

The background is a vibrant red color. It features several abstract geometric shapes: a large teal semi-circle in the top-left corner, a blue semi-circle in the top-right corner containing a white circle, a dark blue horizontal bar in the top-right corner, a teal semi-circle in the bottom-right corner, and a blue semi-circle in the bottom-left corner containing a white circle. There are also smaller white circles and semi-circles scattered throughout the design.

# Appendix M

## Road Safety Audits

Roughan & O'Donovan

BusConnects Core Bus Corridors  
Ballymun/Finglas to City Centre  
Scheme

Stage 1 Road Safety Audit

Roughan & O'Donovan

# BusConnects Core Bus Corridors Ballymun/Finglas to City Centre Scheme

## Stage 1 Road Safety Audit

**Document Ref:** P21-026-PSW1-RP-001

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1.0	MAH/PJM	AOR/TAG	PJM	9 <sup>th</sup> Sept. 2021	Draft Report

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# 1 Introduction

## 1.1 General

This report results from a Stage 1 Road Safety Audit on the proposed Ballymun/Finglas to City Centre Core Bus Corridor Scheme, carried out at the request of Ms. Deirdre Neff of Roughan & O'Donovan.

The members of the Road Safety Audit Team are independent of the design team, and include: -

**Mr. Peter Monahan**

(BE MSc CEng FIEI RSACert)  
Road Safety Audit Team Leader

**Mr. Mazen Al Hosni**

(BEng, MIEI)  
Road Safety Audit Team Member

The Road Safety Audit took place during August and September 2021 and comprised an examination of the documents provided by the designers (see Appendix B). In addition to examining the documents supplied the Road Safety Audit Team visited the site of the proposed measures on the 4<sup>th</sup> August 2021. Weather conditions during the site visit were dry and the road surface was dry. Traffic volumes during the site visit were moderate, pedestrian and cyclist volumes were low and traffic speeds were considered to be generally within the posted speed limit.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report and their locations are shown in Appendix D. Where problems are general to the proposals sample drawing extracts are within the main body of the report, where considered necessary.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 - Road Safety Audit (December 2017), contained on the Transport Infrastructure Ireland (TII) Publication's website.

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety and considers the perspective of all road users. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

If any of the recommendations within this road safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observations are intended to be for information only. Written responses to Observations are not required.

## 1.2 Items Not Submitted for Auditing

Details of the following items were not submitted for audit; therefore, no specific problems have been identified at this stage relating to these design elements, however where the absence of this information has given rise to a safety concern it has been commented upon in Section 3: -

- Vehicle swept paths
- Visibility splays
- Traffic Impact Assessment
- Collision Data

## 2 Project Description

### 2.1 General

BusConnects is the National Transport Authority's (NTA) programme to improve bus and sustainable transport services. It is a key part of the Government's policies to improve public transport and address climate change in Dublin and other cities. The aim of BusConnects is to deliver an enhanced bus system that is better for the city, its people and the environment. BusConnects is included in the Programme for Government "Our Shared Future" 2020, as well as within the following Government strategies:

- The National Development Plan 2018 – 2027
- Transport Strategy for the Greater Dublin Area 2016 – 2035
- The Climate Action Plan 2019

Part of the overall BusConnects Programme is to create 16 radial core bus corridors (CBC), as illustrated in Figure 2-1. A CBC is an existing road with bus priority so that buses can operate efficiently, reliably, and punctually. This generally means full length dedicated bus lanes on both sides of the road from start to finish of each corridor or other measures to ensure that buses are not delayed in general traffic congestion. The bus lanes are typically alongside segregated cycle lanes/tracks where feasible and general traffic.

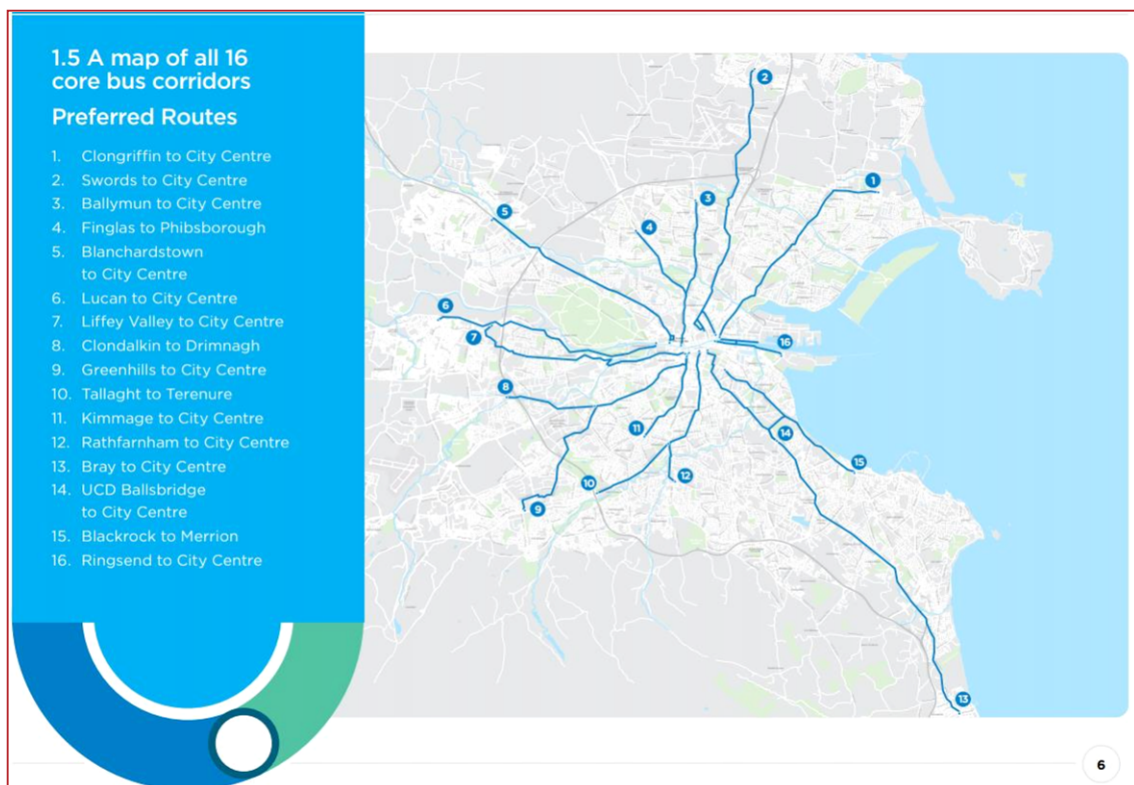


FIGURE 2-1: BUSCONNECTS RADIAL MAP (SOURCE: BUSCONNECTS.IE)

The Ballymun/Finglas to City Centre routes (Routes 3 and 4 in Figure 2-1) travel in a northerly direction from the city centre. The routes can be summarised as follows:

**The Ballymun to City Centre (Route 3):** The Ballymun to City Centre Core Bus Corridor (CBC) commences on the Ballymun Road at its junction with St. Margaret's Road just south of M50 Junction 4. It shall continue along Ballymun Road, St. Mobhi Road, Botanic Road, Prospect Road, Phibsborough Road, Constitution Hill and Church Street as far as Arran Quay, where it will join the North Quays.

**The Finglas to Phibsborough (Route 4):** The Finglas to Phibsborough Core Bus Corridor (CBC) commences on the Finglas Road at the junction between the Finglas Road and St. Margaret's Road and shall continue along Finglas Road as far as Hart's Corner in Phibsborough where it will join the Ballymun CBC from Hart's Corner to Arran Quay. Priority for buses is provided along the entire route, consisting of dedicated bus lanes in both directions. Continuous segregated cycle tracks are provided from Finglas to Hart's Corner.

