Appendix A6.1
Sub Appendix
Appendix 2 –
Junction Design Report

Contents

1 Introduction

1.1 Introduction

This report has been prepared to document the evolution of the design of key junctions along the Ballymun/Finglas to City Centre Core Bus Corridor (CBC) Scheme (hereafter referred the Proposed Scheme) as is illustrated in Figure 1. In addition, the report presents the junction assessment results for the final scheme design which demonstrates the expected operation of the junction. Finally, a theoretical assessment has been carried out to demonstrate the theoretical capacity of the junctions for all modes. The methodology adopted is elaborated upon in the following sections.

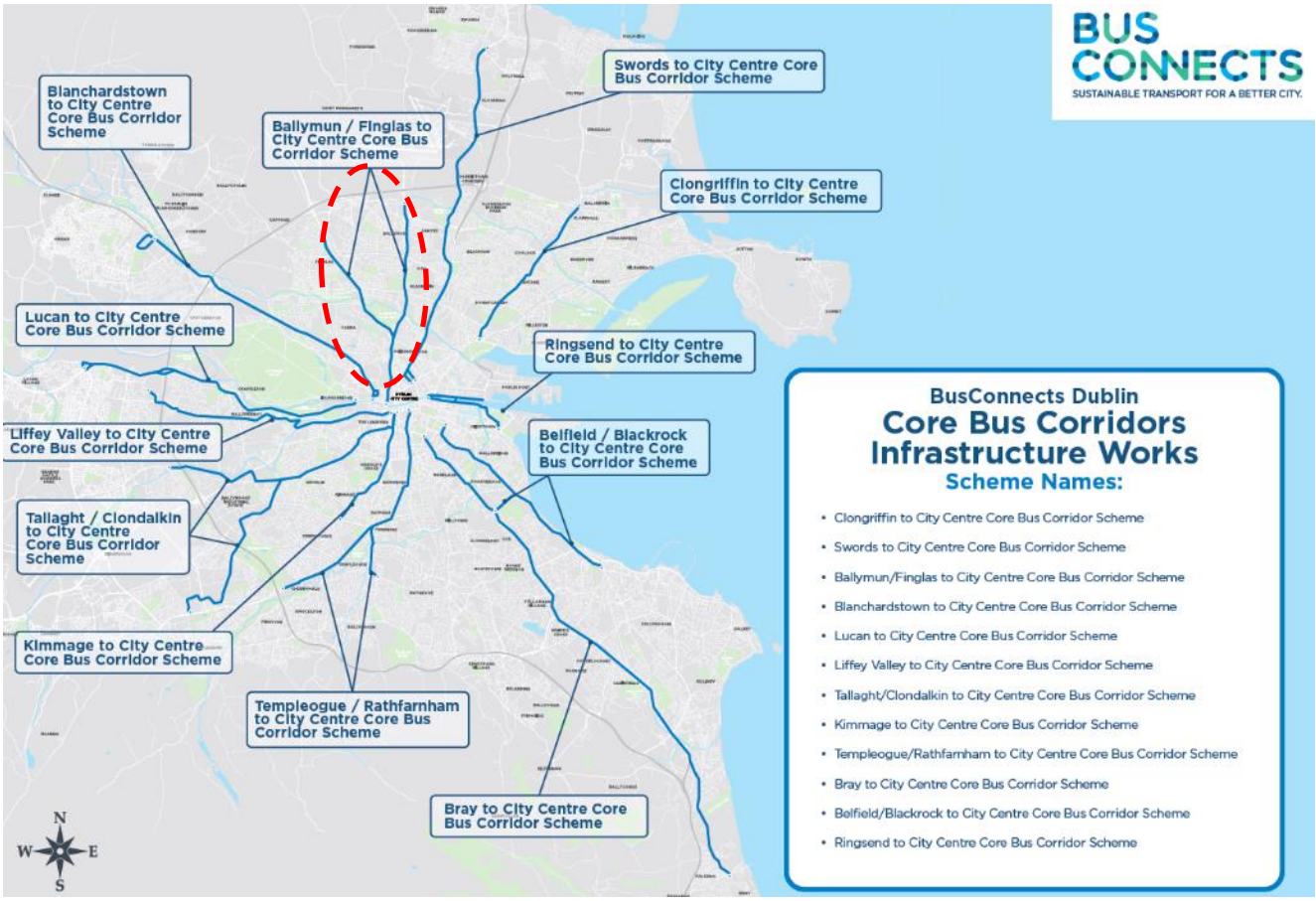


Figure 1-1: Proposed Scheme Route Overview

2 Methodology

2.1 Junction Design Evolution

The Proposed Scheme has been designed over the course of a number of years, and during this period the design principles have evolved to improve the movements of people through the junctions for all modes. The final design principles which guided the junction design are documented in the BusConnects Preliminary Design Guidance Booklet [BCODG] document. The design guidance document sets out four typical junctions arrangements that could be adopted to achieve bus priority - referred to in order of preference as Junction Types 1-4. Junction Type 1 is mainly proposed on the Ballymun & Finglas CBC scheme with some Junction Type 2 provided where left-turn demand movements are sufficiently high to need a dedicated turning lane.

2.1.1.1 Junction Type 1

Junction Type 1, an example of which is illustrated in Figure 2-1, comprises a dedicated bus lane in both inbound and outbound directions that continues up to the junction stop line. Due to space constraints, general traffic travelling both straight ahead and turning left is restricted to one lane.

In this instance, mainline cyclists proceed with the bus phase. When the bus lane gets a red phase general traffic is allowed to proceed. If the volume of left-turning vehicles is greater than 150 PCUs, then the cyclists are also held on red with buses. If the volume of left turners is less than 150 PCUs, left turners will be controlled by a flashing amber arrow and cyclists should receive an early start.

Figure 2-1 Junction Type 1 Proposed Shangan Road Junction

2.1.1.2 Junction Type 2

Junction Type 2 comprises a signalised junction in a suburban context where there is room for additional turning lanes. A dedicated bus lane in both inbound and outbound directions continues up to the junction stop line. At approximately 30m back from the stop line there is a yellow box to allow left turners to cross the bus lane to enter a dedicated left turn lane, where space permits.

In this instance, left turners are held and mainline cyclists proceed with the bus phases. Mainline cyclists can proceed also with the straight-ahead general traffic if left turners are held. If the volume of left tuners traffic is less than 150 PCUs per hour, then mainline cyclists can still proceed with left turnings from the left turning lane on a flashing amber arrow.

Generally, at these junctions along the Proposed Scheme, a Type 2 layout hasn't been applied on all arms as shown in *Figure 2-2* below. The proposed Type 2 layout has only been applied on arms where the left turn demand is high enough to warrant its inclusion. The opposing arm will instead apply a Type 1 layout.

Figure 2-2 Junction Type 2 Proposed Glenhill Road Junction

In addition to the evolution of the design principles, the design has been positively influenced through engagement with the public at various points in the process. The evolution of the design is documented in this report with a clear rationale provided for the changes at key points in the project as follows:

- Emerging Preferred Routes (EPR);
- Second Public Consultation (PC2);
- Third Public Consultation (PC3); and
- Final Proposed Scheme.

2.2 Transport Modelling

Transport modelling has been a key input to the scheme design throughout the project. Given the complexity of the scheme proposals and changes to existing traffic regimes, the design went through an iterative process which was incorporated in the multi-tiered transport modelling approach consisting of strategic, local, and microsimulation modelling. The overall modelling methodology and information flow is summarised in *Figure 2-3*.

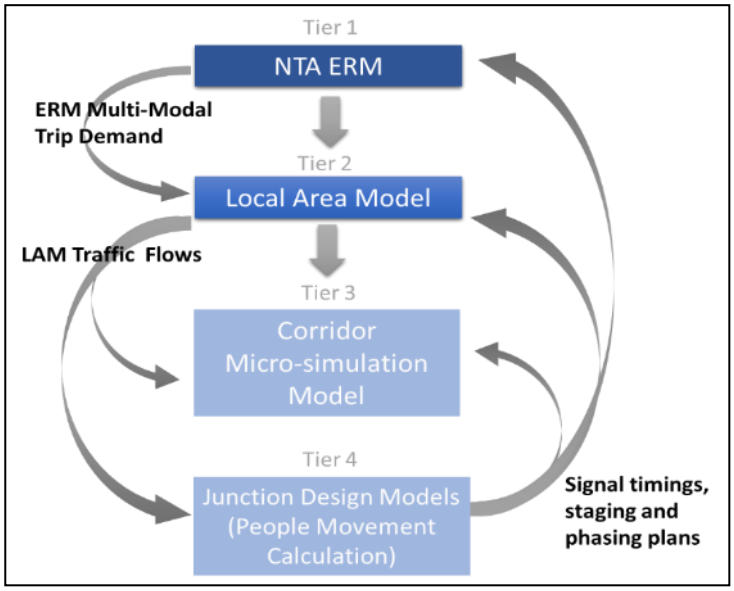


Figure 2-3: Proposed Scheme Traffic Modelling Hierarchy

As shown in *Figure 2-3*, there are four tiers in the transport modelling hierarchy that were used for the purposes of assessing the Proposed Scheme:

- East Regional Model (ERM): the primary tool that provides the strategic multi-modal demand outputs for the proposed forecast.
- Local Area Model (LAM): a more refined road network model used to provide consistent road-based outputs to inform the TIA, EIAR, microsimulation model, junction design models and traffic management plan testing.
- Microsimulation Model: represents the end-to-end corridor model Proposed Scheme to assist in the operational validation of proposed designs with the visualisation of the potential Proposed Scheme impacts and benefits.
- Local Junction Models: Individual models of each junction along the Proposed Scheme were developed to support local junction design development.

For the purposes of the Junction Design Report (JDR), results from the local junction models were extracted, which used LinSig, an industry-standard software that provides comprehensive assessment and design of a junction or a network of junctions.

The local junction models were used to inform junction design considerations and 'proof of concept' demonstration of the Proposed Scheme. The signal staging, timing and phasing from LinSig were incorporated into the three tiers of transport modelling hierarchy and it should be noted that this was an iterative approach throughout the design process.

This report presents the results of the local junction modelling which was the primary tool used by the design team to design and refine junction layouts. The 2028 scenario modelling results are presented in this report which represent an assessment of the junction designs for the opening year.

Figure 2-4 presents an example of the local junction modelling results from LinSig presented in this report. A description of the images follows.

A shows the junction layout in LinSig and the results per lane, which are the following:

- Average Delay per PCU (sec) – this is the number located at the back of the lane in Figure 2-4 and is the average delay for each PCU per lane;

- Degree of Saturation (%) – this is the number located in the middle of the lane in Figure 2-4 and is the ratio of Flow to Capacity per lane. The theoretical capacity of a junction is 90% and anything less than this assumes that the junction is within capacity; and
- Mean Max Queue (PCU) – this is the number located at the front of the lane in Figure 2-4 and is maximum queue (per lane) within a typical cycle.

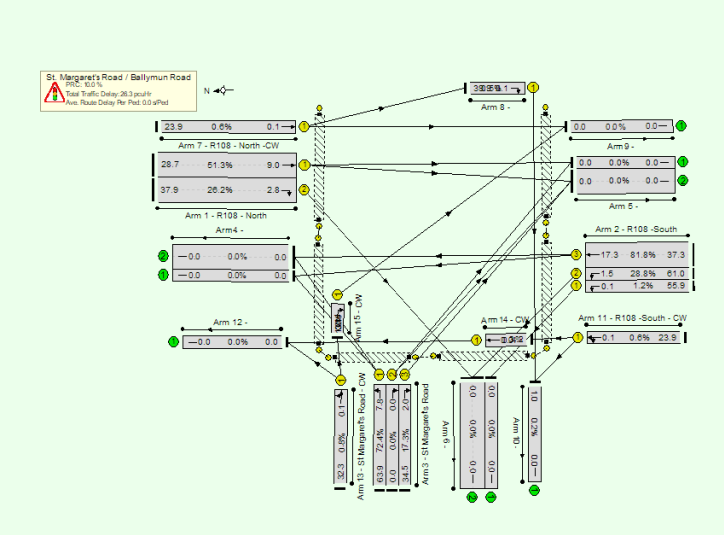
B is the Timing Dial that shows an overview of signal times for all Stage Streams.

C is the Stage Diagram that shows the staging, phasing and timings of the junction.

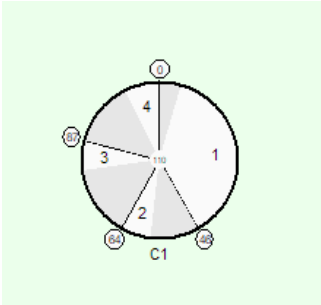
D shows the following Network Summary Results:

- Cycle (seconds) – Cycle time in seconds;
- PRC (%) – Practical Reserve Capacity, which is the available spare capacity at a junction (i.e. negative PRC = over-capacity; positive PRC = spare capacity);
- Delay (PCUhr) – the total aggregate delay on all lanes controlled by each Stage Stream; and
- Bus delay (PCUhr) – the average bus delay per direction on the Proposed Scheme per junction.

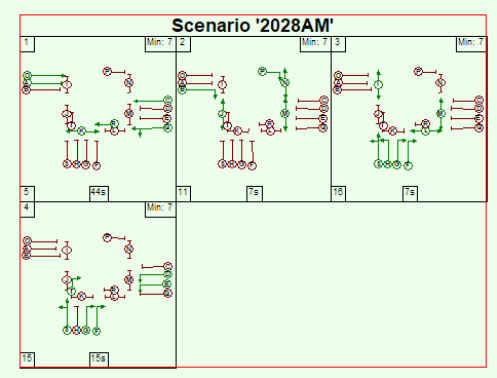
A



B



C



D

Cycle =120 secs
PRC = 1.6%
Delay = 38.27pcuHr

Bus Delay
Inbound = N/A
Outbound = 51s

Figure 2-4 Example image of People Movement at Signals Calculator results

It should be noted that modelling bus priority signals is not possible in LinSig due to its dynamic nature. However, this was modelled in the microsimulation model and is reported in the Transport Impact Assessment Report and Transport Modelling Report.

2.3 People Movement at Signals Calculator

The prioritisation of people movement and maximising the throughput of sustainable modes (i.e. walking, cycling and bus modes) in advance of the consideration and management of general vehicular traffic (private car) movements at junctions was the policy led approach to the junction design for the Proposed Scheme. Therefore, in order to quantify this for the purposes of supporting this policy led approach, the People Movement at Signals (PMS) Calculator was developed. The PMS Calculator was used to validate the design and the assertion that the proposal would result in greater throughput of people.

The PMS Calculator provided an initial estimate of green time allocation for all movements at a 'typical' junction on the basis that sustainable mode movements should be accommodated foremost to maximise people movement, with the remaining green time allocated to general traffic movements. The PMS calculator was also set up to cater for the four junction types as proposed in the BusConnects Preliminary Design Guidance Booklet.

The information used for the purposes of PMS Calculator include the following:

- Number of buses required to be accommodated along the corridor (informed from the network re-design proposals);
- Estimated cycling demand (from early stage runs of the ERM);
- Pedestrian crossing width and resultant crossing timing requirements; and
- Vehicular capacity at each junction (derived by LinSig).

The bus demand and vehicular capacity per hour were converted to number of persons in order to calculate the total number of people (including pedestrians and cyclists) that can be accommodated at each junction in the Proposed Scheme per hour.

It should be noted that the PMS Calculator is based on theoretical capacity of the design and would generally be different from the local junction modelling results in LinSig, which is based on operational capacity or Practical Reserve Capacity (PRC) and future transport demands. Therefore the PMS Calculator results are shown in the JDR, in tandem with the LinSig results, to display both the movement of people (relative to the available capacity) and vehicles along the Proposed Scheme.

Additionally, the vehicular capacity per arm for each junction (as marked in the image below) is the capacity calculated in LinSig, which factors in parameters such as geometry and red time. Therefore, the vehicular capacity is dependent on each junction design. These vehicular capacities were directly extracted from LinSig for each traffic lane of all junctions and applied in the PMS Calculator.

The vehicular capacities were then converted to number of people using an assumed occupancy factor of 1.2 per vehicle.

Therefore, the percentage displayed in the Junction Design Report for General Traffic is the volume/capacity of people per junction. It should be noted that the capacity used for general traffic is based on the total volume and capacity for the junction overall (i.e. total of all arms) and therefore does not directly reflect the PRC results in LinSig, which reflects the maximum degree of saturation on the worst lane.

Below is an example image of PMS Calculator results, which shows the capacity used by mode (**blue**), as well as the combined capacity used for all modes (**black**).

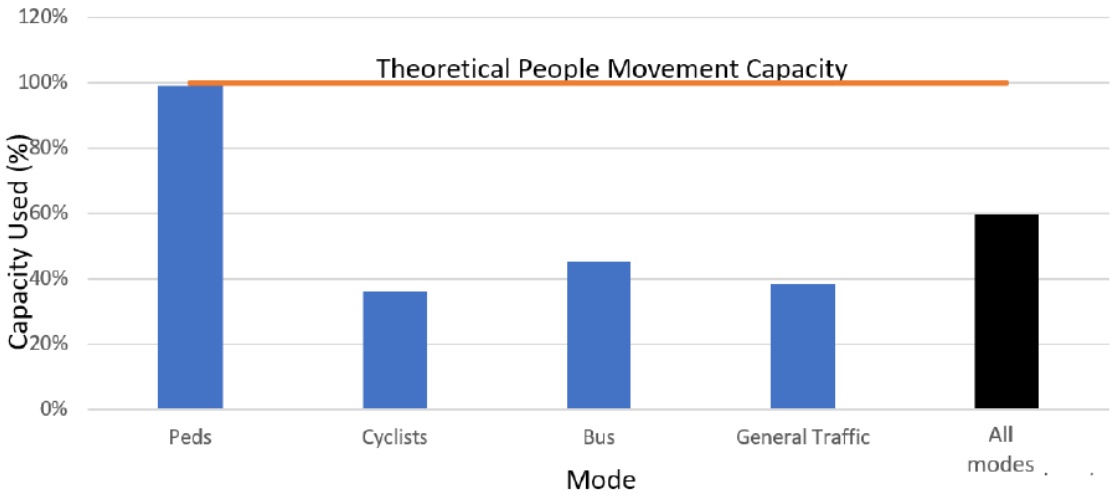


Figure 2-5 Example image of People Movement at Signals Calculator results

Each junction has a certain theoretical capacity for each mode based on green time and has been examined as to how this green time can cater for the anticipated demand through the junction. In the scenario illustrated in Figure 2-5, due to high pedestrian volumes the junction has reached its theoretical capacity for pedestrians, as no additional green time can be applied to pedestrian phases. However, it is also the case in this example scenario that the volumes of cyclists, buses, and general traffic are below the theoretical capacity. As such, if there were an increased demand for any or all of these modes the junction could continue to cater for such a demand (up to the theoretical capacity for the relevant mode and/or the overall theoretical capacity for all modes).

3 Junctions Assessed

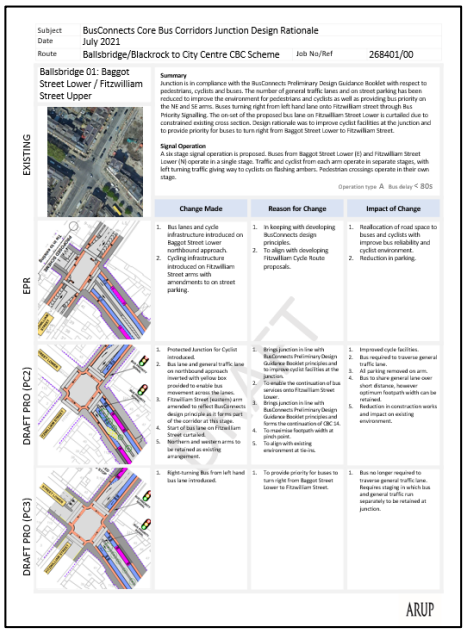
A total number of 28 junctions in the Proposed Scheme are presented in this report, which are as follows:

- St. Margaret's
- Northwood
- Santry Cross
- Shangan Road
- Gateway Crescent
- Collins Avenue
- St. Pappin's Road
- St. Canice's Road
- Griffith Avenue Gyratory
- Botanic Avenue / St. Mobhi Road
- Botanic Road / St Mobhi Road
- Harts Corner Gyratory
- Whitworth Road / Prospect Road
- Connaught Street / Phisborough Road
- Doyle's Corner
- Western Way / Broadstone
- Brunswick Street / Church Street Upper
- North King Street / Church Street
- Chancery Street / Church Street
- Wellmount Road / Finglas Road / Finglas Village
- Finglas Place / Finglas Road
- Glenhill Road / Finglas Road / Clearwater Shopping Centre
- The Griffith/Finglas Road
- Tolka Valley Road / Finglas Road
- Old Finglas Road / Finglas Road
- Ballyboggan Road / Finglas Road
- Slaney Road / Finglas Road
- Claremount Court

The junctions design and modelling commentary and results are presented in similar order as above in the next section.

4 Junction Design and Modelling Results

Contents


Subject BusConnects Core Bus Corridors Junction Design Rationale
Date July 2021
Route Ballsbridge/Blackrock to City Centre CBC Scheme Job No/Ref 268401/00

Ballsbridge 01: Baggot Street Lower / Fitzwilliam Street Upper

EXISTING

EPR

DRAFT PRO (PC2)

DRAFT PRO (PC3)

Summary

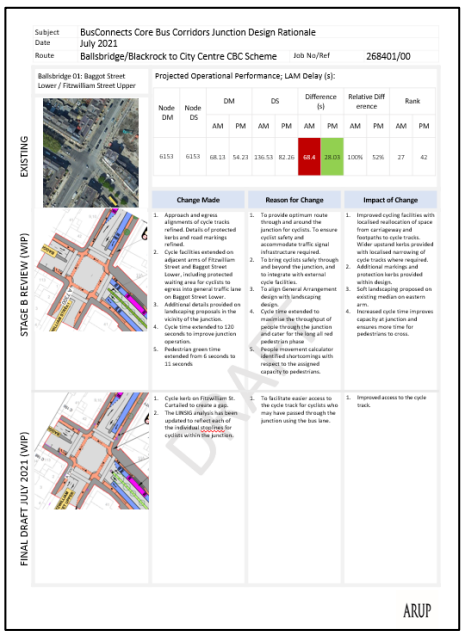
Signal Operation

Change Made | Reason for Change | Impact of Change

ARUP

Description of Options

- Summary
- EPR
- Draft PRO PC2
- Draft PRO PC3


Subject BusConnects Core Bus Corridors Junction Design Rationale
Date July 2021
Route Ballsbridge/Blackrock to City Centre CBC Scheme Job No/Ref 268401/00

Ballsbridge 01: Baggot Street Lower / Fitzwilliam Street Upper

Projected Operational Performance; LAM Delay (s):

EXISTING

STAGE B REVIEW (WIP)

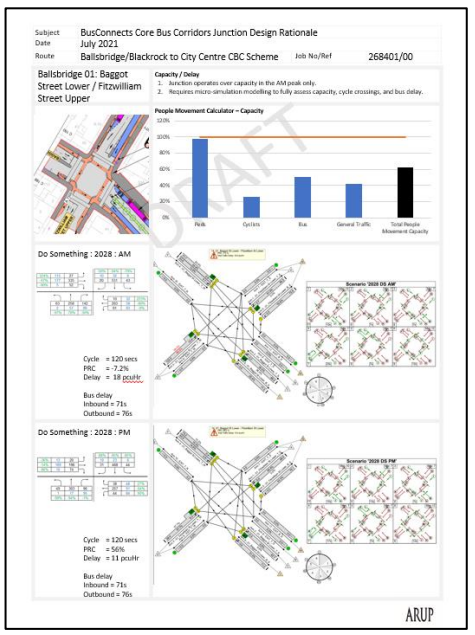
FINAL DRAFT JULY 2021 (WIP)

Change Made | Reason for Change | Impact of Change

ARUP

Description of Options cond.

- Interim Design Development (where relevant)
- Stage B Review
- Final Draft (Work In Progress)


Subject BusConnects Core Bus Corridors Junction Design Rationale
Date July 2021
Route Ballsbridge/Blackrock to City Centre CBC Scheme Job No/Ref 268401/00

Ballsbridge 01: Baggot Street Lower / Fitzwilliam Street Upper

Capacity / Delay

People Movement Calculator – Capacity

Do Something : 2028 : AM

Do Something : 2028 : PM

ARUP

LinSig Outputs and People Movement Calculator

- People Movement Calculator
- Flow Diagrams
- LinSig Results

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St. Margaret's Road/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
The number of general traffic lanes was increased to the west of the junction to provide priority for buses.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A four stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING	N/A			
DRAFT PRO (PC2)		1. Outbound Bus lane introduced on Ballymun Rd South 2. Inbound Bus Lane added to Ballymun Road South 3. Inbound Bus lane on St. Margaret's Road 4. Segregated cycle infrastructure	1. To improve bus priority. 2. To improve bus priority. 3. To improve bus priority. 4. To provide continuous cycle infrastructure along the corridor.	1. Road cross section increased and pedestrian refuge island reduced. 2. Road cross section increased and Improved outbound bus provision. 3. Improved cycle facilities through the junction
DRAFT PRO (PC3)		1. New pedestrian crossing across St Margaret's Road 2. Realignment of cycle and pedestrian infrastructure on south western corner	1. To improve pedestrian crossing facilities. 2. To reduce the extent of additional road cross section requirements	1. Existing landscaped central median modified to provide hardstanding area. 2. Substandard pedestrian crossing refuge

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

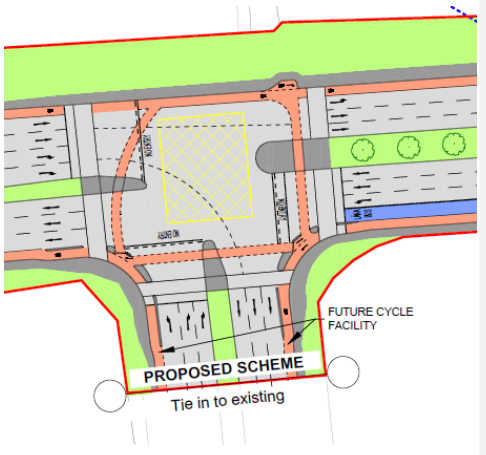
St. Margaret's Road/Ballymun Road

EXISTING

STAGE B REVIEW

Change Made	Reason for Change	Impact of Change
1. Left Slip lanes and associated islands removed 2. Inbound bus lane removed from St Margaret's Road 3. Outbound bus lane removed on St Margaret's Road 4. Reconfiguration of cycle lanes and right turn stacking facilities	1. In keeping with DMURS principles 2. No upstream bus lane to tie into and segregated downstream bus lane 3. No further downstream bus lane to tie into 4. To improve turning potential and safety of cyclists	1. Reduced pedestrian crossing stages and removal of substandard pedestrian refuge islands 2. Improved inbound turning capacity 3. Allows for priority for any future northbound bus service 4. Reduced carriageway footprint and improved cycle facilities

FINAL DRAFT (WIP)

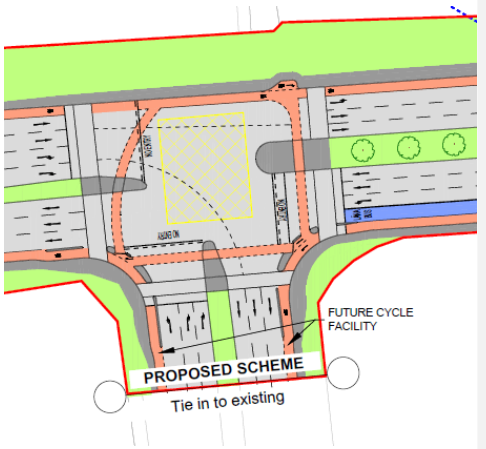


1. Inbound bus lane removed on Ballymun Road South and left turn lane reinstated. 2. Lane destination markings added.	1. No southbound bus services dependent on priority infrastructure 2. On foot of Road Safety Audit recommendations	1. Improved general traffic capacity downstream of junction due to high left turn demand. 2. Improved traffic safety and behaviour through the junction

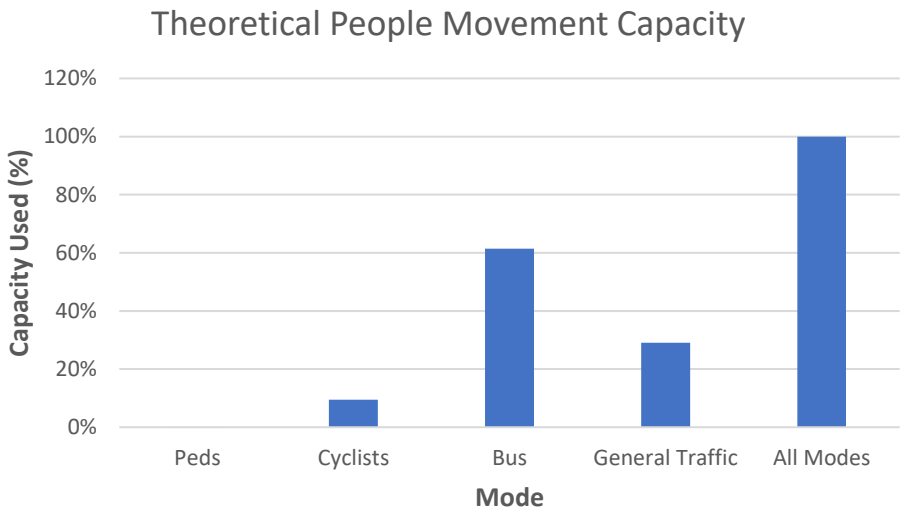
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St. Margaret's Road/Ballymun Road

Capacity / Delay



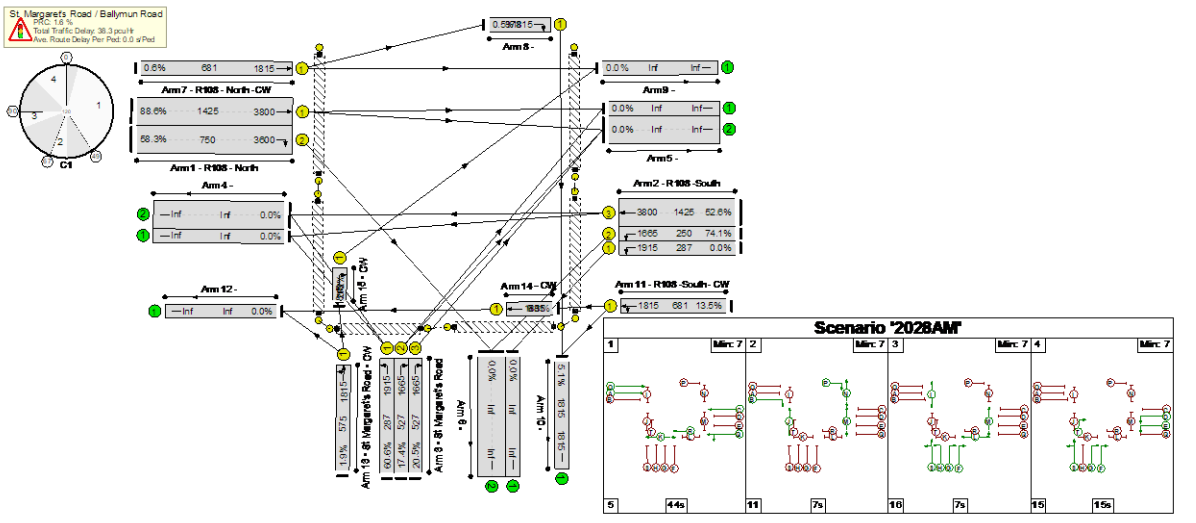
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle =120 secs
PRC = 1.6%
Delay = 38.27pcuHr

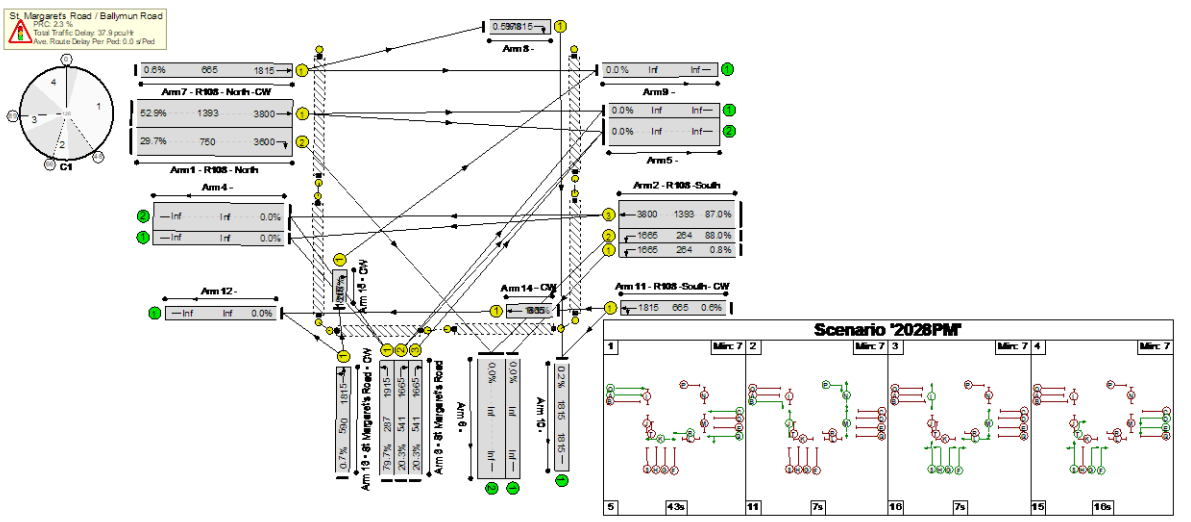
Bus Delay
Inbound = N/A
Outbound = 50s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 2.3%
Delay = 37.94pcuHr

Bus Delay
Inbound = N/A
Outbound = 50s

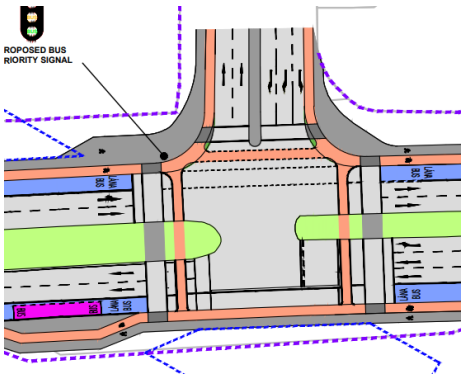
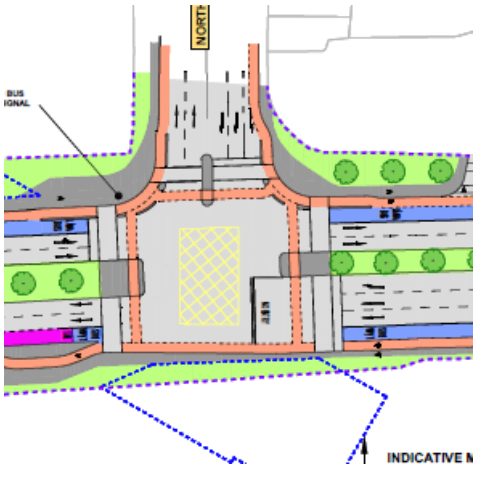


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Northwood Avenue/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated removing slip lanes and island and introducing Bus lane infrastructure to provide priority for buses.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
An eight stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING	N/A	N/A	N/A	N/A
DRAFT PRO (PC2)		1. Inbound and outbound bus lane infrastructure introduced 2. Left slip lanes and associated islands removed 3. Cycle infrastructure introduced through the junction 4. Pedestrian Crossings provided	1. To improve bus priority. 2. In keeping with DMURS principles. 3. To provide continuous cycle infrastructure along the corridor. 4. The lack of pedestrian facilities not aligned with DMURS principles	1. Improved inbound and outbound bus priority provision. 2. Reduced length of pedestrian crossings 3. Improved cycle facilities through the junction 4. Improvements to pedestrian safety and required number of crossing stages
DRAFT PRO (PC3)		1. Protected cycle infrastructure 2. Central median footprint reduced	1. Brings junction in line with BusConnects Preliminary Design Guidance Booklet principles and to improve cyclist facilities at the junction. 2. To improve turning manoeuvrability through the junction	1. Improved safety for cyclists 2. Wider turning sweep provision in particular for larger vehicles

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

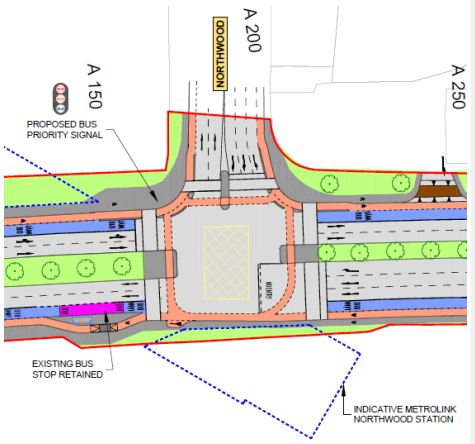
EXISTING

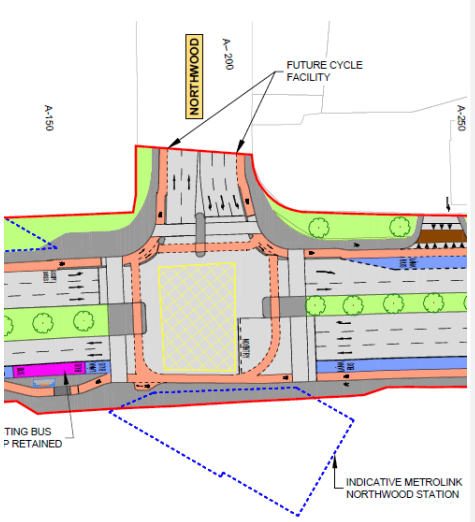
STAGE B REVIEW

FINAL DRAFT (WIP)

Northwood Avenue/Ballymun Road

Change Made	Reason for Change	Impact of Change
1. Cycle lanes realigned and right turn stacking facilities provided	1. To improve turning potential and safety of cyclists.	1. Improved cycle facilities
1. Bus lane on southbound Ballymun Rd at North of Junctions changed to shared bus lane and left turn for vehicles. 2. Inbound bus lane developed downstream of junction	1. No planned bus services to use the lane and high left turn demand requires a dedicated lane 2. Bus services to commence in Northwood and will turn unopposed.	1. Increased general traffic capacity through the junction. 2. Wider turning sweep provision in particular for larger vehicles

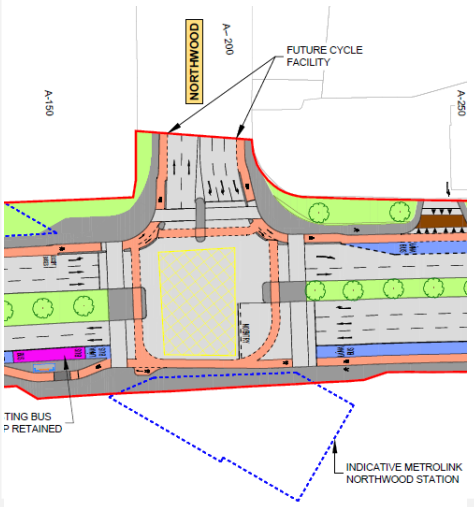




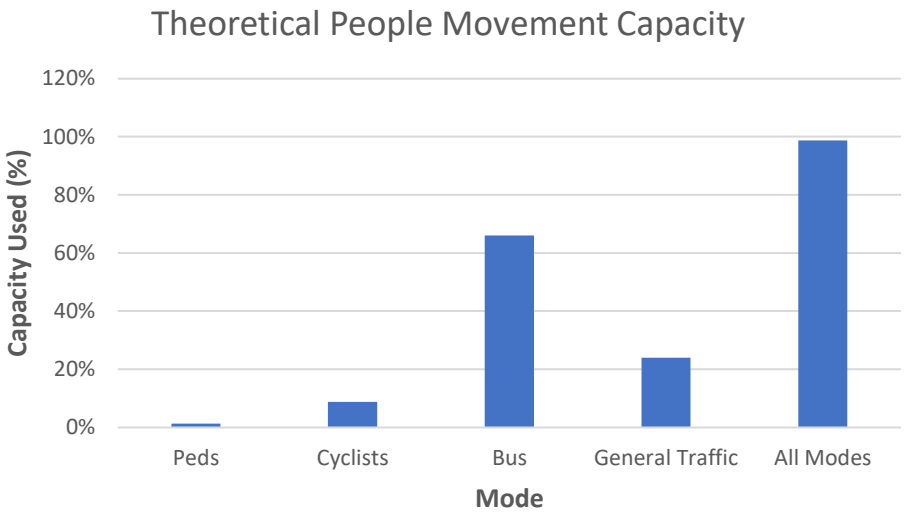
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Northwood Avenue/Ballymun Road

Capacity / Delay



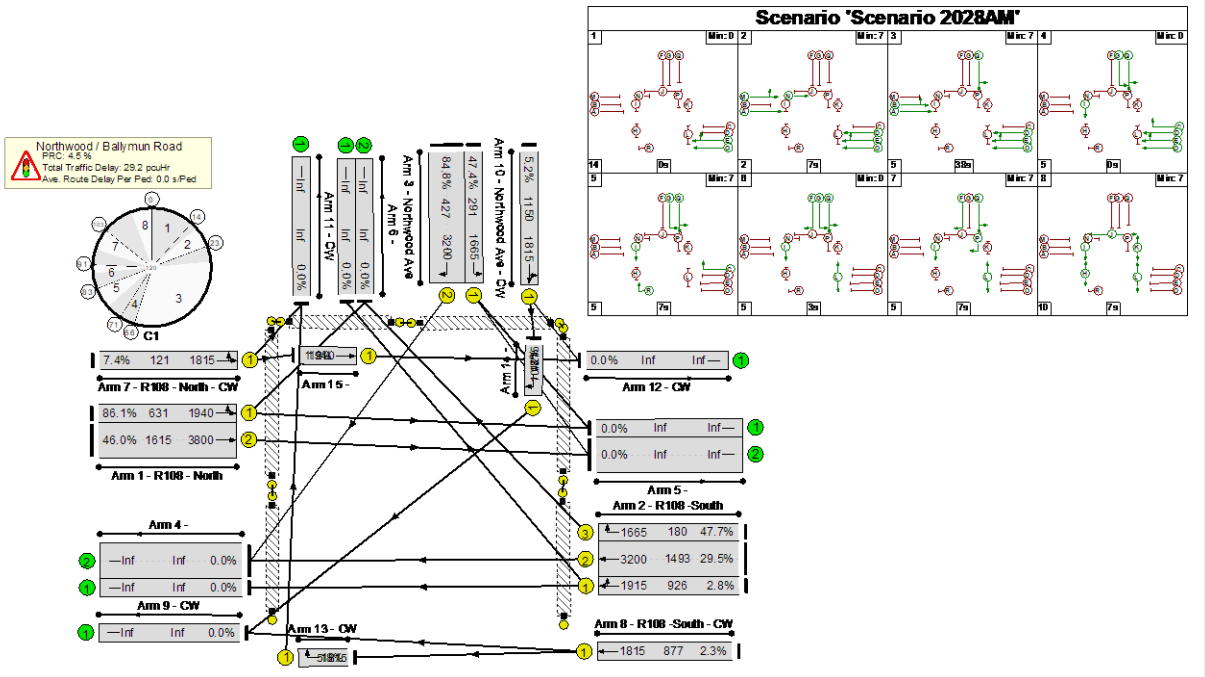
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 4.5%
Delay = 29.22pcuHr

Bus Delay
Inbound = N/A
Outbound = 18s

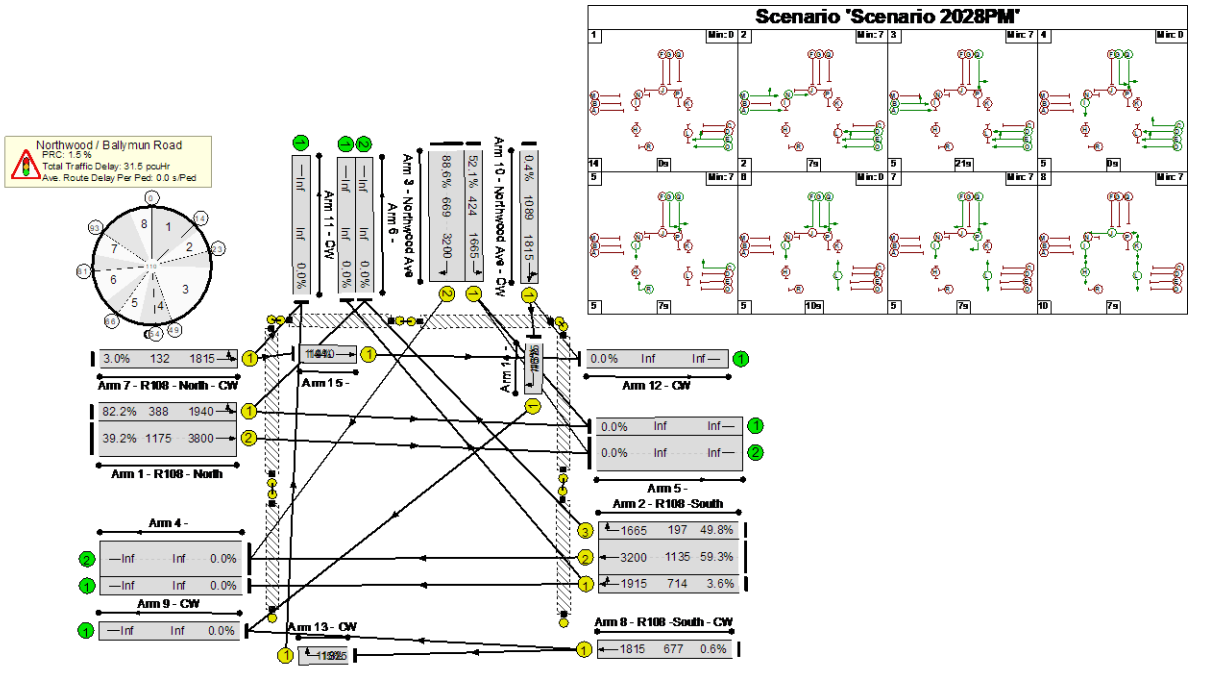


Do Something : 2028 : PM

Cycle = 110secs
PRC = 1.5%
Delay = 31.51pcuHr

Bus Delay
Inbound = N/A

Outbound = 25s

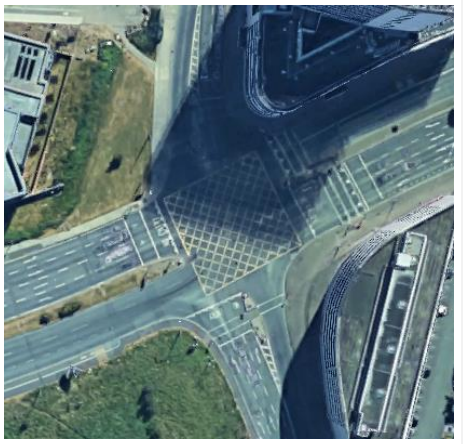
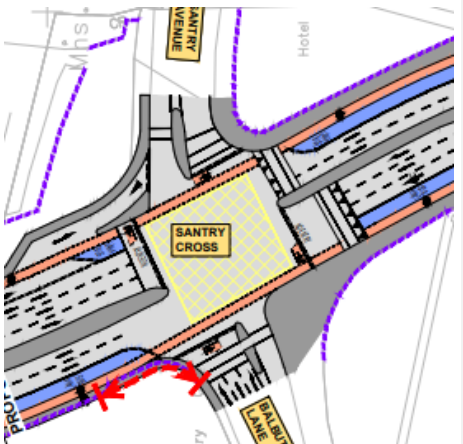
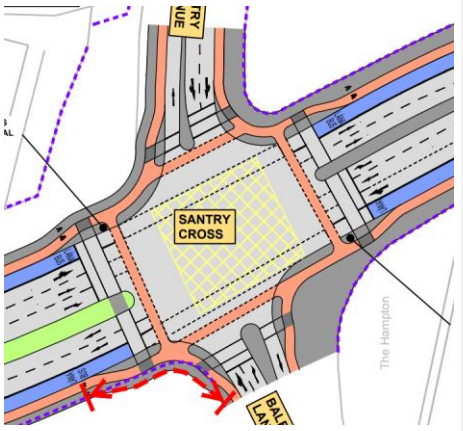
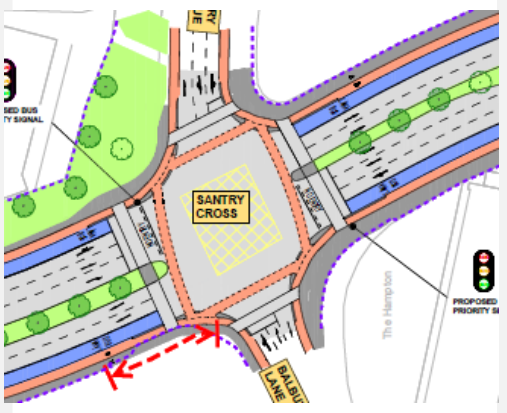


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Santry Avenue/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A nine stage signal operation is proposed.

