross Section, Section 1b – Stage 1

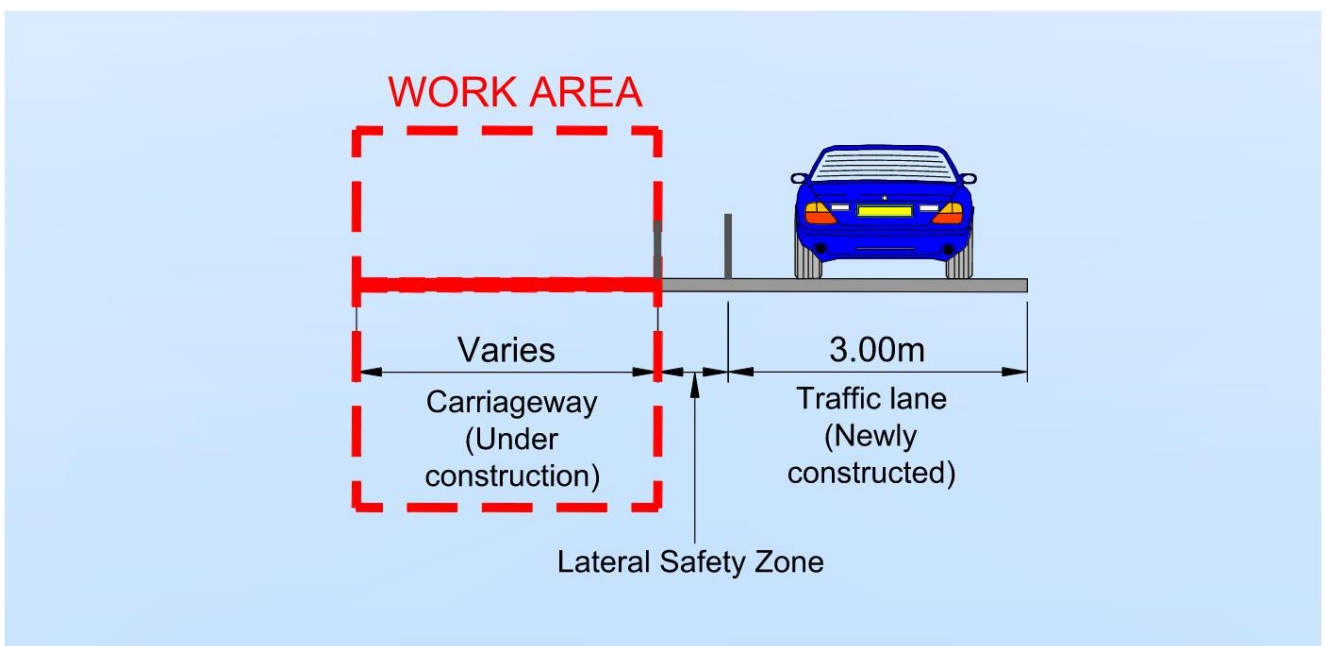


Image 5.7: Traffic Management Cross Section, Section 1b – Stage 2

5.8.3.1.3 Section 1c: Blanchardstown Road

Works for the new bus layby and retaining wall can continue during all stages. The works at Section 1c will be undertaken in four traffic management stages:

- Stage 1 – Construction works on the south-eastern side of the carriageway, traffic reduced to a single lane in each direction and realigned to the north, as shown in Image 5.8;
- Stage 2 – Construction works on the north-western side of the carriageway, traffic reduced to a single lane in each direction and realigned to the south, as shown in Image 5.9;
- Stage 3 – Construction works at the bus driver welfare facility; and
- Stage 4 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

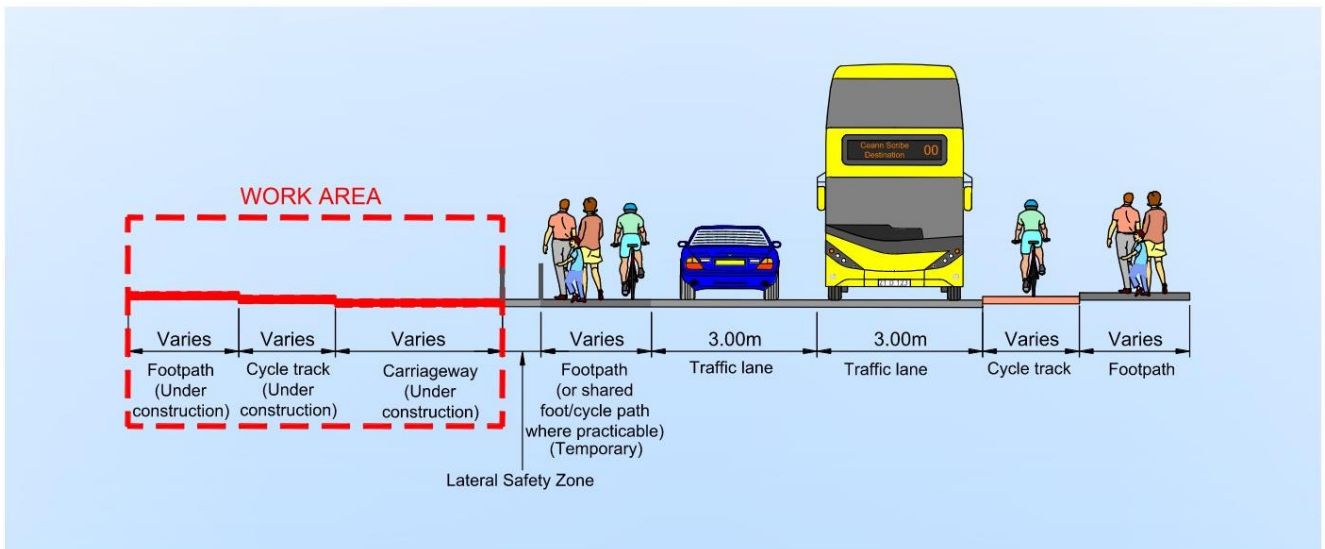


Image 5.8: Traffic Management Cross Section, Section 1c – Stage 1

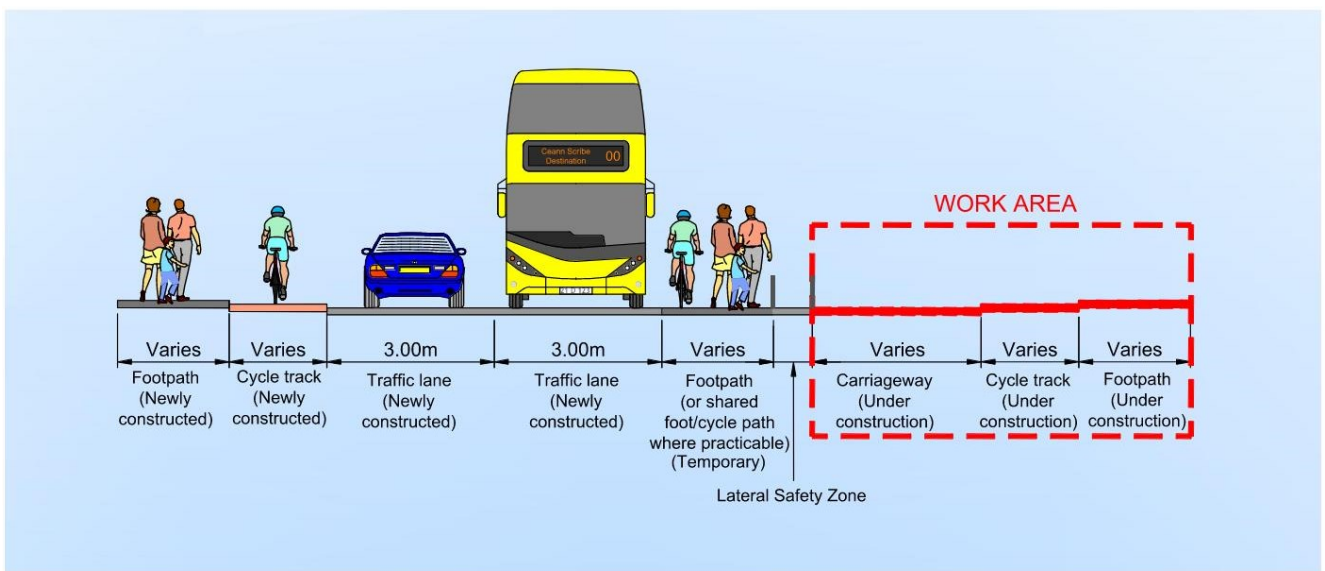


Image 5.9: Traffic Management Cross Section, Section 1c – Stage 1

5.8.3.1.4 Section 1d: Blakestown Roundabout

The Blakestown roundabout will be converted to a signalised junction. The works at Section 1d will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 1c, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.1.5 Section 1e: Blakestown Roundabout to Blanchardstown Shopping Centre Roundabout 1

The works at Section 1e will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, traffic reduced to a single lane in each direction and realigned to the south, as shown in Image 5.10;
- Stage 2 – Construction works on the southern side, traffic reduced to a single lane in each direction and realigned to the north, as shown in Image 5.11; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

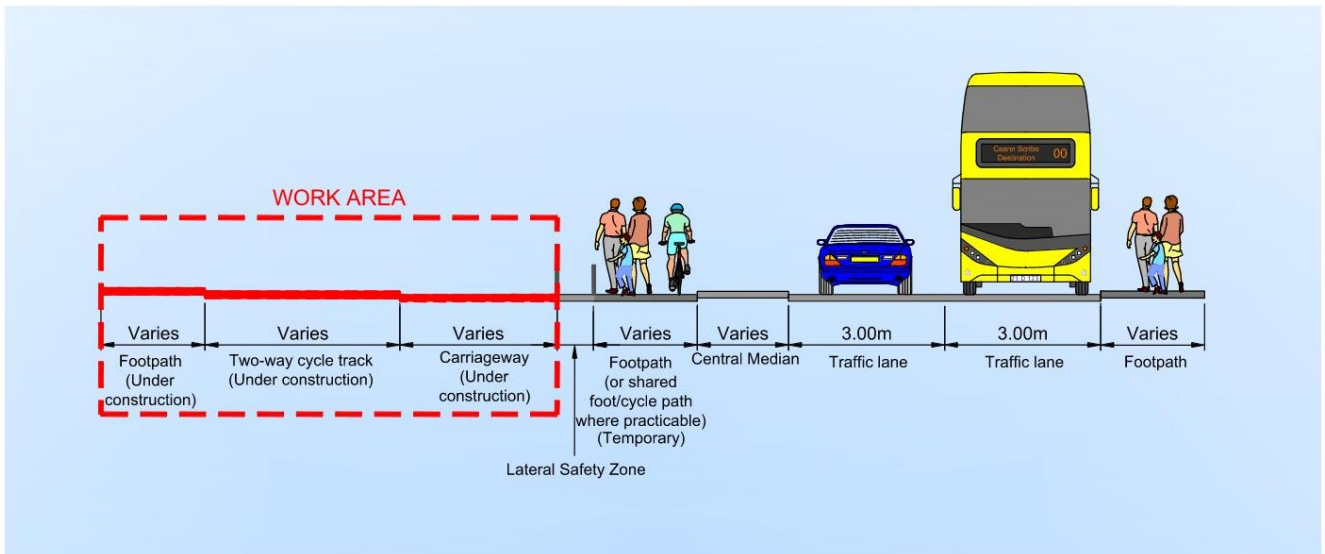


Image 5.10: Traffic Management Cross Section, Section 1e – Stage 1

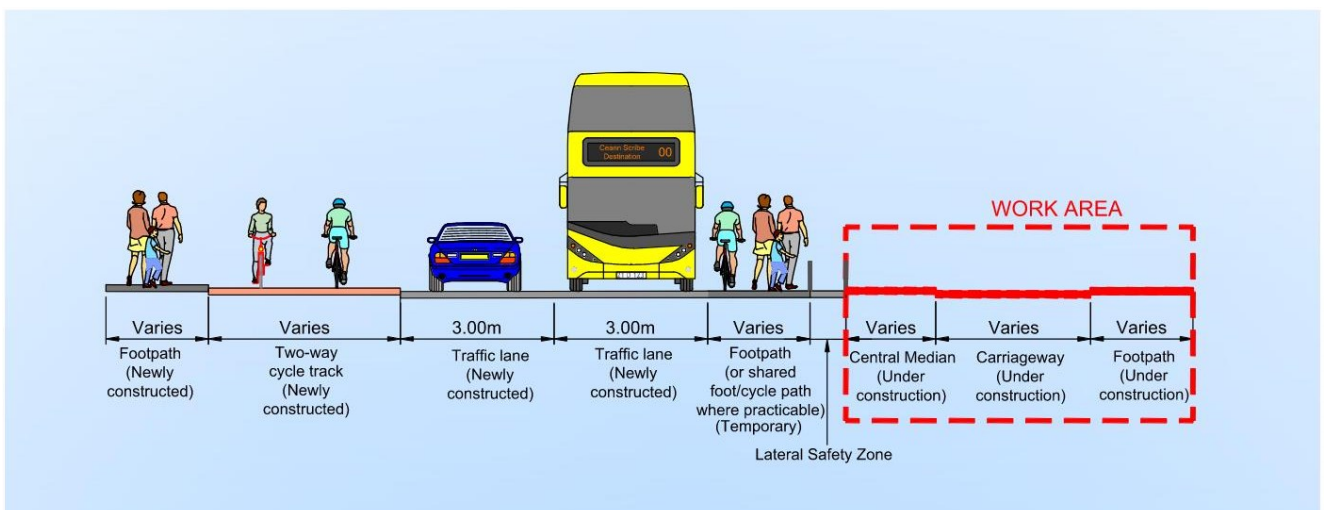


Image 5.11: Traffic Management Cross Section, Section 1e – Stage 2

5.8.3.1.6 Section 1f: Blanchardstown Shopping Centre Roundabout 1

The Blanchardstown Shopping Centre roundabout 1 will be converted to a signalised junction. The works at Section 1f will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 1e and Section 1g, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.1.7 Section 1g: Blanchardstown Shopping Centre Roundabout 1 to Roundabout 2, including Bus Interchange

The works at Section 1g will be undertaken in four traffic management stages:

- Stage 1 – Construction works on the central reservation, traffic reduced to a single lane in each direction and realigned to the verges, as shown in Image 5.12;
- Stage 2 – Construction works on the north-western side and at the Bus Interchange, traffic reduced to a single lane in each direction and realigned to the southeast, as shown in Image 5.13;
- Stage 3 – Construction works on the southwestern side, traffic reduced to a single lane in each direction and realigned to either side of the Bus Interchange, as shown in Image 5.14; and
- Stage 4 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