### 3 Main Report

#### 3.1 General Problems

##### 3.1.1 Problem

Location: General Problem

Example: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)

Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)

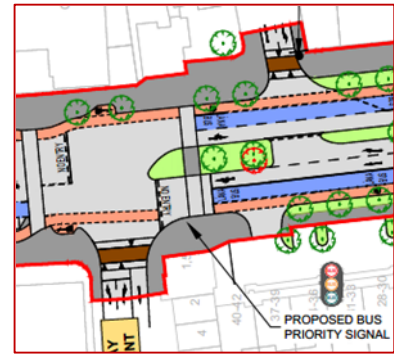
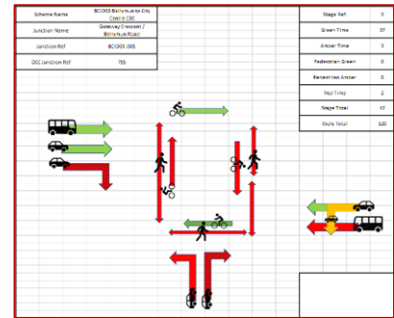
Summary: *Left turning manoeuvres are indicated during the same signal phase as straight-ahead cyclists where turning drivers may be insufficiently aware of cyclists proceeding straight at a number of the protected intersections/junctions within the Scheme.*

At a number of signalised protected junctions within the Scheme, left turning traffic is indicated as occurring during the same phase as straight-ahead cyclists, often on an amber signal.

Where the straight through cycle lane is offset from the adjacent traffic lane, for example where it is separated by a bus lane, there is a risk that drivers, when given a green or amber signal, may not be aware of, or prepared for, a straight-ahead cyclist also proceeding through the junction, resulting in possible vehicular/cyclist collisions.

#### Recommendation

The signal phasing should be such that straight-ahead cyclists do not proceed at the same time as left-turning traffic where the left-turning traffic is separated from the cycle lane by a bus lane.



##### 3.1.2 Problem

Location: General Problem

Example: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)

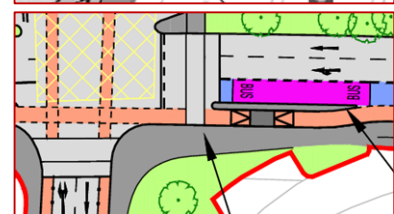
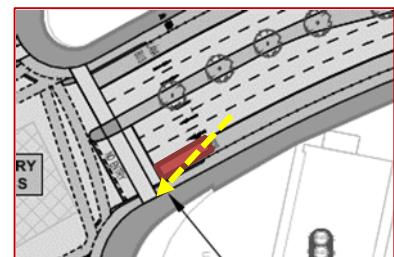
Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0005 (Rev S3 L02)

Summary: *High-sided vehicles in the bus lane may block visibility to the signal heads for drivers in the adjacent general traffic lanes.*

The proposed number of lanes and the provision of a nearside bus lane along the CBC routes is such that drivers approaching signalised junctions/crossings may fail to have adequate visibility to the primary signal heads due to the lateral distance to the footpath, where the signal heads are most likely to be located, and the possibility that their view of the signals may be obscured by a high-sided vehicle or bus in the adjacent lane.

In some cases, the proposed location of bus stop is immediately upstream of a signalised junction (e.g. on the northbound carriageway at Chainage A2230), and may result in a stationary bus at the bus stop blocking an approaching northbound driver's visibility towards the signals.

This could result in a driver being insufficiently aware of the signal status and a failure to stop, leading to overshoot into the pedestrian crossings or junctions, resulting in vehicular/pedestrian collisions or side-on collisions.





**Recommendation**

During the design development the need for high-mast or cantilever signal supports should be assessed, and these signal supports provided where required, so that drivers have adequate forward visibility to the signals on their approach to a junction/crossing.

The location of bus stops should not result in an approaching driver’s view of the signals being blocked by stationary buses at the bus stop.

**3.1.3 Problem**

*Location: General Problem*

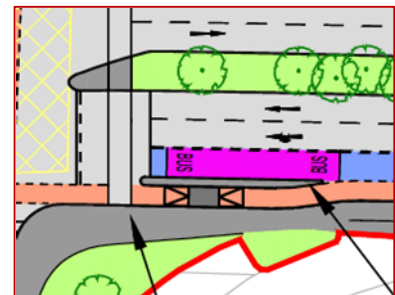
*Example: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)*

*Summary: Insufficient bus-stop island width could increase the risk of pedestrians, waiting for a bus, encroaching into the cycle track resulting in possible pedestrian/cyclist collisions.*

The width of the floating islands at various bus stops throughout the scheme appears to be relatively narrow.

Should pedestrians waiting for a bus choose to wait within the island, there is a risk that they could encroach into the adjacent cycle track, impede cyclists and increase the likelihood/possibility of pedestrian/cyclist collisions.

In addition, it is unclear if the width of the proposed islands is sufficient to allow a wheelchair user to access public transport safely, in particular, where there are other passengers embarking/disembarking at the same time.



**Recommendation**

Ensure the floating islands at bus stops along the route can safely accommodate the expected volumes of waiting passengers, and that they are of sufficient width to accommodate all public transport users safely.

**3.1.4 Problem**

*Location: General Problem*

*Example: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0001 (Rev S3 L02)*

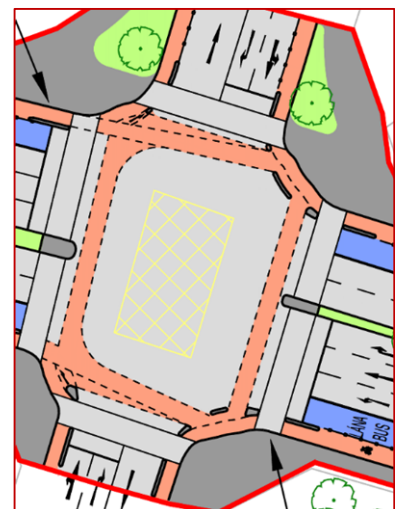
*Summary: Small islands proposed at signalised junctions may be impractical to sign, and lead to these islands being struck.*

Small islands have been indicated within signalised junctions to separate vehicle, cyclist, and pedestrian movements.

The relatively small size of the islands, and their number within a junction, may be impractical to sign, and lead to these signs being struck by vehicles and cyclists, leading to material damage and loss of control collisions.

**Recommendation**

Ensure physical islands can accommodate traffic signs and provide at least 450mm between the kerb and sign edge.



### 3.1.5 Problem

*Location: General Problem*

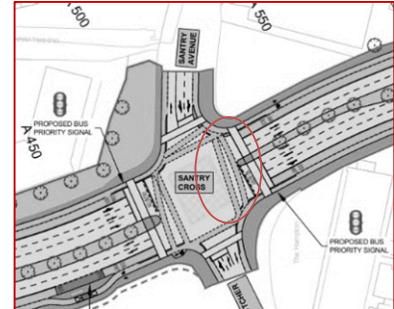
*Example: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)*

*Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0005 (Rev S3 L02)*

*Summary: Multiple cycle lanes indicated may result in cyclists misinterpreting the layout to be two-way cycle lanes resulting in conflicts.*

It is unclear what the purpose/need is for the duplicate cycle lanes across the arms at a number of the signalised junctions (e.g. Santry Cross junction, Collins Avenue junction).

The proposed layouts could result in confusion for cyclists, who may misinterpret the layout as consisting of bi-directional cycle lanes, leading to erratic or inappropriate/unsafe manoeuvres resulting in collisions with other cyclists using the junction.



### Recommendation

The layout of the proposed cycle lanes at the signalised junctions should be clear and easily understood by cyclists.