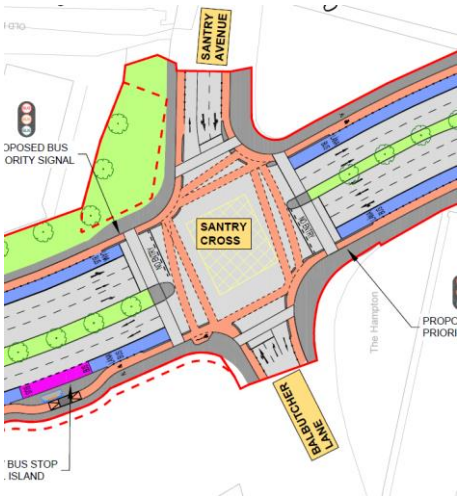
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound bus lanes provided 2. Left slip land and associated islands introduced 3. Inbound and outbound cycle infrastructure provided	1. To improve bus priority along the corridor. 2. To segregate left turns from the junction signalisation 3. To provide continuous cycle infrastructure along the corridor.	1. Improved inbound and outbound bus provision. 2. Conflict with ahead cyclists, increased junction footprint. 3. Improved cycle infrastructure through the junction
DRAFT PRO (PC2)		1. Left slip land and associate islands removed 2. Mainline pedestrian crossings introduced 3. Protected cycle infrastructure on all arms 4. Santry Avenue Lane allocation modified 5. Balbutcher lane approach arm reduced to two lanes and lanes reallocated	1. In keeping with DMURS principles 2. To improve pedestrian permeability across the junction 3. To improve the turning capacity and safety of cyclists 4. Increase capacity for straight ahead traffic 5. Reduced traffic demand on this arm	1. Reduced road carriageway 2. Improved pedestrian facilities 3. Improved cycle facilities 4. Downstream merging manoeuvres 5. Increased pedestrian refuge provision
DRAFT PRO (PC3)		1. Minor side road arm islands removed. 2. All cycle infrastructure alignment modified	1. To reduce the junction footprint and improve downstream merging manoevres 2. To further reduce the footprint of the junction.	1. Single stage pedestrian crossing stages on side arms 2. Reduced intergreen requirements and improved alignment for cycle manoeuvres.

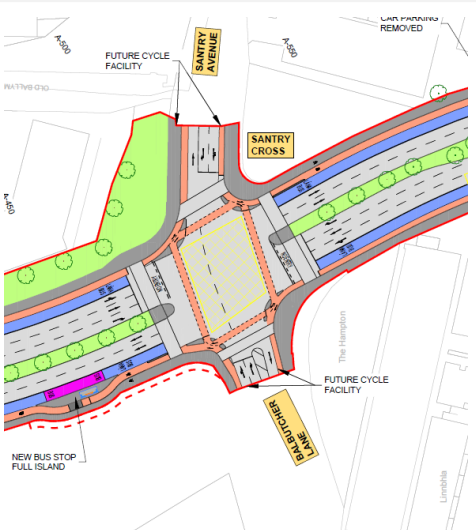
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Santry Avenue/Ballymun Road

EXISTING

	Change Made	Reason for Change	Impact of Change
STAGE B REVIEW	1. Cyclist right turn pockets provided with segregated right turn cycle lanes.	1. To ensure unimpeded movements by straight ahead cyclists	1. Potential confusion by cyclists not understanding which lane to use.
FINAL DRAFT (WIP)	1. Santry Avenue lane allocation reverted. 2. Cycle infrastructure modified	1. To eliminate the downstream merging manoeuvres. 2. To improve the legibility of the cycle provision.	1. Improved traffic safety through the junction. 2. Improved cycle facilities

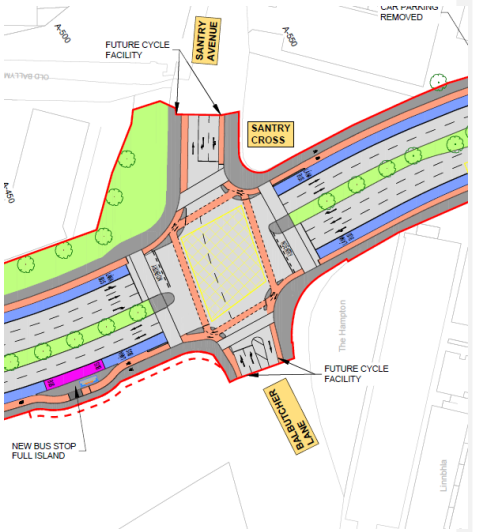




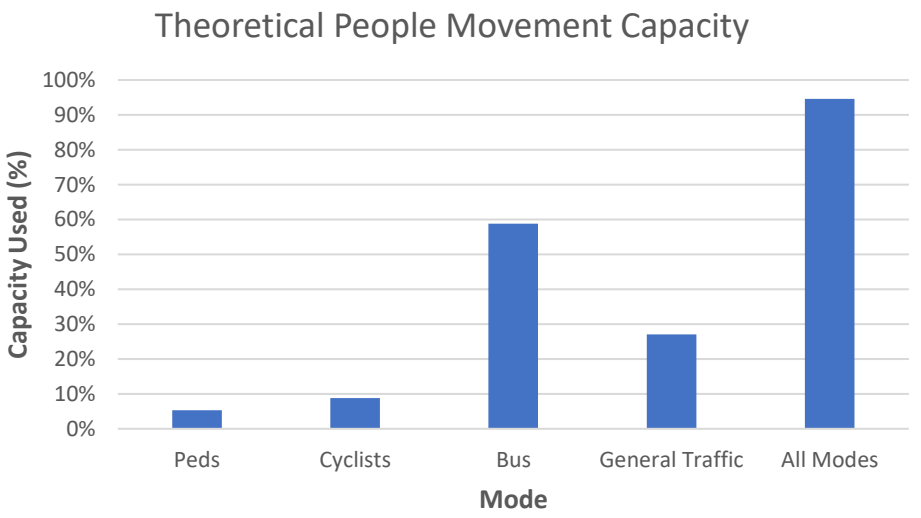
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Santry Avenue/Ballymun Road

Capacity / Delay



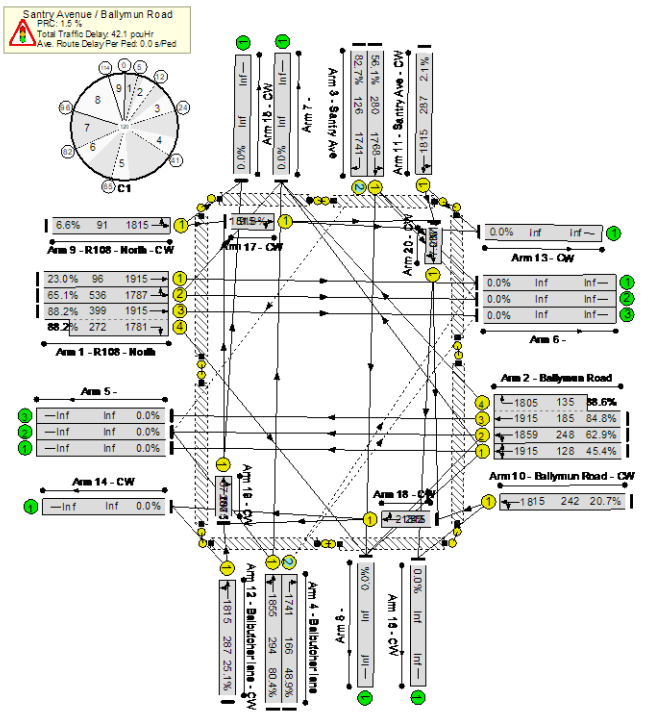
People Movement Calculator – Capacity

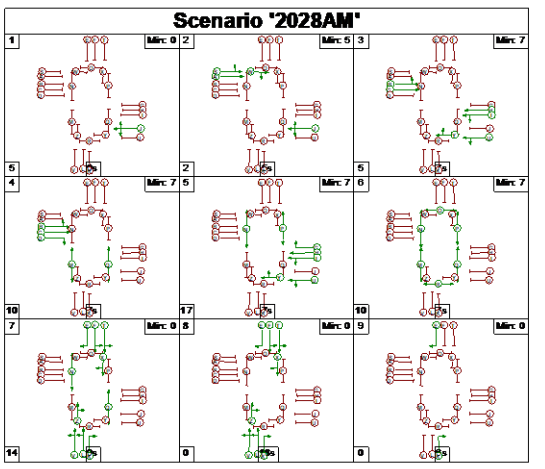


Do Something : 2028 : AM

Cycle = 120secs
PRC = 1.5%
Delay = 42.10pcuH

Bus Delay
Inbound = 79s
Outbound = 80s

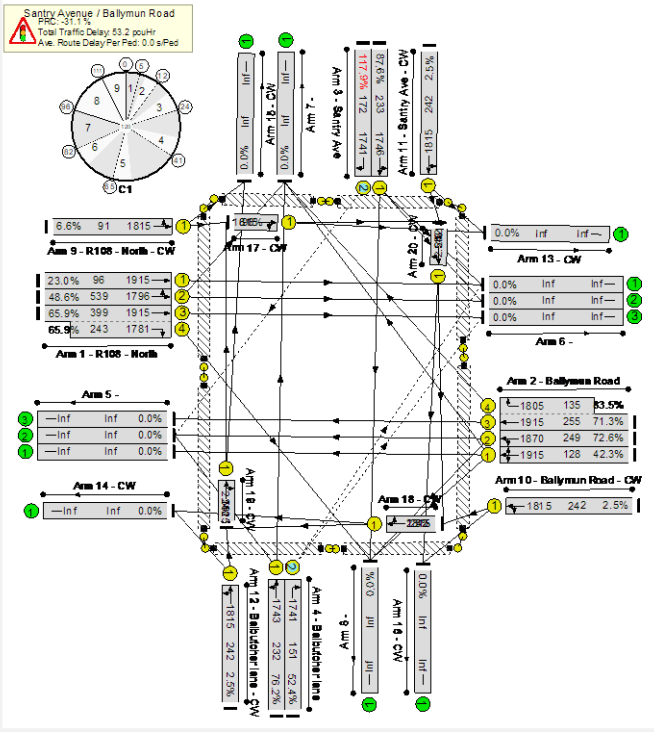


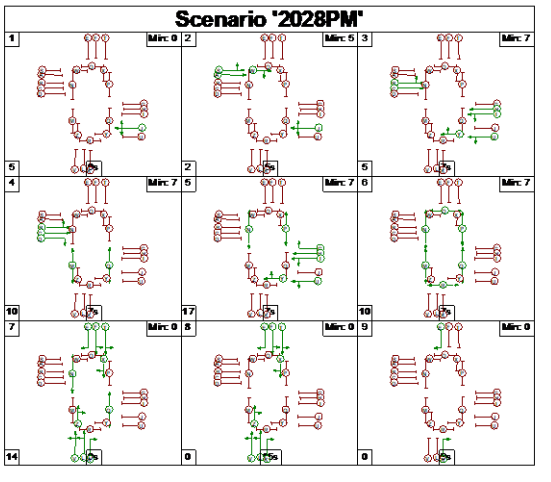


Do Something : 2028 : PM

Cycle = 120secs
PRC = -31.1%
Delay = 53.16pcuH

Bus Delay
Inbound = 79s
Outbound = 78s



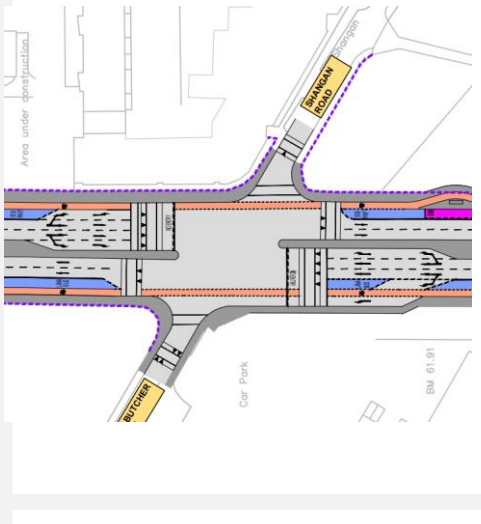
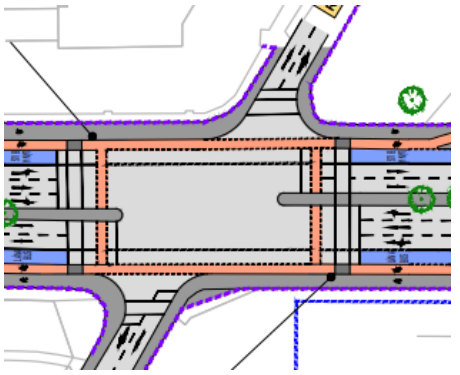
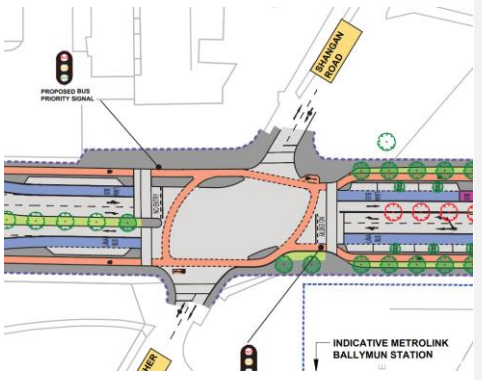


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Shangan Road/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
The number of general traffic lanes exiting the junction has been reduced to improve the environment for pedestrians and to improve approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A eight stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

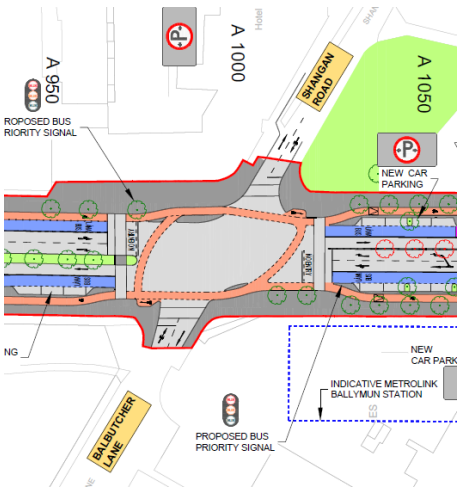
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound cycle infrastructure provided. 2. Dedicated left turn lane introduced on Ballymun Road South	1. To provide continuous cycle infrastructure along the corridor. 2. To segregate the vehicular left turns from the bus lane	1. Improved alignment 2. Conflict with cyclists by vehicles crossing the cycle lane and increased road carriageway footprint 3. Improved cycle infrastructure through the junction
DRAFT PRO (PC2)		1. Traffic segregated from bus lanes 2. Left turn lane removed 3. In line pedestrian crossings 4. Cycle lanes provided across the junction	1. To improve bus priority through the junction. 2. To remove the conflict with cyclists and reflect the expected lower left turn demand 3. To improve pedestrian facilities 4. To facilitate cycle accessibility from the minor side road arms.	1. Improved bus provision in the southbound and northbound direction 2. Reduced road carriageway footprint and less conflict with cyclists. 3. Single stage crossing requirements 4. Improved cycle accessibility from minor side road arms.
DRAFT PRO (PC3)		1. Removal of one general traffic lane inbound and outbound 2. Central median removed on southern arm of the junction 3. Cycle right turn pockets and improved cycle lane alignment 4. Landscaping proposals	1. Reduced traffic demand along the corridor justifies reduced road carriageway 2. To facilitate town centre parking provision without increasing the road carriageway footprint 3. To ensure unimpeded movements by straight ahead cyclists 4. To enhance the greening and character of the street	1. Reduced road carriageway footprint and reduced pedestrian crossing distances 2. Reduced pedestrian crossing distances and reduced potential for parking in the bus lane 3. Improved cycle facilities 4. Improved landscaping to reflect the town centre character of the street

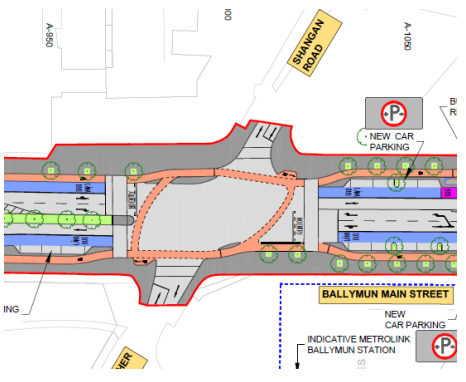
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Shangan Road/Ballymun Road

EXISTING

	Change Made	Reason for Change	Impact of Change
STAGE B REVIEW	1. Removal of parking on Ballymun Road north inbound arm. 2. Modified Landscaping plans	1. To provide minimum pedestrian footpath provisions 2. To ensure minimum pedestrian footpath provisions maintained	1. Improved pedestrian facilities 2. Improved pedestrian facilities
FINAL DRAFT (WIP)	1. Additional protective islands between cycle track and bus lane	1. To ensure adequate segregation between buses and cyclists.	1. Improved junction safety

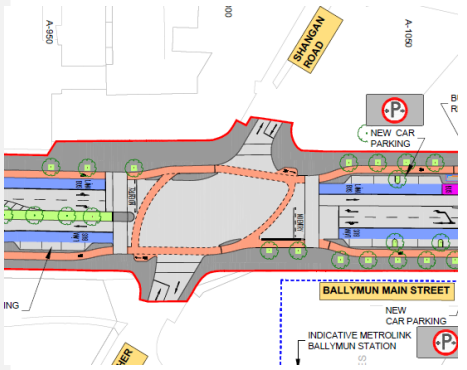




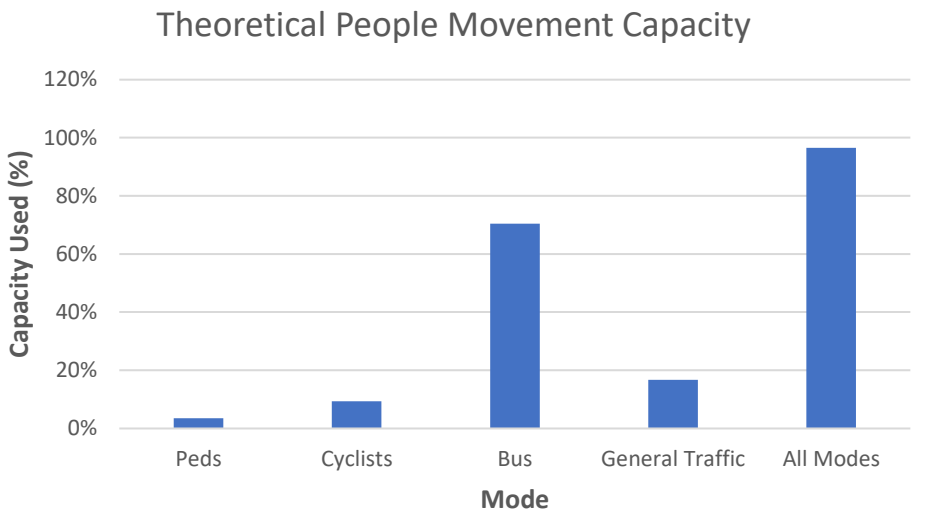
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Shangan Road/Ballymun Road

Capacity / Delay



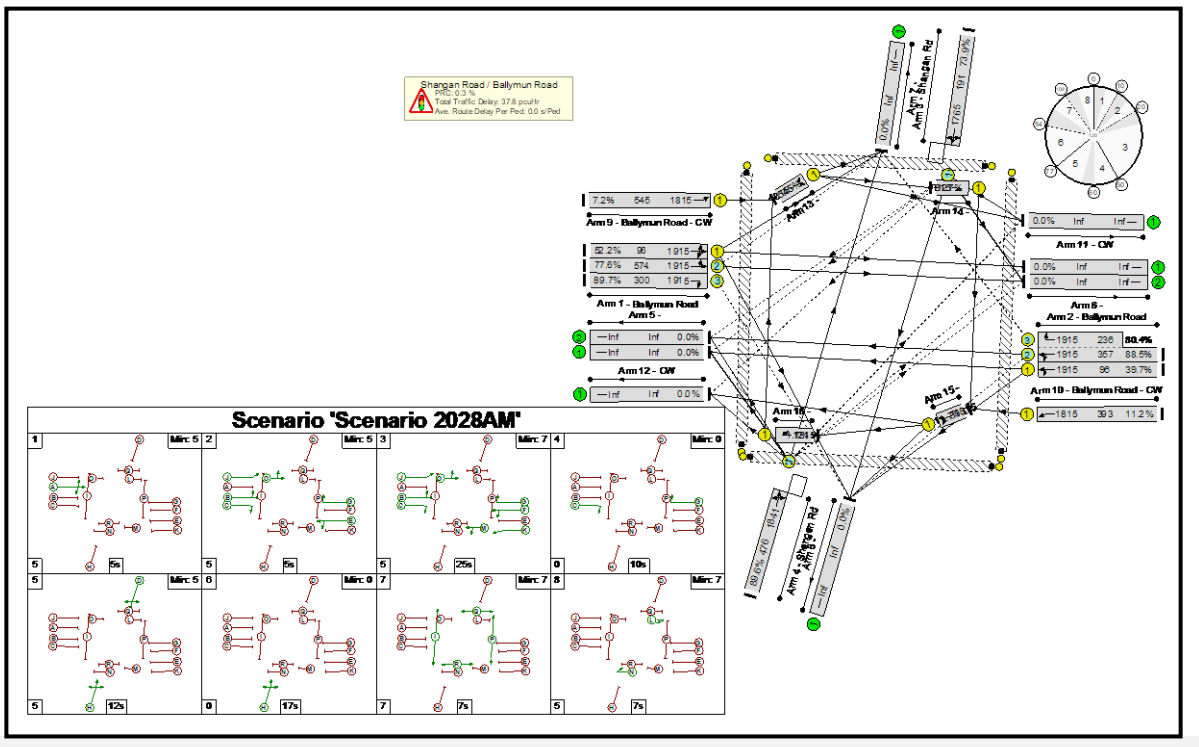
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 0.3%
Delay = 37.76pcuH

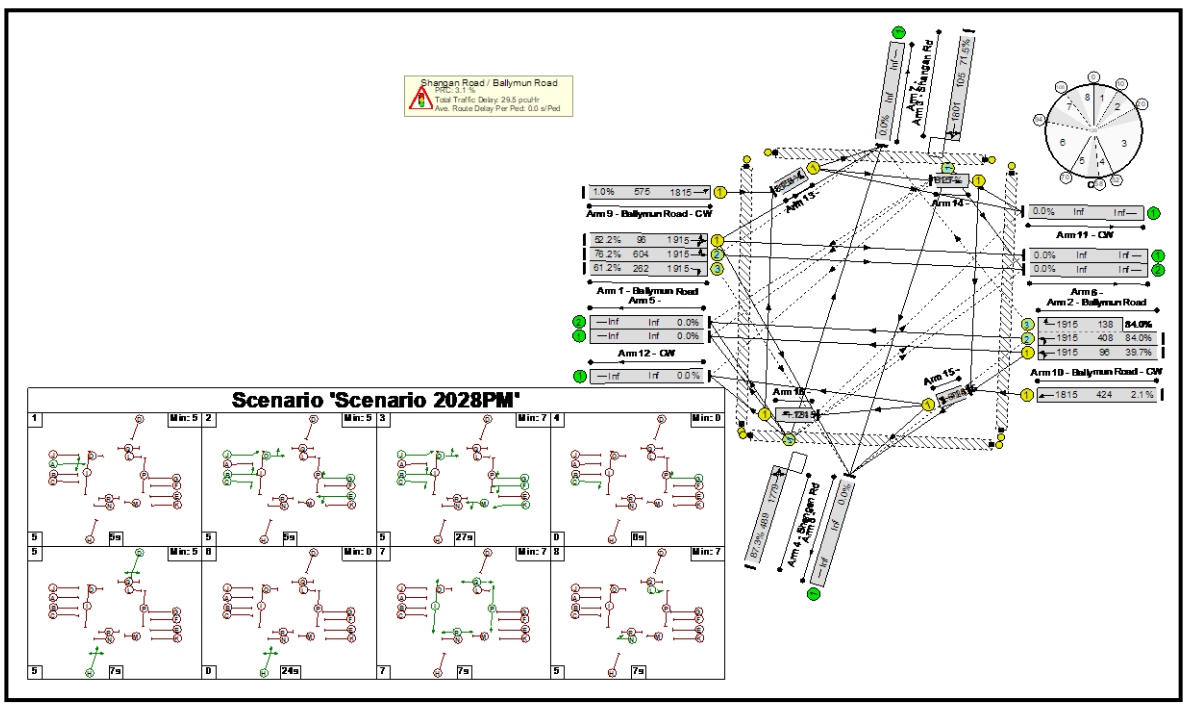
Bus Delay
Inbound = 94s
Outbound = 86s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 3.1%
Delay = 29.46pcuH

Bus Delay
Inbound = 94s
Outbound = 86s

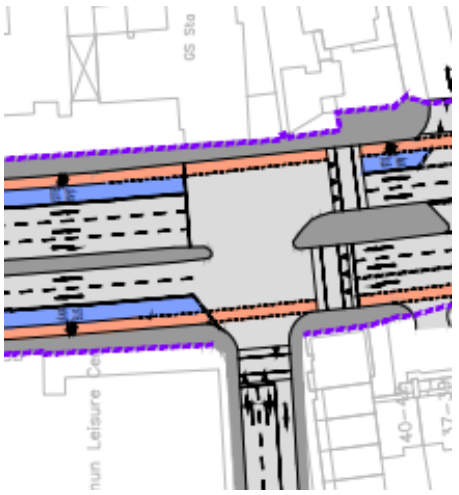
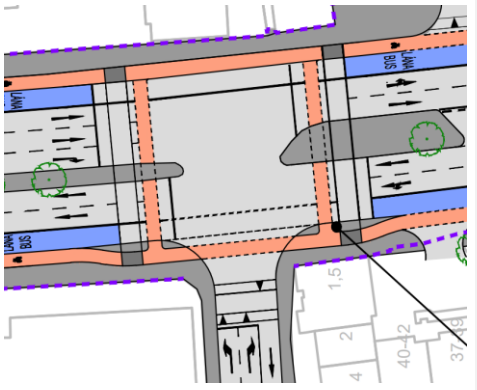


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

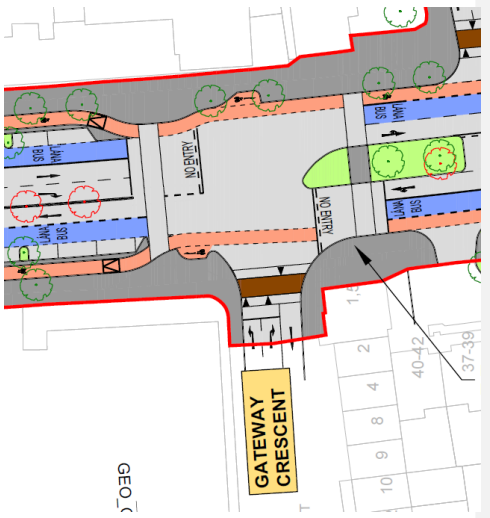
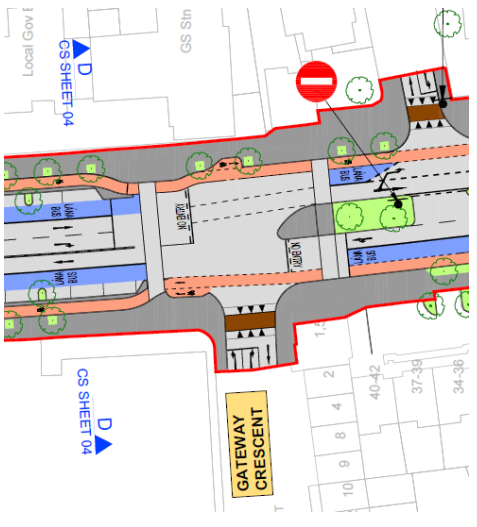
Gateway Crescent/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A six stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound cycle infrastructure provided 2. Pedestrian crossing removed on northern arm	1. To provide continuous cycle infrastructure along the corridor. 2. Design error	1. Improved cycling facilities through the junction 2. Important crossing facility removed
DRAFT PRO (PC2)		1. Segregated bus lanes through the junction. 2. Pedestrian crossing on northern arm reinstated 3. In-line pedestrian crossings provided. 4. Cycle lanes provided across the junction	1. To improve the bus priority through the junction 2. To correct the earlier omission 3. To improve pedestrian facilities 4. To facilitate cycle accessibility from the minor side road arms.	1. Improved bus provision in particular in the northbound direction 2. Pedestrian accessibility restored 3. Improved pedestrian facilities. 4. Improved cycle accessibility from minor side road arms.
DRAFT PRO (PC3)		1. Removal of one general traffic lane inbound and outbound 2. Central median removed on northern arm of the junction 3. Cycle right turn pockets and improved cycle lane alignment 4. Landscaping proposals	1. Reduced traffic demand along the corridor justifies reduced road carriageway 2. To facilitate town centre parking provision without increasing the road carriageway footprint 3. To ensure unimpeded movements by straight ahead cyclists 4. To enhance the greening and character of the street	1. Reduced road carriageway footprint and reduced pedestrian crossing distances 2. Reduced pedestrian crossing distances and reduced potential for parking in the bus lane 3. Improved cycle facilities 4. Improved landscaping to reflect the town centre character of the street

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

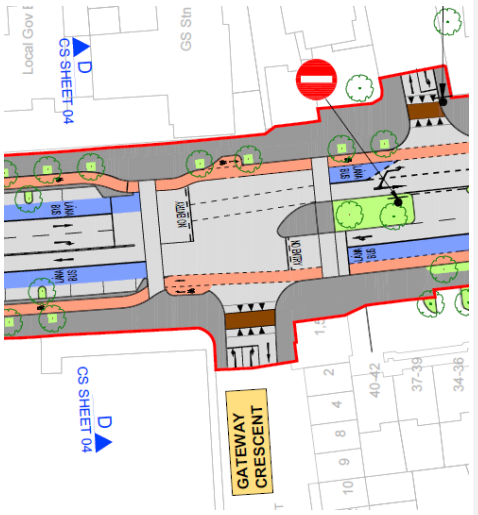
	Gateway Crescent/Ballymun Road		
EXISTING			
STAGE B REVIEW		1. Cycle lanes across the junction removed and right turn pockets relocated	1. To reflect the lack of cycle infrastructure to and from Gateway Crescent
FINAL DRAFT (WIP)		1. Lane guidance road markings were provided	1. On foot of Road Safety Audit recommendations.

Change Made	Reason for Change	Impact of Change
		1. Cycle infrastructure is more readily understood
		1. Improved traffic safety and behaviour through the junction

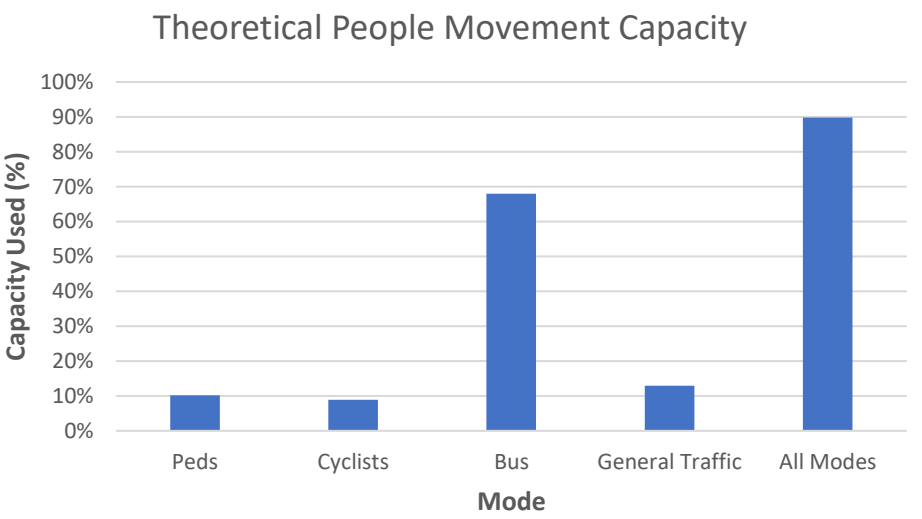
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Gateway Crescent/Ballymun Road

Capacity / Delay



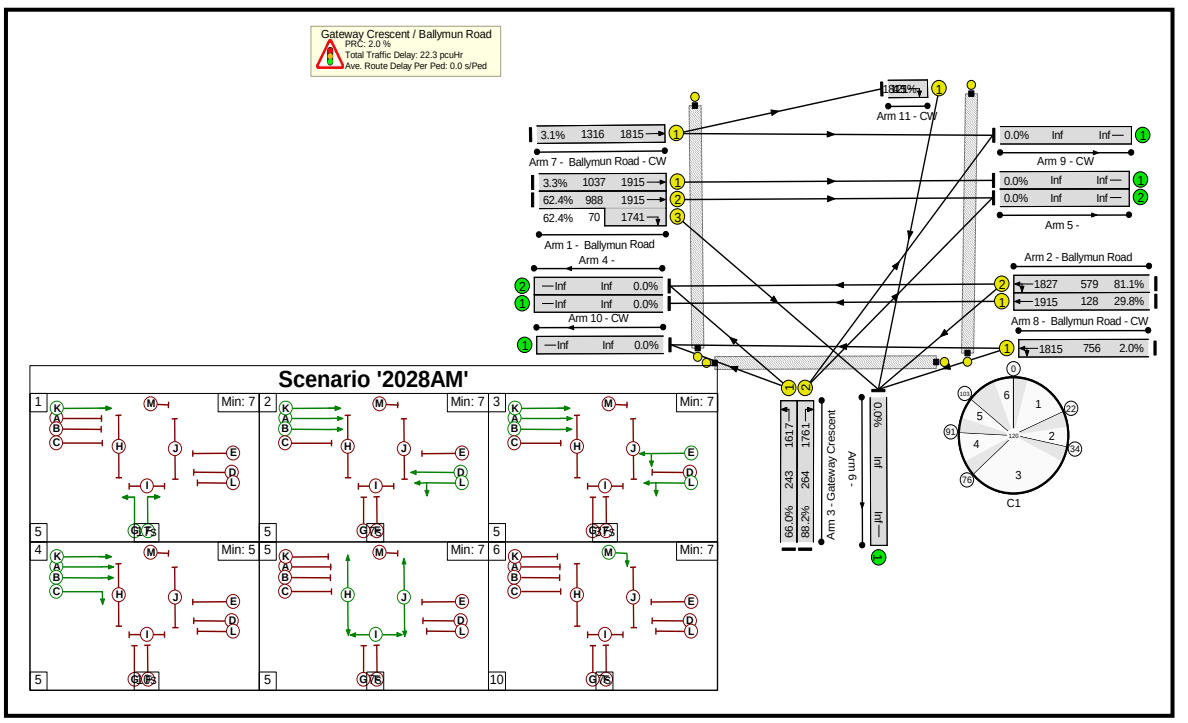
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 2.0%
Delay = 22.25pcuH

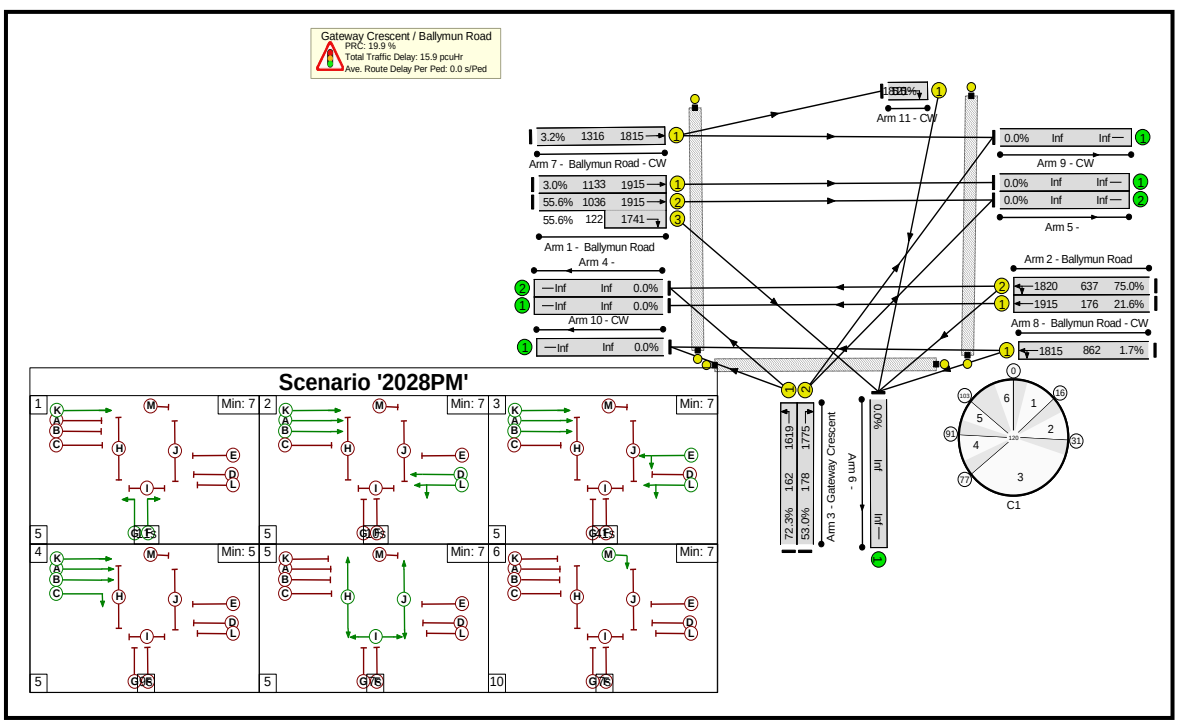
Bus Delay
Inbound = 15s
Outbound = 73s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 19.9%
Delay = 15.87pcuH

Bus Delay
Inbound = 12s
Outbound = 19

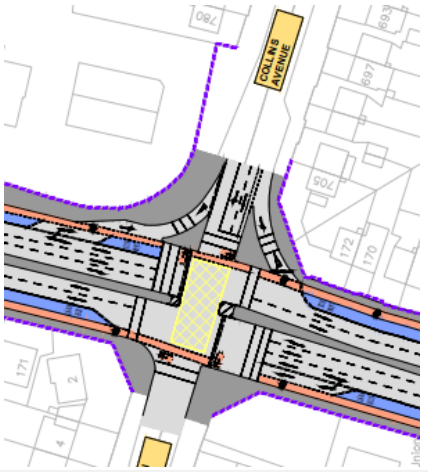
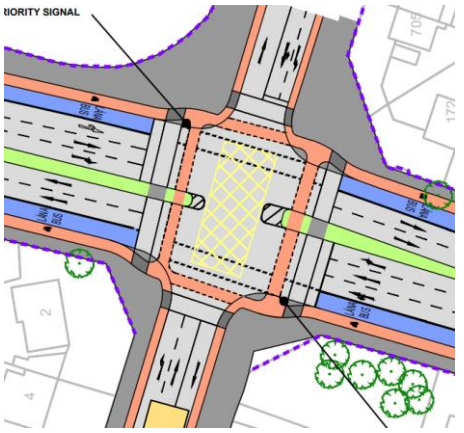
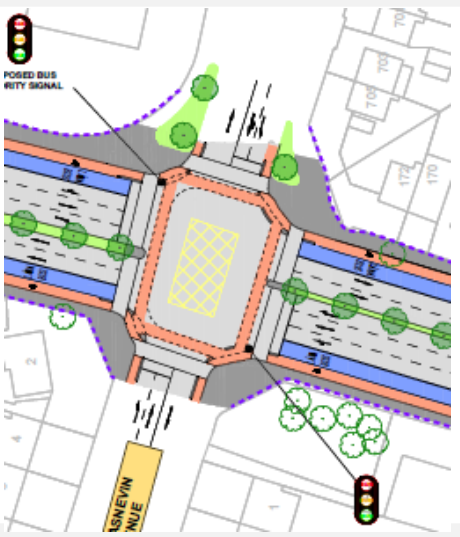


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

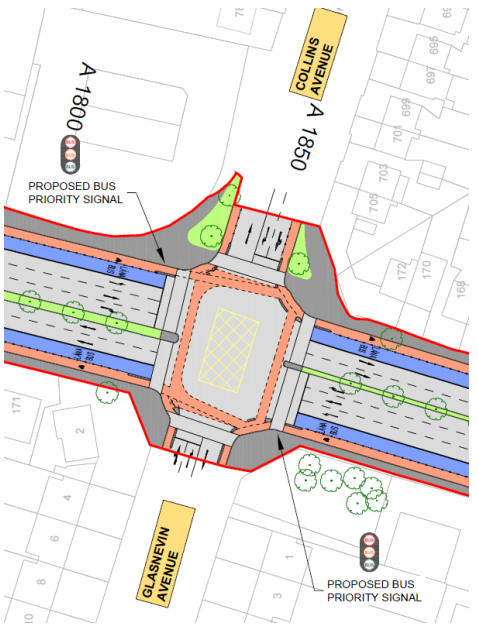
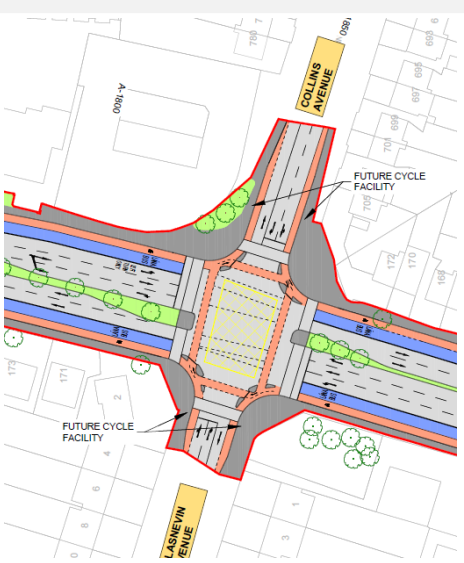
Collins Avenue Ext/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated removing slip lanes and island and introducing protected cycle infrastructure.
The number of general traffic lanes exiting the junction has been reduced to improve the environment for pedestrians and to improve approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A eight stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound cycle infrastructure provided 2. Right turn cycle pockets provided at the minor side arms. 3. Modifications to north to eastern left slip lane	1. To provide continuous cycle infrastructure along the corridor. 2. To facilitate right turning cyclists to the minor side arms. 3. To ensure a bus at the stop line doesn't impede left turning vehicles	1. Improved cycling facilities through the junction 2. Improved safety for right turning cyclists 3. Improved permeability for both left turning vehicles and buses to the stop line
DRAFT PRO (PC2)		1. All left turning slip lanes and associated islands removed 2. Left turning vehicles segregated from bus lanes 3. Cycle lanes provided across the junction	1. In keeping with DMURS principles 2. To improve bus priority 3. To facilitate cycle accessibility from the minor side road arms.	1. Reduced junction footprint and reduced number of crossing stages required. 2. Improved bus priority through the junction 3. Improved cycle accessibility from minor side road arms.
DRAFT PRO (PC3)		1. Landscaping proposals 2. Reduced central median footprint	1. To enhance the greening and character of the street 2. To improve the alignment of the upstream to downstream traffic lanes	1. Landscaping to improve the character of the street 2. Improved traffic safety and behaviour through the junction