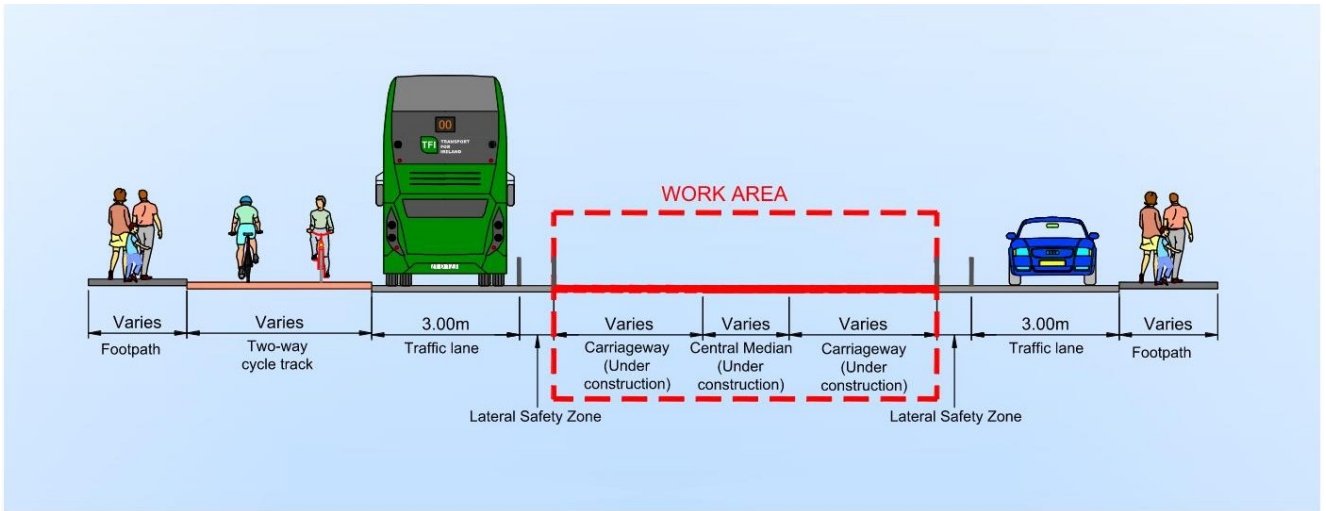


Image 5.12: Traffic Management Cross Section, Section 1g – Stage 1

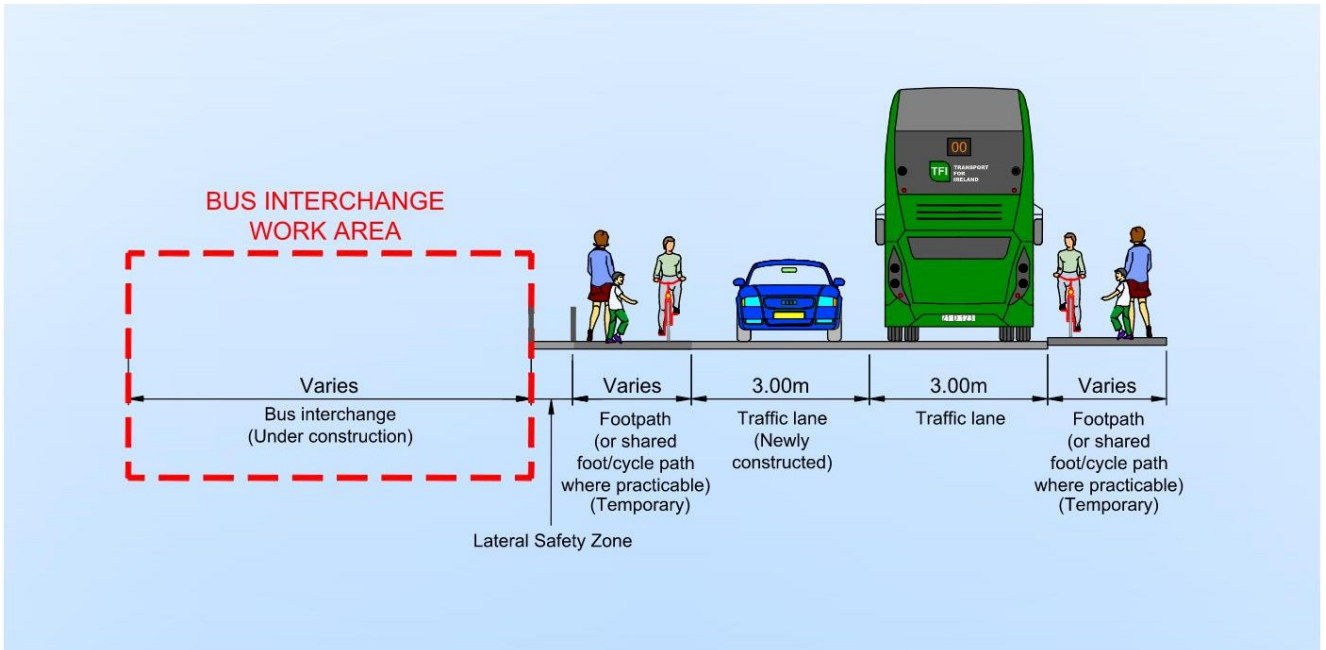


Image 5.13: Traffic Management Cross Section, Section 1g – Stage 2

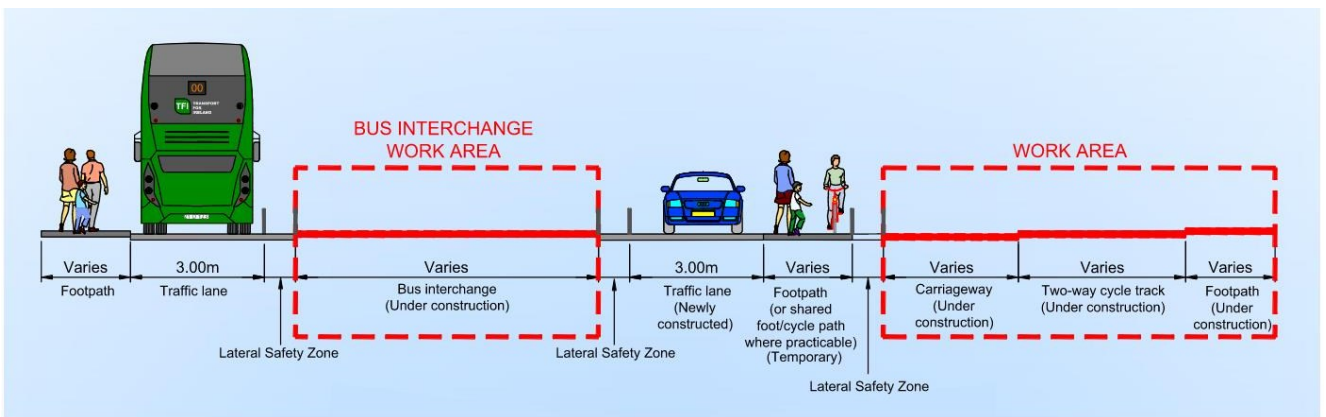


Image 5.14: Traffic Management Cross Section, Section 1g – Stage 3

5.8.3.1.8 Section 1h: Blanchardstown Shopping Centre Roundabout 2

The Blanchardstown Shopping Centre roundabout 2 will be converted to a signalised junction. The works at Section 1h will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 1g, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.1.9 Section 1i: Blanchardstown Shopping Centre Roundabout 2 to Blanchardstown Road

The works at Section 1i will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the western side, traffic reduced to a single lane in each direction, and realigned to the east, as shown in Image 5.15;
- Stage 2 – Construction works on the eastern side, traffic reduced to a single lane in each direction, and realigned to the west, as shown in Image 5.16; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to a single lane shuttle working. Night-time closures will be required during Stage 3.

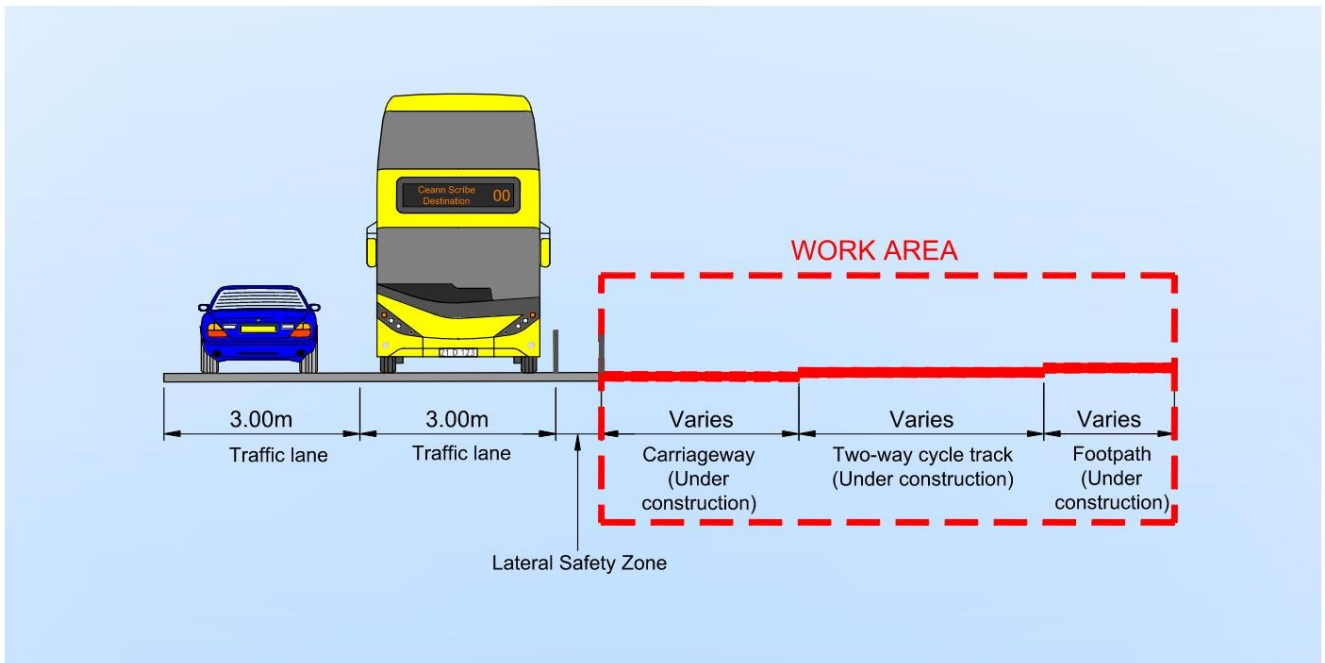


Image 5.15: Traffic Management Cross Section, Section 1i – Stage 1

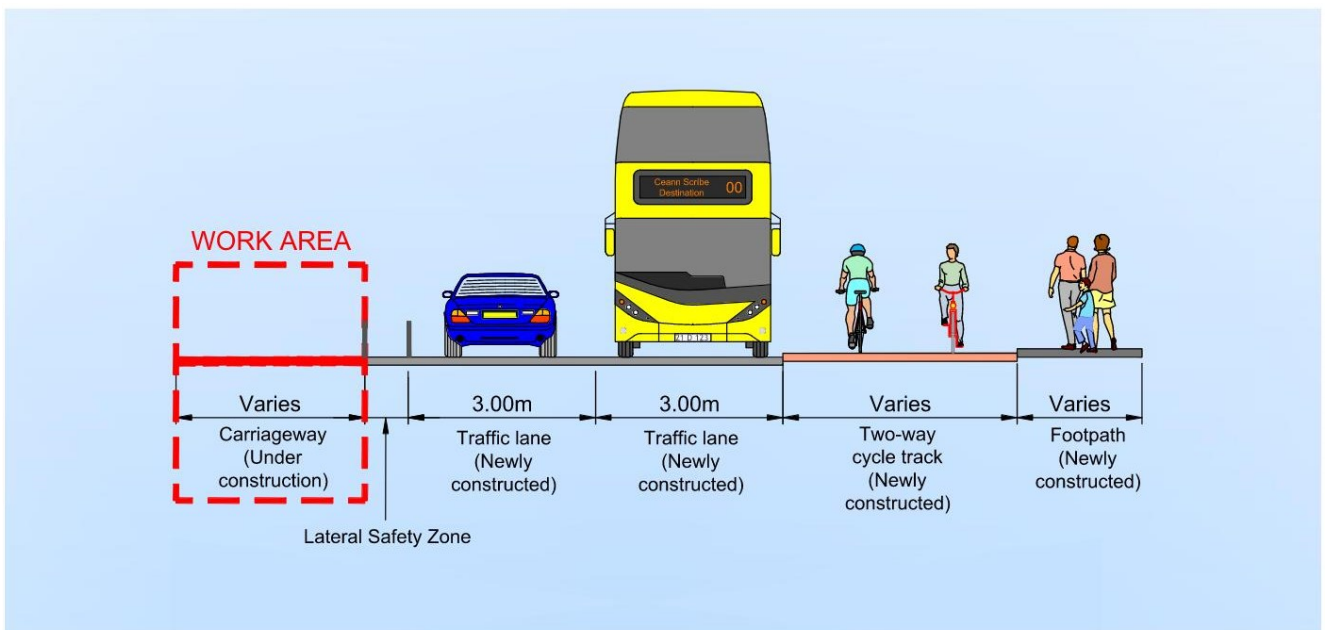


Image 5.16: Traffic Management Cross Section, Section 1i – Stage 2

5.8.3.1.10 Section 1j: Blanchardstown Shopping Centre Roundabout 2 to Roundabout 3

The works at Section 1j will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the southern side, traffic reduced to a single lane in each direction, and realigned to the north, as shown in Image 5.17;
- Stage 2 – Construction works on the northern side, traffic reduced to a single lane in each direction, and realigned to the south, as shown in Image 5.18;
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

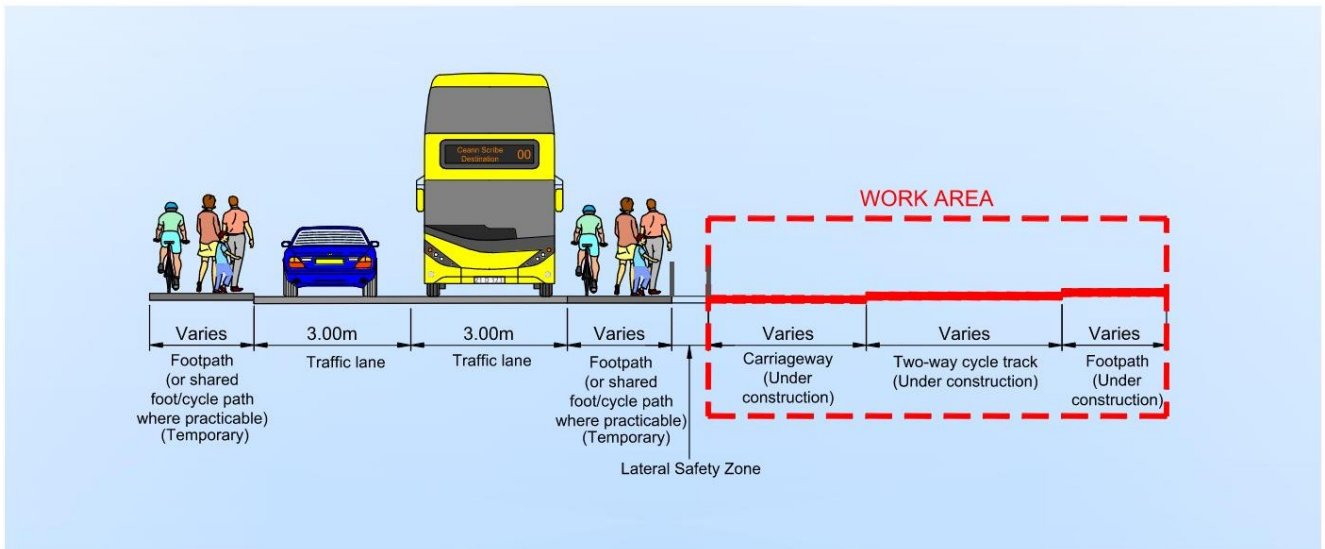


Image 5.17: Traffic Management Cross Section, Section 1j – Stage 1

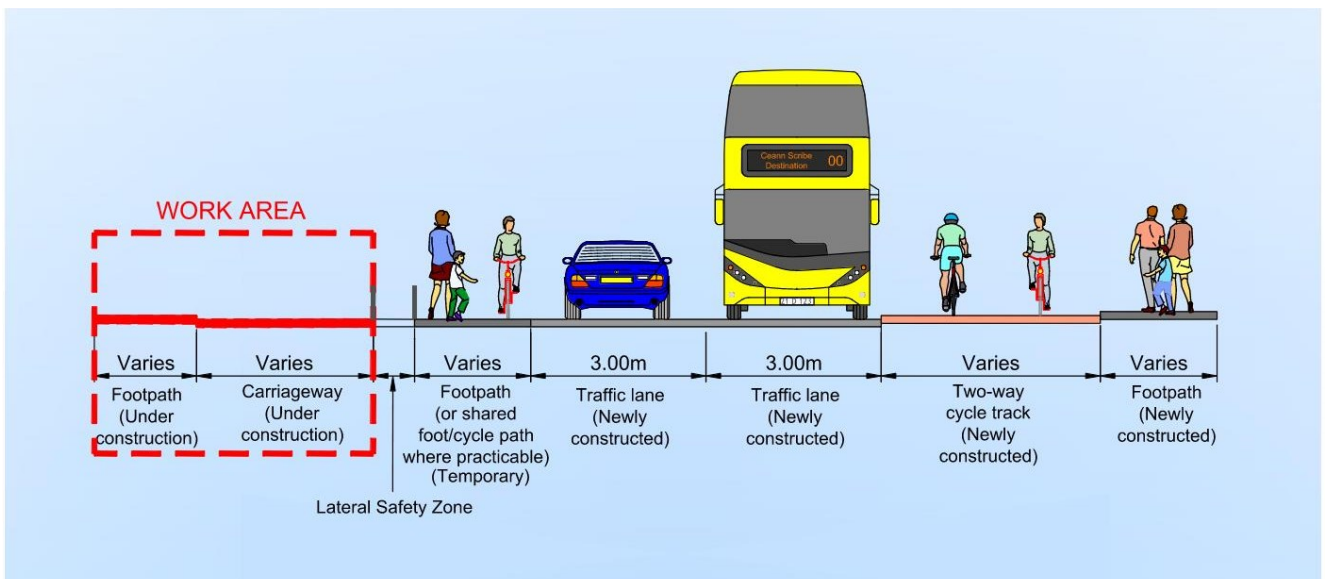


Image 5.18: Traffic Management Cross Section, Section 1j – Stage 2

5.8.3.1.11 Section 1k: Blanchardstown Shopping Centre Roundabout 3

The Blanchardstown Shopping Centre roundabout 4 will be converted to a signalised junction. The works at Section 1h will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 1j, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.1.12 Section 1l: Blanchardstown Shopping Centre Roundabout 3 to Snugborough Tie-in