### 3.1.6 Problem

*Location: General Problem*

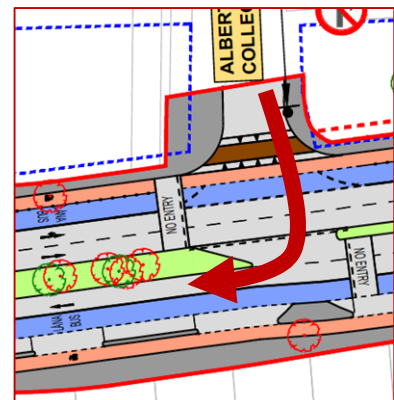
*Examples: Albert College Court, Shangan Road, Hampstead Avenue & Library access.*

*Summary: Central median layout at a number of side roads is wide and may allow for unsafe manoeuvres to be undertaken.*

The proposed, and the existing, road layout at number of side roads is for left-turns-only exiting the side road while permitting uncontrolled right-turns into the side road.

The road layout at these locations includes a relatively wide break in the median such that vehicles can and, as observed during the Site Visit, do turn right from these side roads onto the Ballymun Road.

Vehicles turning right from the side roads at these locations are at greater risk of collisions with through-traffic on the multi-lane carriageway and also present a risk to right-turning drivers wishing to turn into the side road who may not anticipate a vehicle turning right from the side road.



### Recommendation

The road layout should be amended to prevent right-turns from these side road, possibly by the provision of a central splitter island within the side road at its junction with Ballymun Road which is profiled to encourage left-turns only out of the side road. Alterations to the arrangement of the right-turn lane and associated gap in the median may also assist in discouraging inappropriate right-turns out of the side road at these locations.

**3.1.7 Problem**

*Location: General Problem*

*Summary: Unclear if vertical separation is proposed between adjacent footpath & cycle tracks.*

It is unclear from the information provided if it is intended to provide vertical separation between the cycle track and the adjacent footpaths throughout the Scheme. An absence of vertical separation between adjacent footpath & cycle tracks can result in pedestrians straying into the cycle track, and presenting a hazard to cyclists leading to possible cyclist/pedestrian collisions.

**Recommendation**

Vertical separation should be provided between adjacent footpath & cycle tracks.

**3.2 Ballymun Route**

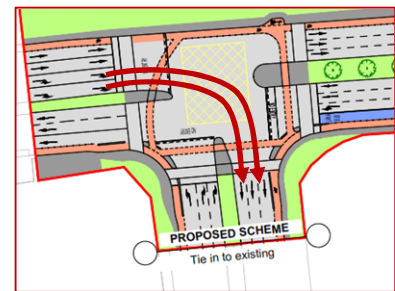
**3.2.1 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0001 (Rev S3 L02)*

*Summary: The proposed two right-turning lanes could result in poor lane discipline which may lead to side swipe collisions.*

Two right-turning lanes have been indicated for traffic turning into & out of St Margaret’s Road and out of Northwood.

There is a risk of poor lane discipline resulting in possible side-swipe collisions where one vehicle strays into the adjacent turning lane.



**Recommendation**

During the design development guidance road markings should be provided to assist drivers in following the correct route through the junction when undertaking a right-turn.

**3.2.2 Problem**

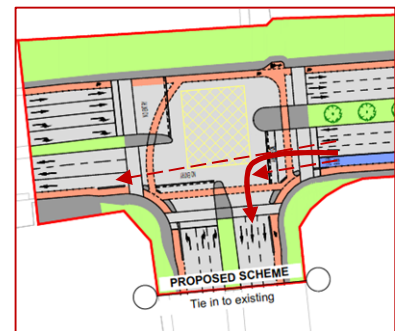
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0001 (Rev S3 L02)*

*Summary: Potential conflicting manoeuvres between drivers in the bus lane, left turning traffic into St Margaret’s Road and straight-through traffic onto the M50 slip road.*

Two northbound traffic lanes have been indicated on the approach to the junction with St Margaret’s Road, and there are three lanes downstream of the junction in this direction.

Traffic whose destination is the on-slip onto the M50 southbound may attempt to enter the nearside lane downstream of the junction as they travel through the junction, impinging upon the path of a left-turning vehicle in the left-turning general traffic lane.

In addition, it is proposed to allow left turns into St Margaret’s Road from the northbound bus lane and the adjacent general left-turning traffic lane at the same time.



However, not all traffic in the bus lane will wish to turn left. Vehicles, other than buses, are permitted to use bus lanes (e.g. taxis) and some of these may wish to proceed straight-ahead leading to possible conflicts with left turning traffic in the adjacent general traffic lane.

## Recommendation

Amend the layout of the north-western corner of the junction so that there is only two lanes leaving the junction northbound, with the third lane, for traffic wishing to join the M50 southbound, developing a short distance downstream.

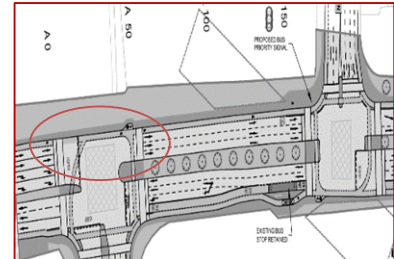
### 3.2.3 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0001 (Rev S3 L02)*

*Summary: Two lane approach at the junction with three lanes downstream might lead to conflicts due to late lane change manoeuvres.*

Two southbound traffic lanes have been indicated on the approach to the junction with St Margaret's Road, and there are three lanes downstream of the junction in this direction.

The nearside straight-ahead lane on the southbound carriageway on the approach to the St Margaret's Road junction becomes a left-turn only lane at the downstream junction with Northwood.



There is a concern that drivers unfamiliar with the road layout who wish to proceed south may find themselves inadvertently in the left-turn only lane, leading to late lane-change manoeuvres and possible side-swipe collisions.

## Recommendation

Amend the layout of the south-eastern corner of the junction so that there is only two lanes leaving the junction southbound, with the third lane, for traffic wishing to turn left at Northwood Junction, developing a short distance downstream.

### 3.2.4 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)*

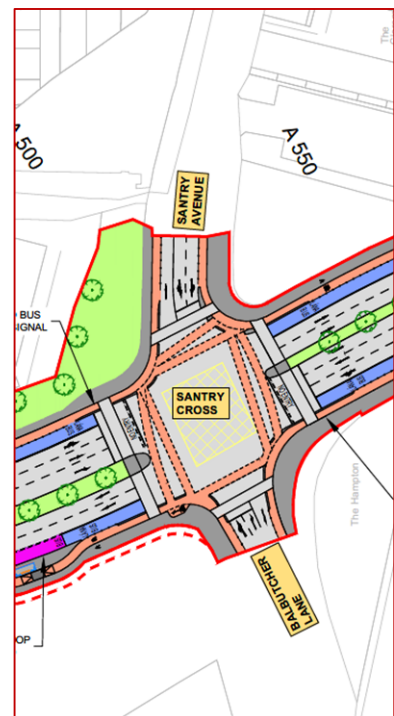
*Summary: Proposed road layout does not appear to tie-in with the existing road layout at the scheme extents.*

It is unclear if the extent of the proposed works on Santry Avenue or Balbutcher Lane will be sufficient to tie-in the revised road layout on these side roads on their immediate approach to the Santry Cross Junction with the existing road layout to the east/west respectively.

Inappropriate tie-ins may result in the approach alignments being inadequate, this can lead to poor lane discipline which can result in conflicts.

## Recommendation

Ensure that appropriate & safe tie-ins are provided with the existing road network outside of the proposed Scheme extents.



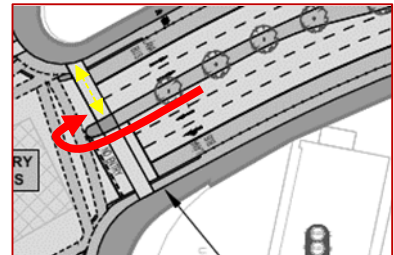
**3.2.5 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02) (Stage 5 of the signal phasing)*

*Summary: Possible conflicts between u-turning vehicles and pedestrians on the signalised pedestrian crossing.*

Southbound vehicles approaching the Santry Avenue junction are provided with a green signal in Stage 5, which permits right-turn manoeuvres, at the same time as pedestrians are permitted to cross the northbound carriageway, on the northern side of the junction.