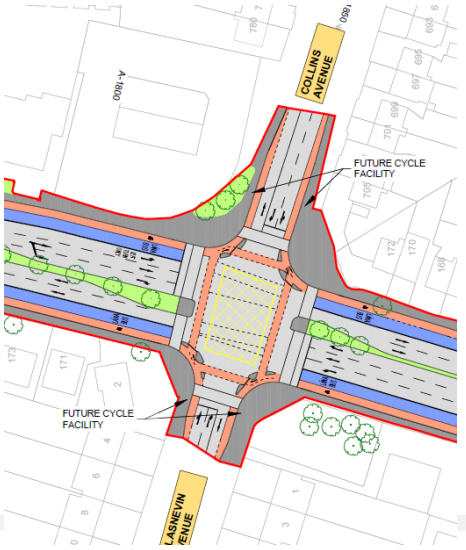
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

	Collins Avenue Ext/Ballymun Road			
EXISTING				
STAGE B REVIEW		**Change Made** 1. Lane reallocation on main arms. 2. Cycle lane modifications across the side arms	**Reason for Change** 1. To reflect the expected traffic demands through the junction 2. To provide right turning stacking area for cyclists	**Impact of Change** 1. Improved lane behaviour by drivers. 2. Potential confusion and danger for cyclists due to lack of physical protection
FINAL DRAFT (WIP)		1. Central median width increased. 2. Lane guidance markings added 3. Right turning cycle stacking areas protected by kerbs	1. To accommodate waiting pedestrians during split stage crossings. 2. On foot of Road Safety Audit recommendations. 3. To ensure the safety of cyclists at the junction and improve legibility of the infrastructure	1. Improved stacking space for pedestrians. Single downstream lanes. 2. Improved traffic safety and behaviour through the junction 3. Improved safety of cyclists at the junction and improved legibility of the infrastructure

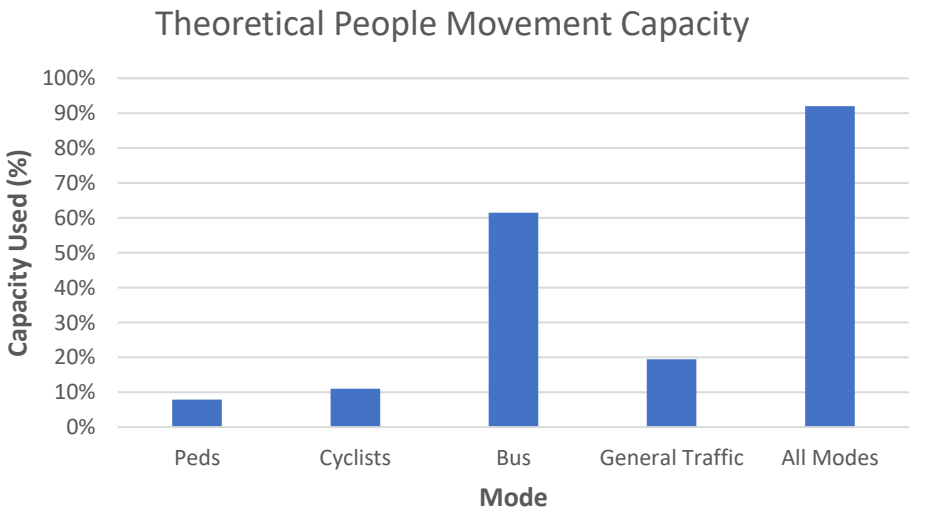
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Collins Avenue Ext/Ballymun Road

Capacity / Delay



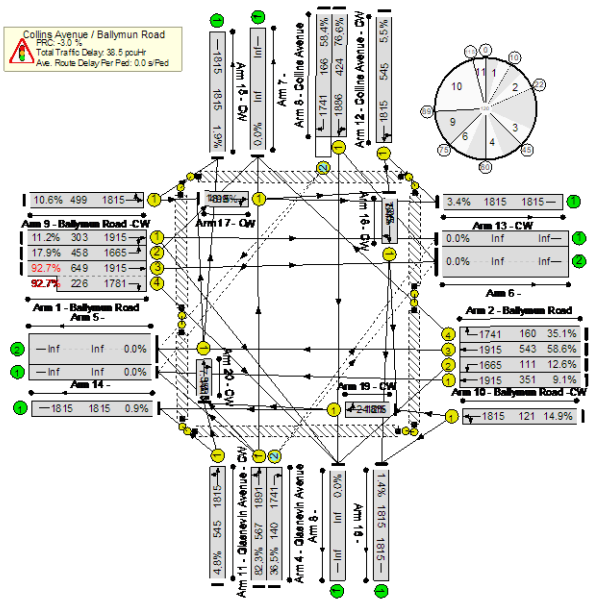
People Movement Calculator – Capacity

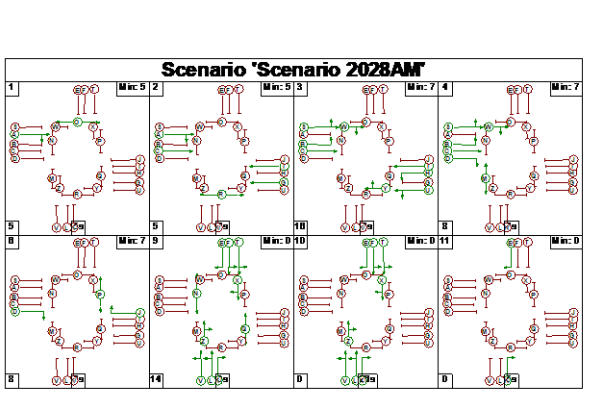


Do Something : 2028 : AM

Cycle = 120secs
PRC = -3.0%
Delay = 38.49pcuH

Bus Delay
Inbound = 50s
Outbound = 46s

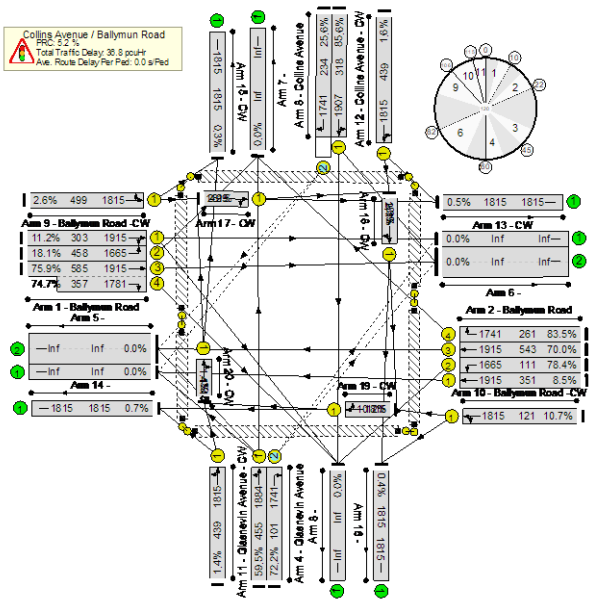


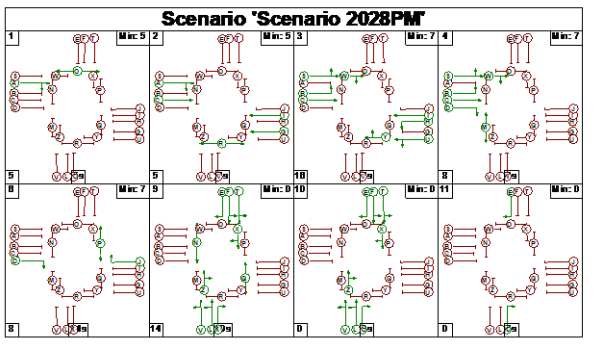


Do Something : 2028 : PM

Cycle = 120secs
PRC = 5.2%
Delay = 36.80pcuH

Bus Delay
Inbound = 42s
Outbound = 46.3s





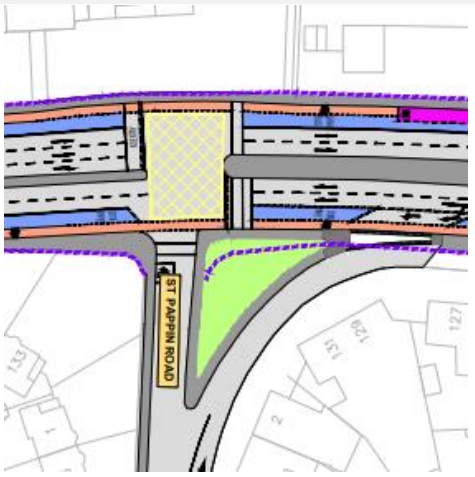
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

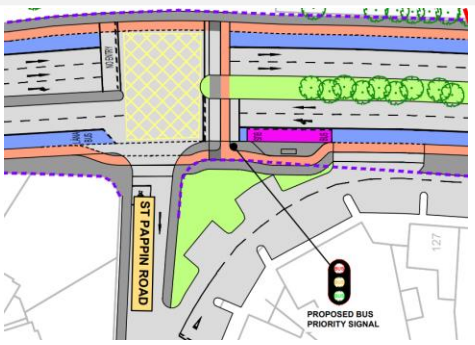
St. Pappin Road/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments. The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A six stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

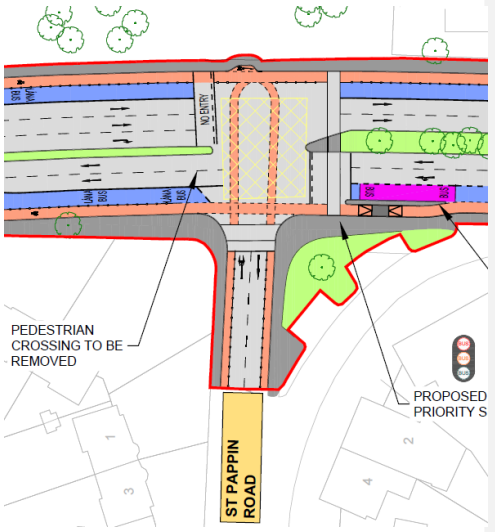
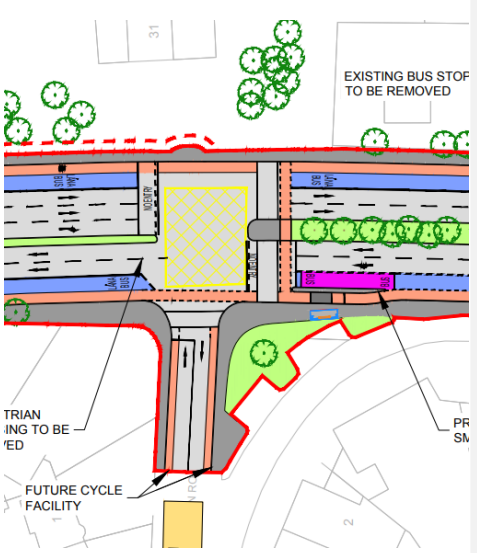
	Change Made	Reason for Change	Impact of Change
EXISTING	1. Inbound and outbound cycle infrastructure provided 2. ASL Boxes removed on mainline 3. ASL Box provided on minor arm 4. Pedestrian crossing moved to southern arm	1. To provide continuous cycle infrastructure along the corridor. 2. Contrary to National Cycle Manual recommendations 3. To provide stacking space for cyclists 4. Wider central median to provide pedestrian refuge if needed	1. Improved cycling facilities through the junction 2. No other means for cyclists to turn right 3. No means for cyclists to reach the ASL while a car is stopped 4. Pedestrian stage can run with right turn stage to improve operation of the junction.
DRAFT PRO (PC2)	1. Cycle crossing provided adjacent to pedestrian crossing	1. To facilitate cyclist right turns	1. Improved segregation of cyclists and pedestrians
DRAFT PRO (PC3)	1. Central median alignment reverted to existing 2. Cycle crossing relocated relative to pedestrian crossing	1. To improve the turning manoeuvrability for vehicles from St Pappin's Road 2. To remove the conflict between pedestrians and cyclists turning to St Pappin's Road	1. Reduced refuge space for pedestrians 2. Minimised conflict between pedestrians and cyclists





Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

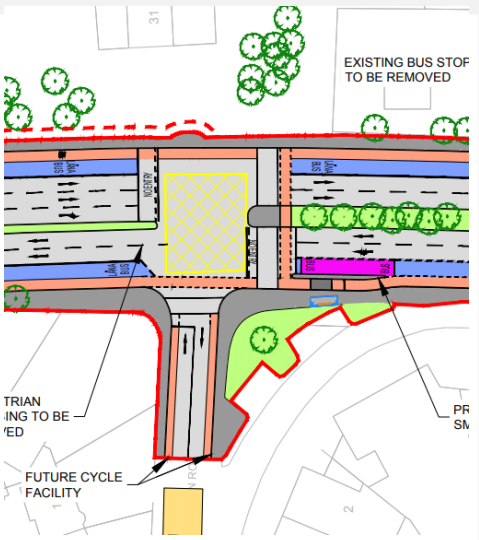
St. Pappin Road/Ballymun Road

		Change Made	Reason for Change	Impact of Change
EXISTING				
STAGE B REVIEW		1. Cycle lanes provided on St Pappin's Road and ASL removed 2. Cycle crossing removed and right turn facility provided	1. In line with the recommendations in the National Cycle Manual 2. Improved cycle permeability through the junction.	1. Improved cycling facilities 2. Safer turning manoeuvres for cyclists with a dedicated signal stage
FINAL DRAFT (WIP)		1. Central median widened 2. Cross-junction cycle lanes removed and cycle crossing facility provided.	1. To improve pedestrian refuge space 2. To ensure consistency in cycle infrastructure provision	1. Tighter turning manoeuvres from St Pappin's Road 2. Dedicated signal stage for cyclists no longer required; Cyclists to cross with pedestrians.

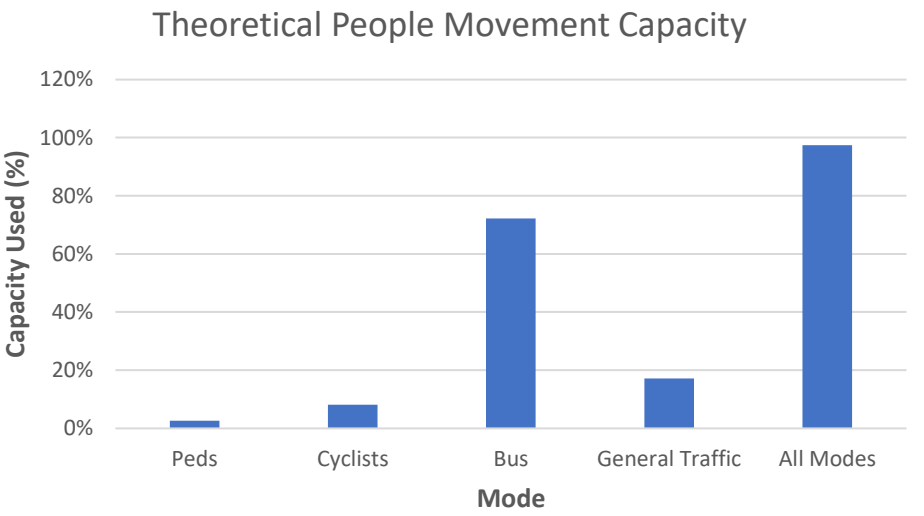
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St. Pappin Road/Ballymun Road

Capacity / Delay



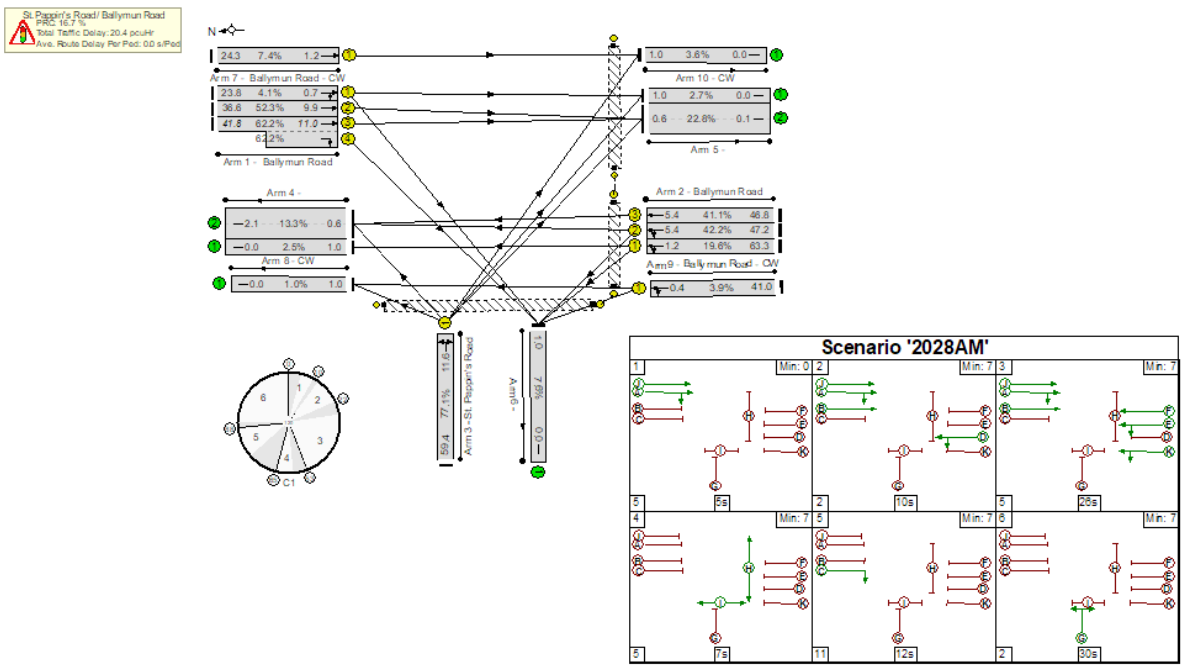
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 16.7%
Delay = 20.57pcuH

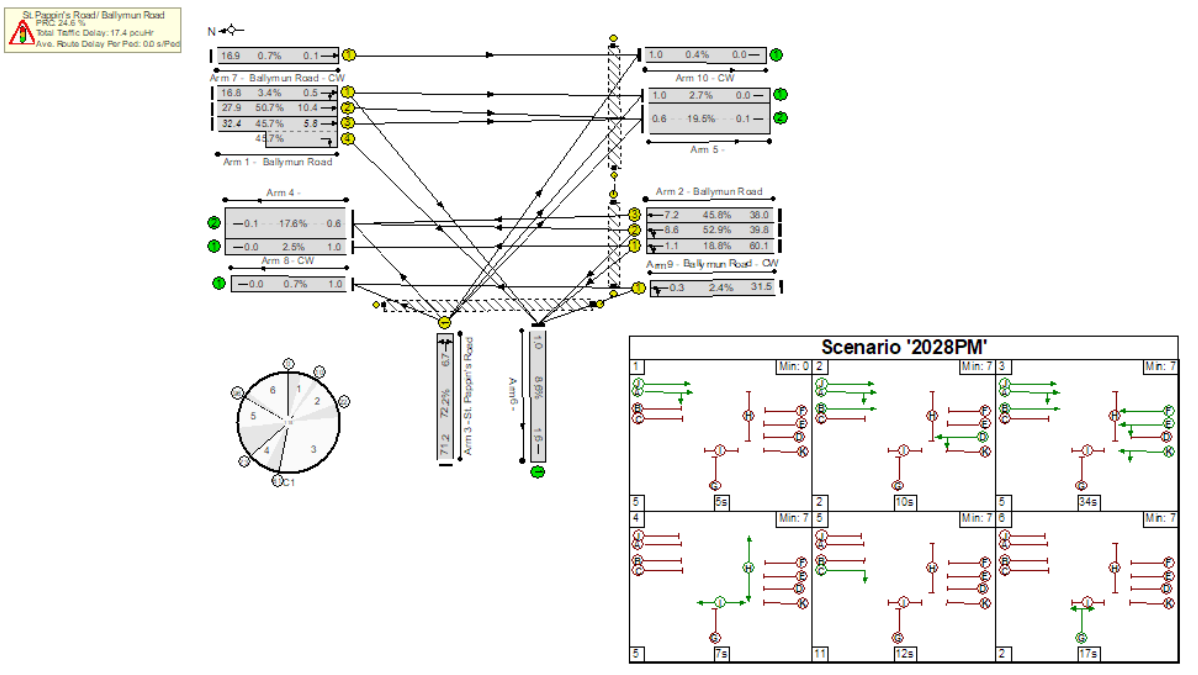
Bus Delay
Inbound = 24s
Outbound = 63s



Do Something : 2028 : PM

Cycle = 115secs
PRC = 24.6%
Delay = 24.6pcuH

Bus Delay
Inbound = 17s
Outbound = 32s

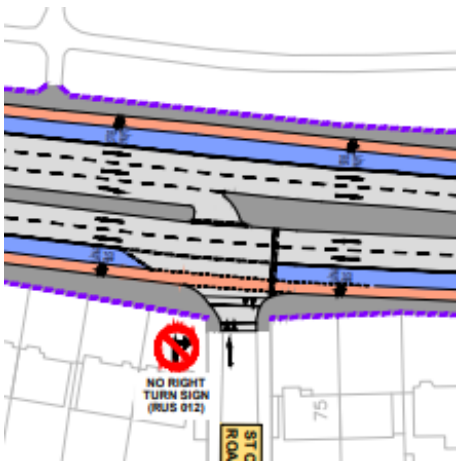


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St Canices Road/Ballymun Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

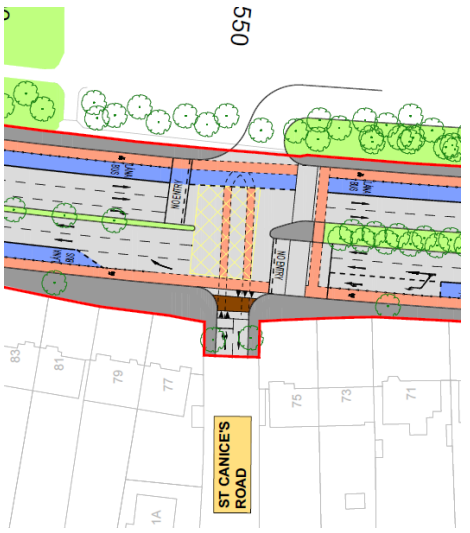
Signal Operation
A five stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

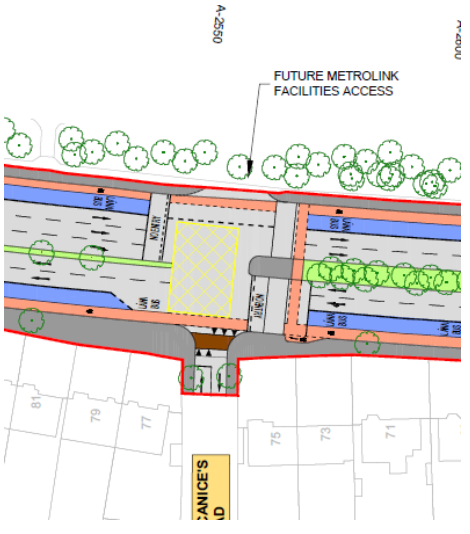
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound cycle lane provided 2. Central median footprint increased	1. To provide continuous cycle infrastructure along the corridor. 2. To restrict turning manoeuvres from St Canince's Road	1. Improved cycle facilities 2. Traffic will use an alternative junction
DRAFT PRO (PC2)		1. Junction fully signalised	1. To improve accessibility for cyclists and pedestrians	1. Improved pedestrian and cycle accessibility to and from St Canice's Road
DRAFT PRO (PC3)		1. Modified traffic island	1. To maintain vehicle turning manoeuvrability.	1. Reduced refuge space for pedestrians.

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St Canices Road/Ballymun Road

	Change Made	Reason for Change	Impact of Change
EXISTING			
STAGE B REVIEW	1. Left turn sharing with buses 2. Indicative access for Metrolink added 3. Indicative cycle lanes shown to and from St Canice's Road	1. To improve capacity of the junction 2. To future proof the junction layout 3. To improve permeability for cyclists through the junction	1. Left turning vehicles adjacent to cyclists 2. Footpath continuation interrupted 3. Additional cycle infrastructure provided
FINAL DRAFT (WIP)	1. Left turns segregated from bus lane 2. Cross-junction cycle lanes removed 3. Cyclist jug turn provided	1. To improve bus priority 2. On foot of RSA recommendations 3. To remove conflicts between turning and ahead cyclists	1. Separate signal staging required reducing potential green time for buses 2. Cyclists required to use crossing facility at pedestrian crossing 3. Improved cycle infrastructure

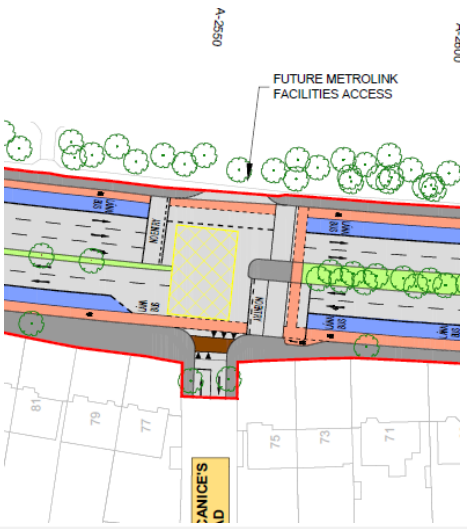




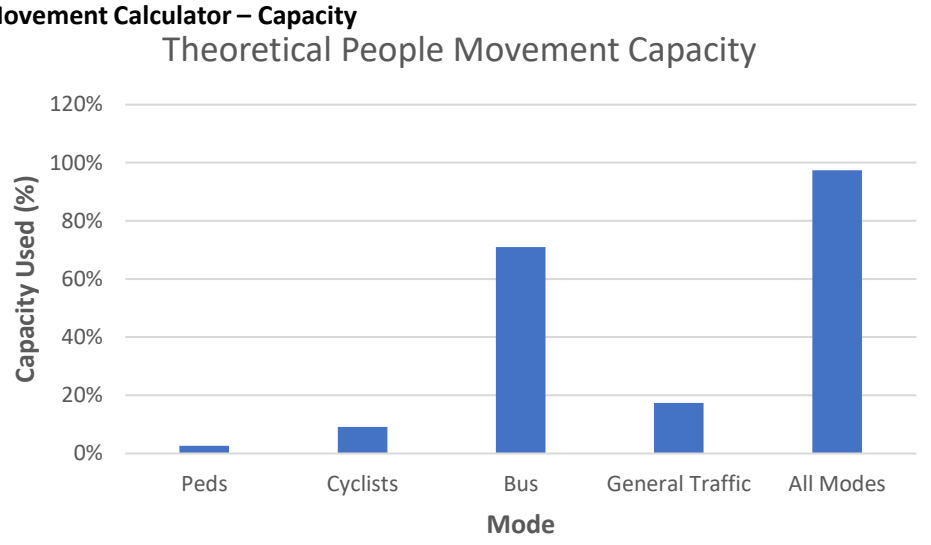
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

St Canices Road/Ballymun Road

Capacity / Delay



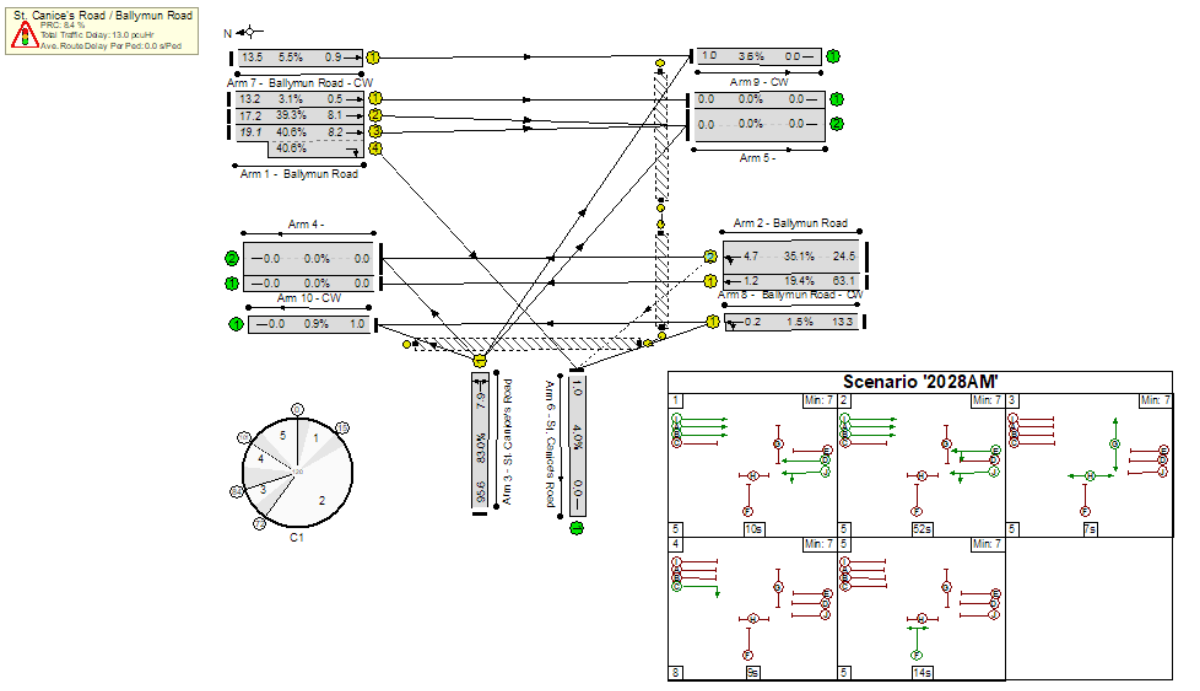
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 8.4%
Delay = 13.02pcuH

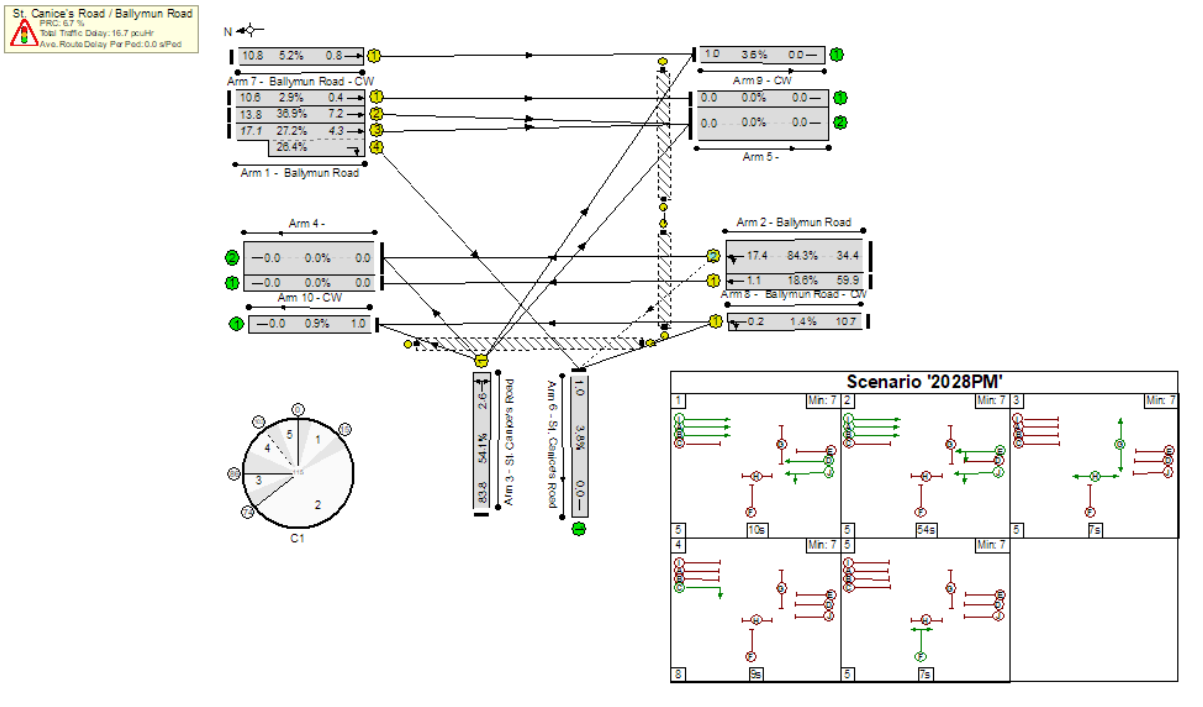
Bus Delay
Inbound = 13s
Outbound = 63s



Do Something : 2028 : PM

Cycle = 115secs
PRC = 6.7%
Delay = 16.78pcuH

Bus Delay
Inbound = 11s
Outbound = 60s

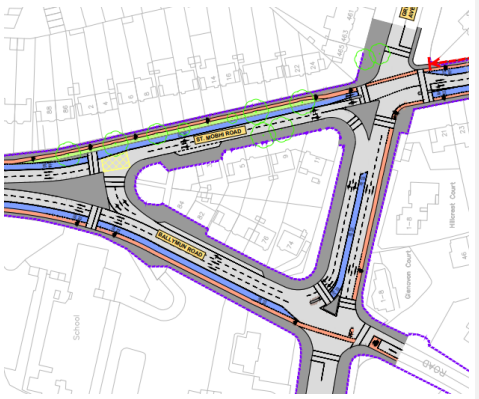
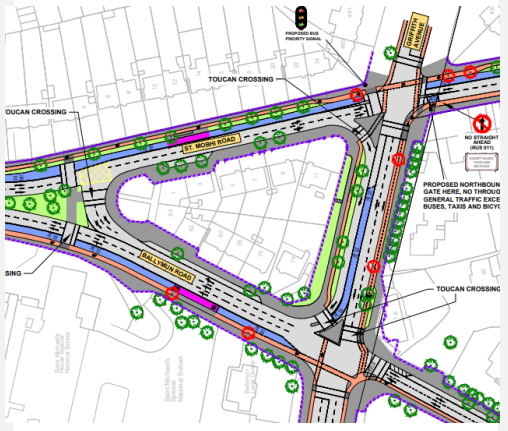
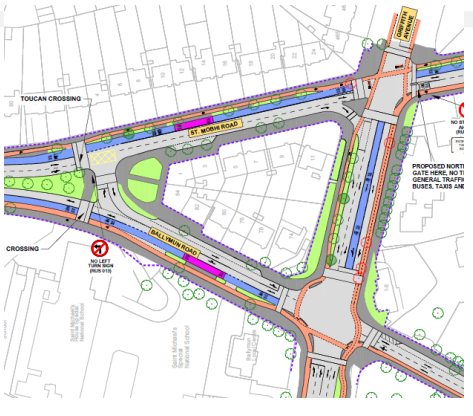


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Griffith Avenue Gyratory

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of each junction updated by introducing protected cycle infrastructure and new pedestrian crossing, removing slip lanes and island and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A six stage signal operation in the AM and a seven stage signal operation in the PM is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING 			
EPR 	1. Inbound and outbound cycle lanes provided 2. Inbound and outbound bus lanes 3. Go left turn turn right stacking at Ballymun Road arm	1. To provide continuous cycle infrastructure along the corridor. 2. To improve bus priority 3. To separate right turn manoeuvres for cyclists from left turning vehicles	1. Improved cycling facilities through the junction 2. Improved inbound and outbound bus provision, increased road cross section, footpaths narrowed and parking removed on Griffith Ave. 3. Increased safety for right turning cyclists
DRAFT PRO (PC2) 	1. Cycle infrastructure added on all arms of junctions on Griffith Ave 2. Griffith Avenue west and northbound road carriageway cross section reduced to existing 3. Two-way cycle track provided on Griffith Avenue 4. Outbound bus gate introduced on St Mobhi Road	1. To improve cycle permeability through the junctions from all directions 2. To minimise impact on footpaths and landscaped areas 3. Excessive crossing requirements for cyclists as a result of traffic circulation requirements 4. To improve bus priority, provide adequate cycle infrastructure	1. Improved cycle facilities 2. Space available for a contra-flow cycle track 3. Improved permeability for cyclists along Griffith Avenue 4. Traffic diversion required via Ballymun Road
DRAFT PRO (PC3) 	1. Contra flow traffic lane introduced on Ballymun Road / Griffith Avenue 2. Reduced road cross section on Ballymun Road outbound 3. Continuation of two-way cycle track west on Griffith Avenue	1. To remove left turn vehicular conflict with buses on St Mobhi Road inbound 2. To improve space provision for cyclists and pedestrians 3. To improve cycle provision in the area	1. Island removed on Griffith Avenue/Ballymun Rd junction allowing for improvements to pedestrian and cyclist permeability 2. Improved cycle and pedestrian facilities 3. Improved cycle facilities

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Griffith Avenue Gyratory

		Change Made	Reason for Change	Impact of Change
EXISTING				
STAGE B REVIEW		1. Improved protection for Cyclists through the junctions on Ballymun Road / St Mobhi/Griffith Ave.	1. Brings junction in line with BusConnects Preliminary Design Guidance Booklet principles and to improve cyclist facilities at the junction.	1. Improved cycle facilities
FINAL DRAFT (WIP)		1. St Mobhi/Griffith Ave junction reconfigured. 2. Continuation of two-way cycle track east on Griffith Avenue	1. To improve intervisibility between right turning vehicles and outbound buses and cyclists. 2. To improve cycle provision in the area	1. Reduced pedestrian and cyclists crossing requirements 2. Improved cycle facilities

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Griffith Avenue Gyratory

Capacity / Delay

People Movement Calculator – Capacity

Theoretical People Movement Capacity

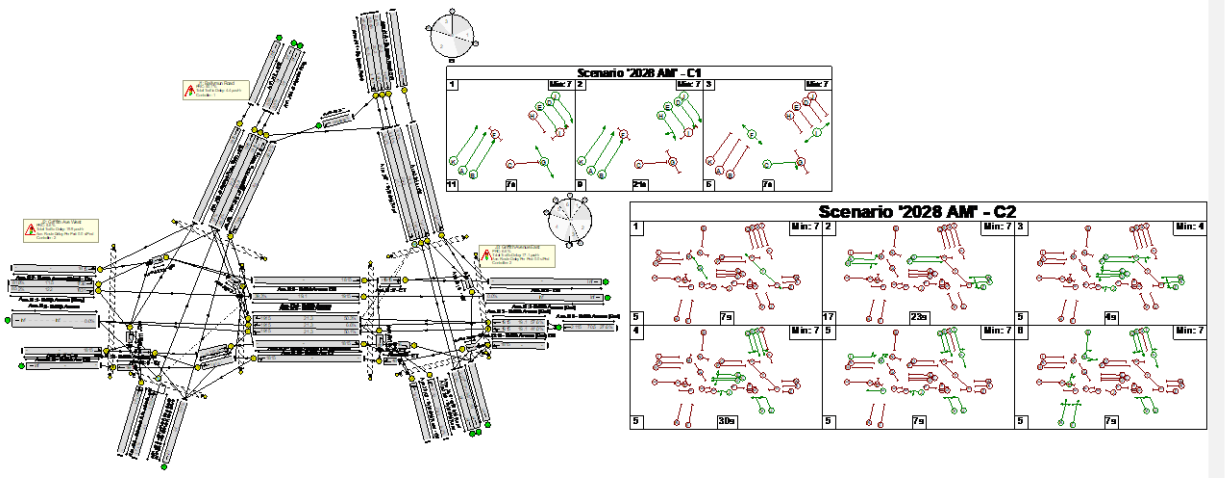
Capacity Used (%)

Mode

Do Something : 2028 : AM

Cycle C1= 60secs
Cycle C2= 120secs
PRC = 5.6%
Delay = 41.42pcuH

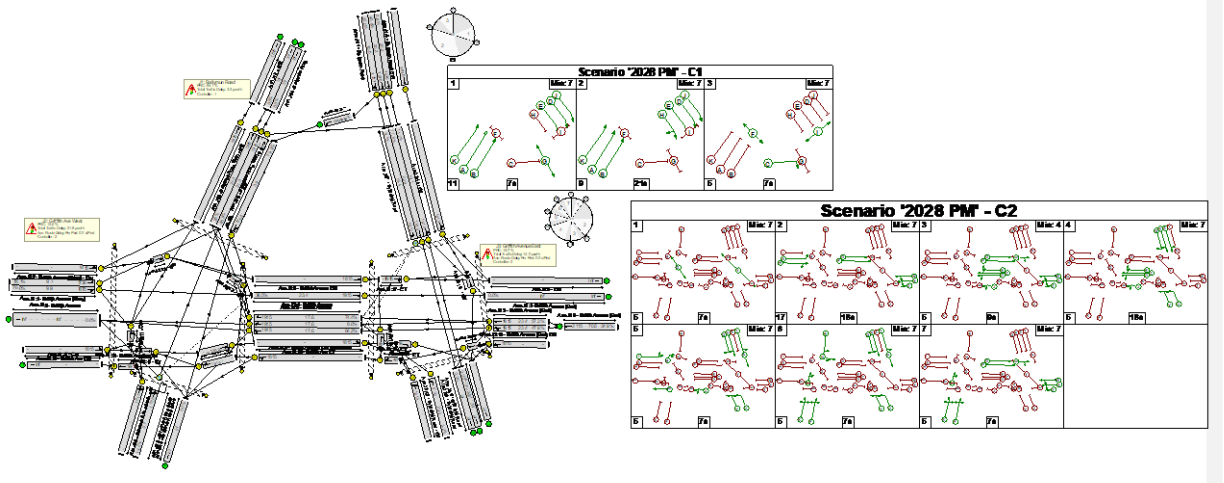
Bus Delay
Inbound = 38s
Outbound = 21s



Do Something : 2028 : PM

Cycle C1= 60secs
Cycle C2= 120secs
PRC = 12.6%
Delay = 39.09pcuH

Bus Delay
Inbound = 50s
Outbound = 28s

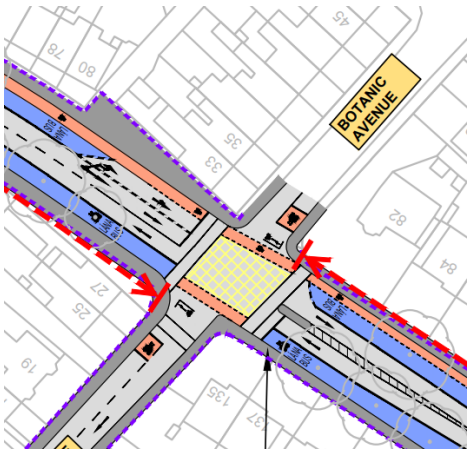
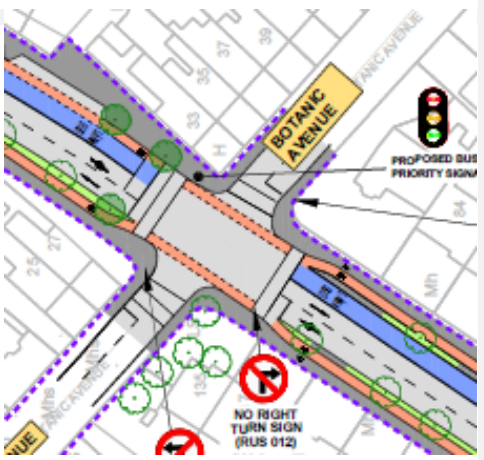


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Botanic Avenue/St Mobhi Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A six stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

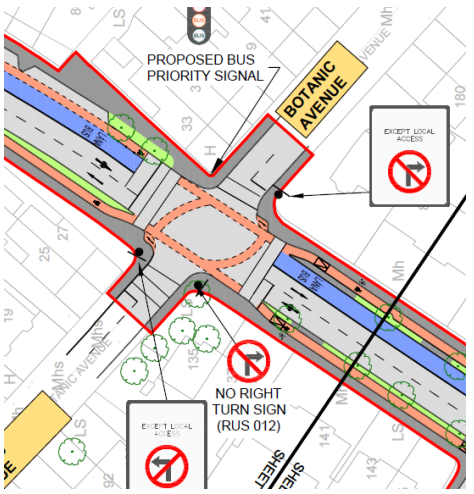
	Change Made	Reason for Change	Impact of Change
EXISTING		1. Inbound cycle infrastructure extended 2. Inbound and outbound bus lanes introduced 3. Pedestrian crossing on Botanic Avenue eastern arm removed 4. ASL and turn left to go right stacking provided on minor arms	1. To provide continuous cycle infrastructure along the corridor 2. To improve bus priority along the corridor 3. Drawing error 4. To provide stacking space for turning cyclists	1. Reduced footpath space to accommodate increase in road cross section 2. Improved bus priority 3. Apparent reduction in pedestrian facilities 4. Safe stacking space for cyclists
DRAFT PRO (PC2)		1. Outbound bus lane shared with local traffic only 2. Pedestrian crossing reinstated 3. ASL and turn left to go right boxes removed on Botanic Avenue 4. Inbound bus lane segregated from traffic 5. Outbound cycle infrastructure provided.	1. Proposed bus gate at Griffith Ave will significantly reduce traffic volumes along the corridor 2. To maintain pedestrian crossing opportunities 3. In line with the recommendations in the National Cycle Manual 4. To improve bus priority 5. To improve cycle infrastructure provision	1. Improved bus provision in the southbound direction 2. Earlier error amended 3. No turning provision for cyclists from the main corridor 4. Separate signal staging required between buses and general traffic 5. Improved cycle infrastructure provision
DRAFT PRO (PC3)		1. Realignment of cycle infrastructure to ensure pedestrian crossing priority	1. To ensure pedestrian priority across the cycle track	1. Increased pedestrian intergreen times and reduced operational capacity of the junction