The works at Section 1l will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, traffic reduced to a single lane in each direction, and realigned to the south as shown in Image 5.19;
- Stage 2 – Construction works on the southern side, traffic reduced to a single lane in each direction, and realigned to the north as shown in Image 5.20. Construction of the miscellaneous retaining wall (RW13) will be undertaken during Stage 2;
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

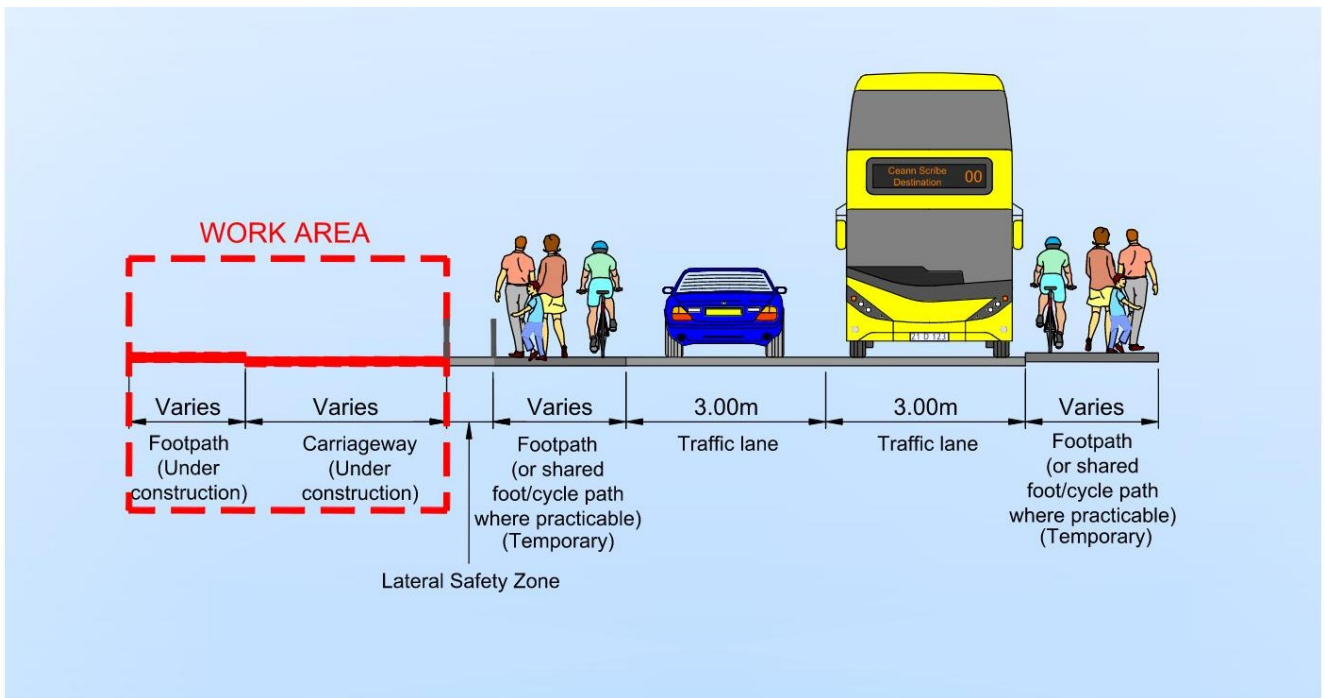


Image 5.19: Traffic Management Cross Section, Section 11 – Stage 1

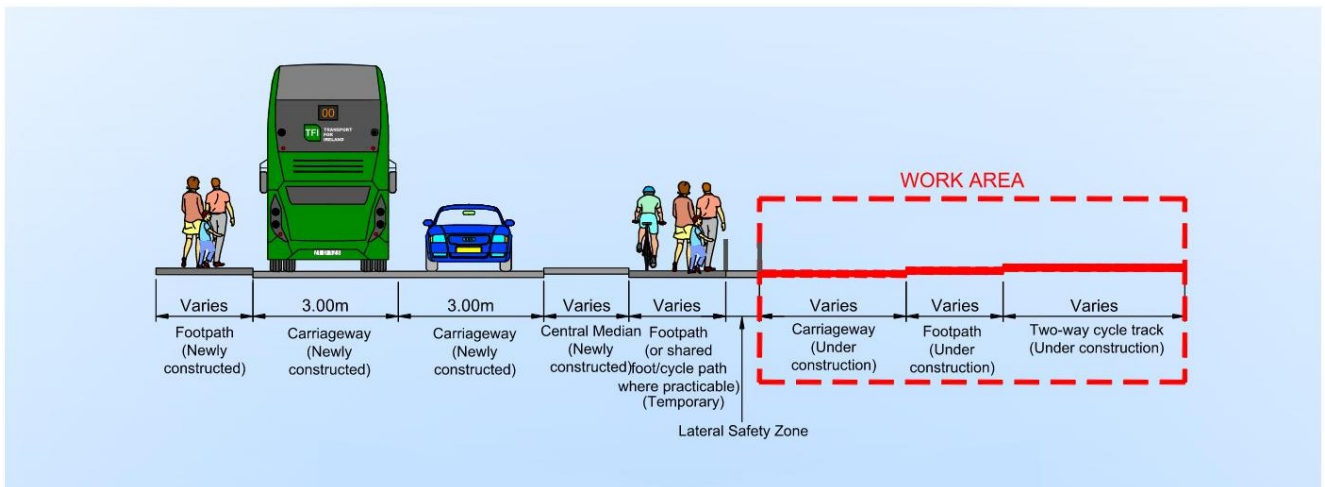


Image 5.20: Traffic Management Cross Section, Section 11 – Stage 2

5.8.3.2 Section 2: Snugborough Road to N3 / M50 Junction

5.8.3.2.1 Section 2a: N3 Dual Carriageway Slip Roads

The works at Section 2a will be undertaken in three traffic management stages (on each slip road):

- Stage 1a – Construction works on the westbound slip road, on the northern side, traffic reduced to a single lane to the south, as shown in Image 5.21;
- Stage 1b – Construction works on the westbound slip road, on the southern side, traffic reduced to a single lane to the north, as shown in Image 5.22;
- Stage 2a – Construction works on the eastbound slip road, on the northern side, traffic reduced to a single lane to the south, as shown in Image 5.23;
- Stage 2b – Construction works on the eastbound slip road, on the northern side, traffic reduced to a single lane to the north, as shown in Image 5.24; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

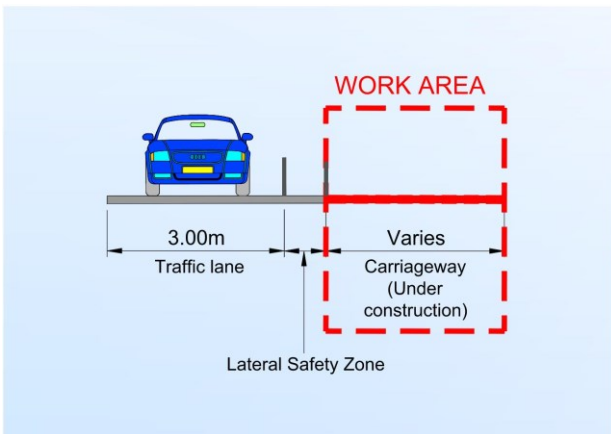


Image 5.21: Traffic Management Cross Section, Section 2a – Stage 1a

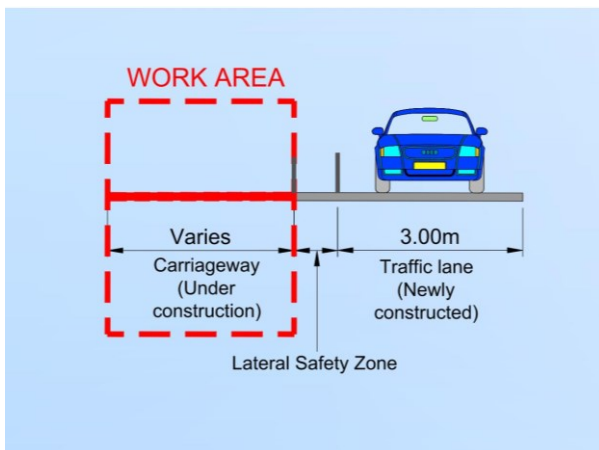


Image 5.22: Traffic Management Cross Section, Section 2a – Stage 1b

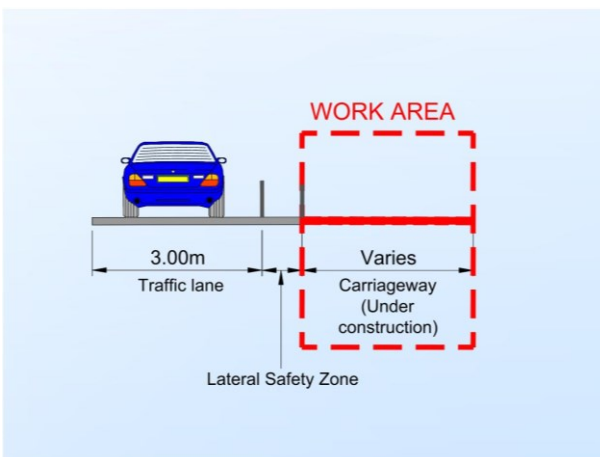


Image 5.23: Traffic Management Cross Section, Section 2a – Stage 2a

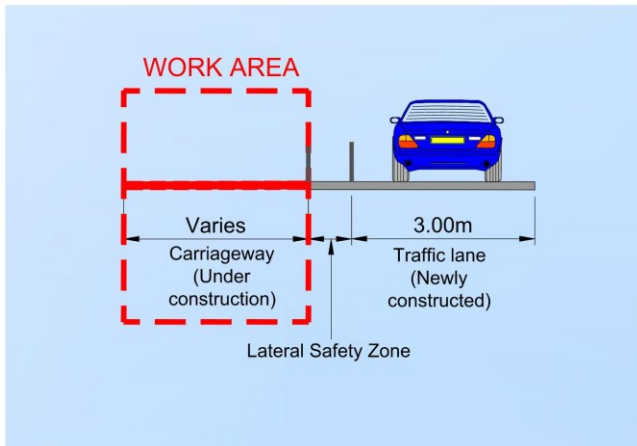


Image 5.24: Traffic Management Cross Section, Section 2a – Stage 2b

5.8.3.2.2 Section 2b: N3 Dual Carriageway

The works at Section 2b will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the central reservation, traffic reduced to two lanes in each direction, and realigned to the verges, as shown in Image 5.25;
- Stage 2 – Construction works on the outer verges, traffic reduced to two lanes in each direction, and realigned to the central reservation, as shown in Image 5.26; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

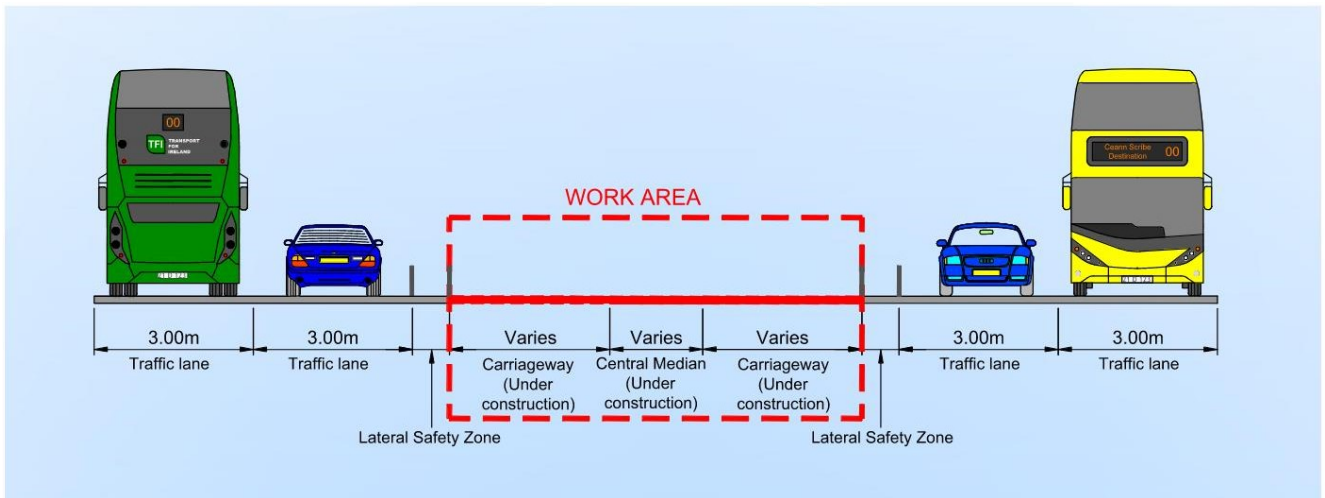


Image 5.25: Traffic Management Cross Section, Section 2b – Stage 1

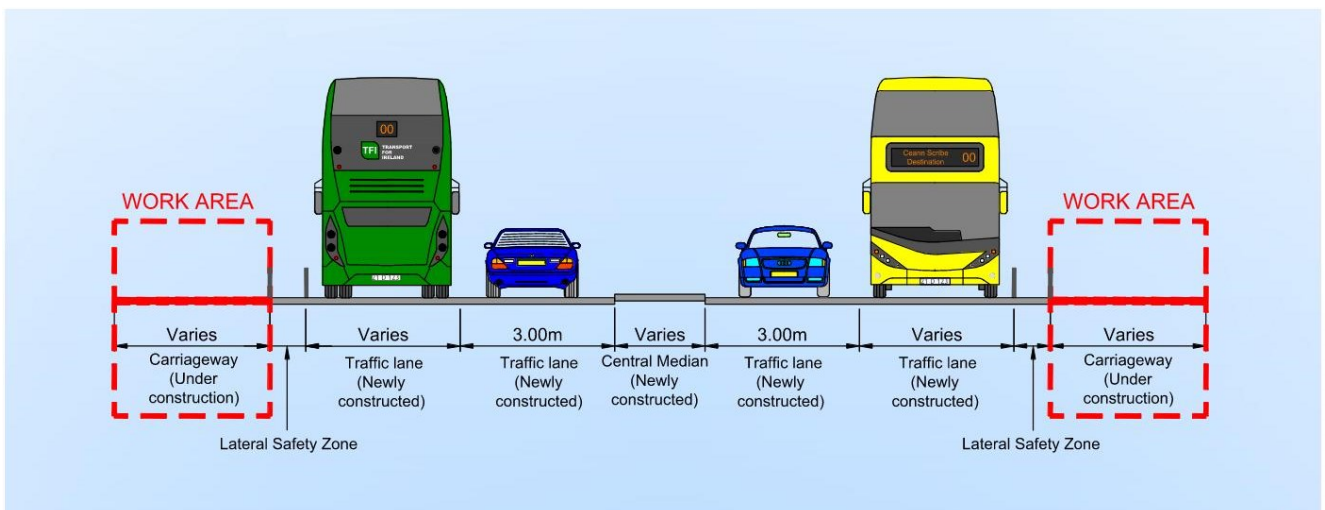


Image 5.26: Traffic Management Cross Section, Section 2b – Stage 2

Furthermore, for the duration of works at Mill Road Bridge (BR02), the following traffic management measures will be in place:

- Pedestrian access will be maintained along Mill Road, however for specific works such as bridge beam lifts, undertaken out-of-hours, pedestrian access will be temporarily closed;
- Vehicular traffic access will be closed along Mill Road, at the location of the Mill Road Bridge (BR02). Diversions will be installed via R806 Main Street, R843 Snugborough Road and Waterville Road; and
- Vehicle traffic accessing Edmund Rice College may be subject to traffic management measures e.g. traffic control signals.

5.8.3.2.1 Section 2c, Section 2d, Section 2e: N3 Structure Widening

The works at Section 2c, Section 2d, and Section 2e will be undertaken in three traffic management stages, under the traffic management measures as described at Section 2b. Mill Road will be closed to vehicular traffic for the duration of the construction works, between Herbert Road and Edmund Rice College, however pedestrian access will be maintained for the majority of the works.