Should a southbound vehicle undertake a u-turn at the junction this could result in vehicular/pedestrian collisions.



**Recommendation**

Separate phases for the right turning traffic and the pedestrian crossing should be provided, or if u-turns are not permitted at this location then the appropriate regulatory signage should be provided.

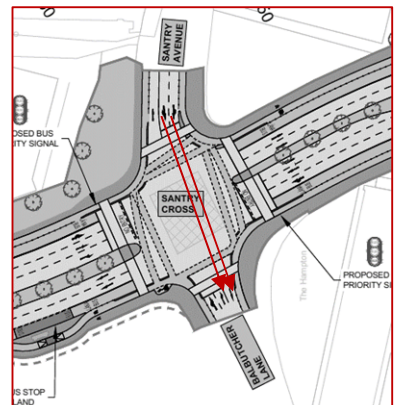
**3.2.6 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)*

*Summary: The merging of two straight-ahead traffic lanes within the junction may lead to side-swipe collisions*

There are two straight-ahead westbound lanes indicated on Santry Avenue approaching the junction with Ballymun Road.

However, there is only a single exit lane onto Balbutcher Lane on the other side of the junction. Should traffic from both lanes proceed at the same time the road layout on the downstream exit from the junction could result in sideswipe collisions.



**Recommendation**

The permitted westbound movements on Santry Avenue, approaching the junction, should be amended so that only one lane is permitted to travel straight-through the junction.

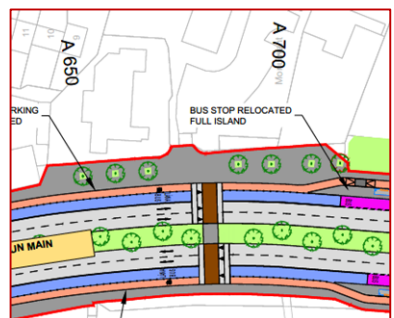
**3.2.7 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0002 (Rev S3 L02)*

*Summary: Proposed bollards may result in collisions for drivers attempting to access the properties between chainage A650 to A700*

A number of properties on the eastern side of the Ballymun Main Street, Chainage A650 to A700, currently have vehicular access directly from the Main Street. It would appear that it is proposed to provide bollards along the interface between the cycle lane and the bus lane continuously along this section, which would impede vehicular access/egress from these properties.

There is a risk that drivers wishing to access these properties may seek to do so at the pedestrian crossing at Chainage A680 approximately, resulting in unsafe manoeuvres and possible vehicular/pedestrian collisions.



In addition, new planting has been indicated to the north of the entrance to the Nursing Home at this location. It is unclear what species of vegetation is proposed at this location, however, there is a risk that the planting may impede visibility for drivers of exiting vehicles towards approaching cyclists/traffic resulting in unsafe exiting manoeuvres and possible side-on collisions.

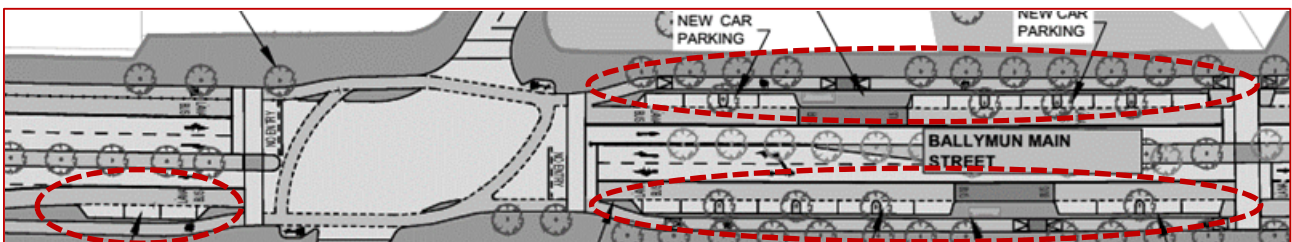
### Recommendation

The proposed road layout should permit safe access/egress to these properties. In addition, during the design development, ensure the proposed tree species will not result in reduced visibility for drivers exiting the Nursing Home.

#### 3.2.8 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: Narrow buffer area/island between parking spaces and cycle lanes may result in conflicts should car occupants open the door onto the cycle lane.*



Parking has been indicated on both sides of Ballymun Main Street, to the north & south of the junction with Balbutcher Lane & Shangan Road. The cycle lanes have been indicated to the rear of these parking spaces, separated by an island. It is unclear from the information provided what the width of this island is to be in these areas.

Should the separation between the parking spaces and the cycle lane be insufficient, there is a risk that the doors of parked vehicles may open into the cycle lane as vehicle occupants enter/exit their vehicle, presenting a “dooring” hazard to cyclists.

### Recommendation

Ensure an appropriate buffer zone between the cycle lane and the parking spaces is provided.

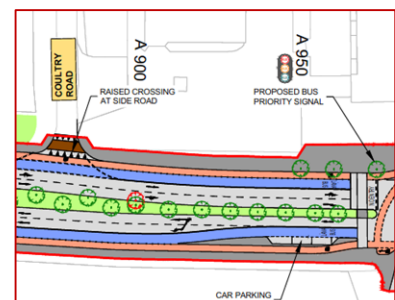
#### 3.2.9 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: Straight through traffic in the southbound lane on Ballymun Road may inadvertently enter the offside lane, which becomes a dedicated right-turn lane further downstream, leading to possible late lane-change manoeuvres.*

The offside southbound lane on Ballymun Road approaching the junction with the Shangan Road and Balbutcher Lane becomes a right-turn only lane at the next junction.

This restriction is not clearly indicated by the upstream road markings or the upstream road layout. This could result in some drivers, in particular those unfamiliar with the area, finding themselves in the wrong lane for their intended destination, leading to late lane-change manoeuvres and possible side-swipe collisions.



**Recommendation**

Amend the development of the additional traffic lane on Ballymun Road so that traffic is first guided into the nearside general traffic lane (e.g. by provision of hatched markings), with a bifurcation arrow provided downstream to allow traffic to move into the offside lane should they wish to turn right at the upcoming junction.

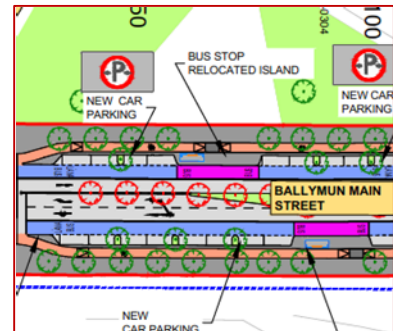
**3.2.10 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: Trees and their canopies may present a hazard to pedestrians on the footpath or cyclists on the adjacent cycle track.*

Trees have been indicated as extending over the cycle lane on Ballymun Main Street. It is unclear what the canopy height for these trees will be.

Should insufficient clearance be provided to the adjacent footpath & cycle lane, the tree canopy could present a hazard to visually impaired pedestrians or to cyclists on the cycle track, leading to personal injury.



**Recommendation**

During the subsequent Design Development phases, the tree species chosen should have canopies, when mature, that will not present a hazard to pedestrians or cyclists on the adjacent footpaths & cycle tracks/lanes.

**3.2.11 Problem**

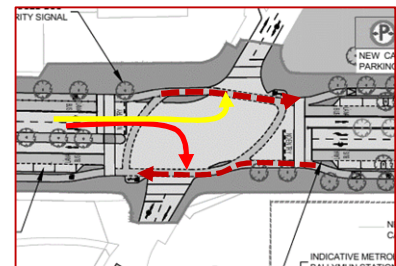
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: Left- and right-turning manoeuvres are indicated during the same signal phase as straight-ahead cyclists where turning drivers may be insufficiently aware of a cyclist proceeding straight-through.*

At the Ballymun Road/Balbutcher Lane signalised protected junction left-turning manoeuvres are indicated as occurring during the same phase as straight-ahead cyclists. The straight through cycle lane is offset from the adjacent traffic lane and is positioned closer to the pedestrian crossing on the intersected road.