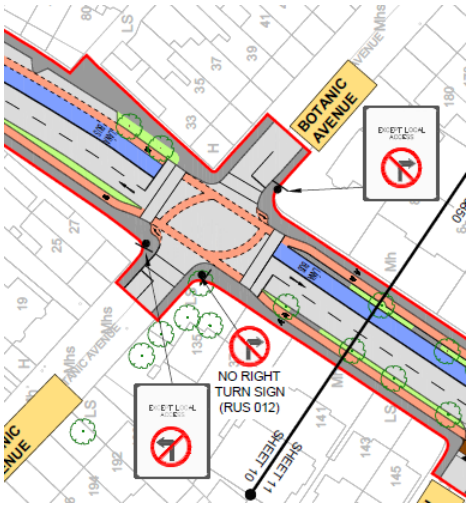
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Botanic Avenue/St Mobhi Road

EXISTING

	Change Made	Reason for Change	Impact of Change
STAGE B REVIEW	1. Right turn stacking provision for cyclists	1. To create safe opportunities for cyclists to turn right	1. Requires a separate cycle stage due to a lack of downstream cycle lanes on Botanic Avenue
FINAL DRAFT (WIP)	1. None	1. None	1. None

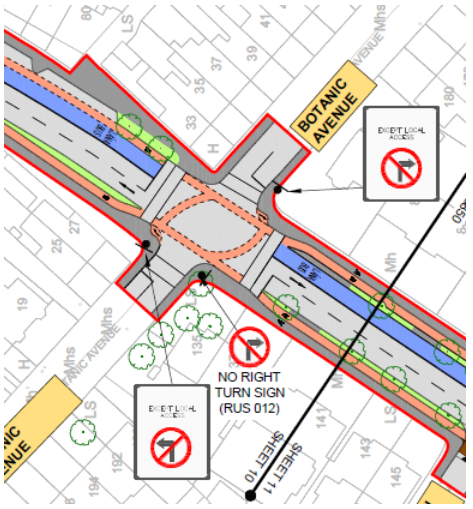




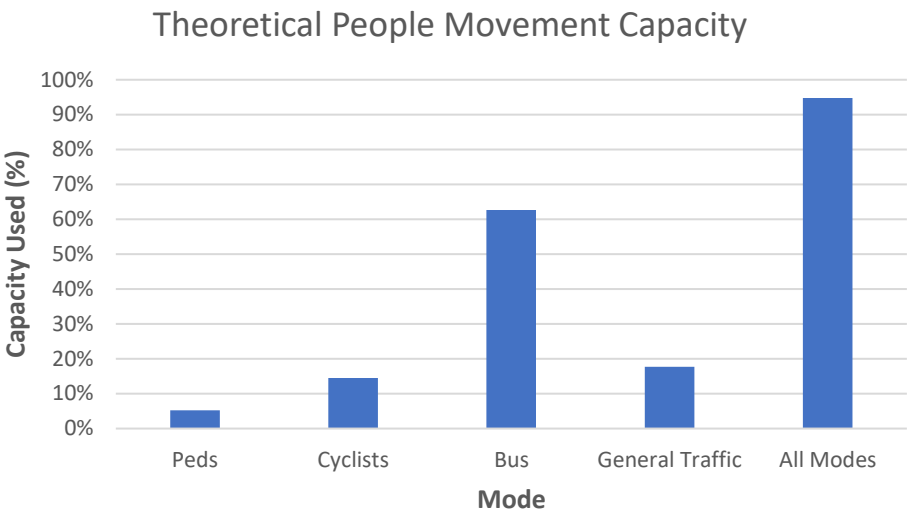
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Botanic Avenue/St Mobhi Road

Capacity / Delay



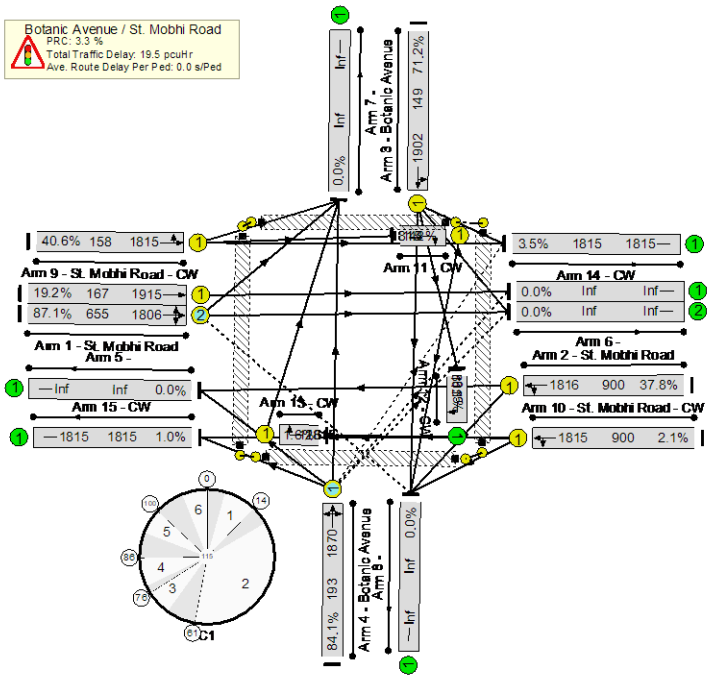
People Movement Calculator – Capacity

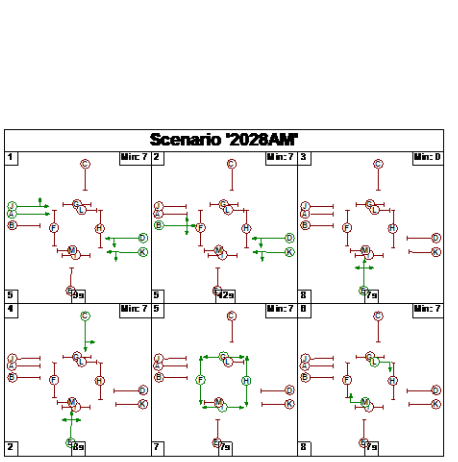


Do Something : 2028 : AM

Cycle = 115secs
PRC = 3.3%
Delay = 19.55pcuH

Bus Delay
Inbound = 62s
Outbound = N/A

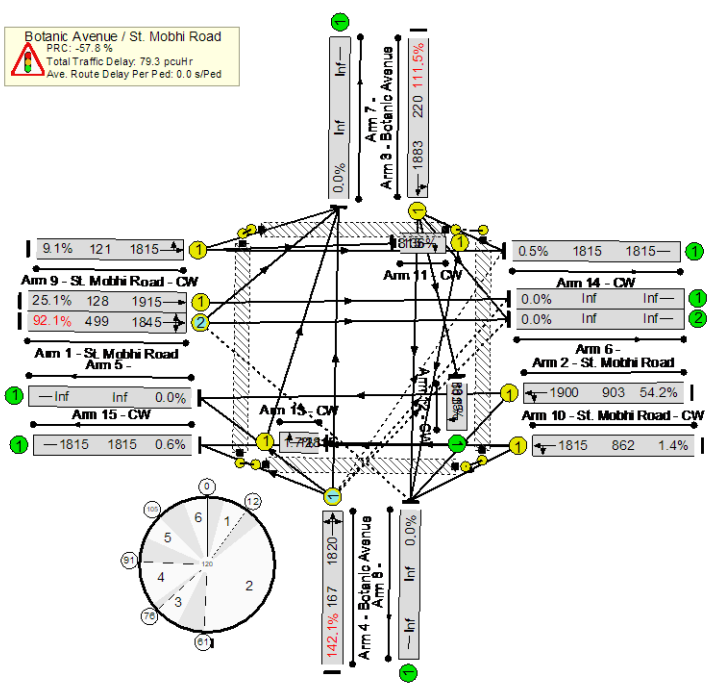


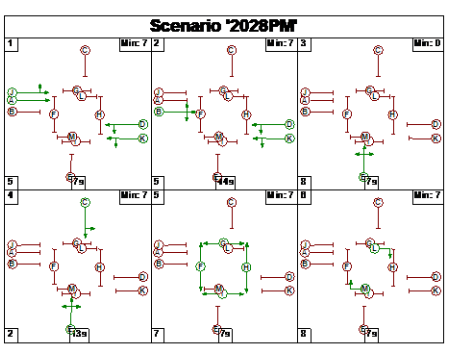


Do Something : 2028 : PM

Cycle = 120secs
PRC = -57.8%
Delay = 79.29pcuH

Bus Delay
Inbound = 72s
Outbound = N/A



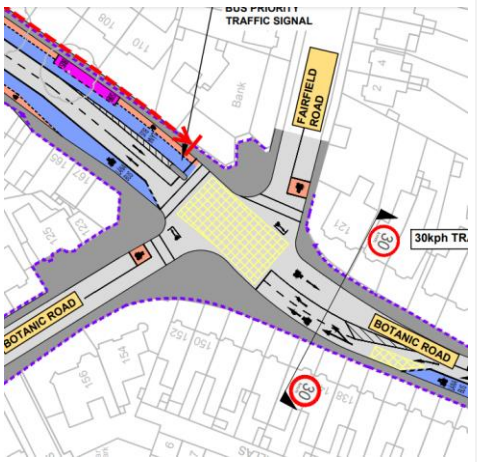
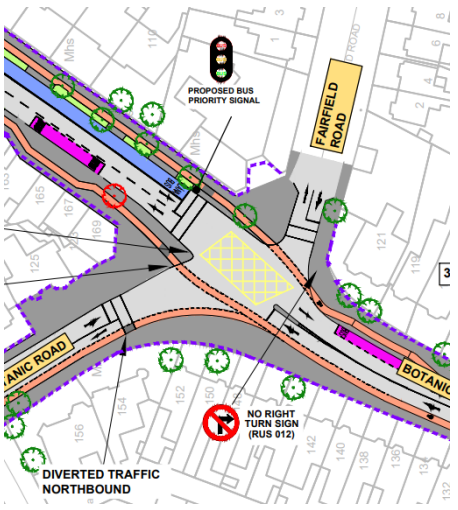
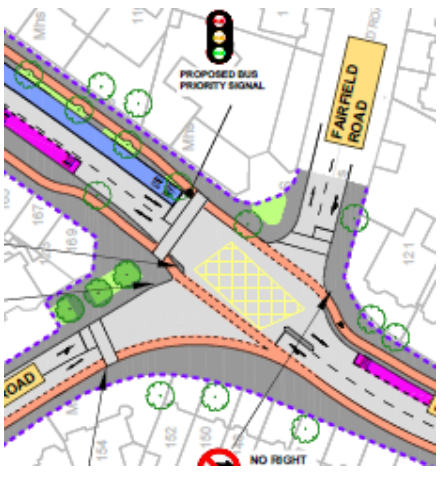


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Botanic Road/St Mobhi Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing.
Removed slip lane and island and introduced Bus lane infrastructure to provide priority for buses.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A five stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Junction footprint reduced 2. ASL and turn left to go right stacking provided on minor arms 3. Inbound bus lane provided to junction stop line. Outbound bus lane provided with shuttle on Botanic Road southern arm 4. Inbound and outbound cycle lane removed south of the junction	1. To improve safety for pedestrians and cyclists. 2. To provide stacking space for turning cyclists 3. To improve bus provision along the corridor 4. Reallocation of road space for buses	1. Improved opportunities for public realm upgrades 2. Safe stacking space for cyclists 3. Improved bus provision along the corridor 4. Reduced provision for cyclists along the corridor
DRAFT PRO (PC2)		1. Inbound and outbound cycle infrastructure reinstated with continuation of northbound cycle lane. 2. Outbound bus lane removed 3. Junction geometry modified 4. ASL and turn left to go right boxes removed on Botanic Avenue	1. To reinstate existing level of cycle infrastructure provision 2. Upstream shuttle facility included due to space constraints and bus gate will reduce outbound traffic volumes 3. To accommodate permitted turning manoeuvres 4. In line with the recommendations in the National Cycle Manual	1. Road cross section reduced and loss of northbound bus north of the junction and loss of a lane at south of the junction. 2. Road space reallocated to reinstate cycle provision 3. Junction footprint expanded 4. No turning provision for cyclists from the main corridor
DRAFT PRO (PC3)		1. Realignment of cycle tracks	1. To ensure pedestrian priority across the cycle track	1. Increased pedestrian intergreen times and reduced operational capacity of the junction

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
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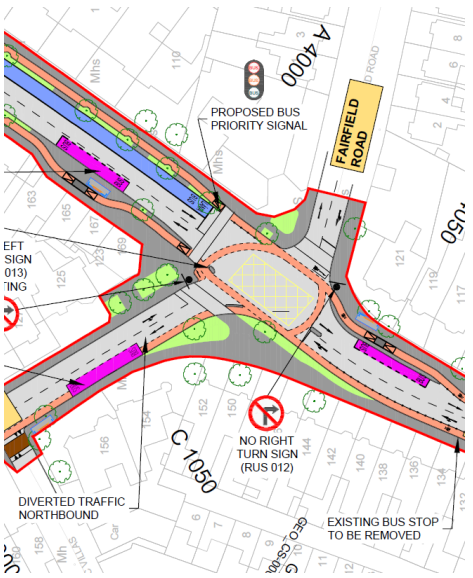
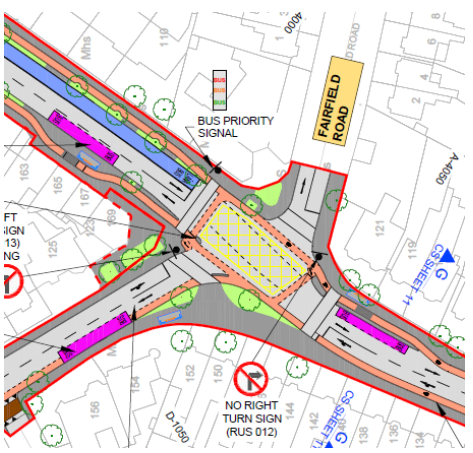
EXISTING

STAGE B REVIEW

FINAL DRAFT (WIP)

Botanic Road/St Mobhi Road

	Change Made	Reason for Change	Impact of Change
	1. Protected right turn stacking provision for cyclists	1. To create safe opportunities for cyclists to turn right	1. Requires a separate cycle stage due to a lack of downstream cycle lanes on Fairfield Road / Botanic Road
	1. Pedestrian crossing added across mainline southern arm.	1. On foot of RSA recommendation	1. Improved pedestrian facilities

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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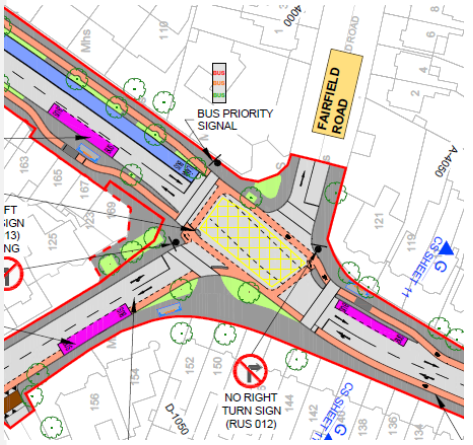
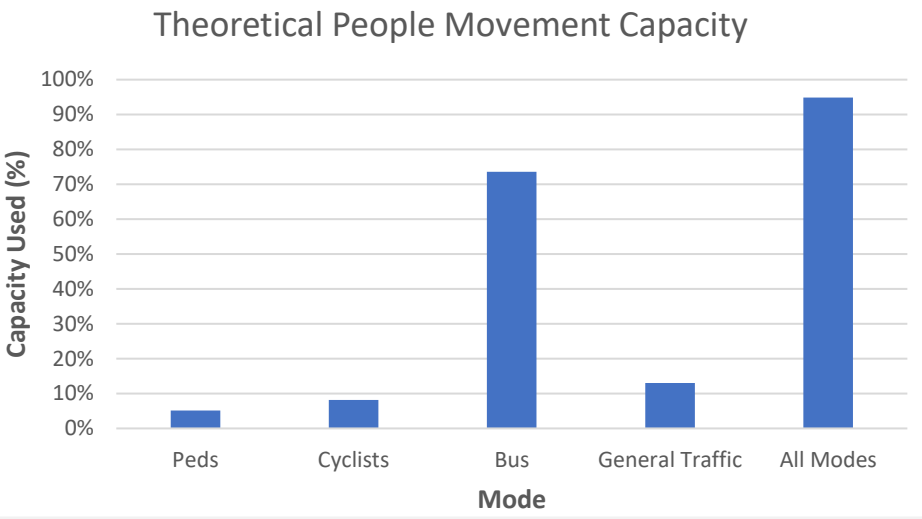
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Botanic Road/St Mobhi Road

Capacity / Delay

People Movement Calculator – Capacity

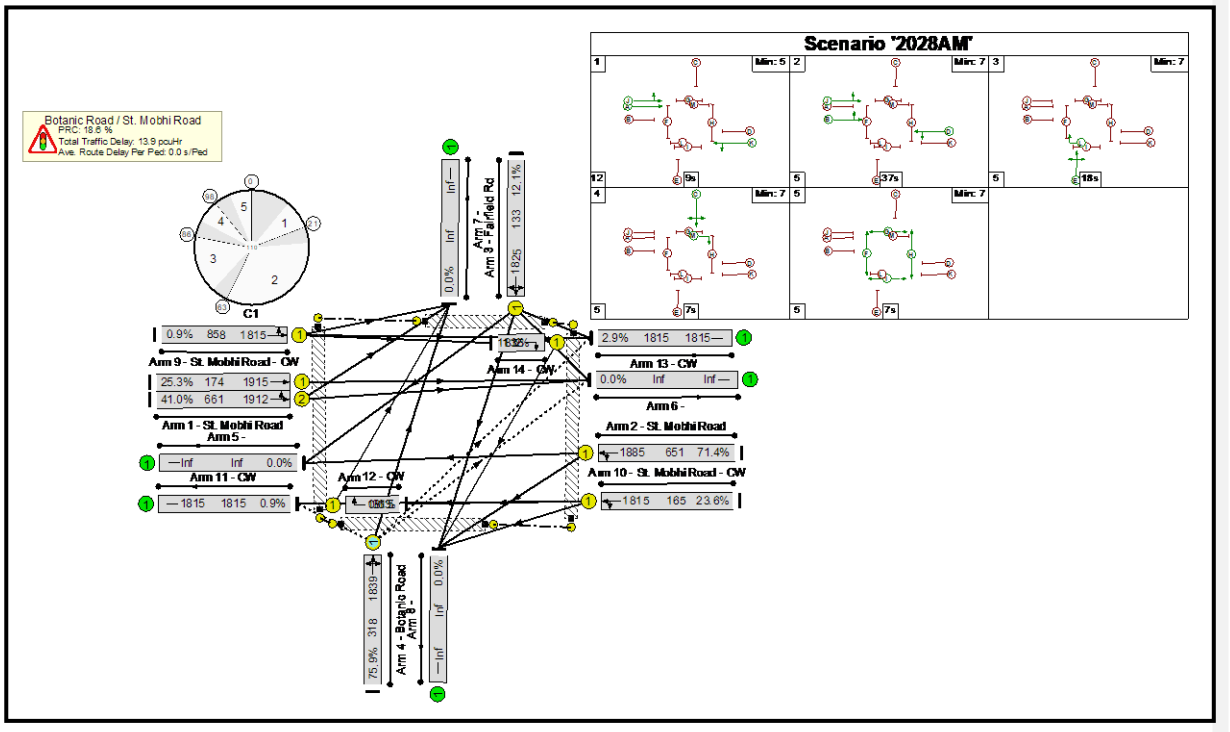




Do Something : 2028 : AM

Cycle = 110secs
PRC = 18.6%
Delay = 13.91pcuH

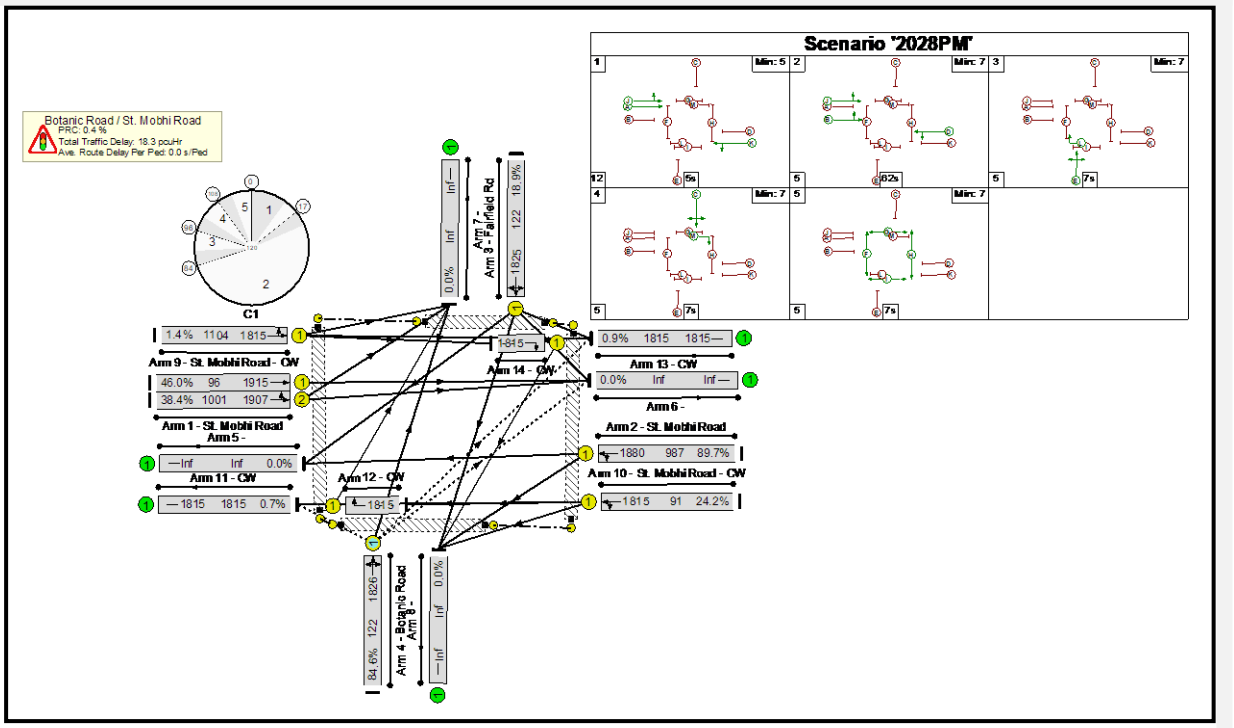
Bus Delay
Inbound = 60s
Outbound = N/A



Do Something : 2028 : PM

Cycle = 120secs
PRC = 0.4%
Delay = 18.34pcuH

Bus Delay
Inbound = 90s
Outbound = N/A

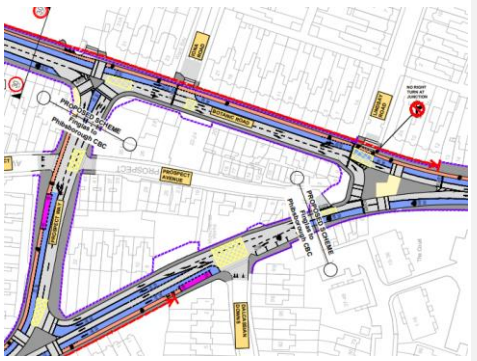
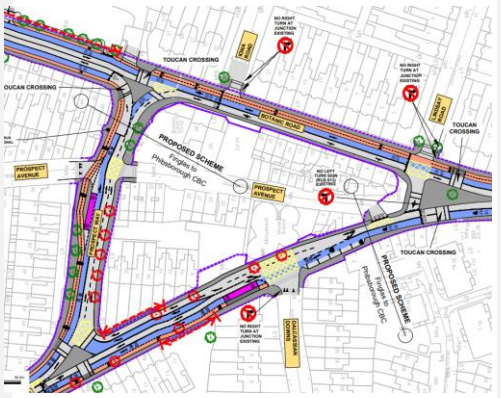
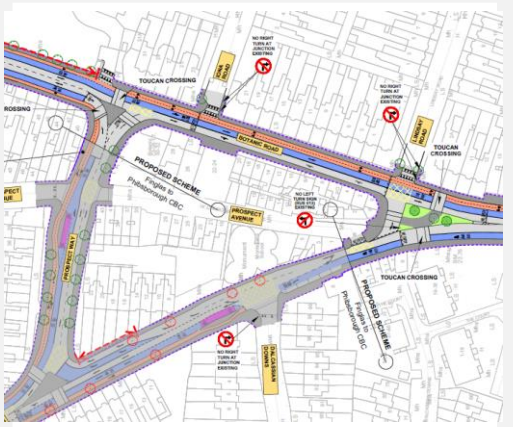


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Harts Corner Gyratory

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of each junction updated by introducing protected cycle infrastructure, new pedestrian crossing and Bus lane infrastructure. Two-way cycle track introduced on Botanic Road south and Prospect way. The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A seven stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING 			
EPR 	1. Inbound and outbound bus lanes provided. 2. Lindsay Road turning slip reduced to single lane 3. Inbound and outbound cycle infrastructure provided 4. Additional crossing on Lindsay Rd turning slip	1. To improve bus provision along the corridor 2. To align with lane reallocation on Finglas Road outbound. 3. To provide continuous cycle infrastructure along the corridor. 4. To provide safe access to the commercial properties	1. Improved bus provision along the corridor. 2. Reallocation of road space for public realm improvements 3. Improved cycle infrastructure provision along the corridor 4. Improved pedestrian crossing facilities
DRAFT PRO (PC2) 	1. Two-way cycle track provided on Botanic Road. 2. Two-way cycle track provided on Prospect Road	1. To eliminate circuitous manoeuvres by cyclists around the gyratory 2. To eliminate circuitous manoeuvres by cyclists around the gyratory	1. Reduced lane allocation. Minimises the need for right turning manoeuvres by cyclists. 2. Reduced lane allocation and footpath width. Minimises the need for right turning manoeuvres by cyclists.
DRAFT PRO (PC3) 	1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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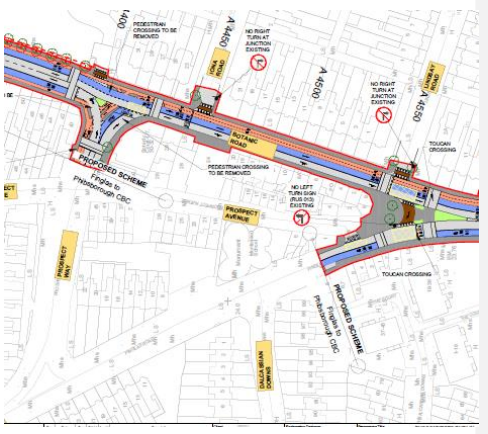
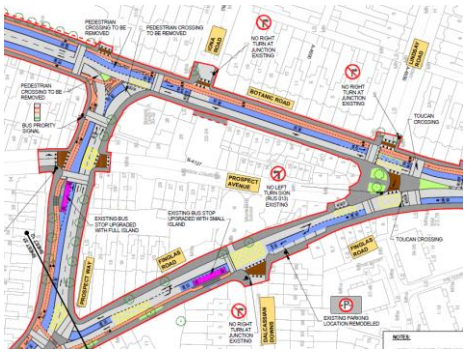
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Harts Corner Gyratory

		Change Made	Reason for Change	Impact of Change
EXISTING				
STAGE B REVIEW		1. Junction reconfiguration at Prospect Road / Ballymun Road to allow for segregated cycle crossings. 2. Additional pedestrian crossings provided 3. Signalised priority for buses on Finglas Road	1. To enable separate pedestrian crossings from cyclists and reduce the number of crossing stages for both 2. To improve pedestrian permeability through the junctions 3. To reduce the road footprint	1. Reduced capacity at the junction due to additional complex cycle manoeuvres. 2. Improved accessibility and permeability for pedestrians 3. Road space allocation rationalised and land acquisition requirements minimised
FINAL DRAFT (WIP)		1. On Finglas Road protected Junction for Cyclist introduced and approach and egress alignments of cycle tracks refined. 2. Priority control on Finglas Road	1. To provide optimum route through and around the junction for cyclists. To ensure cyclist safety. 2. Micro-simulation model predicting traffic congestion due to signal control	1. Improved cycle facilities and modified traffic island to allow cyclists to stop. 2. Minimised potential for traffic congestion and priority maintained for buses to Finglas or Ballymun

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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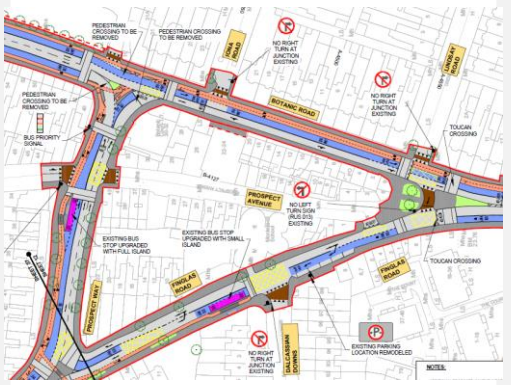
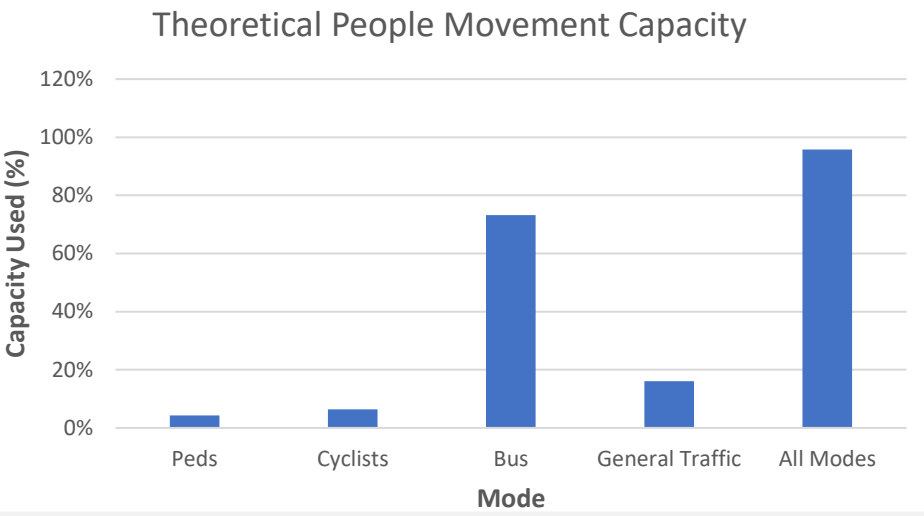
Harts Corner Gyratory

Capacity / Delay



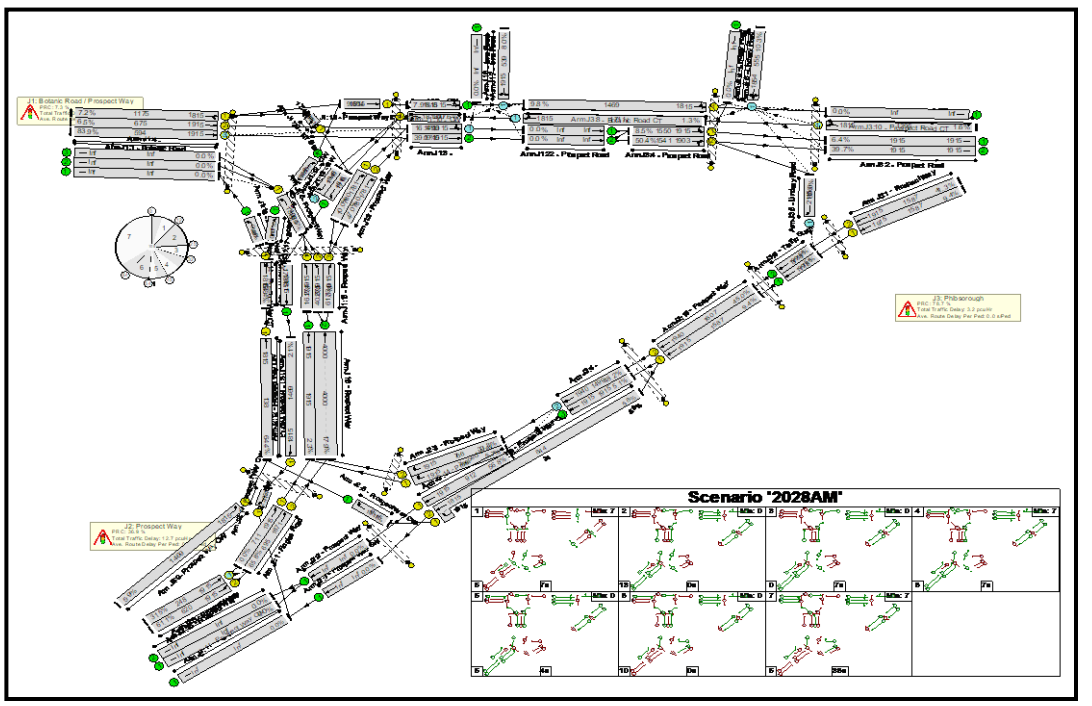
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 105secs
PRC = 7.3%
Delay = 38.16pcuH

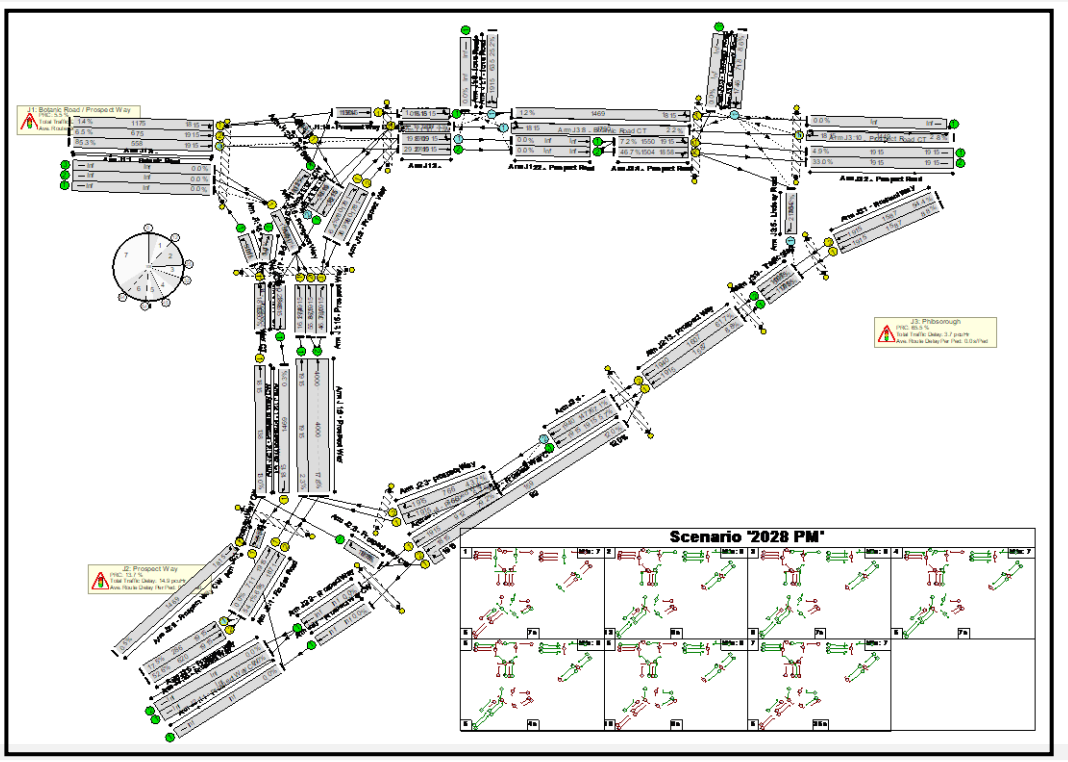
Bus Delay
Inbound = 35s
Outbound = 3s



Do Something : 2028 : PM

Cycle = 105secs
PRC = 5.5%
Delay = 34.90pcuH

Bus Delay
Inbound = 31s
Outbound = 3s

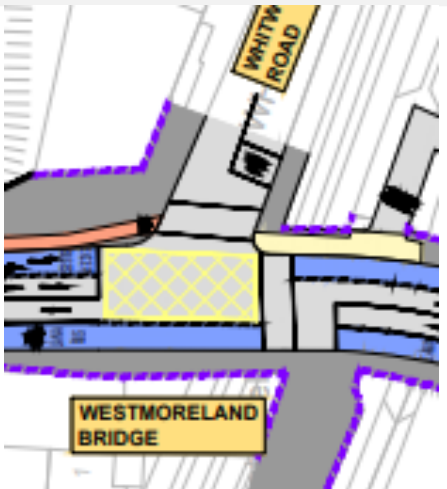
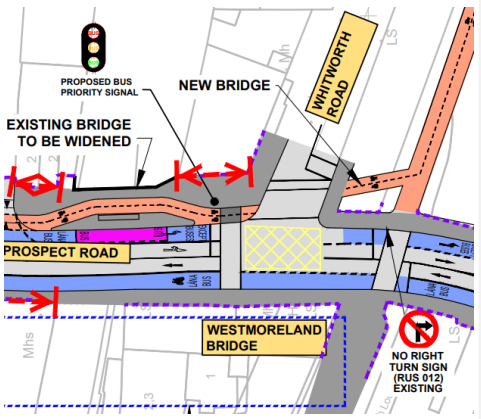
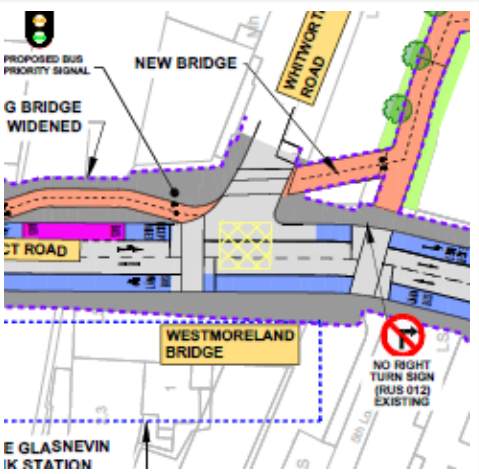


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Whitworth Road/Prospect Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing protected cycle infrastructure, new pedestrian crossing and Bus lane infrastructure. Two-way cycle track introduced on Botanic Road north to tie in with the Royal Canal route.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A four stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

		Change Made	Reason for Change	Impact of Change
EXISTING				
EPR		1. Inbound cycle infrastructure introduced 2. Continuation of inbound and outbound bus lanes 3. ASL provided on Whitworth Road	1. In keeping with developing BusConnects design principles. 2. To improve bus priority along the corridor 3. To provide stacking space for cyclists	1. Improved Cycle facilities 2. Improved bus priority along the corridor. 3. Stacking space available for cyclists when no vehicles have stopped.
DRAFT PRO (PC2)		1. Two-way cycle track introduced on Botanic Road. 2. Junction aligned with Royal Canal Phase 3 proposals	1. To ensure continuation of the two-way cycle track to the Royal Canal Avenue quiet street route 2. To ensure consistency with future infrastructure improvement schemes	1. New bridges required. 2. Increased intergreen times from the southern arm.
DRAFT PRO (PC3)		1. Two-way cycle track realignment 2. Left turns segregated from the bus lane	1. Design error 2. To improve bus priority through the junction	1. Cycle track not aligned with toucan crossing 2. Separate signal staging required

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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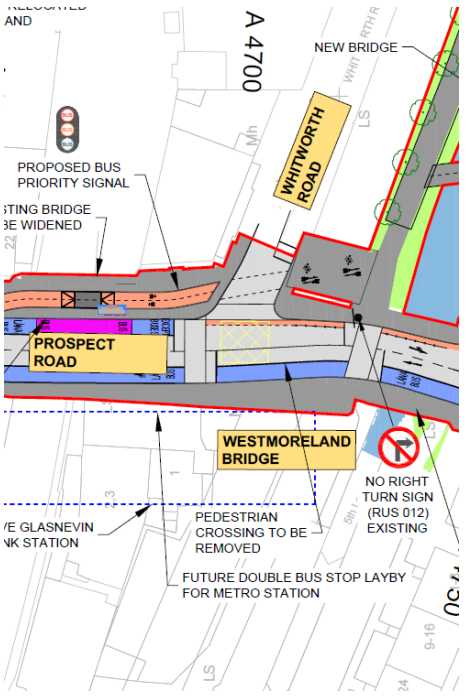
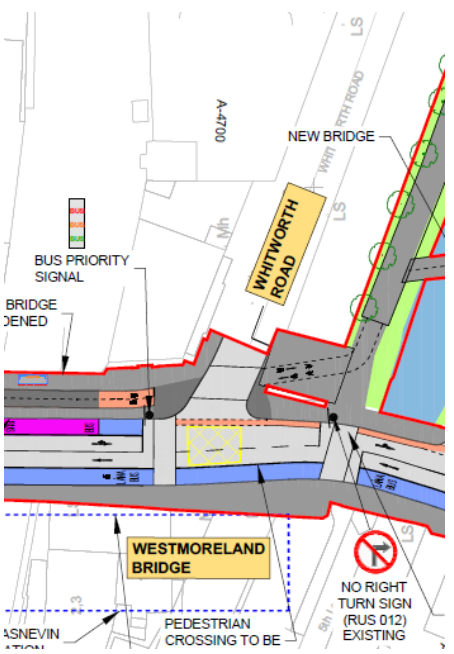
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

		Change Made	Reason for Change	Impact of Change
EXISTING	Whitworth Road/Prospect Road 			
STAGE B REVIEW		1. Two-way cycle track realigned 2. Inbound downstream lane reduced to single lane 3. Inbound on road cycle lane introduced 4. Intermediate stop lines added at pedestrian crossings	1. To improve the tie-in with the toucan crossing 2. To improve bus priority downstream of the junction 3. To provide access for cyclists to Phibsborough centre 4. To minimise intergreen time requirements	1. Improved cycle facilities 2. Additional road space available to increase pedestrian footpath width 3. Improved cycle access to and permeability through Phibsborough 4. Potential congestion for vehicles in the outbound direction
FINAL DRAFT (WIP)		1. Two-way cycle track reconfigured to meet a shared landing area 2. Toucan crossing width improved 3. Intermediate stop lines removed at pedestrian crossing in outbound direction	1. To improve the space available for interaction between cyclists and pedestrians 2. To improve crossing facilities for pedestrians in particular 3. To eliminate potential congestion for vehicles in the outbound direction from Whitworth Road	1. Improved area for interaction between cyclists and pedestrians 2. Improved crossing facilities 3. Intergreens reinstated to ensure all vehicles clear the junction

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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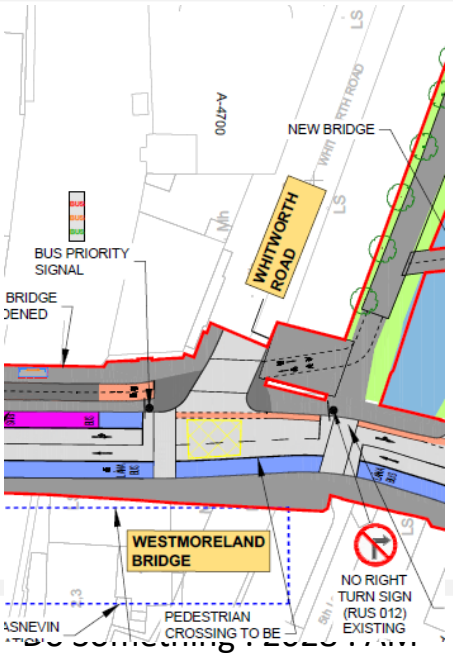
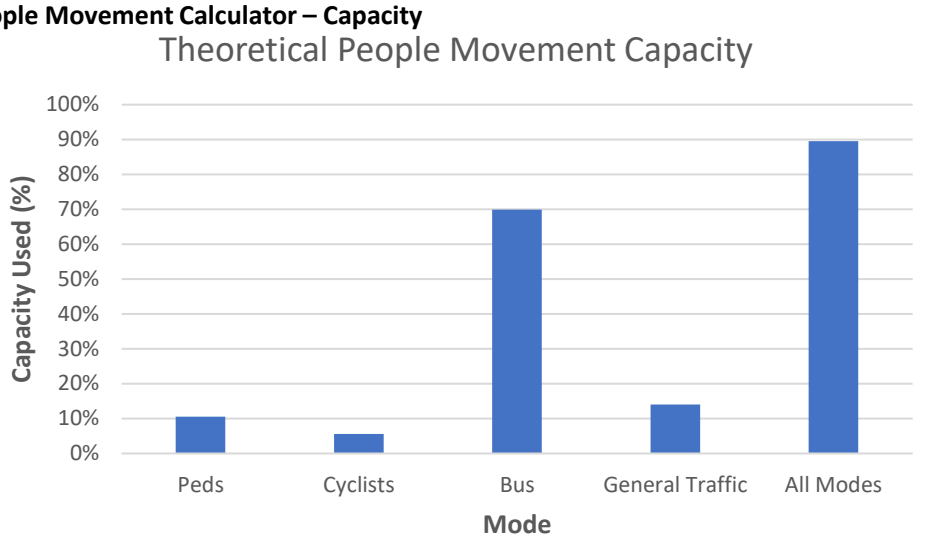
Whitworth Road/Prospect Road

