Appendix L
Junction Design Report

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1. Introduction

This report has been prepared to document the evolution of the design of key junctions along the Swords to City Centre Scheme (hereafter referred the Proposed Scheme). In addition, the report presents the junction assessment results for the final scheme design which demonstrate the expected operation of the junction.

Finally, a theoretical assessment has been carried out to demonstrate the capacity of the junctions for all modes. The methodology adopted is elaborated upon in the following sections.

2. Methodology

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 movement 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. This document sets out the four typical junction arrangements adopted on the project as follows:

- Junction Type 1 – Both bus lanes are dedicated lanes up to the junction stop line and general straight ahead and left-turning traffic is restricted to one lane;
- Junction Type 2 – As per Junction Type 1 but with left turning traffic crossing the bus lane into a dedicated left turn lane in advance of the stop line;
- Junction Type 3 – Bus lanes are terminated just short of the junction to allow left-turners to turn left from a short left-turn pocket in front of the bus lane. Buses can continue straight ahead from this pocket where a receiving bus lane is proposed; and
- Junction Type 4 – Similar to the CYCLOPS junction in Manchester, U.K. the pedestrian crossings are located on the inside of the cycle lanes on all arms of the junction. This assists to minimise pedestrian crossing distances. Signalised pedestrian crossings are proposed across the cycle tracks to allow the pedestrian to cross from the footpath to the pedestrian crossing landing areas, thus avoiding any uncontrolled pedestrian-cyclist conflict. Bus lanes are terminated just short of the junction to allow left turners to turn left from a short left-turn pocket in front of the bus lane. Buses can continue straight ahead from this pocket where a receiving bus lane is proposed.

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 design process. The evolution of the design is documented in this report with a clear rationale provide for the changes at key points in the project as follows:

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

2.1 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 2-1.

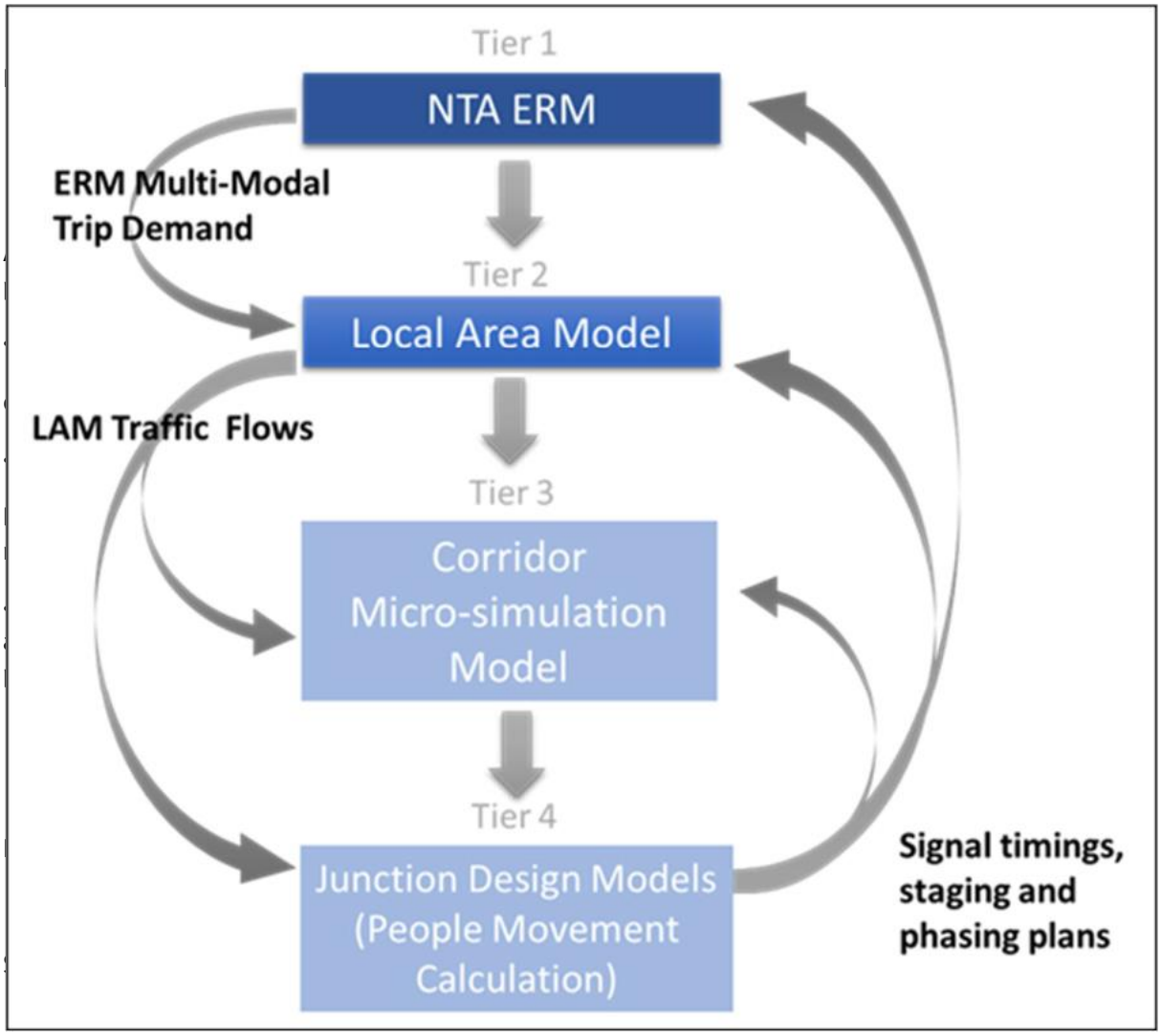


Figure 2-1 Transport Modelling Methodology and Information Flow

As shown above, 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 of the proposed scheme to assist in the operational validation of proposed designs with the visualisation of the potential proposed scheme impacts and benefits; and

- Local Junction Models: each junction along the proposed CBC were modelled individually to support local junction design development.

For the purposes of the Junction Design and Modelling 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 preferred design for the CBC. 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 of BusConnects. Figure 2-2 presents an example of the local junction modelling results from LinSig presented in this report. A description of the images follows.

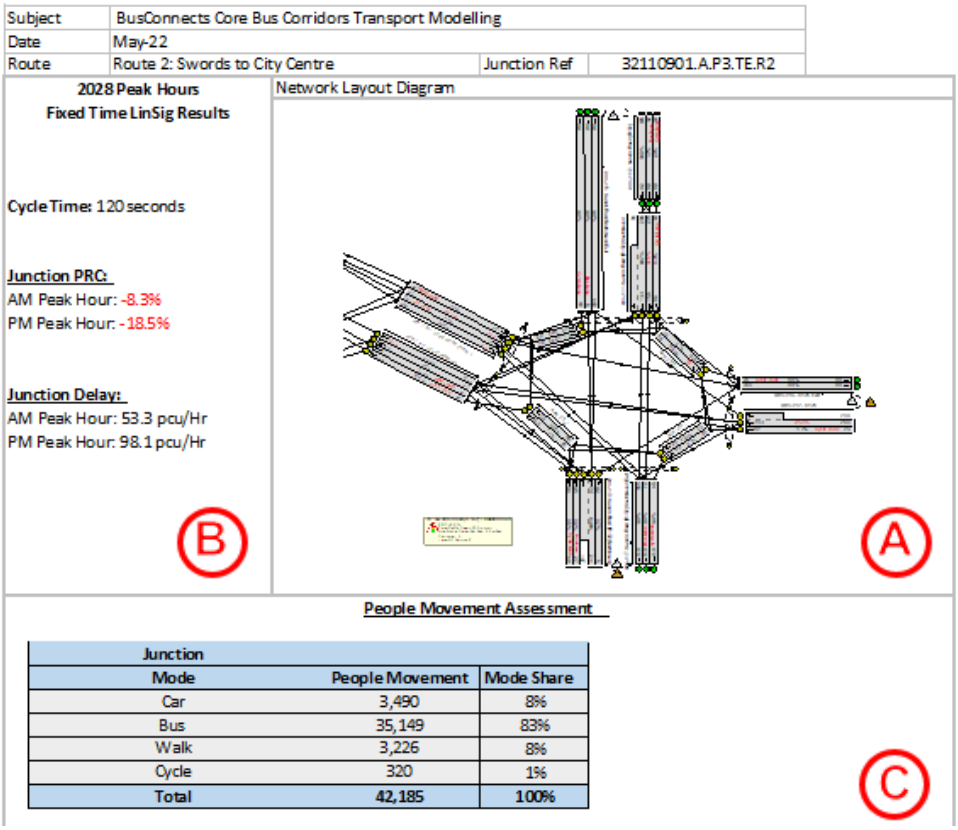


Figure 2-2 Example of a junction modelling results in the JDR

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

- Number of PCUs arriving at the Stop Line – this is the number located at the back of the lane in Figure 2-2 and reflects the traffic flows on its respective lane;
- Degree of Saturation (%) – this is the number located in the middle of the lane in Figure 2-2 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 theoretical capacity; and
- Mean Max Queue (PCU) – this is the number located at the front of the lane in Figure 2 and is Maximum queue (per lane) within a typical cycle.

B 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);
- Junction Delay (PCU/hr) – the total aggregate delay on all lanes controlled by each Stage
- Stream;

C shows the tabulated information on the People Movement Assessment for the Do-Something 2028 scenario during the AM peak.

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 Environmental Impact Assessment Report (EIAR).

2.2 People Movement

An assessment has been carried out to determine the people movement potential the proposed scheme will generate. This adopts a policy led approach to the design of junctions, which prioritises the movement of people as opposed to private modes and maximisation of sustainable modes i.e. walking, cycling and bus are considered in advance of management of general traffic movements at junctions. The outputs of the calculator provide an estimate of people movement per mode per junction and the respective percentage mode share. Figure 2-3 illustrates the People Movement Formulae.

People Movement Formulae	
Cyclists	$\sum\left(\frac{Green\ Time}{headway}\right)\left(\frac{3600}{Cycle\ Time}\right)\left(\frac{CT\ Width}{1.5}\right)$
Buses	$\sum(No.of\ Buses)(Occupancy)(\ Direction)$
General Traffic	$\sum LinSig\ PCU\ Capacity\ Outputs$
Pedestrians	$\sum(Green\ Time)\left(\frac{Walking\ Speed}{Ped.Walking\ Buffer}\right)\left(\frac{Crossing\ Width}{2}\right)\left(\frac{3600}{Cycle\ Time}\right)(No.Crossing\ Points)$

Figure 2-3 People Movement Formulae

The emerging proposed designs were inputted to the People Movement Calculation tool including the junction geometry, junction type and the signal staging, which produced initial people movement outputs and indicative green times per mode. The results provided an initial starting point to facilitate a review of the junction designs, where necessary pedestrian, cyclist and bus infrastructure was optimised accordingly to facilitate additional capacity. The revised designs were then added into the LAM to facilitate traffic modelling.

The LAM outputs provided traffic flows for the opening year (2028) and opening year +15 (2043). The traffic flows were fed into the LinSig models to facilitate a detailed analysis of the proposed junction operation. The LinSig and DLAM analysis required traffic modelling iterations. The people movement results were also re-evaluated during the iteration process, the results were also used to inform the projected number of cyclists in the operational year in the Cycle Quantification assessment.

Below is a sample Table 2-1 of People Movement results, which captures the People Movement Assessment for Do-Something 2028 scenario for all modes during the morning peak hours at the Ballyfermot Road/ Kylemore Road junction.

Junction Mode	People Movement	Mode Share
Car	1586	13%
Bus	7691	61%
Walk	2765	21%
Cycle	635	5%
Total	12677	100%

Table 2-1 Theoretical People Movement Assessment (Typical Peak Period)

3. Junctions Assessed

A total number of 34 junctions in the Proposed Scheme are presented in this report which are as follows:

1 Pinnockhill Jn (Swords (R132) Rd/ Dublin Rd)

2 Swords Road (R132)/Boroimhe Road (L2300)/Access to Airside

3 Kettle Lane Priority Junction

4 Dublin Road (R132)/Naul Road/Stockhole Lane

5 Dublin Airport Roundabout

6 Swords Road (R132)/Green Long-Term Car Park

7 Swords Road (R132)/Corballis Road

8 Swords Road (R132)/Old Airport Road

9 Swords Road (R132)/Quick Park at Dublin Airport

10 Swords Road (R132)/Turnapin Lane

11 Swords Road (R132)/Northwood Avenue

12 Swords Road (R132)/Coolock Lane

13 Swords Road (R132)/Santry Avenue

14 Swords Road (R132)/Magenta Crescent

15 Swords Road (R132)/Lorcan Road/Omni Park Shopping Centre Access

16 Swords Road (R132)/Shanowen Road

17 Swords Road (R132)/Larkhill Road/Shanrath Road

18 Swords Road (R132)/Shantalla Rd

19 Swords Road (R132)/Collins Avenue

20 Swords Road (R132)/Iveragh Road

21 Swords Road (R132)/Seven Oaks Junction

22 Drumcondra Road Upper (R132)/Griffith Avenue

23 Drumcondra Road Upper (R132)/Home Farm Road

24 Drumcondra Road Upper (R132)/Richmond Road/Millmount Ave

25 Drumcondra Road Lower (R132)/Botanic Avenue

26 Drumcondra Road Lower (R132)/Clonliffe Road

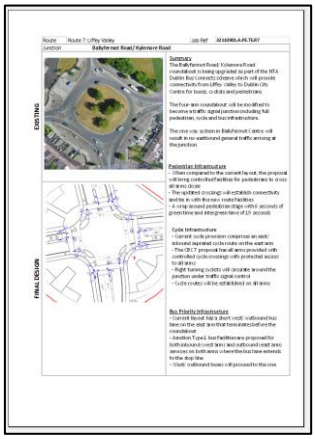
27 Drumcondra Road Lower/Whitworth Place/Whitworth Road

28 Dorset Street Lower/Belvidere Road/Innisfallen Parade

29	Dorset Street Lower/North Circular Road
30	Dorset Street Lower/Gardiner Street Upper/Synnott Place
31	Dorset Street Lower/Eccles Street/Hardwicke Place
32	Dorset Street Lower/Frederick Street North/Blessington Street
33	Parnell Square north/Gardiner Row
34	St Mary's Pl North/Granby Row

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

Contents

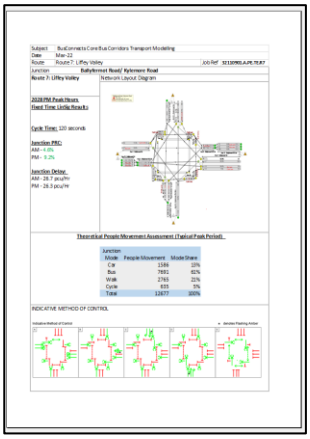


Current Proposal

- Existing;
- Proposed Design;
- Pedestrian Infrastructure;
- Cyclists Infrastructure; and
- Bus Priority.

Design Evolution

- Existing;
- Concept Design;
- Emerged Preferred Route;
- Public Consultation 2 (PC2);
- Public Consultation 3 (PC3); and
- Current Proposal.



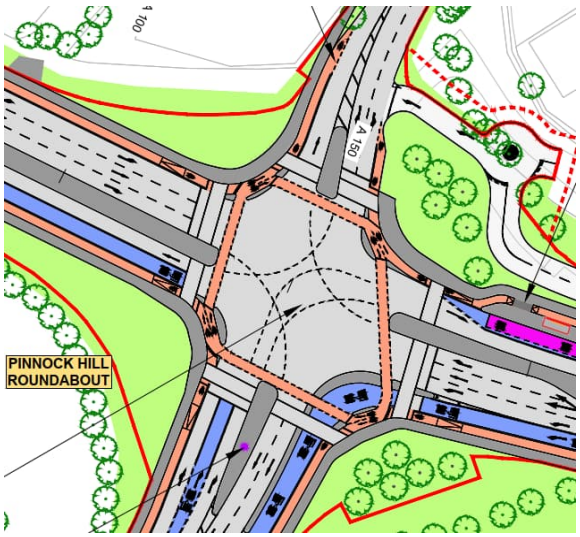
Transport Modelling

- LinSig Network outputs;
- People Movement; and
- Indicative Method of Control.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Bypass / Dublin Road / Pinnockhill		

EXISTING

FINAL DESIGN



Summary:

The Pinnockhill junction is proposed to be upgraded to a 4 arm signalised junction as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The design rationale was to provide pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on all arms of the junction.

•Existing facilities comprise uncontrolled dropped kerb crossings on the roundabout splitter islands.
•New signal controlled straight pedestrian crossings, with 4m central islands, are proposed on all arms; and
•New pedestrian infrastructure will tie in with existing facilities.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on Dublin Road and Swords Bypass, with protected facilities to enable cyclists to safely travel through the junction; and
• A right-turn cycle facility is proposed to cater for cyclists crossing two arms of the junction.
Side Roads:
•Entry and exit cycle lanes proposed on Pinnockhill to assist cyclists entering and exiting the junction.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline, comprising R836 Dublin Road and R132 Dublin Road. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

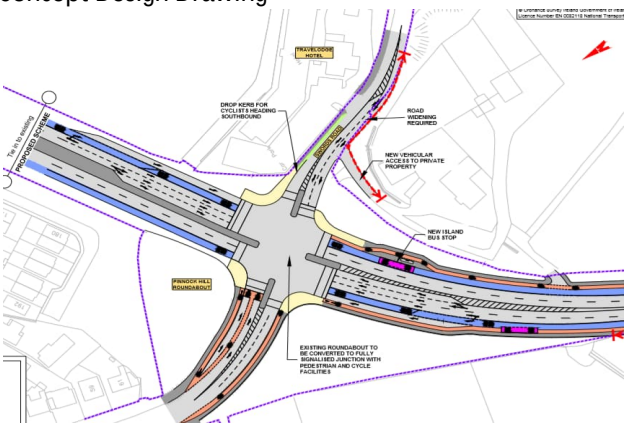
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

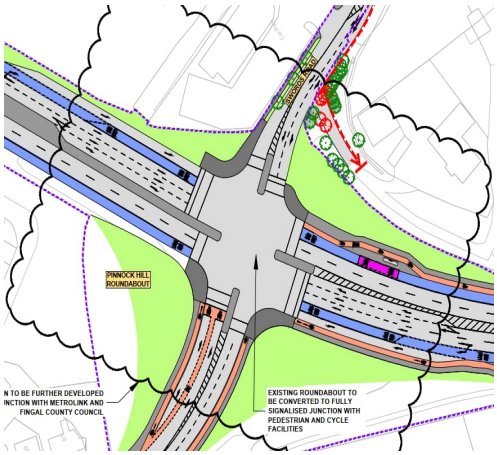
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

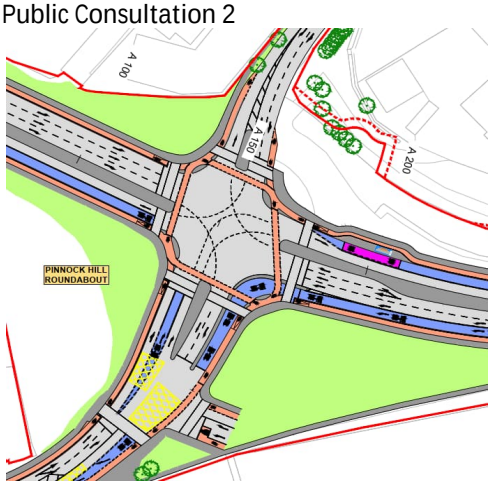
Concept Design Drawing



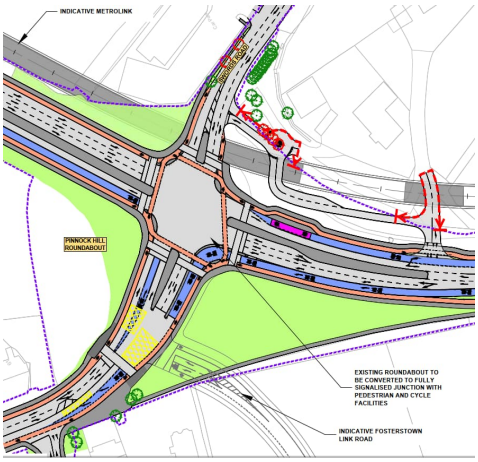
Emerging Preferred Route



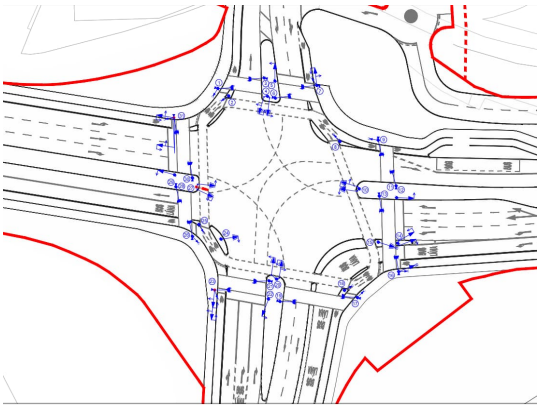
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

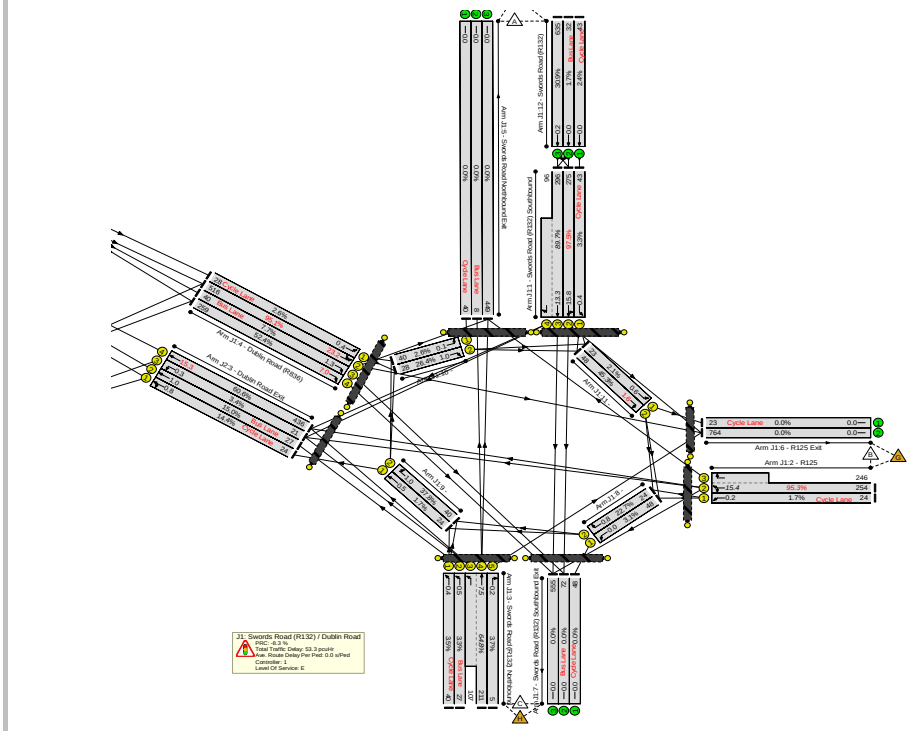
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -8.3%
PM Peak Hour: -18.5%

Junction Delay:
AM Peak Hour: 53.3 pcu/Hr
PM Peak Hour: 98.1 pcu/Hr

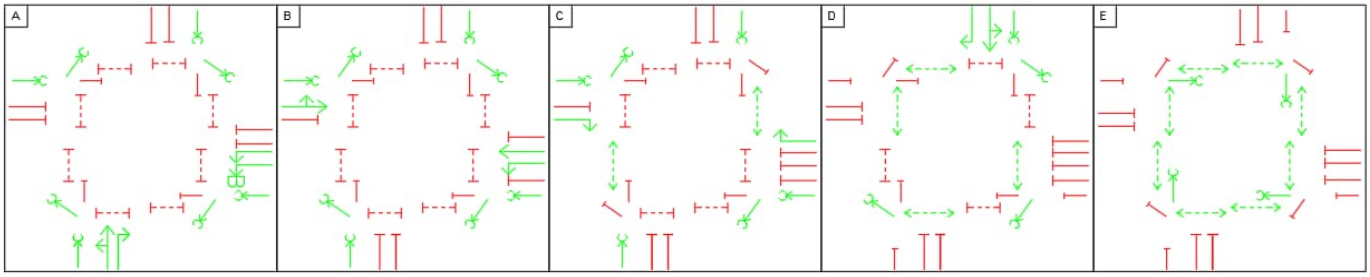
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	3,490	8%
Bus	35,149	83%
Walk	3,226	8%
Cycle	320	1%
Total	42,185	100%

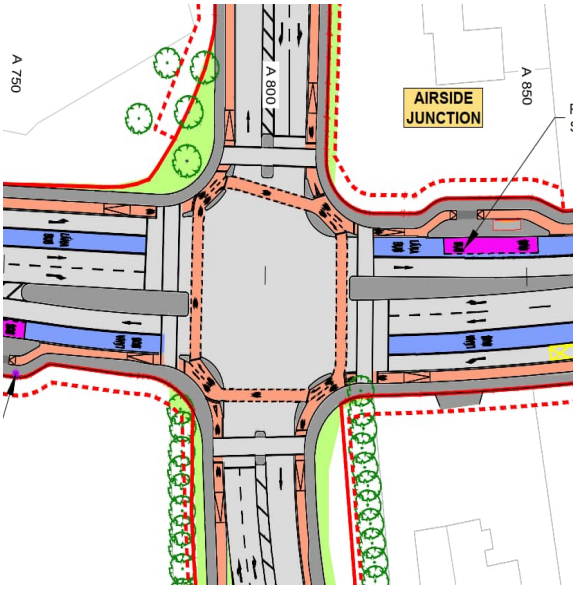
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Dublin Road / Swords Road / Boroimhe Road / Lakeshore Drive		

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure.
The key design rationale was to introduce pedestrian crossing facilities on all arms of the junction, remove existing left turn slip lanes, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Full policy outcomes for CBC route can be achieved by Junction Type 2 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
CBC:
•Existing staggered pedestrian crossing on the CBC northern arm, to be reconfigured into a straight crossing with a 4m refuge island.
•A new straight pedestrian crossing with 4m island is proposed on the CBC southern arm;
Side Roads:
•Remove left turn slip on CBC northern arm and provide a straight pedestrian crossing on Lakeshore Drive arm; and
•Upgrade existing staggered crossing on Boroimhe Road to straight pedestrian crossing.

Dedicated pedestrian and cycle crossing phase provided.

Cycle Infrastructure
• Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;
•Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and
Side Roads:
• Entry and exit cycle lanes proposed on the Boroimhe Road and Lakeshore Drive to enhance cycle connectivity through the junction.

Bus Priority Infrastructure
Junction Type 2 proposed with bus lanes, on CBC mainline, extended to the stop line. Both bus lanes extend to the stop line, which provides greater bus priority and reliability. There is a yellow box to allow left-turners to cross the bus lane to enter a dedicated left-turn pocket.

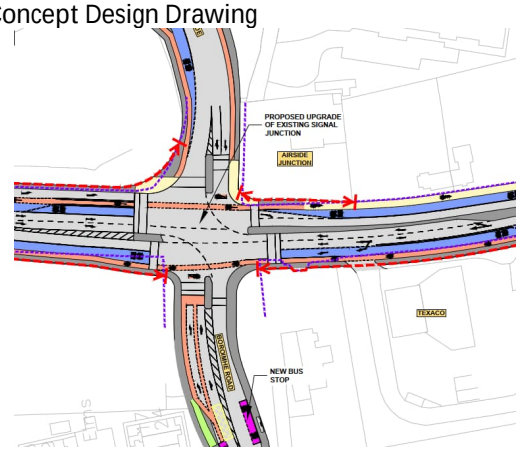
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

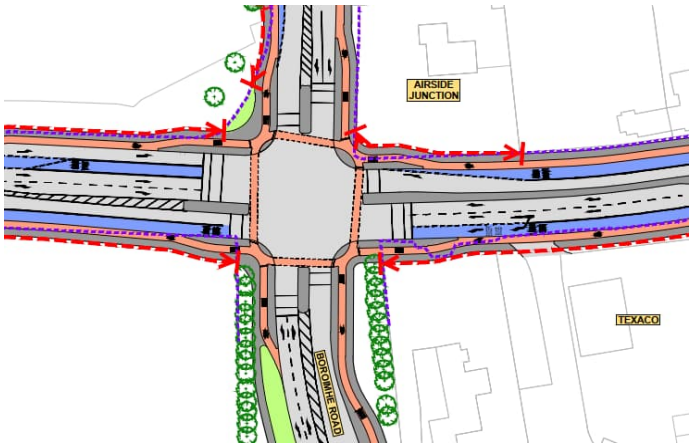
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

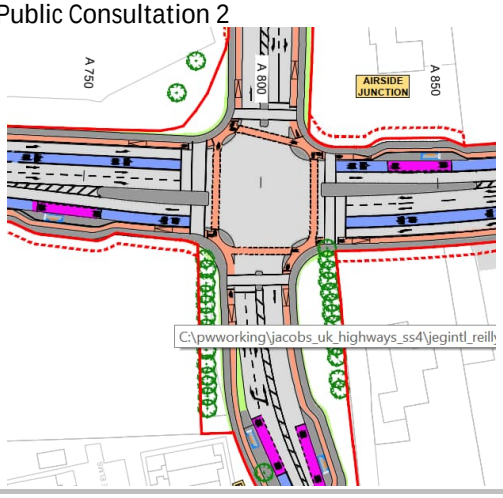
Concept Design Drawing



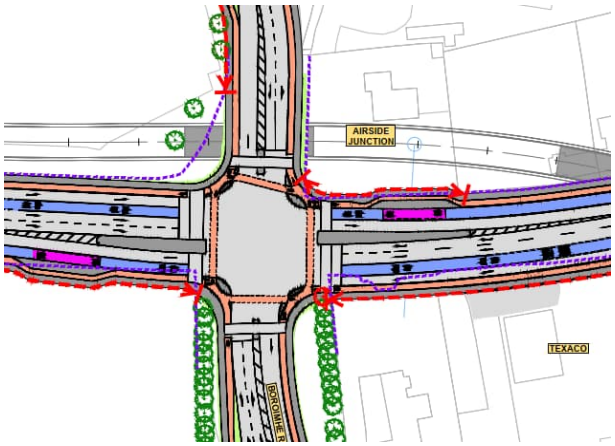
Emerging Preferred Route



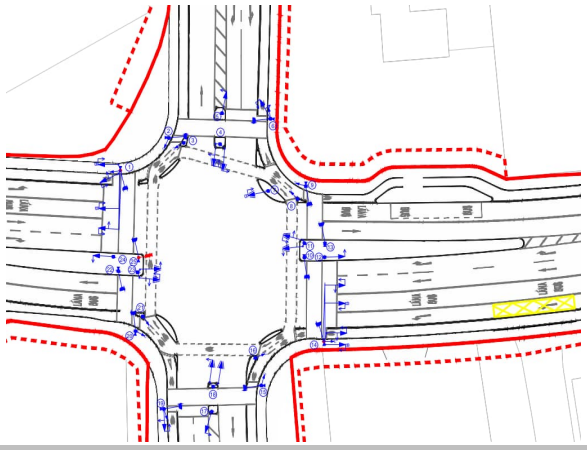
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

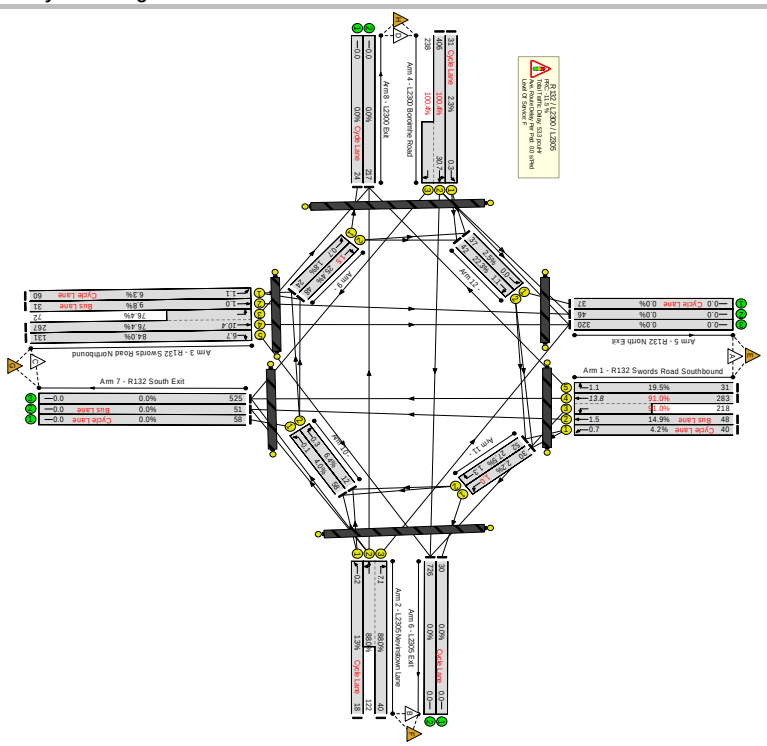
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 125 seconds

Junction PRC:
AM Peak Hour: -11.5%
PM Peak Hour: -16.2%

Junction Delay:
AM Peak Hour: 53.3 pcu/Hr
PM Peak Hour: 53.1 pcu/Hr

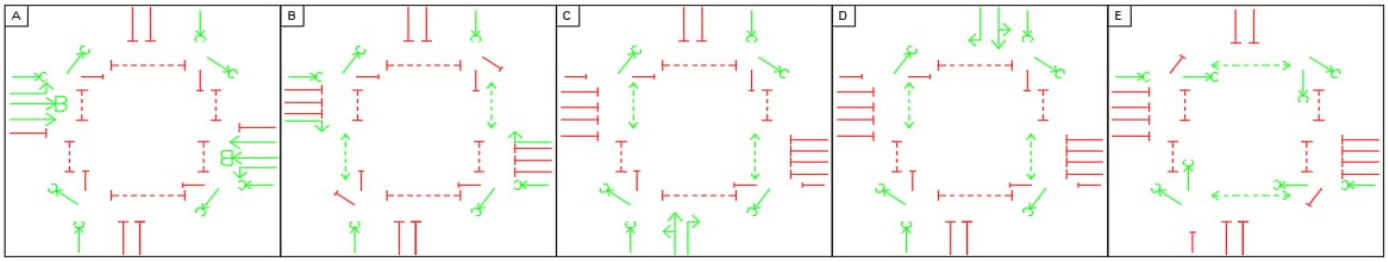
Network Layout Diagram



People Movement Assessment

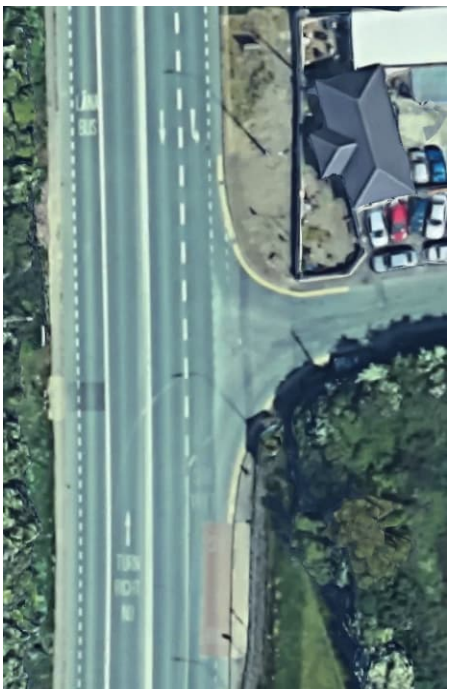
Junction		
Mode	People Movement	Mode Share
Car	2,561	11%
Bus	16,774	72%
Walk	3,539	15%
Cycle	374	2%
Total	23,248	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Kettles Lane		

EXISTING



FINAL DESIGN

Summary:
The existing 3 arm junction is proposed to be upgraded as a signalised junction per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure.
The key design rationale was to minimise rat running of general traffic via Kettle's Lane, provide cycle infrastructure and crossing facilities, whilst improving bus priority.

Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
CBC:
•A new toucan crossing is proposed on the CBC north arm.
•The proposed upgrade will enhance pedestrian and cycle crossing opportunities at the junction.
Side Roads:
•A new toucan crossing is proposed on Kettles Lane.