5.8.3.2.2 Section 2f: Old Navan Road – M50 Roundabout

The works at Section 2f will be undertaken in four traffic management stages:

- Stage 1 – Construction works on the southern side, traffic reduced to two lanes westbound and realigned to the north, as shown in Image 5.27;
- Stage 2 – Construction works on the northern side, traffic reduced to two lanes eastbound and realigned to the south, as shown in Image 5.28;
- Stage 3 – Construction works on the central median, traffic reduced to two lanes in each direction and realigned to the verges, as shown in Image 5.29; and
- Stage 4 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

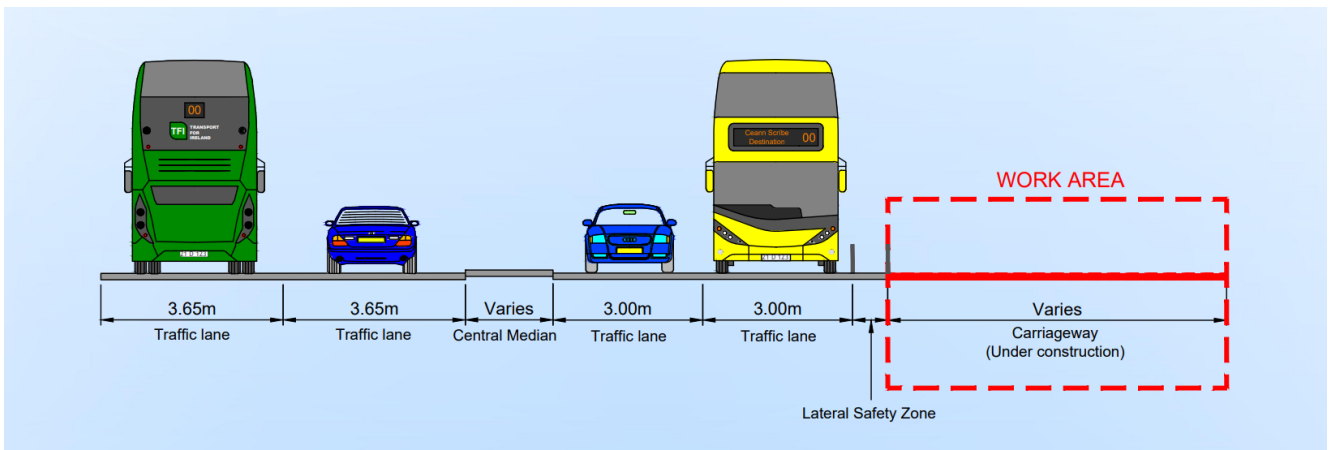


Image 5.27: Traffic Management Cross Section, Section 2f – Stage 1

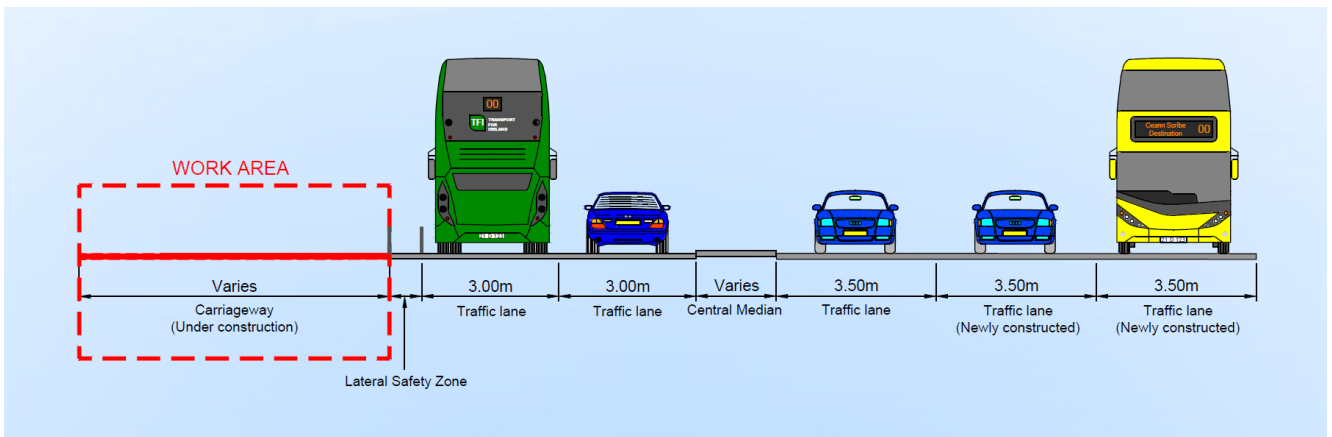


Image 5.28: Traffic Management Cross Section, Section 2f – Stage 2

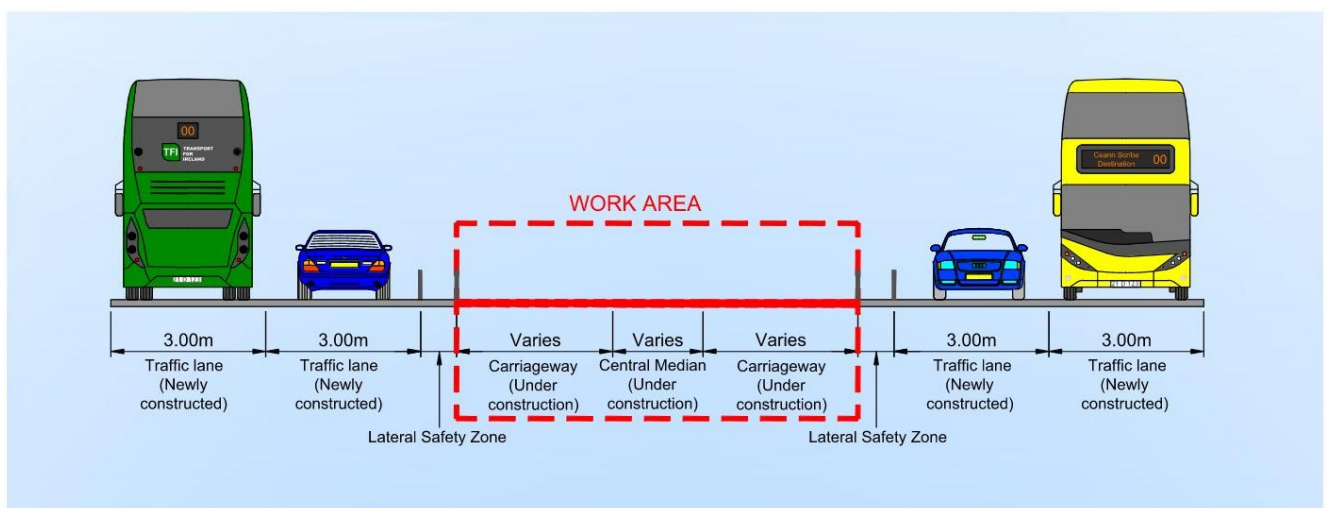


Image 5.29: Traffic Management Cross Section, Section 2f – Stage 3

5.8.3.2.3 Section 2g: M50 Roundabout

The M50 roundabout will be converted to a signalised junction. The works at Section 2g will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 3a, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.3 Section 3: N3 / M50 Junction to Navan Road / Ashtown Road Junction

5.8.3.3.1 Section 3a: M50 Roundabout to Railway Station

The works at Section 3a will be undertaken in four traffic management stages:

- Stage 1 – Construction works on the central reservation, traffic reduced to two lanes in each direction, and realigned to the verges, as shown in Image 5.30;
- Stage 2 – Construction works on the verges, traffic reduced to two lanes in each direction, and realigned to the central reservation, as shown in Image 5.31;
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working; and
- Stage 4 – Parallel cycle route works, vehicular traffic not affected.

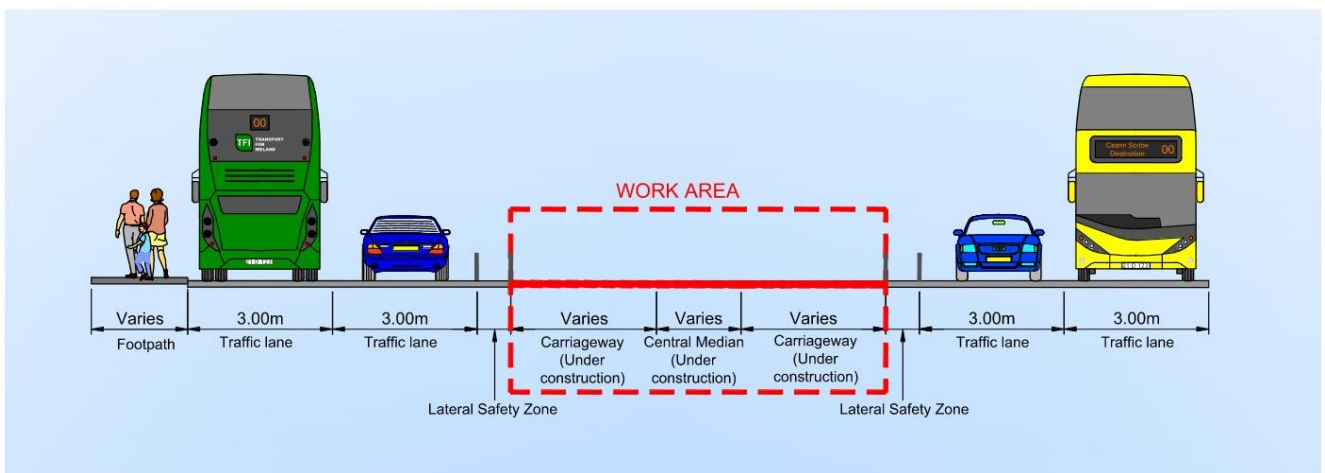


Image 5.30: Traffic Management Cross Section, Section 3a – Stage 1

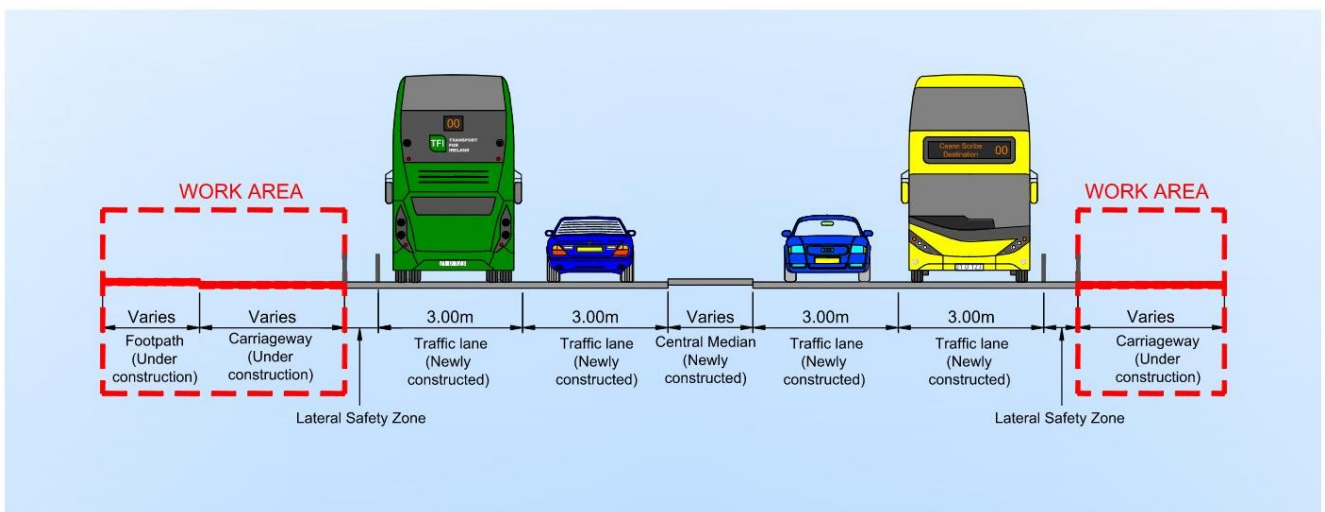


Image 5.31: Traffic Management Cross Section, Section 3a – Stage 2

5.8.3.3.2 Section 3b: Railway Station to Ashtown Road Roundabout

The works at Section 3b will be undertaken in four traffic management stages:

- Stage 1 – Construction works on the eastbound lane, eastbound traffic reduced to a single lane and realigned to the central and southern lanes, as shown in Image 5.32;

- Stage 2 – Construction works on the central reservation, traffic reduced to a single lane in each direction and realigned to the verges, as shown in Image 5.33;
- Stage 3 – Construction works on the westbound lane, westbound traffic reduced to a single lane and realigned to the central and northern lanes, as shown in Image 5.34; and
- Stage 4 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