Capacity / Delay

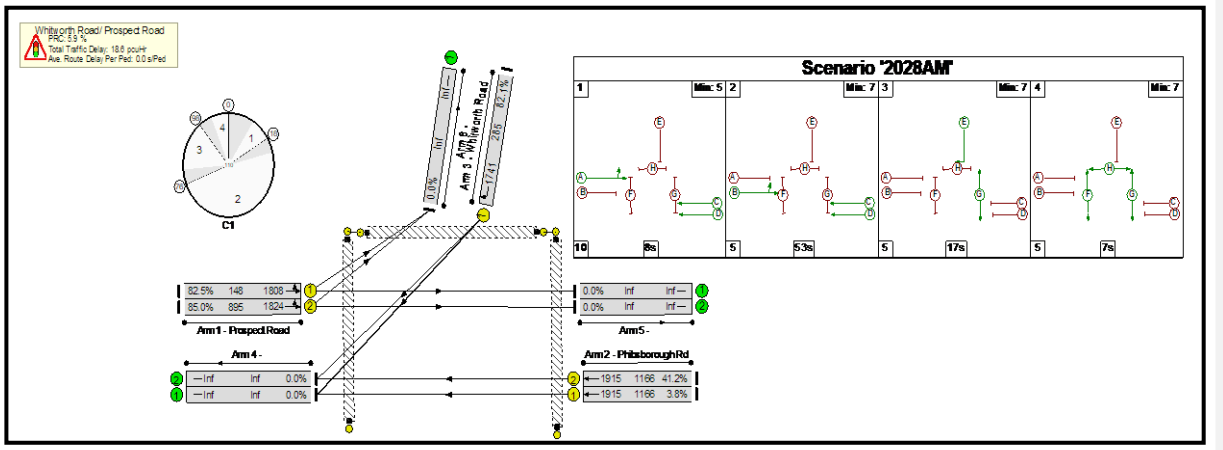


People Movement Calculator – Capacity



Cycle = 110secs
PRC = 5.9%
Delay = 18.59pcuH

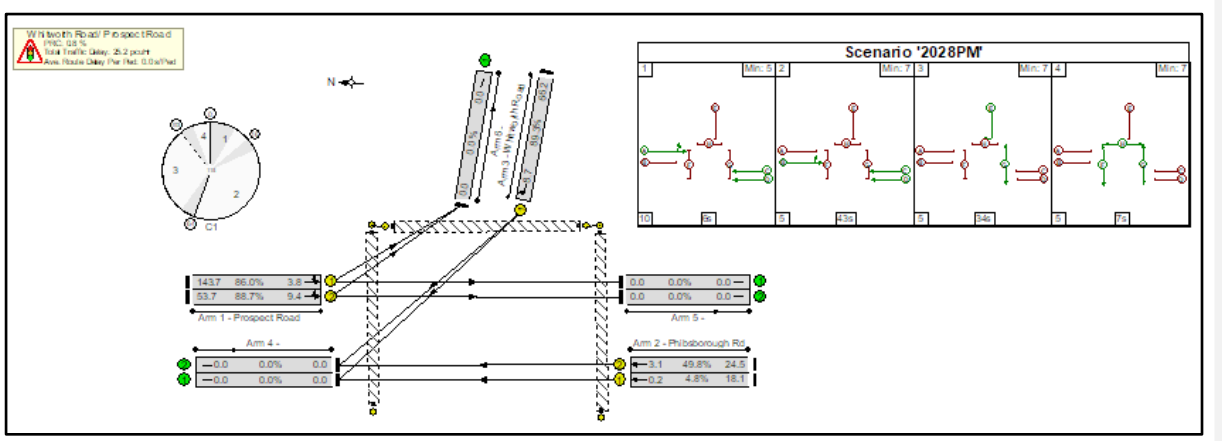
Bus Delay
Inbound = 110s
Outbound = 10s



Do Something : 2028 : PM

Cycle = 115secs
PRC = 0.8%
Delay = 25.20pcuH

Bus Delay
Inbound = 144s
Outbound = 18s

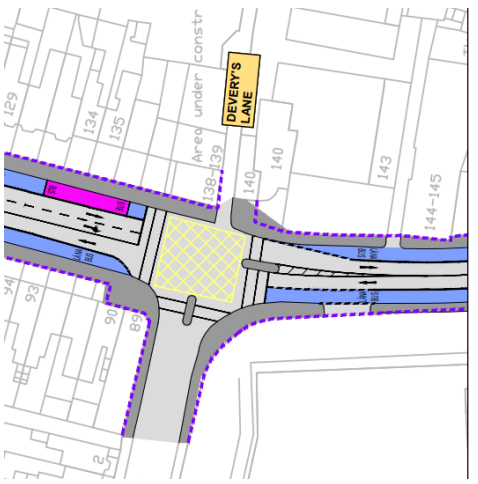
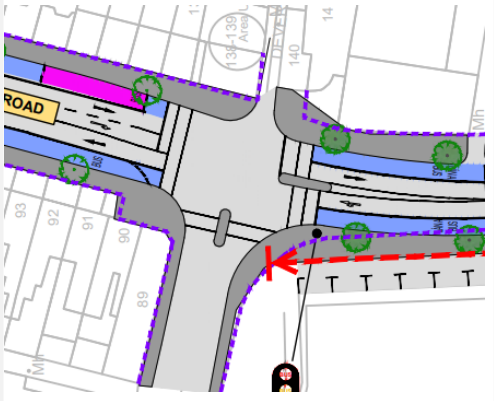
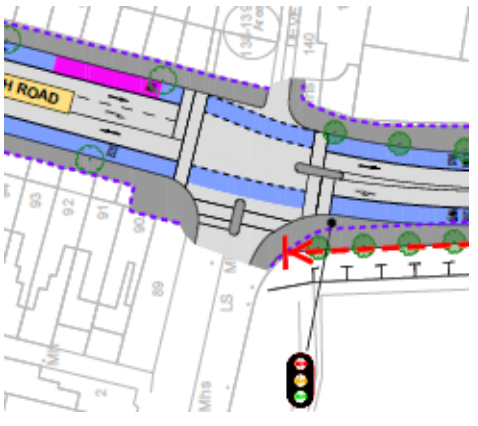


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Connaught Street/Phibsborough Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing new pedestrian crossing and Bus lane infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

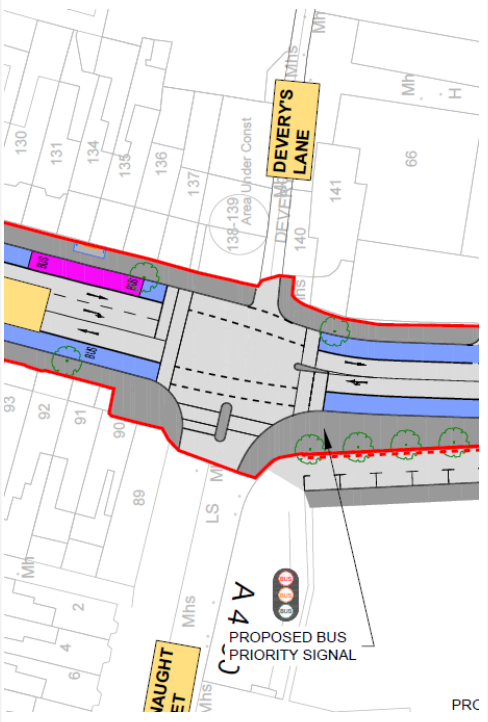
Signal Operation
A five stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

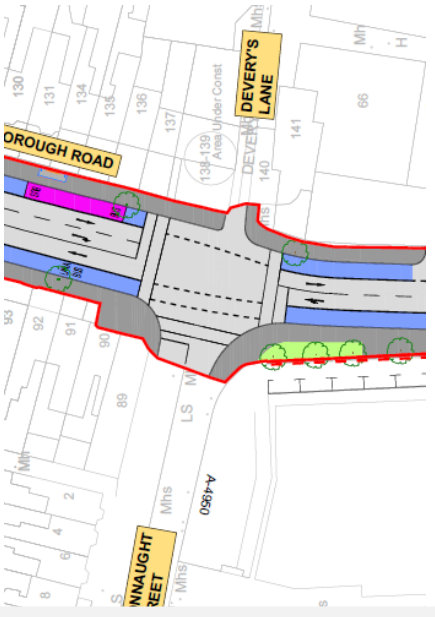
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Pedestrian crossing facilities improved and provided on all arms 2. Inbound bus lane provided	1. To provide safe and direct crossings for pedestrians. 2. To ensure bus priority along the corridor	1. Improved pedestrian facilities 2. Improved bus provision. 3. Pedestrian footpath width narrowed
DRAFT PRO (PC2)		1. Footpath widened along outbound lanes.	1. To ensure adequate pedestrian provision along the main corridor.	1. Land acquisition required.
DRAFT PRO (PC3)		1. Lane guidance markings added	1. To ensure safe routing by all ahead vehicles	1. Ensures safe legibility of the junction by vehicles

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Connaught Street/Phibsborough Road

	Change Made	Reason for Change	Impact of Change
EXISTING			
STAGE B REVIEW	1. Two-way cycle track realigned 2. Inbound downstream lane reduced to single lane 3. Inbound on road cycle lane introduced 4. Intermediate stop lines added at pedestrian crossings	1. To improve the tie-in with the toucan crossing 2. To improve bus priority downstream of the junction 3. To provide access for cyclists to Phibsborough centre 4. To minimise intergreen time requirements	1. Improved cycle facilities 2. Additional road space available to increase pedestrian footpath width 3. Improved cycle access to and permeability through Phibsborough 4. Potential congestion for vehicles in the outbound direction
FINAL DRAFT (WIP)	1. Two-way cycle track reconfigured to meet a shared landing area 2. Toucan crossing width improved 3. Intermediate stop lines removed at pedestrian crossing in outbound direction	1. To improve the space available for interaction between cyclists and pedestrians 2. To improve crossing facilities for pedestrians in particular 3. To eliminate potential congestion for vehicles in the outbound direction from Whitworth Road	1. Improved area for interaction between cyclists and pedestrians 2. Improved crossing facilities 3. Intergreens reinstated to ensure all vehicles clear the junction

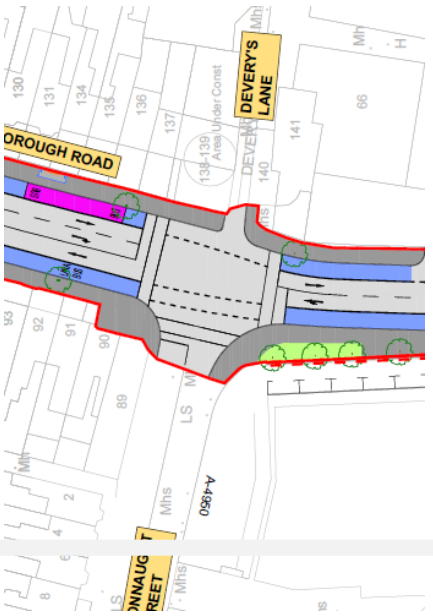




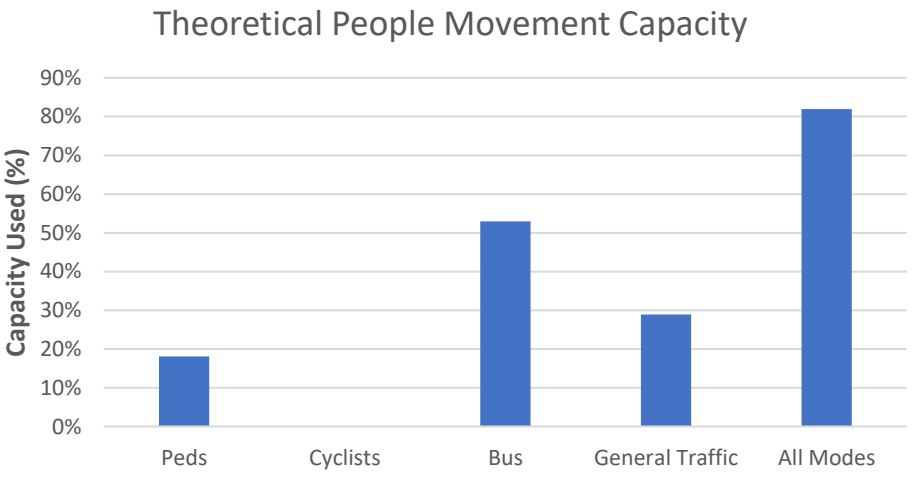
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Connaught Street/Phibsborough Road

Capacity / Delay



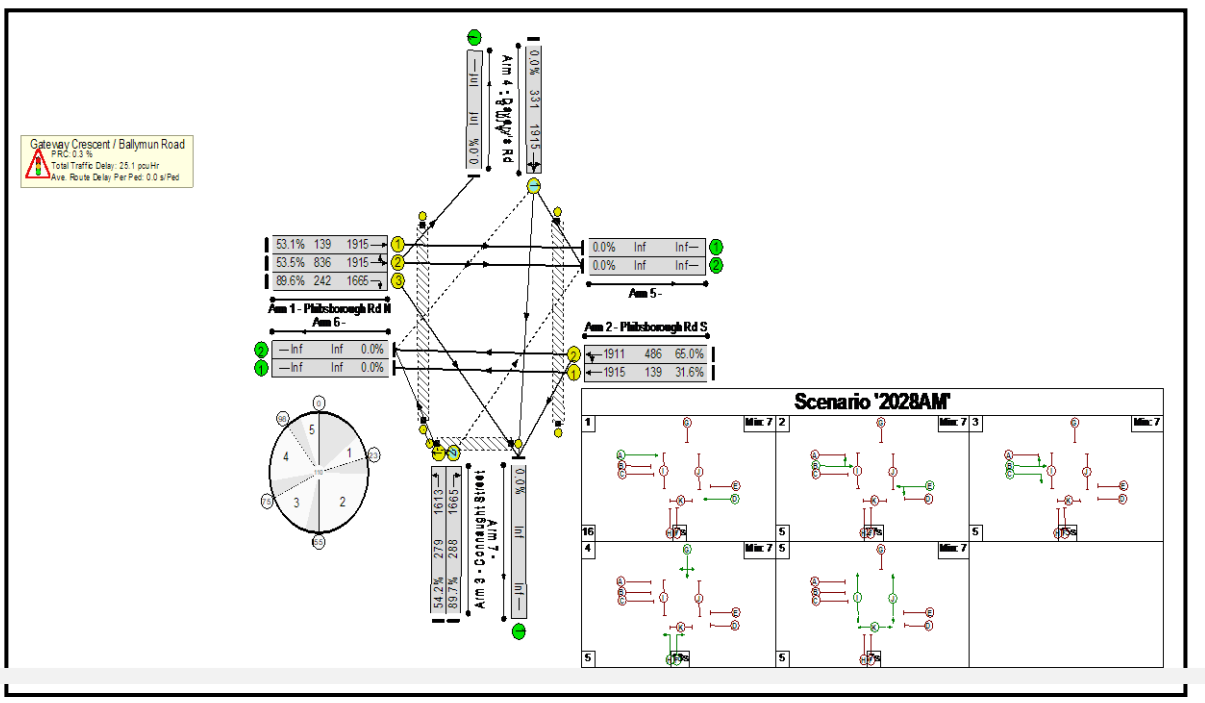
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 110secs
PRC = 0.3%
Delay = 25.15pcuH

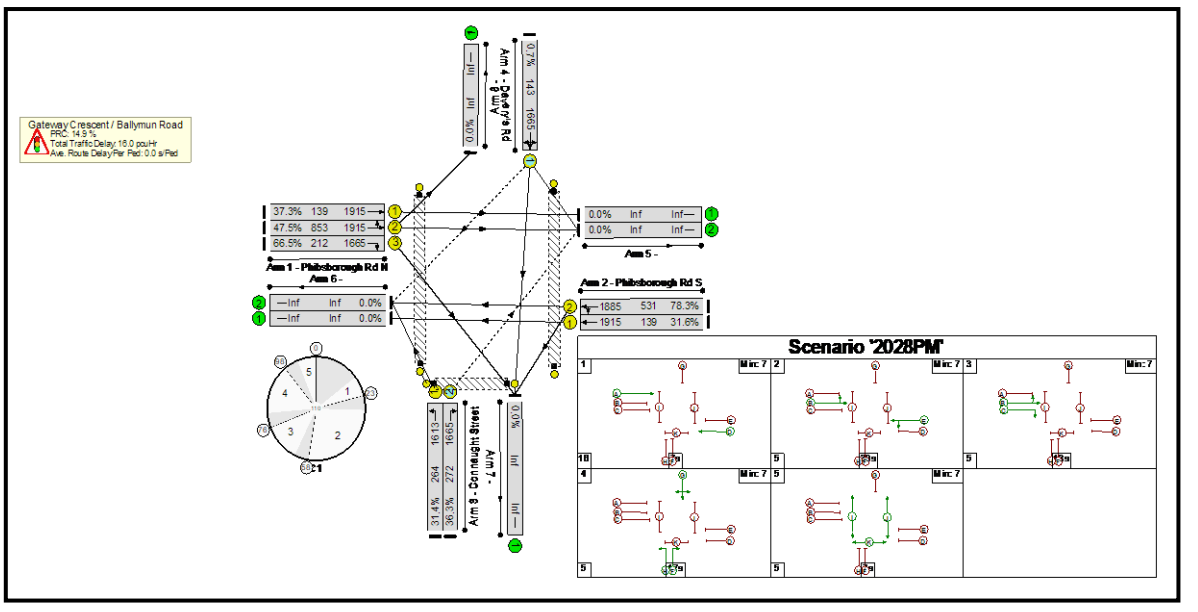
Bus Delay
Inbound = 69s
Outbound = 67s



Do Something : 2028 : PM

Cycle = 110secs
PRC = 14.9%
Delay = 15.99pcuH

Bus Delay
Inbound = 76s
Outbound = 67s



Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

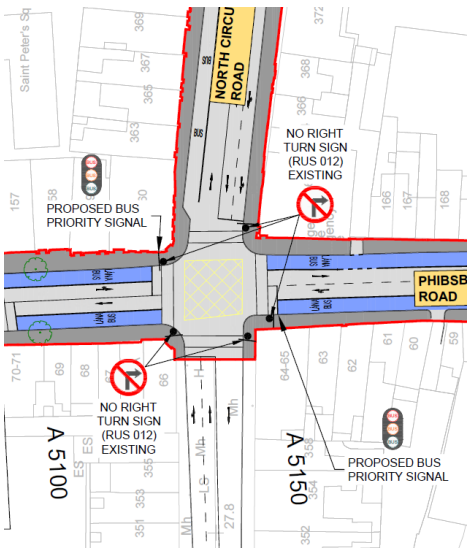
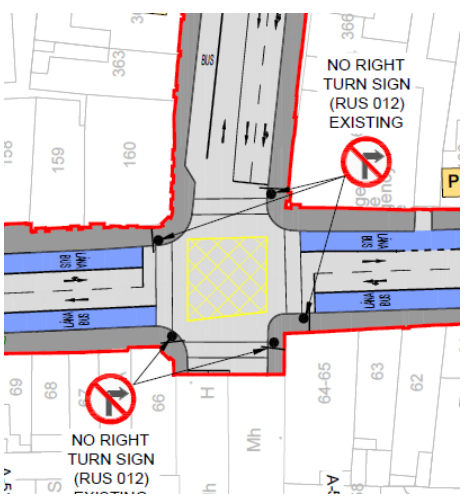
Doyles Corner

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing Bus lane infrastructure.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A four stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
			
EPR	1. Inbound and outbound bus lanes along the main corridor	1. To ensure bus priority along the corridor.	1. Improved bus priority along the corridor
DRAFT PRO (PC2)	1. None.	1. None	1. None.
DRAFT PRO (PC3)	1. None	1. None	1. None

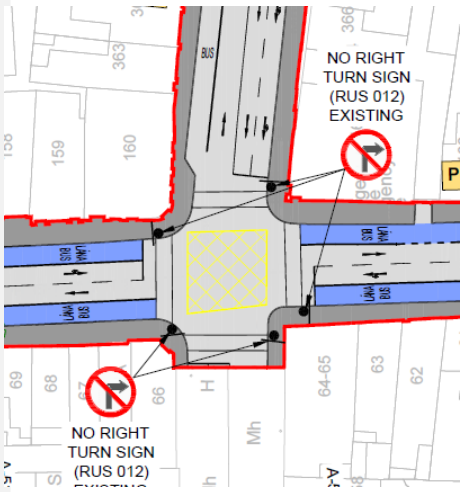
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Doyles Corner			
EXISTING 			
STAGE B REVIEW 	**Change Made** 1. None	**Reason for Change** 1. None	**Impact of Change** 1. None
FINAL DRAFT (WIP) 	1. None	1. None	1. None

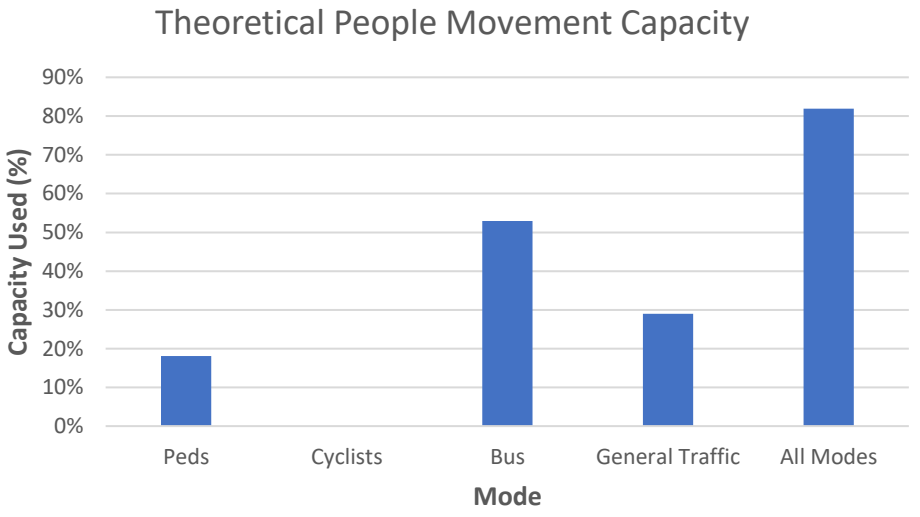
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Doyles Corner

Capacity / Delay



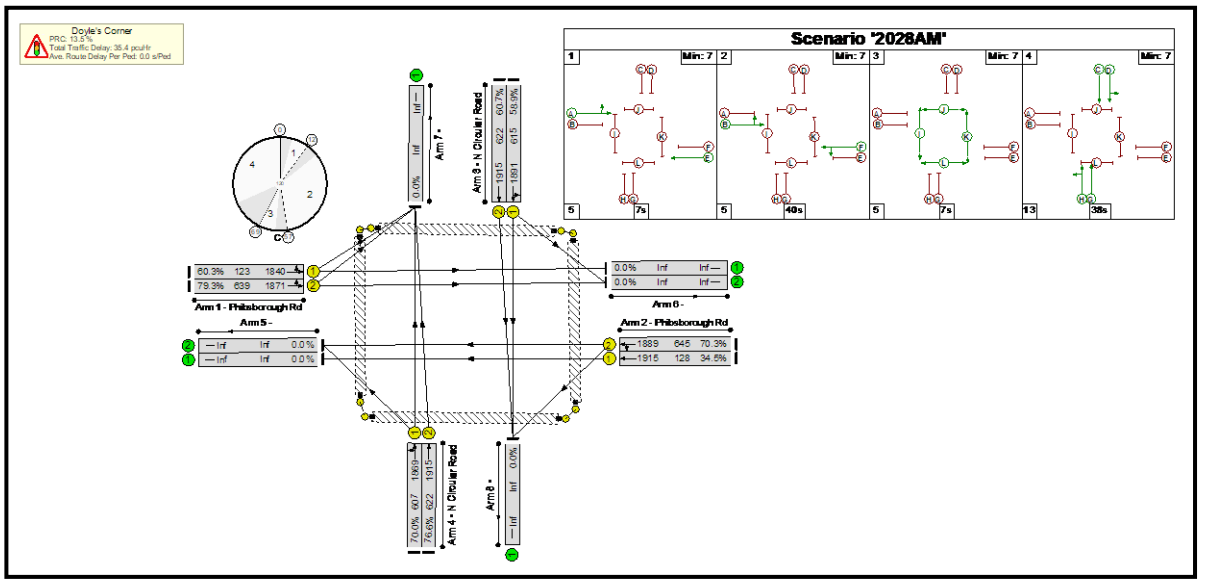
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 13.5%
Delay = 35.36pcuH

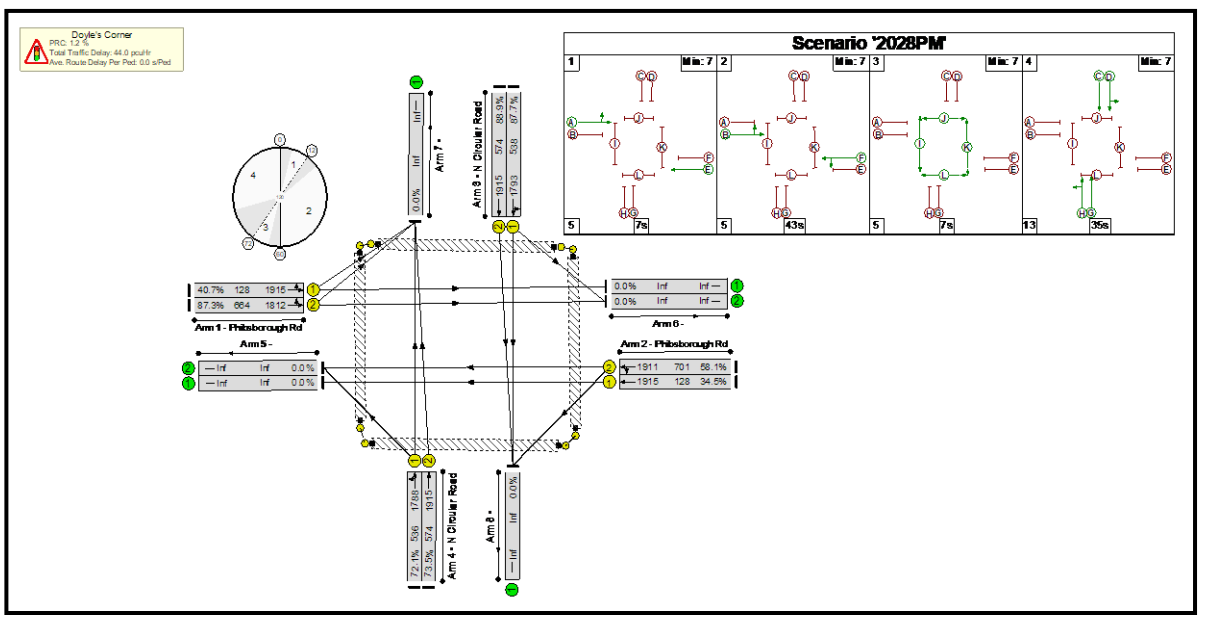
Bus Delay
Inbound = 90s
Outbound = 75s



Do Something : 2028 : PM

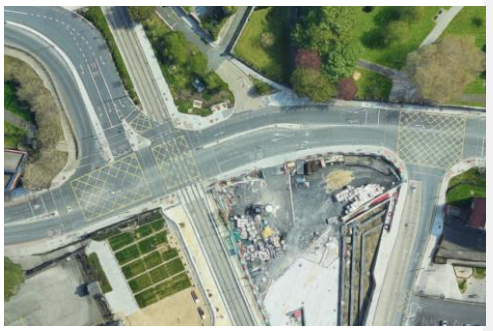
Cycle = 120secs
PRC = 1.2%
Delay = 43.96pcuH

Bus Delay
Inbound = 77s
Outbound = 75s



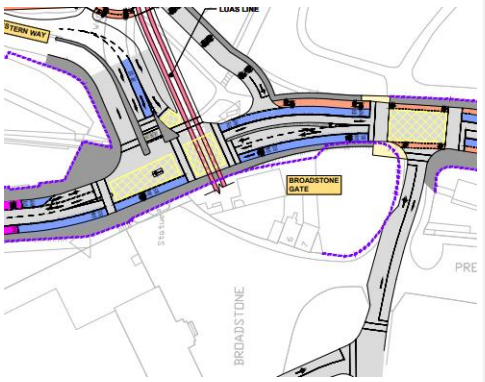
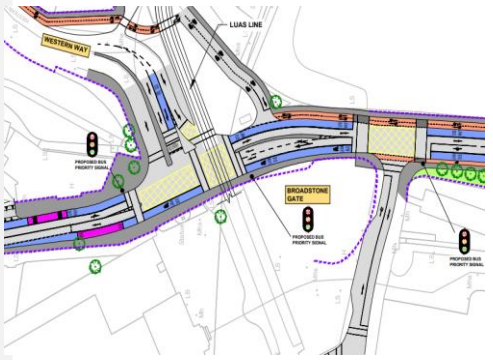
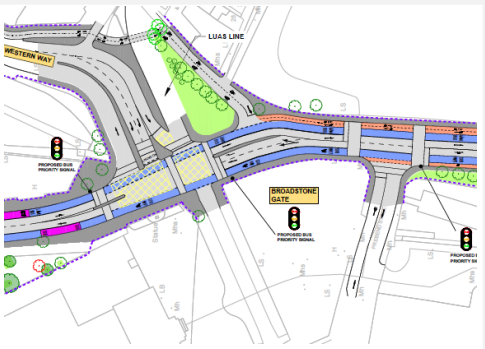
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Western Way/ Broadstone

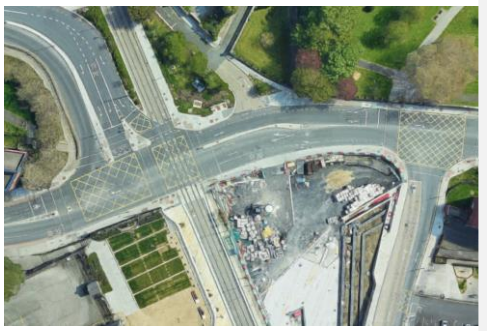
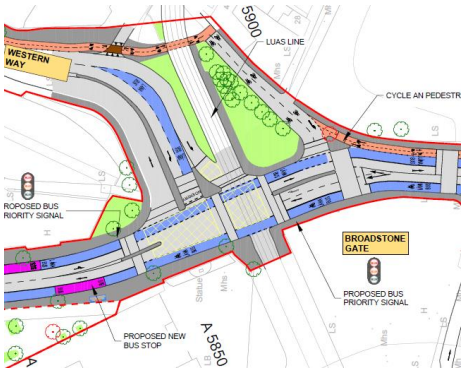


Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing Bus lane infrastructure.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A six stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. No on road cycle infrastructure provision through Western Way. 2. Quiet Street cycle route through Temple Cottages 3. Two-way section of cycle track between junctions 4. Continuous inbound and outbound bus lanes	1. A facilitate a continuation of bus lanes along the corridor 2. To enable the provision of continuous bus facilities along the corridor 3. To accommodate access to and from quiet street route 4. To ensure bus priority along the corridor	1. Improved bus priority provision along the corridor 2. Improved bus provision in the southbound direction 3. Reduced footpath and public realm area 4. Dedicated cycle infrastructure removed and alternative route provided
DRAFT PRO (PC2)		1. Vehicular turning movements segregated from bus lanes 2. Two-way cycle track continued south along the inbound corridor	1. To ensure bus priority through the junction. 2. To minimise the necessary crossing manoeuvres by familiar cyclists	1. Additional signal staging required to segregated to movements 2. Improved cycle infrastructure provision
DRAFT PRO (PC3)		1. Bus Lane on Western Way indicated as general traffic lane 2. Lane guidance marking added through the junction	1. Drawing error 2. To ensure land discipline by drivers	1. Drawing error 2. Safer vehicular routing through the junction

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

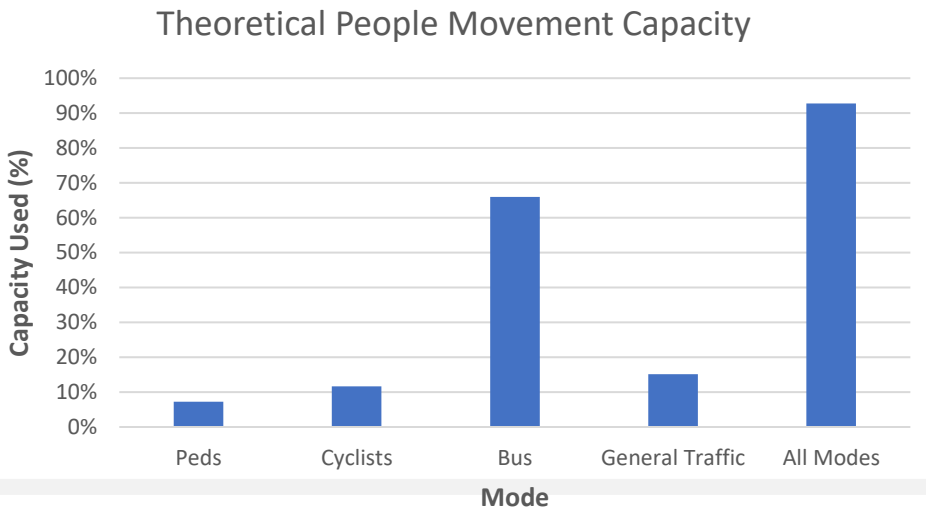
	Western Way/ Broadstone			
EXISTING				
		Change Made	**Reason for Change**	**Impact of Change**
STAGE B REVIEW		1. None	1. None	1. None
FINAL DRAFT (WIP)		1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Western Way/ Broadstone

Capacity / Delay

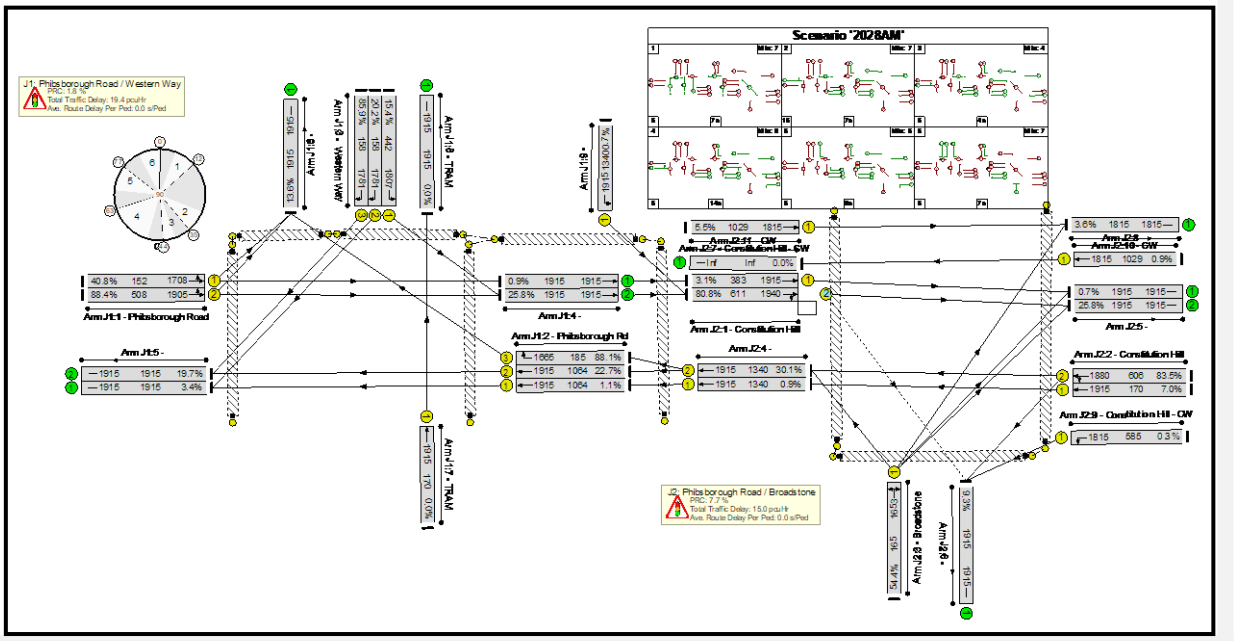
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 90secs
PRC = 1.8%
Delay = 34.48pcuH

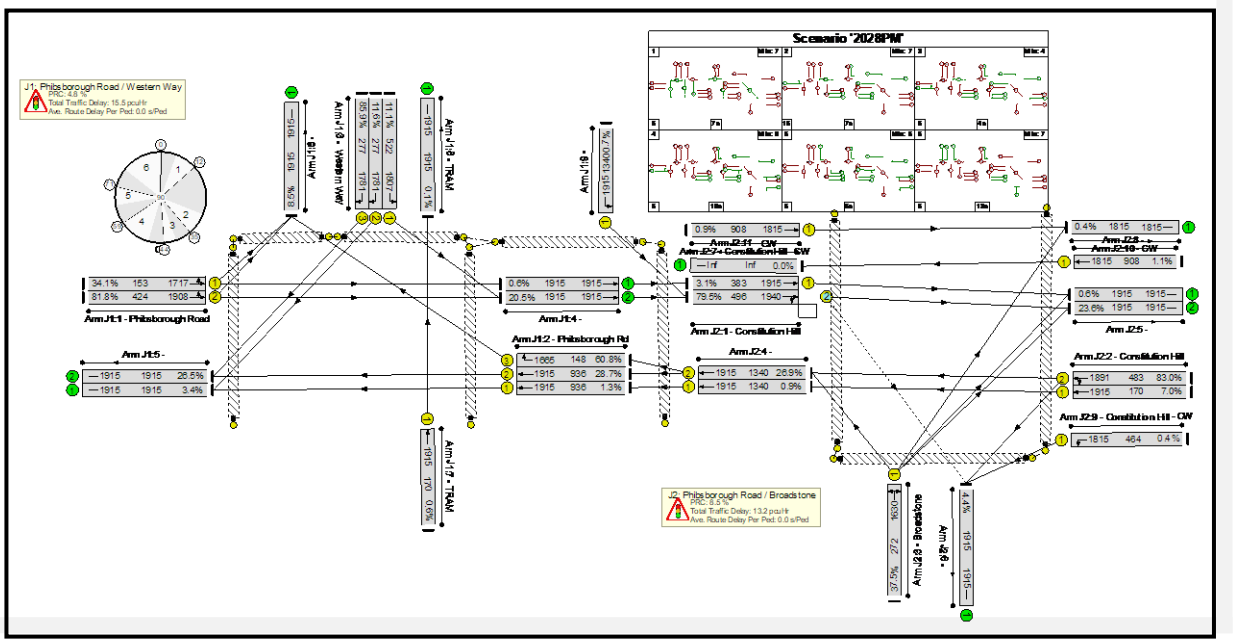
Bus Delay
Inbound = 59s
Outbound = 49s



Do Something : 2028 : PM

Cycle = 90secs
PRC = 4.8%
Delay = 28.67pcuH

Bus Delay
Inbound = 56s
Outbound = 49s

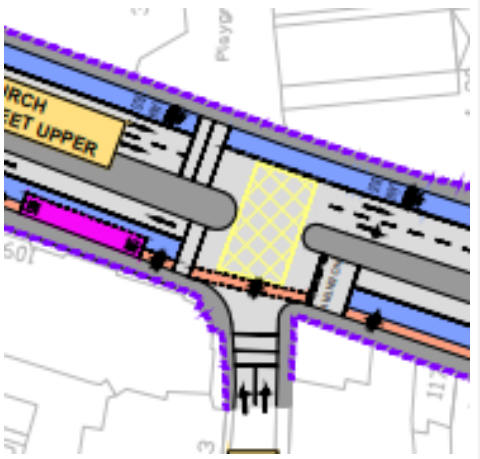
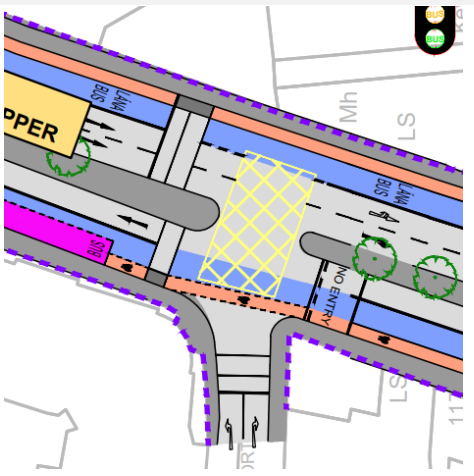
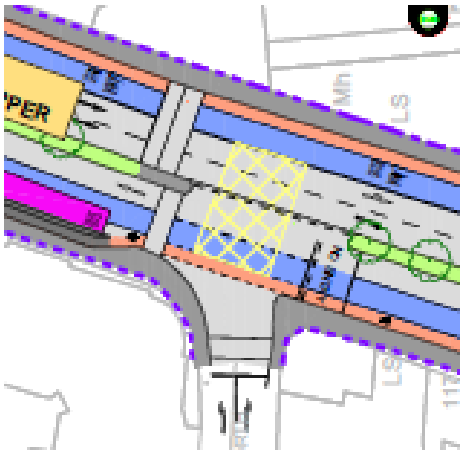


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Brunswick Street/Church Street Upper

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle and Bus lane infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A four stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING 	1. Inbound cycle lane removed 2. Outbound bus lane provided 3. Brunswick Street pedestrian crossing relocated 4. Central median footprint increased	1. To allocate the road space for a dedicated bus lane 2. To ensure bus priority along the corridor 3. To reduce the crossing distance 4. To provide additional pedestrian refuge at staggered crossings	1. Cyclists shared with buses and no dedicated infrastructure provision. 2. Improved cycle infrastructure on northbound direction 3. Crossing located too far offline for pedestrians 4. Difficult turning manoeuvres from vehicles from Brunswick Street North
EPR 	1. Inbound cycle infrastructure included	1. To ensure continuous inbound cycle infrastructure along the corridor	1. Central median footprint reduced
DRAFT PRO (PC2) 	1. Central Island footprint reverted to existing	1. To increase the available footpath width along the corridor	1. Substandard pedestrian refuge provision
DRAFT PRO (PC3) 			

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

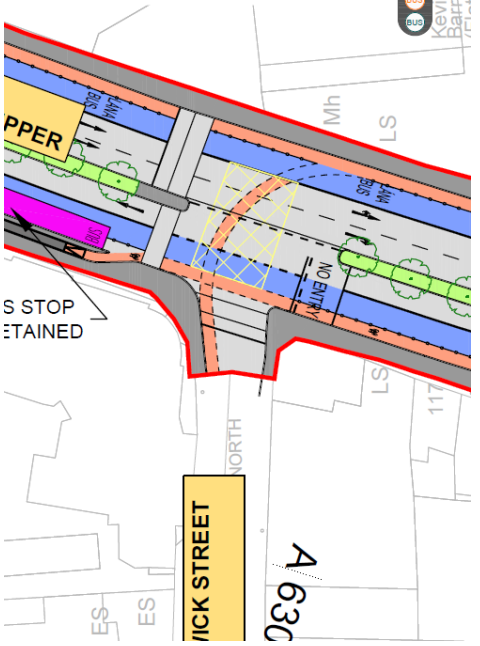
EXISTING

STAGE B REVIEW

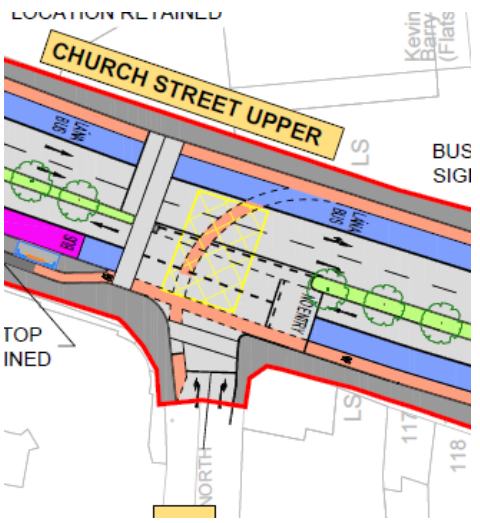
FINAL DRAFT (WIP)

Brunswick Street/Church Street Upper

Change Made	Reason for Change	Impact of Change
1. Brunswick Street North pedestrian crossing relocated in line with pedestrian desire line 2. Facility for right turning cyclists from Brunswick Street North included 3. Staggered pedestrian crossing modified as in line crossings	1. To improve the safety of pedestrians crossing the street 2. To facilitate safe right turning manoeuvres for cyclists 3. To improve the pedestrian crossing provision	1. Improved safety for pedestrians and likelihood for crossing facilities to be used 2. Requires a separate cycle stage to ensure no conflict with left turning general traffic. 3. No awkward manoeuvres for pedestrians through the stagger however a lack of refuge space to ensure separation of signals.