There is a risk that drivers, when given a green signal, may not anticipate a straight-through cyclist, possibly misinterpreting the layout as a signalised/toucan crossing on a separate phase, resulting in possible vehicular/cyclist collisions.

Similarly, right-turning manoeuvres from Ballymun Road are permitted to proceed at the same time as straight-ahead cyclists. There is a concern that that a right-turning driver may not be sufficiently aware of the potential for a straight-ahead cyclist proceeding at the same time, resulting in possible side-on vehicle/cyclist collisions.



Sub-area Name	SECCO Code	SECCO Description	Est. ID	Stage/Ref	3
Sub-area Name	SECCO Code	SECCO Description	Est. ID	Stage/Ref	3
Location Name	SECCO Code	SECCO Description	Est. ID	Stage/Ref	25
Location Ref	SECCO Code	SECCO Description	Est. ID	Stage/Ref	-
SECCO Code	SECCO Code	SECCO Description	Est. ID	Stage/Ref	-
Location Type	SECCO Code	SECCO Description	Est. ID	Stage/Ref	25
Location Type	SECCO Code	SECCO Description	Est. ID	Stage/Ref	59

**Recommendation**

The signal phasing should be amended so that straight-ahead cycle movements are not permitted at the same time as left-or right-turning traffic.

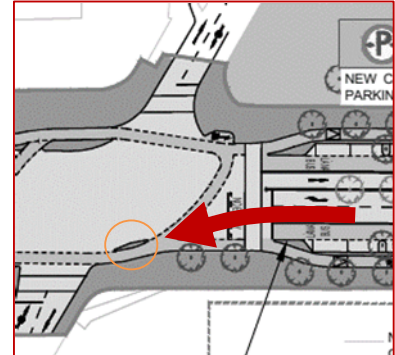
### 3.2.12 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: The island between the cycle lane and the turning traffic path may lead to sudden avoidance manoeuvres that may result in conflicts.*

As part of the cyclist detection measures proposed at the Shangan Road/Balbutcher Lane junction an island is proposed within the junction's southwestern quadrant.

There is a relatively lengthy gap between the northbound traffic lane stop line and this island. There is a concern that left-turning drivers might position themselves close to, or on, the cycle track on the approach to the left-turn, leading to sudden avoidance measures or conflicts with cyclists in the cycle lane.



### Recommendation

Protective measures (e.g. bollards) should be provided between the northbound cycle lane and the adjacent bus lane immediately north of the stop line at the junction.

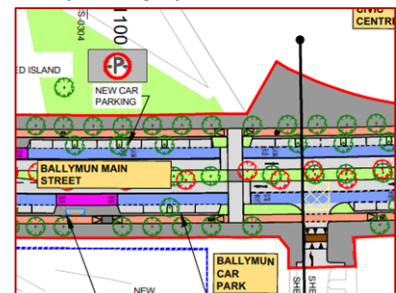
### 3.2.13 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0003 (Rev S3 L02)*

*Summary: Inter-visibility at pedestrian crossing may be poor due to the parallel parking spaces.*

Parallel parking spaces are indicated close to some of the pedestrian crossings within the scheme.

The location of these parking spaces may block inter-visibility between approaching drivers and pedestrians using the crossing which may lead to pedestrians entering the crossing when it not safe to do so, or approaching drivers being insufficiently aware of a pedestrian commencing a crossing.



### Recommendation

Adequate inter-visibility should be provided between drivers of vehicles approaching crossings and pedestrians about to commence a crossing.

### 3.2.14 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)*

*Summary: Visibility for drivers of vehicles exiting Silloge Road could be restricted by parked vehicles in the proposed parking spaces on Ballymun Main Street.*

Parking spaces have been indicated on either side of Ballymun Main Street between Chainage A1020 & A1 250 approximately. It is unclear if there will be sufficient visibility to the right for drivers exiting Silloge Road, with visibility possibly impeded by vehicles in the parking spaces to the south of the junction, leading to possible unsafe exit manoeuvres and side-on collisions.



### Recommendation

Adequate visibility should be provided for drivers of vehicles exiting Silloge Road towards approaching traffic on Main Street.



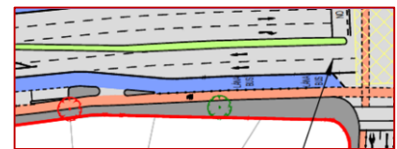
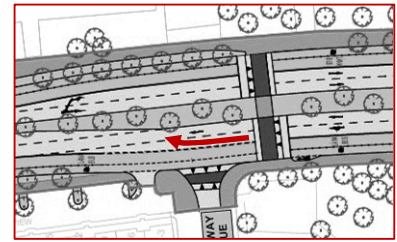
**3.2.15 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02) and Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0006 (Rev S3 L02)*

*Summary: The proposed merge layout might result in difficulties for slow moving drivers in the nearside lane merging with the faster moving traffic in the offside lane.*

The proposed layout of the lane drop/merge on the northbound carriageway between Chainage A1400 and at Chainage A2150 requires vehicles in the nearside lane to merge with vehicles in the offside lane.

Vehicles in the nearside lane are generally slower moving (i.e. goods vehicles) which may find it difficult to merge with faster moving traffic in the offside lane, resulting in driver frustration, unsafe merging manoeuvres and possible side-swipe collisions.



**Recommendation**

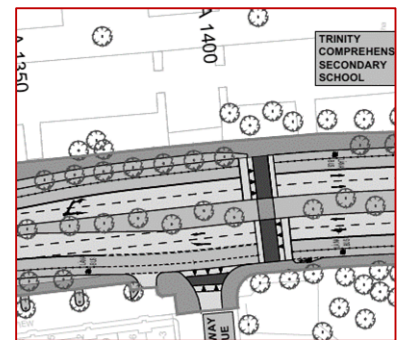
The layout of the merge should be offside traffic merging into the nearside traffic lane.

**3.2.16 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)*

*Summary: Proposed ramp may obscure visibility to the upcoming merge leading to sudden braking and rear end shunts.*

It is not clear from the information provided whether the proposed ramped crossing at Chainage A1410 may obscure the road markings downstream of the crossing for approaching northbound drivers. Should drivers be unable to see the upcoming lane-drop/merge in sufficient time this could lead to them being insufficiently aware of the upcoming lane-drop and the requirement to merge, resulting in sudden braking and rear-end-shunts.



**Recommendation**

Approaching drivers should have sufficient forward visibility to the merge arrangement.

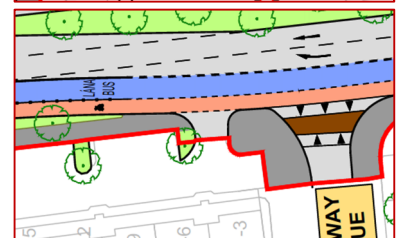
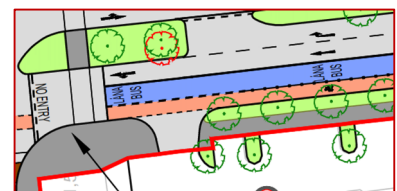
**3.2.17 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)*

*Summary: Discontinuous footpath provided at the vehicular access points to parking area will present a barrier to visually-impaired or partially-sighted individuals.*

Discontinuous footpaths have been indicated at the vehicular entrances to Gateway View at Chainage A1300 & A1380 approximately.

Discontinuities in the footway present difficulties for visually-impaired or partially-sighted individuals safely and independently navigating the road layout.