Cycle Infrastructure
CBC:
•Proposed cycle lanes will ensure cyclists are protected from motorised traffic when using the upgraded junction; and
•Northbound right turning cyclists from CBC south arm would utilise the proposed toucan crossing on the north arm.
Side Roads:
•Advanced Stop Line (ASL) is proposed on Kettles Lane to ensure cyclists have easier access through the junction.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline accommodates an inbound and an outbound bus lane. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

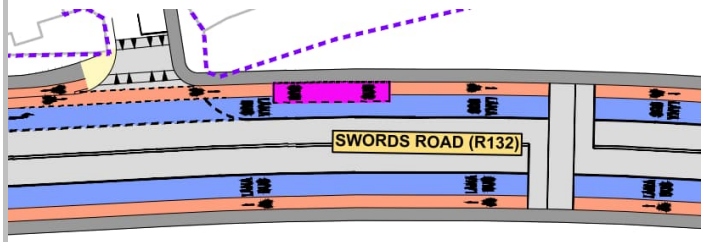
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

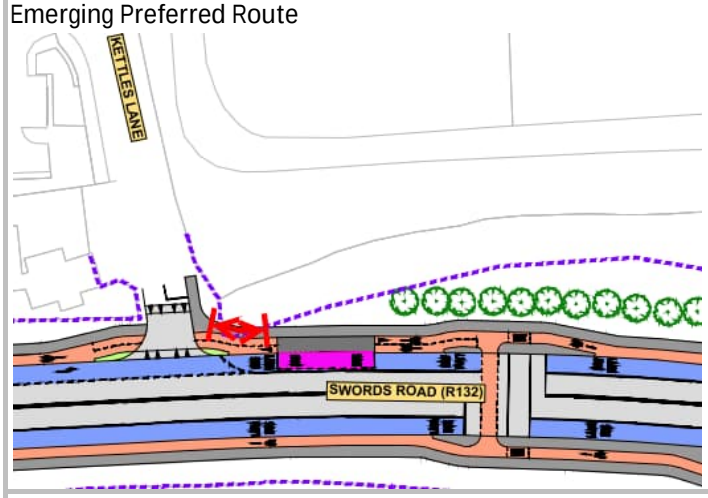
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

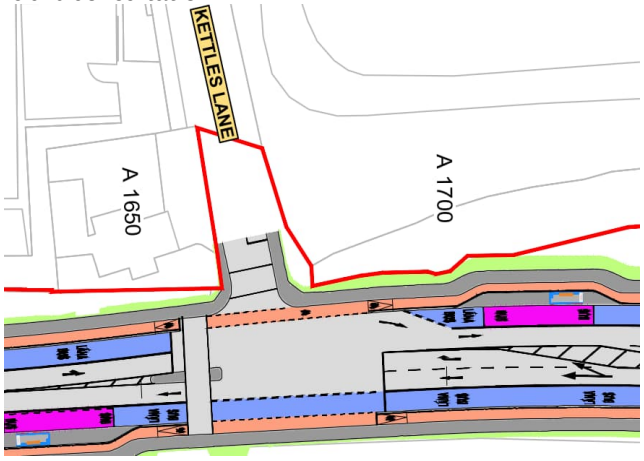
Concept Design Drawing



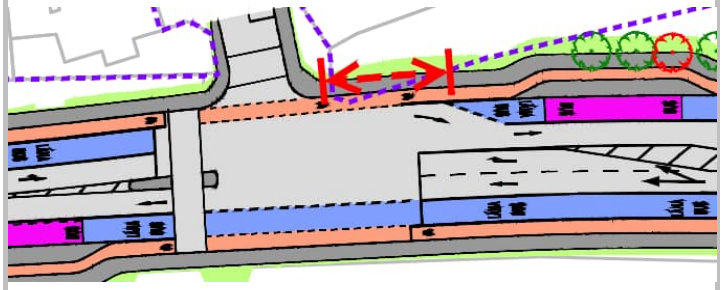
Emerging Preferred Route



Public Consultation 2



Public Consultation 3



Final Preliminary Design

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

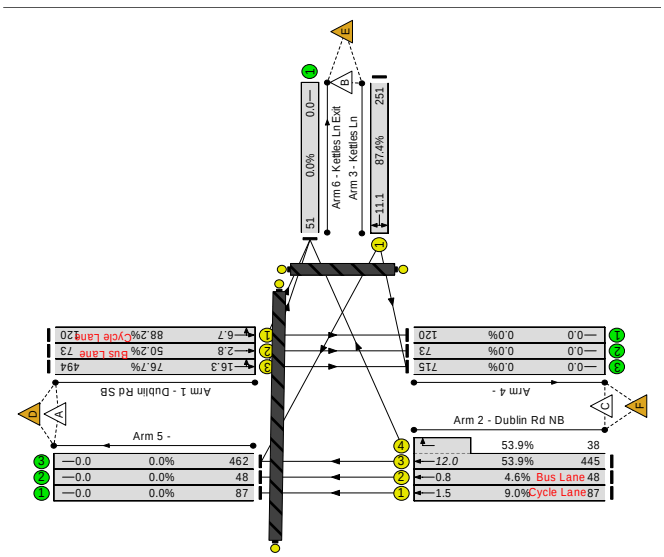
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 2.1%
PM Peak Hour: 21.1%

Junction Delay:
AM Peak Hour: 24.0 pcu/Hr
PM Peak Hour: 15.5 pcu/Hr

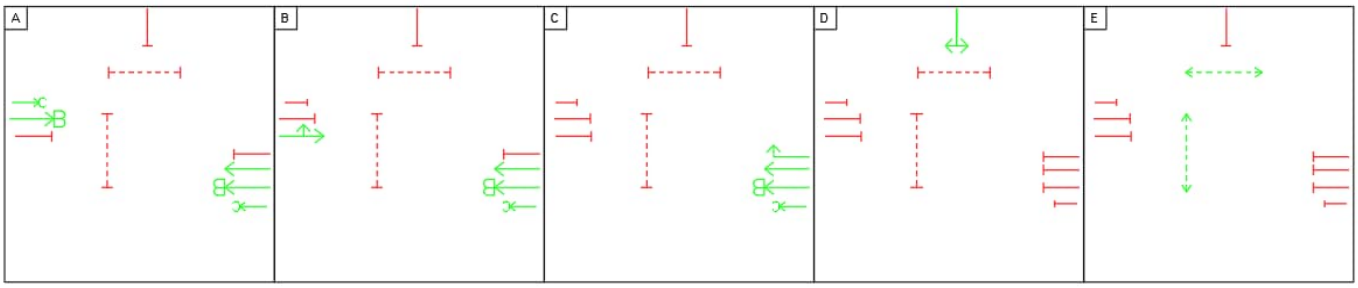
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,191	6%
Bus	31,001	88%
Walk	1,382	4%
Cycle	549	2%
Total	35,123	100%

INDICATIVE METHOD OF CONTROL

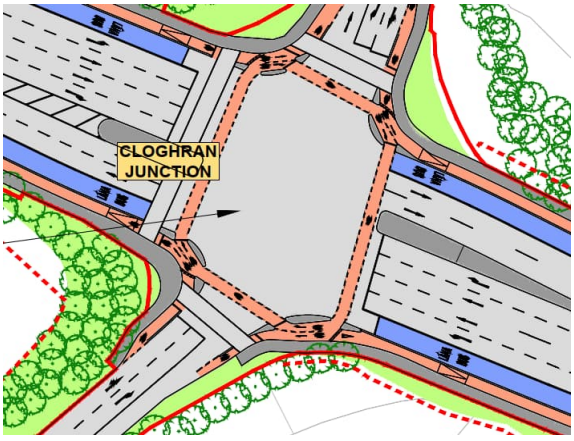


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Swords Road / Naul Road / Stockhole Lane

EXISTING

FINAL DESIGN



Summary:
The existing Cloghran Roundabout is proposed to be upgraded to a 4 arm signalised junction as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure.
The design rationale was to introduce more direct and compact pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to buses and provide improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on all arms.
CBC:
•Existing facilities comprise uncontrolled dropped kerb crossings on the roundabout splitter islands.
•New signal controlled straight pedestrian crossings, with 4m central islands, are proposed on all arms; and
•New pedestrian infrastructure will tie in with existing facilities.
Side Roads:
•A new straight crossing is proposed across Naul Road and Stockhole Lane to facilitate pedestrians.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;
•Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
•Entry and exit cycle lanes proposed on Nual Road and Stockhole Road to enhance cycle connectivity; and

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline accommodates an inbound and an outbound bus lane. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

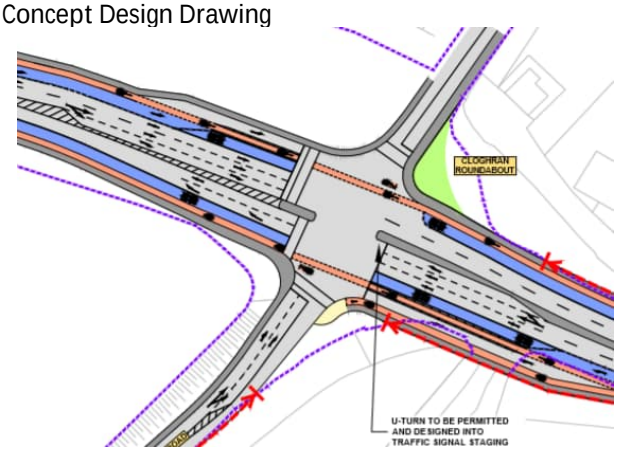
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

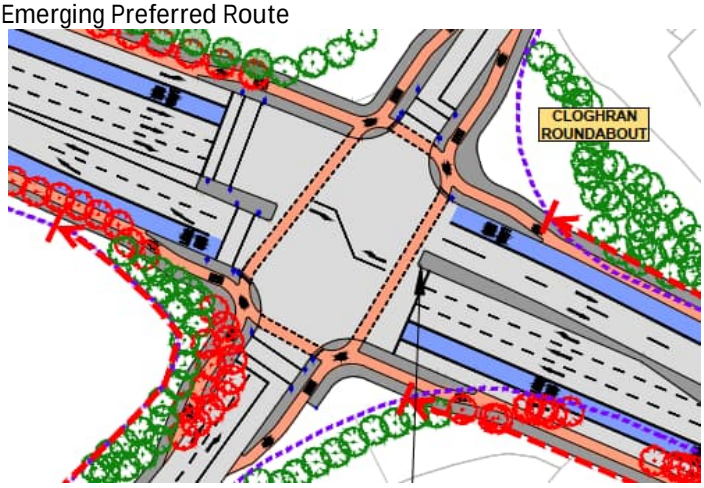
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

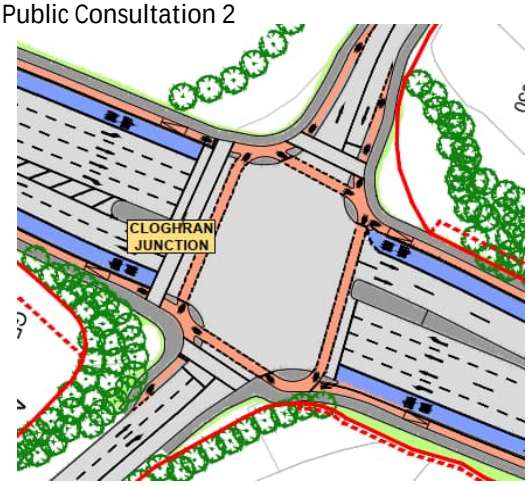
Concept Design Drawing



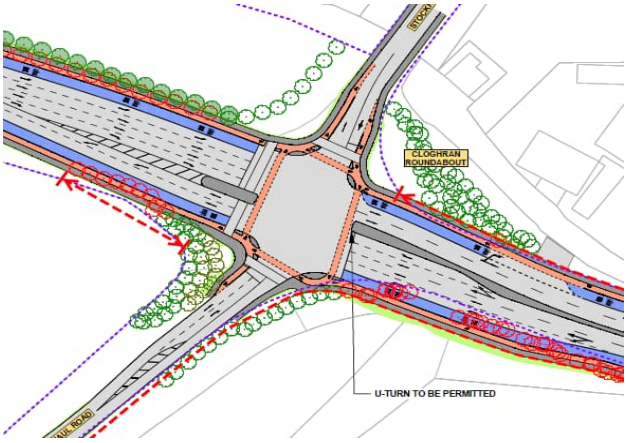
Emerging Preferred Route



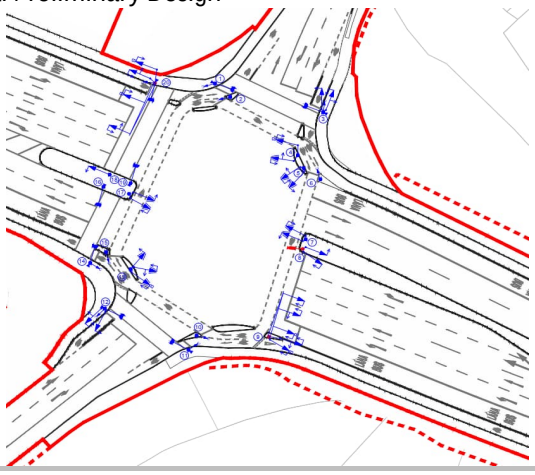
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

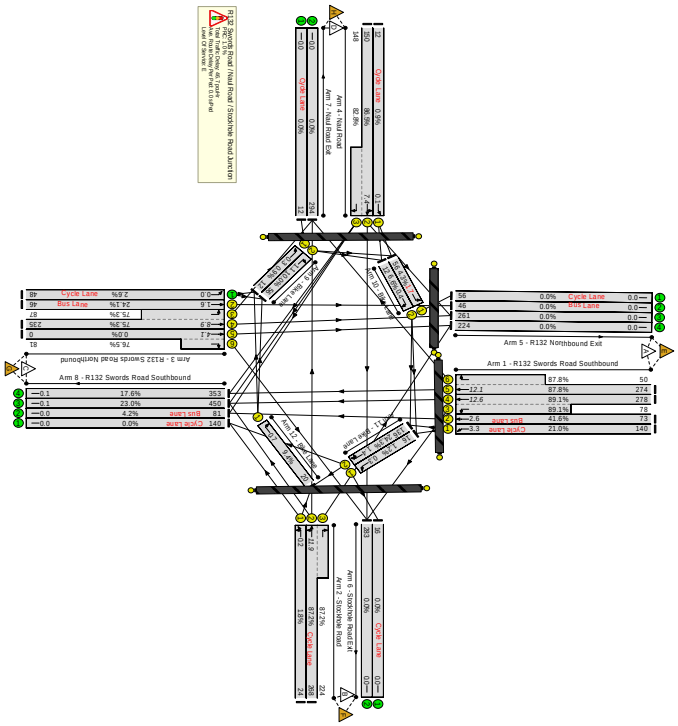
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.0%
PM Peak Hour: 2.3%

Junction Delay:
AM Peak Hour: 46.7 pcu/Hr
PM Peak Hour: 42.5 pcu/Hr

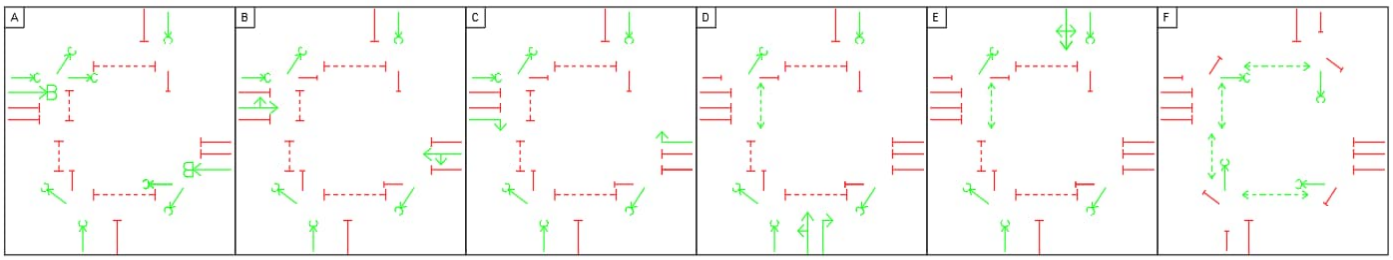
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,663	16%
Bus	9,634	58%
Walk	3,686	22%
Cycle	590	4%
Total	16,573	100%

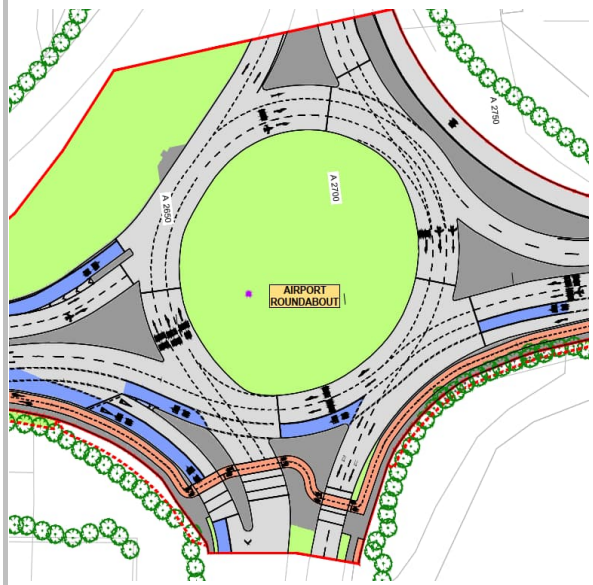
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Airport Motorway Link / Corballis Road North		

EXISTING

FINAL DESIGN



Summary:
Dublin Airport roundabout is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The design rationale was to improve cycle facilties and provide bus priority on the CBC mainline. Bus Connects Junction Type 1 on the southbound approach and Junction Type 2 on the northbound approach to provide greater bus priority reliability. Bi-directional cycle crossing facilities are provided across the west approach improviding connectivity for cycle facilities on the CBC.

Pedestrian Infrastructure
•Existing staggered pedestrian crossings with islands on the western arm will be retained.

Cycle Infrastructure
• Bi-directional cycle track have been proposed running along west side of the R132 to facilitate north - south cyclists to avoid the need for southbound cyclists to negotiate through the roundabout.
• Provision of new bi-directional cycle crossing facilities on the west arm, parallel to the existing pedestrian crossing.

Bus Priority Infrastructure
Junction Type 1 and Type 2 bus priority facilties proposed on CBC north and south arms respectively. Bus lanes extend to the stop line, which provides greater bus priority and reliability.

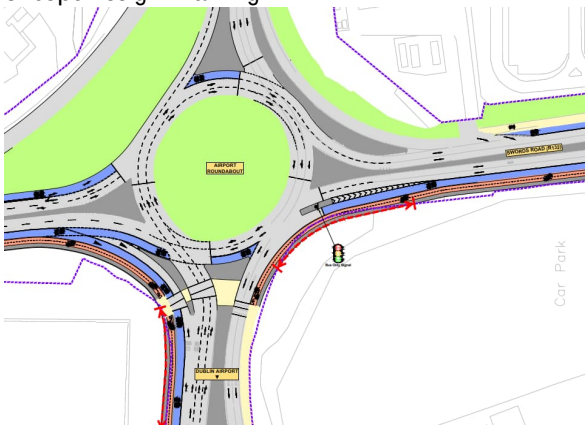
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

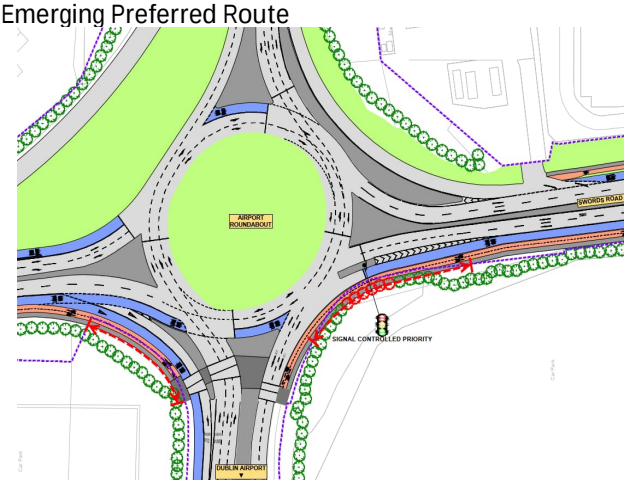
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

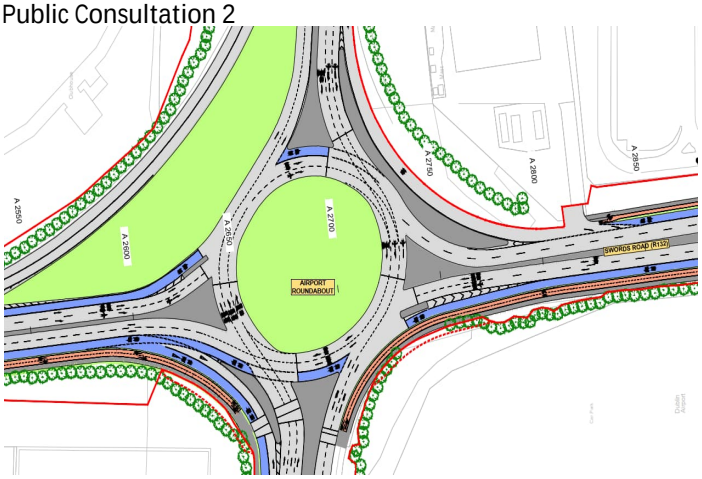
Concept Design Drawing



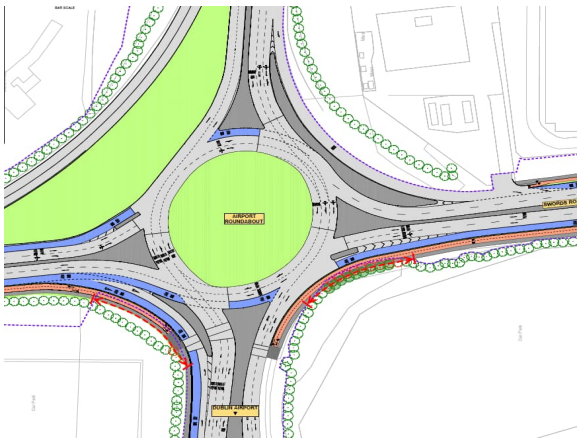
Emerging Preferred Route



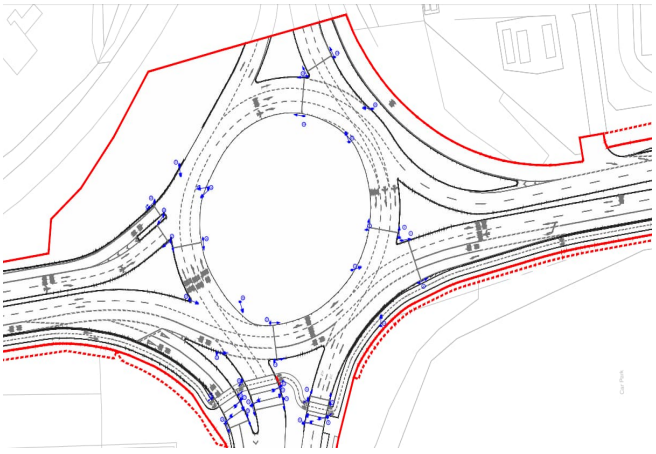
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

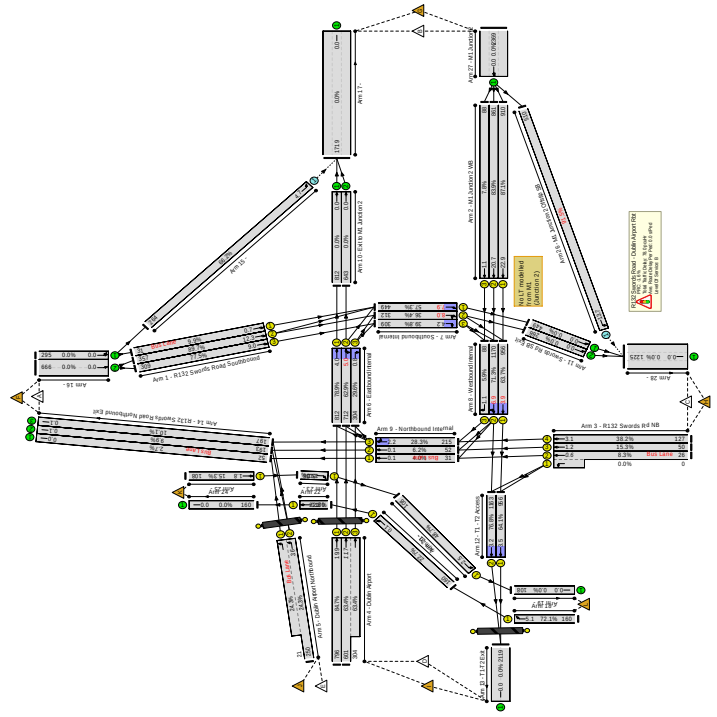
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 90 seconds

Junction PRC:
AM Peak Hour: -1.6%
PM Peak Hour: -6.6%

Junction Delay:
AM Peak Hour: 78.0 pcu/Hr
PM Peak Hour: 74.1 pcu/Hr

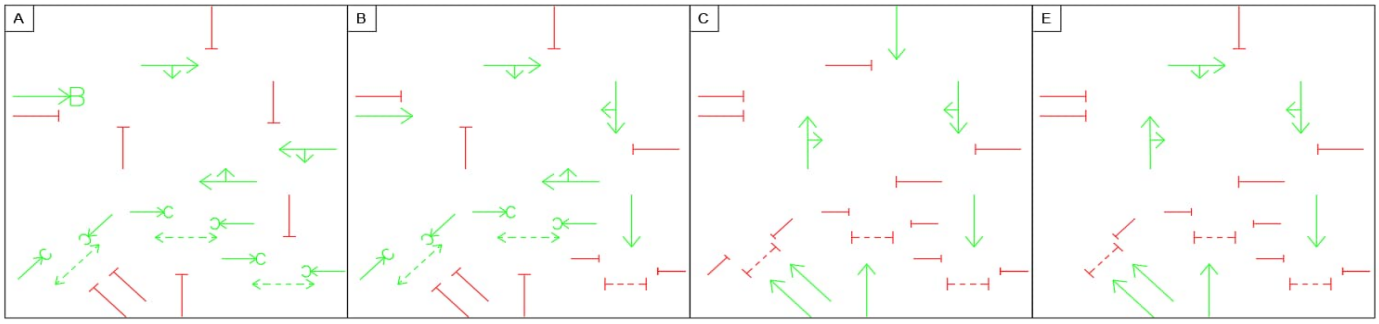
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	9,656	32%
Bus	18,716	61%
Walk	1,536	5%
Cycle	690	2%
Total	30,598	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Green Long Term Car Park		

EXISTING

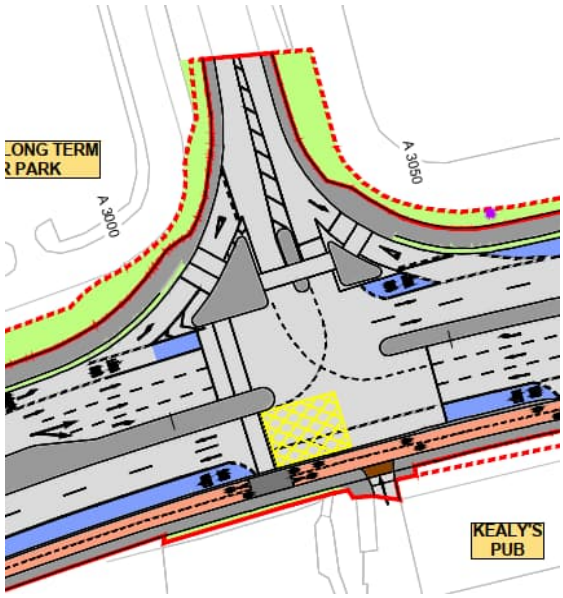
Summary:
The existing 3 arm signalised junction, with left turn slips, is to be retained due to low pedestrian count and also to maintain access to the long term car park considering the strategic location of the junction. Bi-directional cycle track proposed along the R132 west side to facilitate north-south cyclists and to avoid cycles having to cross the slip lanes at the junction. Existing staggered toucan crossing are to be straightened to address the pedestrians crossing in between the traffic stream.

Pedestrian Infrastructure
•Existing staggered pedestrian crossings has been straightened to enhance pedestrian connectivity.
•The existing pedestrian crossings on the eastern arm is maintained.

Cycle Infrastructure
• Bi-directional cycle track have been proposed on the west side of the R132 to facilitate north - south cyclists to avoid the need for southbound cyclists having to cross the slip lanes at the junction.
• Existing toucan crossing is on the CBC north arm is to be straightened for easy access across the mainline.

Bus Priority Infrastructure
Junction Type 1 and Type 2 proposed along CBC south and north arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

FINAL DESIGN



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

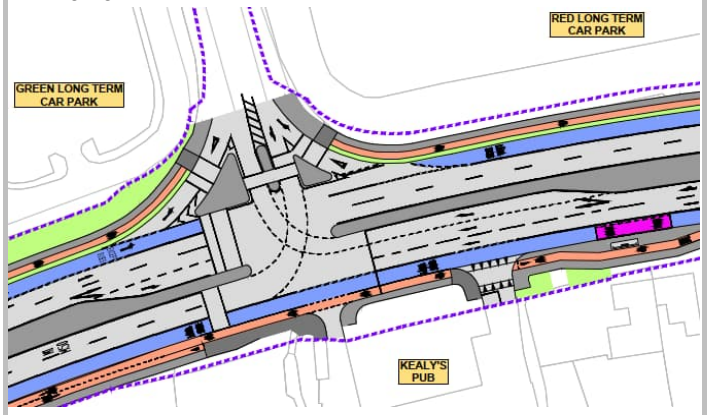
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

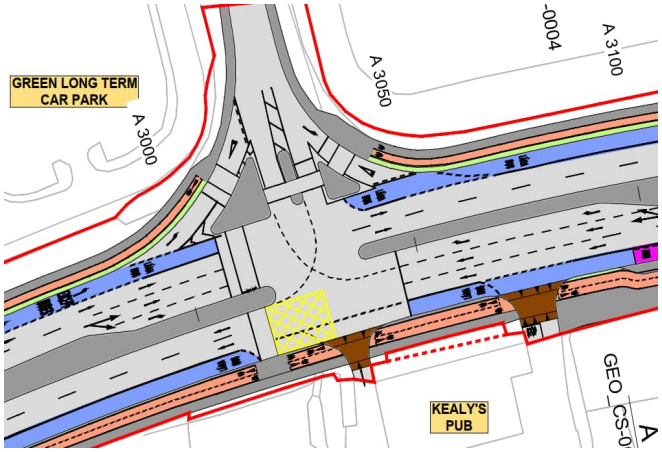
Existing

Concept Design Drawing

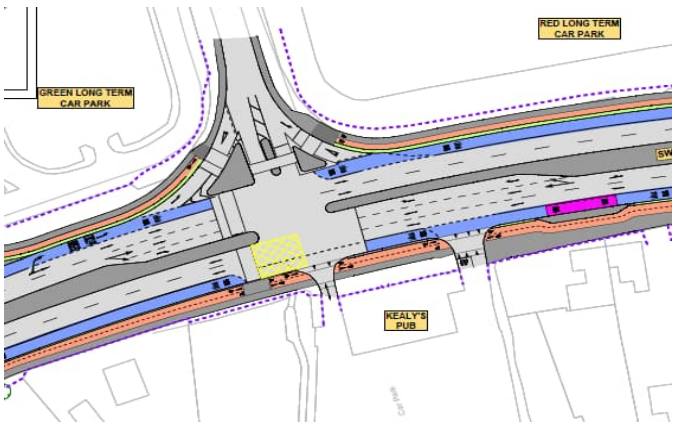
Emerging Preferred Route



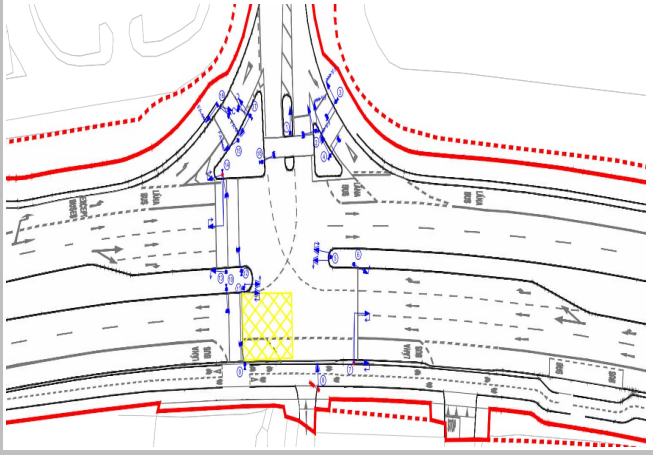
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

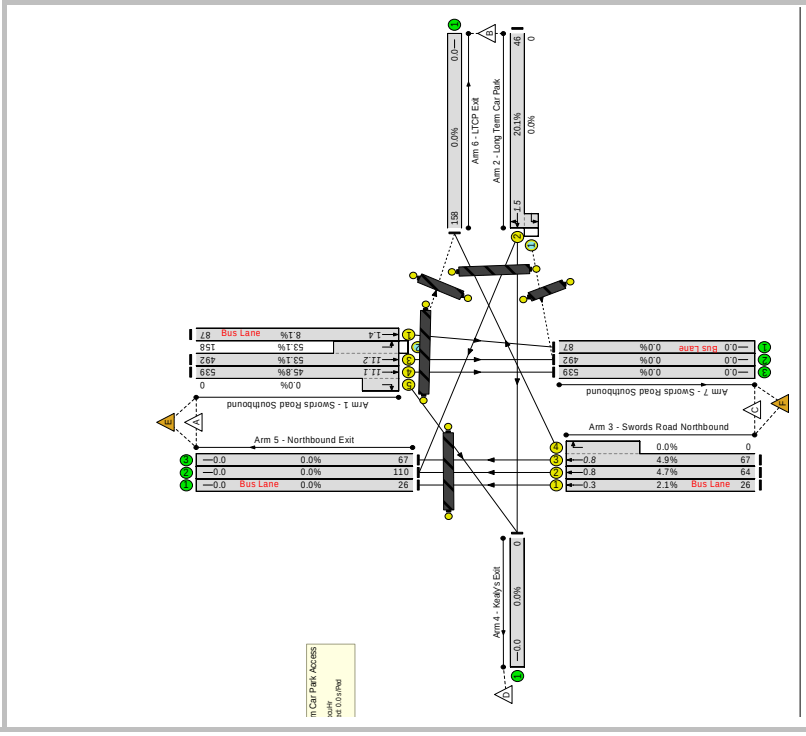
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 69.3%
PM Peak Hour: 270.3%

Junction Delay:
AM Peak Hour: 7.2 pcu/Hr
PM Peak Hour: 6.0 pcu/Hr

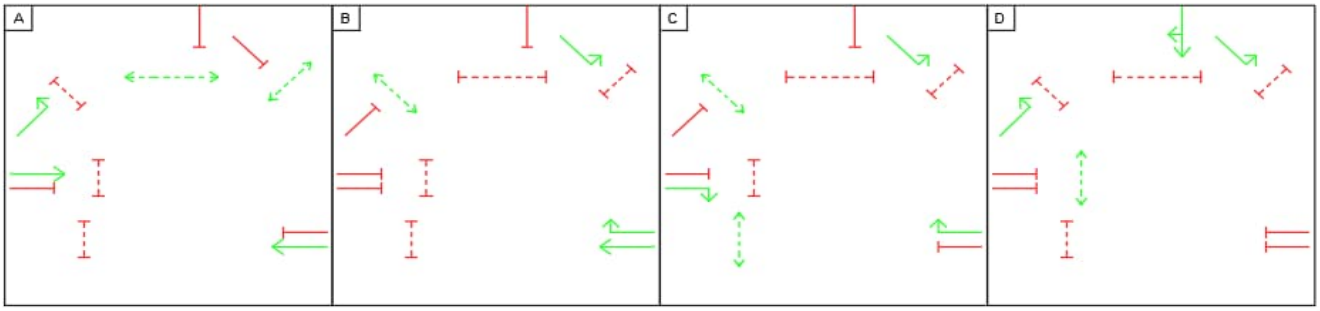
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	6,448	9%
Bus	61,425	84%
Walk	4,262	6%
Cycle	693	1%
Total	72,828	100%

INDICATIVE METHOD OF CONTROL

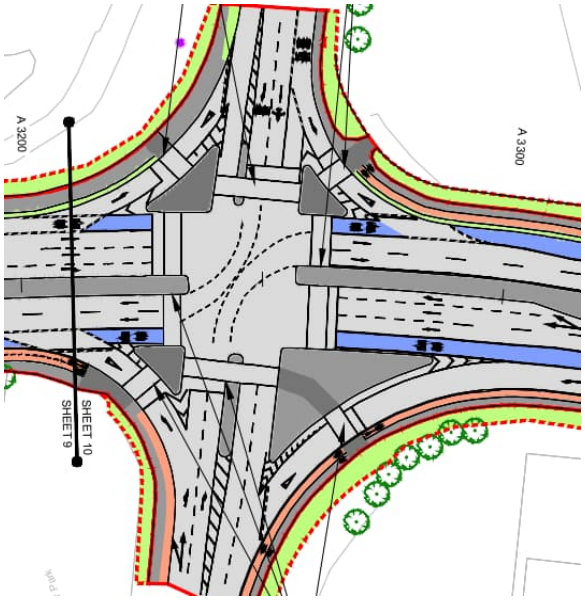


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Swords Rd / South Corballis Road / Eastland's Road

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction layout, with left slip lanes, is to be maintained due to low pedestrian counts. Bi-directional cycle track proposed along the west side of R132 section north of the junction. South of the junction, southbound and northbound direction cycle tracks are provided on the east and west side of the R132 respectively.

Pedestrian Infrastructure
Existing staggered toucan crossings, on the CBC, are straightened to enhance pedestrian and cyclist connectivity. Existing toucan crossing on the sides is to be maintained.

Cycle Infrastructure
• Bi-directional cycle track have been proposed running along west side of the R132, north of the junction.
•Existing toucan crossings at the junction is to be maintained.

Bus Priority Infrastructure
Junction Type 2 bus priority facilities on the CBC arms. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

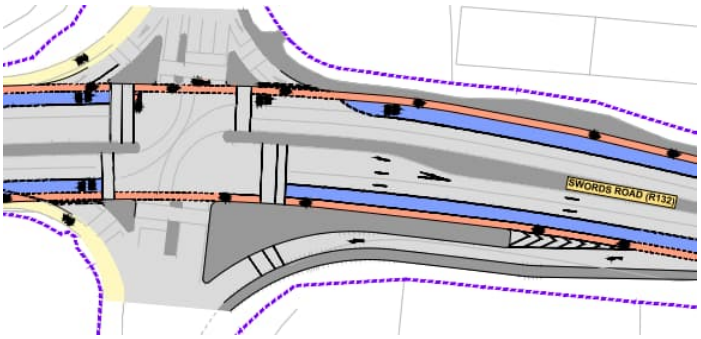
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

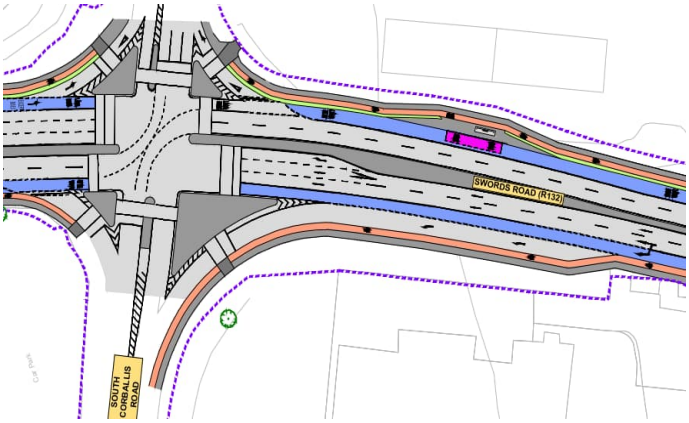
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

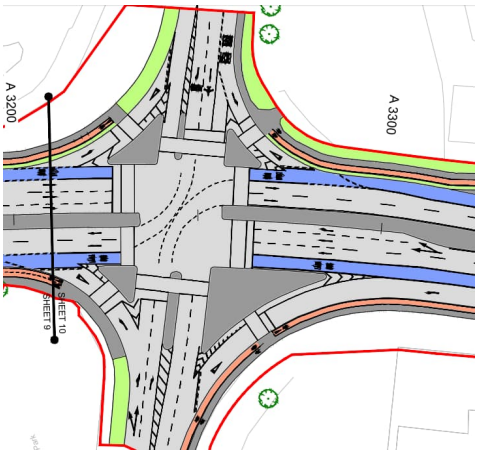
Concept Design Drawing



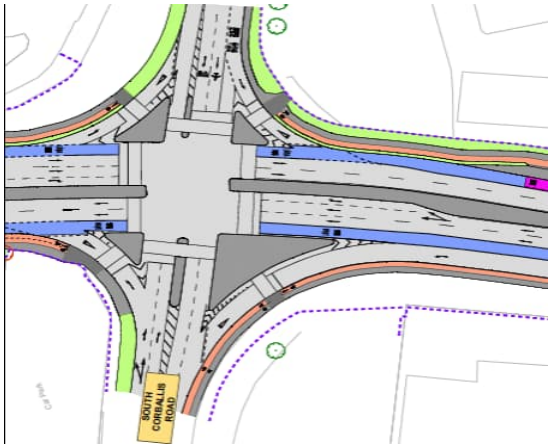
Emerging Preferred Route



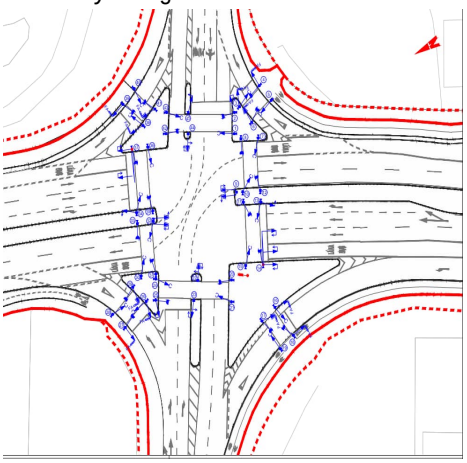
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

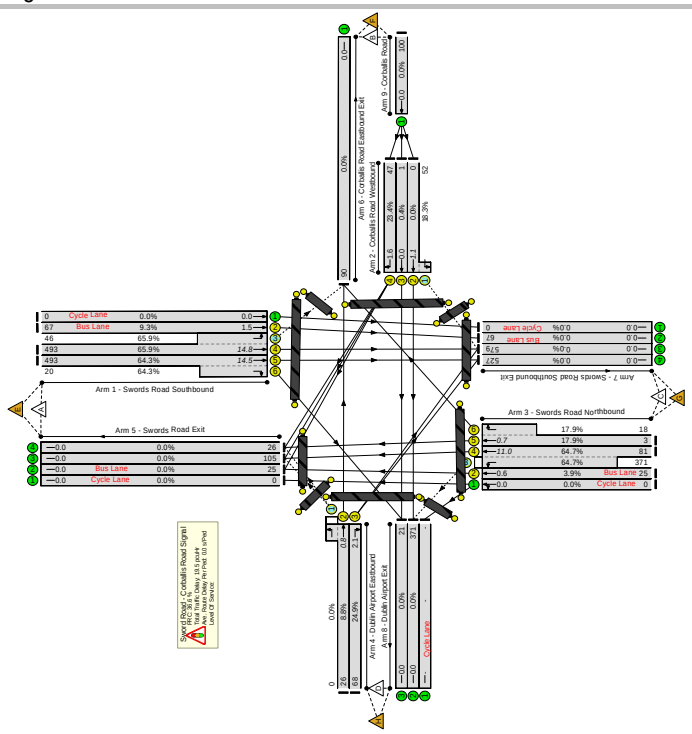
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 36.6%
PM Peak Hour: 51.3%

Junction Delay:
AM Peak Hour: 19.54 pcu/Hr
PM Peak Hour: 15.51 pcu/Hr

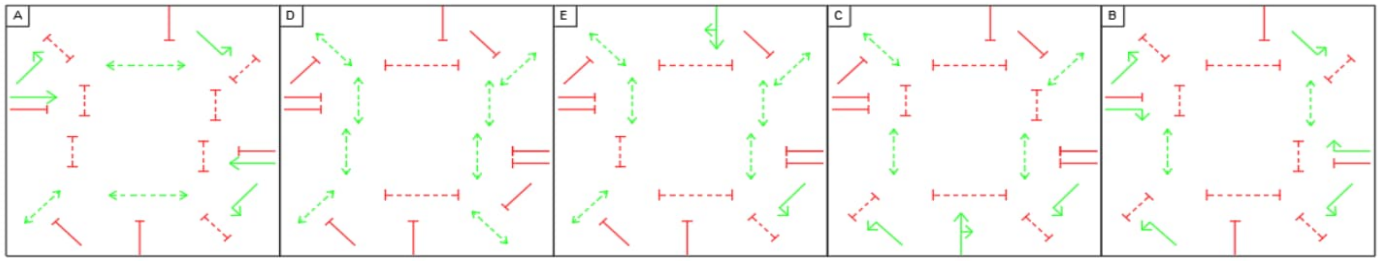
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	6,806	10%
Bus	57,803	83%
Walk	4,147	6%
Cycle	640	1%
Total	69,396	100%

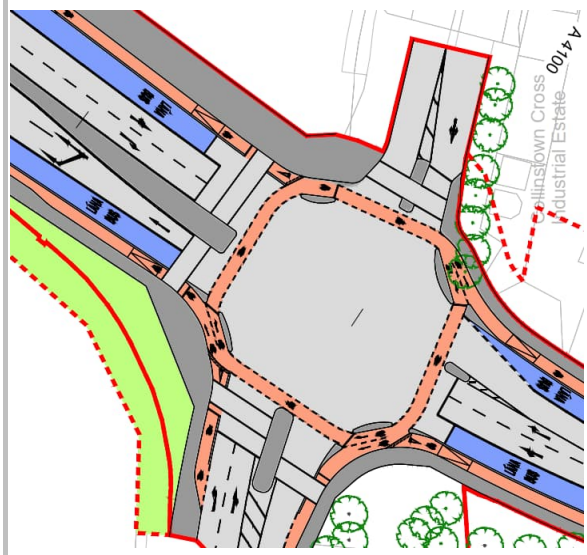
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Collinstown Lane / Old Airport Road		

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction and slip road is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Removal of the existing left turn slip and splitter island on Old Airport Road will provide improved pedestrian crossing opportunities.
The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority. Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on north, west and east approaches.
CBC:
•Straight pedestrian crossing with 4m refuge island on the CBC north approach
Side Roads:
•Remove left turn slip on Old Airport Road and provide a staggered pedestrian crossing with 3m refuge island.
•Straight pedestrian crossing on Dardistown Cemetery access arm.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure
• Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;
•Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Entry and exit cycle lanes proposed on the Old Airport Road approach to assist cyclist connectivity through the junction.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

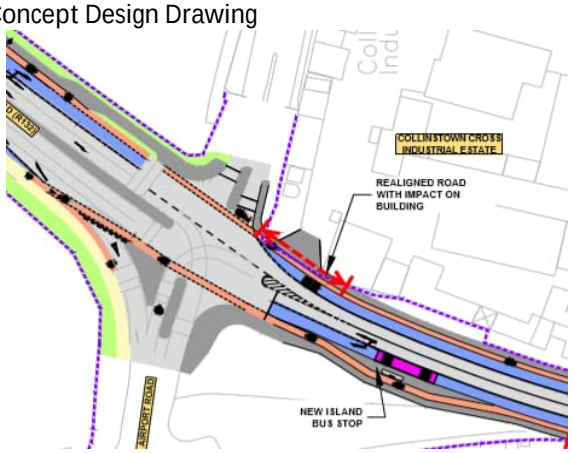
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

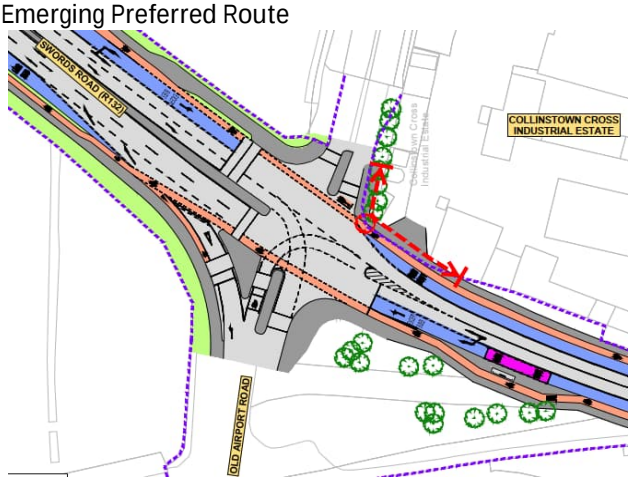
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