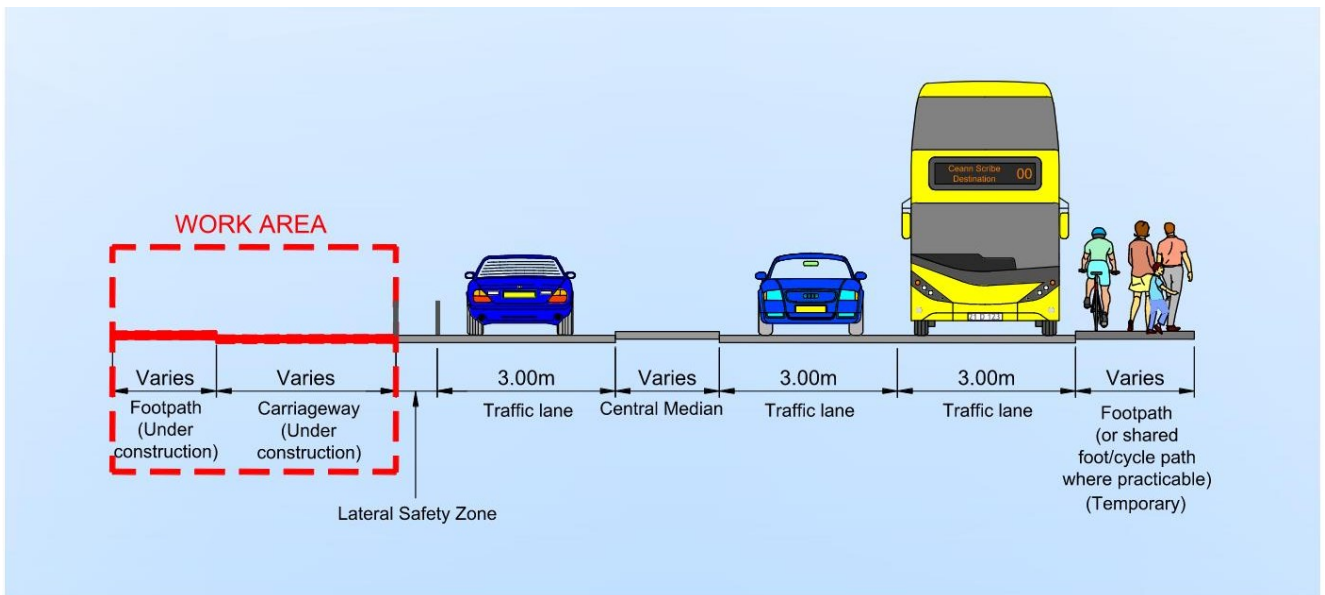


Image 5.32: Traffic Management Cross Section, Section 3b – Stage 1

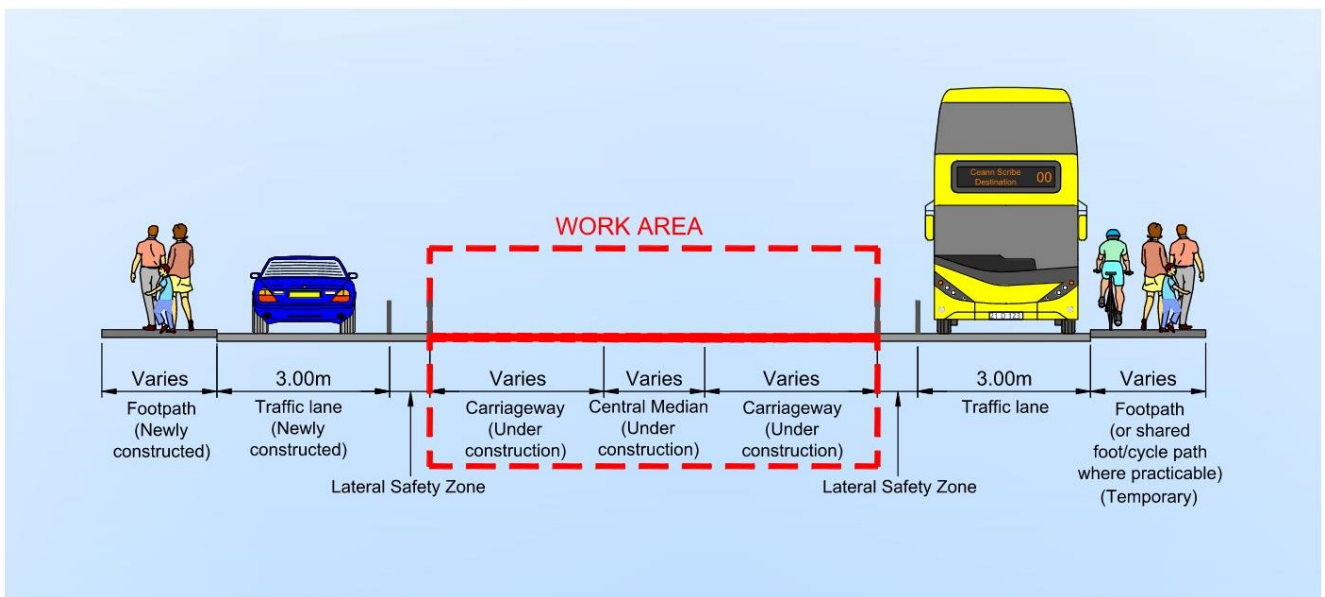


Image 5.33: Traffic Management Cross Section, Section 3b – Stage 2

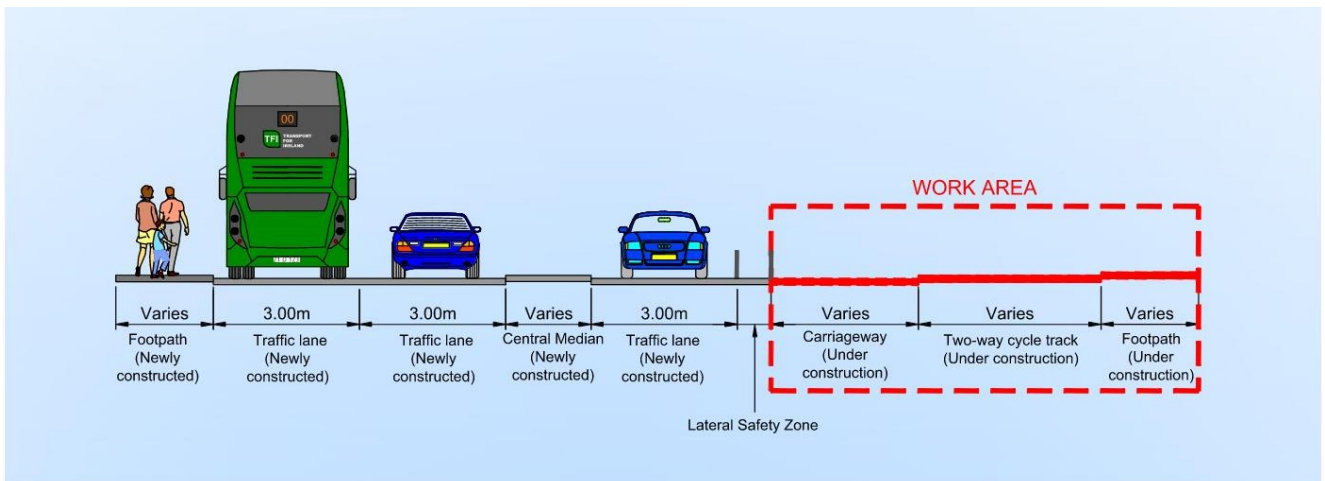


Image 5.34: Traffic Management Cross Section, Section 3b – Stage 3

5.8.3.3.3 Section 3c: Ashtown Roundabout

The Ashtown roundabout will be converted to a signalised junction. The works at Section 3c will be undertaken in a phased manner, in conjunction with the phasing implemented at Section 3a, to allow for traffic to continue to use the junction as it is being upgraded. The roundabout will be broken out and surfaced, and out-of-hour closures are likely to be required for surfacing and white lining works.

5.8.3.4 Section 4: Navan Road / Ashtown Road Junction to Navan Road / Old Cabra Road Junction

5.8.3.4.1 Section 4a: Ashtown Road Roundabout to Baggot Road

The works at Section 4a will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, traffic reduced to a single lane in each direction, and realigned to the south, as shown in Image 5.35;
- Stage 2 – Construction works on the southern side, traffic reduced to a single lane in each direction, and realigned to the north, as shown in Image 5.36; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

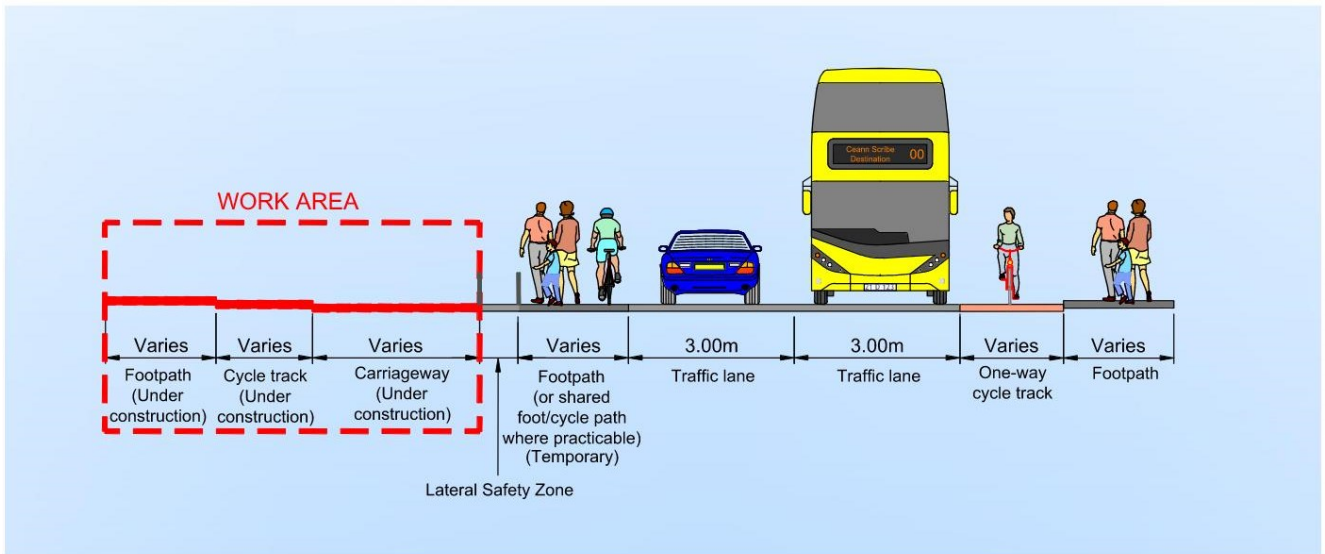


Image 5.35: Traffic Management Cross Section, Section 4a – Stage 1

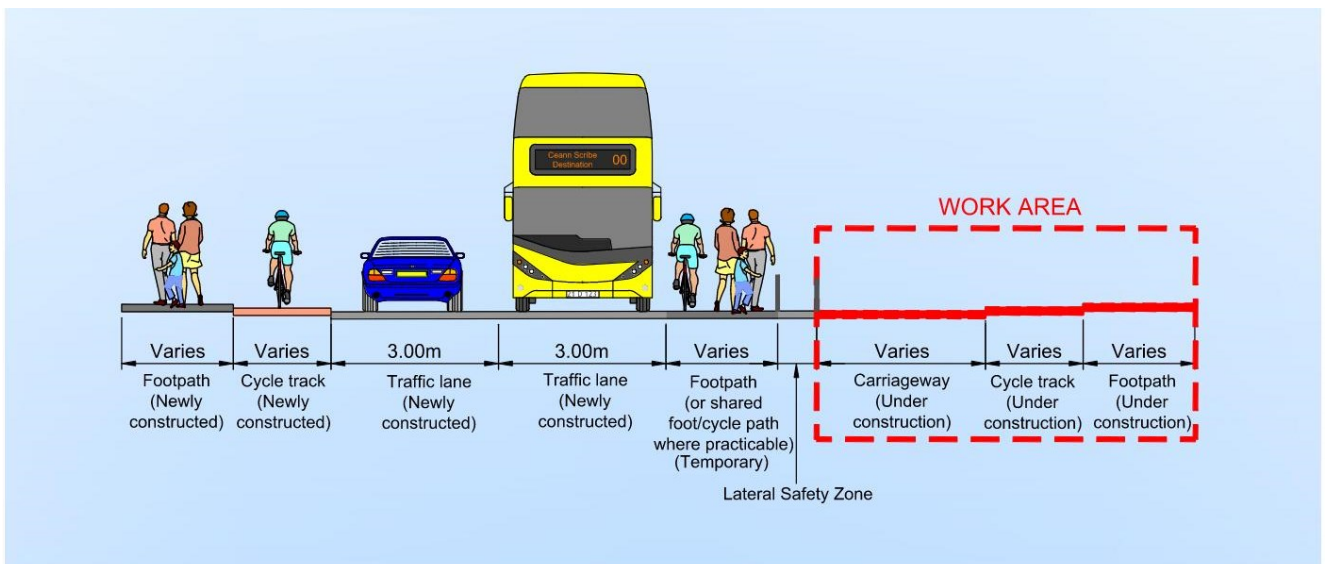


Image 5.36: Traffic Management Cross Section, Section 4a – Stage 2

5.8.3.4.2 Section 4b: Baggot Road to Skreen Road

The works at Section 4b will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the southern side, traffic reduced to a single lane in each direction, and realigned to the north, as shown in Image 5.37;
- Stage 2 – Construction works on the northern side, traffic reduced to a single lane in each direction, and realigned to the south, as shown in Image 5.38; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

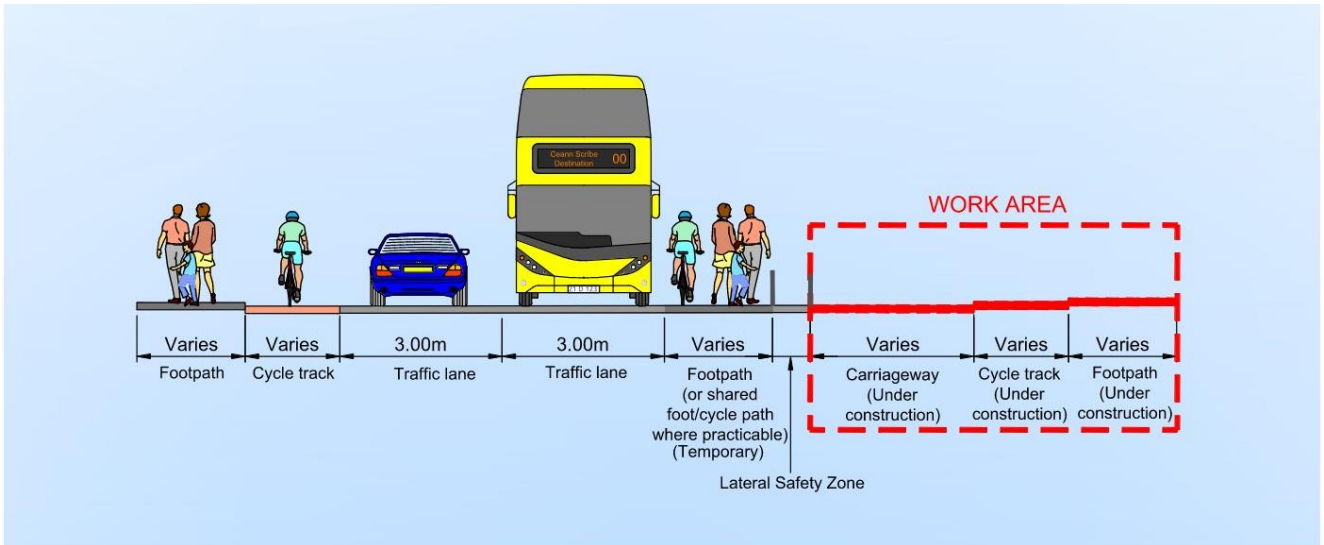


Image 5.37: Traffic Management Cross Section, Section 4b – Stage 1

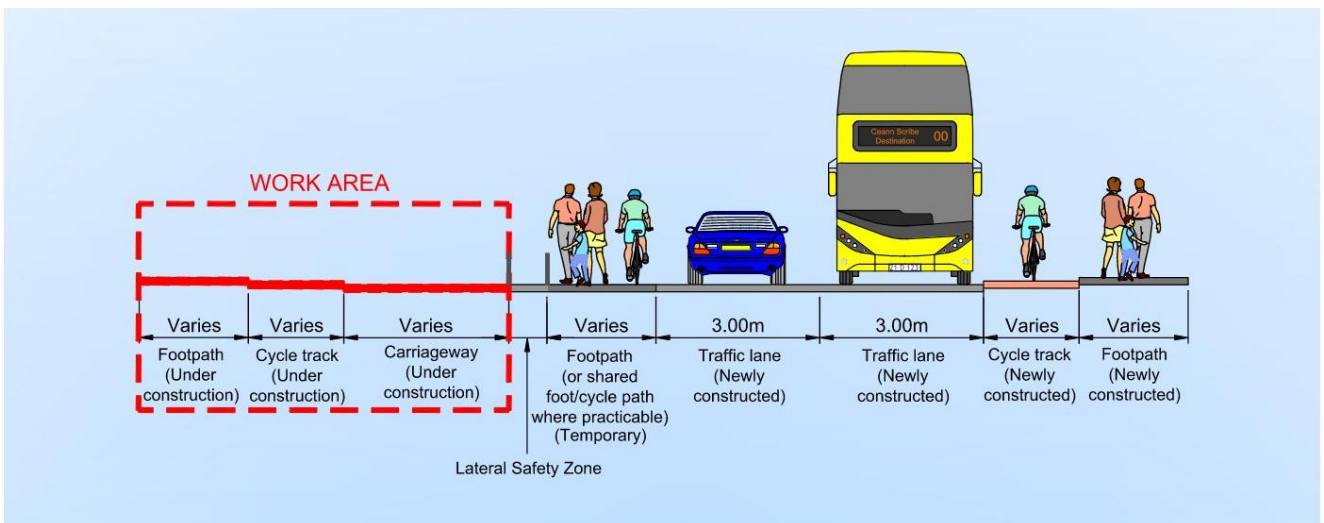


Image 5.38: Traffic Management Cross Section, Section 4b – Stage 2

5.8.3.4.3 Section 4c: Skreen Road to Railway Line

The works at Section 4c will be undertaken in three traffic management stages, under the same traffic management measures as will be undertaken at Section 4b. Intermittent single lane closures will be required during Stage 1 and Stage 2. Traffic will be reduced to single lane shuttle working from Ratoath Road Junction to the railway line.

5.8.3.4.4 Section 4d: Ratoath Road Junction

The works at Section 4d will be undertaken in three traffic management stages, under the same traffic management measures as will be undertaken at Section 4b.