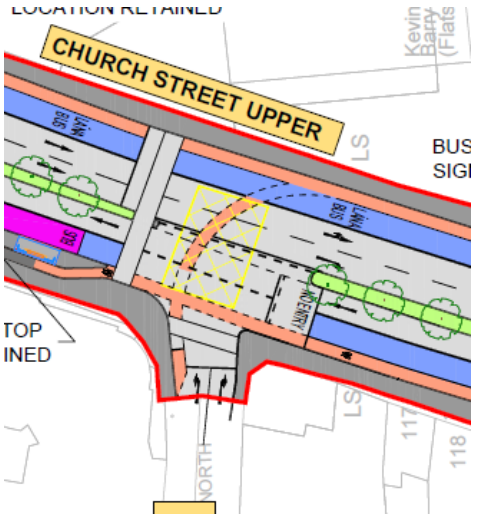
1. Central Median footprint and overall road footprint modified to accommodate a single pedestrian crossing stage on Church Street Upper	1. Island width insufficient to ensure safe separation of the signals	1. Increased pedestrian intergreen time and reduced overall traffic capacity through the junction



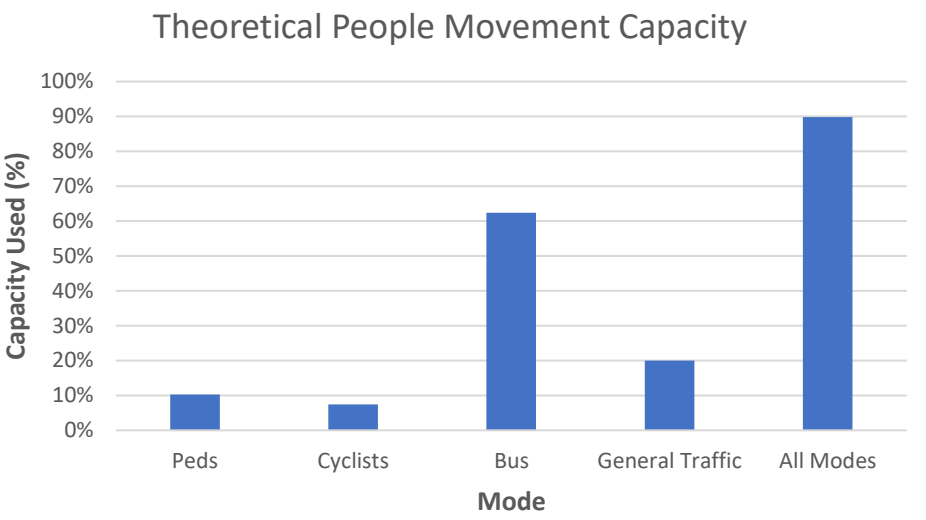
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Brunswick Street/Church Street Upper

Capacity / Delay



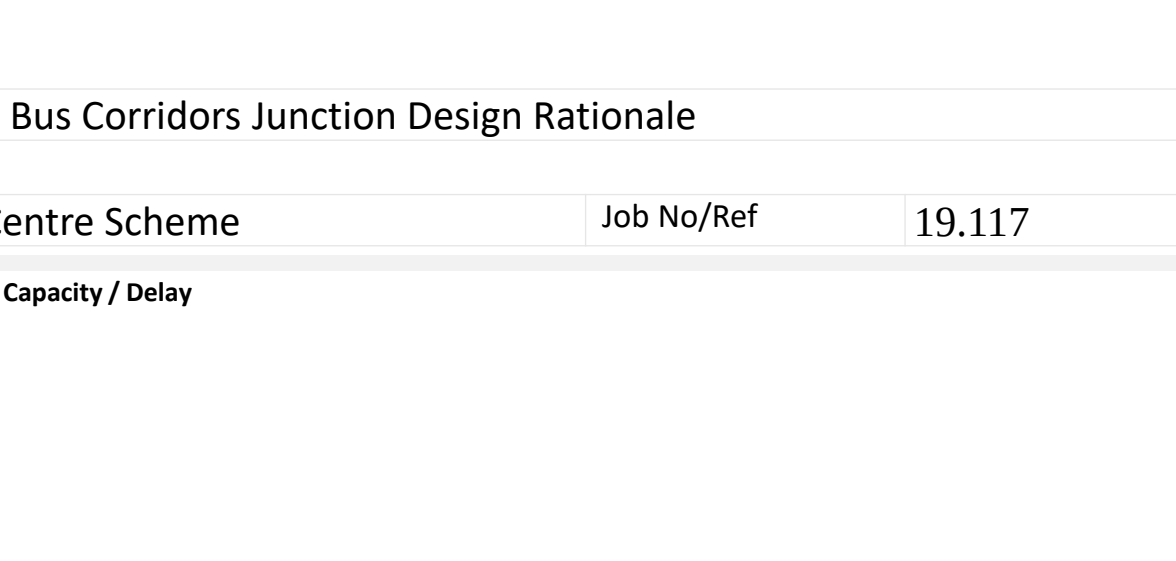
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 70secs
PRC = 1.0%
Delay = 18.30pcuH

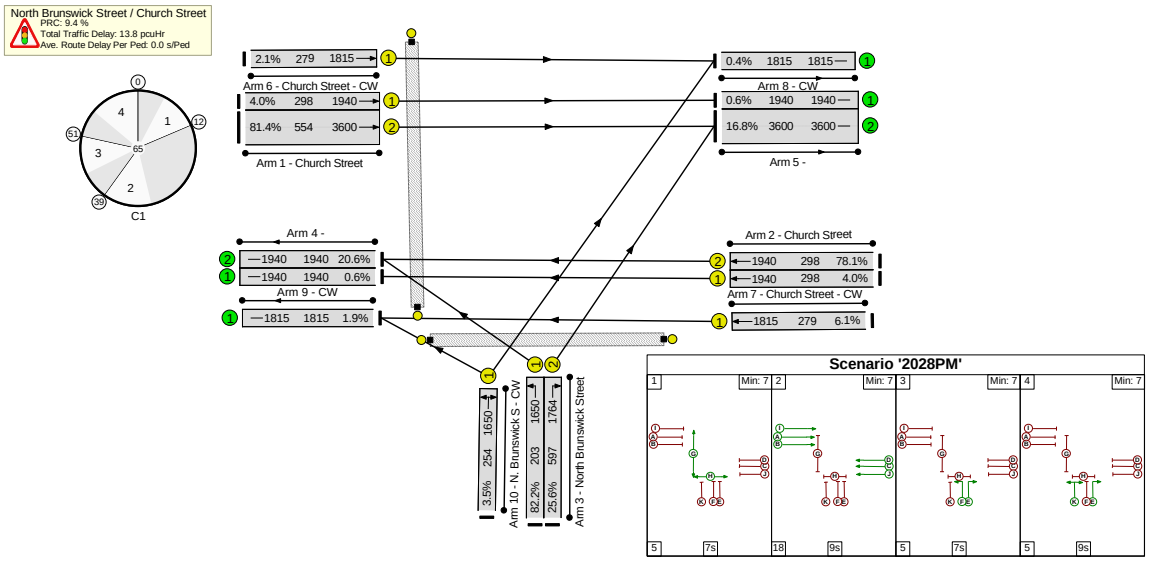
Bus Delay
Inbound = 30s
Outbound = 30s



Do Something : 2028 : PM

Cycle = 60secs
PRC = 9.4%
Delay = 13.77pcuH

Bus Delay
Inbound = 30s
Outbound = 30s

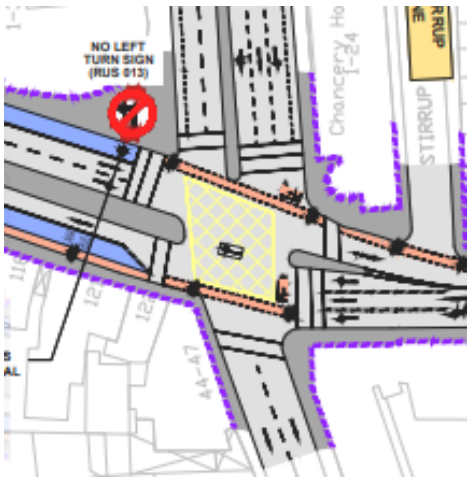
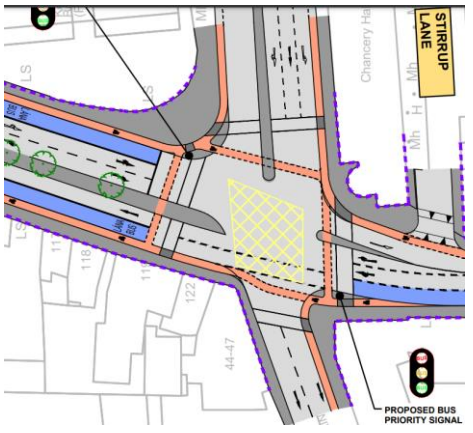
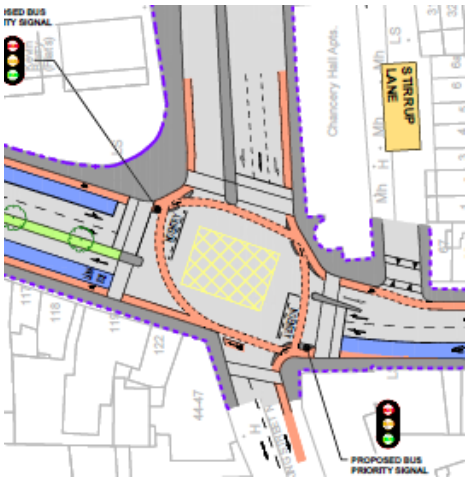


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

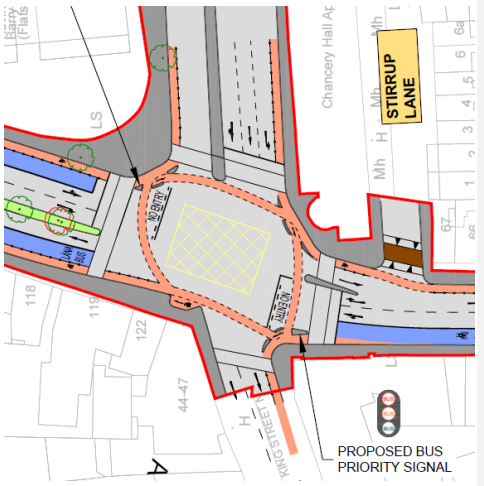
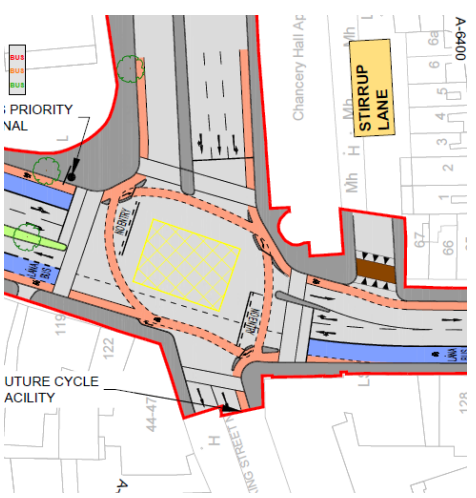
King Street North/Church Street

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle and Bus lane infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A five stage signal operation is proposed.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Outbound bus lane provided downstream of the junction 2. Inbound bus lane provided upstream of the junction 3. Eastbound left slip lane removed and left turn ban introduced 4. Single pedestrian crossing at southern arm modified to staggered 5. Western arm pedestrian crossing realigned	1. To ensure outbound bus priority along the corridor 2. Continuation of inbound bus provision along the corridor 3. To ensure bus priority to the stop line 4. To allow separate signalling of various traffic movements 5. To reduce the crossing distance	1. Improved cycle infrastructure on northbound direction 2. Improved bus provision in the northbound and southbound direction 3. Traffic rediverted to alternative routes 4. Increased crossing manoeuvres by pedestrians 5. Crossing located too far offline for pedestrians
DRAFT PRO (PC2)		1. Inbound and outbound cycle tracks provided with protected right turns 2. Outbound bus lane continued upstream 3. Inline pedestrian crossings 4. Westbound cycle lane added	1. To ensure continuous cycle infrastructure along the corridor 2. To ensure bus priority along the corridor 3. To reduce the number of crossing stages required by pedestrians 4. To continue cycle infrastructure along the minor arms	1. Improved cycle facilities, in particular improved provision for safe turning manoeuvres 2. Reduced general traffic lane provision 3. Improved pedestrian crossing facilities 4. Improved cycle provision
DRAFT PRO (PC3)		1. Improved right turn stacking for cyclists including a turn left to go right stacking area 2. Pedestrian crossings realigned	1. To improve the safety of cyclists through the junction 2. To align with the pedestrian desire line	1. Improved cycling facilities, however eastbound stacked cyclists in conflict with ahead general traffic. 2. Longer crossing distances and therefore increased pedestrian green times

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

		Change Made	Reason for Change	Impact of Change
EXISTING	King Street North/Church Street 			
STAGE B REVIEW		1. Right turn stacking moved in line with eastbound lane 2. Northern arm central median curtailed	1. To remove the cycle conflict with westbound traffic 2. To allow a direct pedestrian crossing	1. Improved safety for cyclists 2. Increased intergreen times and reduced junction capacity as a result
FINAL DRAFT (WIP)		1. Lane guidance markings applied	1. On foot of recommendations from the RSA	1. Ensures safe legibility of the junction by vehicles

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
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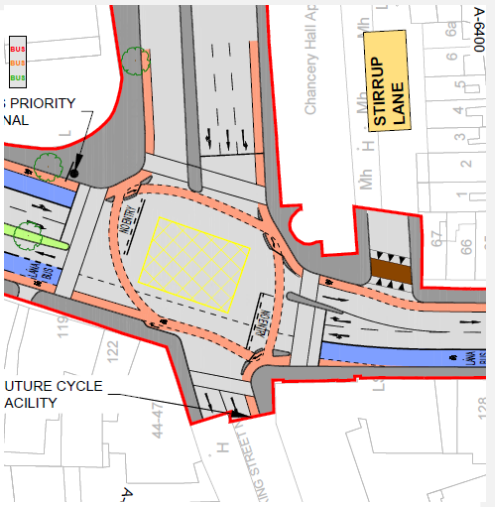
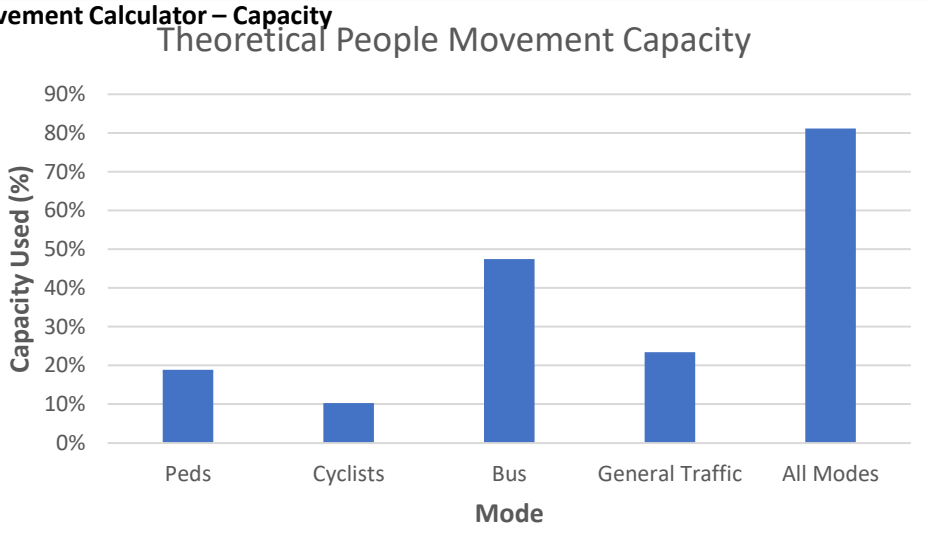
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

King Street North/Church Street

Capacity / Delay



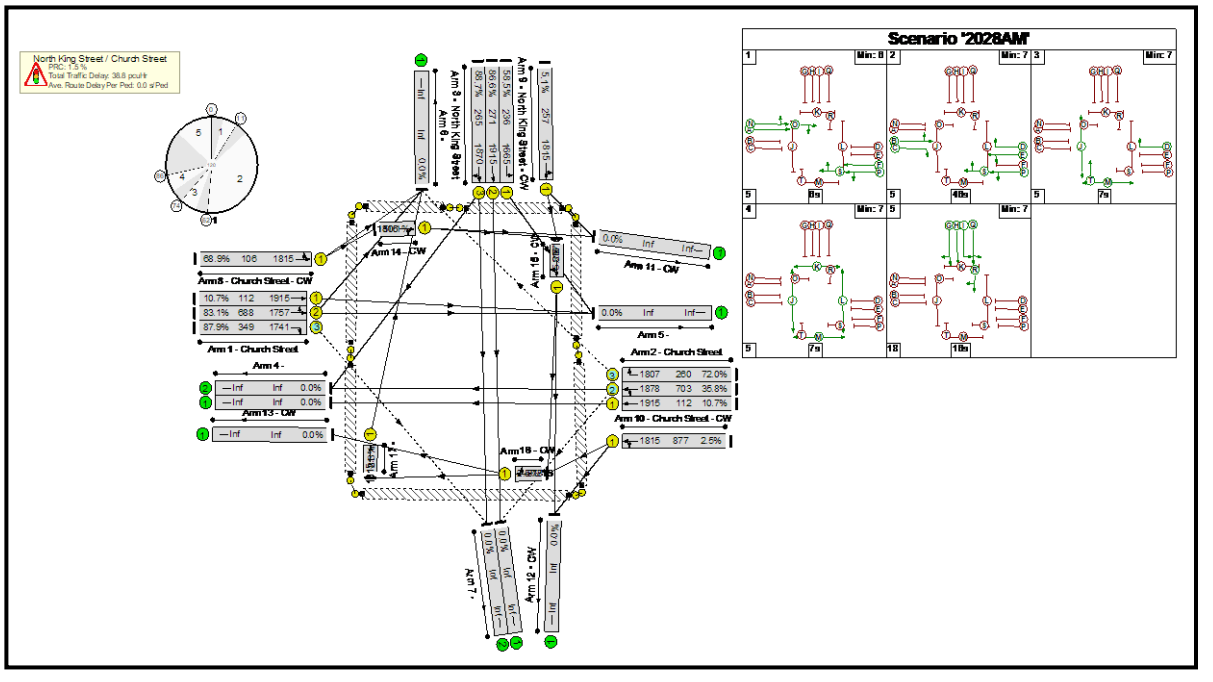
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 1.5%
Delay = 38.79pcuH

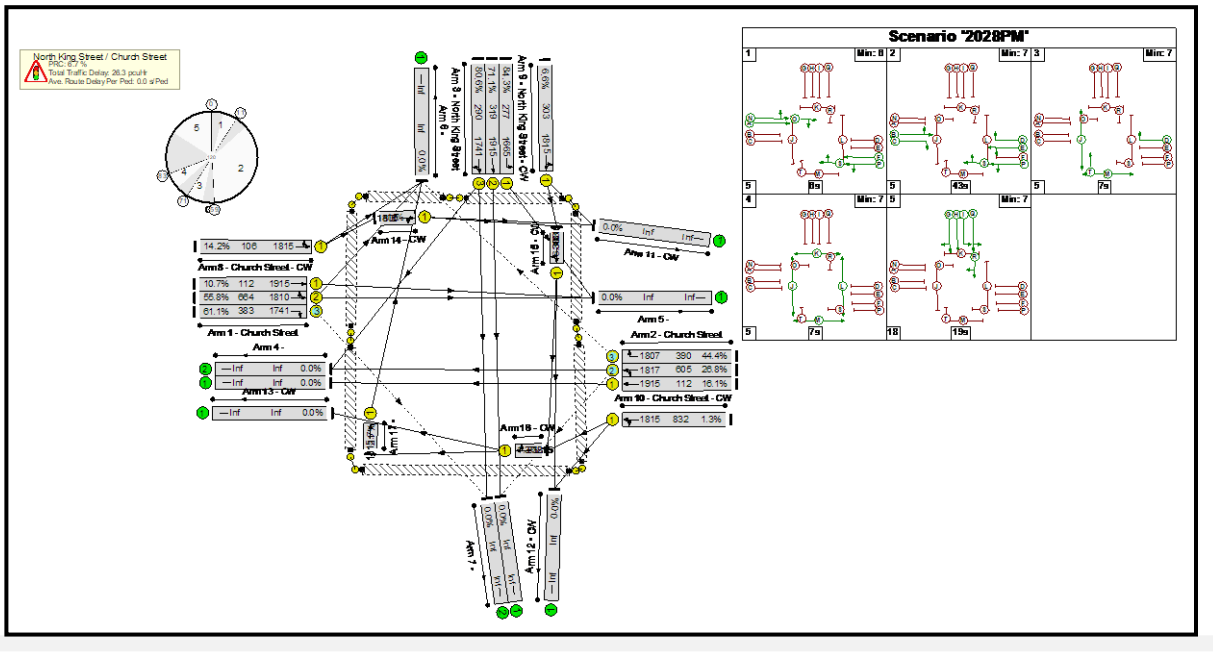
Bus Delay
Inbound = 72
Outbound =72



Do Something : 2028 : PM

Cycle = 120secs
PRC = 6.7%
Delay = 26.30pcuH

Bus Delay
Inbound = 72
Outbound =73

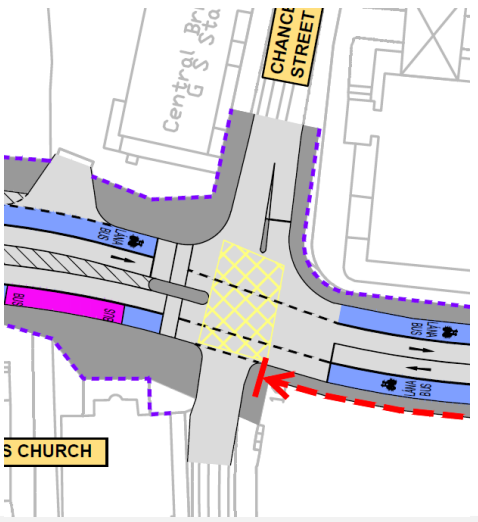
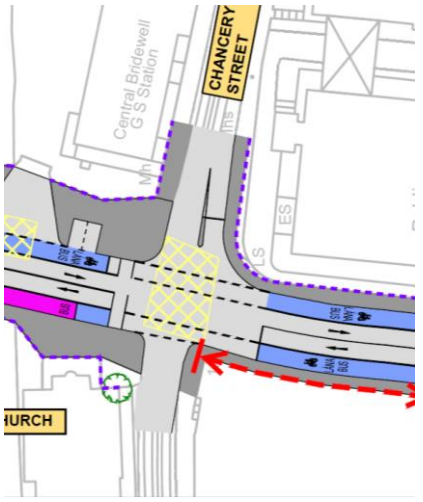
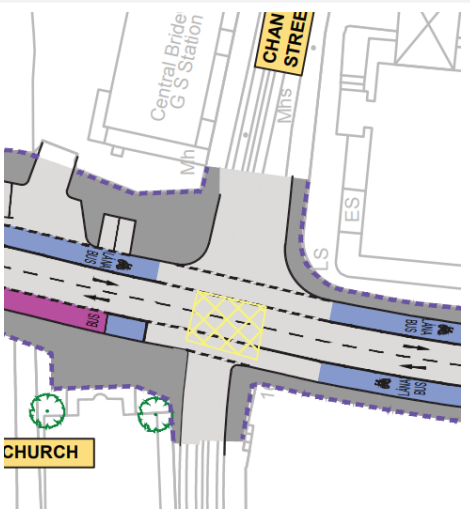


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Chancery Street/ Church Street

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated introducing protected cycle and Bus lane infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

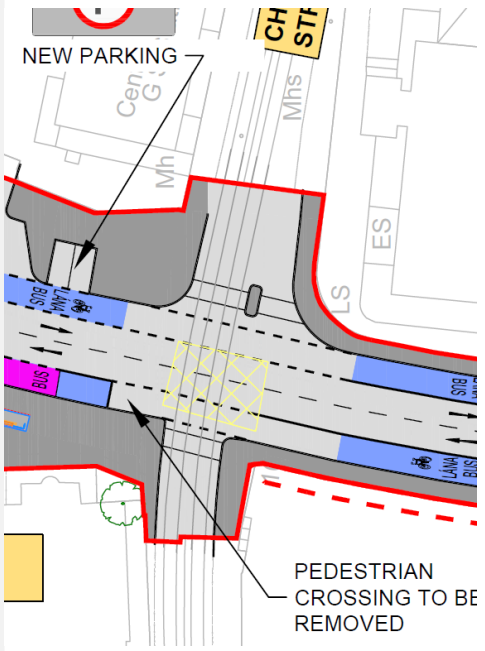
Signal Operation
A three stage signal operation is proposed.

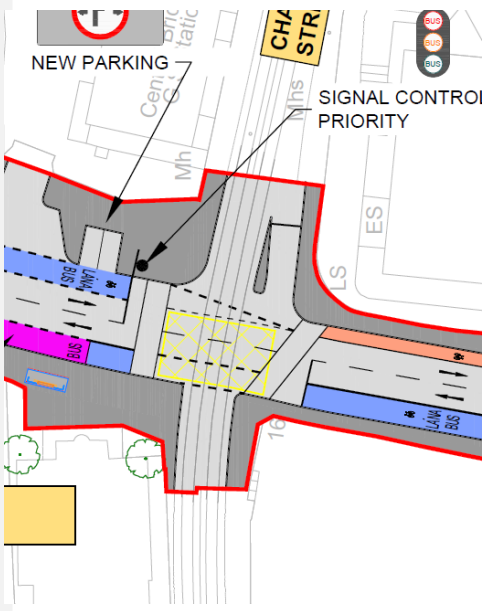
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound bus lanes added 2. Outbound cycle lane removed	1. To ensure bus priority along the corridor 2. To reallocate road space for bus priority	1. No segregated cycle infrastructure through the junction 2. Cyclists encouraged to use an alternative quiet street route
DRAFT PRO (PC2)		1. Central island removed on the northern arm	1. To reduce the footprint of the road corridor and formalise Gárda Parking	1. Reduced pedestrian crossing distance and reduced intergreen times as a result
DRAFT PRO (PC3)		1. Pedestrian crossing removed 2. Splitter island removed on Chancery Street	1. To ensure priority for buses through the junction 2. As requested by DCC	1. No safe or controlled means of crossing the main corridor 2. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Chancery Street/ Church Street

	Change Made	Reason for Change	Impact of Change
EXISTING			
STAGE B REVIEW	1. Crossings indicated across LUAS tracks and splitter island added	1. To provide crossing facilities across the LUAS tracks and accommodate necessary LUAS signalling infrastructure	1. Contrary to usual design across LUAS tracks to facilitate uncontrolled pedestrian crossings
FINAL DRAFT (WIP)	1. Pedestrian crossings reinstated and added on main line 2. Existing splitter island on Chancery Street reinstated 3. Crossings across LUAS tracks removed	1. To provide safe and controlled crossing facilities for pedestrian across the main corridor 2. As requested by TII to ensure separation by vehicles from the LUAS tracks 3. Contrary to usual design across LUAS tracks to facilitate uncontrolled pedestrian crossings	1. Improved pedestrian crossing facilities 2. None 3. None

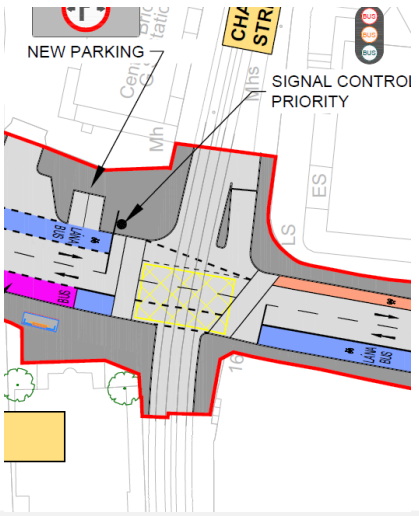




Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Ballymun to City Centre Scheme	Job No/Ref	19.117

Chancery Street/ Church Street

Capacity / Delay



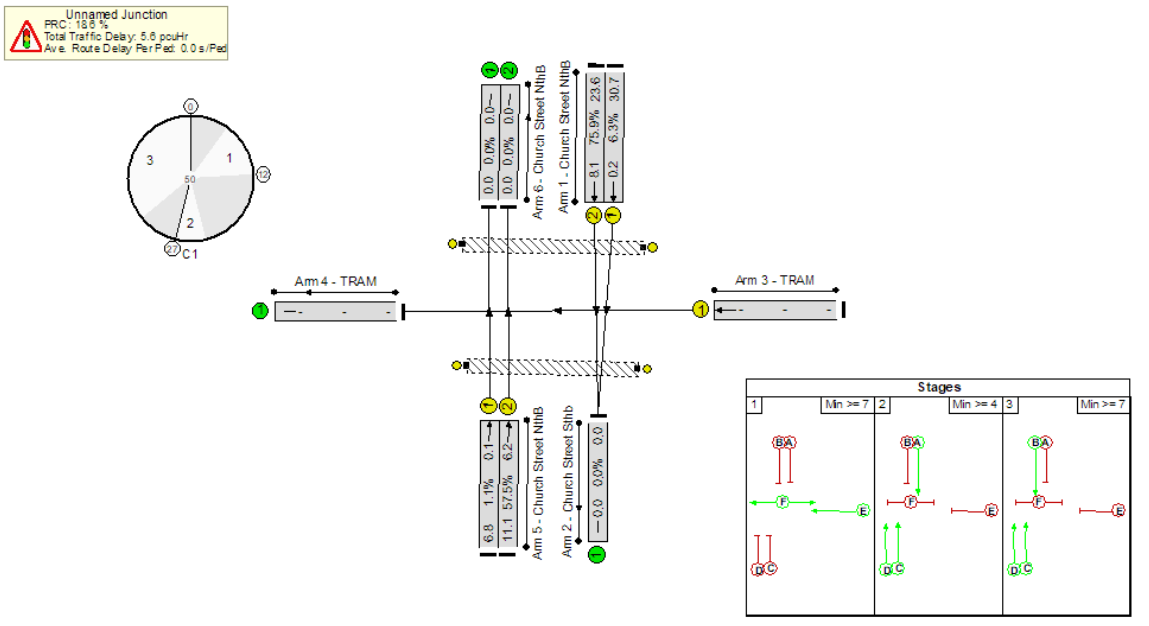
People Movement Calculator – Capacity

N/A

Do Something : 2028 : AM

Cycle = 50s
PRC = 18.6%
Delay = 5.64 pcuHr

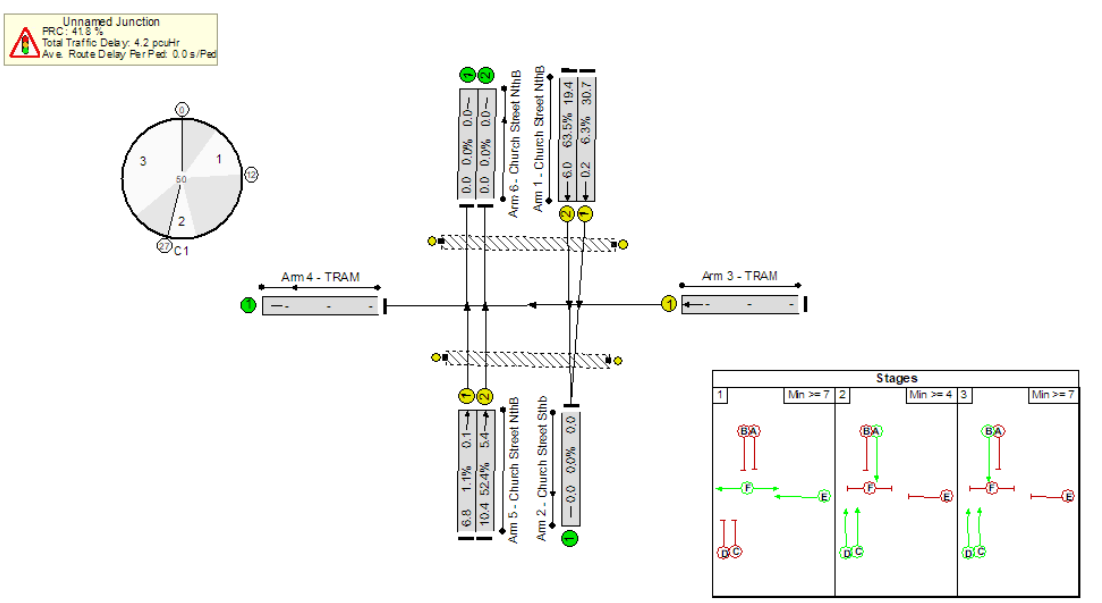
Bus Delay
Inbound = 31s
Outbound = 7s



Do Something : 2028 : PM

Cycle = 50s
PRC = 41.8%
Delay = 4.23pcuHr

Bus Delay
Inbound = 31s
Outbound = 7s

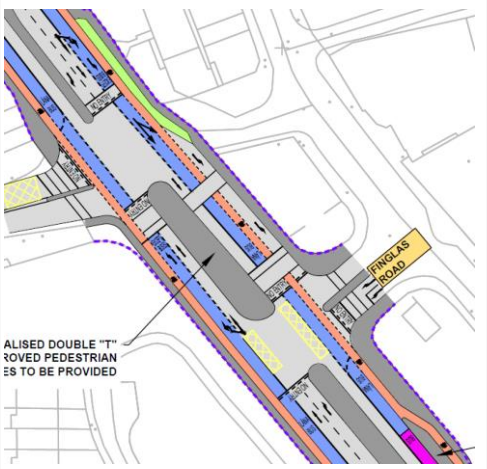
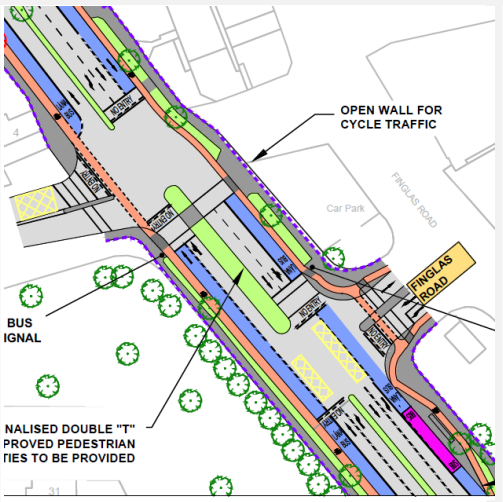
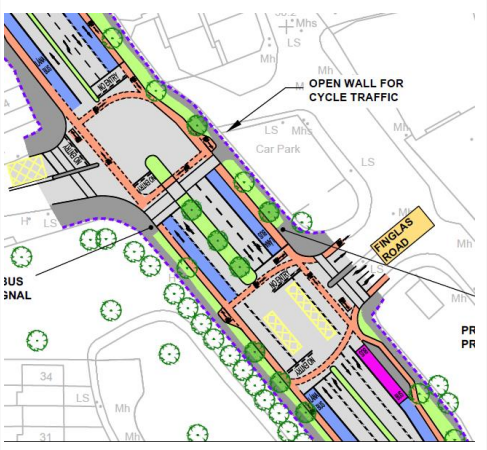


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Wellmount Road/Finglas Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing Bus lane infrastructure to provide priority for buses and new cycle infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A seven stage signal operation is proposed.

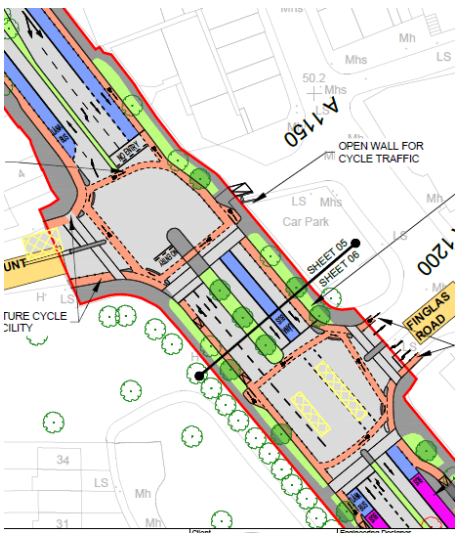
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound Bus lanes introduced 2. Inbound and Outbound cycle tracks introduced. 3. New Pedestrian crossings on the minor arms 4. Central median footprint increased	1. To ensure bus priority along the corridor 2. To ensure continuous, segregated cycle infrastructure along the corridor 3. To improve the pedestrian safety along the corridor 4. To provide additional refuge space for pedestrians	1. Increased priority for buses through the corridor. 2. Improved cycle facilities through the junction 3. Improved pedestrian facilities through the junction 4. Increased road carriageway footprint and reduced adjacent footpath width
DRAFT PRO (PC2)		1. Central median footprint reduced to existing 2. Left turn lane to Finglas Road removed 3. Cycle tracks fully segregated from general traffic	1. To reduce the road carriageway footprint and reinstate footpath widths 2. To improve bus priority through the junction 3. To improve cycle safety through the junction	1. Reduced crossing distance for the pedestrians and reduced intergreen times as a result 2. Left turn traffic fully segregated from the Bus Lane 3. Improved cycle infrastructure along the corridor
DRAFT PRO (PC3)		1. Improvements to cycle infrastructure from the minor arms and right turn facilities provided	1. To improve the turning capacity and safety of cyclists.	1. Improved cycle facilities.

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Wellmount Road/Finglas Road

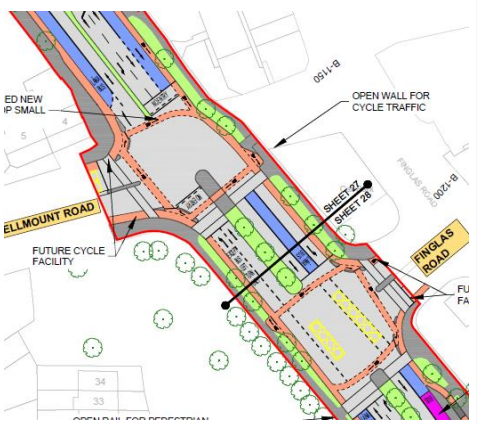
EXISTING

STAGE B REVIEW



Change Made	Reason for Change	Impact of Change
1. Updated protected cycle infrastructure 2. Left turns to Finglas Road provided a segregated traffic lane 3. Central outbound bus lane converted to general traffic lane	1. To improve the turning capacity and safety of cyclists 2. Insufficient lane capacity for the high left turn demand. 3. Insufficient lane capacity for the high left turn demand.	1. Improved cycle facilities 2. Improved junction capacity 3. Improved junction capacity 4. Ahead vehicles in the lane were causing congestion and impacting bus priority

FINAL DRAFT (WIP)



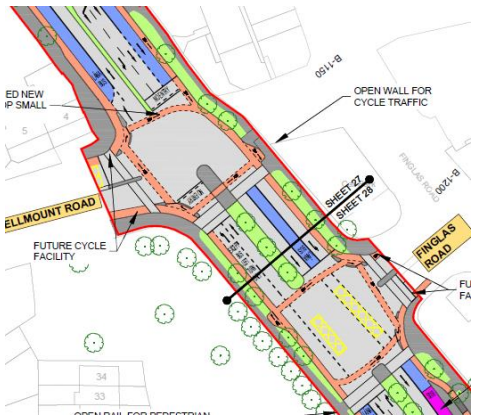
1. Central outbound bus lane converted to left turn general traffic lane shared with buses	1. Ahead vehicles in the lane were causing congestion and impacting bus priority	1. Improved bus priority by efficient signalling stages.

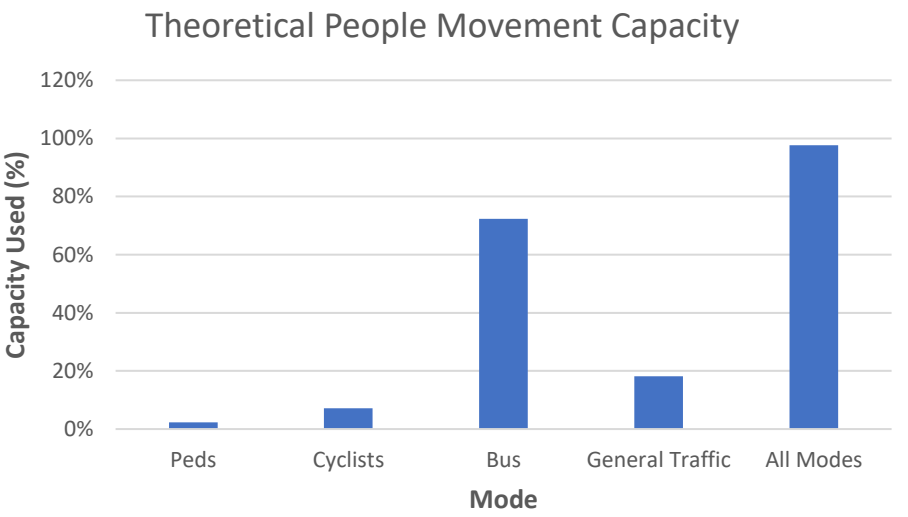
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Capacity / Delay

Wellmount Road/Finglas Road

People Movement Calculator – Capacity

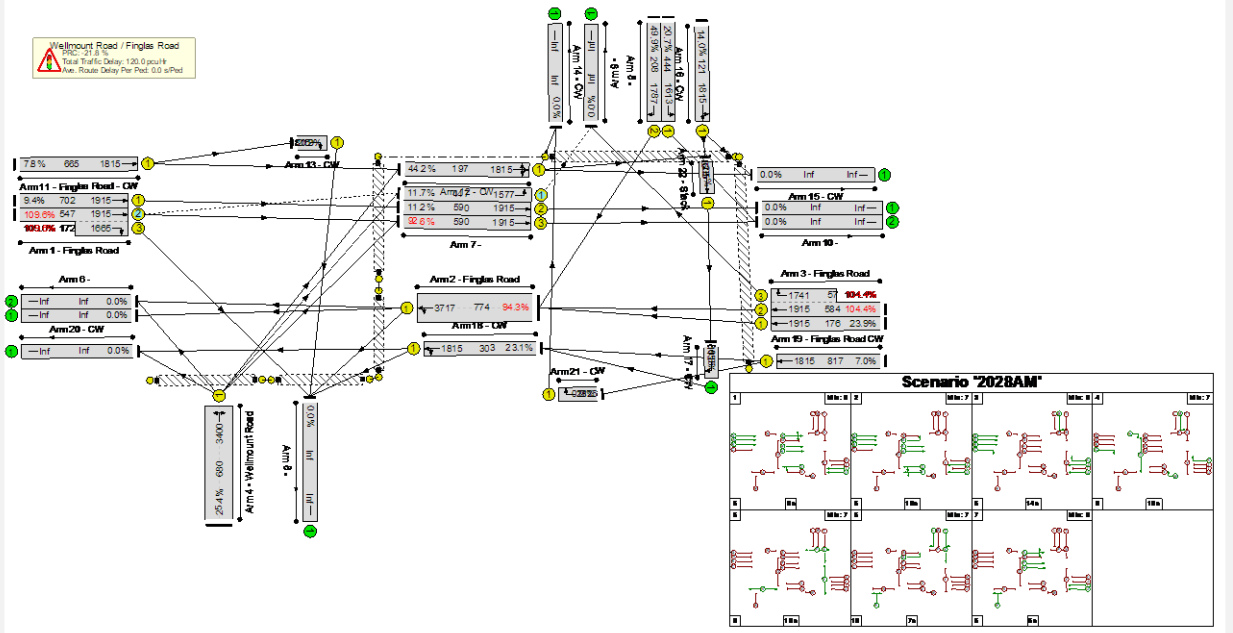




Do Something : 2028 : AM

Cycle = 120secs
PRC = -21.8%
Delay = 120.01pcuHr

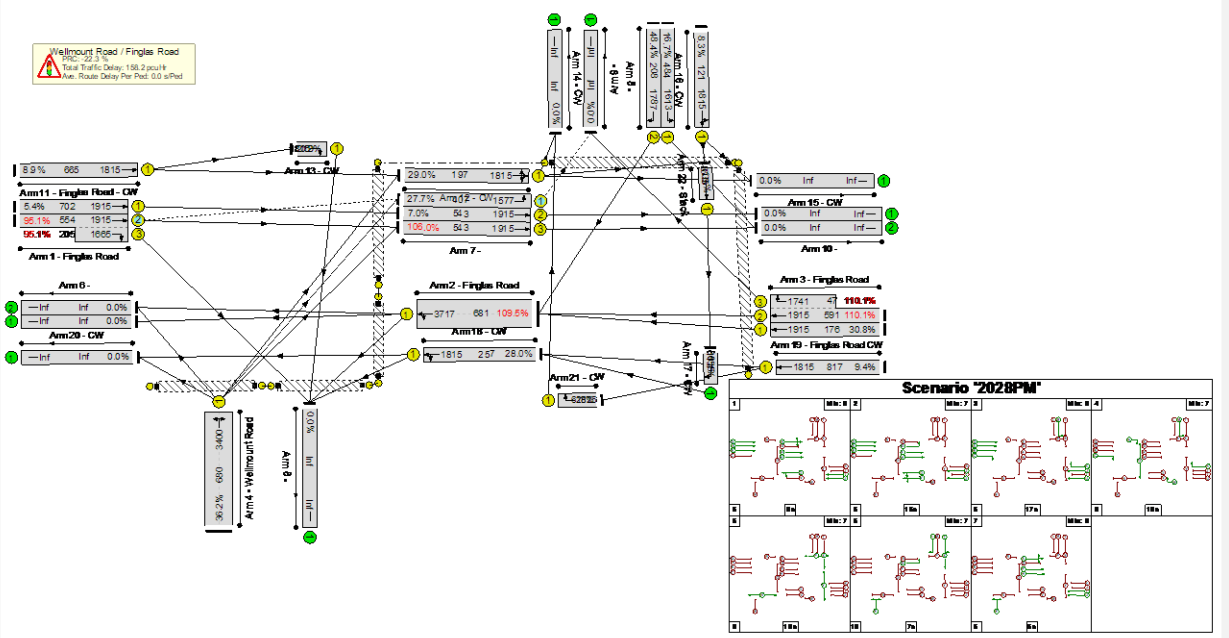
Bus Delay
Inbound = 28s
Outbound = 21s



Do Something : 2028 : PM

Cycle = 120secs
PRC = -22.3%
Delay = 158.20pcuHr

Bus Delay
Inbound = 27
Outbound =21



Subject	BusConnects Core Bus Corridors Junction Design Rationale
Date	July 2022
Route	Finglas to Phibsborough
Job No/Ref	19.117

Finglas Place/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.