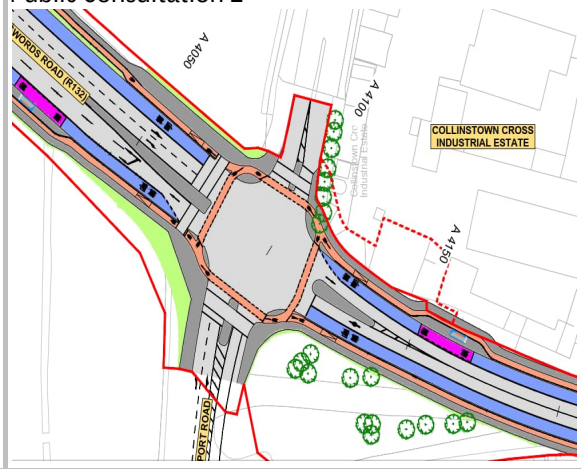
Concept Design Drawing



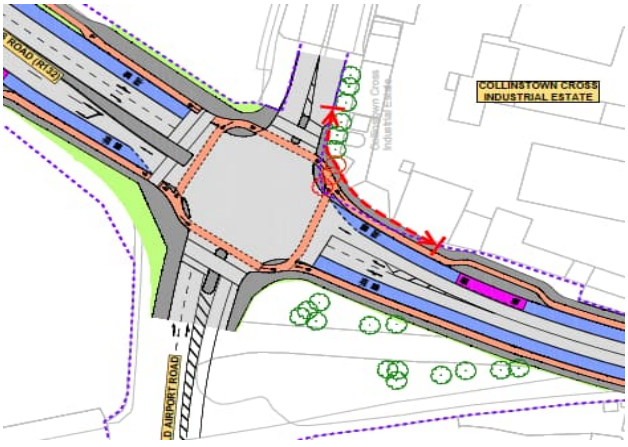
Emerging Preferred Route



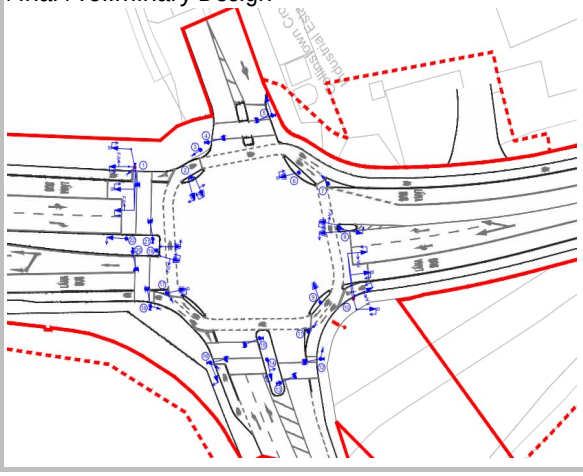
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

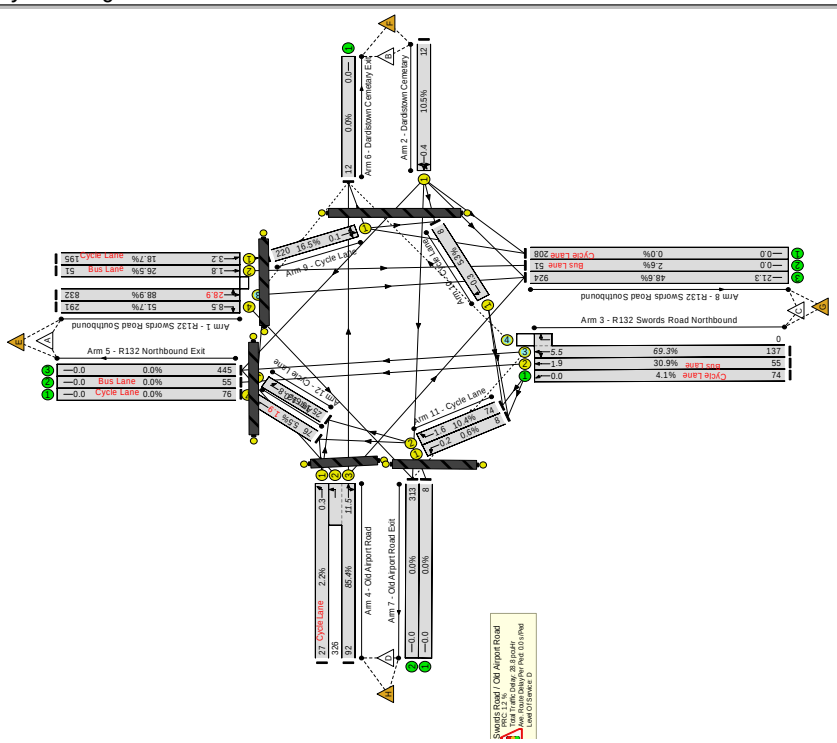
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.2%
PM Peak Hour: -7.4%

Junction Delay:
AM Peak Hour: 28.8 pcu/Hr
PM Peak Hour: 31.3 pcu/Hr

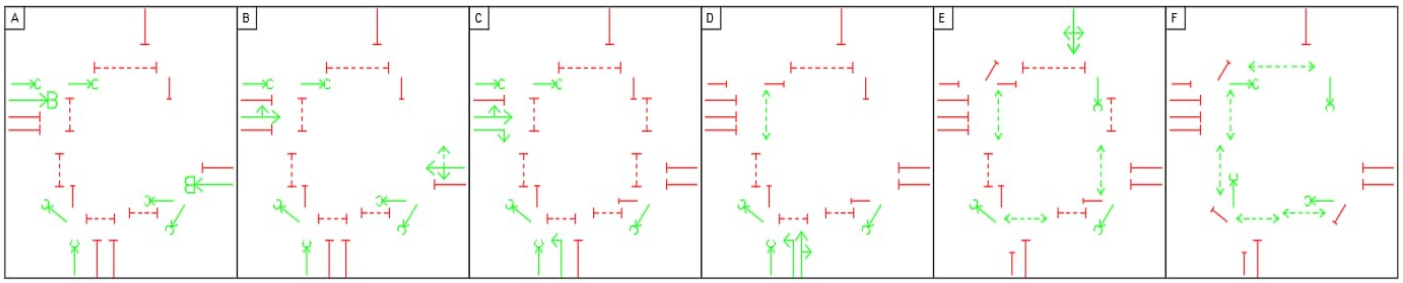
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,363	16%
Bus	9,713	65%
Walk	2,074	14%
Cycle	787	5%
Total	14,937	100%

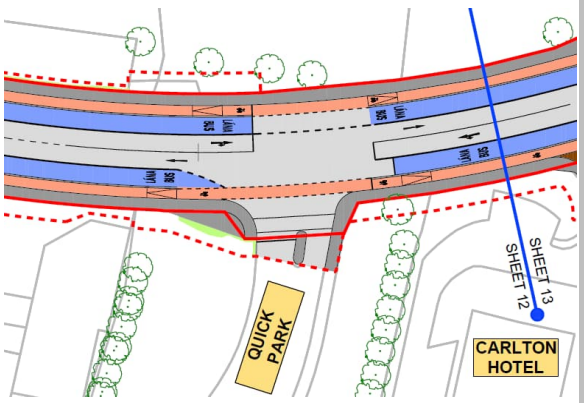
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Quick Park Car Park Access		

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm signalised junction, with left turn slip road, is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to remove the left-turn lane from the Quick Park Access arm of the junction and provide an upgraded junction with enhanced pedestrian and cycle crossing facilities, and bus priority.

Pedestrian Infrastructure
No pedestrian crossing facilities is proposed on the CBC mainline due to the extremely low pedestrians crossing counts.
The removal of the left turn slip and splitter island on Quick Park has reduced number of crossings for pedestrians. Straight pedestrian crossing facility provided on the Quick Park Access arm will enhance pedestrian accessibility.

Cycle Infrastructure
Cycle lanes are proposed on the CBC, to enable cyclists to travel through the junction safely. There are no cycle facilities is proposed on the Quick Park Car Park access arm.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

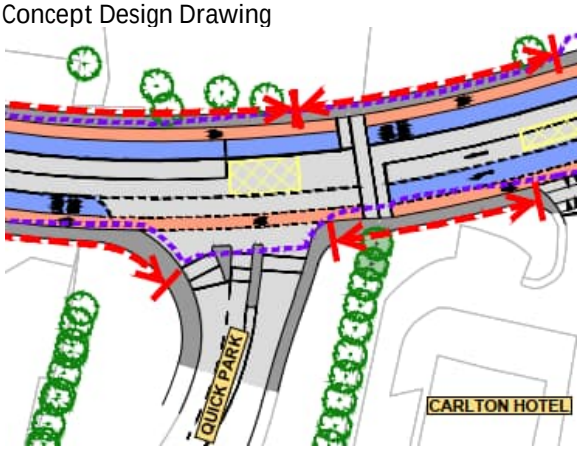
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

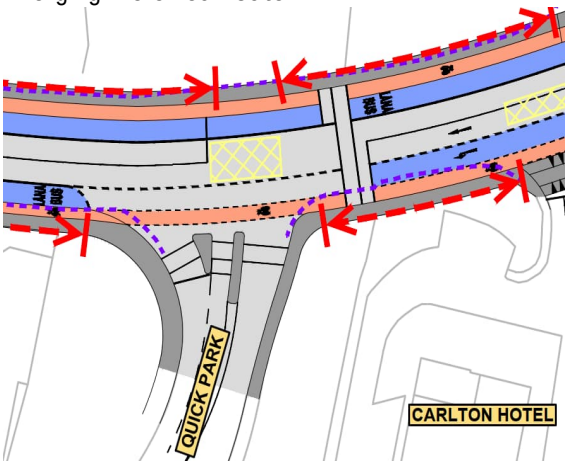
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

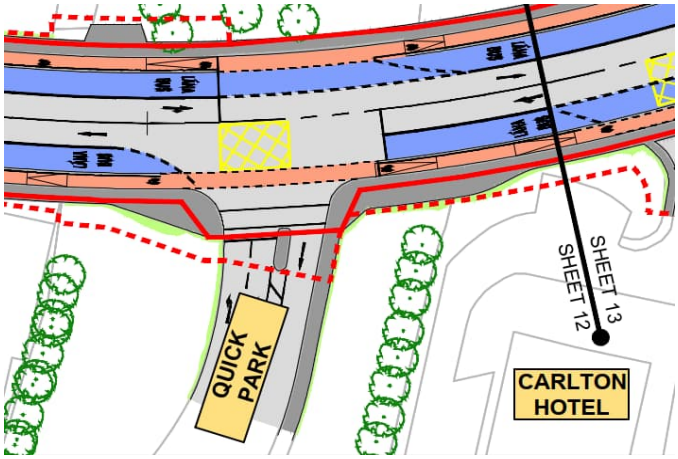
Concept Design Drawing



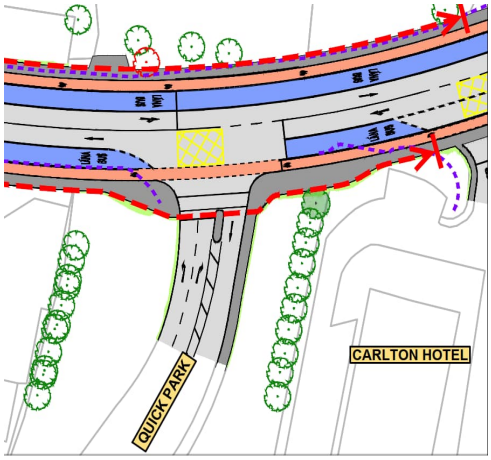
Emerging Preferred Route



Public Consultation 2



Public Consultation 3



Final Preliminary Design

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

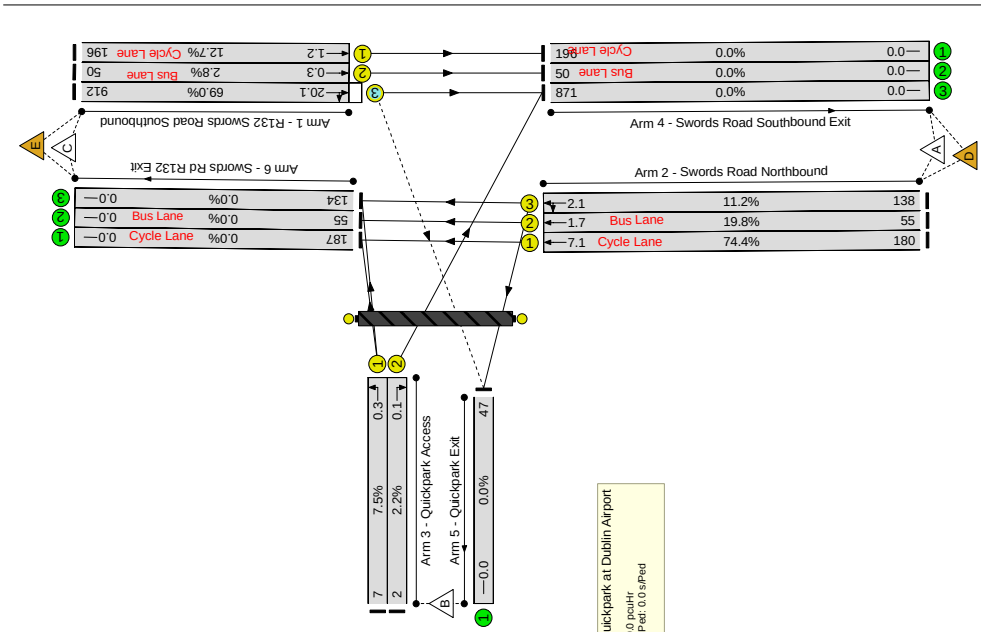
2028 AM Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 21.0%
PM Peak Hour: 65.0%

Junction Delay:
AM Peak Hour: 10.0 pcu/Hr
PM Peak Hour: 8.5 pcu/Hr

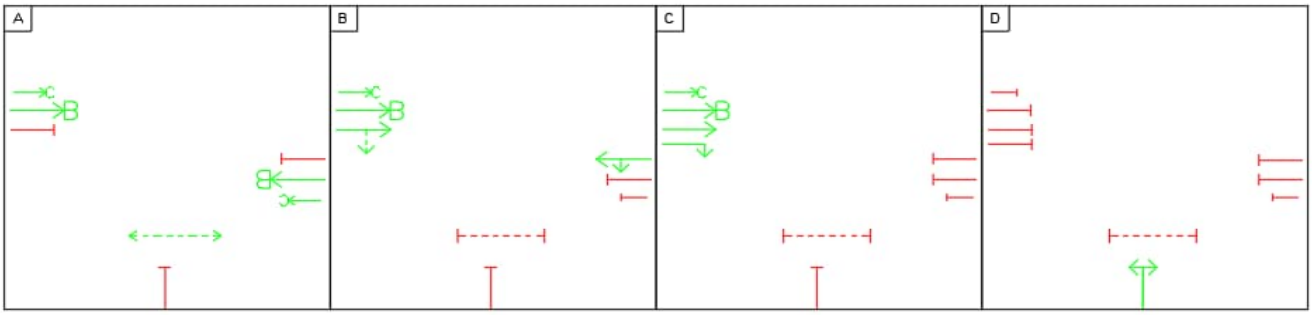
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	3,286	6%
Bus	53,681	90%
Walk	1,728	3%
Cycle	949	2%
Total	59,644	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Turnapin Lane / Furry Road		

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction, with left turn slip roads, is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Removal of the existing left turn slips and splitter islands on Turnapin Lane. Improved pedestrian crossing opportunities with removal of side road splitter island. The key design rationale was to improve pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Pedestrian Infrastructure
CBC:
•A new straight pedestrian crossing with a 4m refuge island is proposed on the CBC southern arm of the junction.
•Existing staggered pedestrian crossing on the CBC northern arm, to be upgraded to a straight crossing with a 4m refuge island.
Side Roads:
• 2 stage staggered pedestrian crossing, with 3m refuge island, is proposed on Turnapin Lane as a replacement for the existing 3 stage staggered crossing.
•The existing straight crossing on the eastern arm (Furry Road) is to be maintained.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC, with a protected junction design to enable cyclists to safely travel through the junction;
• A right-turn cycle facility is proposed to cater for cyclists crossing two arms of the junction; and
•Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Entry and exit cycle lanes proposed on both Furry Road and Turnapin Road arms of the junction to assist cyclists entering and exiting the junction.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

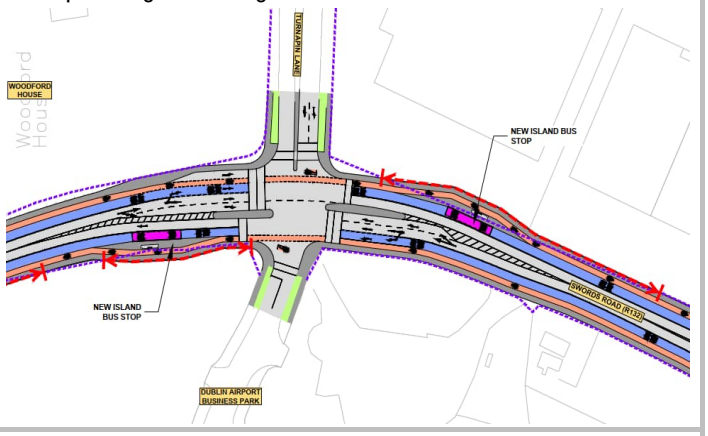
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

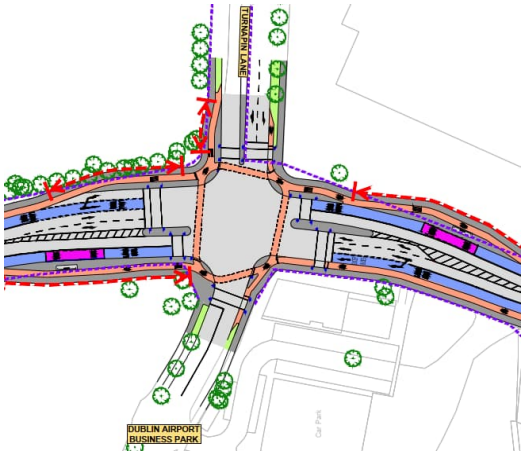
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

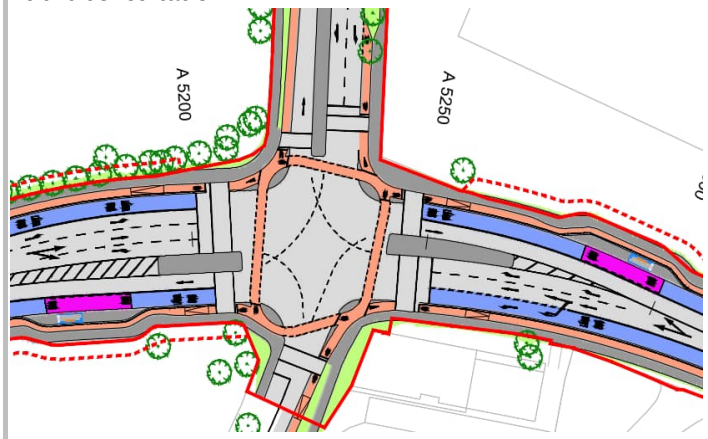
Concept Design Drawing



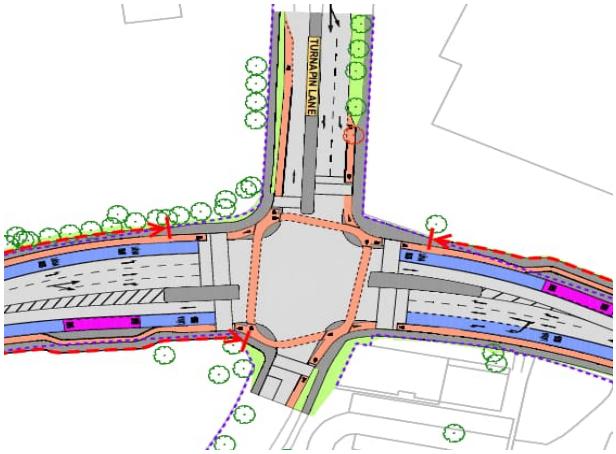
Emerging Preferred Route



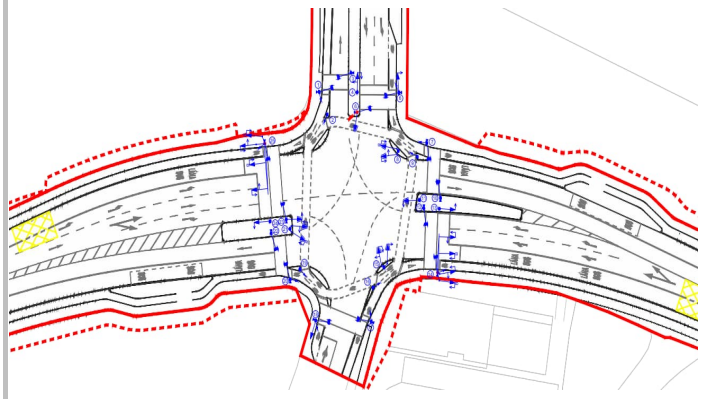
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

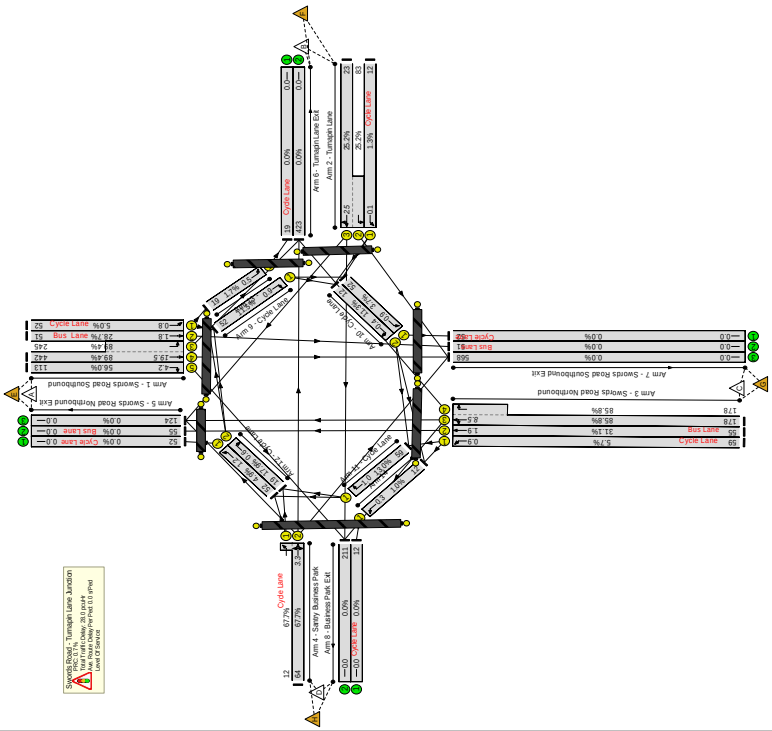
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 0.7%
PM Peak Hour: 12.3%

Junction Delay:
AM Peak Hour: 28.0 pcu/Hr
PM Peak Hour: 26.7 pcu/Hr

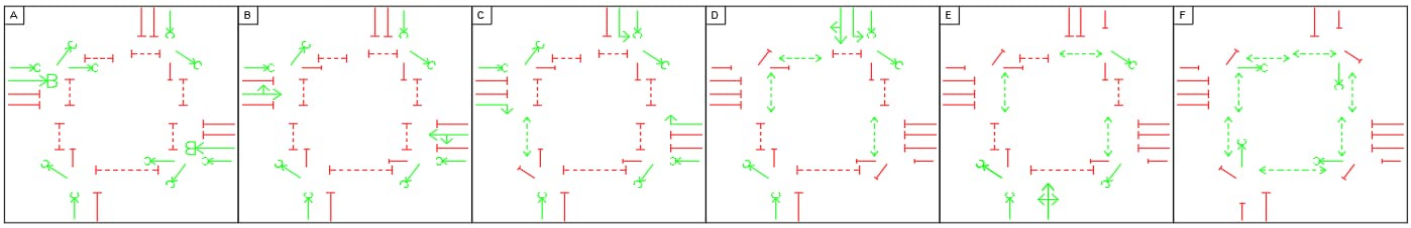
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,290	16%
Bus	9,319	63%
Walk	2,765	19%
Cycle	339	2%
Total	14,713	100%

INDICATIVE METHOD OF CONTROL

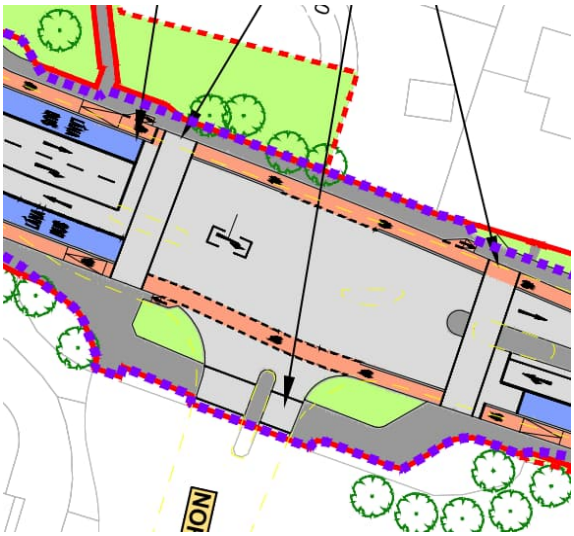


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Swords Road / Northwood Avenue

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to improve pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.
Full policy outcomes for CBC route can be achieved by junction layout by giving priority to bus and cycles, and with improved facilities for pedestrians.

Pedestrian Infrastructure
CBC:
•Existing straight toucan crossing on the CBC northern arm will be retained and upgraded; and
•A new straight toucan crossing is proposed on the CBC southern arm.
Side Roads:
•Existing straight toucan crossing Northwood Avenue will be retained and upgraded; and
•Wrap around pedestrian crossing stage proposed for improved pedestrian connectivity.

Cycle Infrastructure
• Cycle tracks are proposed on the CBC to enable cyclists to safely travel through the junction; and
•Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability..

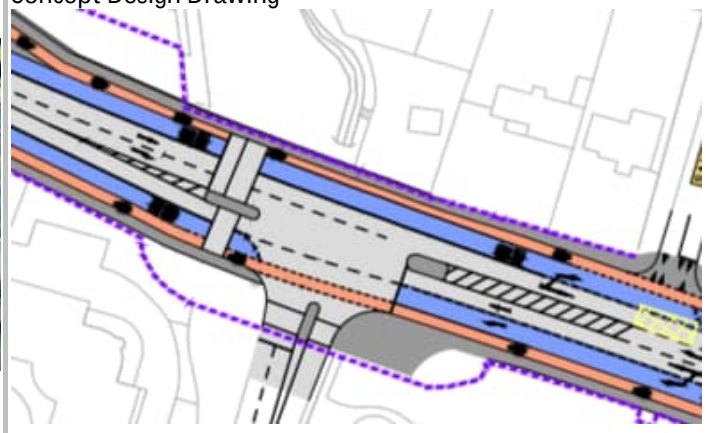
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

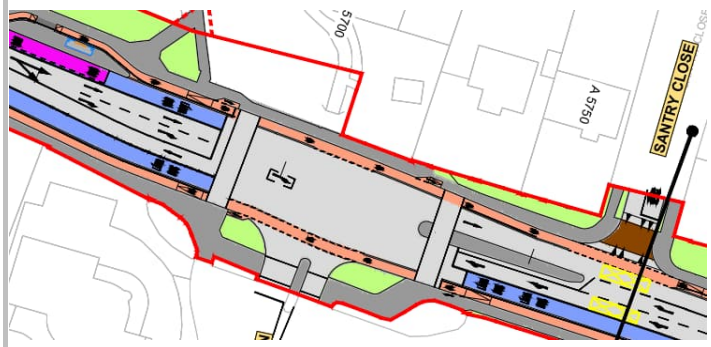
Existing

Concept Design Drawing



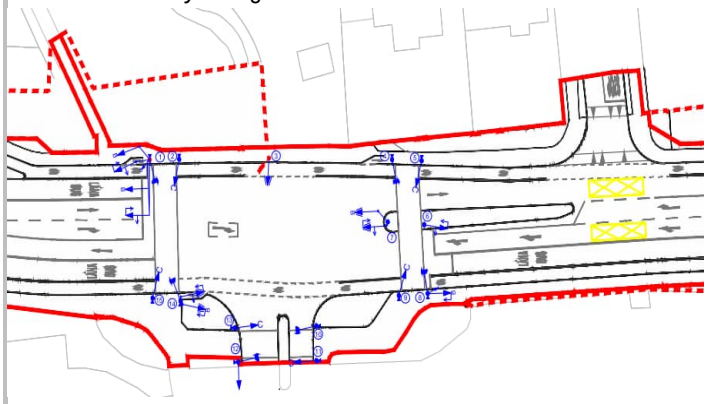
Emerging Preferred Route

Public Consultation 2



Public Consultation 3

Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

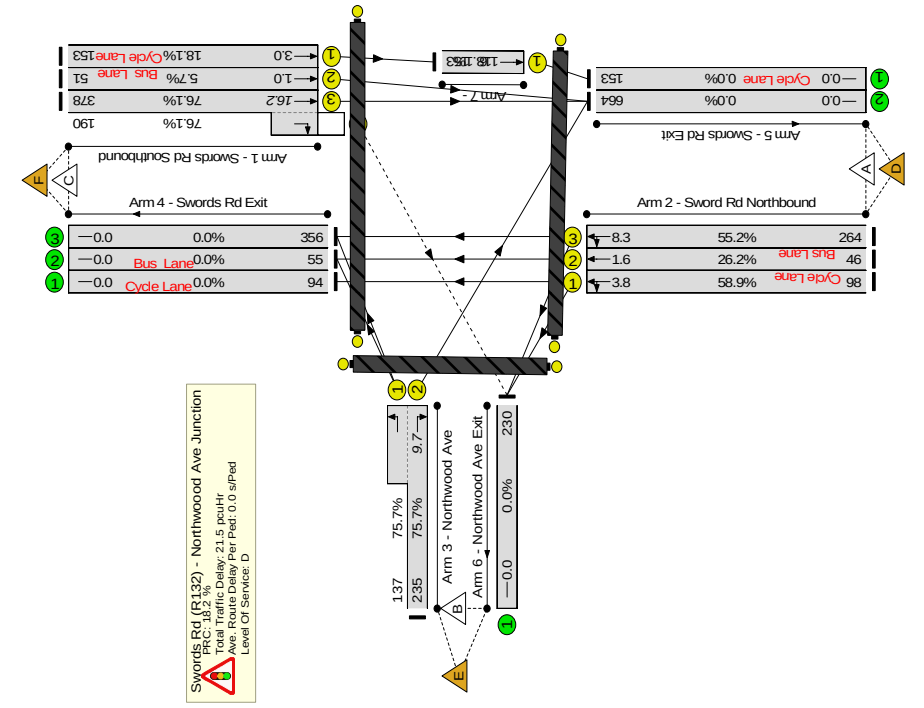
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 18.2%
PM Peak Hour: 20.7%

Junction Delay:
AM Peak Hour: 21.5 pcu/Hr
PM Peak Hour: 19.7 pcu/Hr

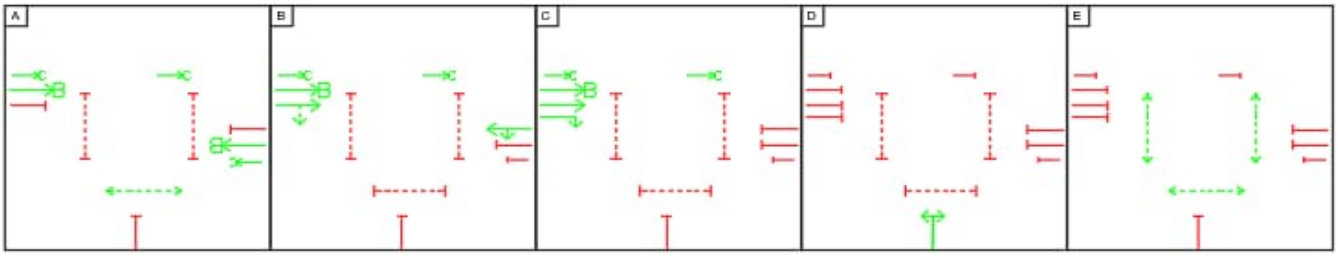
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,062	6%
Bus	28,088	85%
Walk	2,074	6%
Cycle	729	2%
Total	32,953	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Coolock Lane		

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction, with left turn slip roads, is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure.The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Removal of the existing left turn slips and splitter islands on CBC north and Coolock Lane arms of the junction will provide enhanced pedestrian crossing opportunities.

Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on north, west and east approaches.
CBC:
•Staggered pedestrian crossing with 3.5m refuge island on the CBC north approach
Side Roads:
•An improved straight pedestrian crossing with a 4m central island is proposed Coolock Lane arm of the junction;
•An improved straight pedestrian crossing on the Santry Park arm of the junction.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;
•Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Improved eastbound and westbound cycle tracks on Coolock Lane to assist cyclist connectivity through the junction; and
• An Advanced Stop Line (ASL) is proposed on the Santry Park arm

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

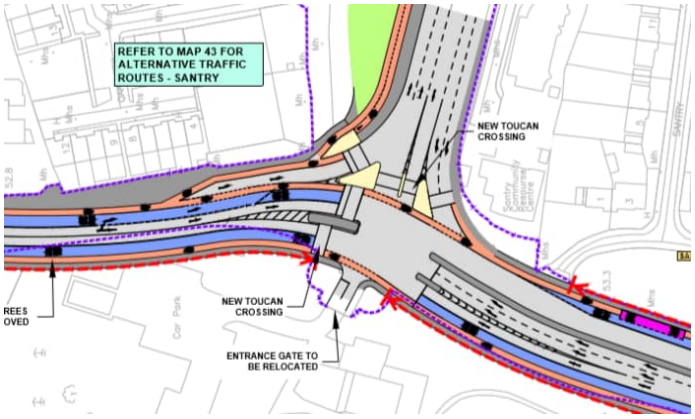
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

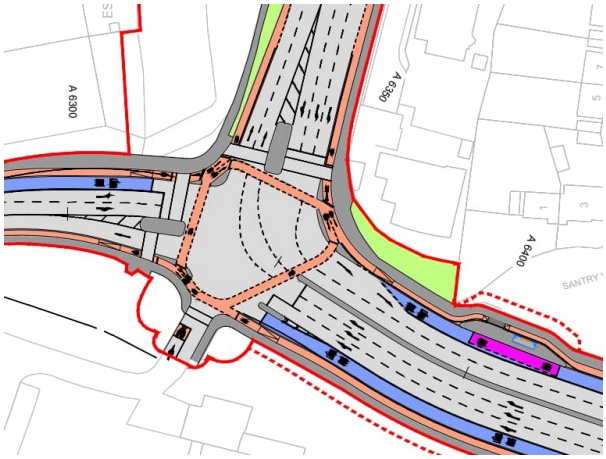
Existing

Concept Design Drawing

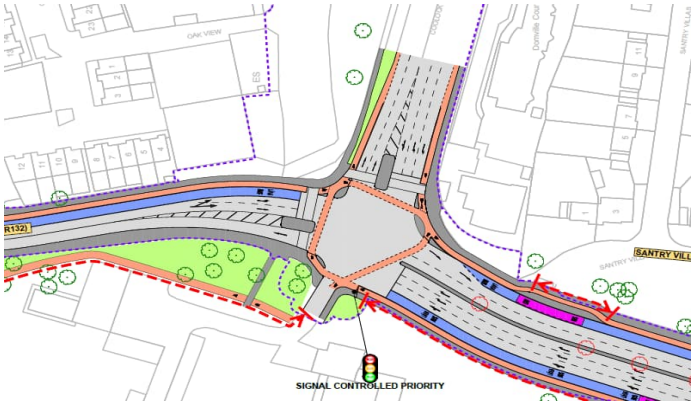


Emerging Preferred Route

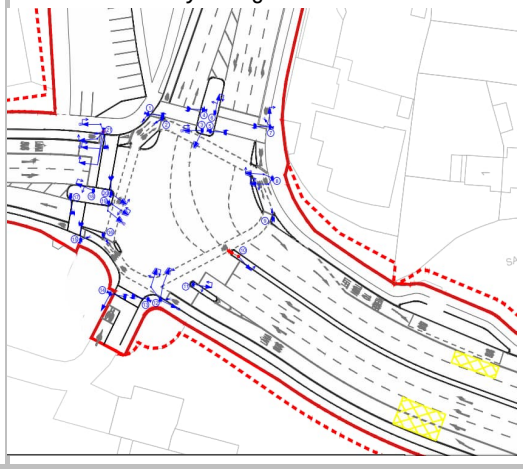
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

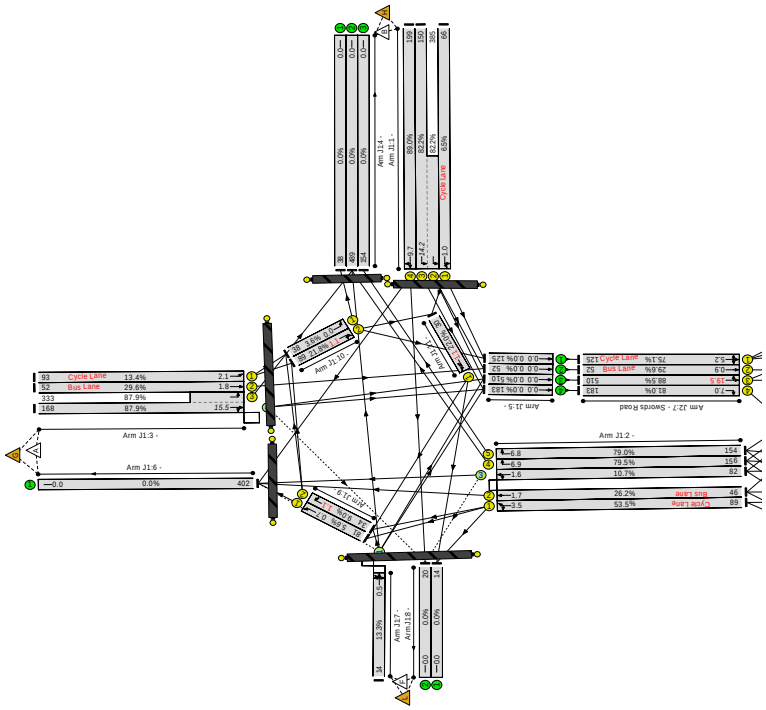
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.1%
PM Peak Hour: -3.6%

Junction Delay:
AM Peak Hour: 39.6 pcu/Hr
PM Peak Hour: 40.5 pcu/Hr

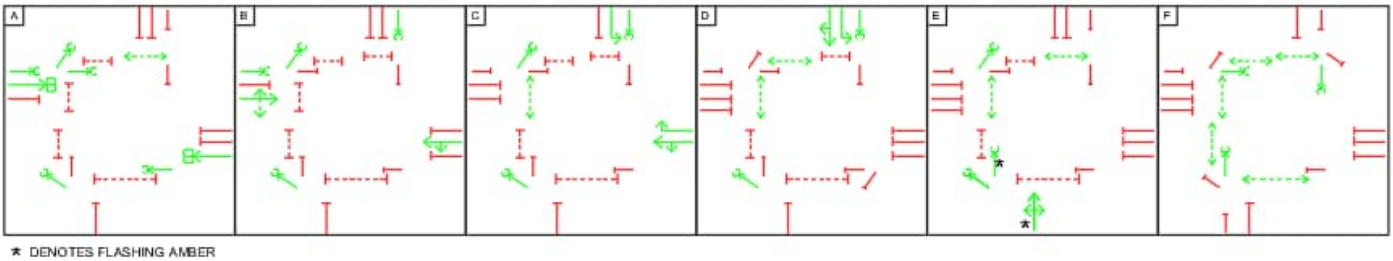
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	3,250	21%
Bus	9,240	61%
Walk	2,074	14%
Cycle	659	4%
Total	15,223	100%

INDICATIVE METHOD OF CONTROL



★ DENOTES FLASHING AMBER

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Rd / Santry Avenue		

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction, with left turn slip on the side raod, is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Removal of the existing left turn slip and splitter island on Santry Avenue. Improved pedestrian crossing opportunities with removal of side road splitter island. The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.
Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on north, south and west approaches.
CBC:
•Existing straight pedestrian crossing on the southern arm will be converted to a 2 stage staggered pedestrian crossing with 4m central island.
•A new straight pedestrian crossing, with 4m central island, is proposed on the CBC northern arm.
•Wrap around pedestrian crossing proposed for improved pedestrian accessibility.
Side Roads:
•Left turn slip on the western arm of the junction is removed to allow for a straight toucan crossing across Santry Avenue.
•The existing dropped kerb crossing on Church Lane is to be signalised creating a safer crossing facility for pedestrians.

Cycle Infrastructure
CBC:
•Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;.
• A bi-directional cycle crossing on the CBC north arm for right turn cyclists from CBC north and Santry Avenue arms; and
• Dedicated early cycle and bus phase, on the CBC mainline, to enable cyclists to advance before general traffic.
Side Roads:
•Toucan crossing on Santry Avenue arm;
• An Advanced Stop Line (ASL) is proposed on the Church Lane arm; and
•Entry and exit cycle lanes on Santry Avenue arm.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability..