5.8.3.5 Section 5: Navan Road / Old Cabra Road Junction to Ellis Quay

5.8.3.5.1 Section 5a: Railway Line to Aughrim Street

The bus gate at Section 5a will be installed in advance of the works. The works at Section 5a will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, traffic reduced to single lane shuttle working, and realigned to the south, as shown in Image 5.39;
- Stage 2 – Construction works on the southern side, traffic reduced to single lane shuttle working, and realigned to the north, as shown in Image 5.40; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

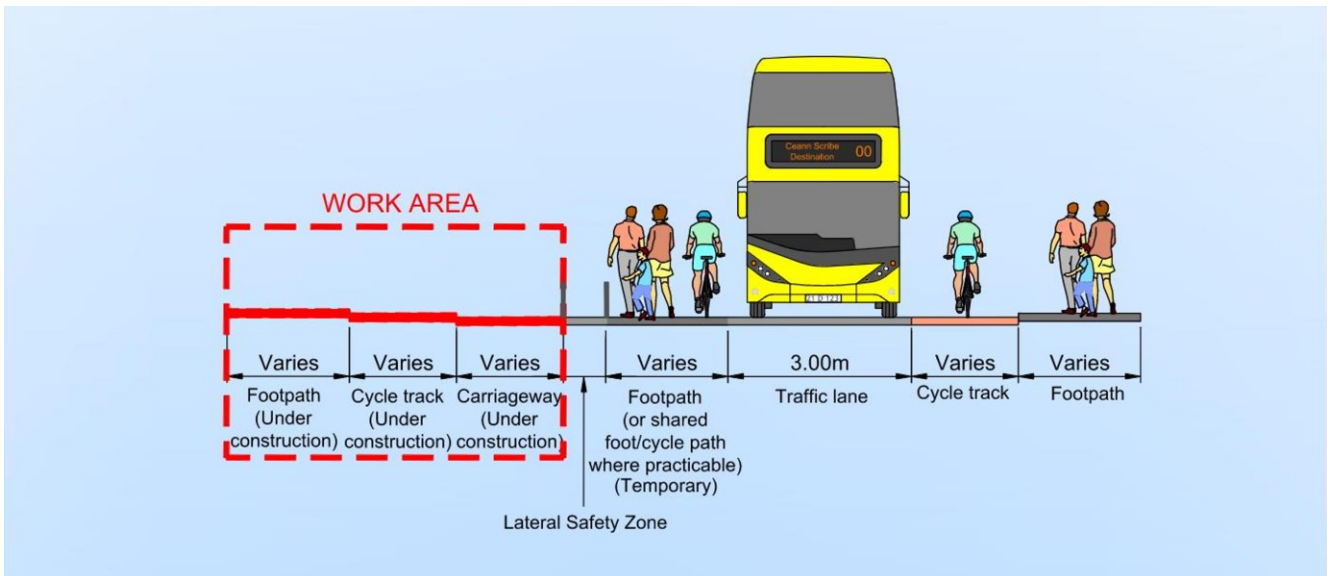


Image 5.39: Traffic Management Cross Section, Section 5a – Stage 1

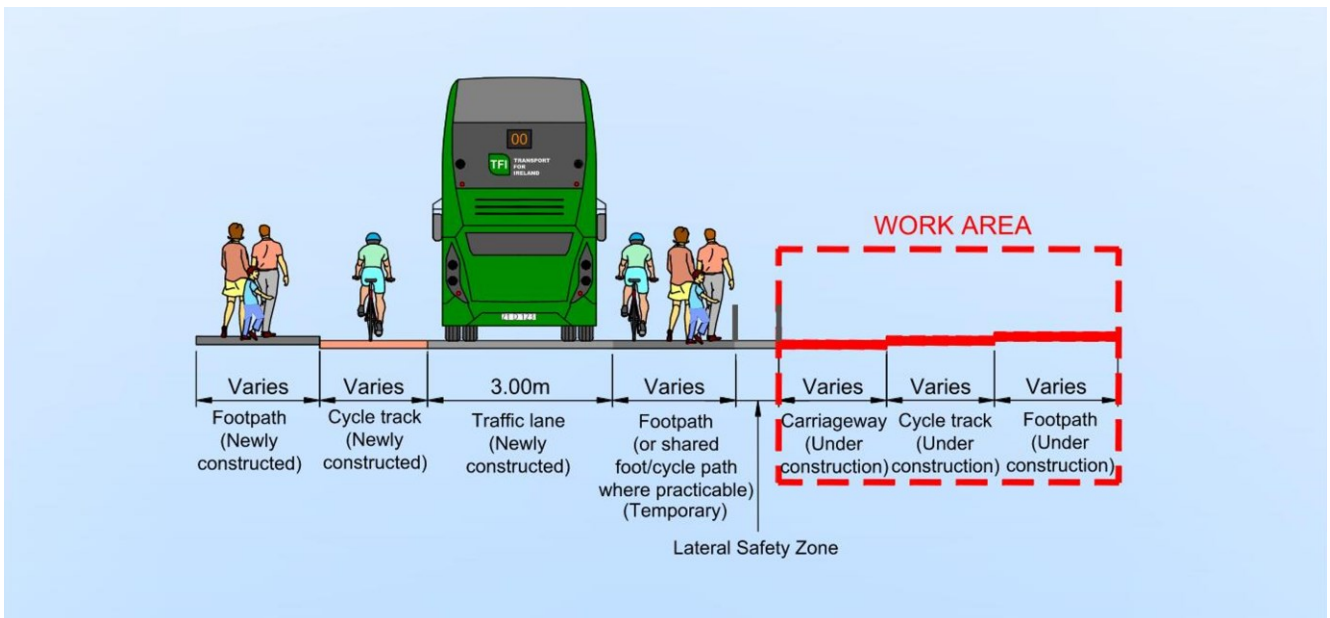


Image 5.40: Traffic Management Cross Section, Section 5a – Stage 2

5.8.3.5.2 Section 5b: Aughrim Street to Brunswick Street North

The works at Section 5b will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the eastern side, traffic reduced to a single lane in each direction and realigned to the west, as shown in Image 5.41;
- Stage 2 – Construction works on the western side, traffic reduced to single lane shuttle working, and realigned to the east, as shown in Image 5.42; and

- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

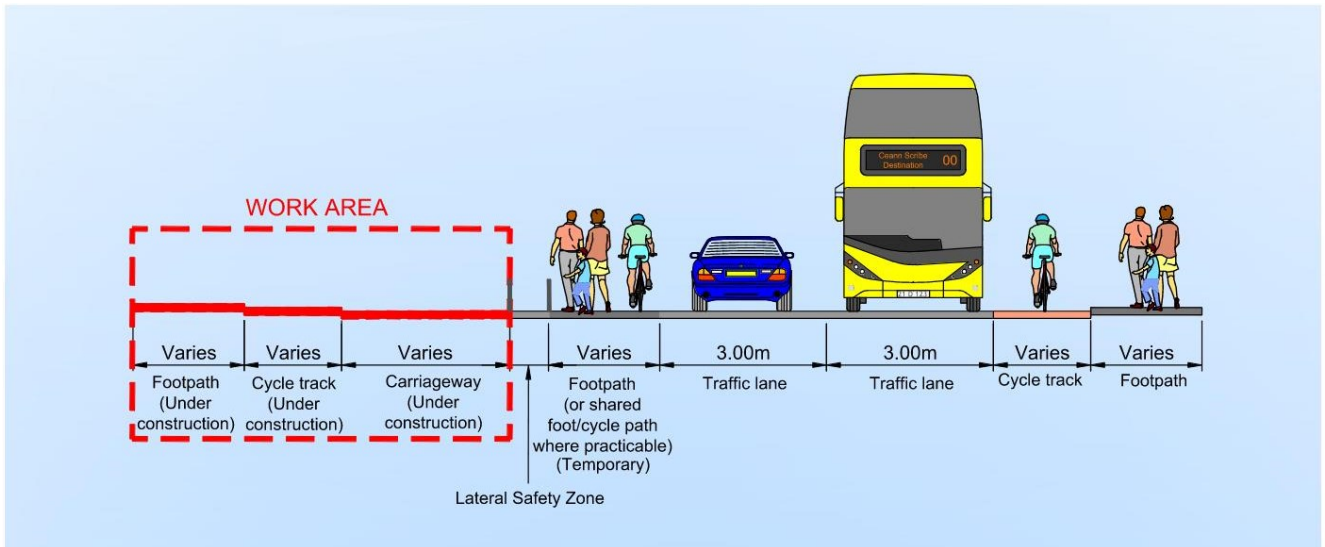


Image 5.41: Traffic Management Cross Section, Section 5b – Stage 1

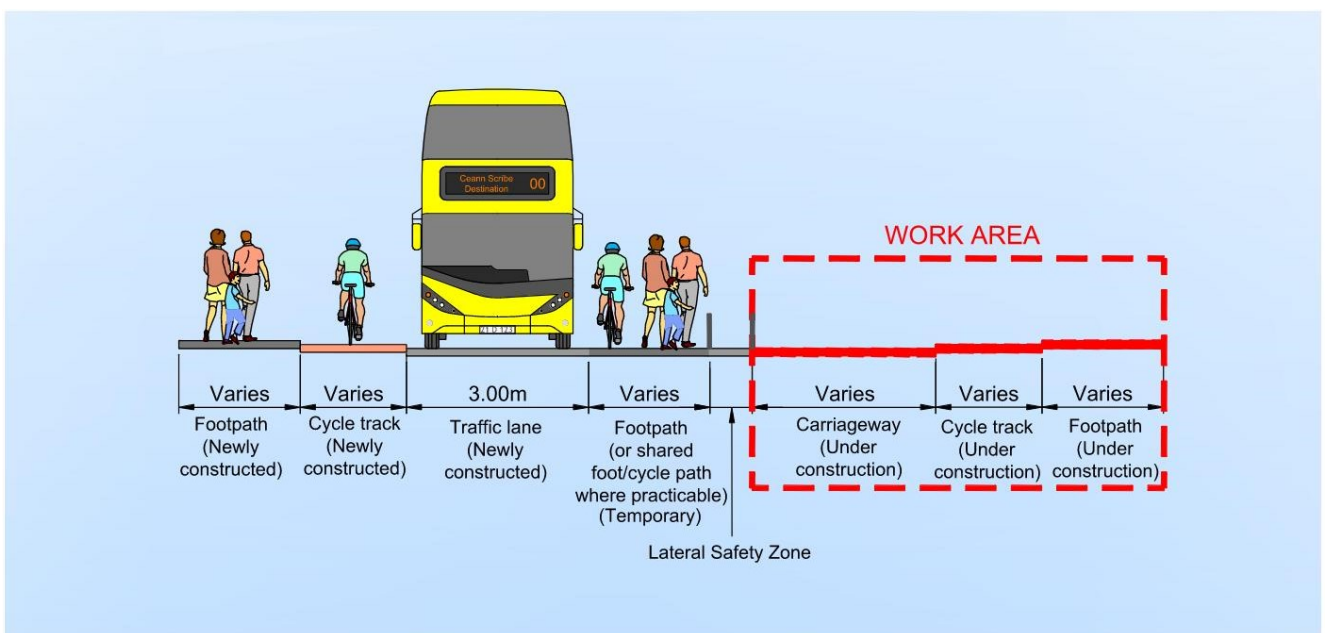


Image 5.42: Traffic Management Cross Section, Section 5b – Stage 2

5.8.3.5.3 Section 5c: Blackhall Place

The works at Section 5c will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the western side, traffic reduced to a single lane in each direction and realigned to the east, as shown in Image 5.43;
- Stage 2 – Construction works on the eastern side, traffic reduced to a single lane in each direction and realigned to the west, as shown in Image 5.44; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

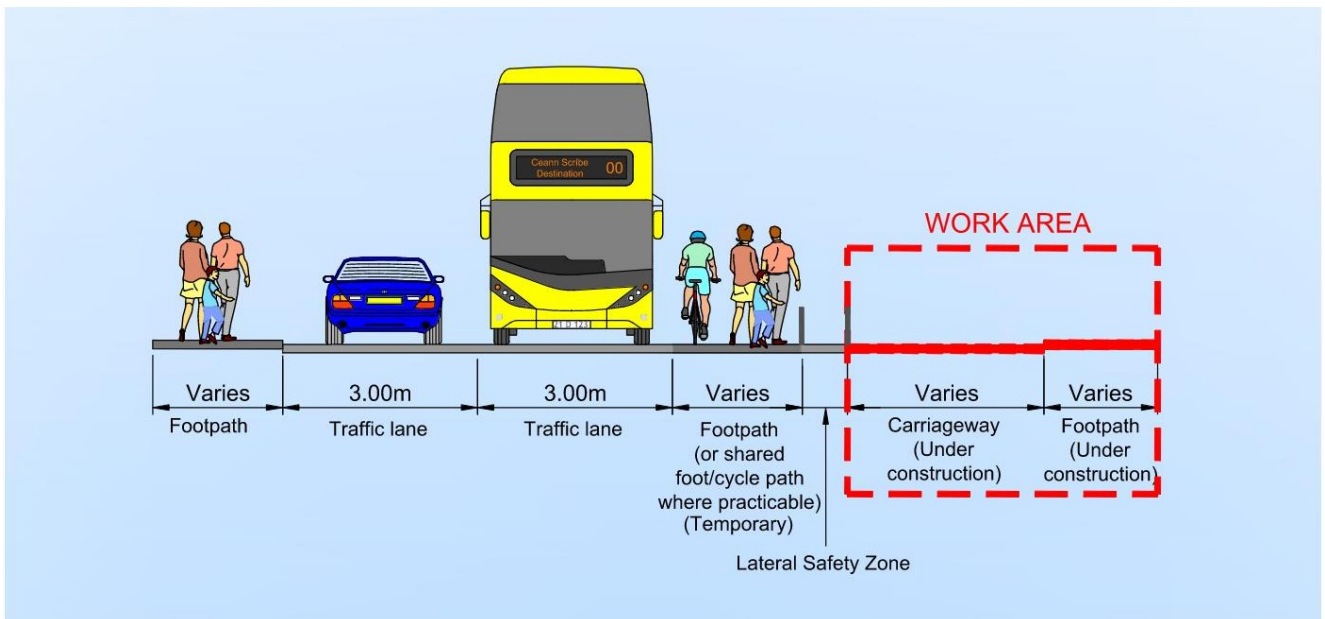


Image 5.43: Traffic Management Cross Section, Section 5c – Stage 1

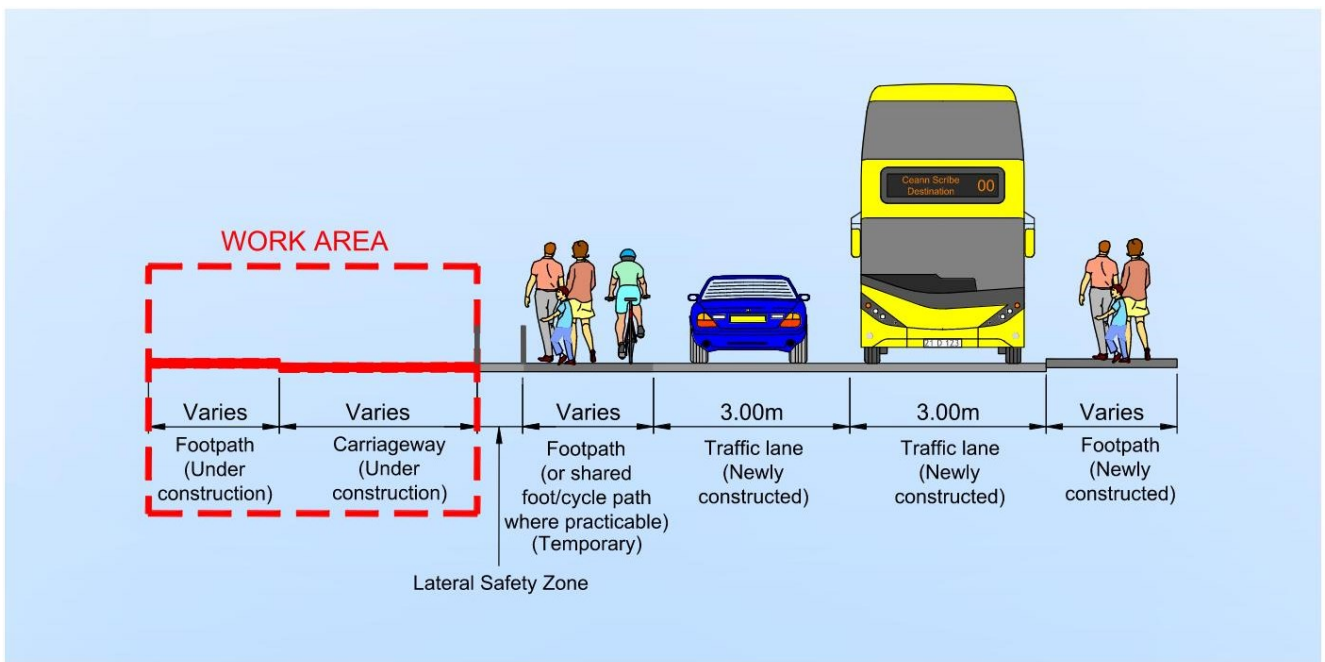


Image 5.44: Traffic Management Cross Section, Section 5c – Stage 2

5.8.3.5.4 Section 5d: Queen Street

The works at Section 5d will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the western side, one-way traffic reduced to single lane and realigned to the east, as shown in Image 5.45;
- Stage 2 – Construction works on the eastern side, one-way traffic reduced to single lane and realigned to the west, as shown in Image 5.46; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