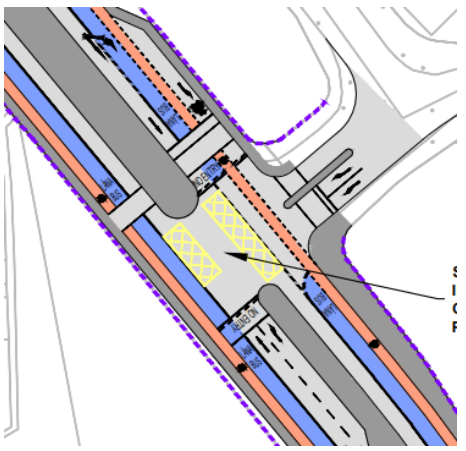
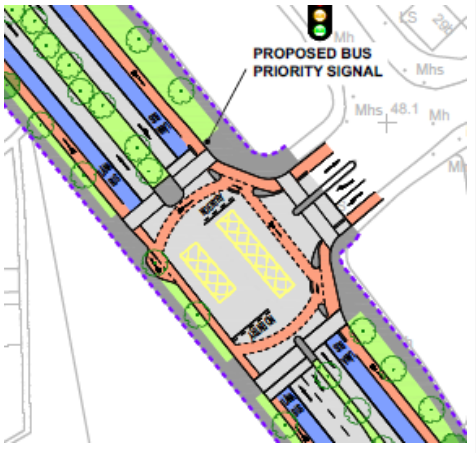
Layout of junction updated by introducing Bus lane infrastructure, new pedestrian crossing and new cycle infrastructure and improving approach and egress alignments.

The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

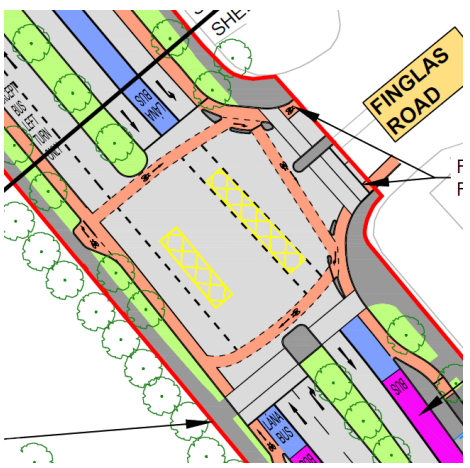
A six stage signal operation is proposed.

Pedestrian crossings operate in their own stage.

		Change Made	Reason for Change	Impact of Change
EXISTING				
EPR		1. Inbound and outbound cycle infrastructure included 2. Fully signalised junction with pedestrian crossings on two arms 3. Central median width increased	1. To ensure continuous cycle infrastructure along the corridor 2. To improve the priority for general traffic on the minor arm 3. Increased carriageway footprint	1. Reallocation of road space to buses and cyclists with improve bus reliability and cyclist environment. 2. Improved pedestrian facilities 3. Reduced pedestrian footpath width to compensate for the increase
DRAFT PRO (PC2)		1. Left turn lane to Finglas Place removed 2. Cycle lanes provided across the junction 3. Central median width reverted to existing	1. Reduced traffic demand anticipated along the corridor and dedicated left turn no longer required 2. To facilitate cycle accessibility from the minor side road arms.	1. Reduced road carriageway footprint 2. General traffic no longer required to traverse bus lane. 3. Improved cycle accessibility from minor side road arms.
DRAFT PRO (PC3)		1. Cycle right turn pockets and improved cycle lane alignment	1. To ensure unimpeded movements by straight ahead cyclists	1. Improved cycle facilities

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

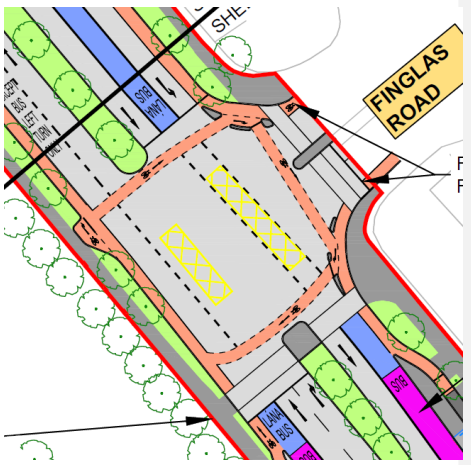
Finglas Place/Finglas Road

		Change Made	Reason for Change	Impact of Change
EXISTING				
STAGE B REVIEW		1. Left turn lane reinstated.	1. Delay to metrolink requires a left turn lane	1. Improved bus priority since staging does not require buses to run separately from ahead general traffic lane.
FINAL DRAFT (WIP)		1. Pedestrian crossing across northern arm removed 2. Central median island width increased on southern arm	1. To increase the capacity of the road link 2. To facilitate staged pedestrian crossings	1. Pedestrians required to cross further north 2. Two stage crossing requirements for pedestrians however improved overall junction capacity

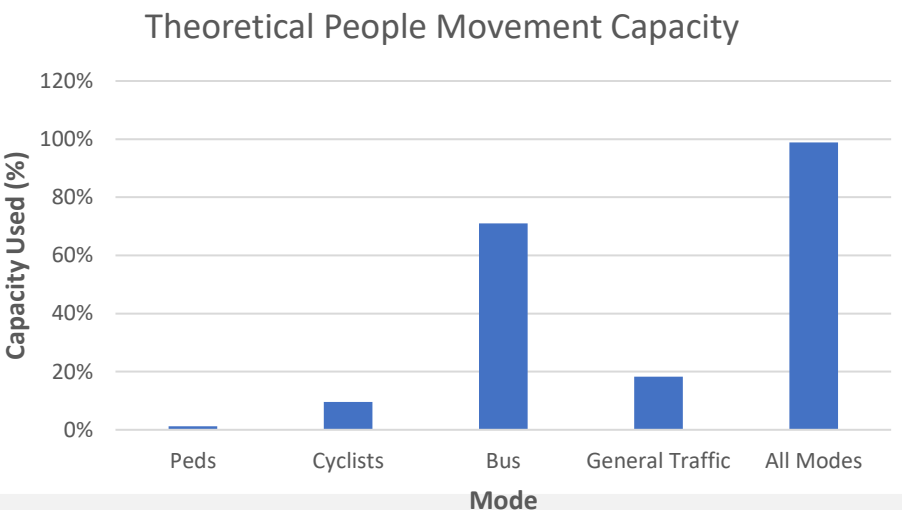
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Finglas Place/Finglas Road

Capacity / Delay



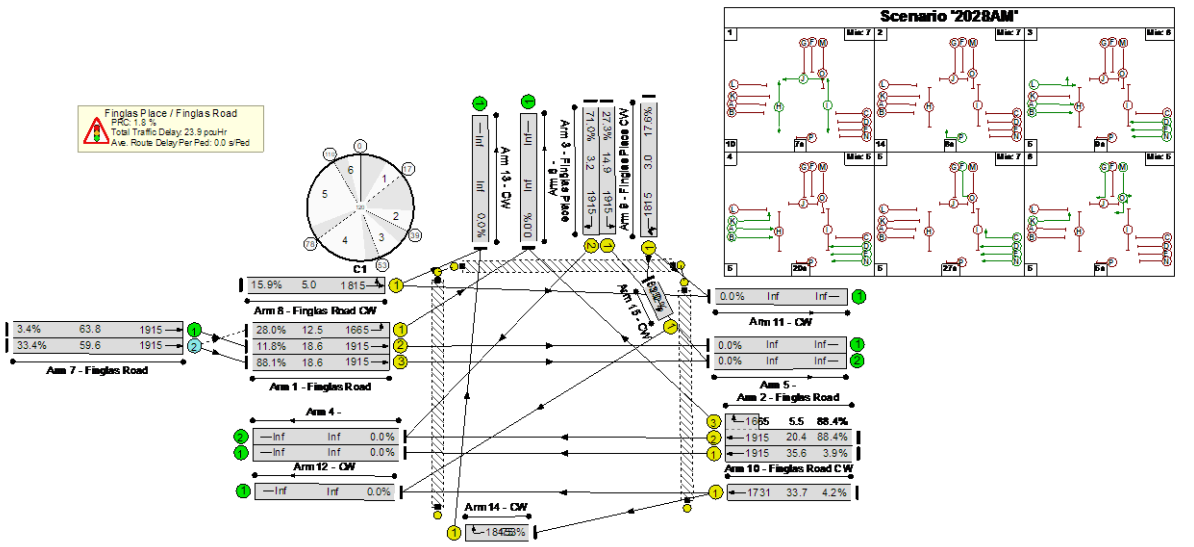
People Movement Calculator – Capacity



Do Something : 2028 : AM

Cycle = 120secs
PRC = 1.8%
Delay = 23.89 pcuHr

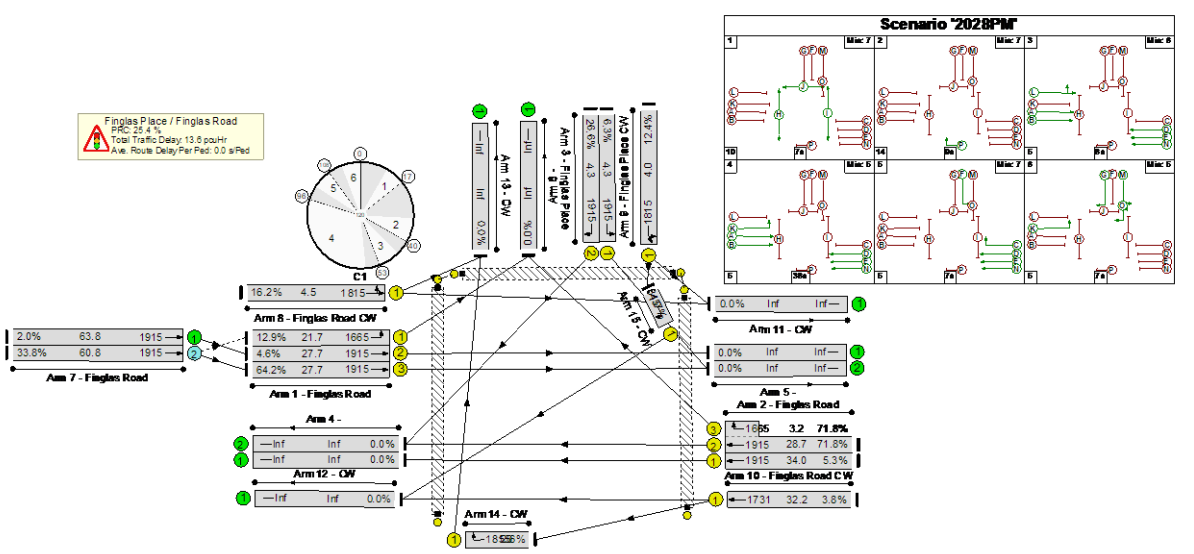
Bus Delay
Inbound = 35s
Outbound = 14s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 25.4%
Delay = 13.58pcuHr

Bus Delay
Inbound = 22s
Outbound = 15s

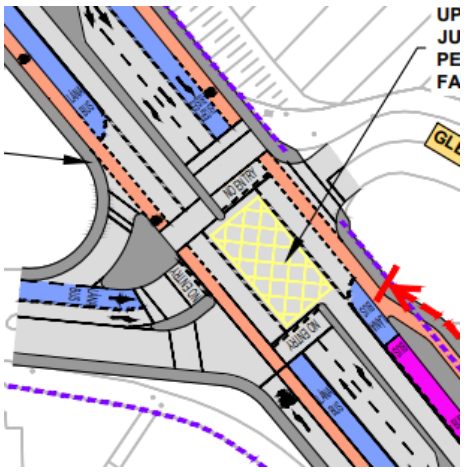
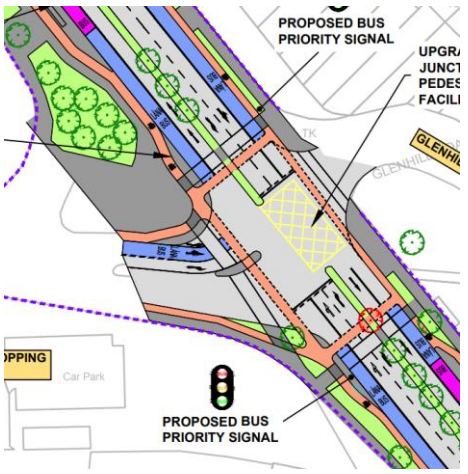
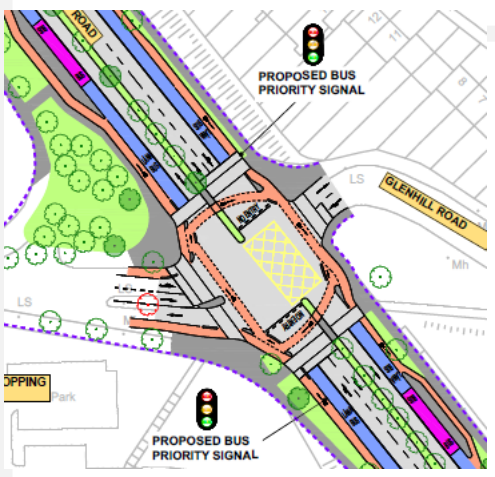


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Glenhill Road/Finglas Road

Summary
Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated removing slip lanes and island and introducing new pedestrian crossing and new cycle infrastructure.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation
A seven stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound cycle infrastructure 2. New Pedestrian crossing on Glenhill Road 3. Left turn lane provided from outbound carriageway 4. Bus lane introduced on western arm 5. Right turn lane from inbound arm length reduced	1. To ensure continuous cycle infrastructure along the corridor 2. To ensure controlled and safe pedestrian crossing 3. Increased turning capacity for general traffic 4. To accommodate bus priority 5. Demand for right turns not considered significant	1. Improved cycle facilities 2. Improved pedestrian facilities 3. Road carriageway significantly increased and reduced public realm 4. Improved bus priority 5. Potential congestion for inbound traffic
DRAFT PRO (PC2)		1. Left slip and associated island removed from western arm 2. Cycle lanes provided across the junction 3. Right turn lane from inbound arm length reinstated 4. Left turn lane from outbound arm removed 5. New Pedestrian crossing on southern arm	1. To reduce the road carriageway footprint and provide public realm upgrade opportunities. 2. To facilitate cycle accessibility from the minor side road arms. 3. To prevent congestion for inbound traffic 4. Sufficient capacity within the junction to accommodate left turns 5. To ensure controlled and safe pedestrian crossing	1. Reduced number pedestrian crossing st 2. Improved cycle accessibility from minor side road arms. 3. Improved junction capacity. 4. Reduced road carriageway footprint 5. Improved pedestrian facilities
DRAFT PRO (PC3)		1. Western arm footprint reduced 2. Cycle right turn pockets and improved cycle lane alignment 3. Bus lane on western arm removed	1. Overwide road carriageway encouraging high speeds 2. To ensure unimpeded movements by straight ahead cyclists 3. Not required as part of the overall bus network layout	1. Improved cycling facilities with road space reallocated to pedestrian and public realm. 2. Improved cycle facilities 3. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

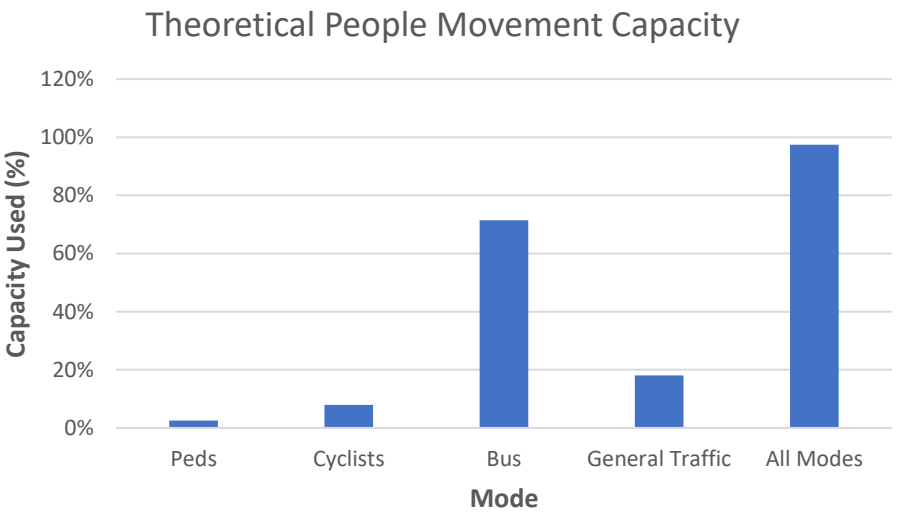
Glenhill Road/Finglas Road

	Change Made	Reason for Change	Impact of Change
EXISTING 			
STAGE B REVIEW 	1. Left turn lane on outbound carriageway reintroduced.	1. Delay to metrolink requires a left turn lane to cater for demand	1. Improved bus priority since staging does not require buses to run separately from ahead general traffic lane.
FINAL DRAFT (WIP) 	1. Central median island width increased	1. To facilitate staged pedestrian crossings	1. Two stage crossing requirements for pedestrians however improved overall junction capacity

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Capacity / Delay

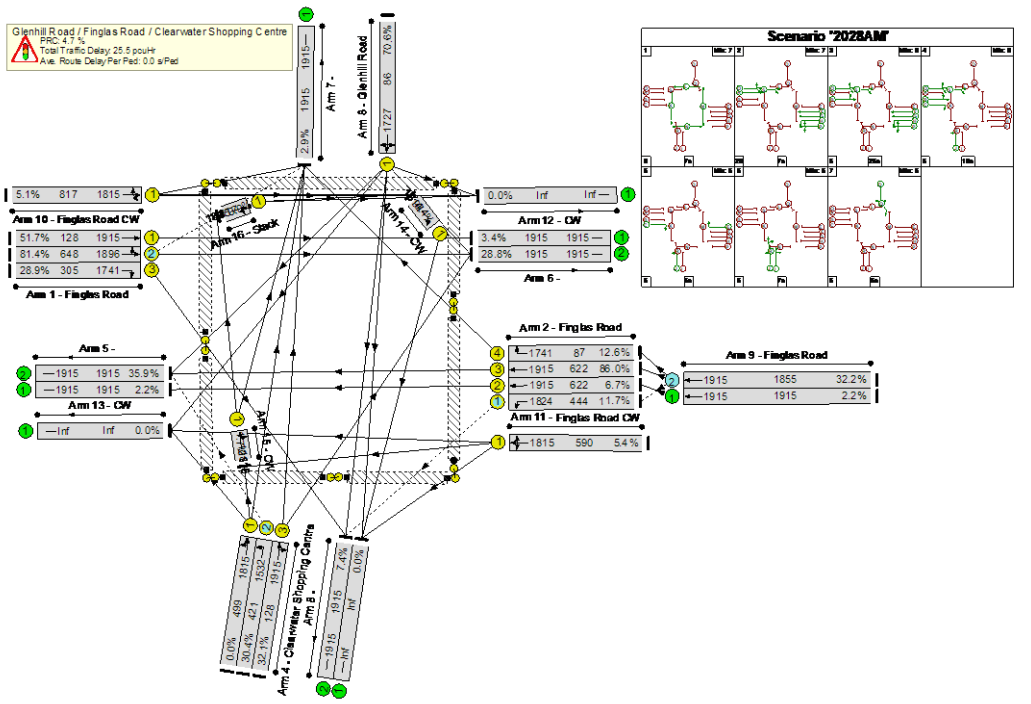
Glenhill Road/Finglas Road



Do Something : 2028 : AM

Cycle =120 secs
PRC = 4.7%
Delay = 25.48pcuHr

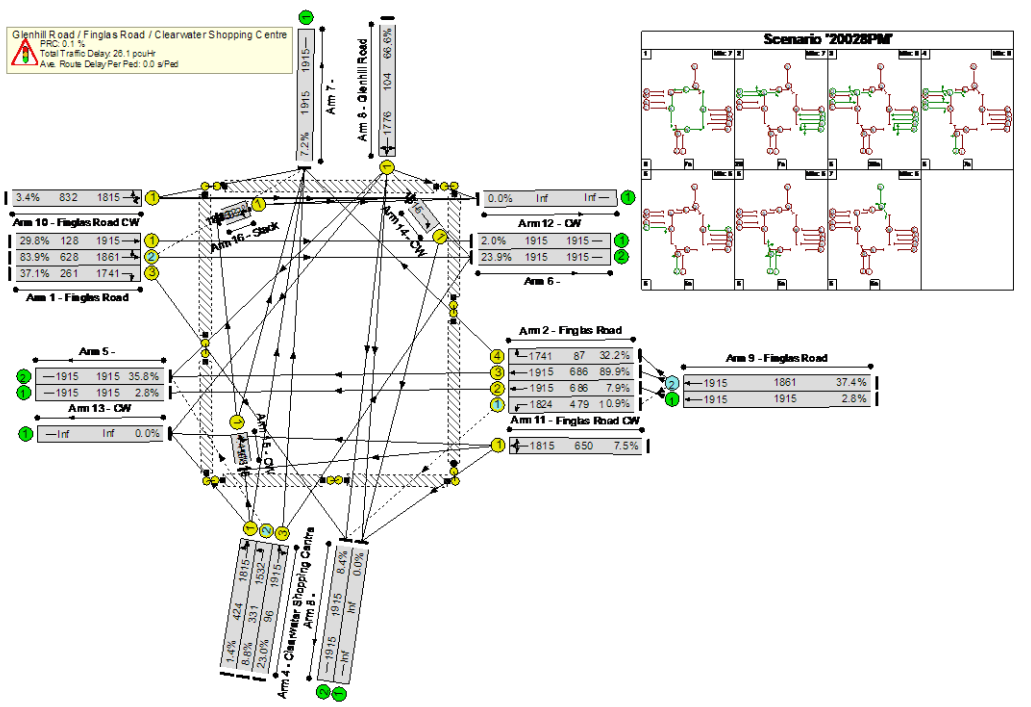
Bus Delay
Inbound = 83s
Outbound = 29s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 0.1%
Delay = 26.09pcuHr

Bus Delay
Inbound = 74s
Outbound = 26s



Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

The Griffith/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.

Layout of junction updated by introducing new cycle infrastructure and improving approach and egress alignments.

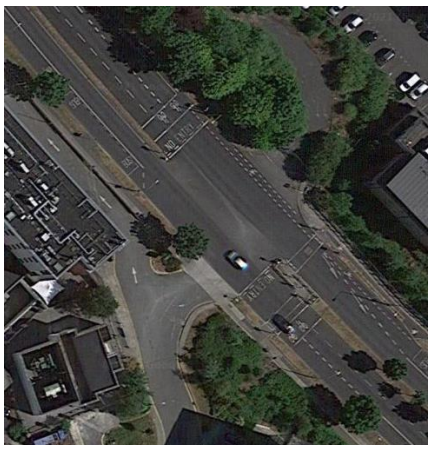
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

A five stage signal operation is proposed.

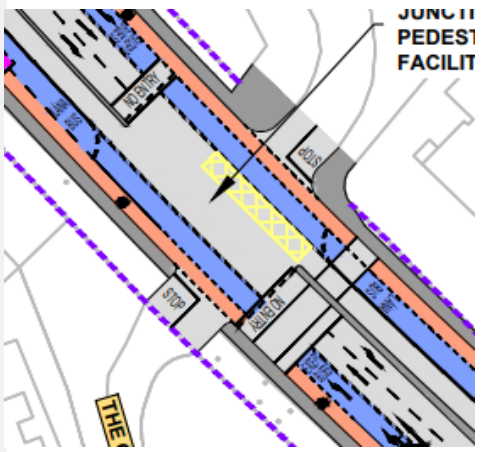
Pedestrian crossings operate in their own stage.

EXISTING



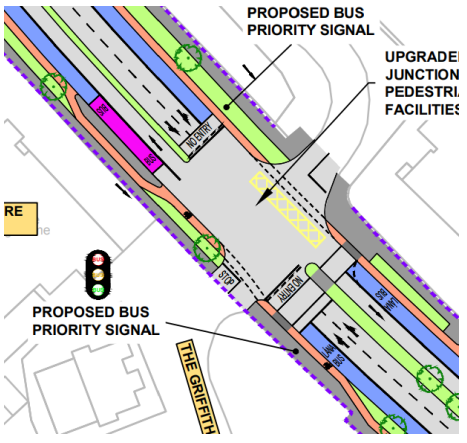
Change Made	Reason for Change	Impact of Change

EPR



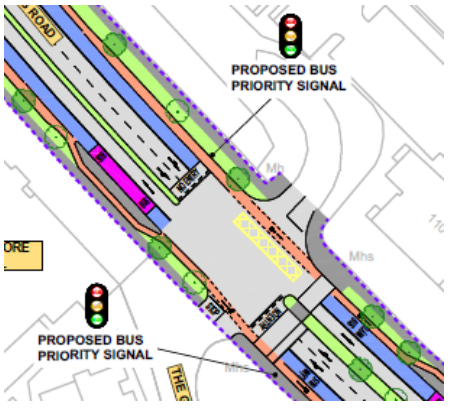
Change Made	Reason for Change	Impact of Change
1. Inbound and outbound cycle infrastructure 2. ASL facilities removed from the main line 3. Single pedestrian crossing stage across main line 4. The Griffith arm of the junction signalised	1. To ensure continuous cycle infrastructure along the corridor 2. Existing layout contrary to National Cycle Manual recommendations 3. To improve pedestrian crossing facilities	1. Improved cycle facilities 2. No other means for cyclists to turn right 3. Reduced median width and increased pedestrian crossing distance and intergreen times as a result

DRAFT PRO (PC2)



Change Made	Reason for Change	Impact of Change
1. Fully segregated bus lanes 2. Central median widths reinstated	1. To ensure bus priority through the junction 2. To maintain existing landscaping	1. Separate signal staging between buses and general traffic 2. Increased pedestrian crossing distance and intergreen times as a result

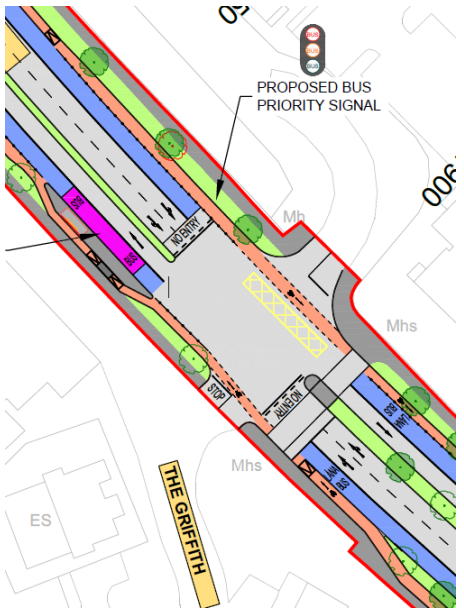
DRAFT PRO (PC3)



Change Made	Reason for Change	Impact of Change
1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

The Griffith/Finglas Road

	Change Made	Reason for Change	Impact of Change
EXISTING 	1. None	1. None	1. None
STAGE B REVIEW 	1. None	1. None	1. None
FINAL DRAFT (WIP) 	1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

The Griffith/Finglas Road

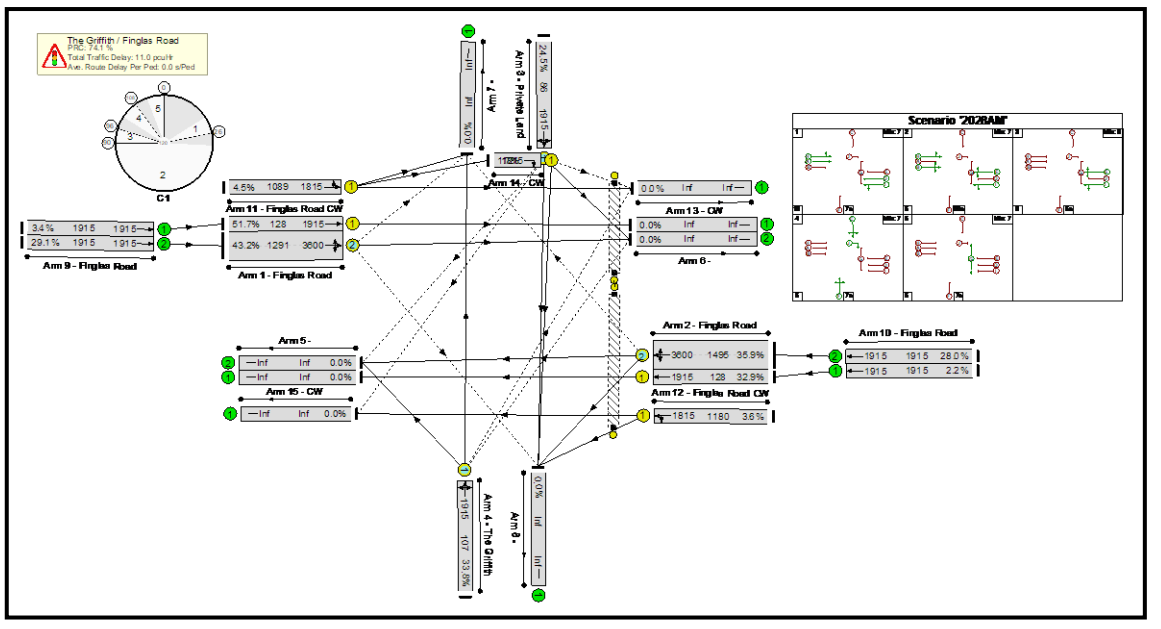
Capacity / Delay

People Movement Calculator – Capacity

Do Something : 2028 : AM

Cycle = 120secs
PRC = 74.1%
Delay = 10.95pcuHr

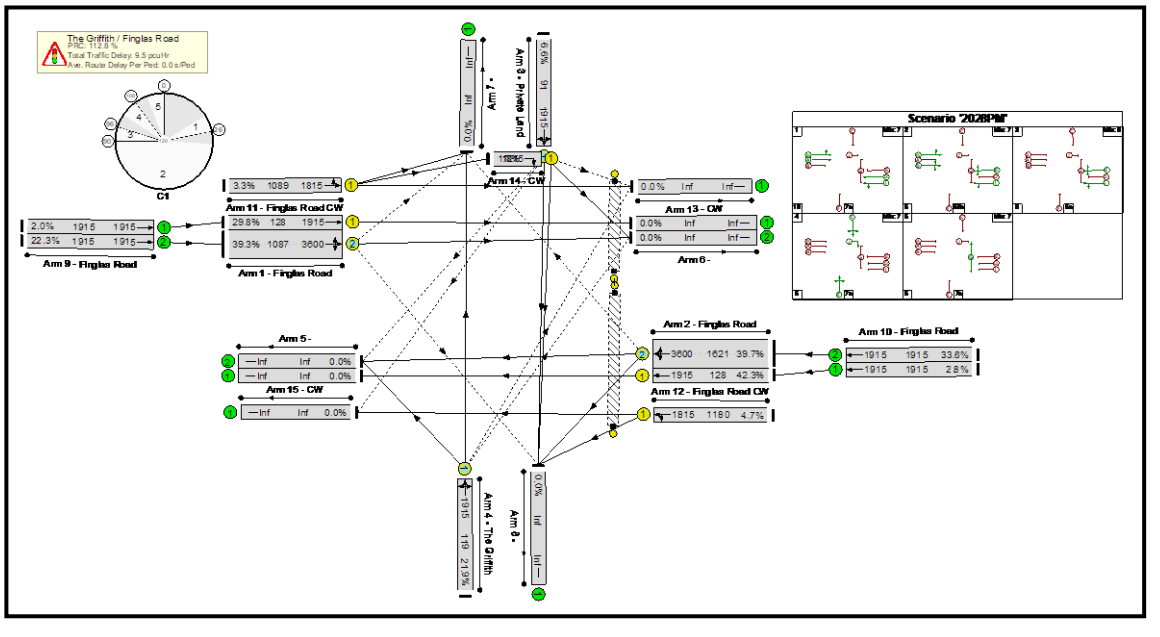
Bus Delay
Inbound = 83s
Outbound = 75s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 112.8%
Delay = 9.54pcuHr

Bus Delay
Inbound = 73s
Outbound = 78s



Subject	BusConnects Core Bus Corridors Junction Design Rationale
Date	July 2022
Route	Finglas to Phibsborough
Job No/Ref	19.117

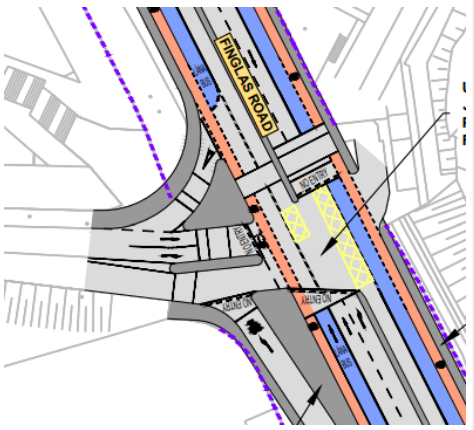
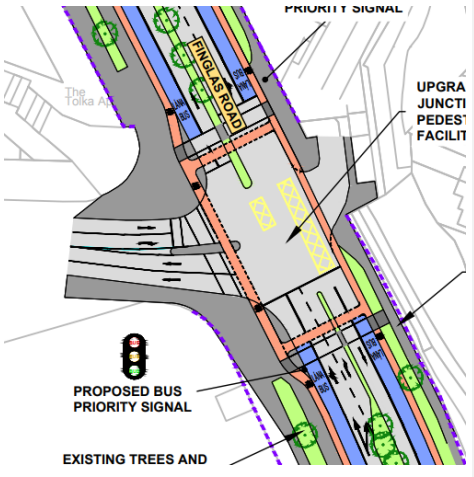
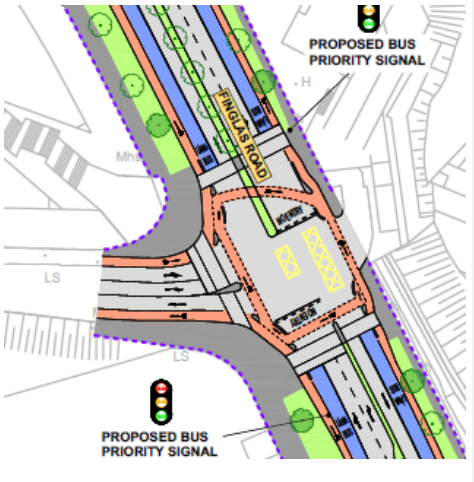
Tolka Valley Road/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing protected cycle infrastructure and new pedestrian crossing, removing slip lanes and island and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

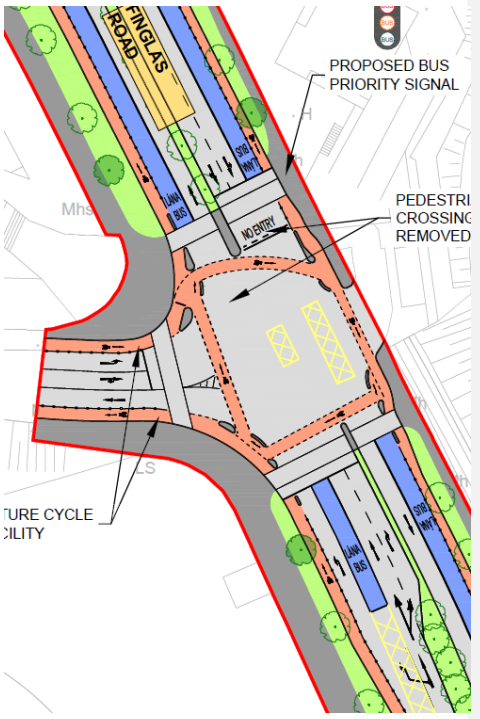
A eight stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

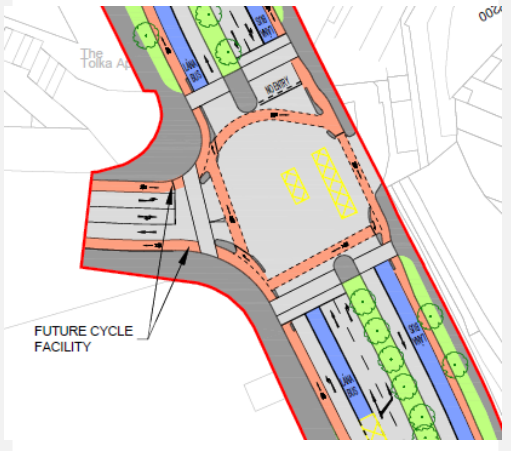
	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Inbound and outbound cycle infrastructure 2. Left slip lane to Tolka Valley Road introduced 3. Continuous inbound and outbound bus lanes 4. Stagger removed from pedestrian crossing across the northern arm	1. To ensure continuous cycle infrastructure along the corridor 2. To segregate the left turn demand from the junction. 3. To ensure bus priority through the junction 4. To improve the pedestrian permeability through the junction	1. Improved cycle facilities 2. Improved pedestrian facilities 3. Improved bus priority through the junction 4. Increased pedestrian intergreen times affecting the overall capacity of the junction
DRAFT PRO (PC2)		1. Left slip lane and associated Island removed on western arm 2. Left slip lane and associated Island removed on southern arm 3. Cycle lanes provided across the junction 4. Pedestrian crossing provided across southern arm	1. In keeping with DMURS recommendations 2. In keeping with DMURS recommendations 3. To facilitate cycle accessibility from the minor side road arms. 4. To improve pedestrian crossing opportunities	1. Reduced pedestrian crossing stages 2. Separate signal stages required between buses and general traffic with improved opportunities for public realm works 3. Improved cycle accessibility from minor side road arms. 4. Improved pedestrian facilities
DRAFT PRO (PC3)		1. Cycle right turn pockets and improved cycle lane alignment 2. Western arm footprint further reduced 3. Southern pedestrian crossing relocated 4. Central median of the northern arm extended	1. To ensure unimpeded movements by straight ahead cyclists 2. To further reduce turning radii and turning speeds 3. Former location too far from pedestrian desire line 4. To ensure traffic does not overswing into oncoming traffic	1. Improved cycling facilities. 2. Additional road space reallocated to pedestrian and public realm 3. Pedestrian crossing more in line with pedestrian desire line 4. Improved landscape opportunities

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Tolka Valley Road/Finglas Road

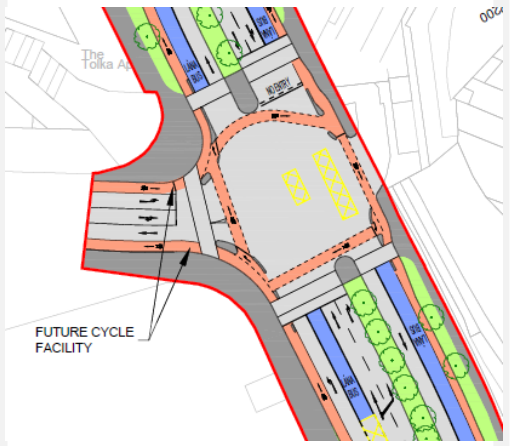
	Change Made	Reason for Change	Impact of Change
EXISTING			
STAGE B REVIEW	1. Left turn lane on outbound carriageway reintroduced. 2. Lane reallocation on Tolka Valley Road	1. Delay to metrolink requires a left turn lane 2. To accommodate turning demands	1. Improved bus priority since staging does not require buses to run separately from ahead general traffic lane. 2. None since no ahead traffic demand
FINAL DRAFT (WIP)	1. Central median islands width increased	1. To accommodate split pedestrian signal stages across the main line	1. Reduced landscape and public realm opportunities to accommodate the increased width; Reduced pedestrian intergreen times improving the overall capacity of the junction



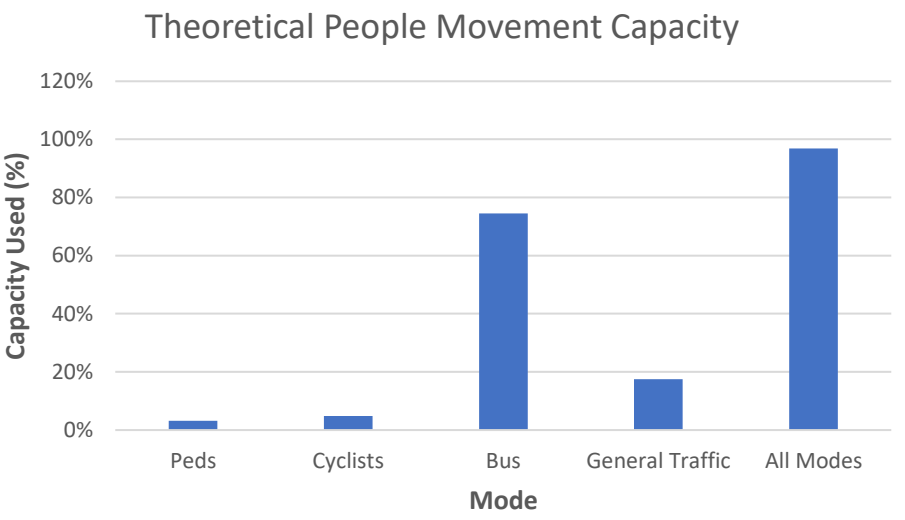


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Tolka Valley Road/Finglas Road



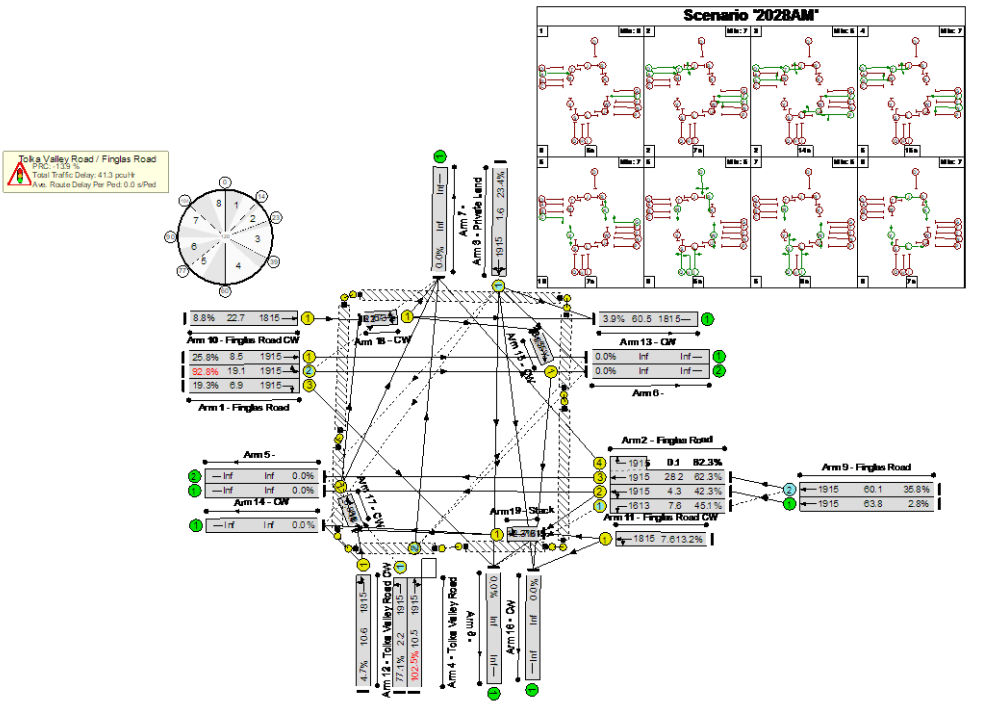
Capacity / Delay



Do Something : 2028 : AM

Cycle = 120secs
PRC = -13.9%
Delay = 41.34pcuHr

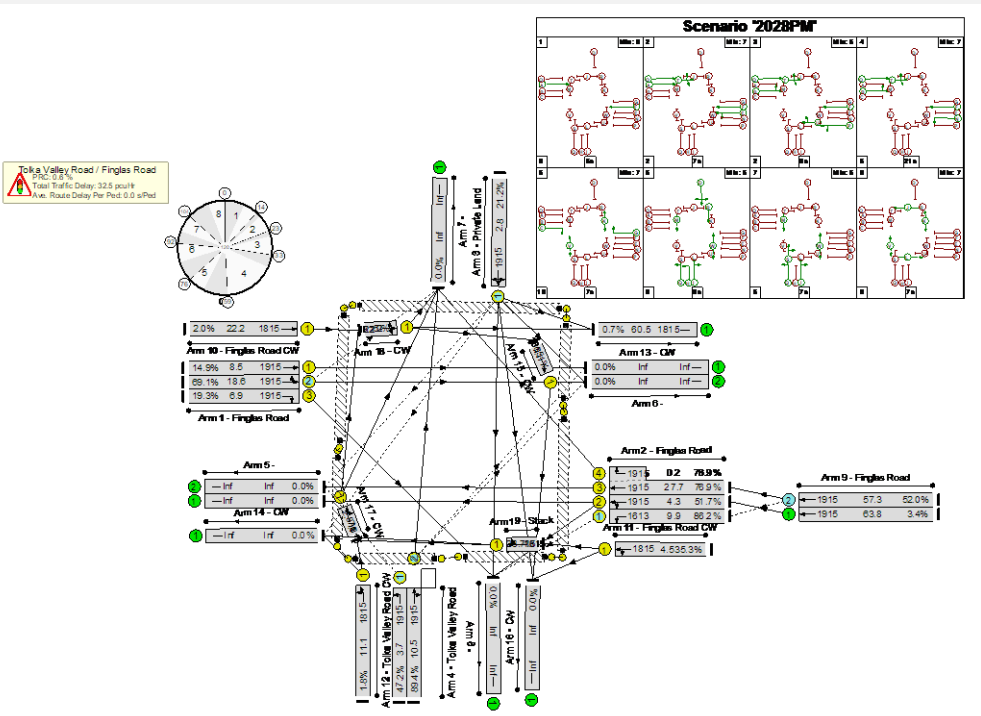
Bus Delay
Inbound = 56s
Outbound = 78s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 0.6%
Delay = 32.52pcuHr

Bus Delay
Inbound = 54s
Outbound = 83s



Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Old Finglas Road/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.