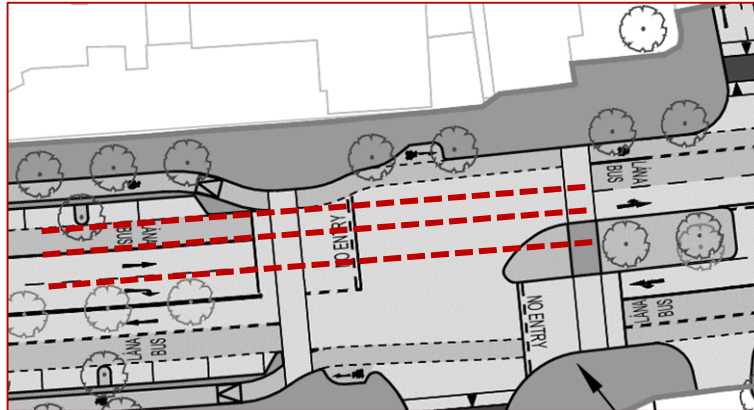
**Recommendation**

A continuous footpath should be provided at these locations, with a dropped kerb to permit vehicular access/egress to the car parking area.

### 3.2.18 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)*

*Summary: Southbound lane alignment through the Gateway Crescent junction may result in side-swipe collisions.*



The southbound traffic lanes & the bus lane on the approach to the junction with Gateway Crescent do not align with the lanes downstream of the junction. This could result in vehicles in the general traffic straight-ahead lane encroaching into the path of a vehicle in the bus lane, resulting in side-swipe collisions within or on the exit from the junction.

#### Recommendation

The traffic lanes upstream and downstream of the junction should better align, or guidance road markings should be provided to better direct drivers into the correct lane downstream of the junction.

### 3.2.19 Problem

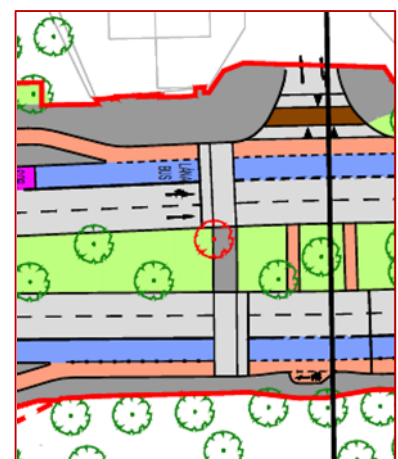
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0004 (Rev S3 L02)*

*Summary: Crossing facilities provided from Ballymun Road onto Shanliss Road may result in unsafe crossing manoeuvres.*

It is proposed to provide a right turning pocket for cyclist on Ballymun Road to access Shanliss Road. It is also proposed to provide cycle facilities in the central median. It is unclear how the facilities provided would operate and if cyclists would be able to safely cross the dual carriageway at this location, particularly during peak traffic times.

#### Recommendation

The proposed pedestrian crossing north of Shanliss Road should be amended to be a toucan crossing.



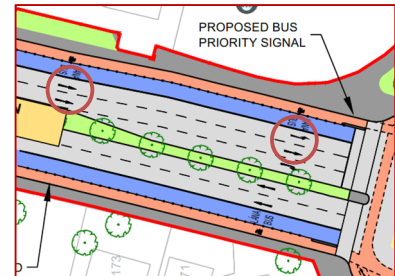
**3.2.20 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0005 (Rev S3 L02)*

*Summary: Nearside lane becomes a left-turn only lane. This might result in side swipe collisions should drivers attempt to change lanes if they wish to travel straight-ahead.*

The nearside lane on the northbound & southbound approach to the Collins Avenue junction becomes a left-turn only lane, which may not be anticipated by drivers resulting in late lane-change manoeuvres and possible side-swipe collisions.

In addition, two lanes have been indicated downstream of the junction which may encourage some drivers to travel within the nearside lane and then proceed straight-head at the junction, a manoeuvre which may not be anticipated by drivers in the straight-ahead lane leading to possible side-swipe collisions through, or on the exit, from the junction.



**Recommendation**

The nearside general traffic lane should cater for both straight-ahead & left-turn traffic at the junction.

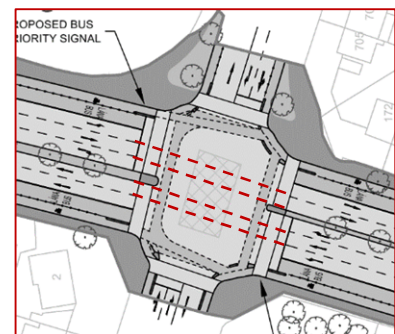
Alternatively, adequate advance notice by means of signage & lane-specific destination text road markings should be provided so that drivers can enter the appropriate lane for their intended destination upstream of the intersection, and the number of general traffic lanes downstream of the junction should match the number of general traffic lanes entering the junction.

**3.2.21 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0005 (Rev S3 L02)*

*Summary: Traffic lanes at the Collins Avenue junction do not align with the lanes downstream of the junction which might lead to side swipe collisions.*

The alignment of the straight-ahead lanes on the northbound & southbound approach to, and away from, the Collins Avenue junction is such that motorists in the general traffic straight-ahead lane who attempt to exit the junction in the offside downstream lane may encroach into the path of a right-turning vehicle in the adjacent right-turn lane, resulting in side-swipe collisions within the junction.



**Recommendation**

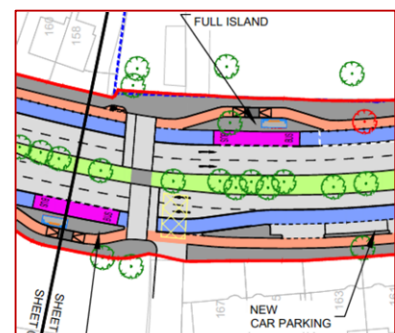
Guidance road markings should be provided to assist drivers traversing the junction, so as not to encroach into the adjacent lane, or the signal phasing should be amended to ensure that straight-ahead and right-turns do not occur at the same time.

**3.2.22 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0006 (Rev S3 L02)*

*Summary: The development of an additional lane upstream of a pedestrian crossing might result in overshoot collisions.*

The number of traffic lanes on the northbound carriageway increases from 1 to 2 on the immediate approach to the signalised crossing at Chainage A1950 approximately.



There is a concern that the proposed layout might result in drivers not paying sufficient attention to the pedestrian crossing while switching lanes resulting in overshoot type collisions.

### Recommendation

The creation of the additional lane should occur downstream of the pedestrian crossing.

#### 3.2.23 Problem

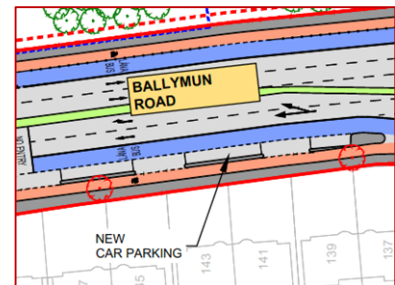
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0006 (Rev S3 L02)*

*Summary: Buffer zone between parking spaces and the cycle lane might be narrow and insufficient and may result in personal injuries should car occupants open the doors onto the cycle lane.*

Roadside parking has been indicated along the edge of the northbound carriageway between Chainage A1970 & A2140 approximately.

While a gap has been indicated between the car parking spaces and a cycle lane to the rear of the parking spaces, it is unclear what the width of the gap/islands is to be in this area.

Should the gap be of insufficient width there is a risk of a vehicle occupant opening a door into the path of an oncoming cyclist resulting personal injury incidents.



### Recommendation

Sufficient island width to allow for appropriate buffer zone between the cycle lane and the parking spaces should be provided.

#### 3.2.24 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0007 (Rev S3 L02)*

*Summary: Possible pedestrian/cyclist collisions should the proposed signalised crossing type be incorrect or have insufficient width to cater for anticipated volumes.*

It is unclear if the proposed signalised crossing of the Ballymun Road at Chainage A2330, near the DCU entrance, will be a toucan crossing. During the Site Visit evidence of cyclists crossing at the location of the existing signalised pedestrian crossing was noted, and it is expected that there would be a demand for cyclists wishing to cross this location. Should the crossing provided not be of sufficient width, there is an increased risk of cyclists/pedestrian collisions at this location.