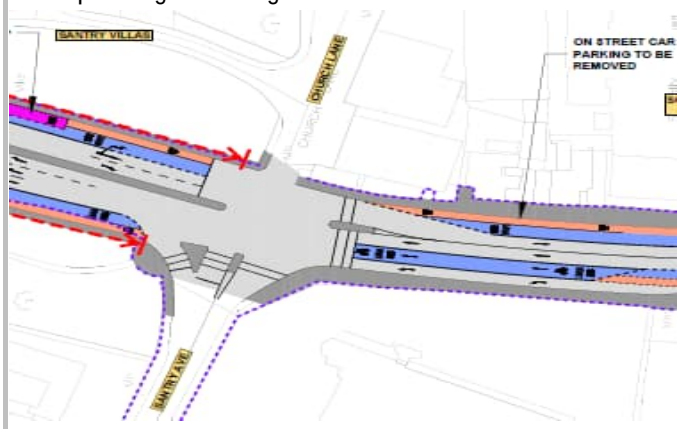
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

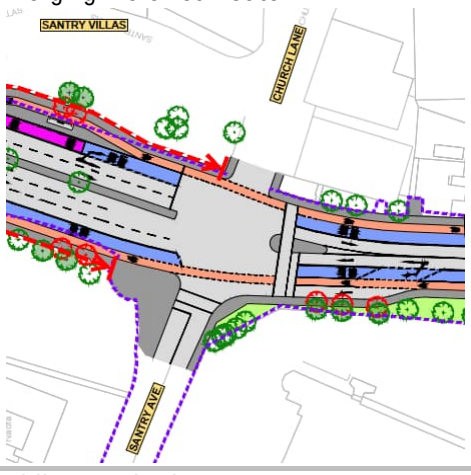
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

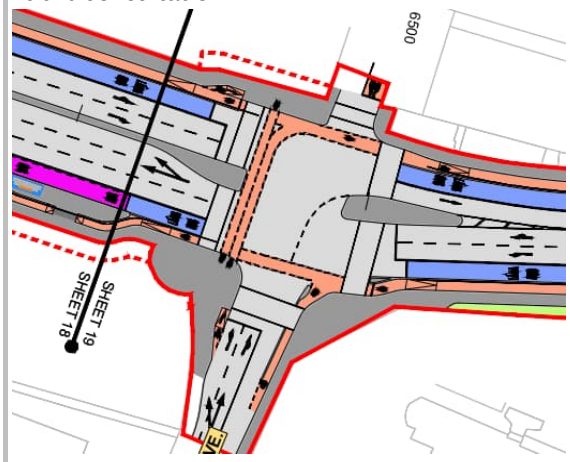
Concept Design Drawing



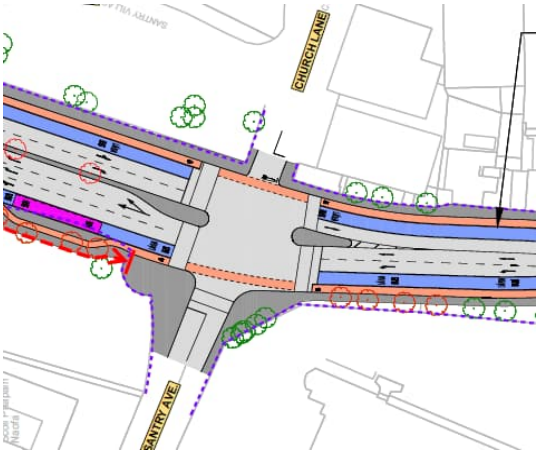
Emerging Preferred Route



Public Consultation 2



Public Consultation 3



Final Preliminary Design

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

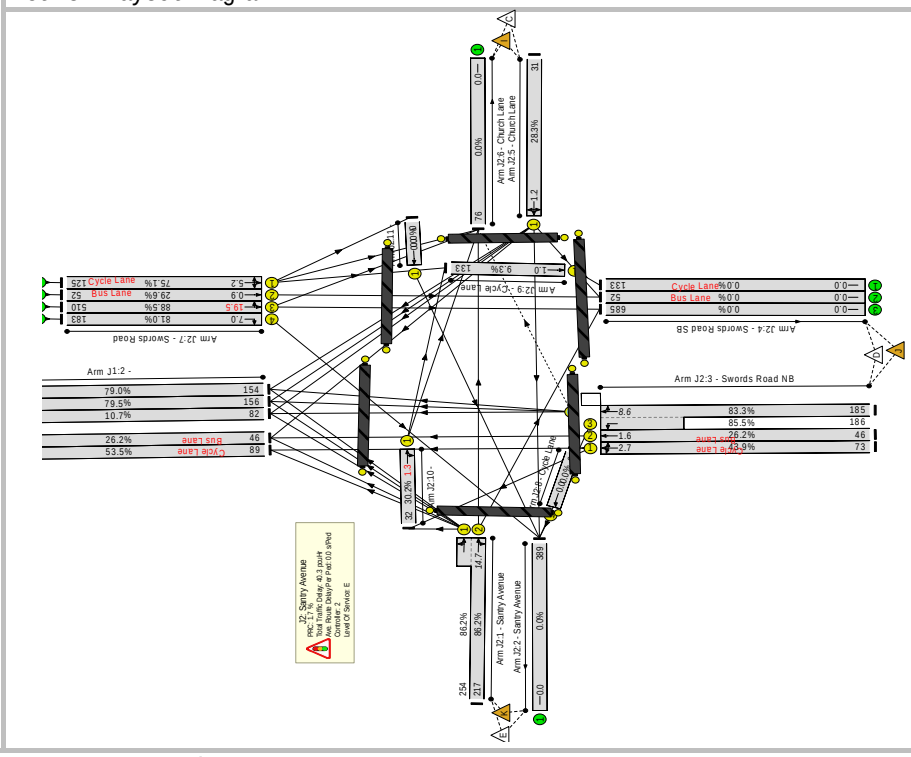
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.7%
PM Peak Hour: -1.3%

Junction Delay:
AM Peak Hour: 40.3 pcu/Hr
PM Peak Hour: 40.3 pcu/Hr

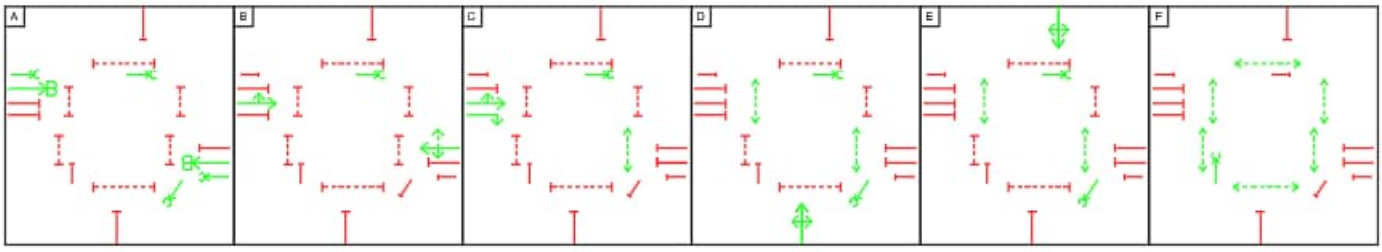
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,276	15%
Bus	9,240	62%
Walk	2,765	18%
Cycle	670	4%
Total	14,951	100%

INDICATIVE METHOD OF CONTROL

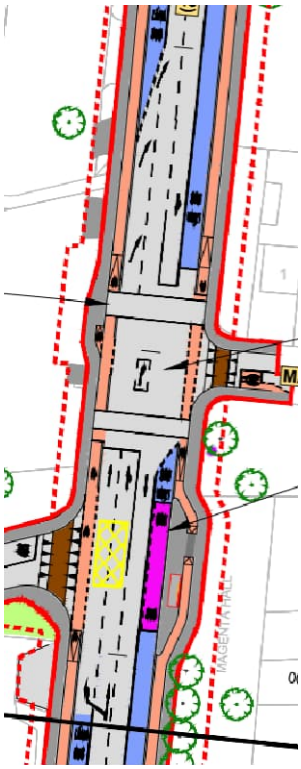


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Swords Road / Magenta Crescent

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm junction, with signal controlled pedestrian crossing on the CBC north arm, is proposed to be upgraded to a full signalised junction per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on south and east approaches.
CBC:
•Existing pedestrian crossing on the CBC north arm, is to be upgraded to a toucan crossing; and
•A new straight pedestrian crossing is proposed on the CBC southern arm.
Side Roads:
•The existing dropped kerb crossing on Magenta Crescent is to be upgraded to a signalised ramped level crossing, creating a safer crossing facility for pedestrians.

Dedicated crossing phase has been provided to improve pedestrian crossing opportunities.

Cycle Infrastructure
CBC:
•Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;.
• Toucan crossing on the CBC north arm; and
• Dedicated early cycle and bus phase, on the CBC mainline, to enable cyclists to advance before general traffic.
Side Roads:
• An Advanced Stop Line (ASL) is proposed on the Magenta Crescent arm.

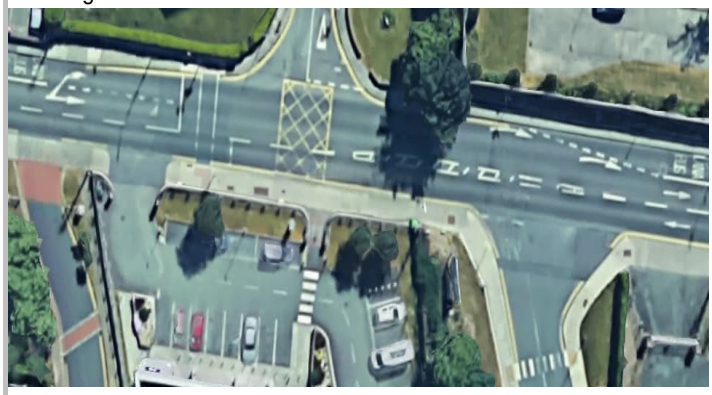
Bus Priority Infrastructure
Junction Type 1 proposed inbound, on the CBC north arm, and Junction Type 3 outbound on the CBC south arm. The Junction Type 3 layout has been selected to allow left turns into Santry Hall Industrial Estate and also to allow ahead general traffic to bypass right turn traffic waiting to turn into Magenta Crescent.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

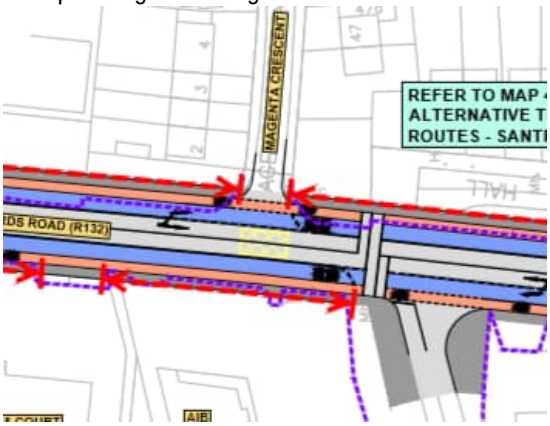
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

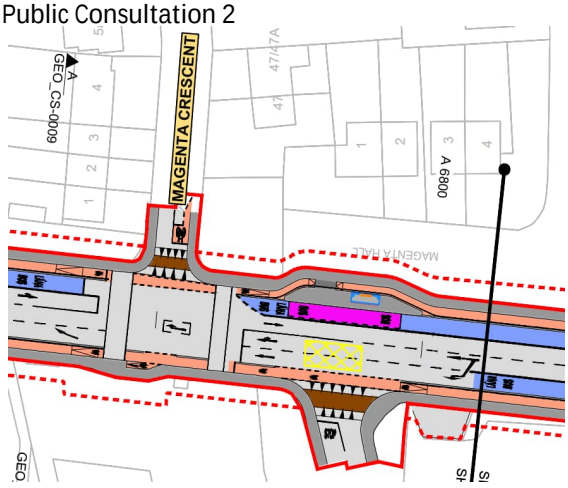


Concept Design Drawing

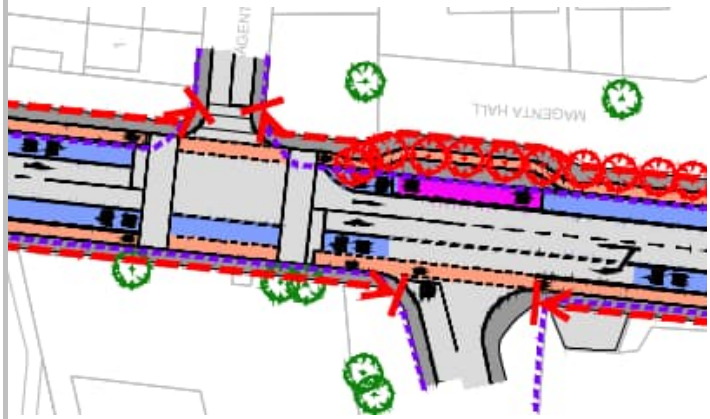


Emerging Preferred Route

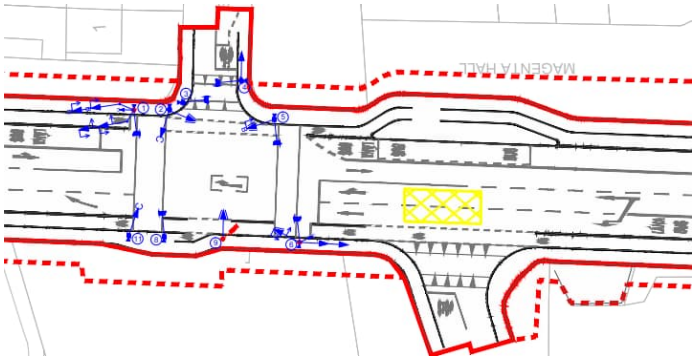
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

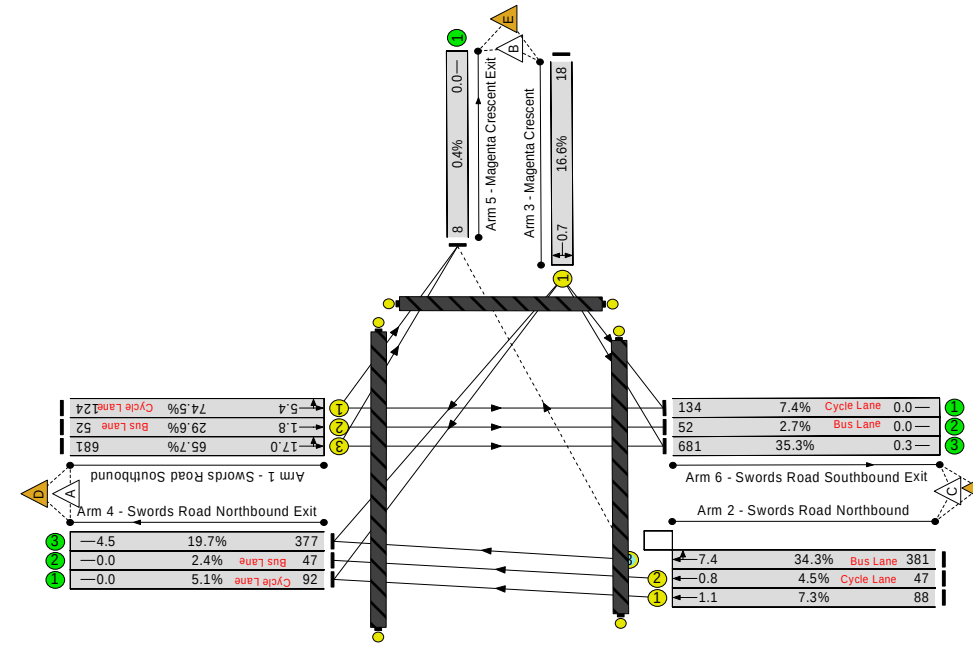
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 20.8%
PM Peak Hour: 20.0%

Junction Delay:
AM Peak Hour: 12.0 pcu/Hr
PM Peak Hour: 15.1 pcu/Hr

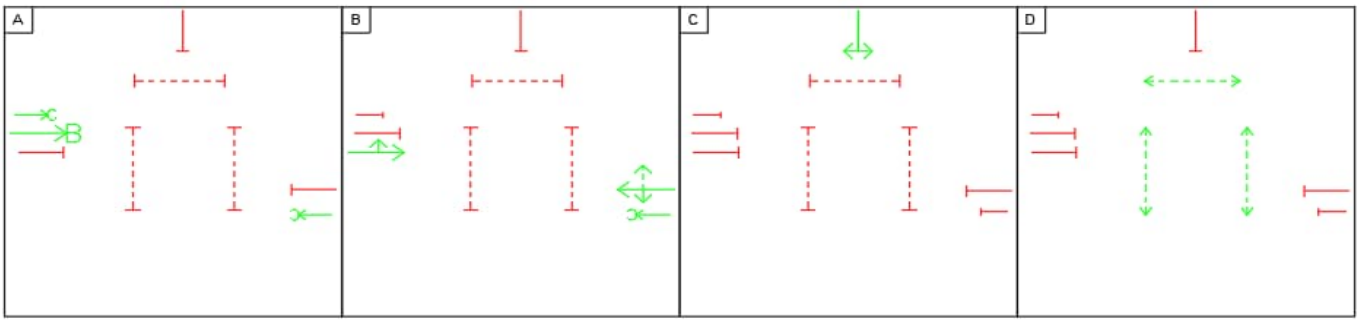
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,707	6%
Bus	38,141	88%
Walk	2,074	5%
Cycle	591	1%
Total	43,513	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Lorcan Road / OMNI Park		

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction and slip road is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The left slip with splitter island on the CBC south arm will be removed. Improved pedestrian crossing opportunities with removal of side road splitter island.

The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority. Full policy outcomes for CBC route can be achieved by Junction Type 1 and signal operation, giving priority to bus and improved facilities for pedestrians and cyclists.

Pedestrian Infrastructure
Enhanced pedestrian crossing facilities on south, east and west approaches.
•Reconfigure existing staggered pedestrian crossing on the CBC south arm to a straight crossing; and
•Upgrade pedestrian crossings on the CBC mainline to toucan crossings; and accessibility.
Side Roads:
•Realign and upgrade existing pedestrian crossing on Omni Shopping Park Access arm to toucan crossing;
•The existing dropped kerb crossing on Lorcan Road is to be signalised creating a safer crossing facility for pedestrians.

Dedicated crossing phase has been provided to improve pedestrian crossing opportunities.

Cycle Infrastructure
CBC:
•Cycle tracks are proposed on the CBC north arm;.
• Toucan crossing on the CBC mainline arms
Side Roads:
•An Advanced Stop Line (ASL) with cycle tracks proposed on the Lorcan Road; and
•Toucan crossing on Omni Shopping Park Access.

Bus Priority Infrastructure
Junction Type 1, which accommodates an inbound and an outbound bus lane, is proposed on the CBC mainline. Both bus lanes extend to the stop line, which provides greater bus priority and reliability..

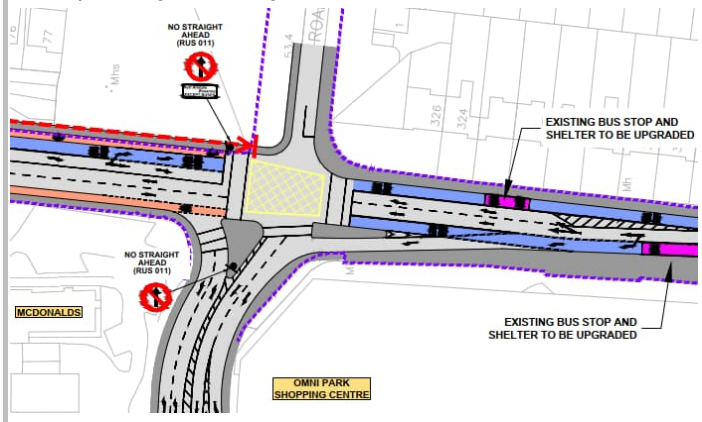
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

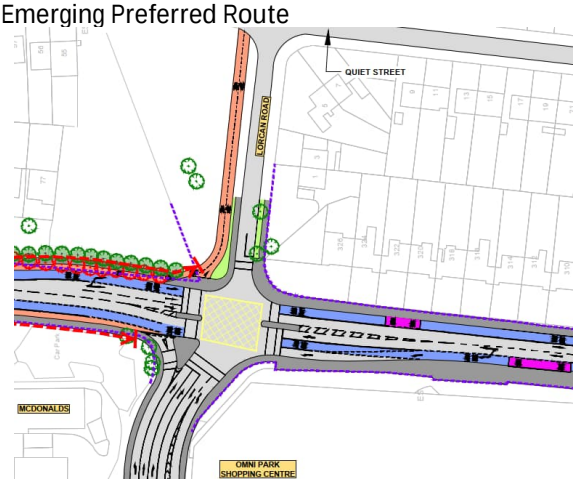
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

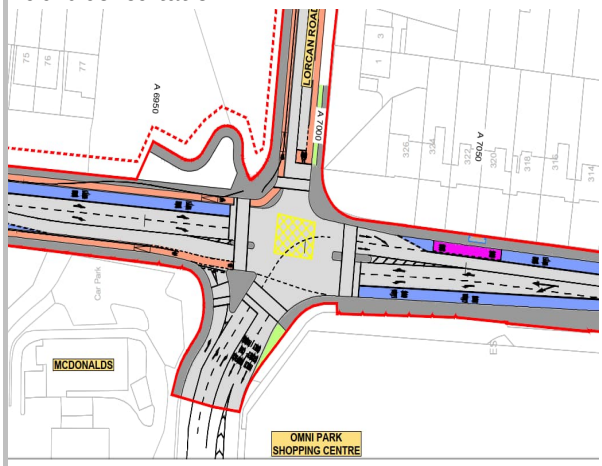
Concept Design Drawing



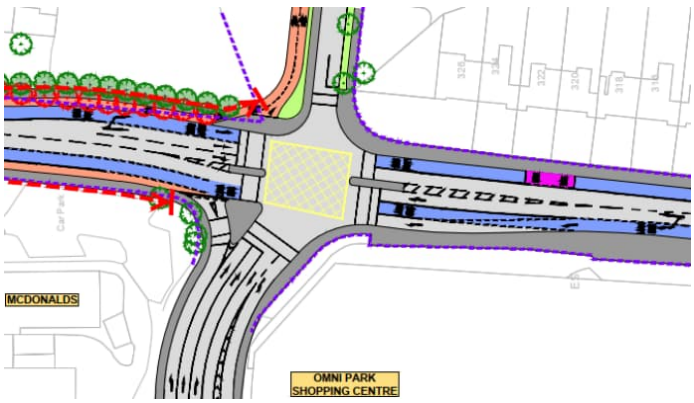
Emerging Preferred Route



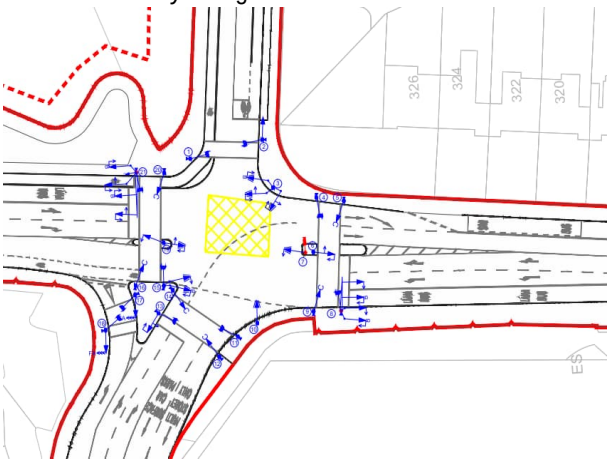
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

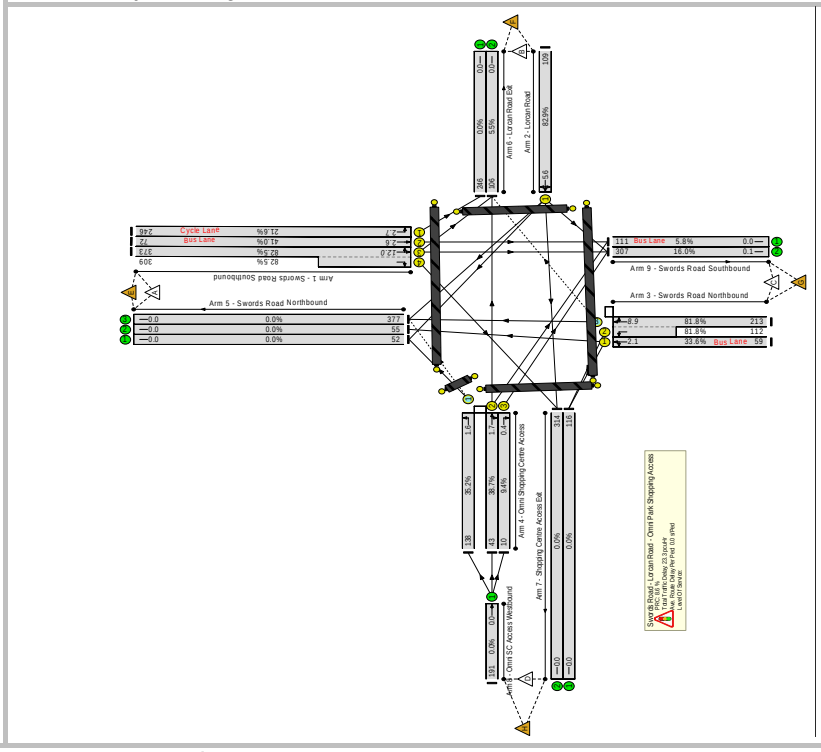
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 8.6%
PM Peak Hour: -21.9%

Junction Delay:
AM Peak Hour: 23.3 pcu/Hr
PM Peak Hour: 40.6 pcu/Hr

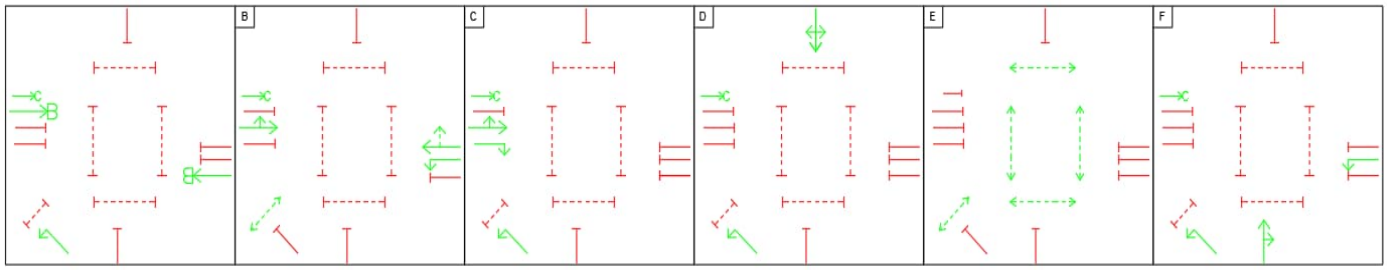
Network Layout Diagram



People Movement Assessment

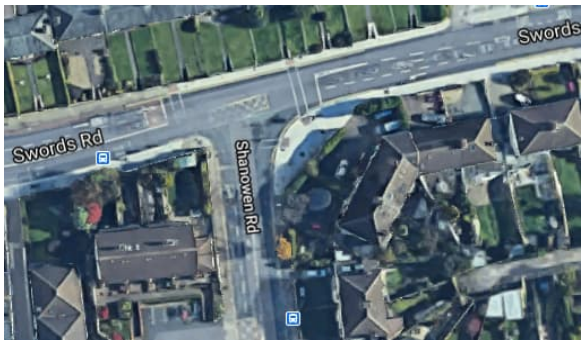
Junction		
Mode	People Movement	Mode Share
Car	2,358	16%
Bus	9,240	61%
Walk	2,765	18%
Cycle	834	5%
Total	15,197	100%

INDICATIVE METHOD OF CONTROL

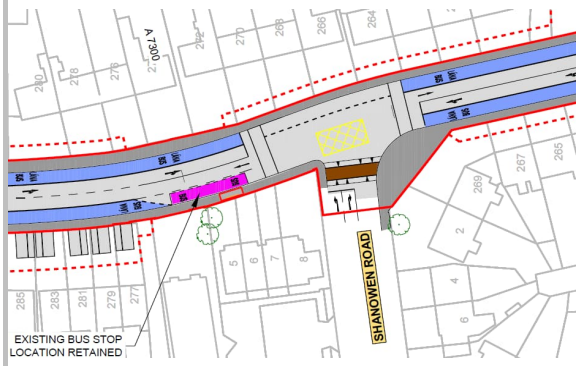


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Shanowen Road		

EXISTING



FINAL DESIGN



Summary:
The existing 3 arm signalised junction is proposed to be upgraded per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. There will be no major physical changes required.

Pedestrian Infrastructure
•The existing straight pedestrian crossings are to be maintained.
•The straight crossing on Magenta Crescent will be relaigned and reconfigured to include a ramped level crossing.and

Dedicated crossing phase has been provided to improve pedestrian crossing opportunities.

Cycle Infrastructure
No provision of cycle facilities due to space constraints.

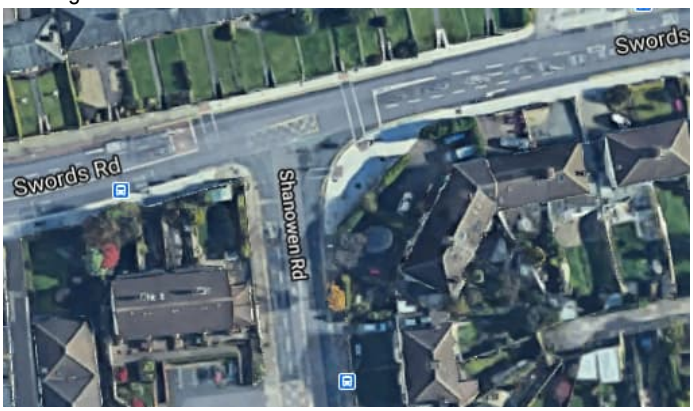
Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

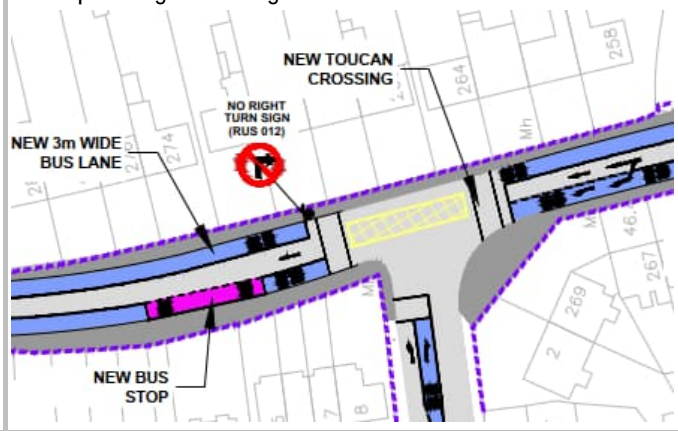
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

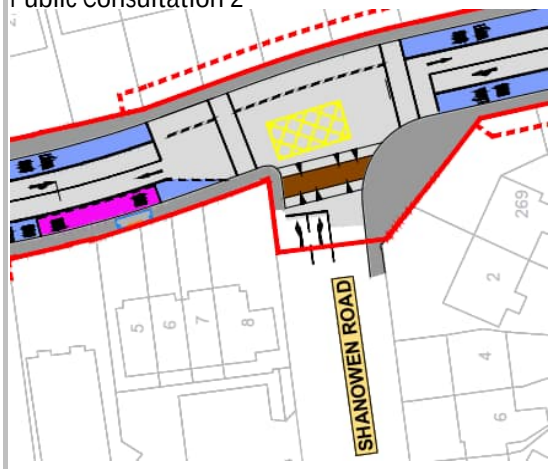


Concept Design Drawing

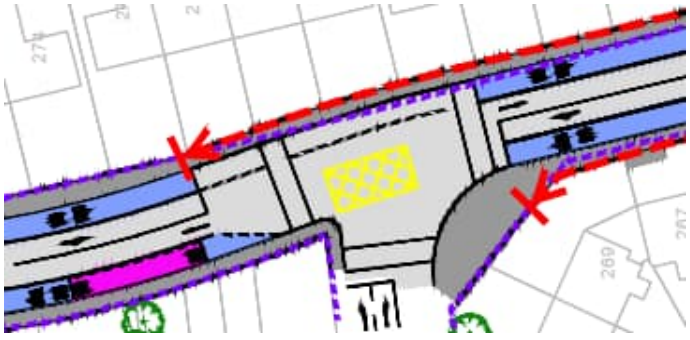


Emerging Preferred Route

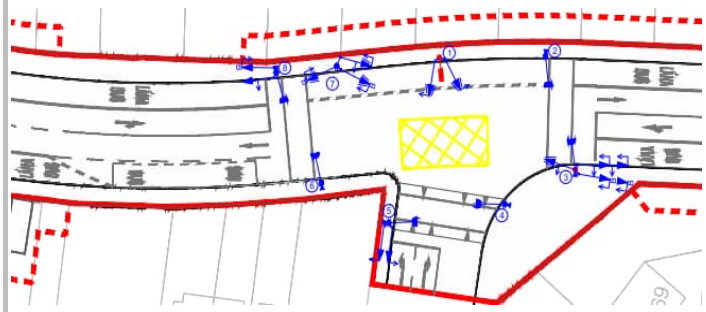
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

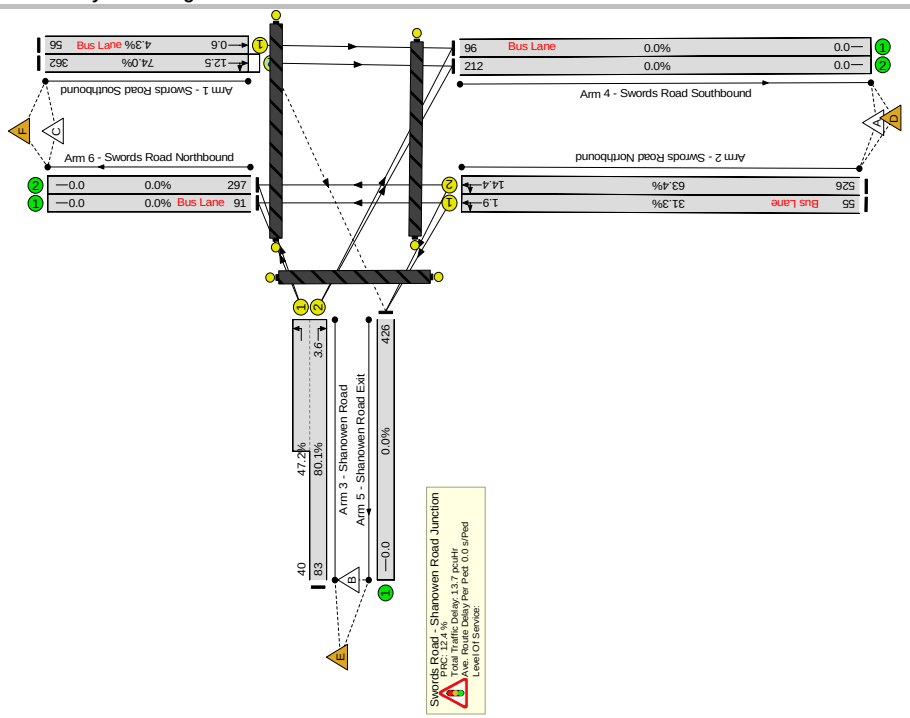
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 12.4%
PM Peak Hour: 22.0%

Junction Delay:
AM Peak Hour: 13.7 pcu/Hr
PM Peak Hour: 13.5 pcu/Hr

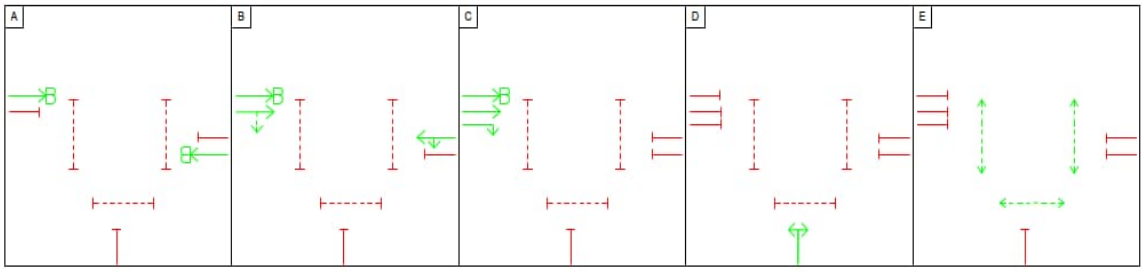
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	1,810	4%
Bus	38,981	90%
Walk	2,074	5%
Cycle	220	1%
Total	43,085	100%

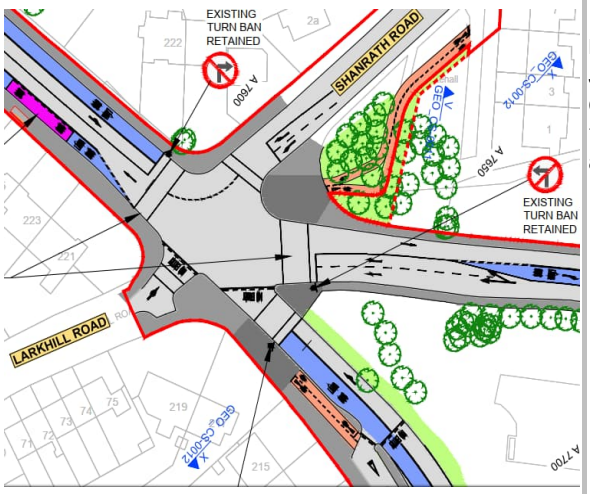
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Larkhill Road / Shantalla Road / Shanrath Road		

EXISTING

FINAL DESIGN



Summary:
The existing 5 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The junction creates the transition of the route from the Swords Road R104 to the Swords Road N1.

The key design rationale was to introduce bus priority on the mainline CBC route, improved pedestrian crossing facilities and infrastructure in place to direct cyclists through the Shanrath Road 'Quiet Street' towards Lorcan Road on-street cycle facilities.

Pedestrian Infrastructure
Enhanced pedestrian crossing on all arms of the junction.
CBC:
•An existing dropped kerb crossing on the CBC north arm will be reconfigured into signalised toucan crossing facility;
•An existing signal pedestrian crossing on the CBC south arm will be upgraded to a toucan crossing facility;
•An existing staggered pedestrian crossing on Shantalla Road will be upgraded to a straight toucan crossing facility;
Side Roads:
•The left turn slip ans splitter island on Shanrath Road will be removed. The space will be reconfigured to a shared use space for pedestrians and cyclists;
•An existing staggered pedestrian crossing on Shanrath Road will be upgraded to a straight pedestrian crossing facility;
•An existing staggered pedestrian crossing on Larkhill Road will be improved.

Cycle Infrastructure
CBC:
•Toucan croosing on the CBC mainline and Shantalla Road arms to enhance connectivity between cycle facilities linking to the junction.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability. Southbound mainline buses are routed via Shatalla Road before turning right to reconnect with the CBC mainline.

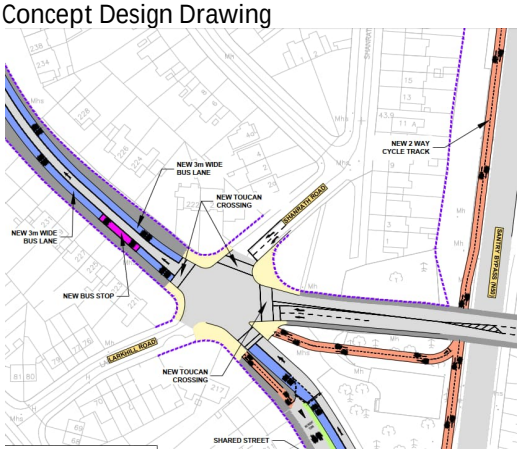
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

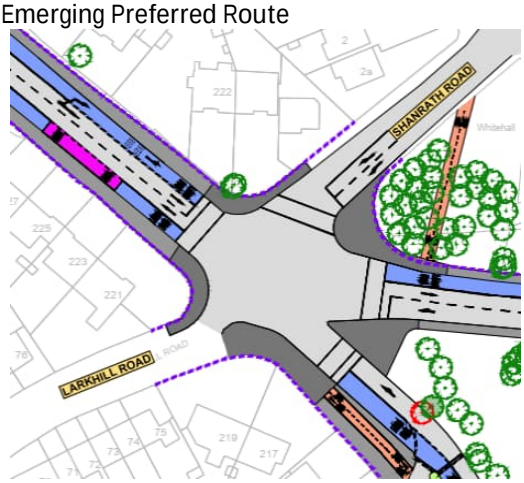
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

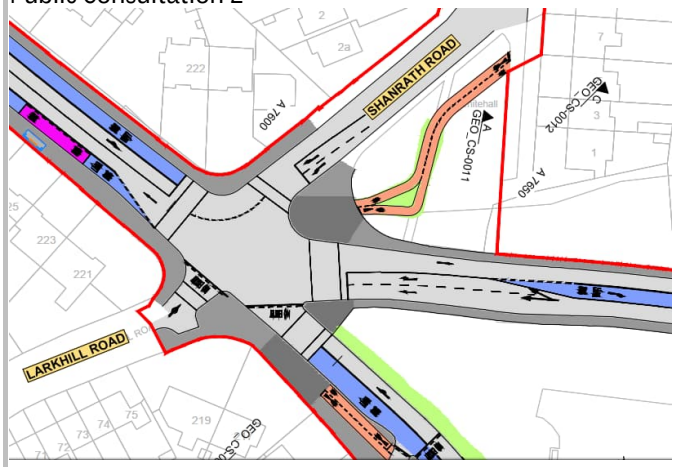
Concept Design Drawing



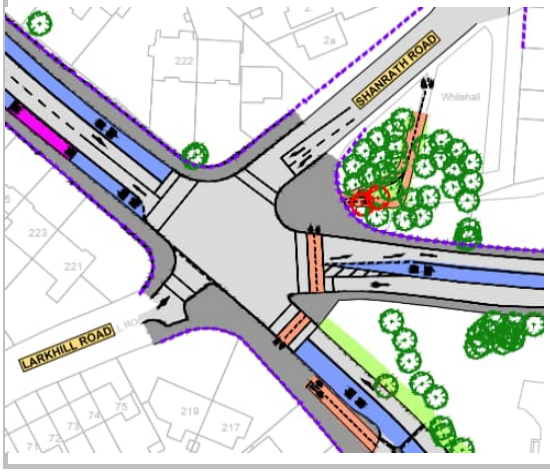
Emerging Preferred Route



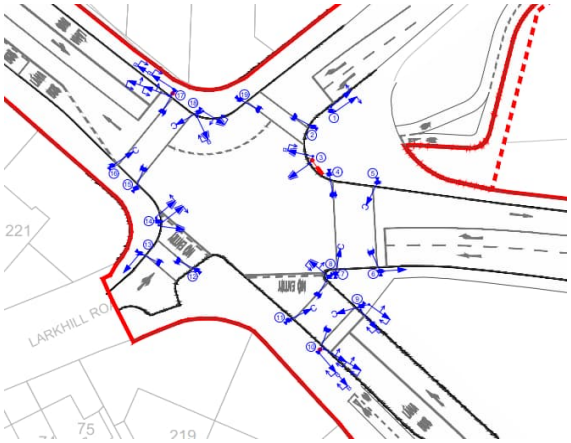
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

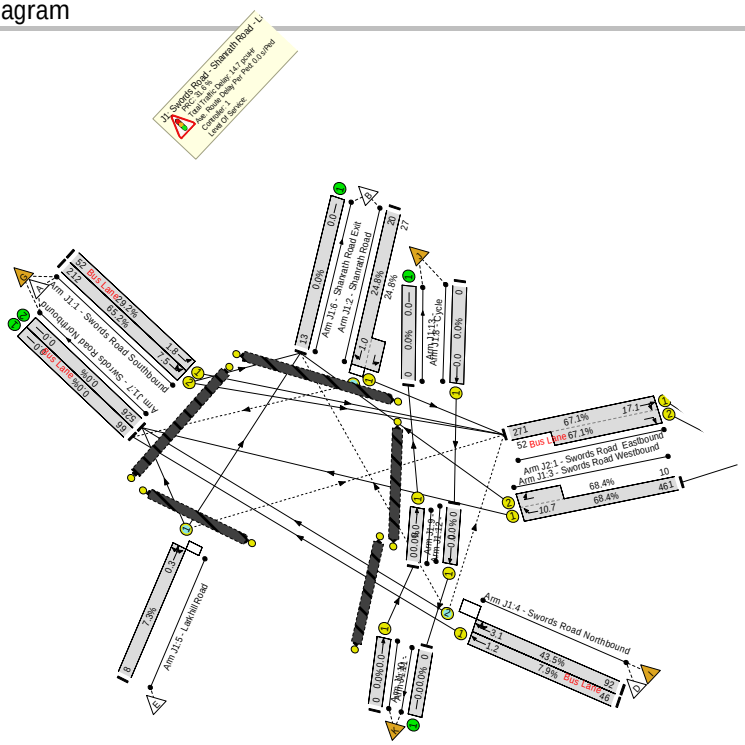
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 31.6%
PM Peak Hour: 28.5%

Junction Delay:
AM Peak Hour: 14.7 pcu/Hr
PM Peak Hour: 14.7 pcu/Hr

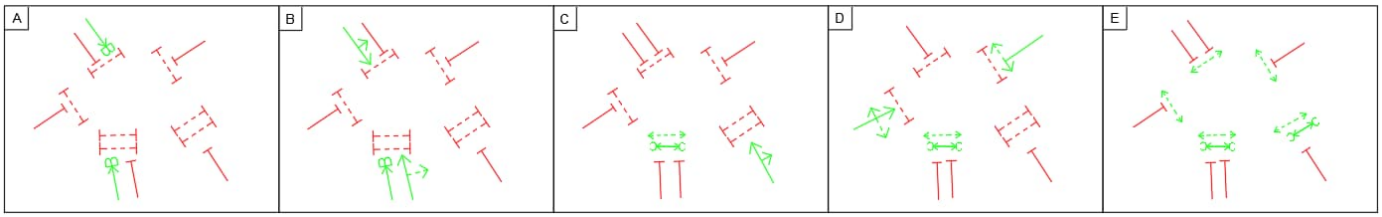
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	1,829	7%
Bus	20,029	78%
Walk	3,456	13%
Cycle	320	1%
Total	25,634	100%

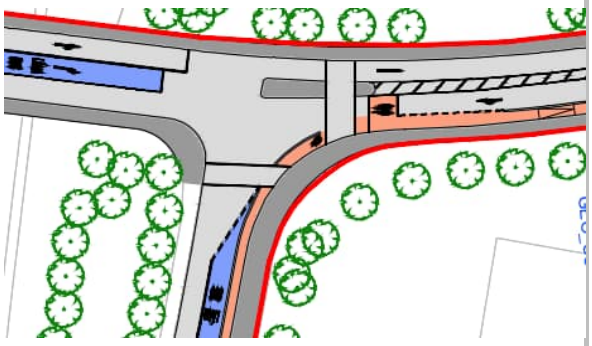
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Shantalla Road		

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm junction is proposed to be upgraded to a full signalised junction and in line with the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority for the southbound buses re-joining the CBC mainline on the R132 Swords Road.