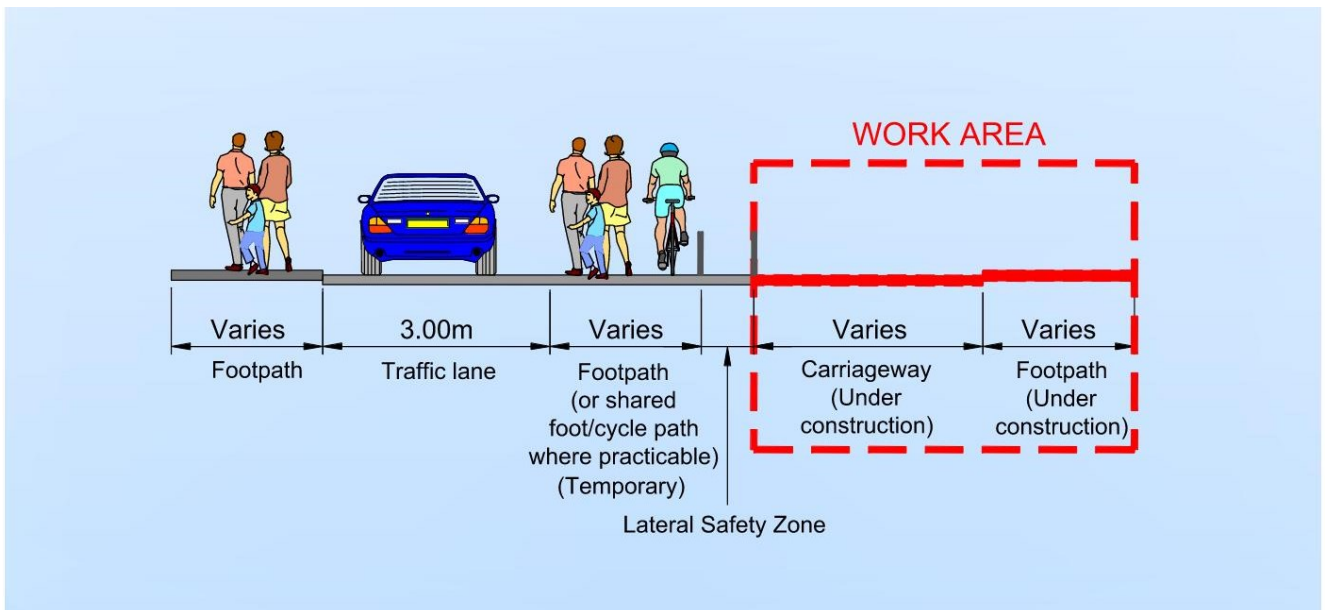


Image 5.45: Traffic Management Cross Section, Section 5d – Stage 1

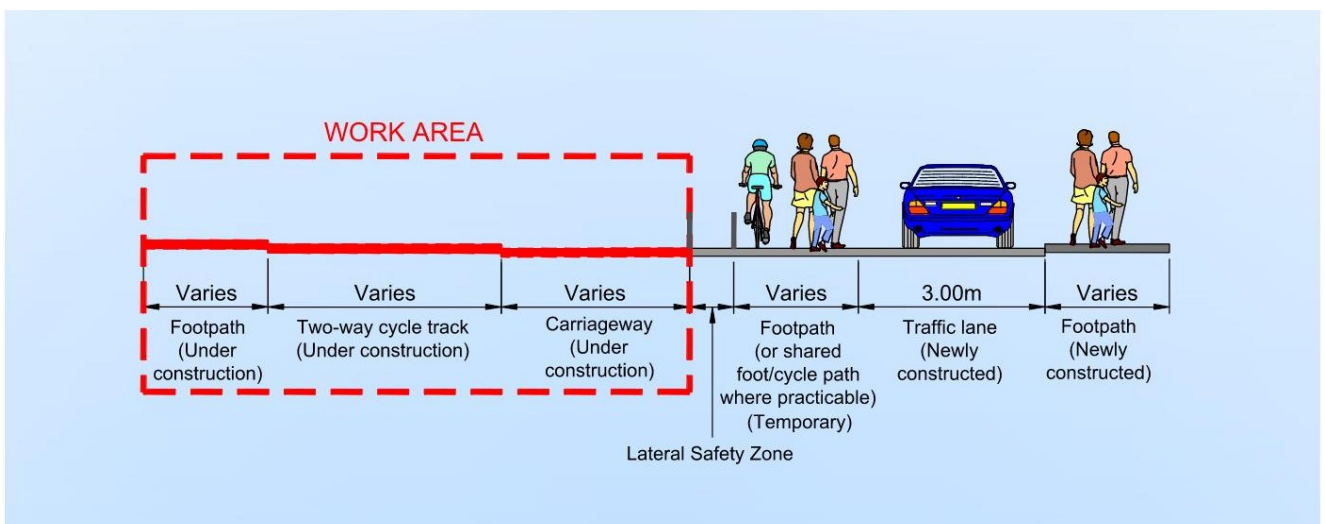


Image 5.46: Traffic Management Cross Section, Section 5d – Stage 2

5.8.3.5.5 Section 5e: Brunswick Street North

The works at Section 5e will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, traffic reduced to single lane shuttle working and realigned to the south, as shown in Image 5.47;
- Stage 2 – Construction works on the southern side, traffic reduced to single lane shuttle working and realigned to the north, as shown in Image 5.48. Pedestrians will be diverted to the newly constructed footpath during Stage 2; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

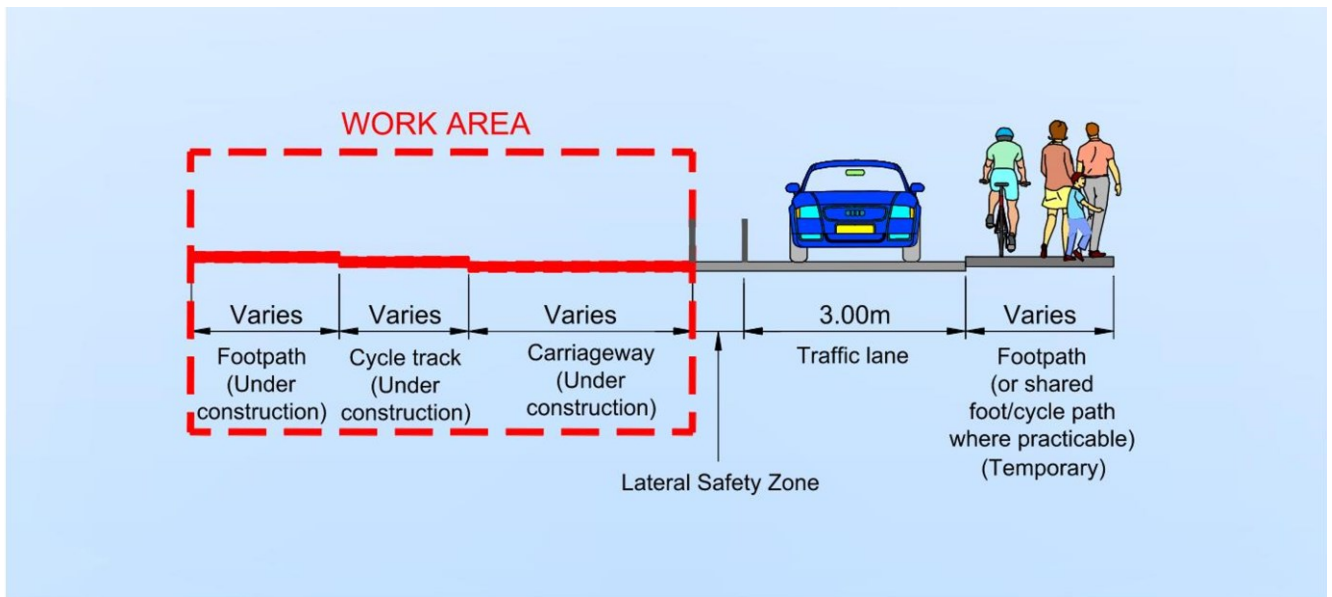


Image 5.47: Traffic Management Cross Section, Section 5e – Stage 1

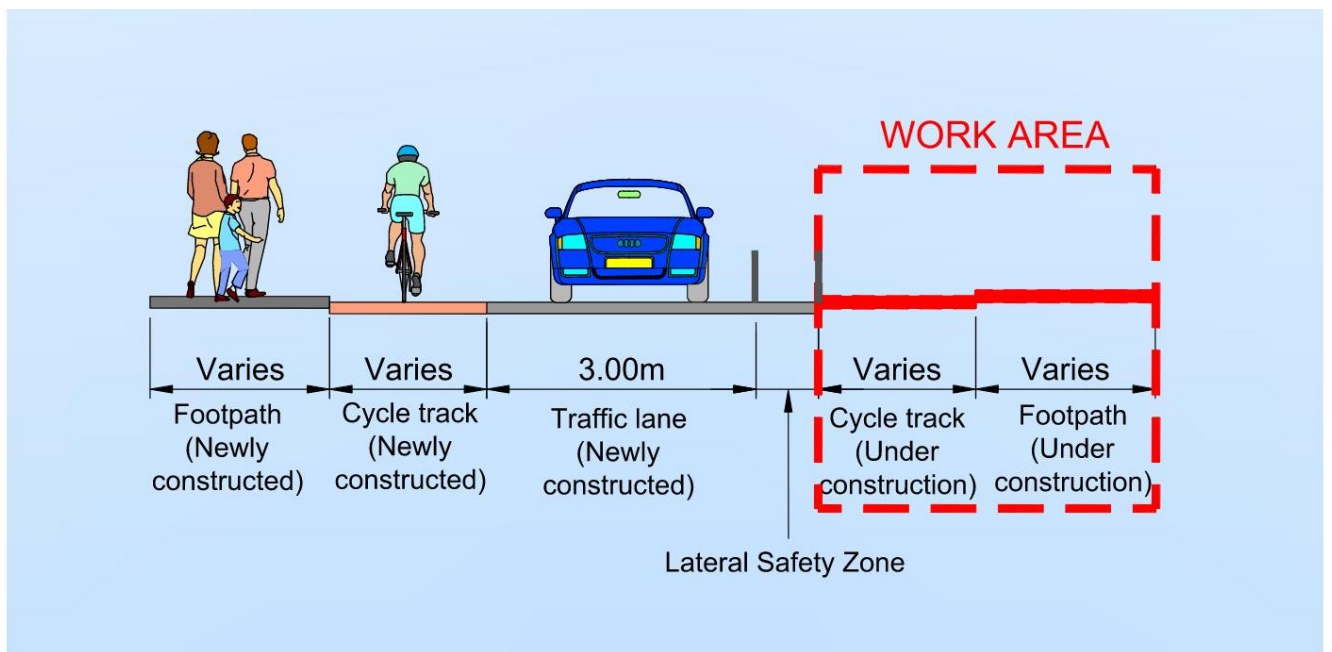


Image 5.48: Traffic Management Cross Section, Section 5e – Stage 2

5.8.3.5.6 Section 5f: King Street North

The works at Section 5f will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, one-way traffic reduced to single lane and realigned to the south, as shown in Image 5.49;
- Stage 2 – Construction works on the southern side, one-way traffic reduced to single lane and realigned to the north, as shown in Image 5.50; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

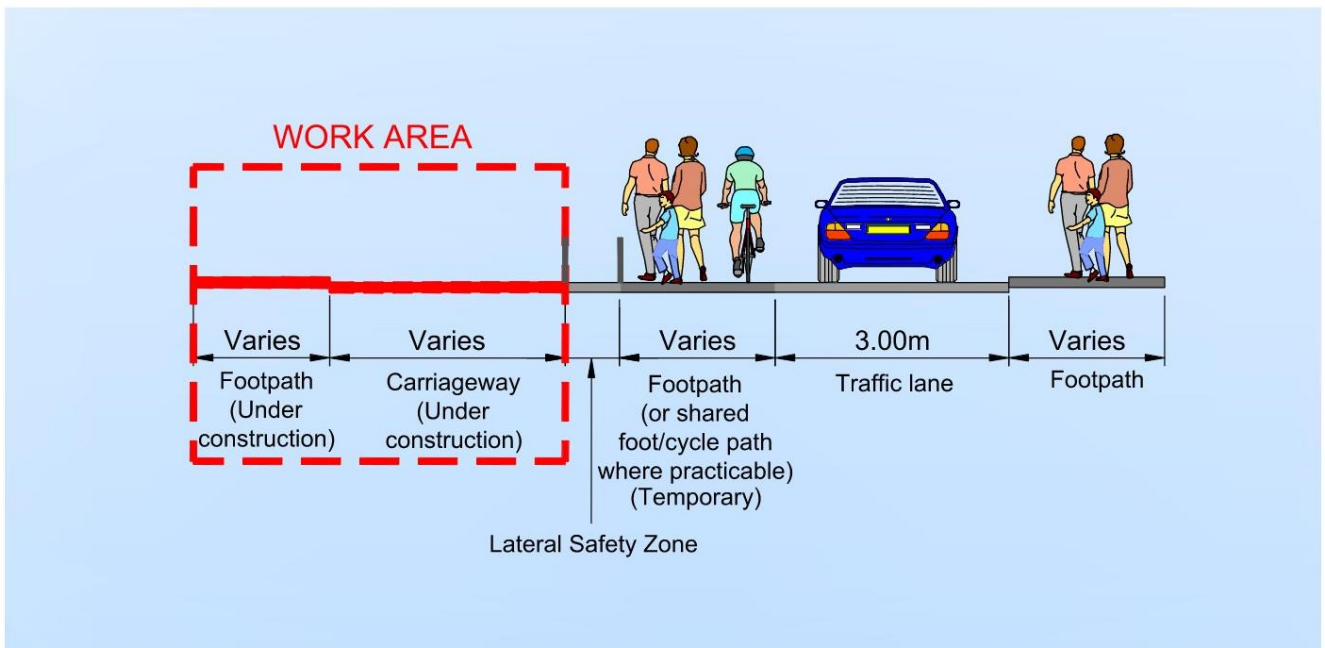


Image 5.49: Traffic Management Cross Section, Section 5f – Stage 1

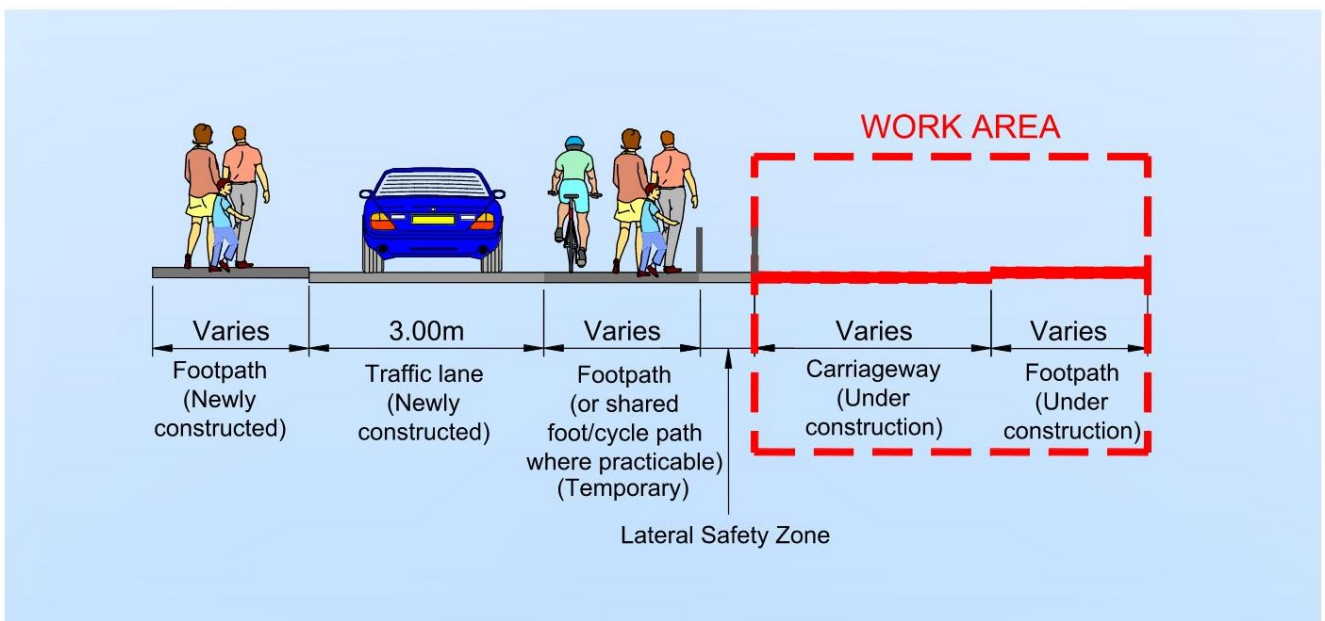


Image 5.50: Traffic Management Cross Section, Section 5f – Stage 2

5.8.3.5.7 Section 5g: Blackhall Street

The works at Section 5g will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the northern side, one-way traffic reduced to single lane and realigned to the south, as shown in Image 5.51;
- Stage 2 – Construction works on the southern side, one-way traffic reduced to single lane and realigned to the north, as shown in Image 5.52; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