Layout of junction updated introducing protected cycle infrastructure and new pedestrian crossing and improving approach and egress alignments.

The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

A eight stage signal operation is proposed.

Pedestrian crossings operate in their own stage.

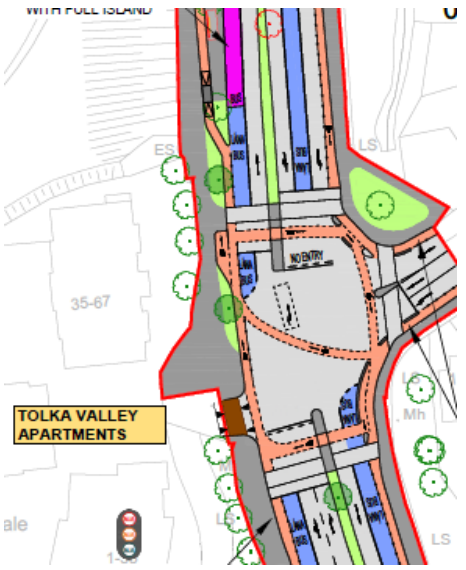
	Change Made	Reason for Change	Impact of Change
EXISTING	1. Outbound bus lane introduced 2. New Pedestrian crossing on Old Finglas Rd 3. Right turn pocket provided for cyclists to Old Finglas Road 4. Entrance to Tolka Valley Apartments relocated	1. To improve bus priority along the corridor. 2. To ensure controlled and safe pedestrian crossing 3. To facilitate safe turning for cyclists 4. To facilitate the right turn pocket for cyclists	1. Improved outbound bus provision 2. Improved pedestrian facilities 3. Additional signal stage required due to lack of downstream cycle infrastructure on Old Finglas Road 4. Not practicable due to significant level differences between proposed new entrance and road level
DRAFT PRO (PC2)	1. Bus lanes segregated from general traffic 2. Cycle lanes provided across the junction 3. New pedestrian crossing on southern arm 4. Existing pedestrian crossing on northern arm reconfigured	1. To improve bus priority along the corridor. 2. To facilitate cycle accessibility from the minor side road arms. 3. To improve pedestrian crossing opportunities 4. To remove the stagger manoeuvre and provide inline crossings	1. Improved bus provision along the corridor 2. Improved cycle accessibility from minor side road arms. 3. Improved pedestrian facilities 4. Improved pedestrian facilities however longer crossing intergreens as a result affecting the overall capacity of the junction
DRAFT PRO (PC3)	1. Cycle right turn pockets and improved cycle lane alignment	1. To ensure unimpeded movements by straight ahead cyclists	1. Improved cycle facilities

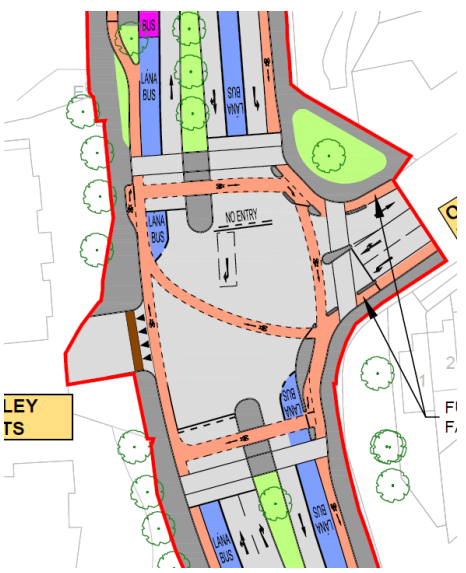
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Old Finglas Road/Finglas Road

EXISTING

	Change Made	Reason for Change	Impact of Change
STAGE B REVIEW	1. Inbound lane allocation reconfigured. 2. Additional right turn cycle lane through the junction provided 3. Right turn box provided within the junction	1. To better reflect turning demands and allow the junction to operate with better capacity 2. To provide a more direct route outbound 3. To allow for safe right turn stacking without impeding ahead traffic.	1. Right turns to Tolka Valley Park now mixed with ahead traffic 2. Improved cycle facilities
FINAL DRAFT (WIP)	1. Tolka Valley Apartments entrance location reinstated 2. Central median island widths increased	1. To improve accessibility for residents and improve the safety of the junction 2. To accommodate split pedestrian signal stages across the main line	1. Improved alignment and safety 2. Reduced pedestrian intergreen times improving the overall capacity of the junction

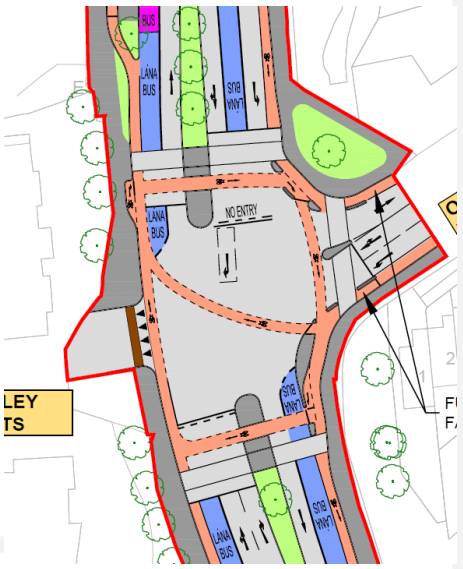


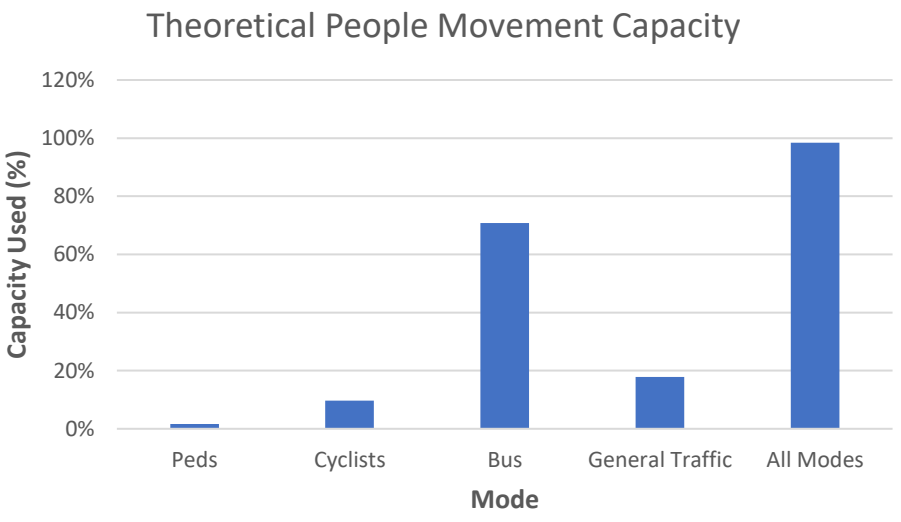


Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Old Finglas Road/Finglas Road

Capacity / Delay

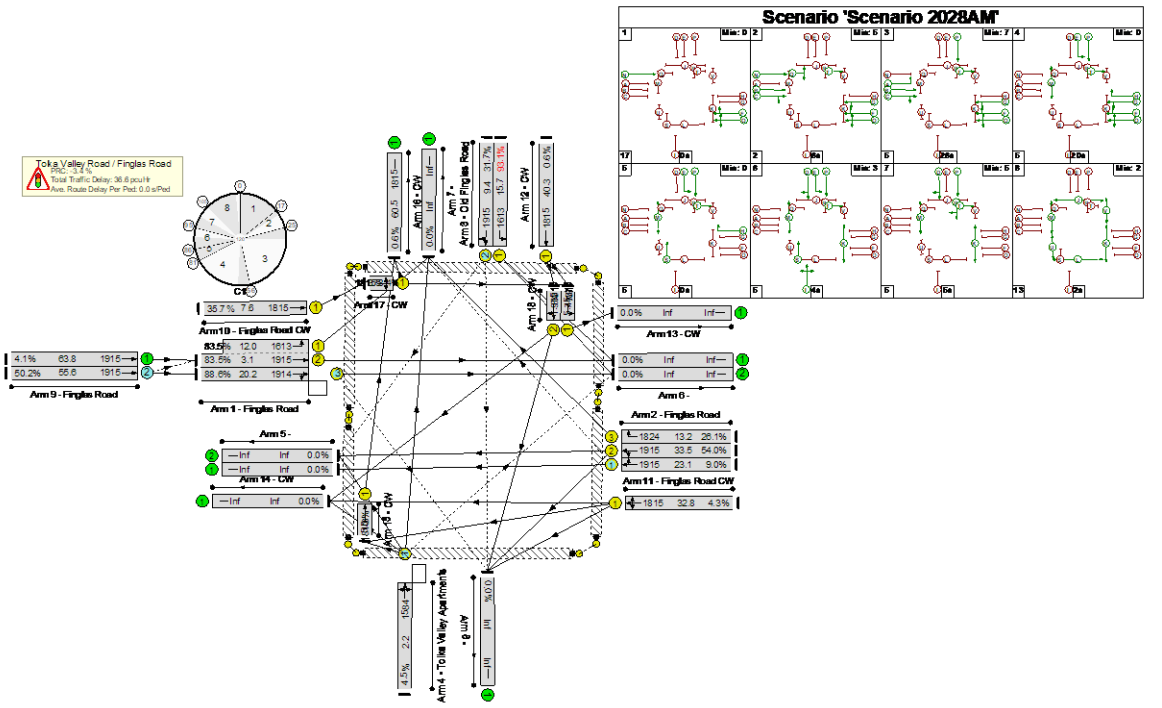




Do Something : 2028 : AM

Cycle = 120secs
PRC = -3.4%
Delay = 36.60pcuHr

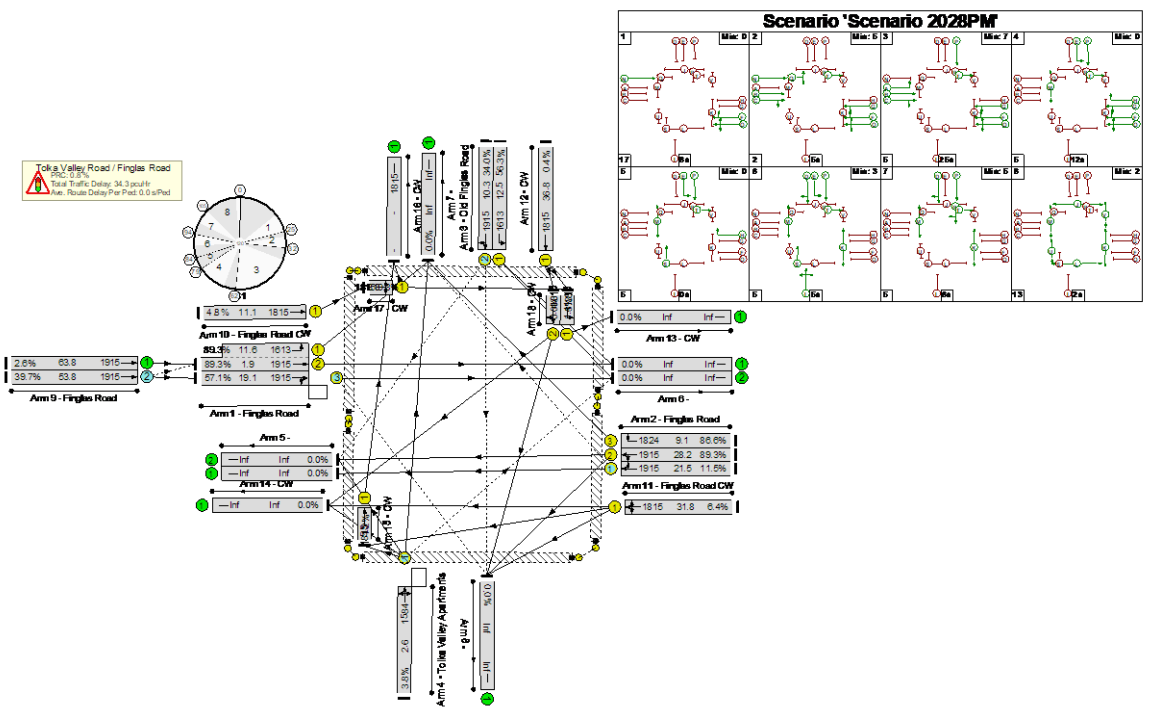
Bus Delay
Inbound = 64s
Outbound = 18s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 0.8%
Delay = 34.34pcuHr

Bus Delay
Inbound = 79s
Outbound = 19s



Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Ballyboggan Road/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.

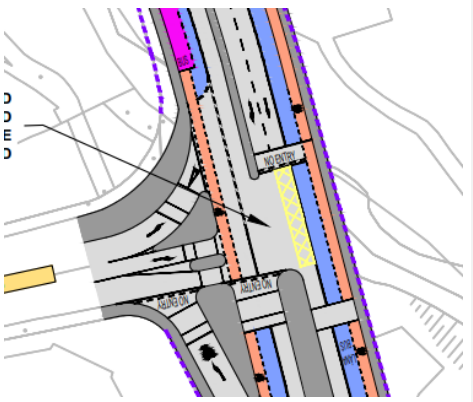
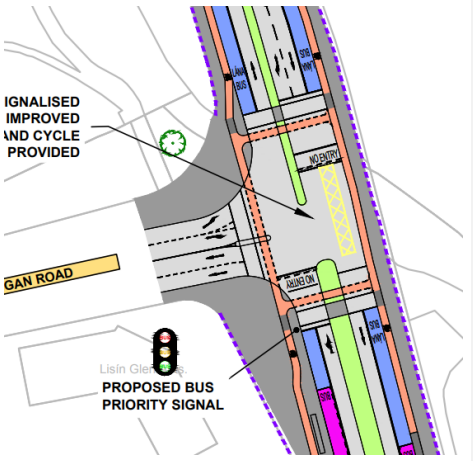
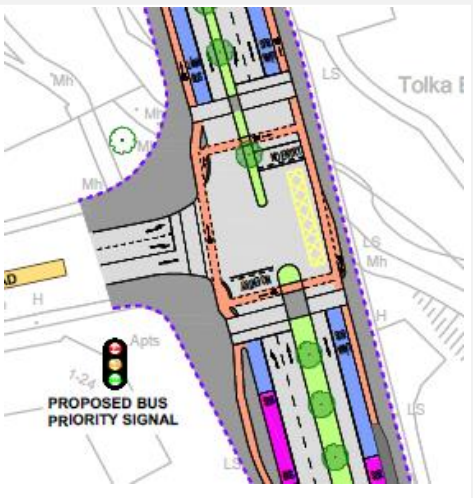
Layout of junction updated removing slip lanes and island and introducing new pedestrian crossing and new cycle infrastructure and improving approach and egress alignments.

The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

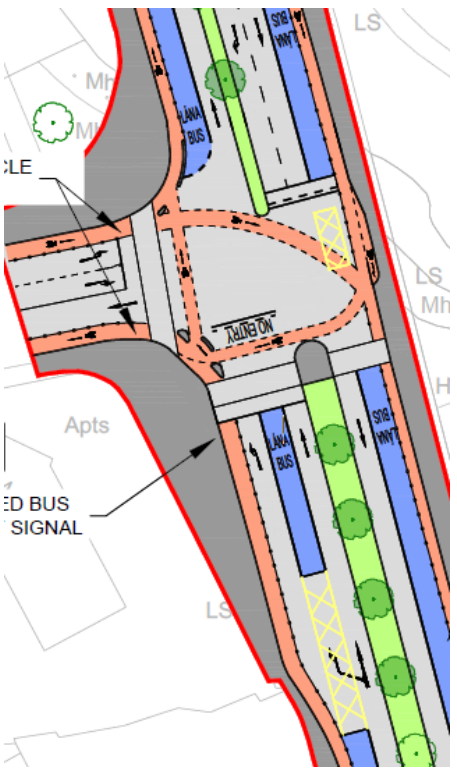
A six stage signal operation is proposed.

Pedestrian crossings operate in their own stage.

		Change Made	Reason for Change	Impact of Change
EXISTING				
EPR		1. Outbound bus lane downstream of the junction introduced 2. Northbound left slip lane reduced to a single lane	1. To ensure bus priority along the corridor. 2. To reflect lane changes to the main line corridor	1. Improved bus priority along the main corridor 2. Reduced northbound road capacity
DRAFT PRO (PC2)		1. All left slip lanes and and associated Islands removed 2. Segregated inbound and outbound cycle infrastructure provided 3. Improvements to pedestrian crossing provision and facilities 4. Cycle lanes provided across the junction	1. In keeping with DMURS recommendations 2. To provide continuous and segregated cycle infrastructure through the junction 3. To improve crossing opportunities and reduce the number of crossing stages 4. To facilitate cycle accessibility to and from the minor side road arms.	1. Reduce number of pedestrian crossing stages 2. Improved cycle facilities. 3. Improved pedestrian facilities 4. Improved cycle accessibility from minor side road arms.
DRAFT PRO (PC3)		1. Cycle right turn pockets and improved cycle lane alignment 2. Segregated left turn lane provided	1. To ensure unimpeded movements by straight ahead cyclists 2. Traffic demand requirements	1. Improved cycling facilities 2. Increased pedestrian crossing distance and intergreen times

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

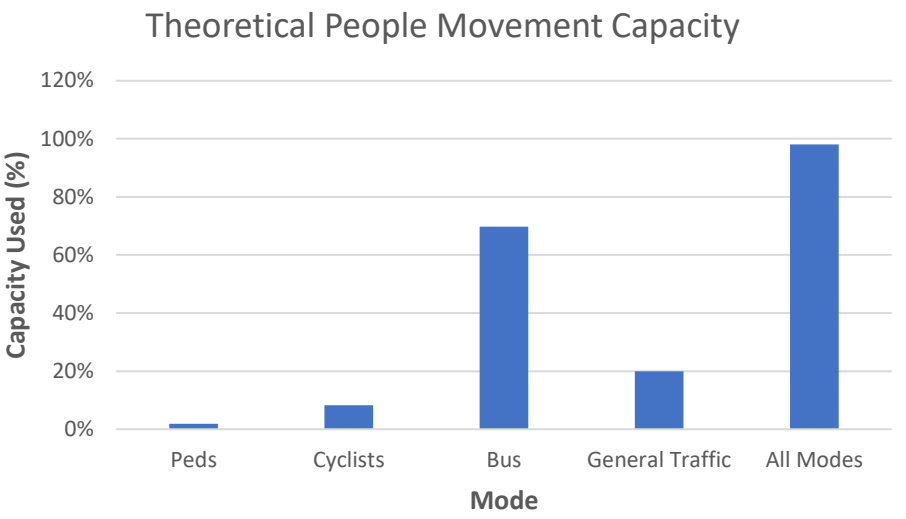
Ballyboggan Road/Finglas Road

	Change Made	Reason for Change	Impact of Change
EXISTING 			
STAGE B REVIEW 	1. Cycling infrastructure introduced on Ballyboggan Road 2. Pedestrian crossing on the northern arm removed 3. Left turn lane relocated adjacent to cycle track	1. To improve cycle accessibility from the minor side road arms. 2. Right turn demand too high and insufficient stacking space causing undue delays upstream 3. To align with the BusConnects junction design layout	1. Improved cycle accessibility from minor side road arms. 2. Reduced pedestrian crossing opportunities; Sufficient stacking capacity in the right turn lane 3. Improved bus priority since staging does not require buses to run separately from ahead general traffic lane.
FINAL DRAFT (WIP) 	1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Ballyboggan Road/Finglas Road

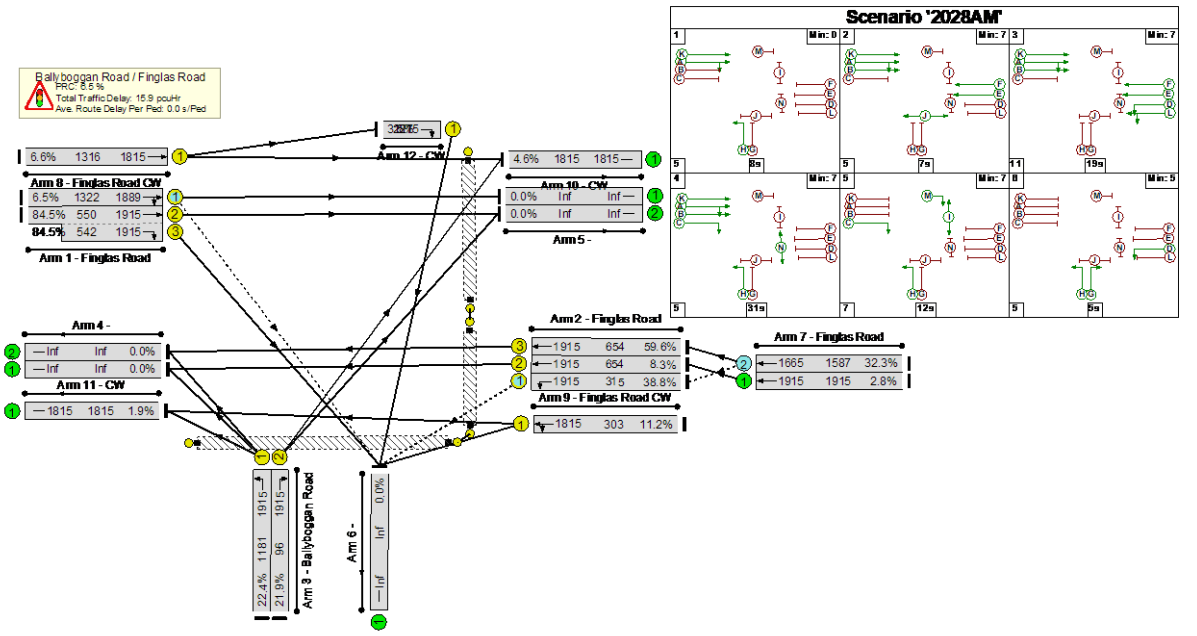
Capacity / Delay



Do Something : 2028 : AM

Cycle = 120secs
PRC = 6.5%
Delay = 15.92pcuHr

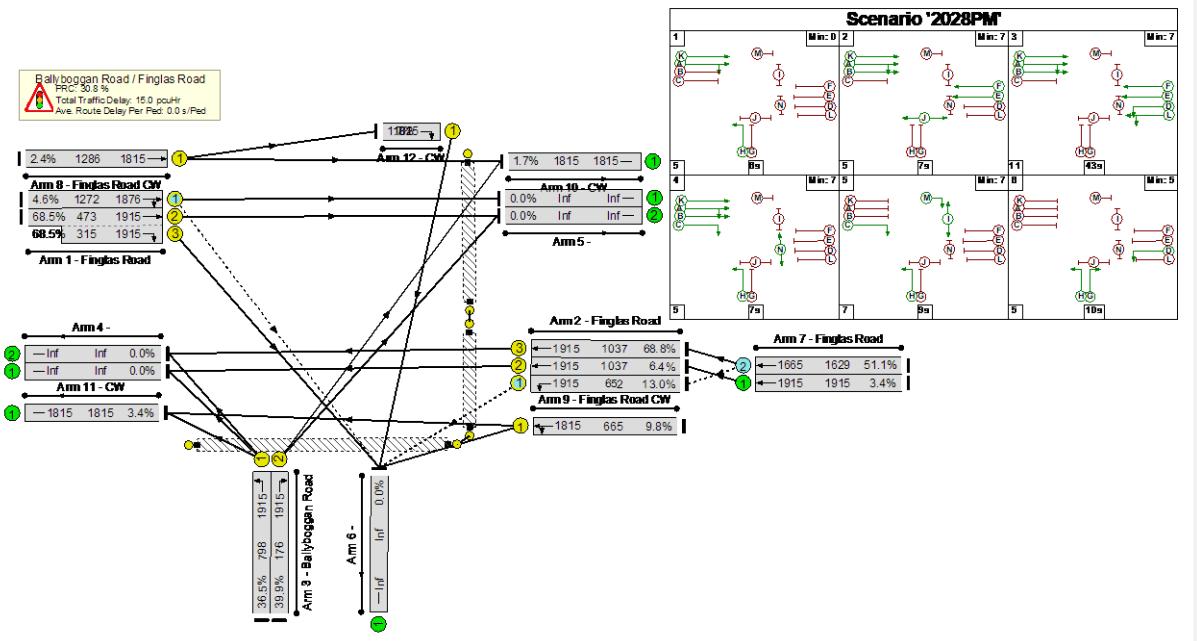
Bus Delay
Inbound = 6s
Outbound = 30s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 30.8%
Delay = 15.97pcuHr

Bus Delay
Inbound = 7s
Outbound = 15s



Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

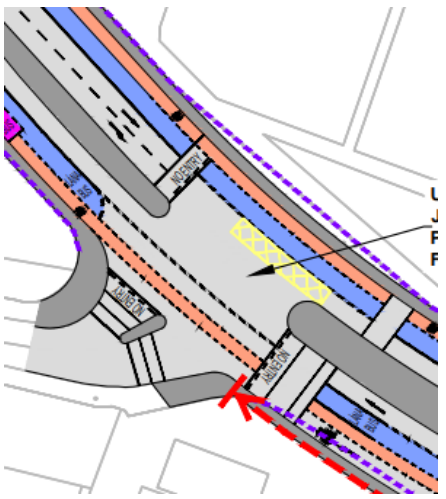
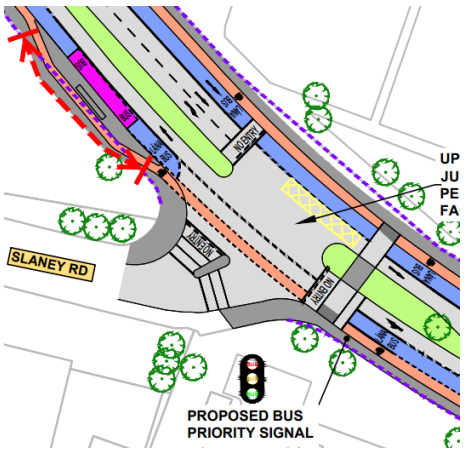
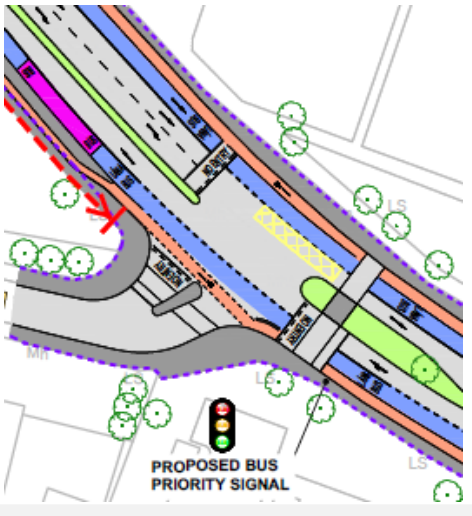
Slaney Road/Finglas Road

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing new cycle infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

Signal Operation

A six stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Left turn general traffic lane introduced. 2. Pedestrian crossing on Slaney Road realigned	1. To segregate left turns from stacking within the bus lane 2. To remove the stagger manoeuvre	1. Improved bus priority since staging does not require buses to run separately from ahead general traffic lane 2. Footpaths moved further away from the pedestrian desire line
DRAFT PRO (PC2)		1. Left turn lane removed and left turns to take place from outbound the general traffic lane. 2. Mainline pedestrian crossing realigned	1. Reduced demand for left turns can be accommodated from the general traffic lane 2. To remove the stagger manoeuvre	1. Separate signal stages required for outbound buses and general traffic 2. Improved pedestrian facilities
DRAFT PRO (PC3)		1. Minor arm pedestrian crossing realigned and widened.	1. To ensure better alignment with the pedestrian desire line.	1. Improved pedestrian facilities.

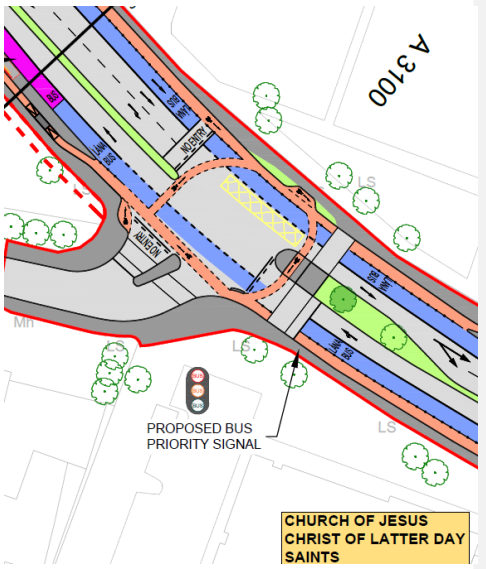
Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Slaney Road/Finglas Road

EXISTING

Change Made	Reason for Change	Impact of Change
1. Cycle right turn pockets and cycle lanes provided across the junction	1. To facilitate cycle accessibility to and from the minor side road arms	1. Improved cycle accessibility from minor side road arms.

STAGE B REVIEW



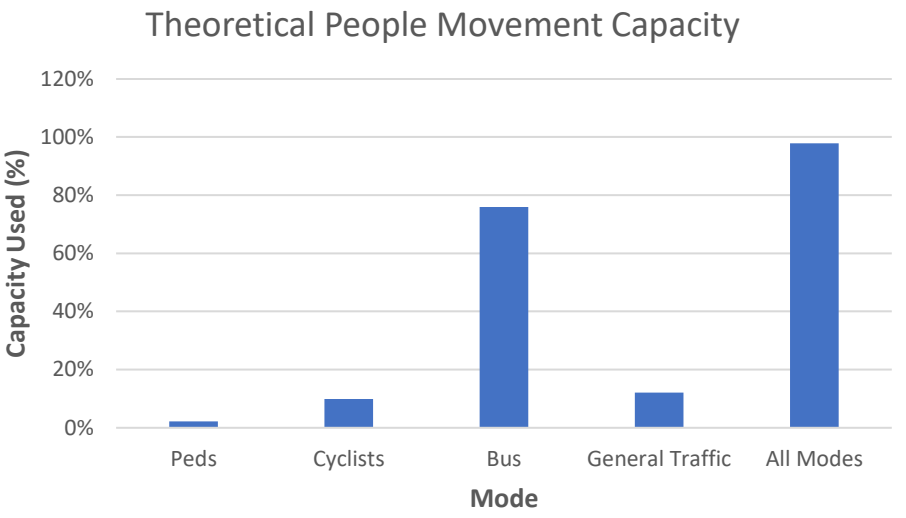
Change Made	Reason for Change	Impact of Change
1. Splitter island removed from Slaney Road	1. To reduce the required number of pedestrian crossing stages	1. Improved pedestrian permeability through the junction

FINAL DRAFT (WIP)

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Slaney Road/Finglas Road

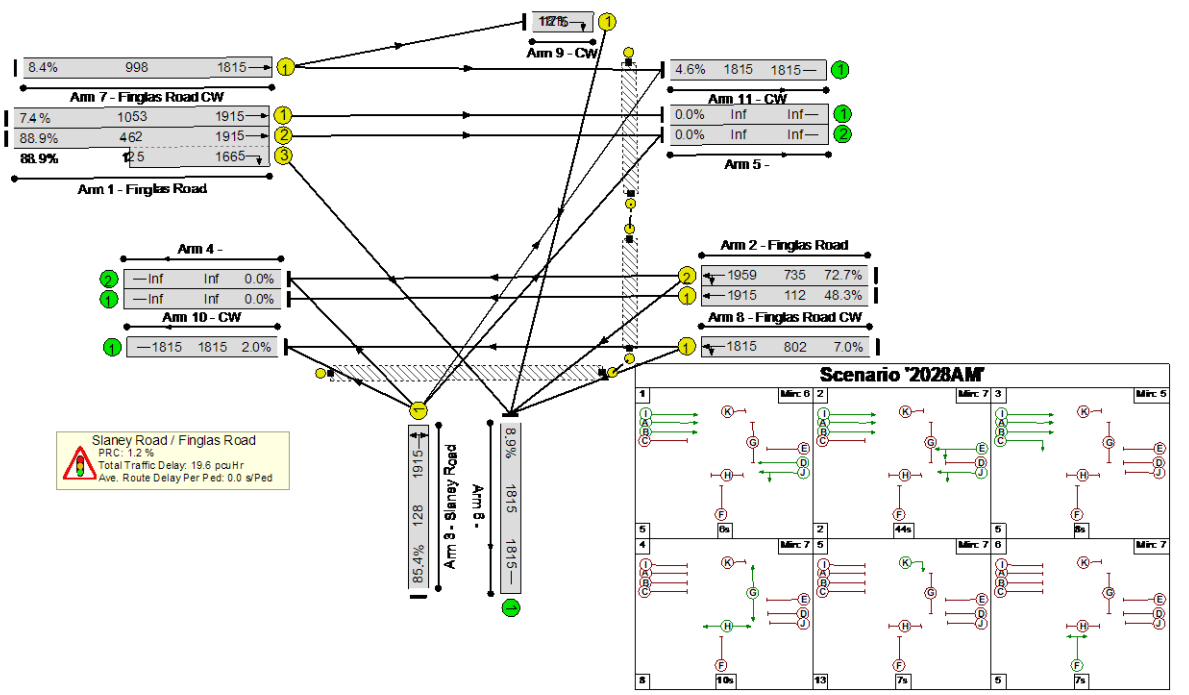
Capacity / Delay



Do Something : 2028 : AM

Cycle = 120secs
PRC = 1.2%
Delay = 19.58pcuHr

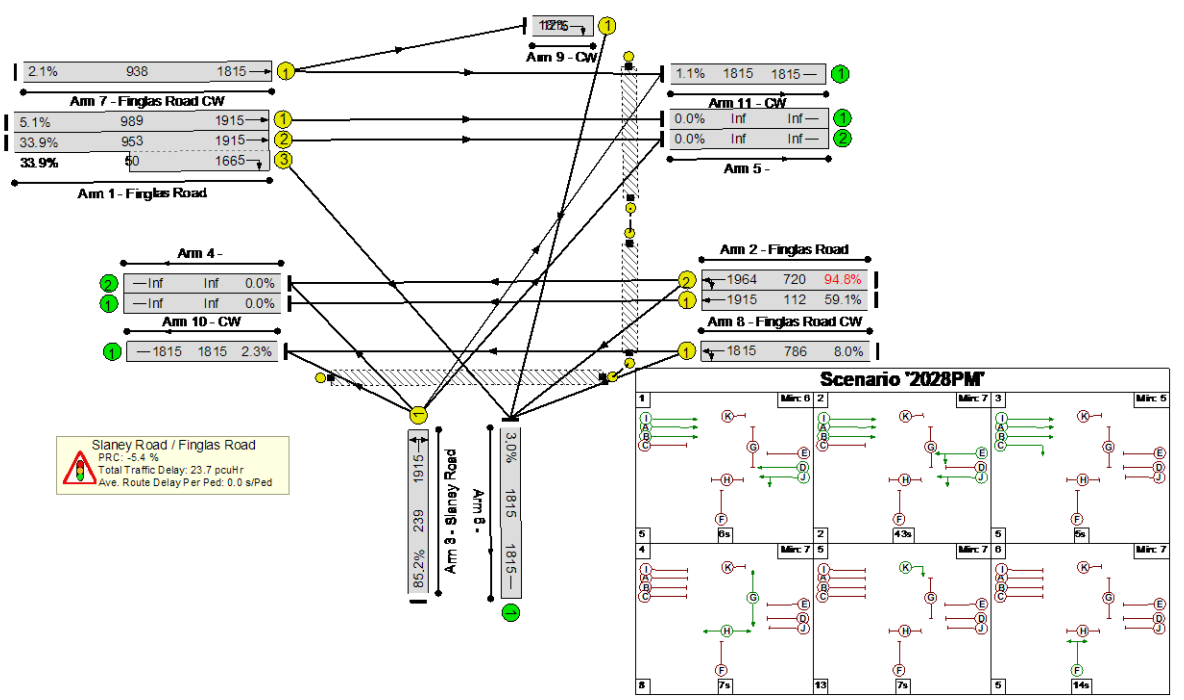
Bus Delay
Inbound = 16s
Outbound = 86s



Do Something : 2028 : PM

Cycle = 120secs
PRC = -5.4%
Delay = 23.71cuHr

Bus Delay
Inbound = 16s
Outbound = 93s



Subject	BusConnects Core Bus Corridors Junction Design Rationale
Date	July 2022
Route	Finglas to Phibsborough
Job No/Ref	19.117

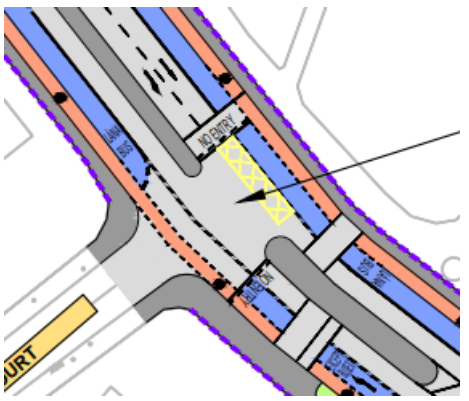
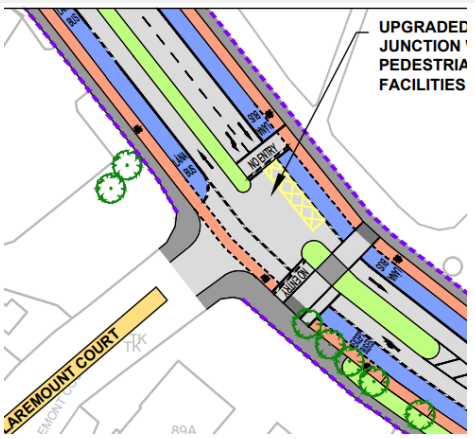
Claremont Court/Finglas Court

Summary

Junction is in compliance with the BusConnects Preliminary Design Guidance Booklet with respect to pedestrians, cyclists and buses.
Layout of junction updated by introducing new cycle infrastructure and improving approach and egress alignments.
The logic of the project was to improve facilities for cyclists at the junction and to provide priority for buses.

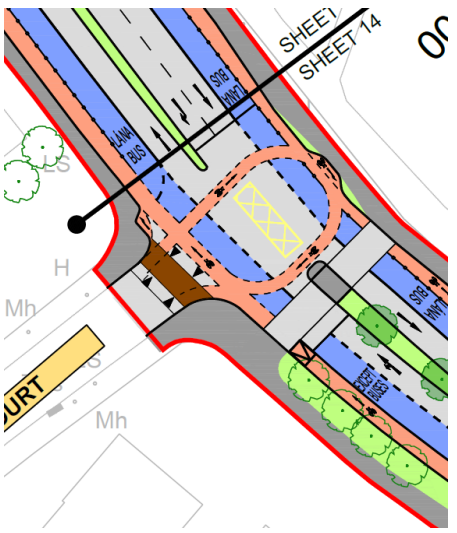
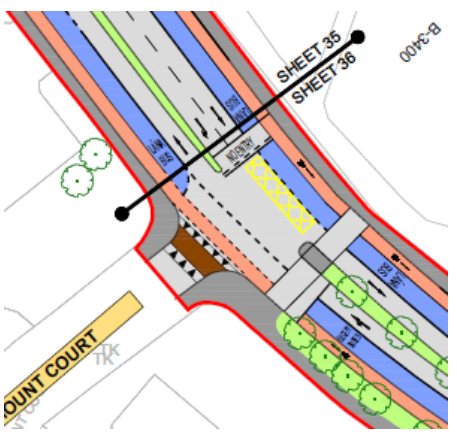
Signal Operation

A six stage signal operation is proposed.
Pedestrian crossings operate in their own stage.

	Change Made	Reason for Change	Impact of Change
EXISTING			
EPR		1. Pedestrian crossing on southern arm reconfigured 2. Cycling ASL removed	1. Necessitated by required changes to the road marking 2. Contrary to National Cycle Manual recommendations	1. Pedestrian crossing location further away from the pedestrian desire line 2. No other means for cyclists to turn right
DRAFT PRO (PC2)		1. Pedestrian crossing on southern arm realigned	1. To remove the required stagger manoeuvre and align with the pedestrian desire line	1. Improved pedestrian facilities
DRAFT PRO (PC3)		1. None	1. None	1. None

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

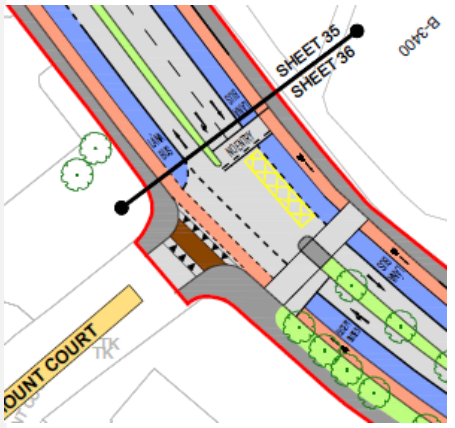
Claremont Court/Finglas Road

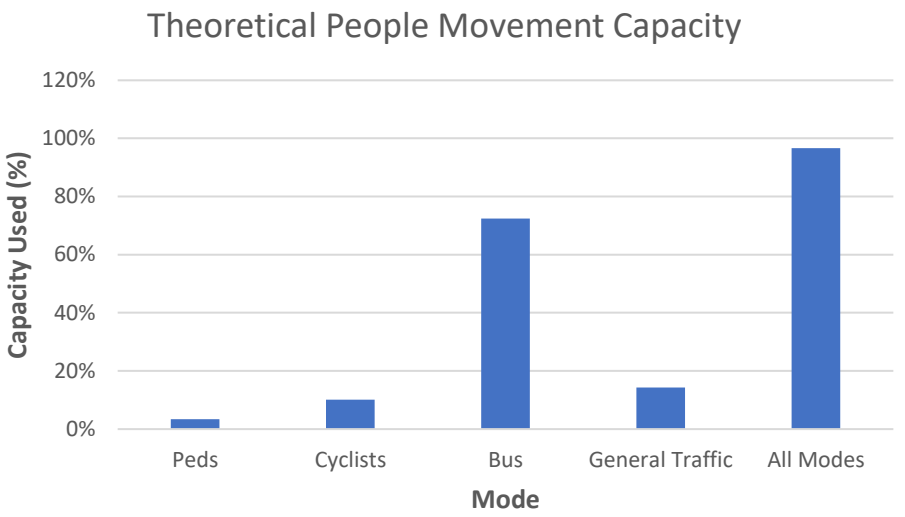
		Change Made	Reason for Change	Impact of Change
EXISTING				
STAGE B REVIEW		1. Cycle right turn pockets and cycle lanes provided across the junction	1. To facilitate cycle accessibility to and from the minor side road arms	1. Improved cycle accessibility from minor side road arms.
FINAL DRAFT (WIP)		1. Cycle right turn pockets and cycle lanes removed across the junction	1. Limited demand for right turning cyclists through the junction	1. Cyclists required to use the toucan crossing

Subject	BusConnects Core Bus Corridors Junction Design Rationale		
Date	July 2022		
Route	Finglas to Phibsborough	Job No/Ref	19.117

Claremont Court/Finglas Road

Capacity / Delay

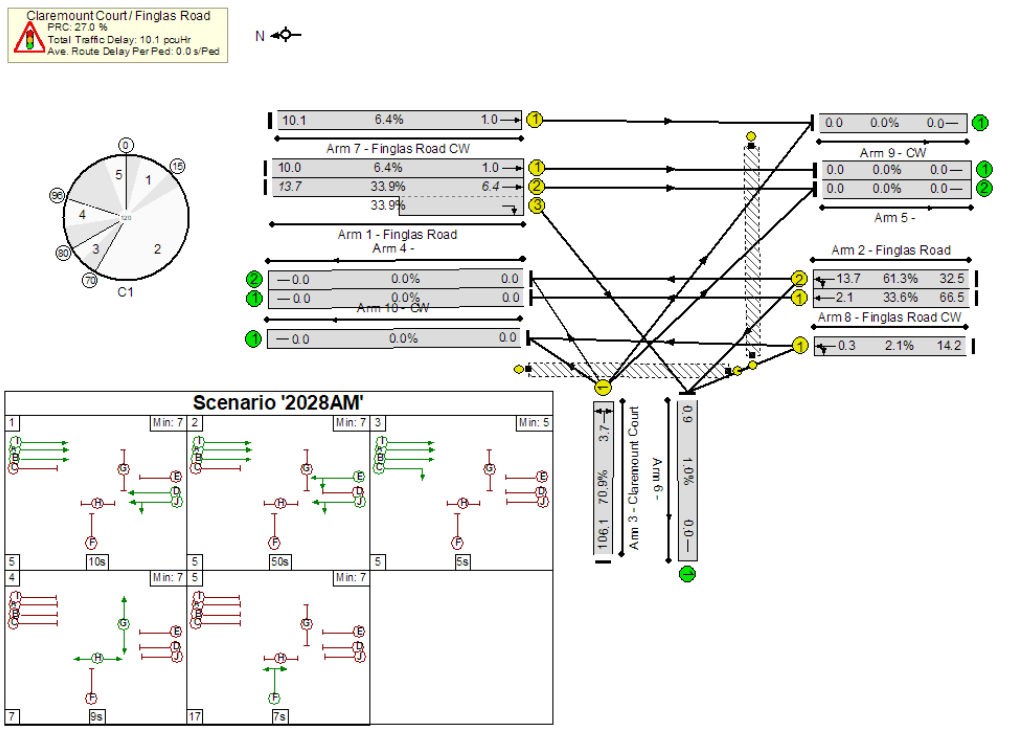




Do Something : 2028 : AM

Cycle = 120secs
PRC = 27.0%
Delay = 10.57pcuHr

Bus Delay
Inbound = 11s
Outbound = 80s



Do Something : 2028 : PM

Cycle = 120secs
PRC = 0.5%
Delay = 15.50pcuHr

Bus Delay
Inbound = 11s
Outbound = 83s