Pedestrian Infrastructure
The existing central island on the south arm of the junction will be removed. The east and south arms of the junction will be re-configured to incorporate new pedestrian crossings.

Cycle Infrastructure
• A new cycle track, with Advanced Stop Line (ASL), will be provided on the Shantalla Road east arm.
• A new cycle track from the east will be continued south along the R132 Swords Road towards the city centre.

Bus Priority Infrastructure
Junction Type 1 bus priority lane, which extends to the stop line, will be provided on Shantalla Road west arm. The bus lane will provide greater priority and reliability for inbound buses.

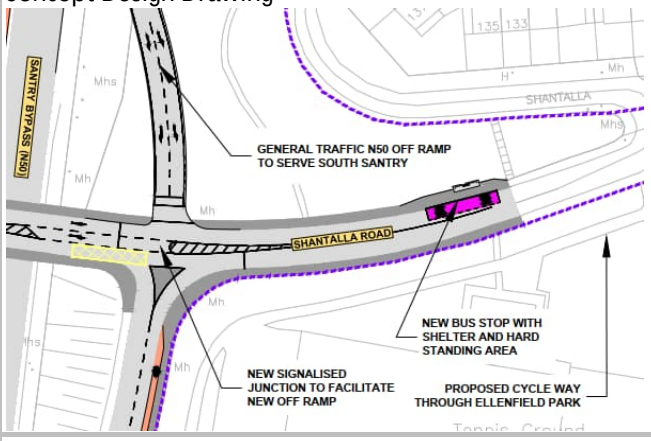
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

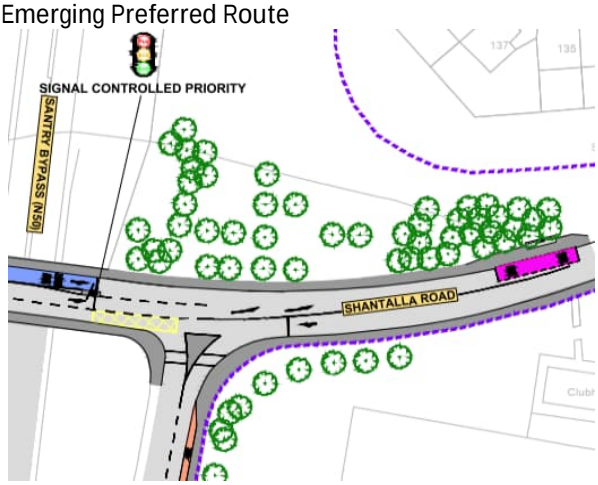
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

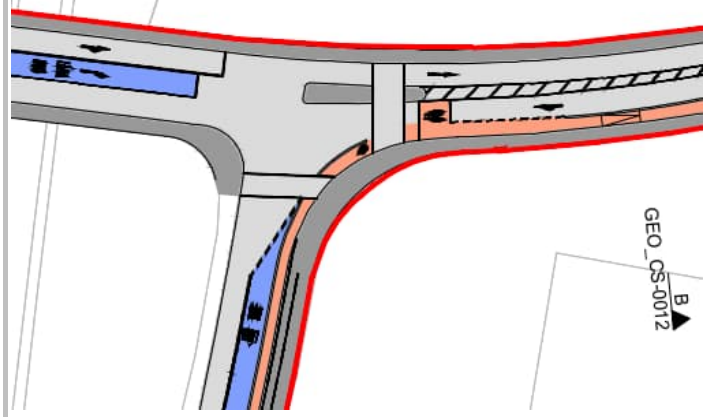
Concept Design Drawing



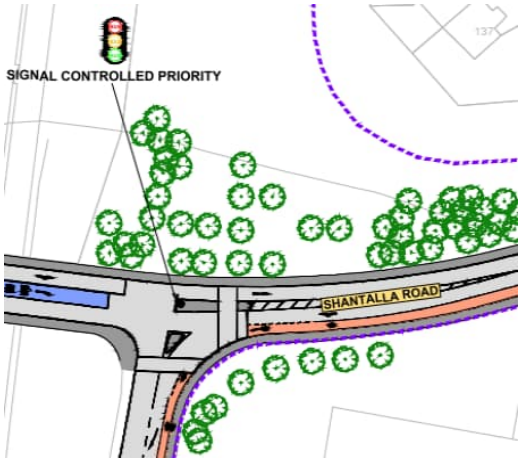
Emerging Preferred Route



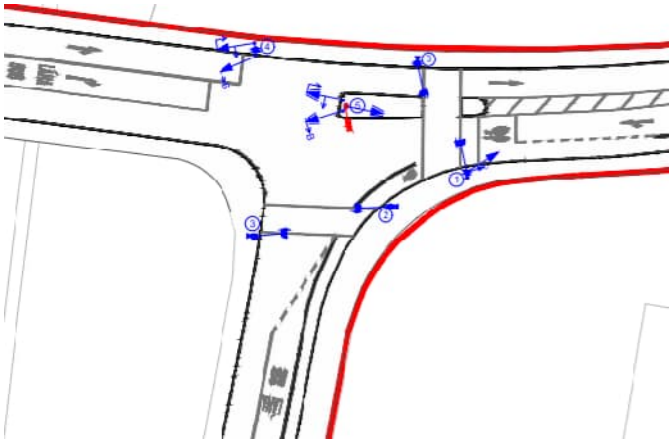
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

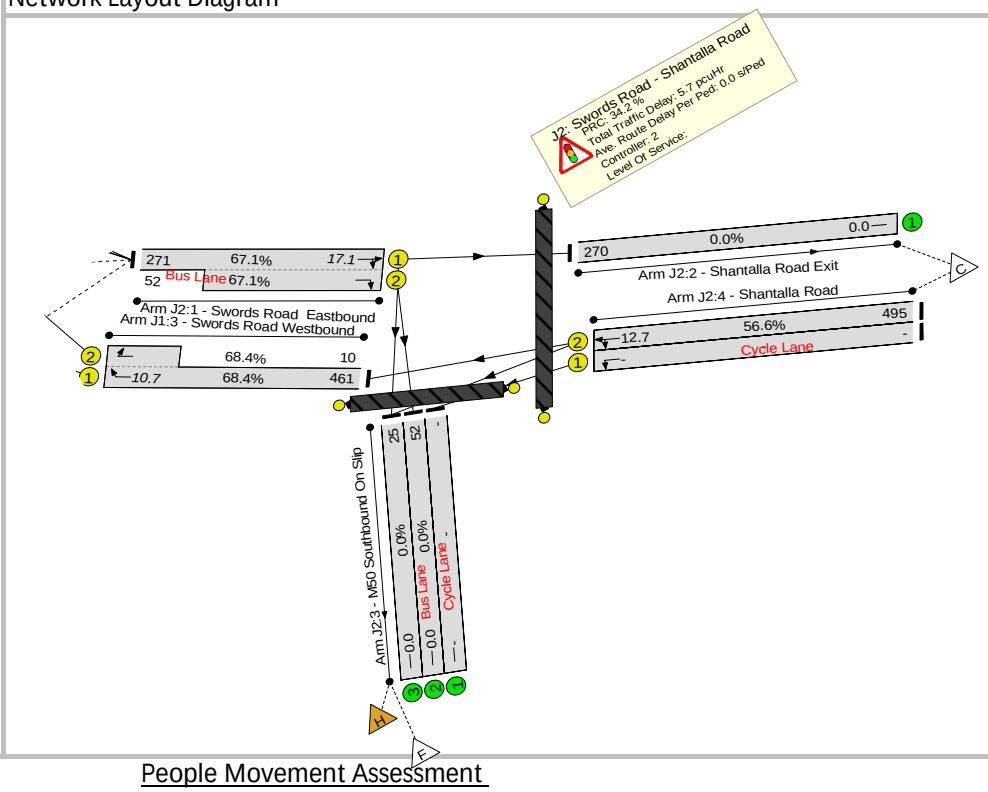
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 34.2%
PM Peak Hour: 27.9%

Junction Delay:
AM Peak Hour: 5.7 pcu/Hr
PM Peak Hour: 6.5 pcu/Hr

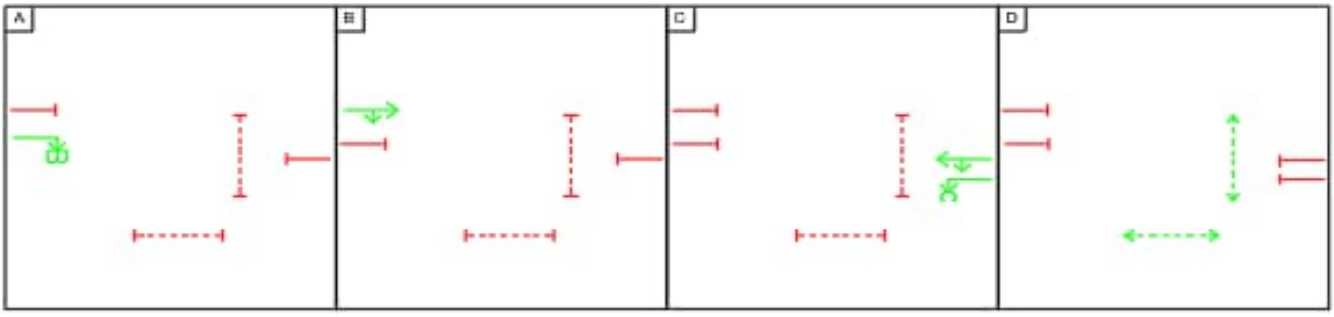
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	1,535	28%
Bus	2,048	37%
Walk	1,382	25%
Cycle	603	11%
Total	5,568	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Collins Avenue		

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction, with left turn slip road, is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Removal of the existing left turn slip and splitter island on Collins Avenue east arm will provide improved pedestrian crossing opportunities. Junction Type 1 is proposed inbound, on the CBC north arm, and Junction Type 3 outbound on the CBC south arm. Junction layout has been adopted to reduce junction delays and provide a balanced approach and capacity for all modes.

The key design rationale was to enhance pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities, whilst improving bus priority.

Pedestrian Infrastructure

CBC:

- The removal of the left slip and island from the eastern arm allows for a reconfigured staggered crossing with 4m central island on the CBC south arm.
- Reconfigured staggered crossing 4m central island to be proposed on the CBC north arm.

Side Roads:

- The removal of the left slip and island from the eastern arm allows for a reconfigured straight crossing with 4m central island on the Collins Avenue east arm.
- The west arm staggered crossing is reconfigured and realigned into a straight crossing with 4m central island.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure

CBC:

- Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely;
- Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and
- Dedicated early cycle and bus phase to enable southbound cyclists to advance before general traffic.

Side Roads:

- Entry and exit cycle lanes proposed on Collins Avenue east and west arms to assist cyclist accesibility through the junction.

Bus Priority Infrastructure

Junction Type 2 proposed inbound, on the CBC north arm, and Junction Type 3 outbound on the CBC south arm.

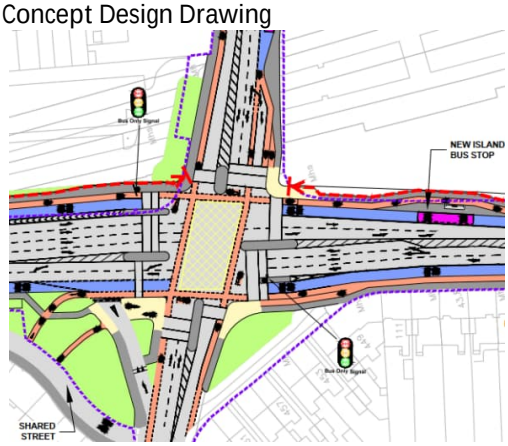
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

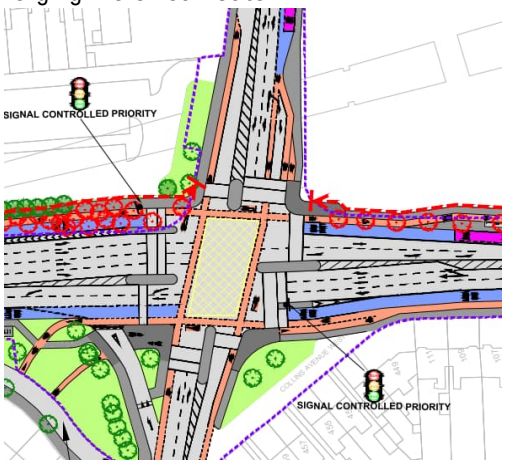
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

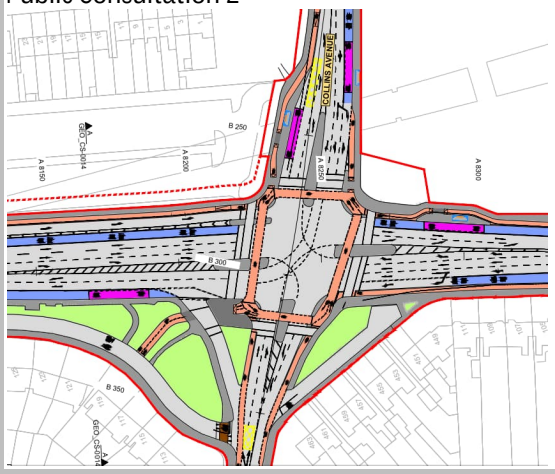
Concept Design Drawing



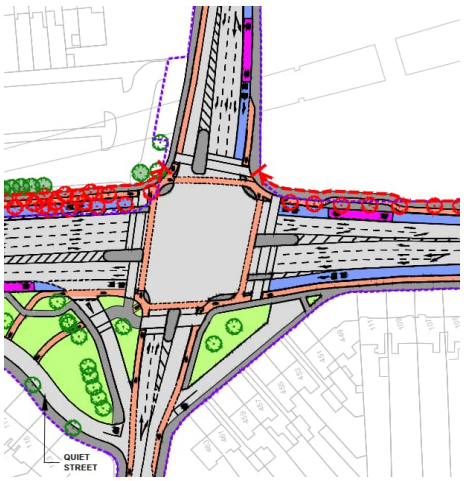
Emerging Preferred Route



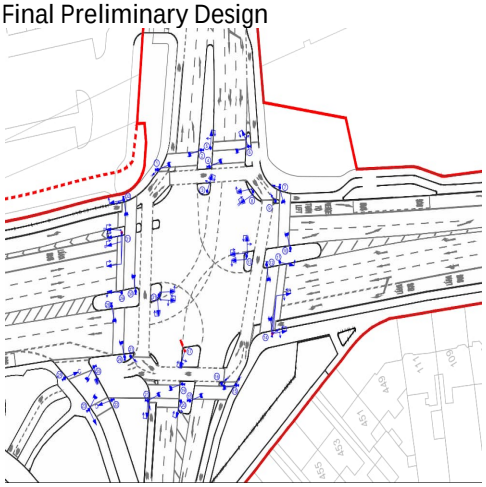
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

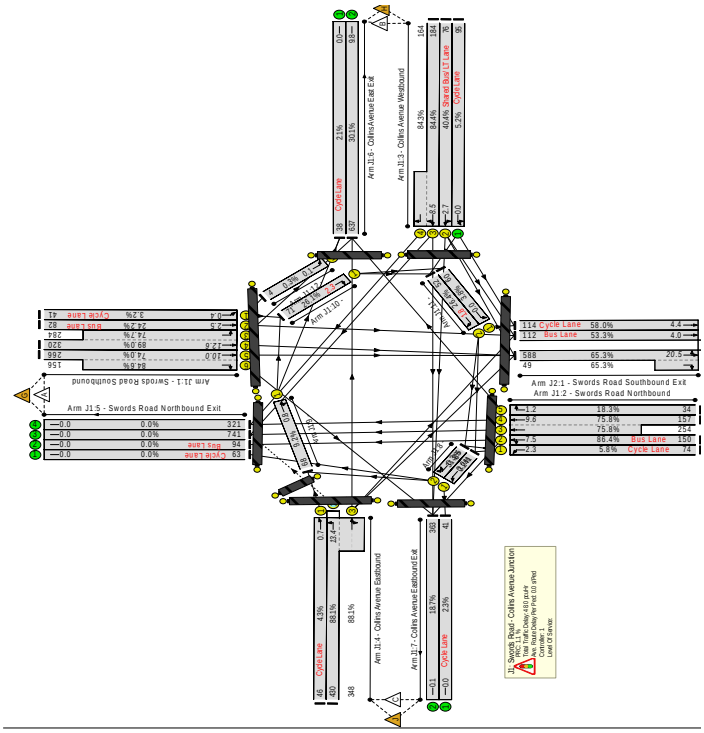
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.1%
PM Peak Hour: -12.0%

Junction Delay:
AM Peak Hour: 48.0 pcu/Hr
PM Peak Hour: 83.1 pcu/Hr

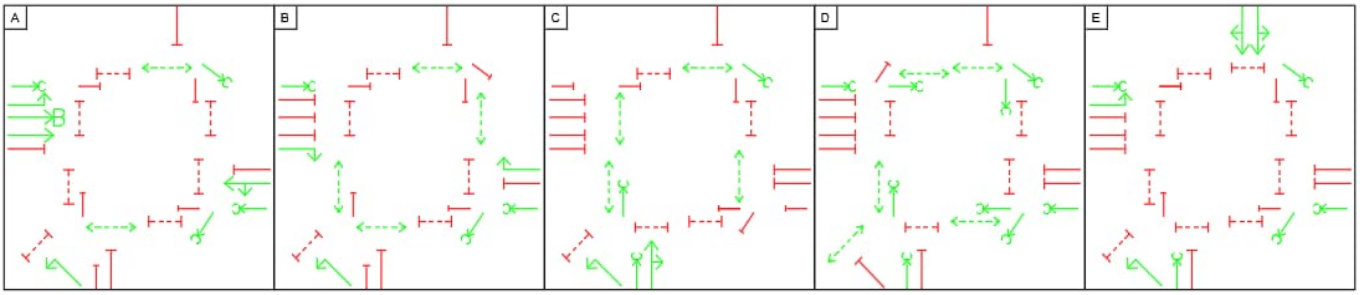
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	3,968	15%
Bus	18,428	68%
Walk	4,147	15%
Cycle	634	2%
Total	27,177	100%

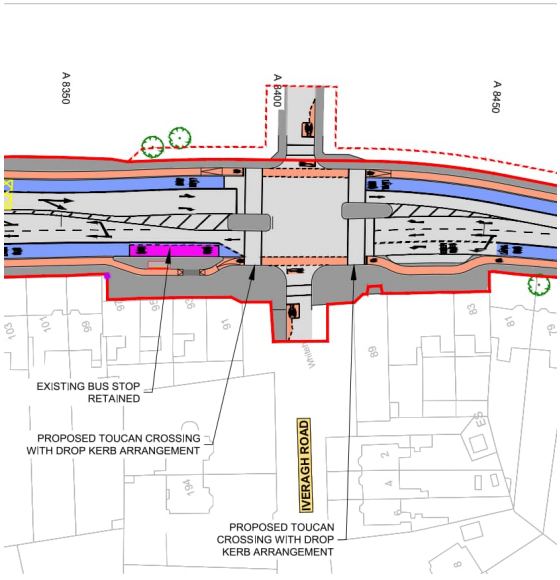
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Iveragh Road		

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm junction, with signal controlled pedestrian crossing on the CBC north arm, is proposed to be upgraded to a full signalised 4-arm junction per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Junction layout amended to facilitate a new access to permitted development on land to the east of the junction. The key design rationale was to enhance cycle infrastructure and crossing facilities, whilst improving bus priority.

Pedestrian Infrastructure

CBC:

•Existing pedestrian crossing on the CBC northern arm to be upgraded to a toucan crossing with a 4m refuge island; and

•A new toucan crossing with 4m island is proposed on the CBC southern arm; and

•Dedicated pedestrian crossing stage provided

Side Roads:

•The existing dropped kerb crossing on Iveragh Road is to be upgraded to a signalised crossing, creating a safer crossing facility for pedestrians; and

•A new pedestrian crossing is proposed on the new development access to the east.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely;

• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic;

•Toucan crossings are proposed on the CBC mainline.

Side Roads:

• Advanced Stop Line (ASL) is proposed on the side roads for cyclists.

Bus Priority Infrastructure

Junction Type 1 proposed inbound, on the CBC north arm, and Junction Type 3 outbound on the CBC south arm. The Junction Type 3 layout has been selected to allow access to on-street parallel parking bays.

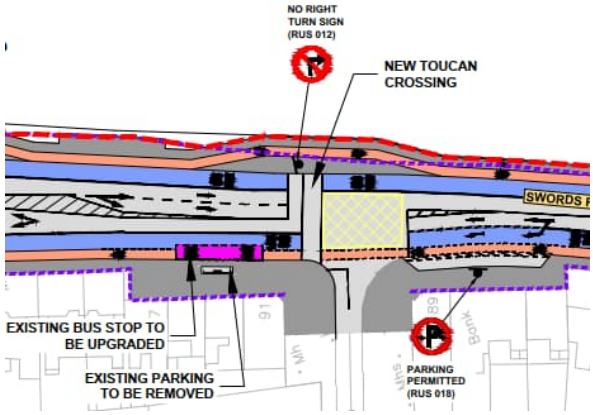
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

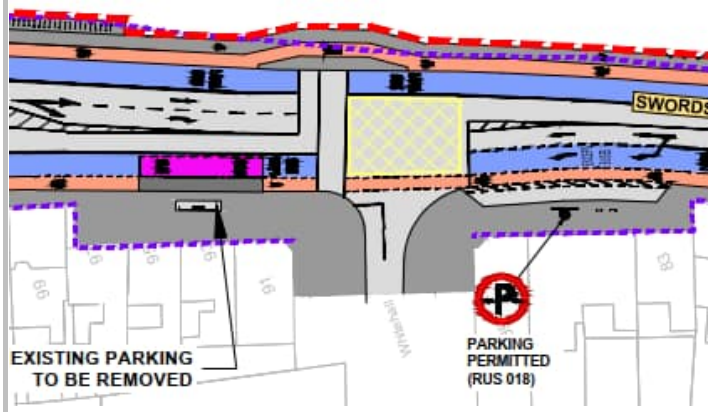
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

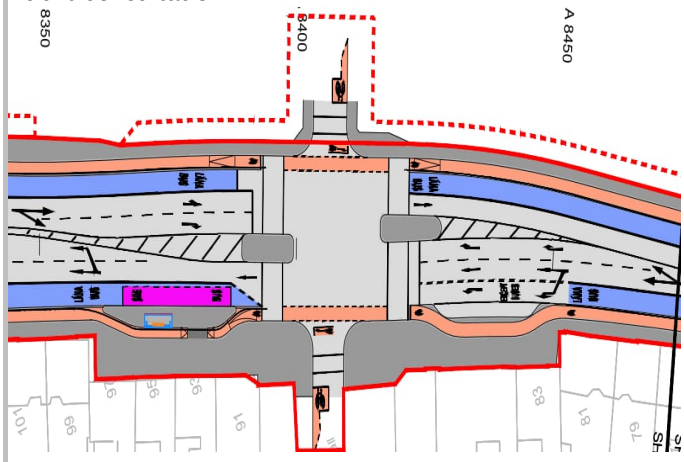
Concept Design Drawing



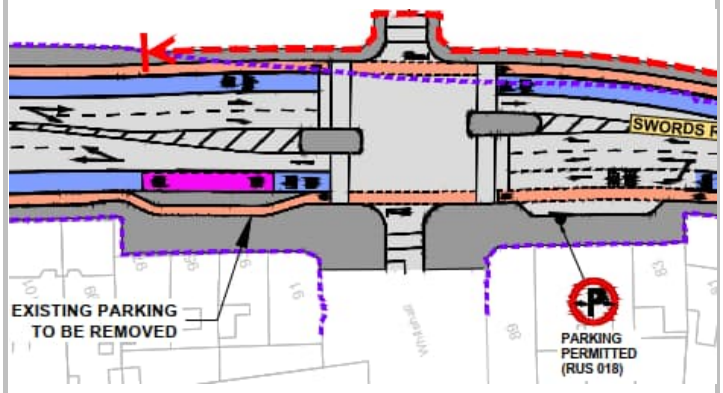
Emerging Preferred Route



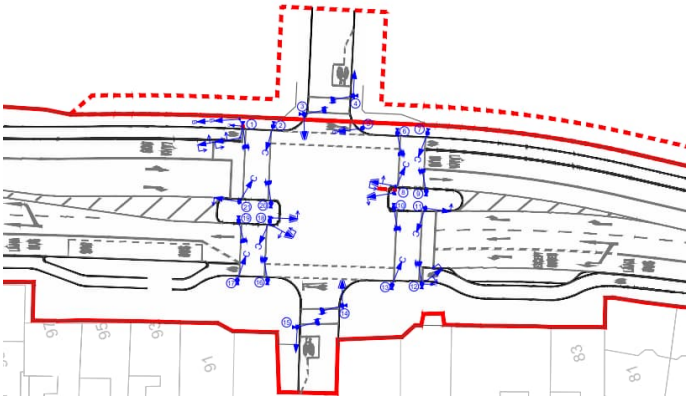
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

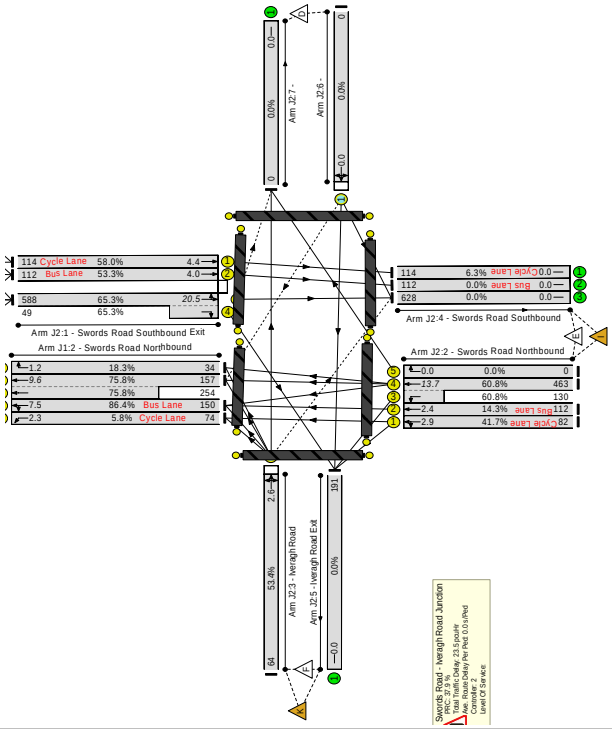
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.1%
PM Peak Hour: 12.2%

Junction Delay:
AM Peak Hour: 48.0 pcu/Hr
PM Peak Hour: 23.9 pcu/Hr

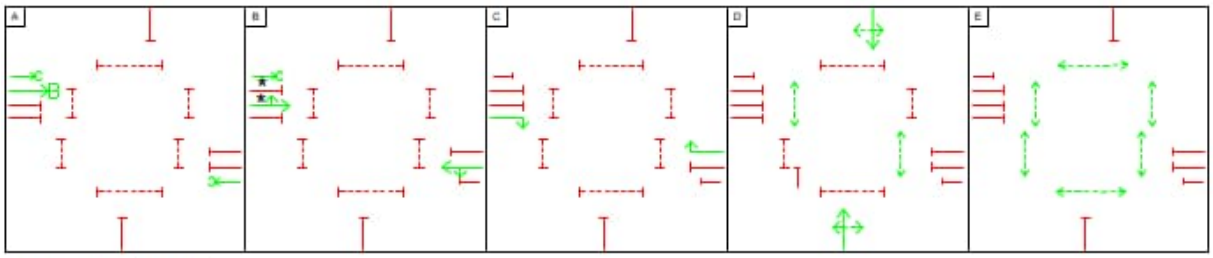
Network Layout Diagram



People Movement Assessment

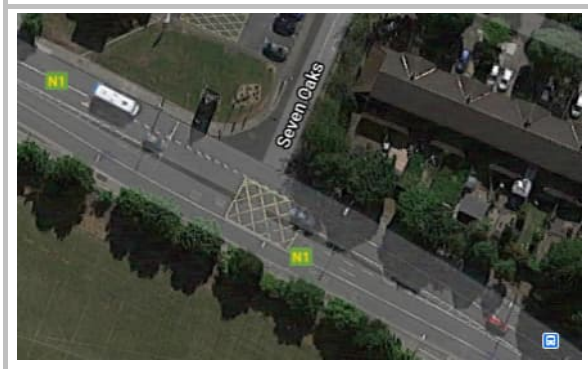
Junction		
Mode	People Movement	Mode Share
Car	2,759	9%
Bus	26,040	81%
Walk	2,765	9%
Cycle	485	2%
Total	32,049	100%

INDICATIVE METHOD OF CONTROL

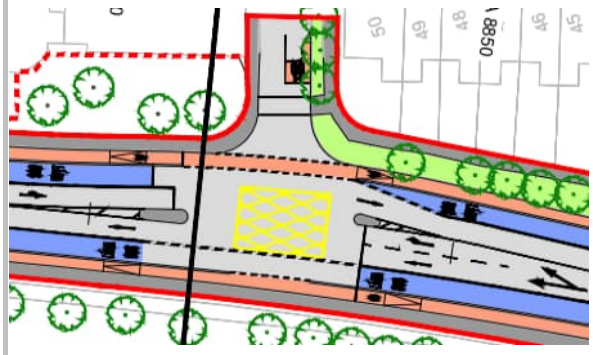


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Swords Road / Seven Oaks		

EXISTING



FINAL DESIGN



Summary:
The existing 3 arm junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to provide improved cycle and bus priority. Full policy outcomes for CBC route can be achieved by junction layout by giving priority to bus and cycles, and with improved facilities for pedestrians.

Pedestrian Infrastructure
•The existing dropped kerb crossing on Seven Oaks is to be upgraded to a signalised rcrossing, creating a safer crossing facility for pedestrian; and
•Dedicated pedestrian crossing stage provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Advanced Stop Line (ASL) is proposed on Seven Oaks for cyclists.

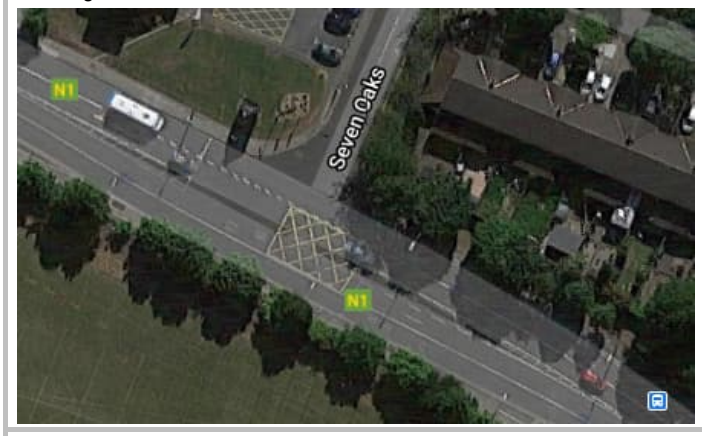
Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

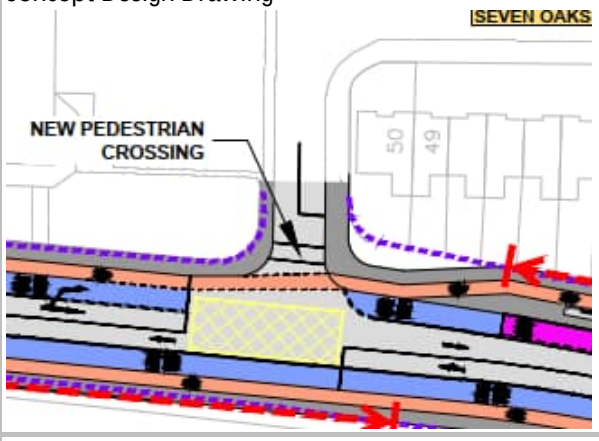
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

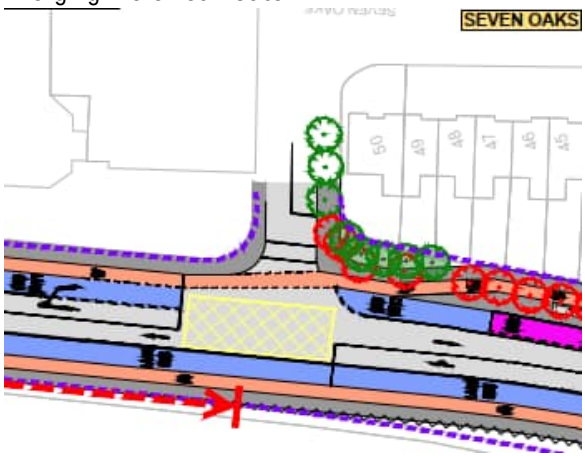
Existing



Concept Design Drawing

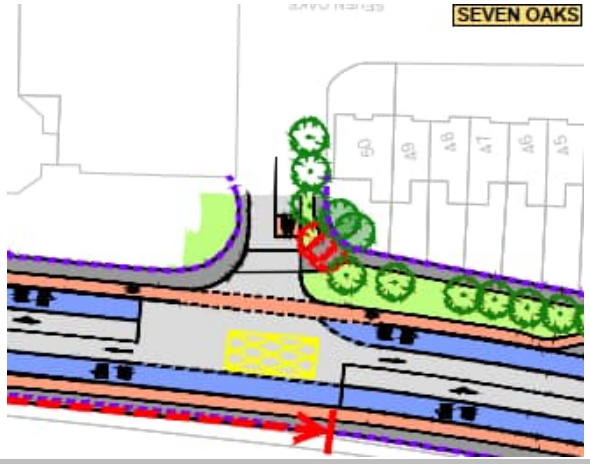


Emerging Preferred Route

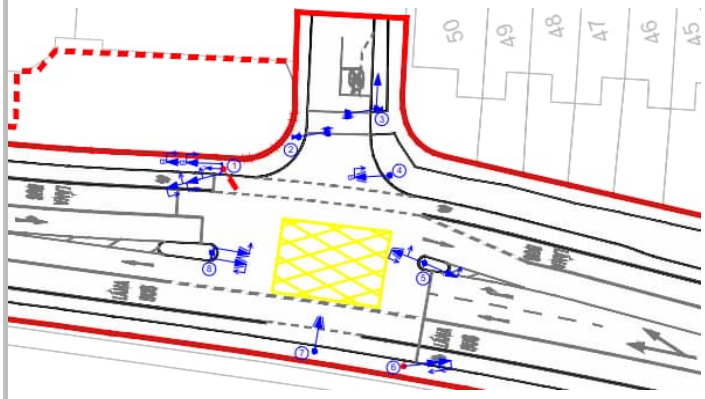


Public Consultation 2

Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

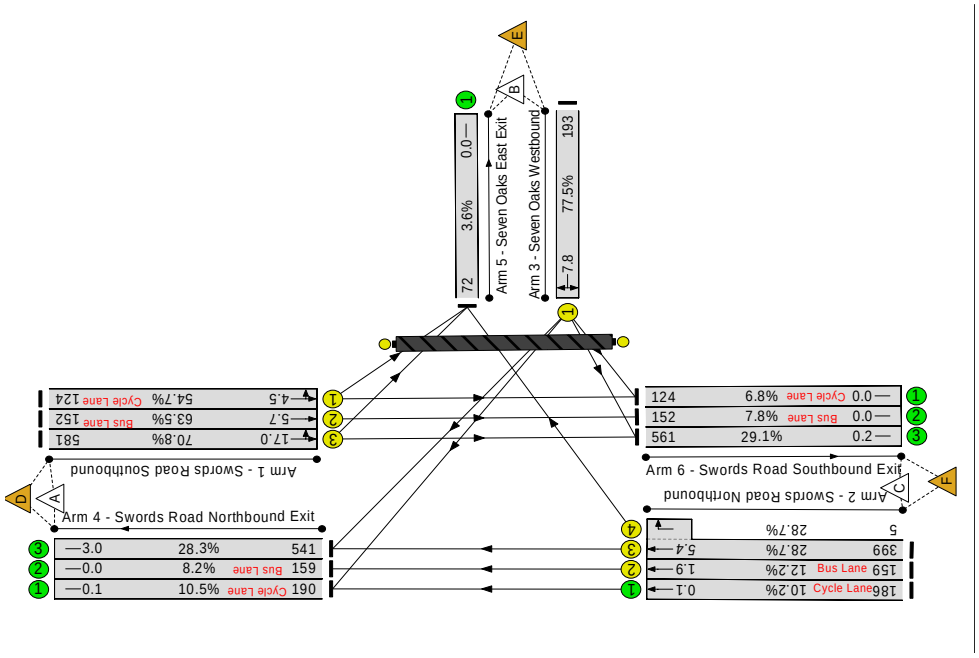
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 16.1%
PM Peak Hour: 8.5%

Junction Delay:
AM Peak Hour: 17.4 pcu/Hr
PM Peak Hour: 19.6 pcu/Hr

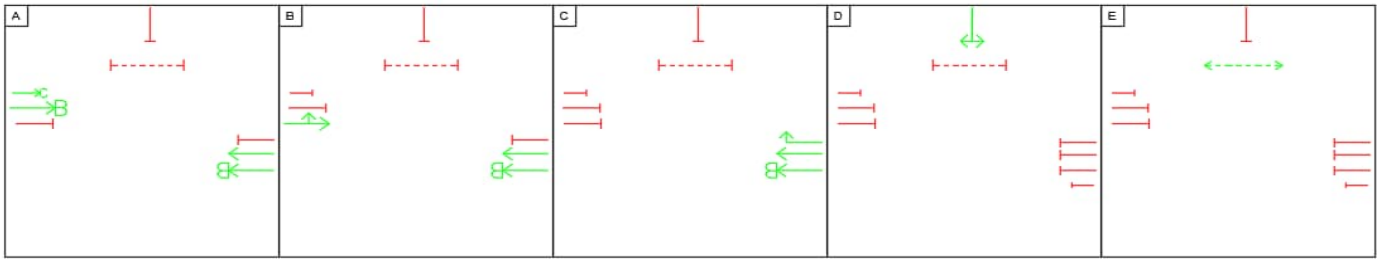
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,970	7%
Bus	40,635	90%
Walk	691	2%
Cycle	850	2%
Total	45,146	100%

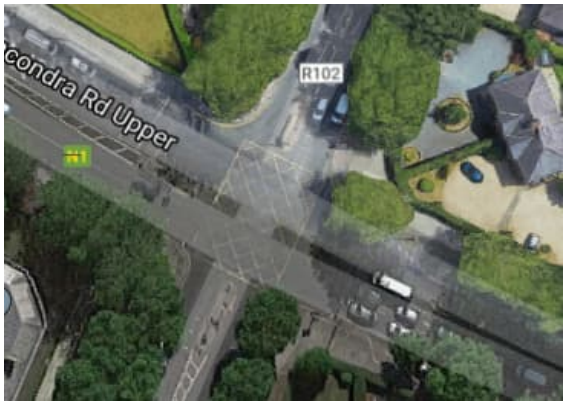
INDICATIVE METHOD OF CONTROL



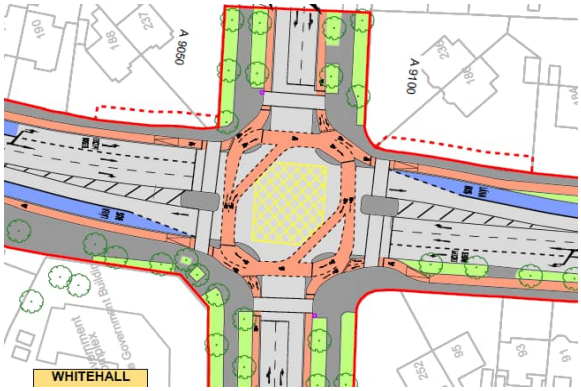
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Drumcondra Road / Griffith Avenue

EXISTING



FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce pedestrian crossing facilities on all arms of the junction, provide protected cycle infrastructure and crossing facilities.