In addition, it is unclear if there is sufficient room within the proposed road layout for cyclists waiting to cross at this location to do so without impeding/obstructing straight-ahead cyclists. This could result in straight-ahead cyclists entering the adjacent bus lane where they are at increased risk of being struck by a bus or other vehicle in the bus lane.

### Recommendation

The signalised crossing at this location should be a Toucan Crossing, with a facility which caters for waiting right-turning cyclists to do so without impeding straight-ahead cyclists in the cycle lane.

The width of the crossing should be adequate to cater for the anticipated volumes of pedestrians & cyclists during peak times.



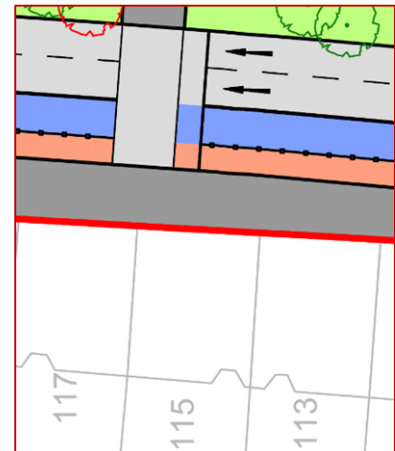
**3.2.25 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0007 (Rev S3 L02)*

*Summary: Location of proposed signalised crossing may impede access to adjacent residential properties, and result in collisions between vehicles entering/exiting these properties and non-motorised road users using the crossing.*

The proposed signalised crossing of the Ballymun Road at Chainage A2330, near the DCU entrance, is shown at a location which may impede vehicular access to/from the adjacent residential properties along the western side of the road. This could lead to collisions between vehicles entering/exiting these properties and non-motorised road users (NMUs) using the crossing.

Bollards have been indicated across the face of all of the residential accesses along the western side of the Ballymun Road in the vicinity of this crossing, which would further impede vehicular access/egress.



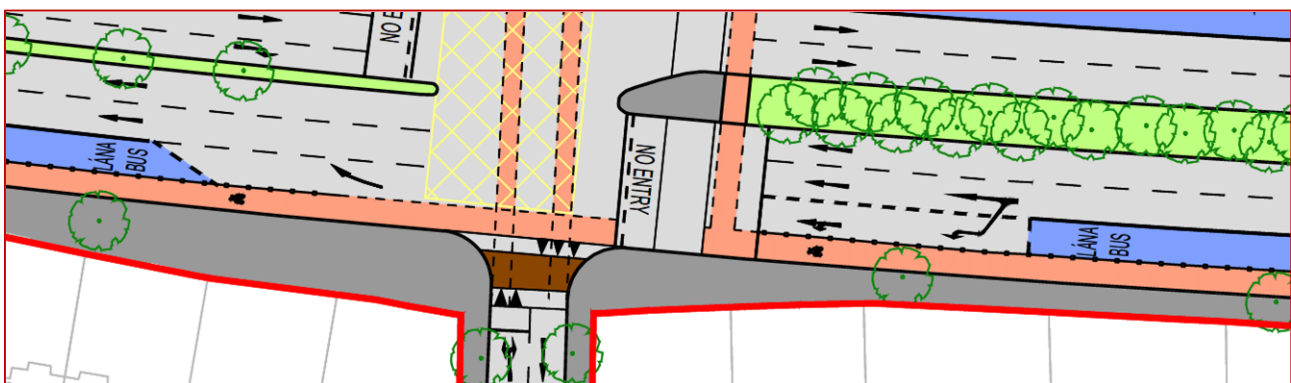
**Recommendation**

The location of the crossing should not impede access to the adjacent residential properties or result in conflicts between vehicles entering/exiting these properties and NMUs using the crossing. Gaps should be provided in the bollards to cater for vehicle access/egress from adjacent properties. The first bollard at the recommencement after a gap/break in the line of bollards should include a narrow reflective sign face with regulatory arrows advising drivers & cyclists of the correct side to pass.

**3.2.26 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0007 (Rev S3 L02)*

*Summary: Creation and subsequent termination of additional straight-ahead lane through junction increases the risk of sideswipe collisions downstream of the intersection.*



A short length of straight-ahead & left-turn lane is indicated on the northbound approach to the intersection with St Canices Road. This additional straight-ahead lane is removed a short distance downstream from the junction, before the bus lane resumes. This arrangement requires general traffic in this nearside lane to merge with traffic in the adjacent lane increasing the risk of side-swipe collisions.

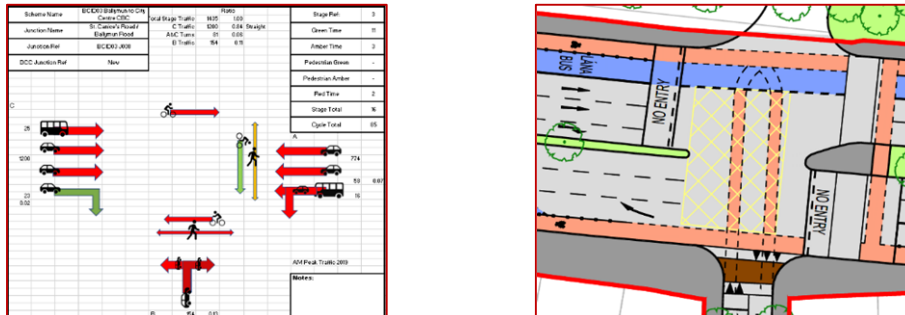
**Recommendation**

The nearside lane on the approach to the junction should be amended to cater for left-turns for all traffic and straight-ahead for buses only, with the downstream nearside lane being a bus lane.

### 3.2.27 Problem

**Location:** Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0007 (Rev S3 L02)

**Summary:** Potential conflicts between right-turning vehicles & right-turning cyclists at the St Canices Road junction.



At the St Canices Road junction right-turning cyclists are to turn right at the same time as southbound right-turning traffic. Right-turning drivers may be unaware of, and unprepared for, a right-turning cyclist given the distance between the starting positions of vehicles/cyclists. This may result in conflicts between right-turning vehicles & right-turning cyclists as they traverse the junction and/or on the entry to the side road.

### Recommendation

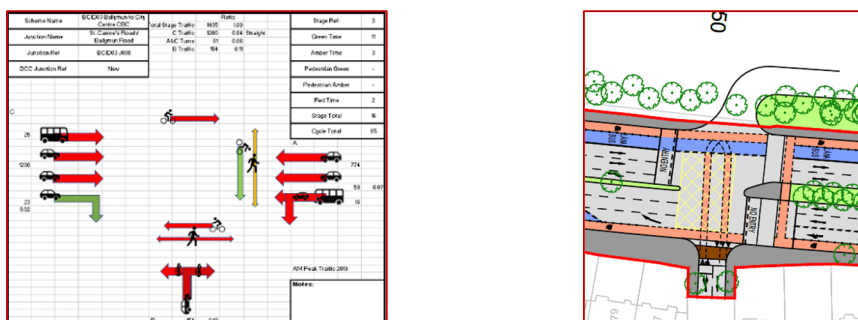
Right-turning cyclists should be given an advanced green to allow them to proceed before right-turning vehicles commence their manoeuvre and to allow cyclists to enter the side road in advance of vehicles.

Alternatively, these manoeuvres could be undertaken on a separate signal phase.

### 3.2.28 Problem

**Location:** Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0007 (Rev S3 L02)

**Summary:** Access shown on the eastern side of road is not indicated within the proposed signal phasing.



A new access is shown on the eastern side of the Ballymun Road at the junction with St Canices Road, however this arm of the junction is not included on the signal phasing information provided. Should the traffic to/from this arm of the junction not be adequately catered for within the signal phasing this could result in unsafe entry/exit manoeuvres and conflicts with vehicles, cyclists or pedestrians at this junction.

In addition, no signalised pedestrian crossing of the relatively wide entry on this arm has been indicated, resulting in crossing pedestrians being exposed to vehicular traffic over an extended distance and presenting an obstacle to visually-impaired road users independently & safely navigating the proposed road layout.