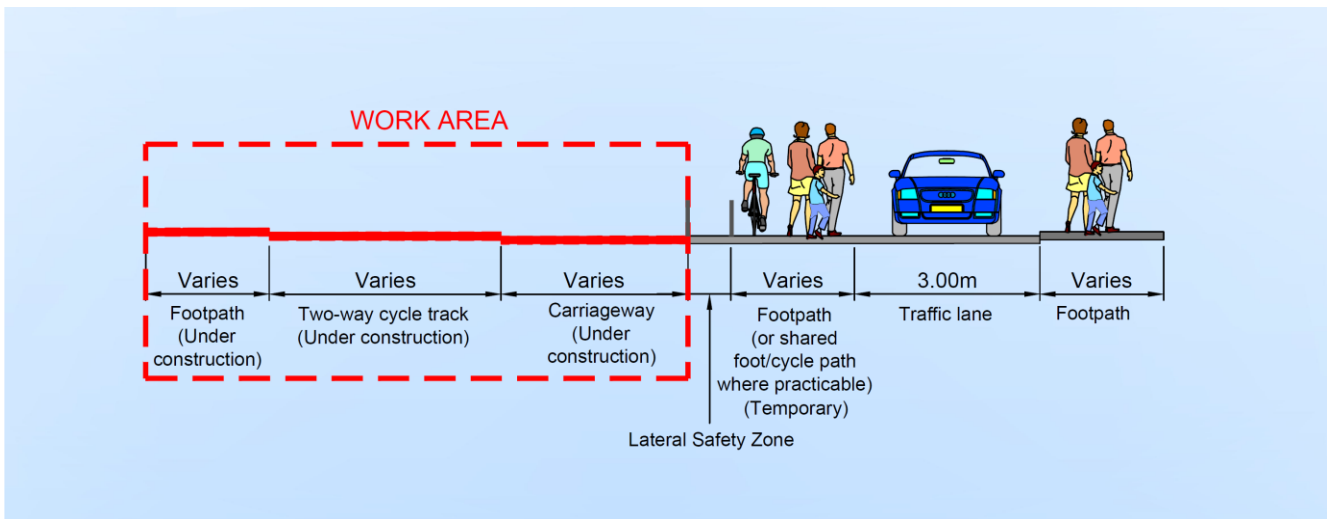


Image 5.51: Traffic Management Cross Section, Section 5g – Stage 1

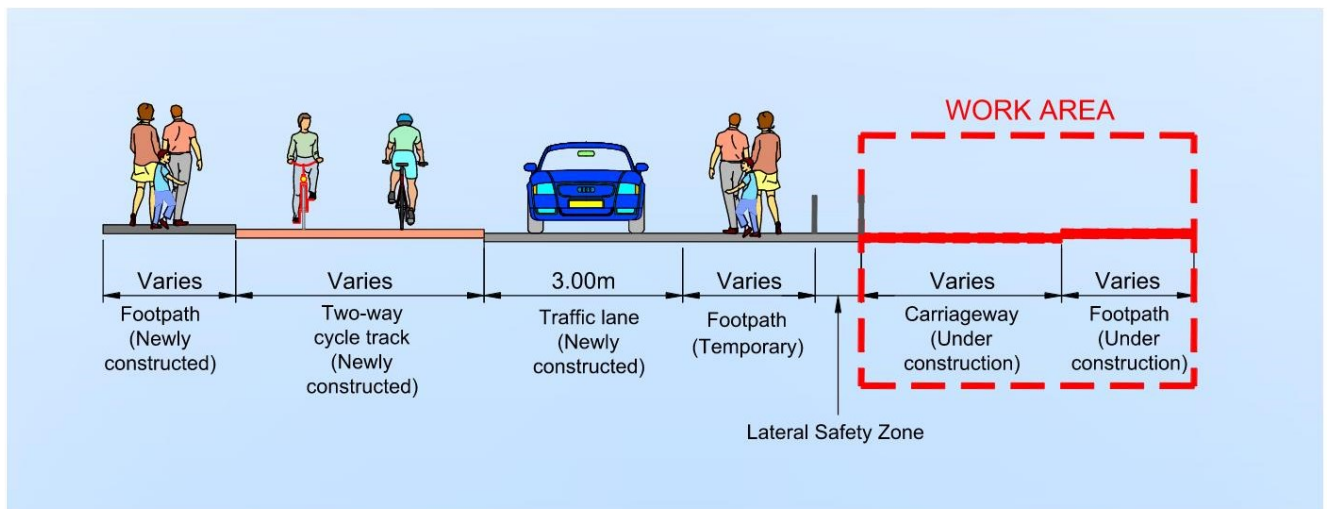


Image 5.52: Traffic Management Cross Section, Section 5g – Stage 2

5.8.3.5.8 Section 5h: George's Lane

The works at Section 5h will be undertaken in three traffic management stages:

- Stage 1 – Construction works on the western side, one-way traffic reduced to a single lane and realigned to the east, as shown in Image 5.53;
- Stage 2 – Construction works on the eastern side, one-way traffic reduced to a single lane and realigned to the west, as shown in Image 5.54; and
- Stage 3 – Finishing works undertaken out-of-hours, traffic reduced to single lane shuttle working.

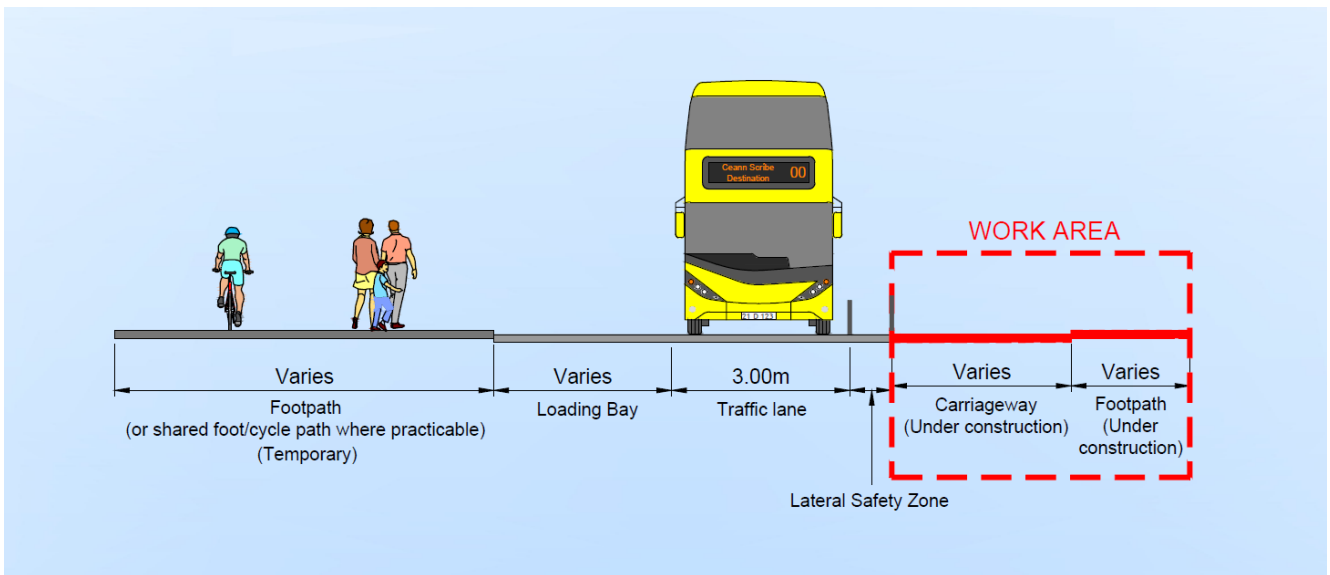


Image 5.53: Traffic Management Cross Section, Section 5h – Stage 1

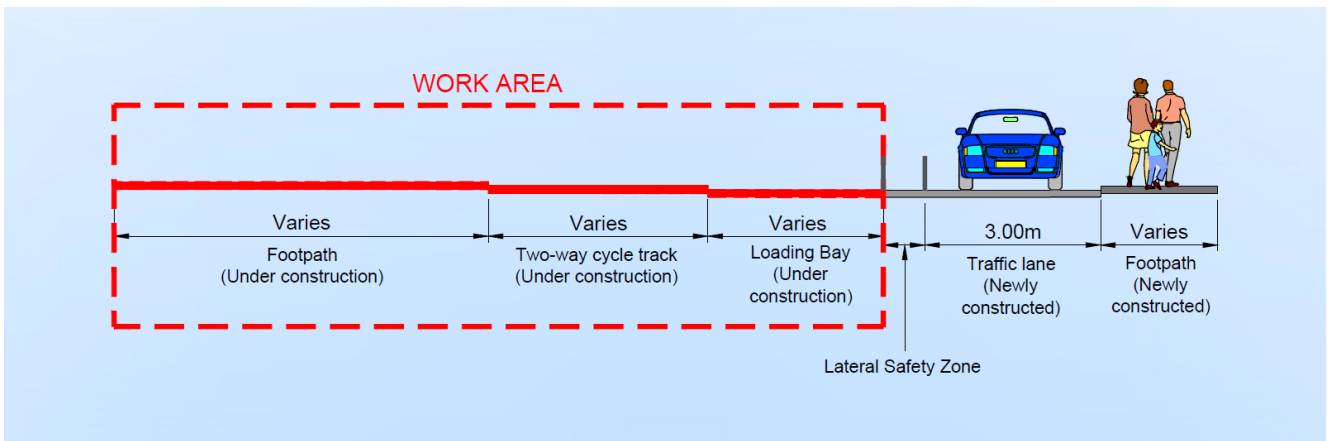


Image 5.54: Traffic Management Cross Section, Section 5h – Stage 2

5.8.3.5.9 Section 5i: Off-line Sections

The works at Section 5i will be completed under localised traffic management measures with the use of temporary traffic lights.

5.8.4 Road Closures and Diversions

Road closures and diversions will need to be carried out during the Construction Phase of the Proposed Scheme. However, these measures will be minimised, wherever possible. Where necessary, road closures and diversions will take into consideration the impact on road users, residents, businesses etc. Road closures and diversions will be carried out with regard to the Traffic Signs Manual (Department of Transport, Tourism and Sport 2019). All road closures and diversions will be determined by the NTA, in consultation with the local authority and An Garda Síochána, as necessary. Access will be maintained for emergency vehicles along the Proposed Scheme, throughout the Construction Phase.

5.9 Interface with Other Projects

The likely timelines of the Proposed Scheme construction works have considered the potential for simultaneous construction of, and cumulative impacts with other infrastructure projects and developments which are proposed along, or in the vicinity of the Proposed Scheme. The likely significant cumulative impacts caused by the Proposed Scheme in combination with other existing or planned projects were identified and assessed in Chapter 21 (Cumulative Impacts & Environmental Interactions) of this EIAR.

Interface liaison will take place on a case-by-case basis through the NTA, as will be set out in the Construction Contract, to ensure that there is coordination between projects, that construction access locations remain unobstructed by the Proposed Scheme works and that any additional construction traffic mitigation measures required to deal with cumulative impacts are managed appropriately.

5.10 Construction Environmental Management

5.10.1 Construction Environmental Management Plan

As stated in Section 5.1, a CEMP has been prepared for the Proposed Scheme and is included as Appendix A5.1 in Volume 4 of this EIAR. The CEMP will be updated by the NTA prior to finalising the Construction Contract documents for tender, so as to include any additional measures required pursuant to conditions attached to An Bord Pleanála's decision. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment, must detail in the CEMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR. The CEMP has regard to the guidance contained in the Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (TII 2007), and the handbook published by CIRIA in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015).

Details of mitigation measures proposed to address potential impacts arising from construction activities are described in Chapter 6 to Chapter 21, as appropriate and are summarised in Chapter 22 (Summary of Mitigation & Monitoring Measures) of this EIAR.

A number of sub-plans have also been prepared as part of the CEMP and these are summarised in the following sections. For the avoidance of doubt, all of the measures set out in the CEMP and the sub-plans appended to this EIAR will be implemented in full by the appointed contractor to the satisfaction of the NTA.

5.10.1.1 Construction Traffic Management Plan

The CTMP has been prepared to demonstrate the manner in which the interface between the public and construction-related traffic will be managed and how vehicular movement will be controlled. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment, must detail in the CTMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála, should they grant approval. Further details on the assessment of construction traffic, and traffic related mitigation measures are provided in Chapter 6 (Traffic & Transport) of this EIAR.

5.10.1.2 Invasive Species Management Plan

The Invasive Species Management Plan (ISMP) has been prepared which provides the strategy to be adopted in order to manage and prevent the spread of the non-native invasive plant species. Non-native invasive plant species were identified in close proximity to the Proposed Scheme during ecological surveys. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment, must detail in the ISMP how it is intended to complete the works in accordance with the Employer's Requirements, and will be subject to the NTA's approval. Further details on the assessment of non-native invasive species, and associated mitigation measures are provided in Chapter 12 (Biodiversity) of this EIAR.

5.10.1.3 Surface Water Management Plan

The SWMP has been prepared which details control and management measures for avoiding, preventing, or reducing any significant adverse impacts on the surface water environment during the Construction Phase of the Proposed Scheme. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment, must detail in the SWMP how it is intended to effectively implement all the applicable measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála to any grant of approval.

5.10.1.4 Construction and Demolition Resource and Waste Management Plan

The Construction and Demolition Resource and Waste Management Plan (CDRWMP) has been prepared which provides the strategy that will be adopted in order to ensure that optimum levels of reduction, re-use and recycling are achieved. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment, must detail in the CDRWMP the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála to any grant of approval. Further details on waste management are provided in Chapter 18 (Waste & Resources) of this EIAR.

5.10.1.5 Environmental Incident Response Plan

The Environmental Incident Response Plan (EIRP) has been prepared to ensure that in the unlikely event of an incident (environmental, or non-environmental), response efforts are prompt, efficient, and suitable for the particular circumstances. The EIRP details the procedures to be undertaken in the event of a significant release of sediment into a watercourse, or a significant spillage of chemical, fuel or other hazardous substances (e.g., concrete), non-compliance incident with any permit or license, or other such risks that could lead to a pollution incident, including flood risks. It will be a condition of the Employer's Requirements that the successful appointed contractor, immediately following appointment must detail in the EIRP, the manner in which it is intended to effectively implement all the applicable mitigation measures identified in this EIAR and any additional measures required pursuant to conditions imposed by An Bord Pleanála to any grant of approval.

5.10.2 Mitigation Measures

Mitigation and monitoring measures have been identified as environmental commitments and overarching requirements which shall avoid, reduce or offset potential impacts which could arise throughout the Construction Phase of the Proposed Scheme. These mitigation and monitoring measures which are relevant to the Construction Phase of the Proposed Scheme are detailed in Chapter 6 to Chapter 21, and are summarised in Chapter 22 (Summary of Mitigation & Monitoring Measures) and Appendix A5.1 CEMP in Volume 4 of this EIAR.

5.10.3 Working Hours

It is envisaged that generally construction working hours will be between 07:00hrs and 23:00hrs on weekdays, and between 08:00hrs and 16:30hrs on Saturdays. Night-time and Sunday working will be required during certain periods to facilitate street works that cannot be undertaken under day-time / evening-time conditions. The planning of such works will take due consideration of sensitive receptors, in particular any nearby residential areas.

5.10.4 Personnel Numbers

Throughout the Construction Phase there will be some variation in the numbers of personnel working on site. It is anticipated there will be approximately 250 personnel directly employed across the Proposed Scheme, rising to 300 personnel at peak construction.

5.10.5 Construction Health and Safety

The requirements of Number 10 of 2005 – Safety, Health and Welfare at Work Act 2005, S.I. No. 291/2013 Safety, Health and Welfare at Work (Construction) Regulations, 2013 (hereafter referred to as the Regulations) and other relevant Irish and European Union safety legislation will be complied with at all times. As required by the

Regulations, a Health and Safety Plan will be formulated which will address health and safety issues from the design stages through to the completion of the Construction Phase. This plan will be reviewed as the Proposed Scheme progresses. The contents of the Health and Safety Plan will follow the requirements of the Regulations. In accordance with the Regulations, a 'Project Supervisor Design Process' has been appointed and 'Project Supervisor Construction Stage' will be appointed, as appropriate.

5.11 References

British Standards Institution (2010). British Standard 3998:2010 Tree Work. Recommendations.

British Standards Institution (2012). British Standard 5837:2012 Trees in Relation to Design, Demolition, and Construction. Recommendations.

Construction Industry Research and Information Association (2015). Environmental Good Practice on Site Guide, 4th Edition.

Department of Transport, Tourism and Sport (2019). Chapter 8, Temporary Traffic Measures and Signs for Roadworks, Traffic Signs Manual.

Inland Fisheries Ireland (2016) Guidelines on Protection of Fisheries During Construction Works Adjacent to Waters.

Inland Fisheries Ireland (2020) Guidelines on Planning for Watercourses in the Urban Environment.

Transport Infrastructure Ireland (2007). Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan.

Transport Infrastructure Ireland (2017). The Management of Waste from National Road Construction Projects.

Directives and Legislation

Safety, Health and Welfare at Work (Construction) regulations 2013.

Safety, Health and Welfare at Work Act 2005, as amended.

Waste Management Act 1996, as amended.