Pedestrian Infrastructure

CBC:

•Existing staggered crossing on the CBC north arm is reconfigured into a straight crossing with 4m central island;

•A new straight crossing with 4m central island is proposed on the CBC south arm.

Side Roads:

• Existing staggered crossing with islands on Griffith Avenue west and east arms are proposed to be reconfigured into straight crossings.

Dedicated 'wrap around' pedestrian and cycle crossing phase provided.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC, with protected facilities to enable cyclists to travel through the junction safely;

•Proposed right-turn cycle facility to cater for cyclists crossing two arms of the junction; and

• Dedicated early cycle phase to enable cyclists to advance before general traffic.

Side Roads:

• Improved entry and exit cycle lanes proposed on both Griffith Avenue arms of the junction to assist cyclists.

Bus Priority Infrastructure

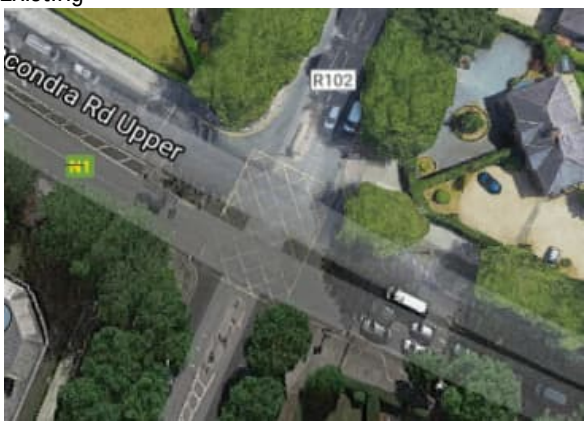
Junction Type 3 is proposed on both CBC mainline arms where the nearside lane is shared by buses and left turn general traffic.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

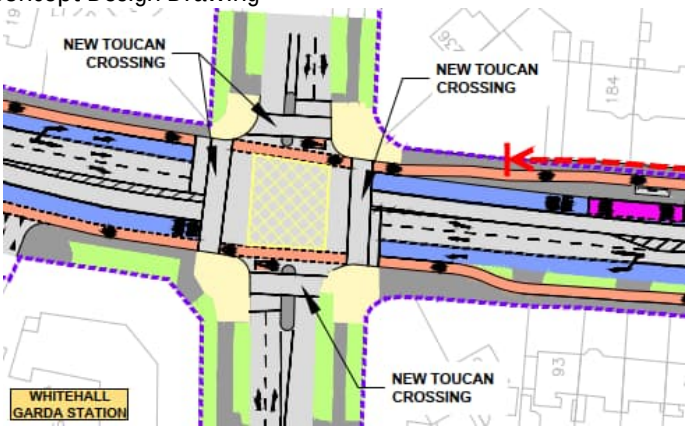
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

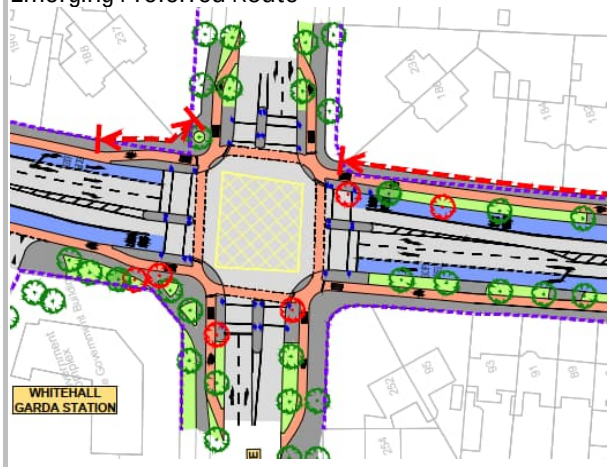
Existing



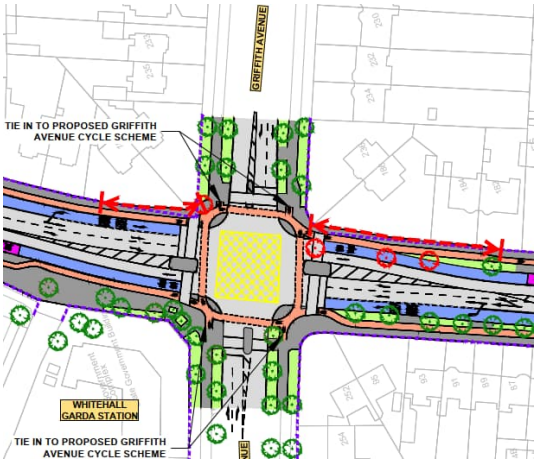
Concept Design Drawing



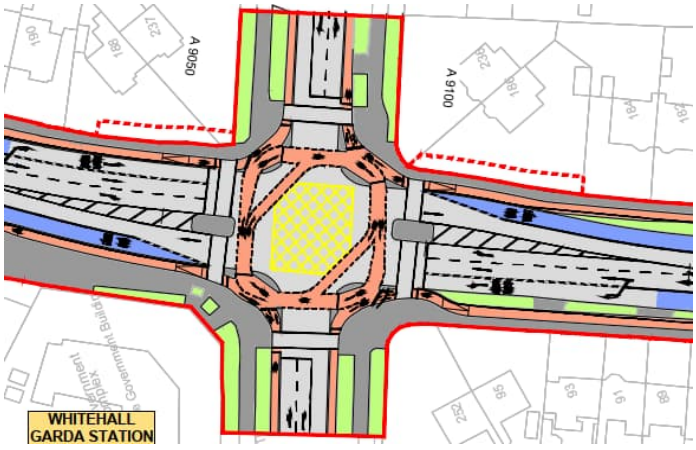
Emerging Preferred Route



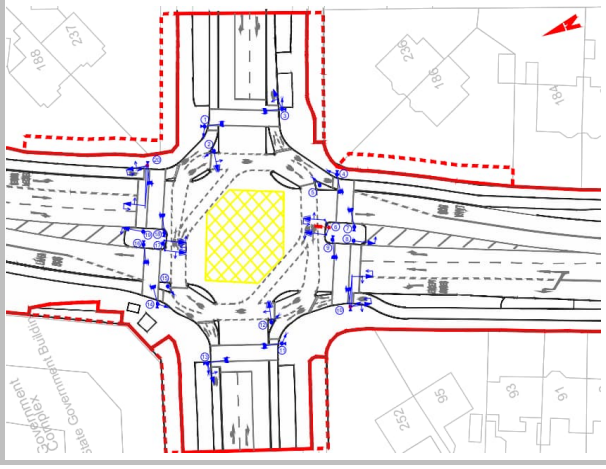
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

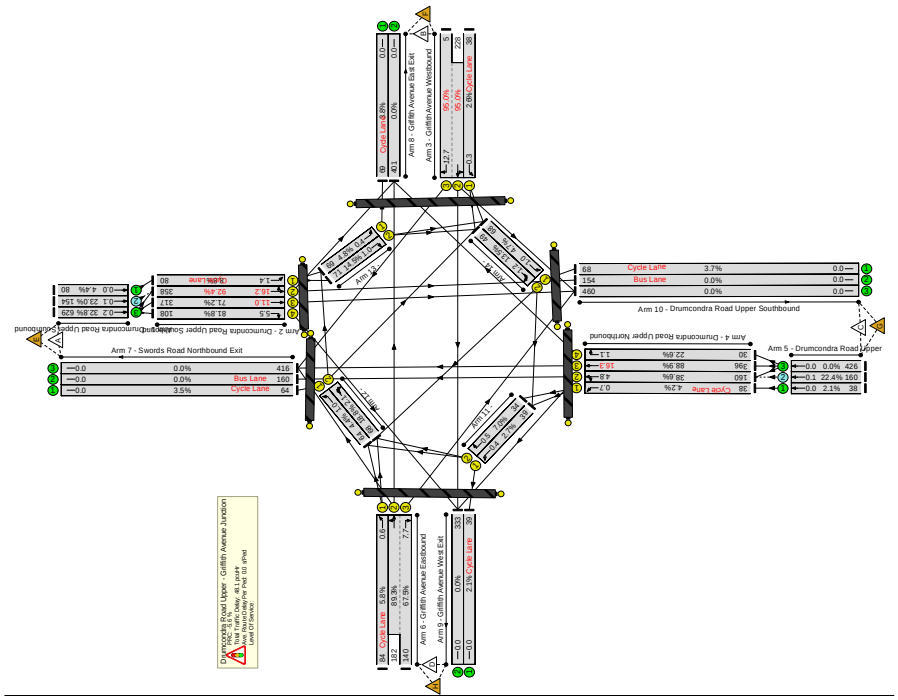
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -5.6%
PM Peak Hour: -7.0%

Junction Delay:
AM Peak Hour: 48.4 pcu/Hr
PM Peak Hour: 46.6 pcu/Hr

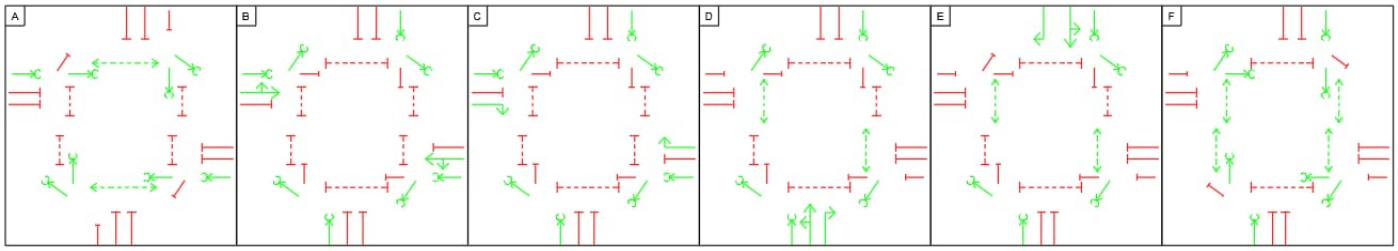
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,766	19%
Bus	8,111	57%
Walk	2,765	19%
Cycle	669	5%
Total	14,311	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Drumcondra Road / Home Farm Road

EXISTING

FINAL DESIGN

Summary:
The existing 3 arm junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to provide improved cycle and bus priority. Full policy outcomes for CBC route can be achieved by junction layout by giving priority to bus and cycles, and with improved facilities for pedestrians.

Pedestrian Infrastructure
•The existing pedestrian crossing on the northern approach will be upgraded to become a toucan crossing.
•A new toucan crossing is proposed on the southern approach of the junction to improved crossing opportunities to pedestrians.
•A new ramped signal controlled pedestrian crossing provision is proposed for the Home Farm Road side road.

Dedicated pedestrian crossing phase provided.

Cycle Infrastructure
CBC:
•Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely;
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
•Proposed toucan crossings on the CBC mainline approaches; and
•A cycle lane is provided on the Home Farm Road side road where cyclists will proceed right along with the general as the existing right-turn ban remains in place.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

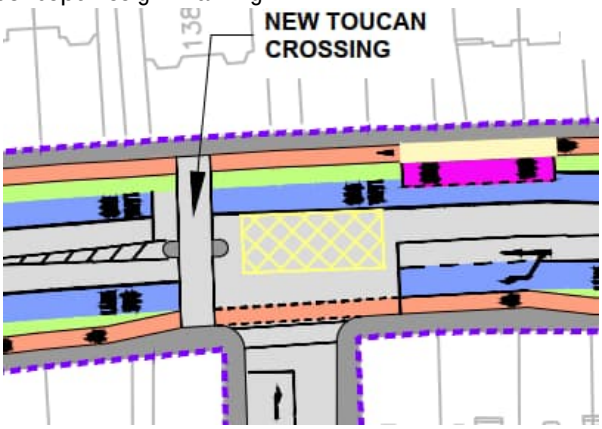
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

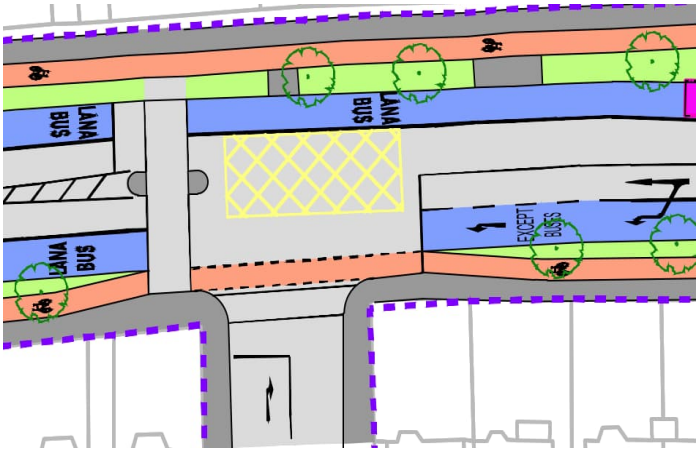
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

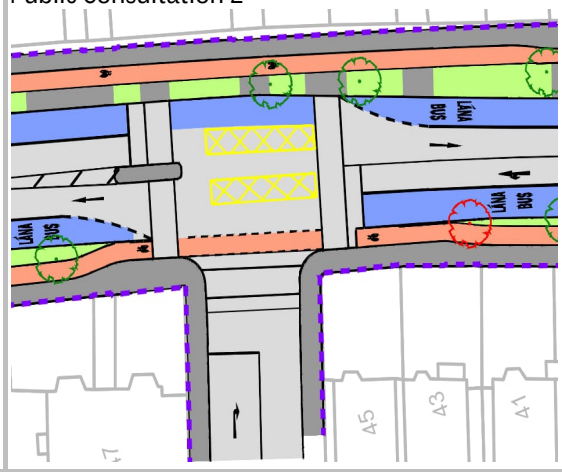
Concept Design Drawing



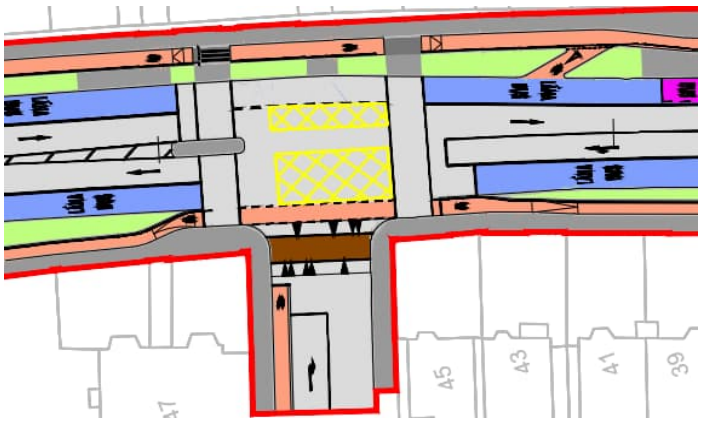
Emerging Preferred Route



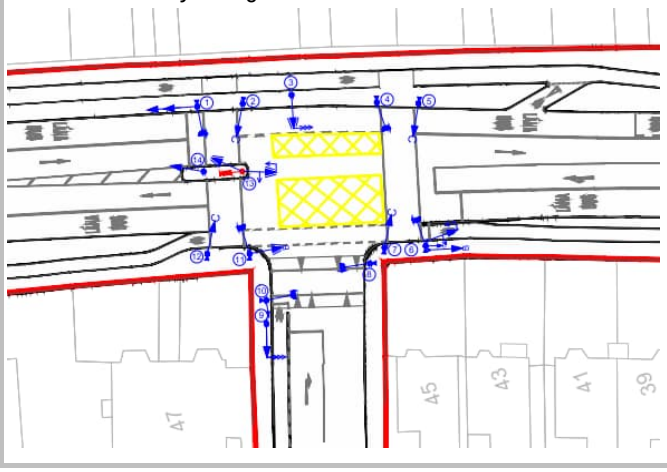
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

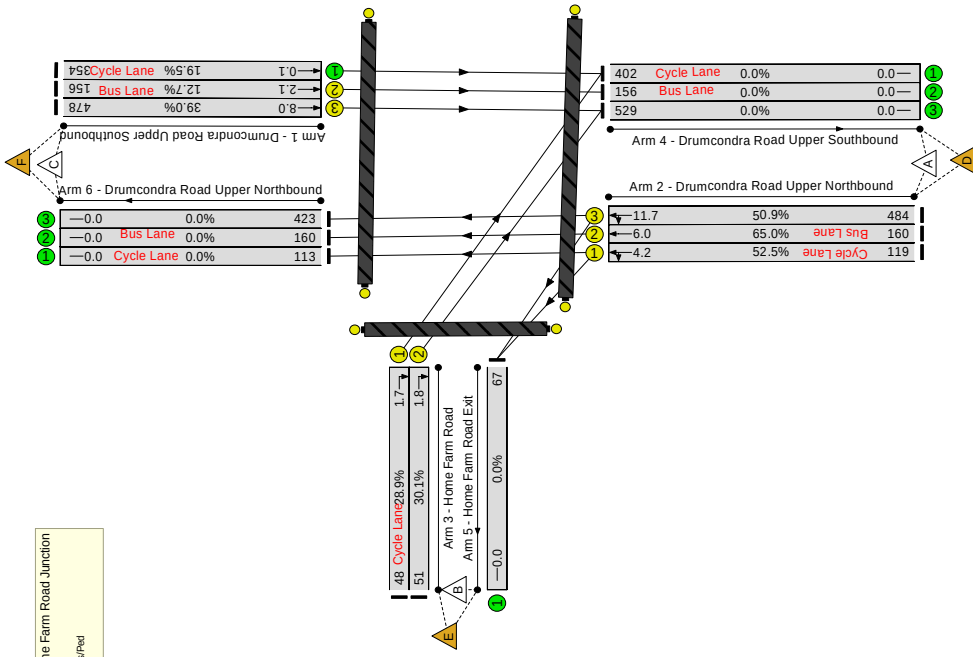
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 38.4%
PM Peak Hour: 17.8%

Junction Delay:
AM Peak Hour: 12.9 pcu/Hr
PM Peak Hour: 15.9 pcu/Hr

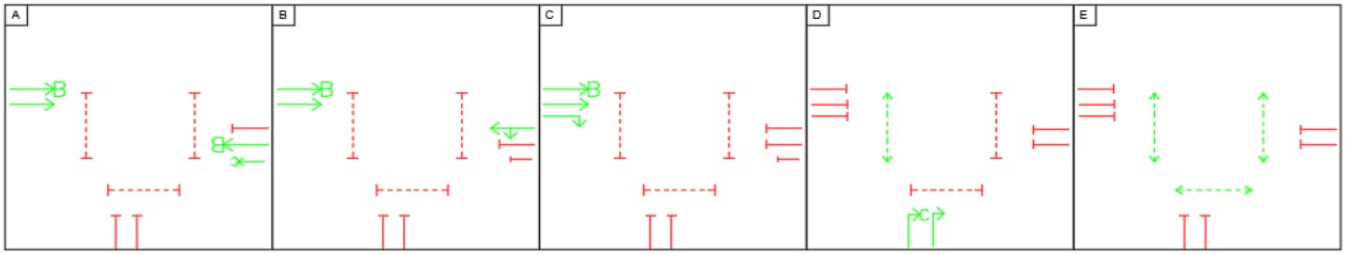
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,815	6%
Bus	38,719	86%
Walk	2,074	5%
Cycle	1,429	3%
Total	45,037	100%

INDICATIVE METHOD OF CONTROL

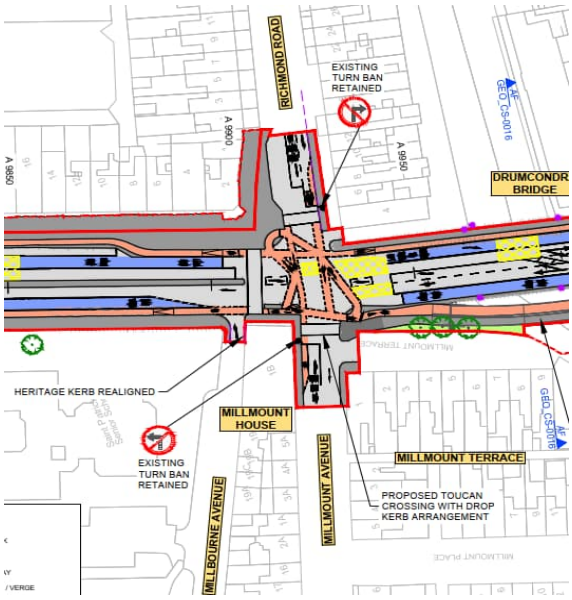


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Drumcondra Road Upper / Drumcondra Road Lower / Richmond Road / Millmount Avenue

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction and slip road is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved pedestrian crossing facilities. Full policy outcomes for CBC route can be achieved by junction layout.

Pedestrian Infrastructure
CBC:
•The existing pedestrian crossing on the northern approach will be upgraded to a straight crossing by removing the central island to provide enhanced pedestrian crossing opportunities.
•No pedestrian crossing facilities is proposed on the southern approach.
Side Roads:
•A new toucan crossing is proposed on the Millmount Avenue approach of the junction.
• The existing signalised pedestrian crossing on the Richmond Road approach is to be retained.

Dedicated pedestrian crossing phase provided for the side road, whilst the CBC mainline crossing operates as 'walk-with' traffic phase.

Cycle Infrastructure
CBC:
•The southbound cycle track have been improved and taken through the junction with protected approaches;
•Northbound cyclists will utilise the proposed cycle track over the Tolka River. A dedicated right-turn cycle lane is provided for cyclists turning right from the CBC south arm to Richmond Road;
•Internal cycle lanes to guide cycle movements through the junction; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
•Advanced Stop Line (ASL) is proposed on the Richmond Road approach.
•Cyclists travelling south from Millmount Avenue will require to cross the mainline to a southbound cycle waiting area on the north side of Richmond Road.

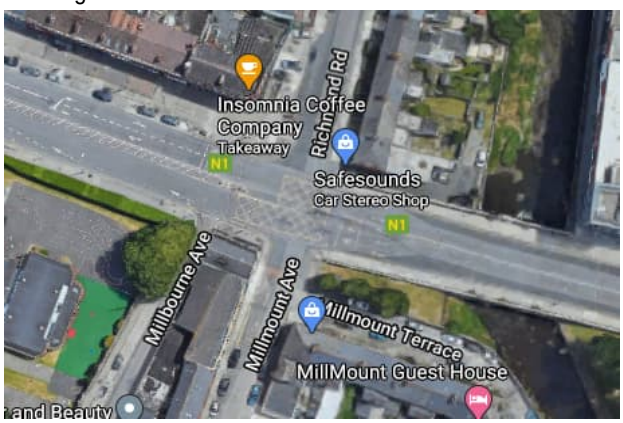
Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

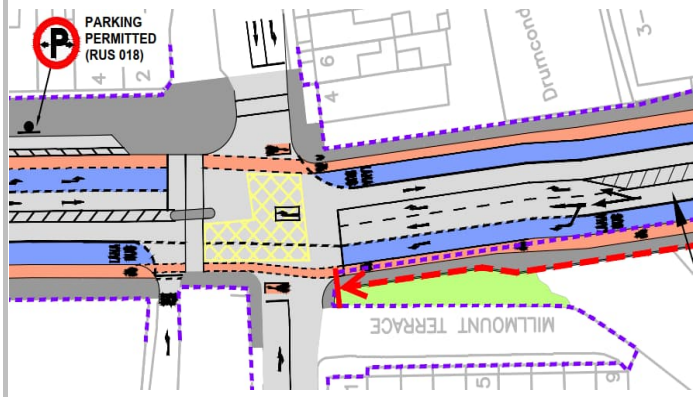
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

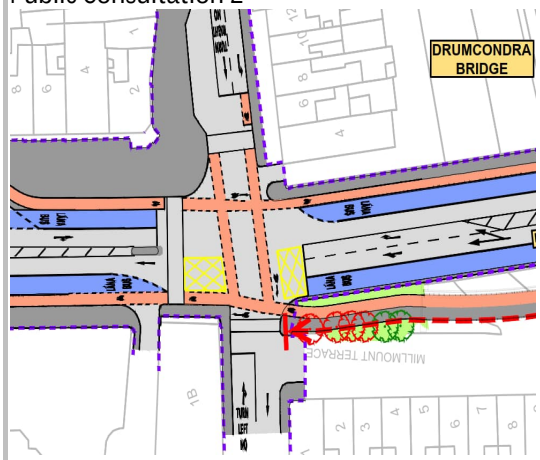


Concept Design Drawing

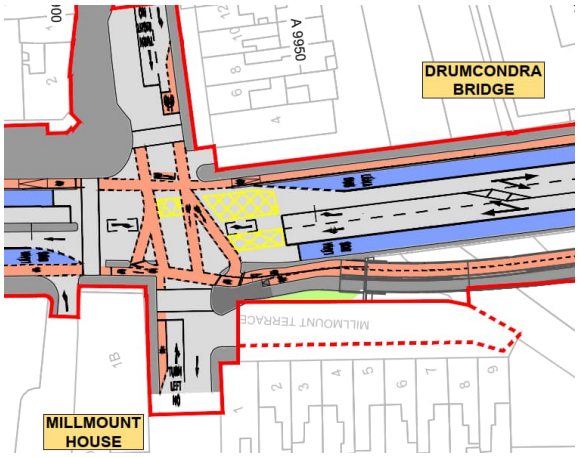


Emerging Preferred Route

Public Consultation 2



Public Consultation 3



Final Preliminary Design

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

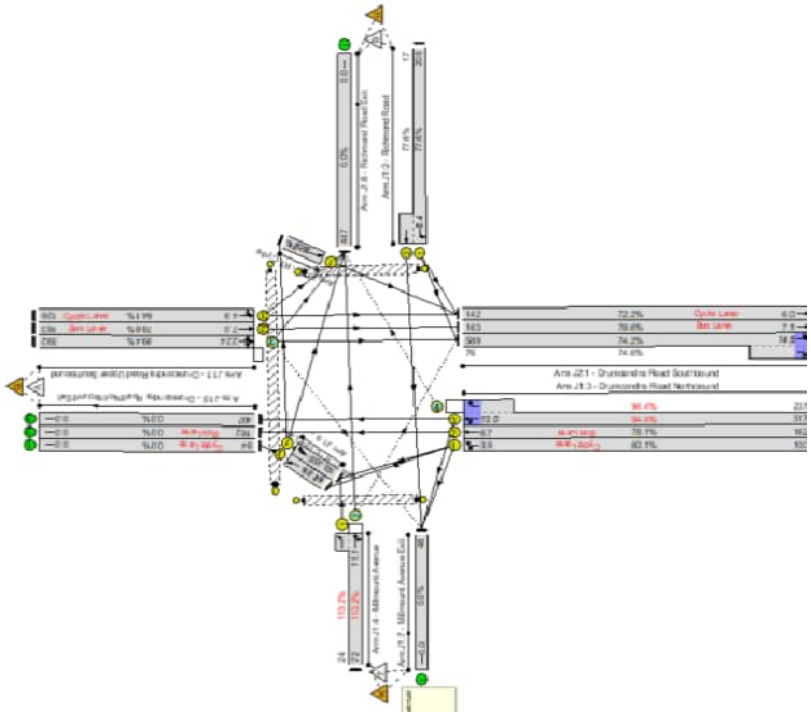
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -25.8%
PM Peak Hour: -18.3%

Junction Delay:
AM Peak Hour: 44.7 pcu/Hr
PM Peak Hour: 68.1pcu/Hr

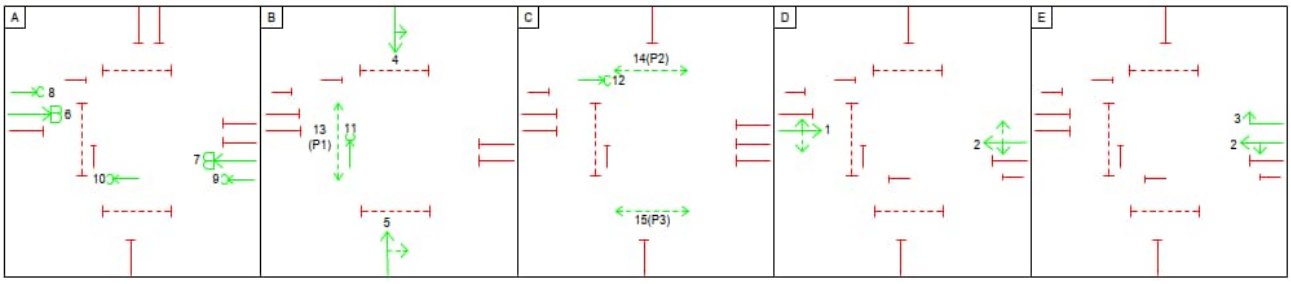
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,176	13%
Bus	10,868	66%
Walk	2,765	17%
Cycle	716	4%
Total	16,525	100%

INDICATIVE METHOD OF CONTROL

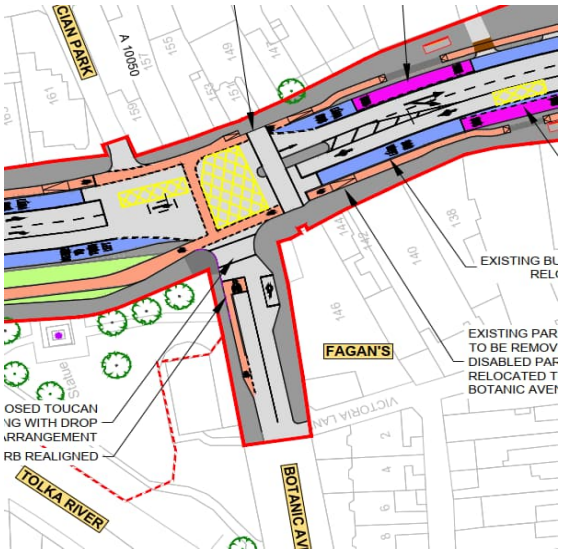


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Drumcondra Road Lower / Botanic Avenue / Cian Park

EXISTING

FINAL DESIGN



Summary:
The existing signalised 4 arm junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure.
The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved pedestrian crossing facilities. Full policy outcomes for CBC route can be achieved by junction layout.

Pedestrian Infrastructure
CBC:
•The existing straight pedestrian crossing on the CBC south arm will be retained and upgraded to a toucan crossing.
•No pedestrian crossing is proposed on the CBC north arm.
Side Roads:
•Existing dropped kerb crossing on Botanic Avenue will be upgraded to a toucan crossing, improving pedestrian and cyclist crossing opportunities.
•The existing pedestrian crossing at the Cian Park approach will remain unsignalised due to the short crossing distance and low traffic volumes on the approach.

Dedicated pedestrian crossing phase provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Advanced Stop Line (ASL) is proposed on Botanic Avenue for cyclists; and
• No cycle facilities are proposed for the Cian Park arm.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

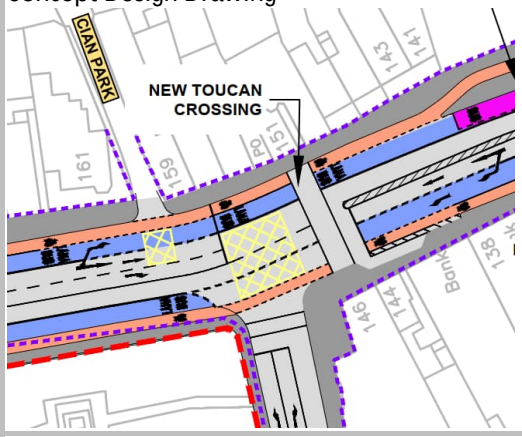
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

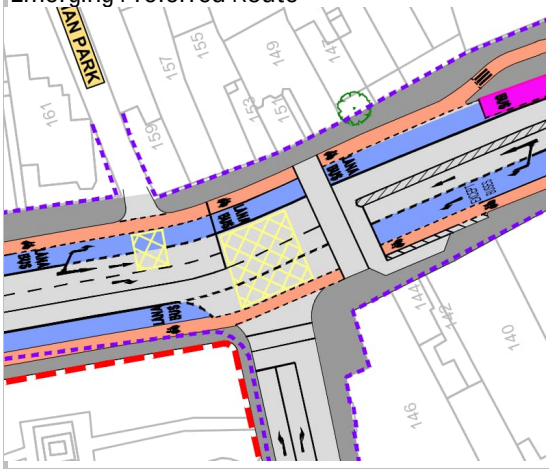
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

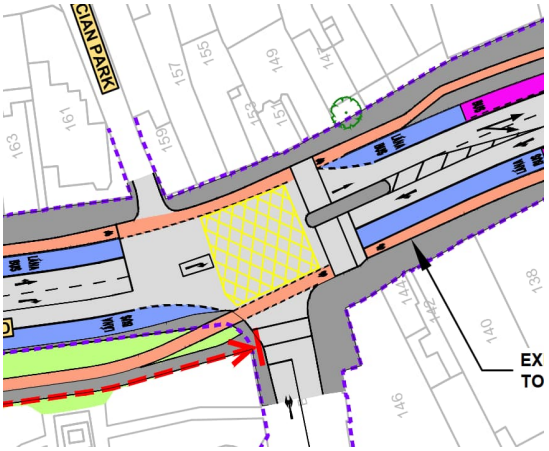
Concept Design Drawing



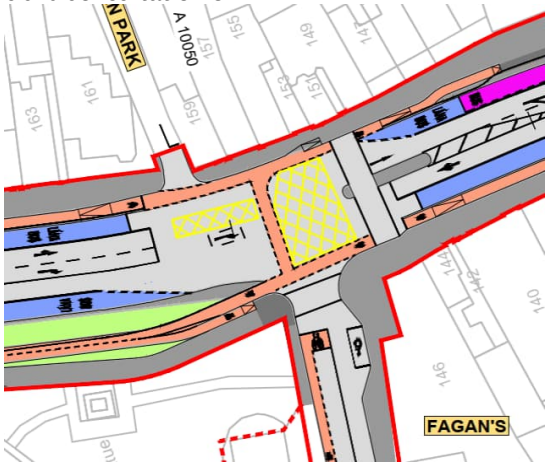
Emerging Preferred Route



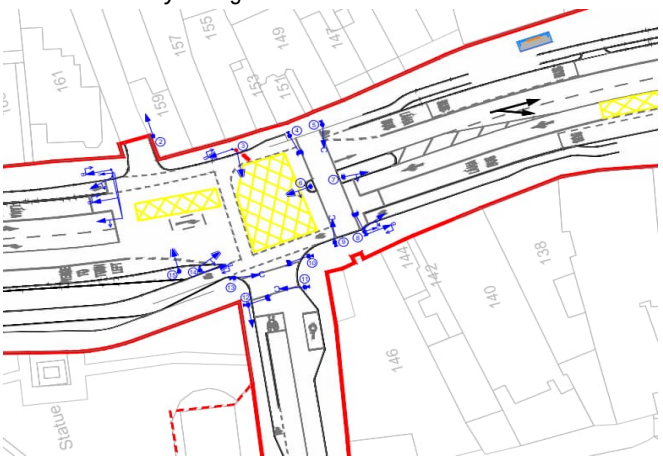
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

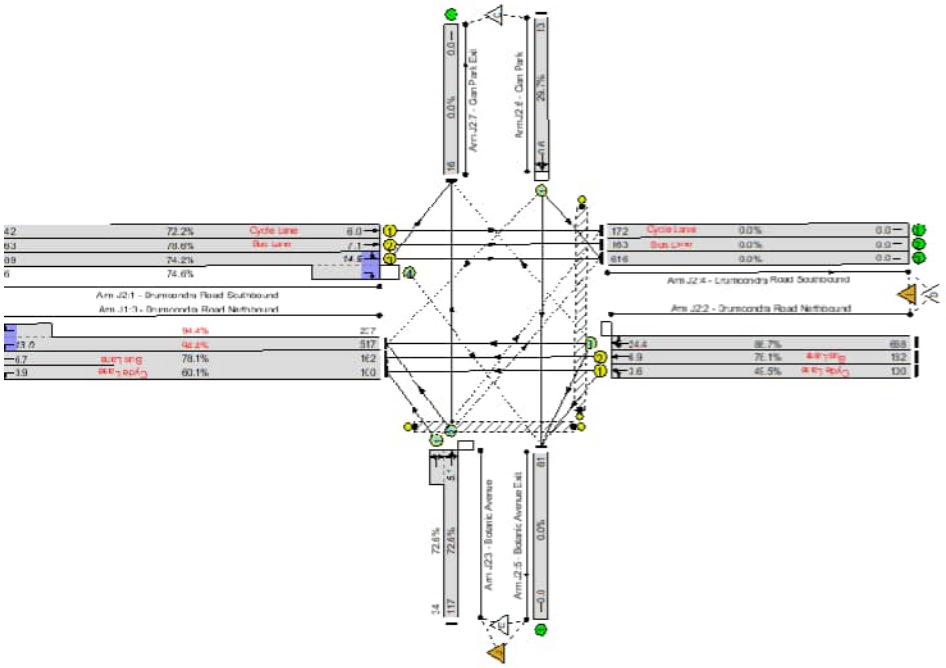
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 1.5%
PM Peak Hour: 5.3%

Junction Delay:
AM Peak Hour: 36.6 pcu/Hr
PM Peak Hour: 34.4pcu/Hr

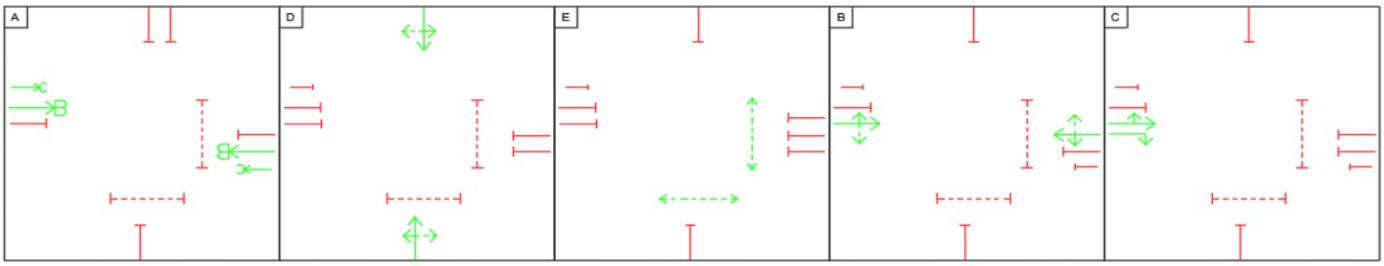
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,226	15%
Bus	10,868	72%
Walk	1,382	9%
Cycle	690	5%
Total	15,166	100%

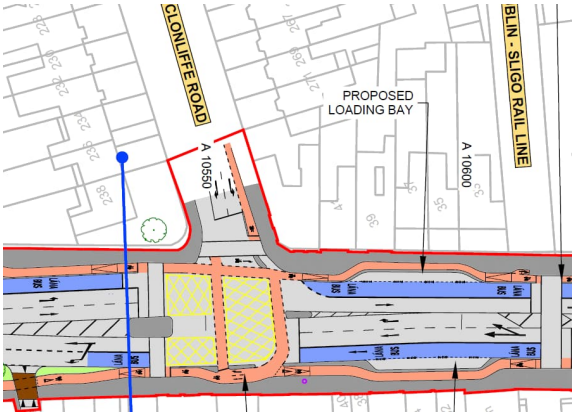
INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Drumcondra Road Lower / Clonliffe Road		

EXISTING

FINAL DESIGN



Summary:
The existing 3 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure

CBC:

•Existing staggered crossing on the CBC north arm is proposed to be reconfigured into a straight crossing with 4m central island;

•No pedestrian crossing facilities is proposed on the CBC south arm. However, a new mid-block toucan crossing is proposed 50 meters south of the junction, which will improve pedestrian connectivity to Drumcondra Rail Station.

Side Roads:

•The existing straight pedestrian crossing on Clonliffe Road will be retained. Crossing length and facilities will be improved.

Dedicated crossing phases have been provided on Clonliffe Road junction and the mid-block toucan crossing to the south of the junction.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and

• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.

Side Roads:

• Advanced Stop Line (ASL) with kerb protection is proposed on Clonliffe Road; and

• Dedicated cycle phase for cyclists travelling east from the CBC south arm and west from Clonliffe Road have been provided.

Bus Priority Infrastructure

Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

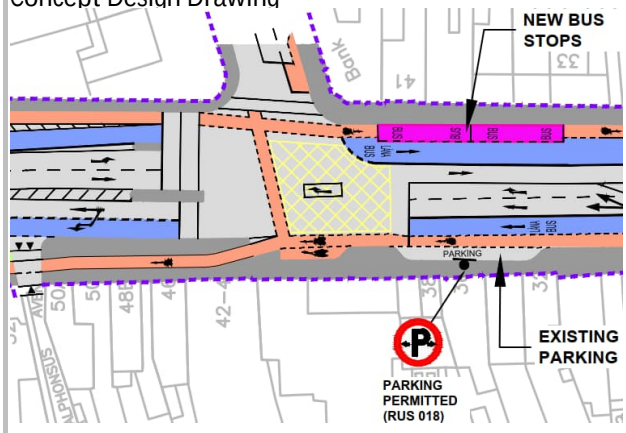
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

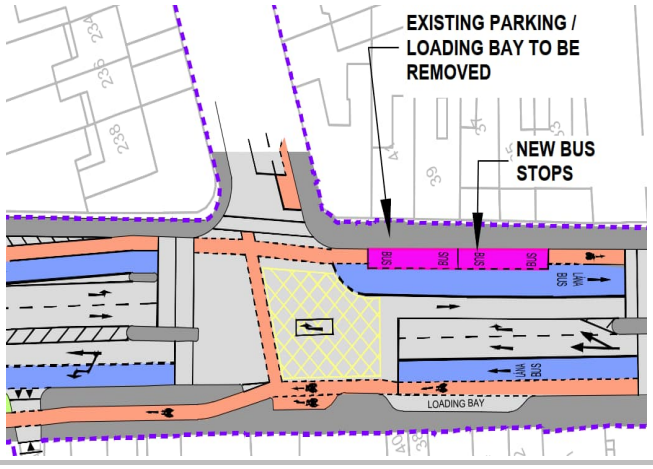
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

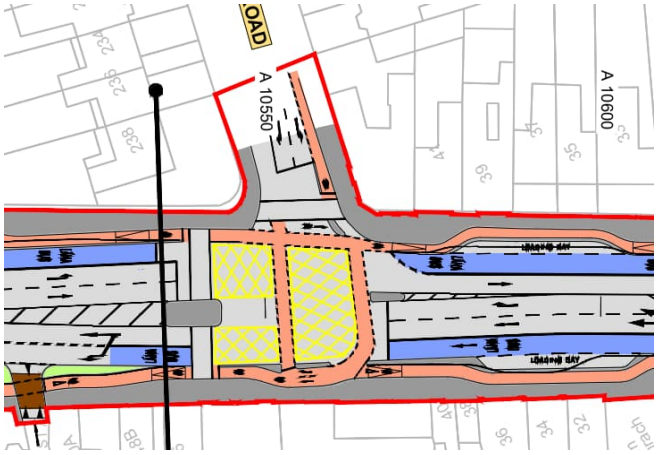
Concept Design Drawing



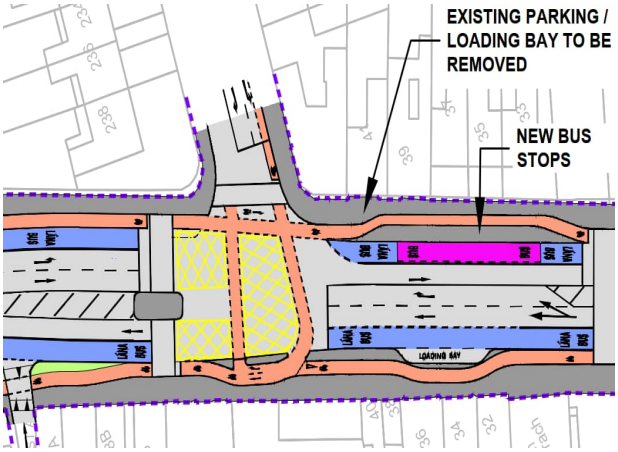
Emerging Preferred Route



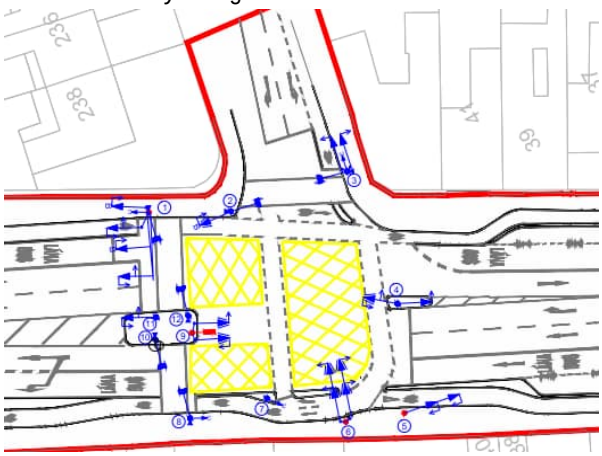
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

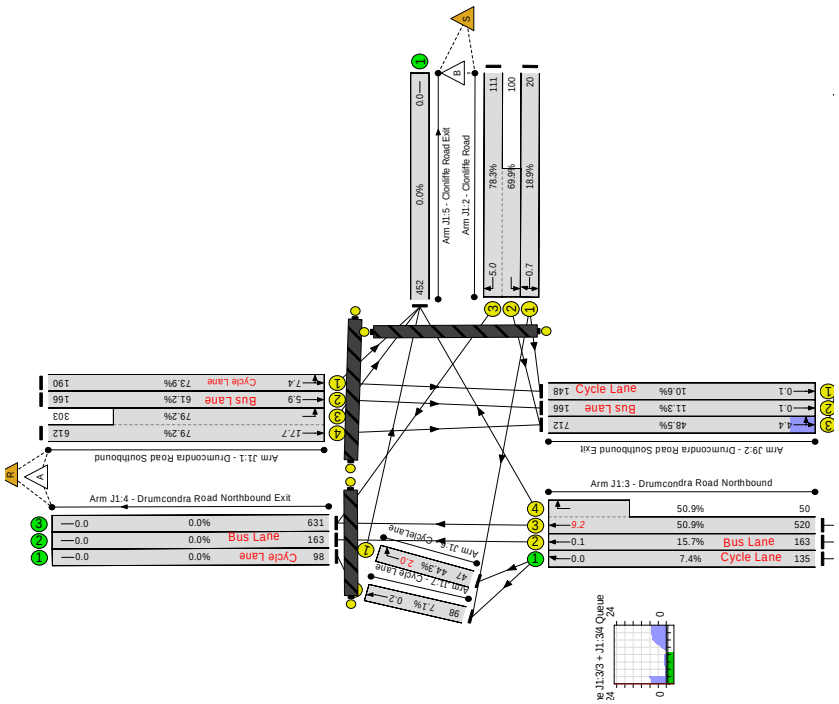
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 13.7%
PM Peak Hour: 21.1%

Junction Delay:
AM Peak Hour: 26.9 pcu/Hr
PM Peak Hour: 22.7 pcu/Hr

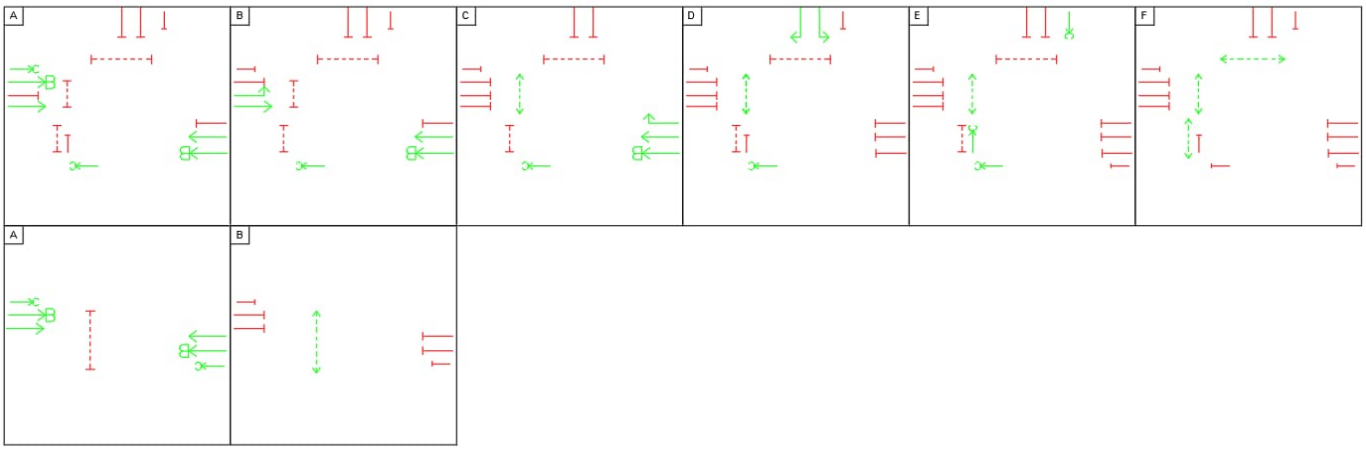
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	3,073	8%
Bus	34,335	86%
Walk	1,843	5%
Cycle	888	2%
Total	40,139	100%

INDICATIVE METHOD OF CONTROL



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2
Junction	Drumcondra Road Lower / Dorset Street Lower / Withworth Road / Whitworth Place		

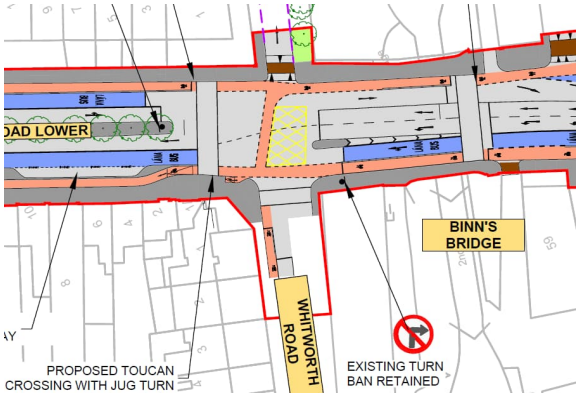
EXISTING

Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure
CBC:
•Existing staggered pedestrian crossing on the CBC north arm is proposed to be reconfigured into a straight toucan crossing;
•No pedestrian crossing facilities is proposed on the CBC south arm. However, a new mid-block toucan crossing is proposed 30 meters south of the junction, which will improve pedestrian crossing opportunities on south of the junction and also connectivity to Royal Canal Way.
Side Roads:
•The existing signalised straight crossing on the Whitworth Road arm of the junction is to be retained. However, the crossing will be realigned to reduce the crossing width.
•The existing ramped level pedestrian crossing on Withworth Place will remain unsignalised due to the short crossing width and low traffic volumes existing junction in to Withworth Place.

Dedicated crossing phases have been provided on Withworth Road junction and the mid-block toucan crossing to the south of the junction.

FINAL DESIGN



Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Advanced Stop Line (ASL) is proposed on Withworth Road; and
• Dedicated cycle phase for cyclists travelling east from the CBC south arm and west from Clonliffe Road have been provided; and
•4 seconds early release phase for cylists is proposed on Withworth Road arm.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

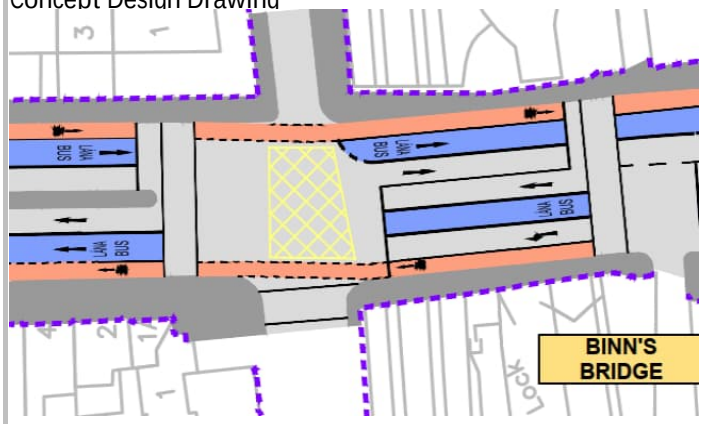
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

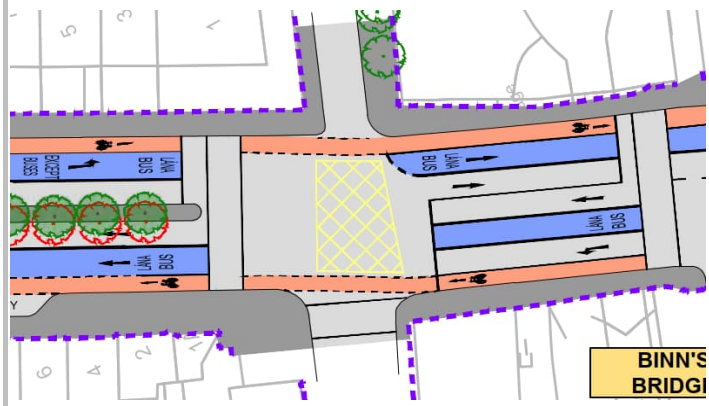
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

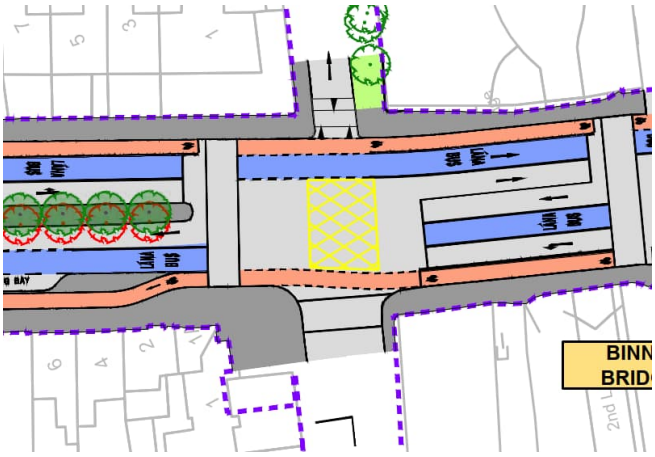
Concept Design Drawing



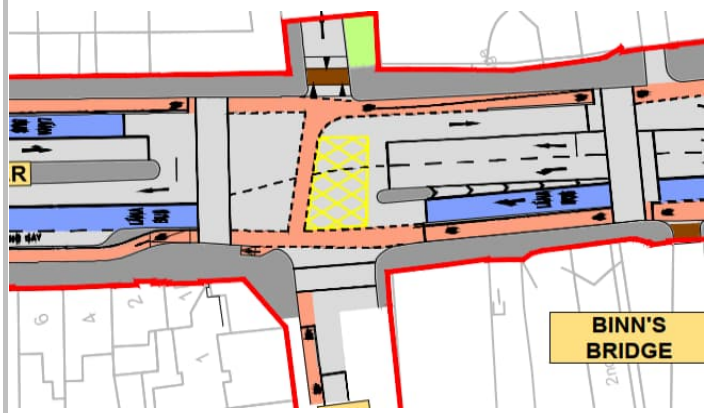
Emerging Preferred Route



Public Consultation 2



Public Consultation 3



Final Preliminary Design

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

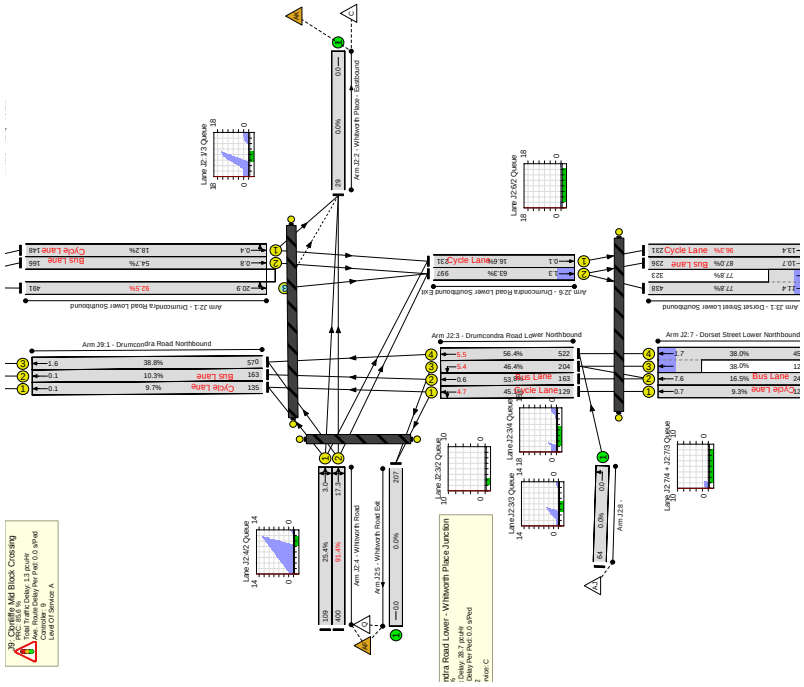
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -2.8%
PM Peak Hour: -7.7%

Junction Delay:
AM Peak Hour: 28.7 pcu/Hr
PM Peak Hour: 27.1 pcu/Hr

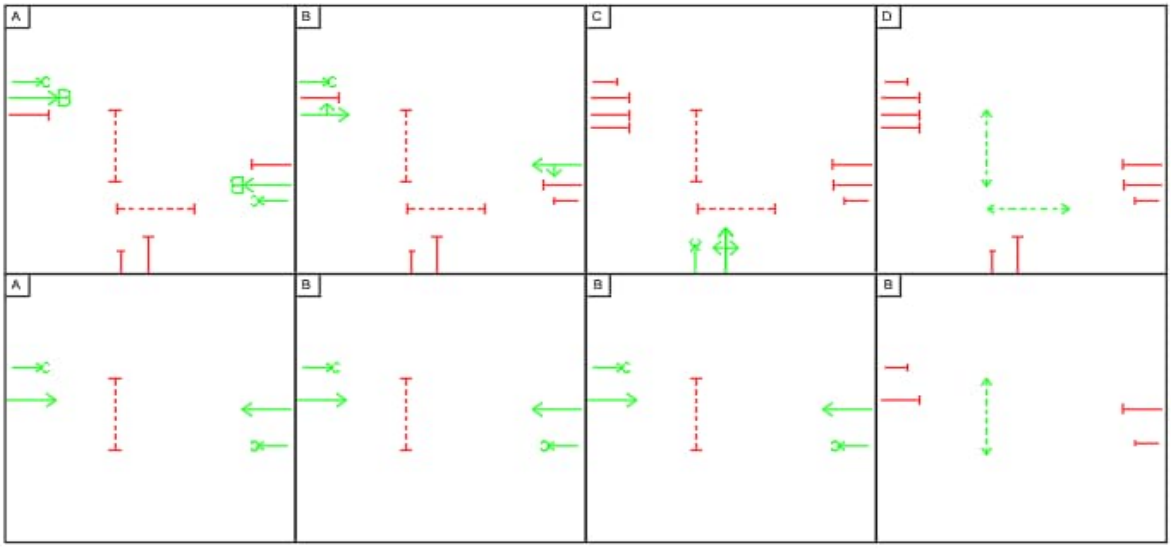
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,800	13%
Bus	15,908	73%
Walk	2,074	10%
Cycle	991	5%
Total	21,773	100%

INDICATIVE METHOD OF CONTROL

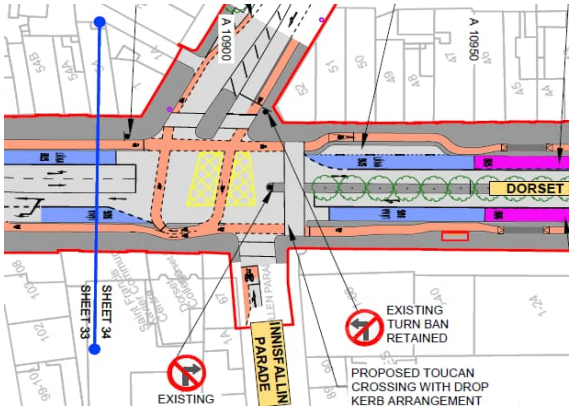


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Lower / Belvidere Road / Innisfallen Parade

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure

CBC:

•The existing pedestrian crossing on the CBC south arm will be upgraded to a toucan crossing;

•No pedestrian crossing facilities is proposed on the CBC north arm. Pedestrian have opportunity to use the mid-block toucan crossing north of the junction.

Side Roads:

•The existing straight pedestrian crossing on Belvidere Road crossing will be reconfigured to a two stage straight crossing with 4 meter central island.

•The existing ramped level pedestrian crossing on Innisfallan Parade arm will be upgraded to become a signalised crossing.

'Walk-with' pedestrian crossing phases have been provided.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and

• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.

Side Roads:

• A cycle track with dedicated cycle phase is proposed on Belvidere Road; and

• Advanced Stop Line (ASL) is proposed on Innisfallan Parade; and

• Dedicated cycle phase for cyclists travelling east from the CBC south arm and west from Belvidere Road have been provided.

Bus Priority Infrastructure

Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

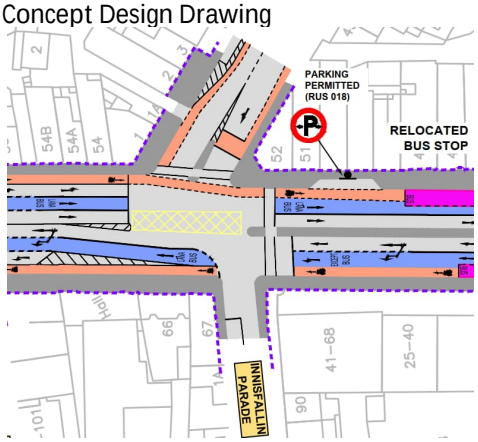
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

Design Evolution

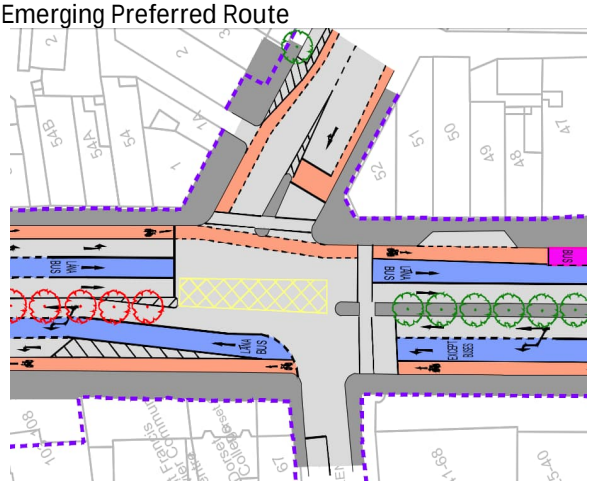
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

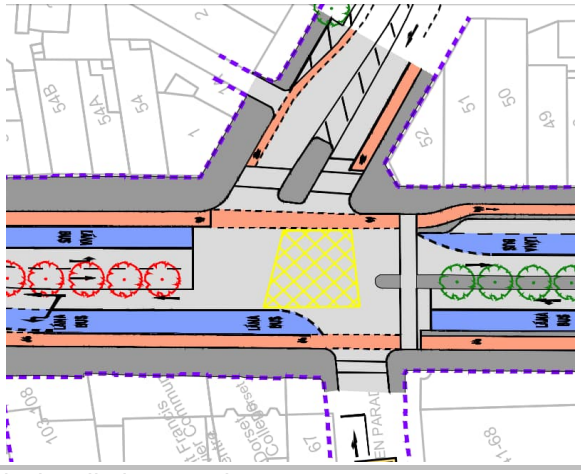
Concept Design Drawing



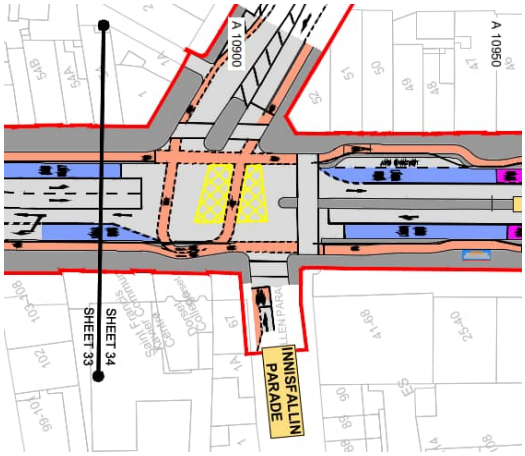
Emerging Preferred Route



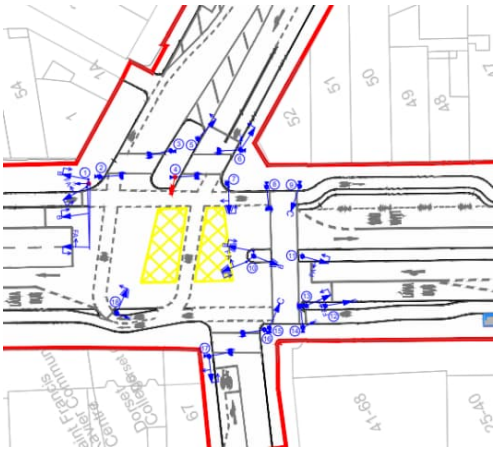
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Junction Ref	32110901.A.P3.TE.R2

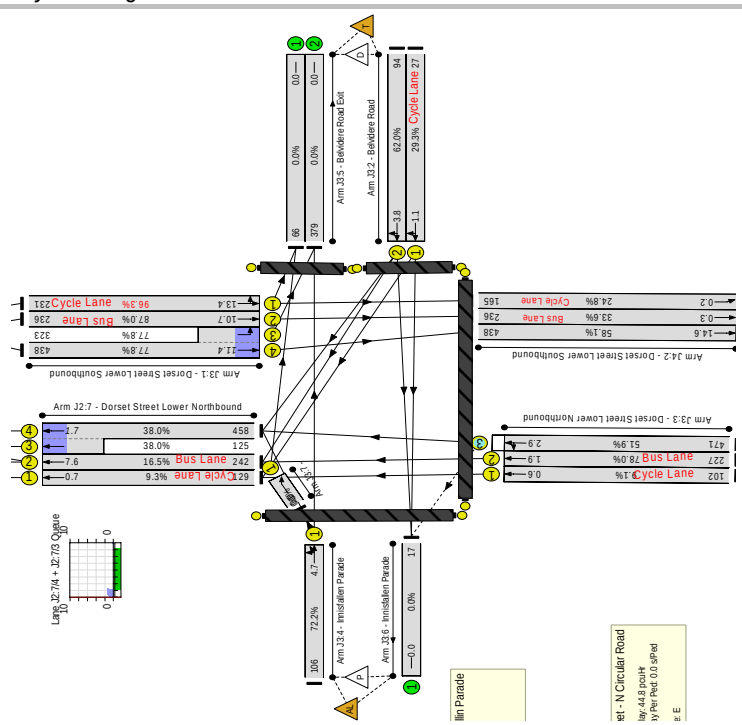
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -7.0%
PM Peak Hour: 6.2%

Junction Delay:
AM Peak Hour: 23.2 pcu/Hr
PM Peak Hour: 35.2 pcu/Hr

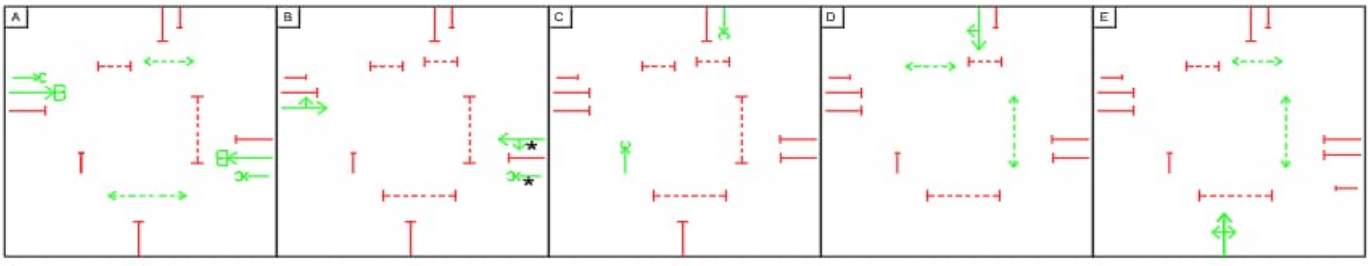
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,622	11%
Bus	15,908	66%
Walk	4,723	20%
Cycle	900	4%
Total	24,153	100%

INDICATIVE METHOD OF CONTROL



* DENOTES FLASHING AMBER

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Lower / North Circular Road

EXISTING

FINAL DESIGN

Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure

CBC:

•Existing staggered pedestrian crossing on the CBC north arm is proposed to be reconfigured into a straight pedestrian crossing;

•No pedestrian crossing facilities is proposed on the CBC south arm.

Side Roads:

•The existing signalised crossing on the both the North Circular Roads arms of the junction is to be retained.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely;

• A dedicated right-turn cycle lane facility is proposed to cater for cyclists crossing the junction from CBC south arm to North Circular Road east arm; and

• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.

Side Roads:

• Advance cycle lanes are proposed on both North Circular Road east and west arms; and

• Dedicated cycle phase for cyclists travelling east-west across the junction have been provided.

Bus Priority Infrastructure

Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

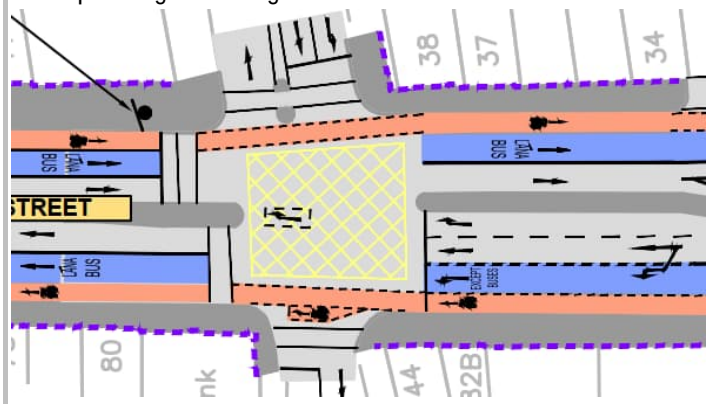
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Design Evolution

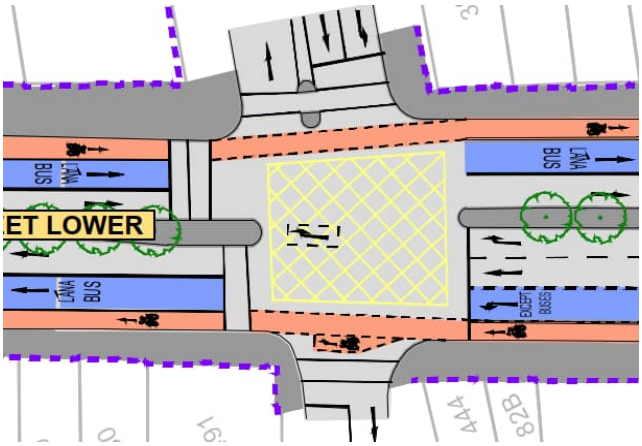
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

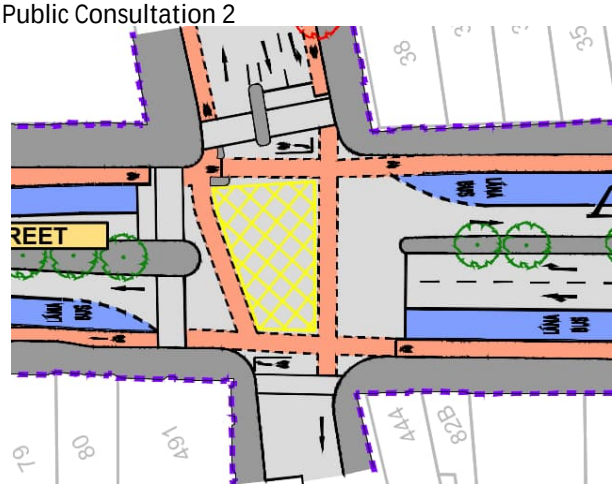
Concept Design Drawing



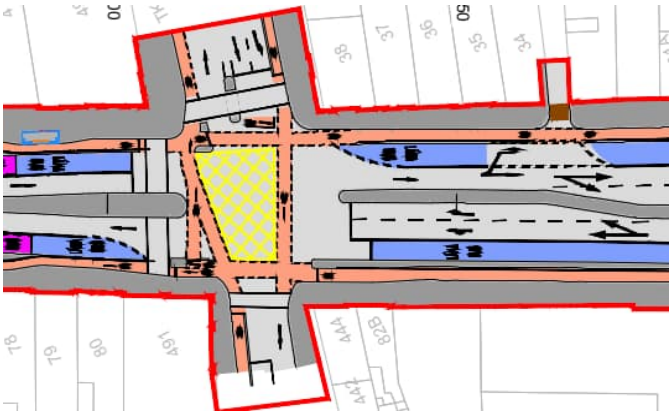
Emerging Preferred Route



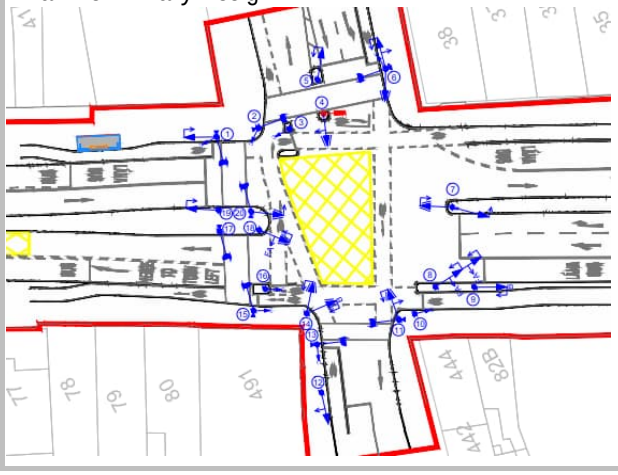
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

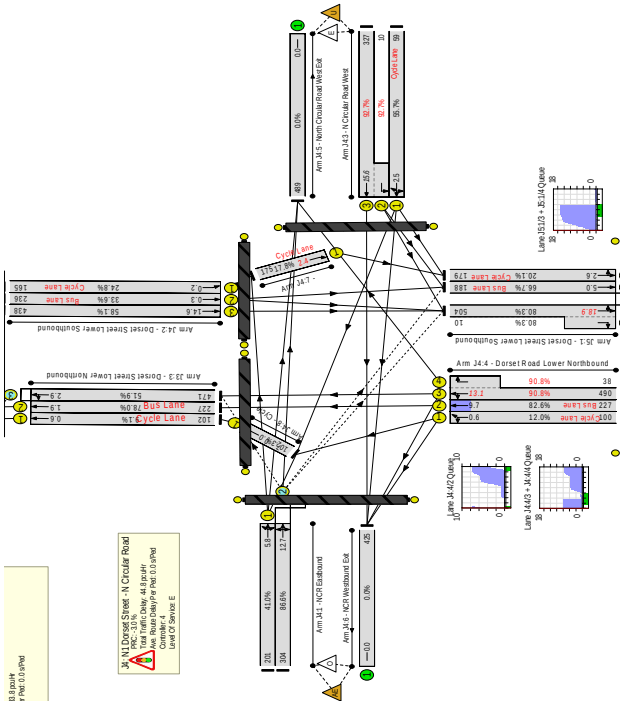
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -3.0%
PM Peak Hour: -5.2%

Junction Delay:
AM Peak Hour: 44.8 pcu/Hr
PM Peak Hour: 42.4 pcu/Hr

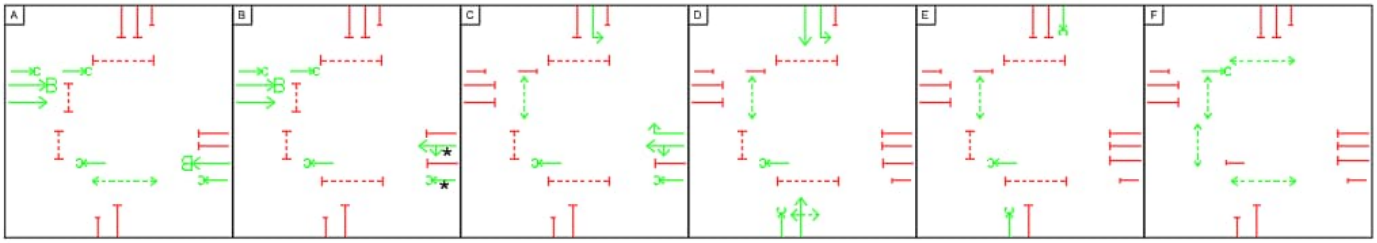
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,459	8%
Bus	25,646	83%
Walk	2,074	7%
Cycle	808	3%
Total	30,987	100%

INDICATIVE METHOD OF CONTROL



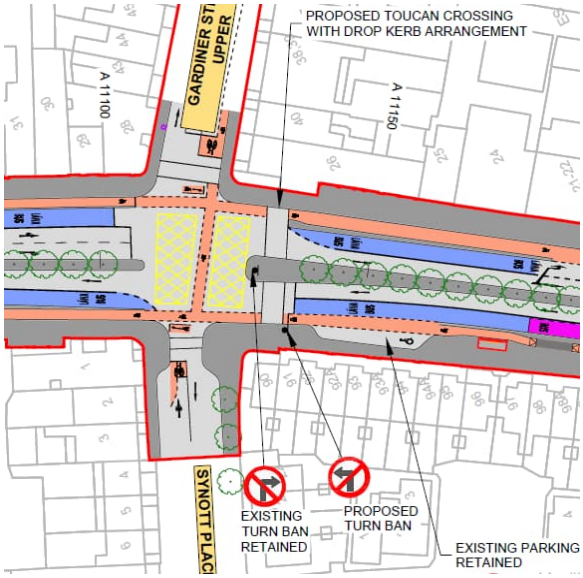
* DENOTES FLASHING AMBER

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Lower / Gardiner Street Upper / Synnott Place

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure

CBC:

•Existing staggered pedestrian crossing on the CBC south arm is proposed to be reconfigured into a straight crossing with a 4m central island and upgraded to a toucan crossing;

•No pedestrian crossing facilities is proposed on the CBC north arm.

Side Roads:

•The existing signalised pedestrian crossings on Gardiner Street Upper and Synnott Place arms is to be retained.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure

CBC:

• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and

• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.

Side Roads:

• Advanced Stop Line (ASL) is proposed on both Gardiner Street Upper and Synnott Place arms of the junction.

Bus Priority Infrastructure

Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

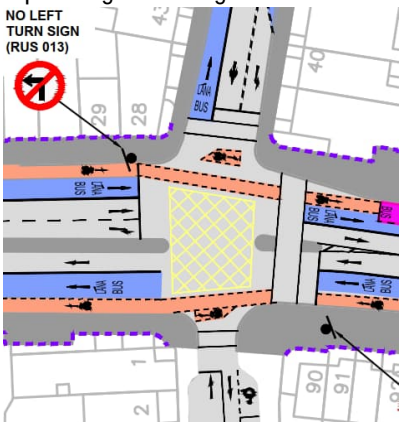
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Design Evolution

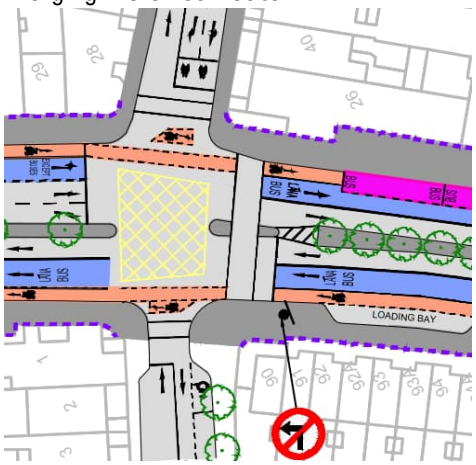
The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

Existing

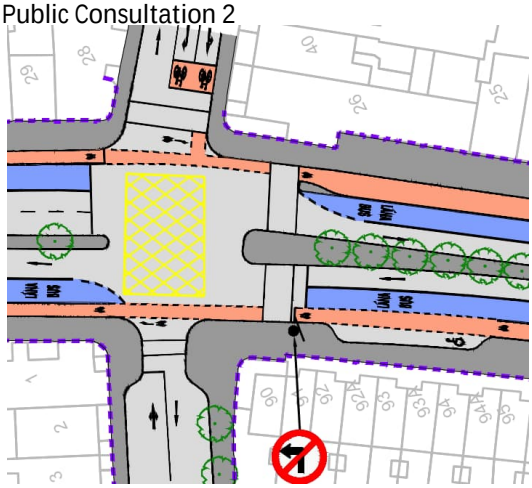
Concept Design Drawing



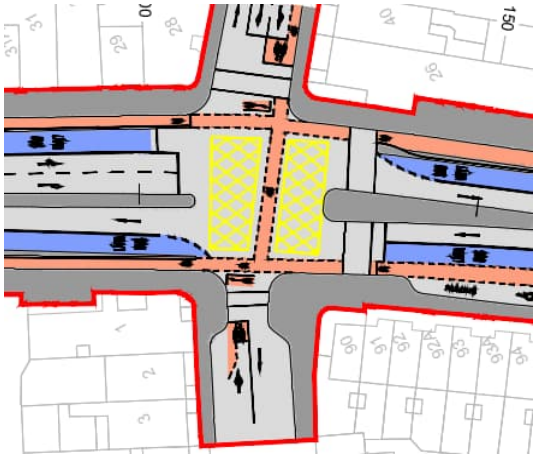
Emerging Preferred Route



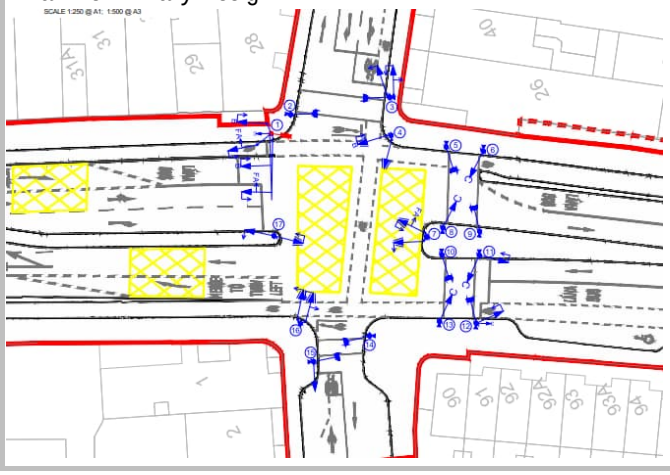
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

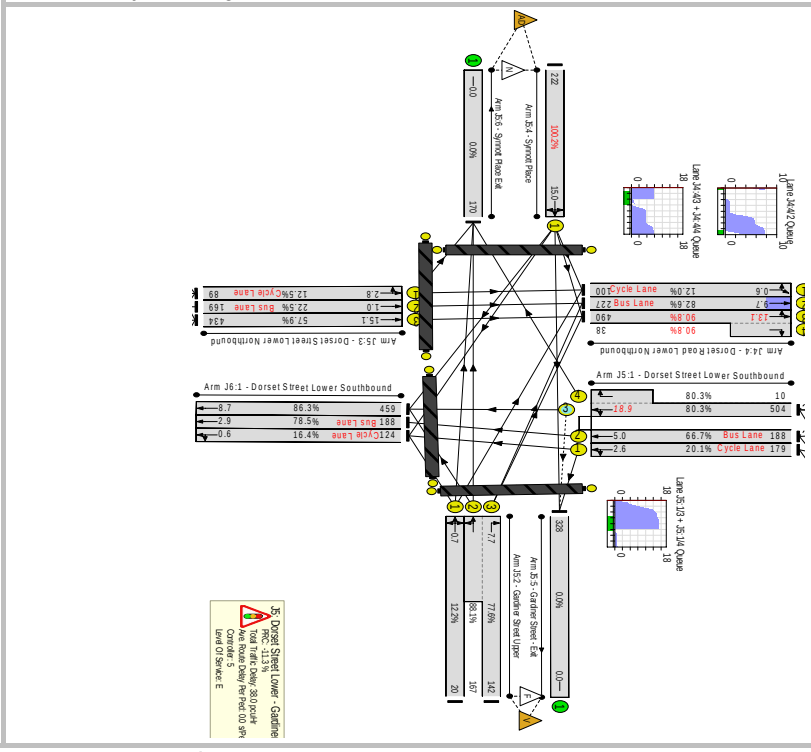
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -11.3%
PM Peak Hour: -0.4%

Junction Delay:
AM Peak Hour: 38.0 pcu/Hr
PM Peak Hour: 34.8 pcu/Hr

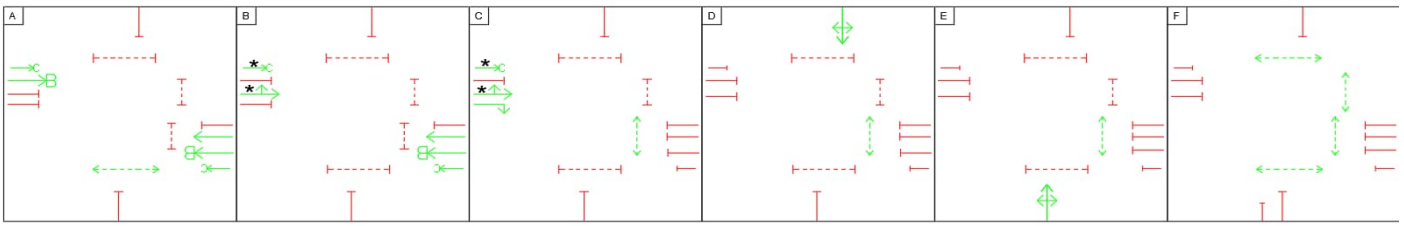
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	2,381	7%
Bus	27,090	84%
Walk	2,074	6%
Cycle	808	2%
Total	32,353	100%

INDICATIVE METHOD OF CONTROL



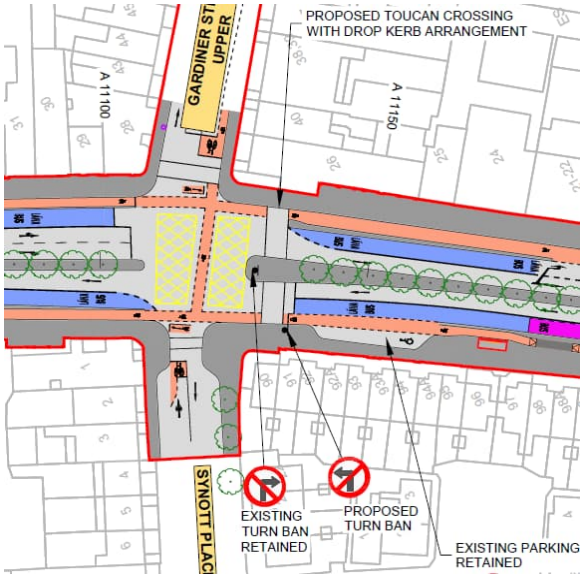
* DENOTES FLASHING AMBER

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Lower / Dorset Street Upper / Eccles Street / Hardwicke Place

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure
CBC:
•The existing pedestrian crossings on CBC north and south arms will be upgraded to toucan crossings. The central island on the south arm will be removed.
Side Roads:
•The existing signalised crossings on Eccles Street and Hardwicke Place arms of the junction is to be retained.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure
CBC:
• Cycle tracks are proposed on the CBC mainline, with protected facilities to enable cyclists to travel through the junction safely; and
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Advanced Stop Line (ASL) is proposed on both Eccles Street and Hardwicke Place arms of the junction.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline, which accommodates an inbound and an outbound bus lane on northern and southern arms respectively. Both bus lanes extend to the stop line, which provides greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

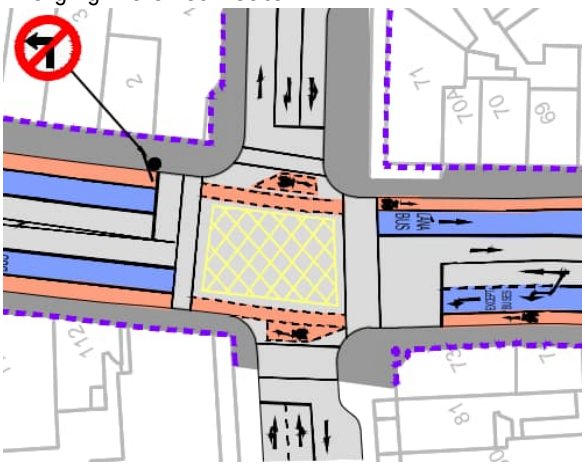
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

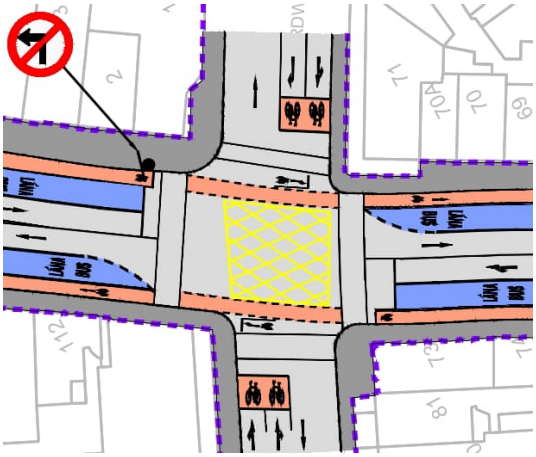
Existing

Concept Design Drawing

Emerging Preferred Route

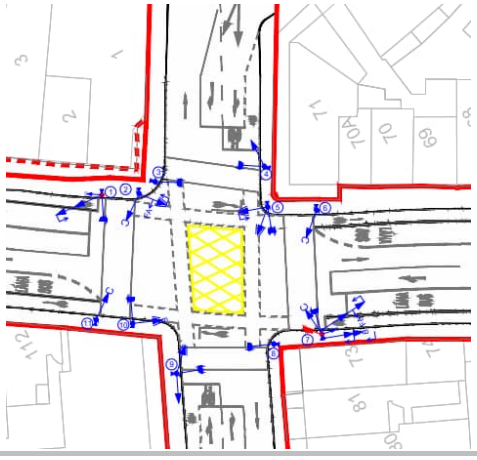


Public Consultation 2



Public Consultation 3

Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

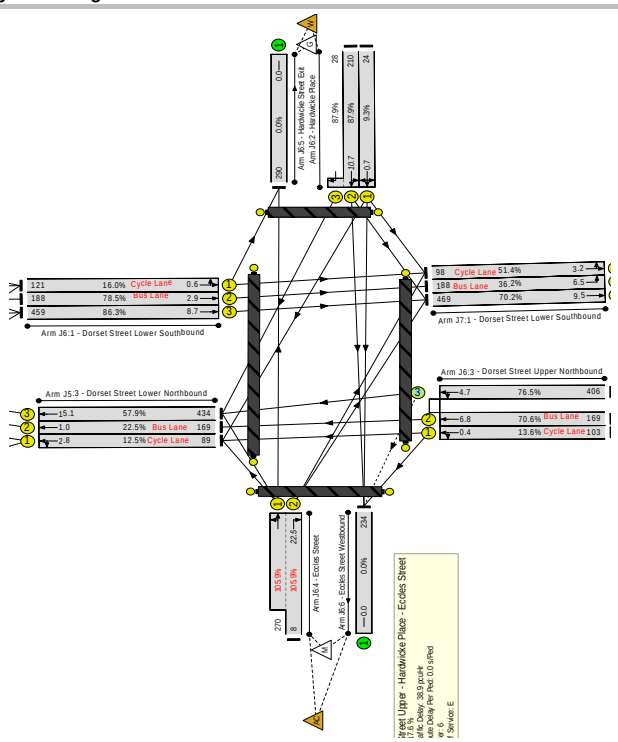
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -17.6%
PM Peak Hour: -11.6%

Junction Delay:
AM Peak Hour: 38.9 pcu/Hr
PM Peak Hour: 39.7 pcu/Hr

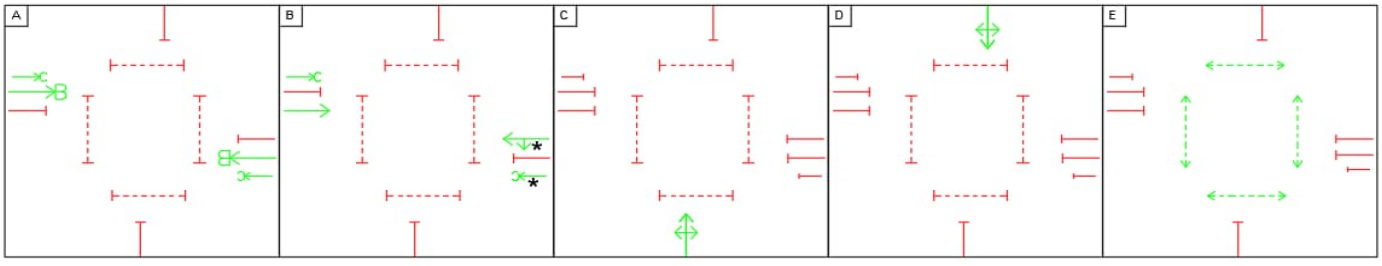
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	1,916	11%
Bus	12,548	69%
Walk	2,765	15%
Cycle	829	5%
Total	18,058	100%

INDICATIVE METHOD OF CONTROL

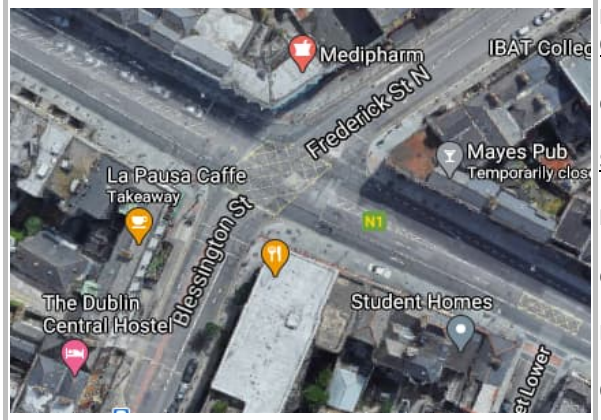


* DENOTES FLASHING AMBER

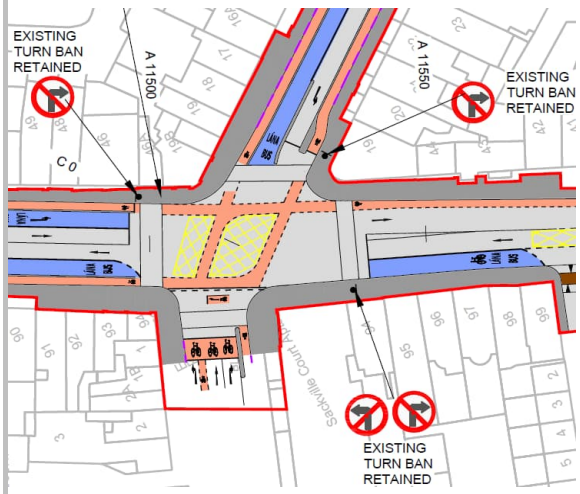
Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Upper / North Frederick Street / Blessington Street

EXISTING



FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and improved crossing facilities.

Pedestrian Infrastructure
CBC:
•The existing pedestrian crossing on the CBC north arm will be upgraded to a toucan crossing. The central island will be removed; and
•A new signalised pedestrian crossing is proposed on the CBC south arm.
Side Roads:
•The existing signalised crossing on Blessington Street and North Frederick Street arms is to be retained.
• Existing central island on North Frederick Street arm is to be removed to create a straight crossing.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure
• Cycle tracks is proposed on the CBC north arm, with protected facilities to enable cyclists to travel through the junction safely; and
• No cycle tracks is proposed on the CBC south arm;
• Dedicated early cycle and bus phase to enable cyclists to advance before general traffic.
Side Roads:
• Existing cycle lane leadng to an Advanced Stop Line (ASL) on Blessington Street will be retained;
• A new cycle track, with dedicated cycle phase, is proposed on Frederick Street North; and
• A new westbound contra-flow cycle track is proposed on Blessington Street.

Bus Priority Infrastructure
Junction Type 1 is proposed on the CBC mainline accommodates an northbound and an southbound bus lane. Both bus lanes are dedicated lanes up to the junction stop line and dedicated bus signal phase on the main CBC route which provides full bus priority reliability.

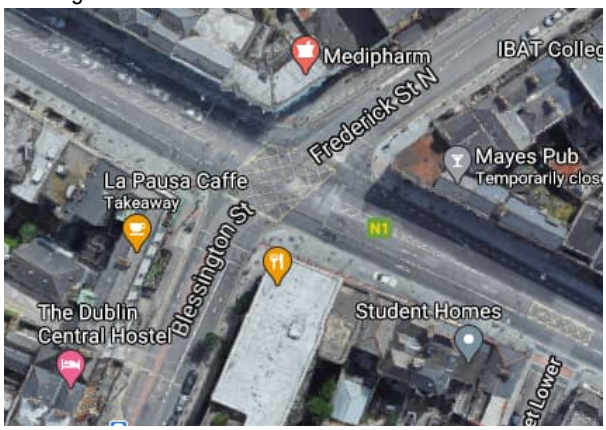
Eastbound lane on North Frederick Street is dedicated bus lane for buses exiting the junction from CBC north and Blessignton Street arms.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

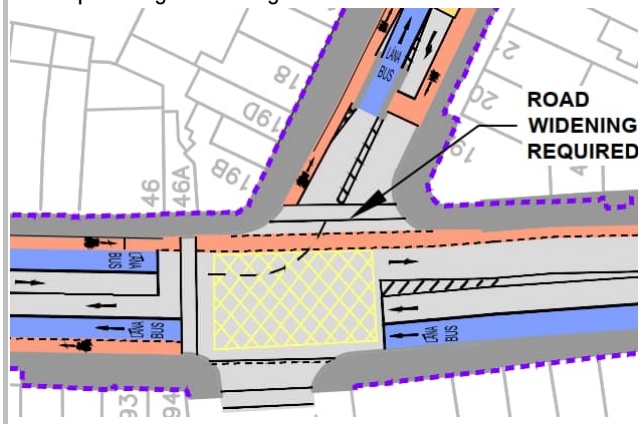
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

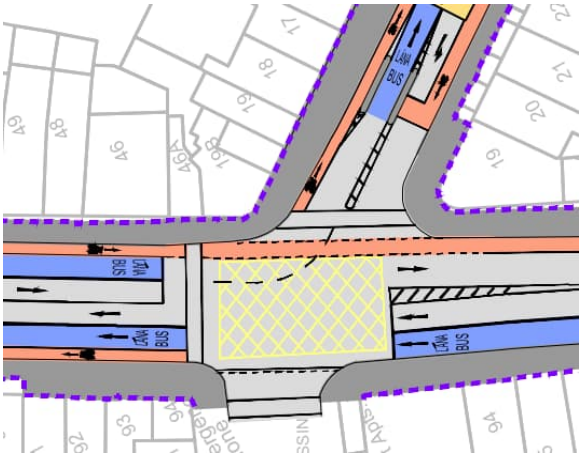
Existing



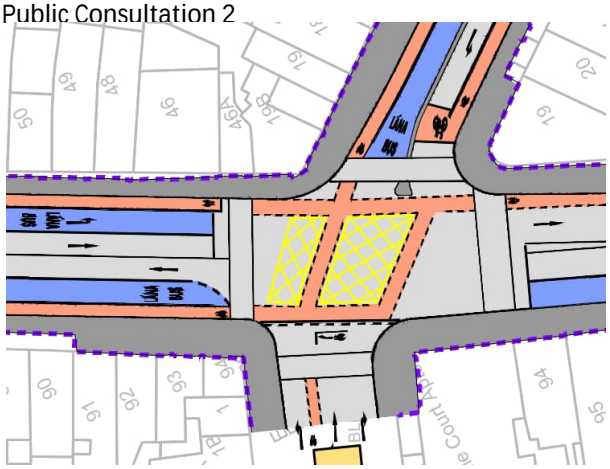
Concept Design Drawing



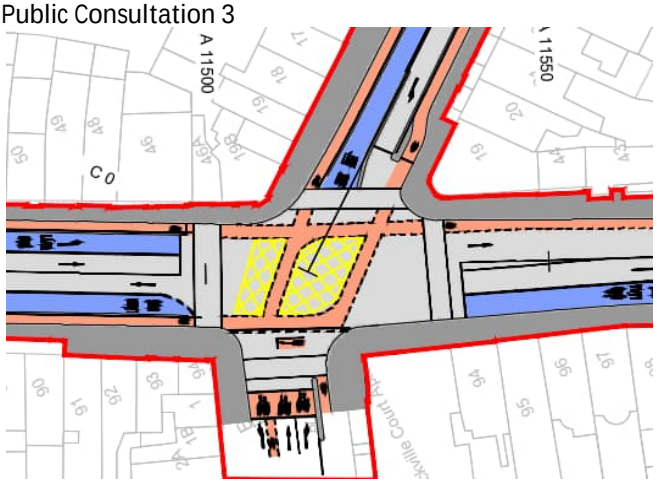
Emerging Preferred Route



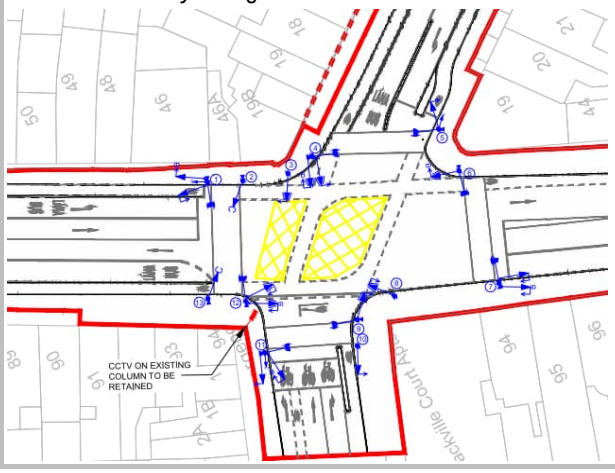
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

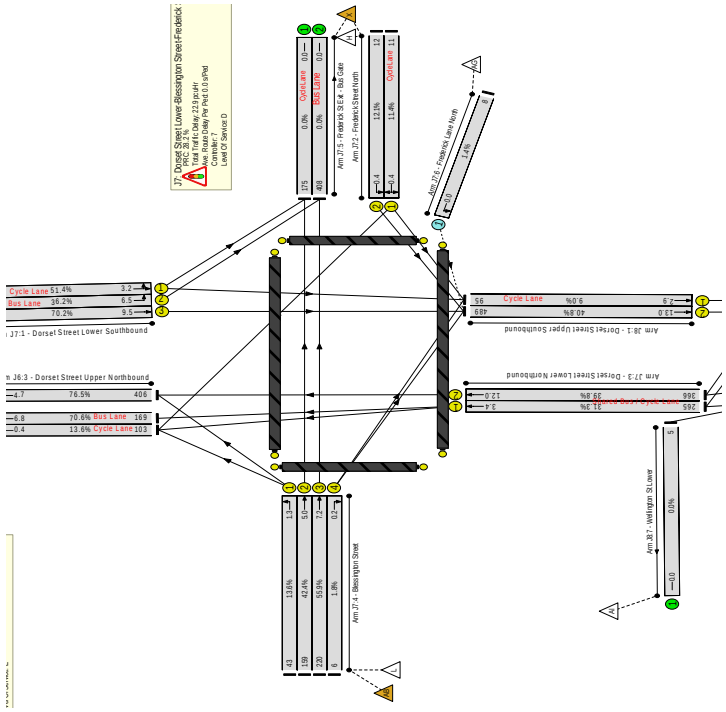
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 28.2%
PM Peak Hour: 10.1%

Junction Delay:
AM Peak Hour: 22.9 pcu/Hr
PM Peak Hour: 15.7 pcu/Hr

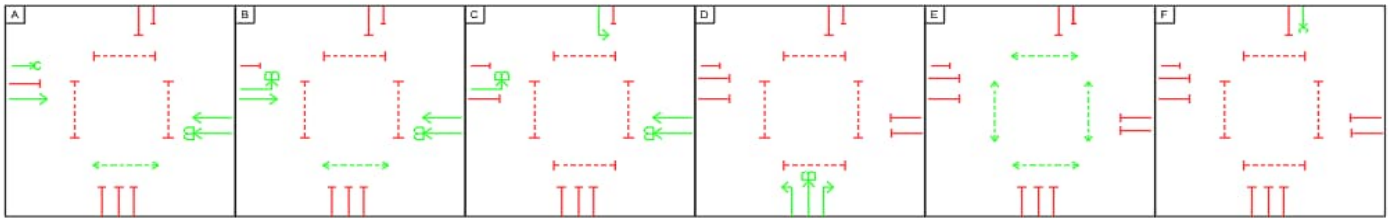
Network Layout Diagram



People Movement Assessment

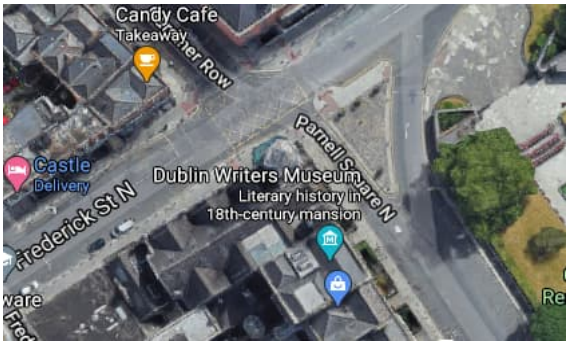
Junction		
Mode	People Movement	Mode Share
Car	2,812	5%
Bus	46,200	85%
Walk	4,147	8%
Cycle	1,062	2%
Total	54,221	100%

INDICATIVE METHOD OF CONTROL

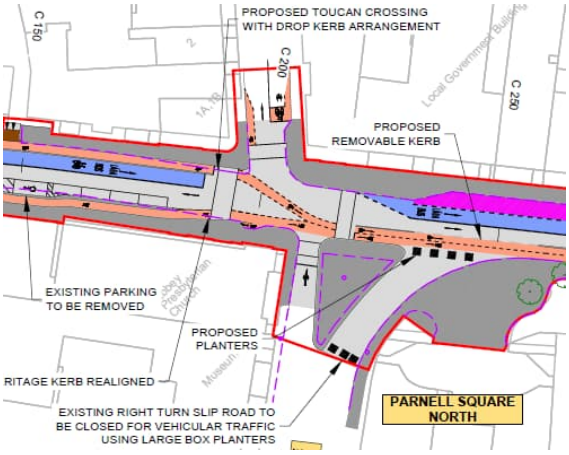


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2
Junction	North Frederick Street / Parnell Square East / Parnell Square North / Gardiner Row		

EXISTING



FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. The key design rationale was to introduce bus priority on the mainline CBC route, provide protected cycle infrastructure and eliminate conflict between eastbound buses and cyclists.

Pedestrian Infrastructure

CBC:

•The existing pedestrian crossing on North Frederick Street will be upgraded to a toucan crossing; and

• The existing pedestrian crossing on Parnell Square East is to be retained.

Side Roads:

•The existing signalised crossing on the both Parnell Square North and Gardiner Row arms of the junction is to be retained;

•Existing right turn slip from Parnell Square North to Parnell Square East will be stopped up. Pedestrians will no longer be required to wait to cross that arm of the junction.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure

CBC:

•A new kerbing is to be provided between the eastbound cycle lane and bus lane on North Frederick Street, to protect cyclists using the route.

• A new westbound cycle on North Frederick Street between Parnell Square East and Blessington Street junctions.

• Westbound cycle lane on Parnell Square East is to be upgraded to a two-way cycle track.

•Dedicated cycle signal phases for eastbound and westbound cyclists on the CBC mainline route.

Side Roads:

• Advanced Stop Line (ASL) and northbound exit cycle lane proposed on Gardiner Row.

•No cycle facilities on Parnell Square North.

Bus Priority Infrastructure

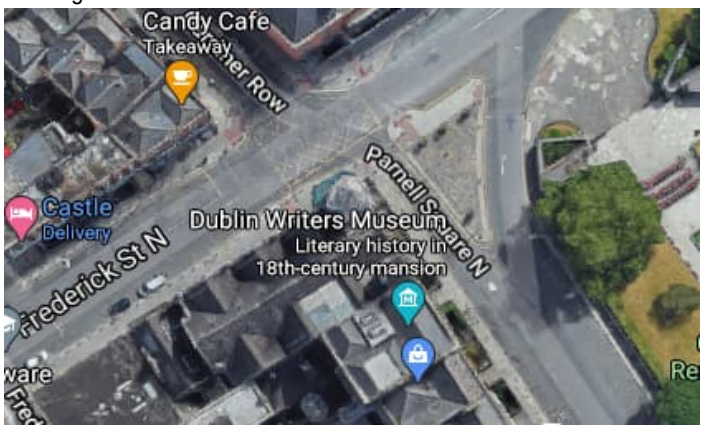
Junction Type 1 bus priority facility is proposed on the CBC mainline, which accommodates bus lane which extend to the stop line. A dedicated bus phase will provide greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

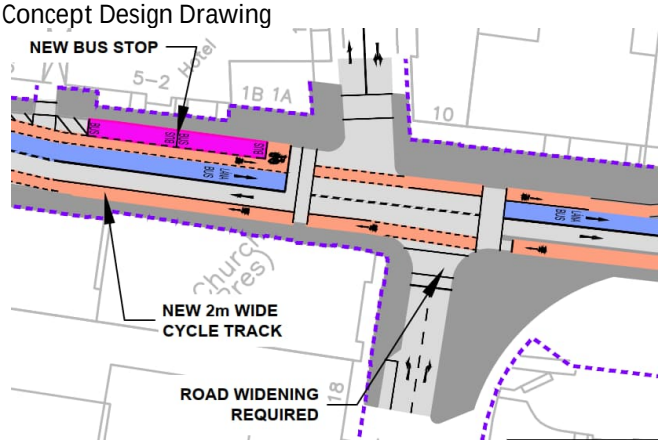
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

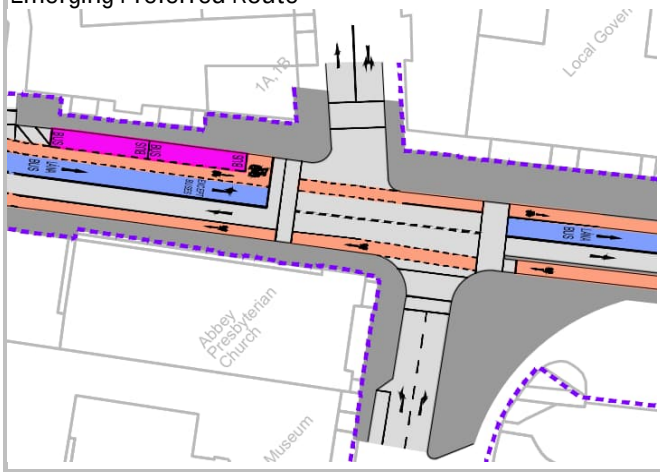
Existing



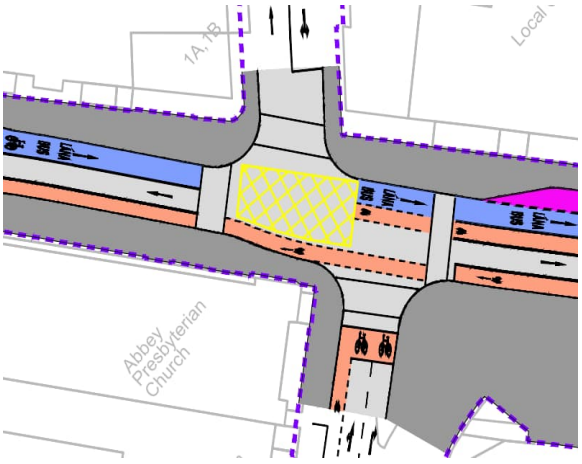
Concept Design Drawing



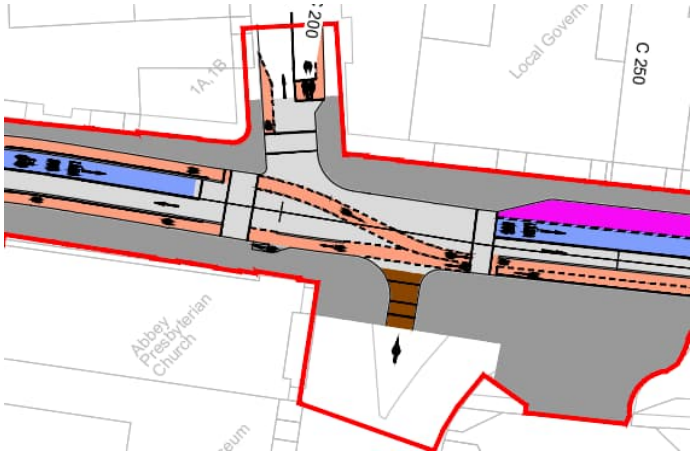
Emerging Preferred Route



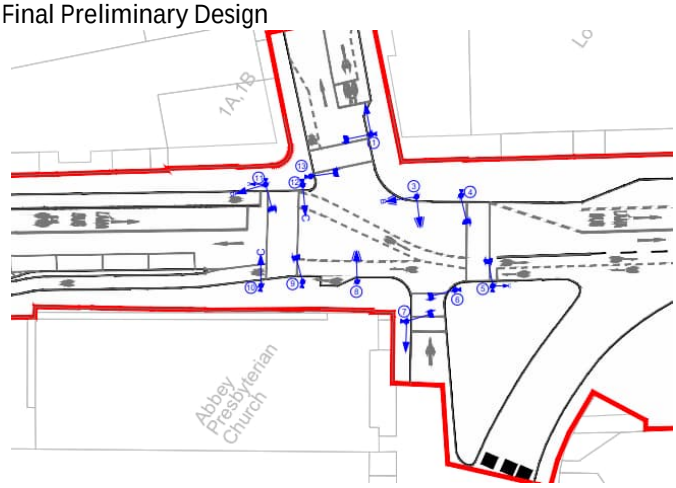
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

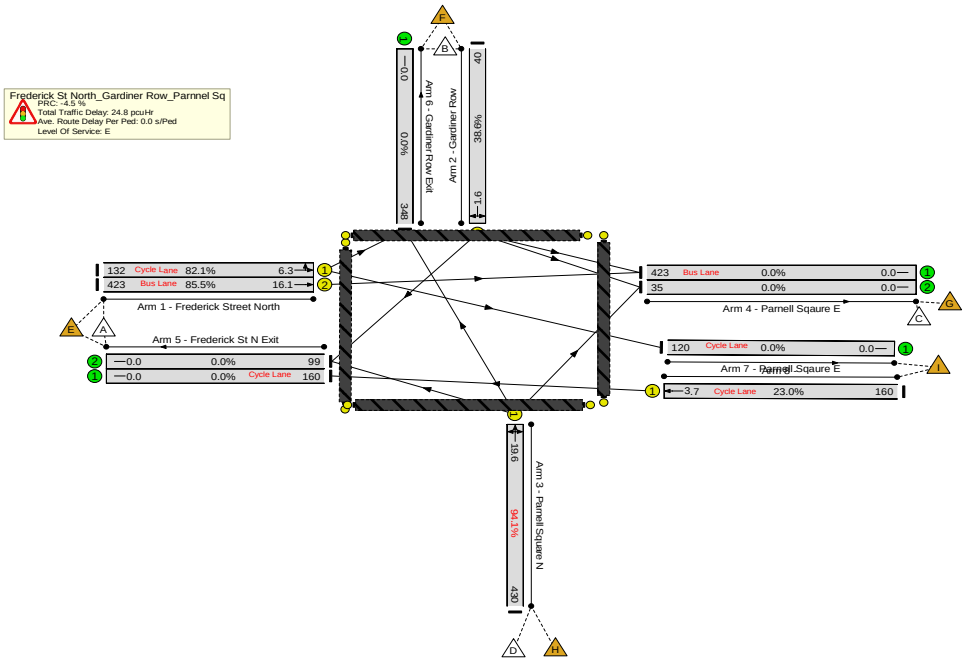
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: -4.5%
PM Peak Hour: -2.4%

Junction Delay:
AM Peak Hour: 24.8 pcu/Hr
PM Peak Hour: 21.0 pcu/Hr

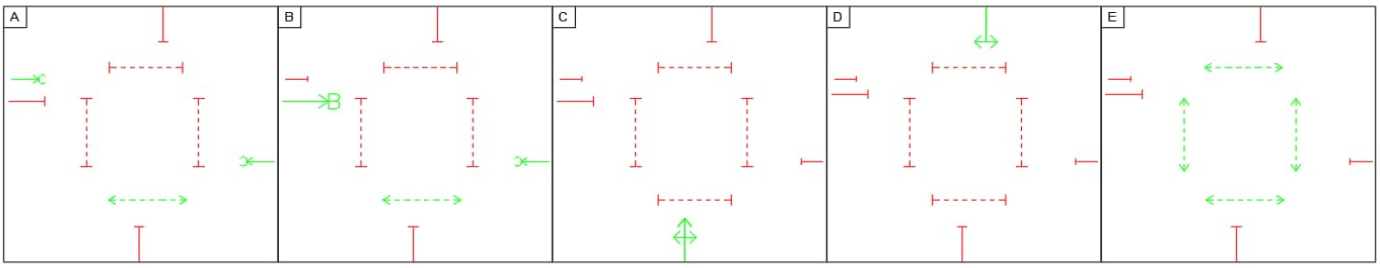
Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	677	3%
Bus	12,994	59%
Walk	7,603	35%
Cycle	760	3%
Total	22,034	100%

INDICATIVE METHOD OF CONTROL

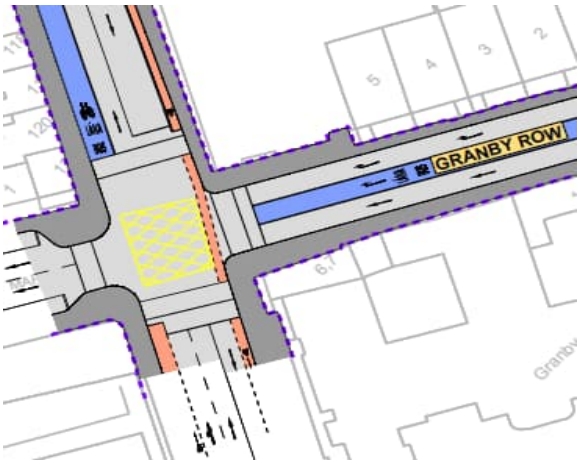


Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

Junction	Dorset Street Upper / Grandy Row / St Mary's Place

EXISTING

FINAL DESIGN



Summary:
The existing 4 arm signalised junction is proposed to be upgraded as per the BusConnects Preliminary Design Guidance Booklet to enhance pedestrian, cyclist and bus priority infrastructure. Full policy outcomes for CBC route can be achieved by junction layout and signal operation, giving priority to mainline buses and cyclists. No significant physical changes required to junction layout.

Pedestrian Infrastructure
•A new pedestrian crossing on the CBC north arm.
•Existing pedestrian crossings on Dorset Street Upper, Granby Road and St Mary's Place to be retained and improved.

Dedicated pedestrian crossing phase has been provided.

Cycle Infrastructure
Existing cycle lanes on Dorset Street Upper to be retained and improved. Cycle priority phase is to be provided.

Bus Priority Infrastructure
Junction Type 1 bus facility is proposed on Granby Row, which accommodates bus lane that extends to the stop line. A dedicated phase for all traffic on Granby Row provide greater bus priority and reliability.

Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

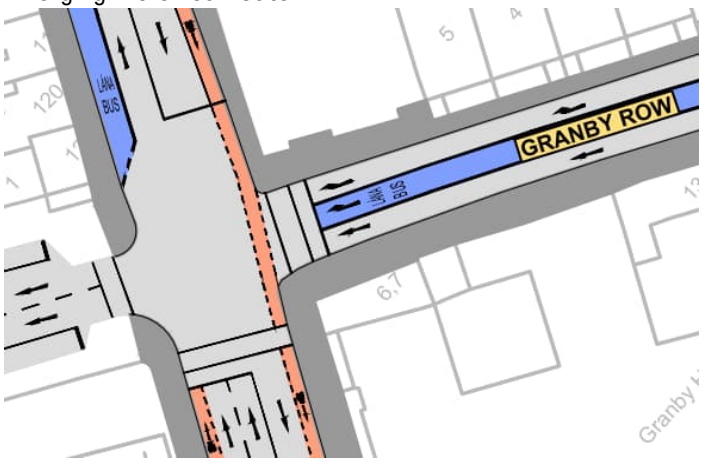
Design Evolution

The proposed junction design has evolved on the BusConnects project from initial Concept Design, Emerging Preferred Route, Public Consultation 2, Public Consultation 3 up to the Current Design. The junction design iterations have been undertaken to optimise pedestrian, cyclist and bus priority infrastructure on the scheme.

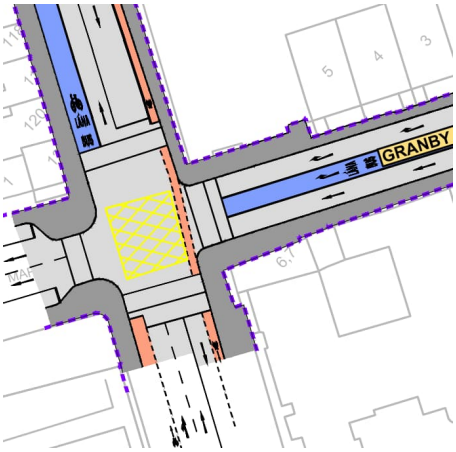
Existing

Concept Design Drawing

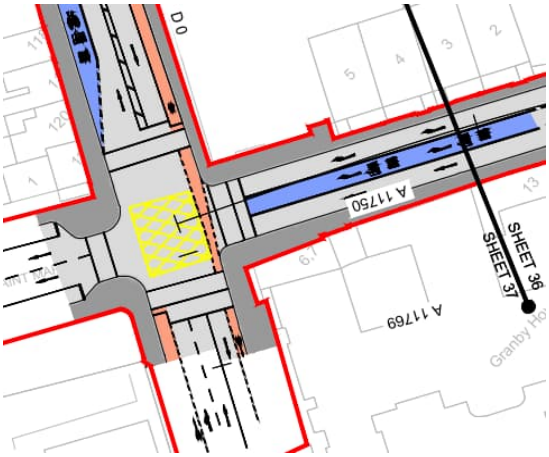
Emerging Preferred Route



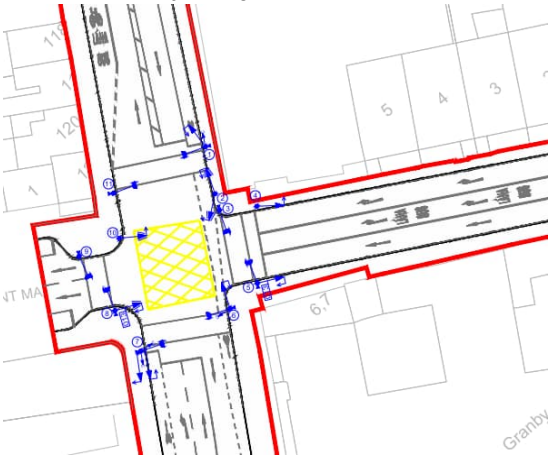
Public Consultation 2



Public Consultation 3



Final Preliminary Design



Subject	BusConnects Core Bus Corridors Transport Modelling		
Date	May-22		
Route	Route 2: Swords to City Centre	Job Ref	32110901.A.P3.TE.R2

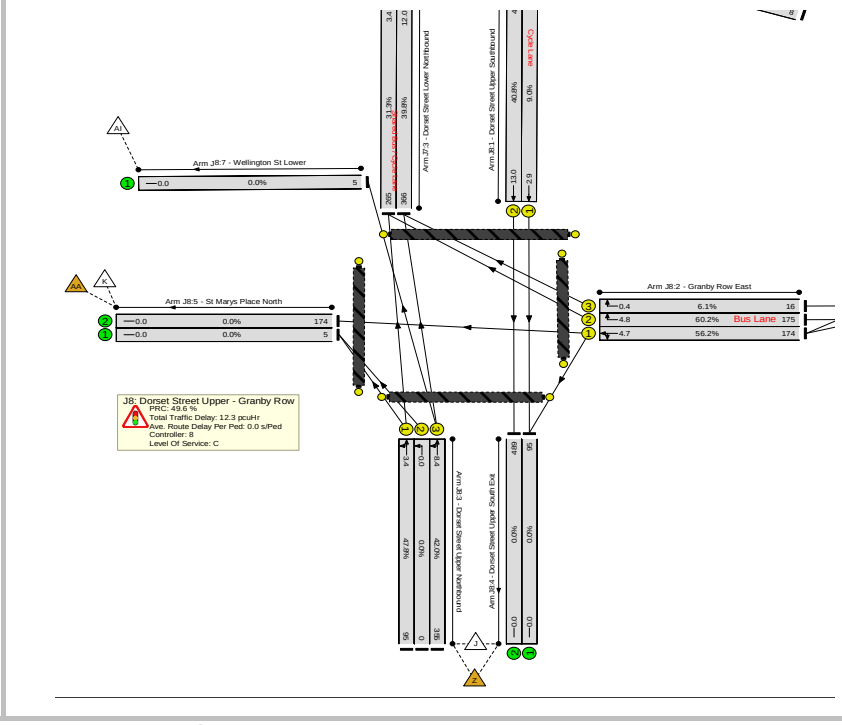
2028 Peak Hours
Fixed Time LinSig Results

Cycle Time: 120 seconds

Junction PRC:
AM Peak Hour: 49.6%
PM Peak Hour: 24.6%

Junction Delay:
AM Peak Hour: 12.3 pcu/Hr
PM Peak Hour: 13.5 pcu/Hr

Network Layout Diagram



People Movement Assessment

Junction		
Mode	People Movement	Mode Share
Car	4,158	17%
Bus	7,639	31%
Walk	12,211	50%
Cycle	547	2%
Total	24,555	100%

INDICATIVE METHOD OF CONTROL