### Recommendation

During the design development this arm of the junction should be catered for within the proposed junction layout and signal phasing, and an appropriate pedestrian crossing provided.

#### 3.2.29 Problem

*Location:* Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)

*Summary:* Changes to road layout at Griffith Avenue junction may give rise to inappropriate/unsafe manoeuvres, in particular in the initial weeks/months following implementation of the revised layout.

The proposed changes to the permitted direction of travel at the Griffith Avenue junction may give rise to confusion and inappropriate manoeuvres on behalf of drivers who are familiar with the current layout, in particular in the initial weeks/months following implementation of the revised layout. For example, northbound drivers approaching the turn onto St Mobhi Road at Chainage A2900 may inadvertently stray into the oncoming traffic lane.



### Recommendation

Splitter islands with appropriate regulatory signage should be incorporated into the road layout (e.g. at Chainage A2900, C100 & C180) to assist drivers in understanding the new layout at this location and to prevent inappropriate manoeuvres.

#### 3.2.30 Problem

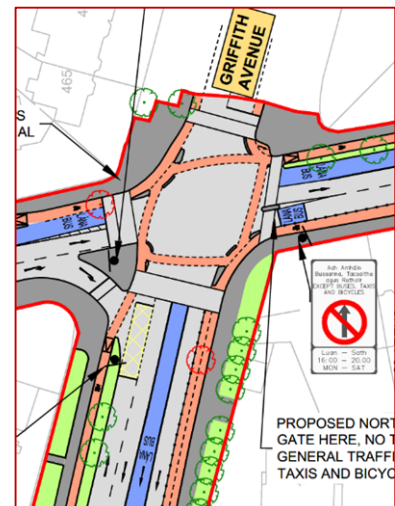
*Location:* Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)

*Summary:* Proposed layout does not cater for right-turning cyclists from the eastbound two-way cycle track on the southern side of Griffith Avenue at the junction with St Mobhi Road.

A two-way cycle lane has been indicated on the southern side of Griffith Avenue between the junction with Ballymun Road and St Mobhi Road. It is unclear how eastbound cyclists on this two-way section of cycle track will turn right onto St Mobhi Road southbound, as the layout would appear to require the cyclists to traverse the junction clockwise, undertaking three crossing manoeuvres in order to proceed along their intended route.

It is unlikely that cyclists will follow this lengthy route, but rather proceed into the westbound cycle lane across the St Mobhi Road arm of the junction against the flow of oncoming cyclists, resulting in unsafe manoeuvres by these cyclists leading to possible collisions with oncoming cyclists.

Alternatively, these cyclists may choose to cross at the adjacent signalised pedestrian crossing which may not have adequate width to cater for pedestrians & cyclists leading to possible cyclist/pedestrian collisions.



### Recommendation

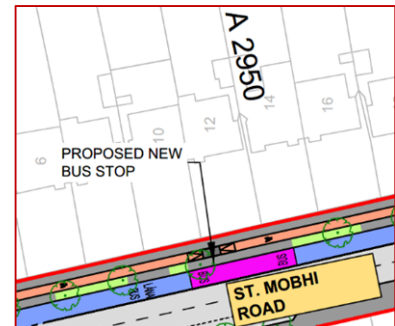
During the design development the layout should be amended to facilitate right-turns from the two-way eastbound cycle lane onto St Mobhi Road southbound, possibly by amending the signalised crossing of St Mobhi Road to a Toucan Crossing.

### 3.2.31 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)*

*Summary: Proposed bus stop location at Chainage A2940 may impede vehicular access/egress to the private dwellings on the eastern side of St Mobhi Road.*

The proposed bus stop location at Chainage A2940 may impede vehicular access/egress to the private dwellings on the eastern side of St Mobhi Road, resulting in unsafe access/egress manoeuvres and possible conflicts with passengers waiting at the bus stop.



### Recommendation

During the design development the placement of the bus stop should not impede access to the adjacent residential properties, and safe access/egress should be possible.

### 3.2.32 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)*

*Summary: It is unclear where northbound drivers are advised of the restrictions proposed at the intersection of St Mobhi Road & Griffith Avenue.*

There is no through route for general northbound traffic from St Mobhi Road at the Griffith Avenue junction, and it is unclear where northbound drivers will be first advised of this restriction so that they can take an alternate route.

A failure to provide drivers with adequate notice of the restrictions proposed may result in large volumes of traffic proceeding north along St Mobhi Road and undertaking inappropriate & possibly unsafe manoeuvres at the junction with Griffith Avenue.

### Recommendation

Appropriate advance warning should be provided for northbound drivers advising them of the restrictions, and alerting them to the appropriate alternate routes which can be taken. Directional signage along the alternate routes may be required in order to guide drivers towards their intended destinations.

### 3.2.33 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0008 (Rev S3 L02)*

*Summary: The restrictions proposed at the intersection of St Mobhi Road & Griffith Avenue may displace traffic onto the adjacent road network, giving rise to potential safety issues outside of the scheme extents.*

The proposed restrictions at the intersection of St Mobhi Road & Griffith Avenue could result in significant volumes of traffic being displaced onto the adjacent road network, in particular to the west of St Mobhi Road. This displaced traffic could give rise to potential safety issues outside of the scheme extents, particularly as much of the adjacent road network consists of residential streets.

The displacement of traffic onto roads which have not been designed to cater for significant volumes, and on which there are likely to be greater numbers of vulnerable road users (e.g. children) is likely to result in an increased risk of vehicular/NMU collisions leading to serious injuries or fatalities.



**Recommendation**

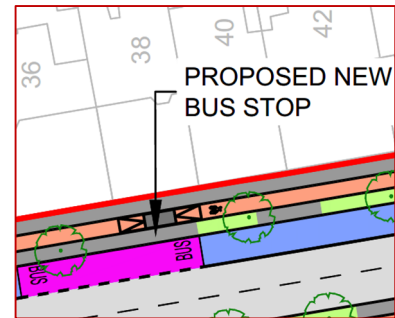
An assessment of the effect of displaced traffic on the adjacent road network should be undertaken, and measures should be implemented to address any safety issues that may arise.

**3.2.34 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0009 (Rev S3 L02)*

*Summary: Proposed bus stop location at Houses Numbered 36 & 38 on St Mobhi Road may impede vehicular access/egress to these private dwellings.*

The proposed bus stop location at Houses Numbered 36 & 38 on St Mobhi Rd may impede vehicular access/egress to these dwellings, resulting in unsafe access/egress manoeuvres and possible conflicts with passengers waiting at the bus stop.



**Recommendation**

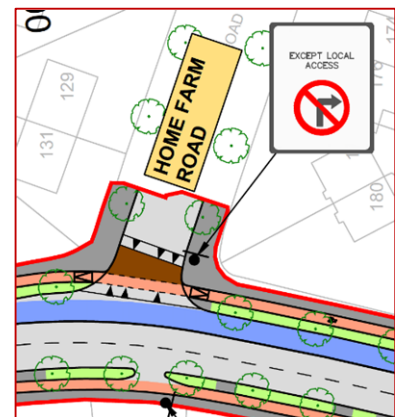
During the design development the placement of the bus stop should not impede access to the adjacent residential properties, and safe access/egress should be possible.

**3.2.35 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0009 (Rev S3 L02)*

*Summary: Potential for unsafe right-turns by cyclists should visibility towards approaching traffic be impeded by existing/proposed planting.*

A gap is indicated in the grass verge between the cycle track and the traffic lane on St Mobhi Road at the Home Farm Road junction, presumably to allow northbound cyclists to turn right into/out of Home Farm Road.



However, cyclists turning into Home Farm Road may have their view of approaching vehicles obscured by the trees within the grass verge either side of this opening, resulting in possible unsafe turning manoeuvres and vehicle/cyclist collisions.

In addition, the position of the gap may not position cyclists optimally for turning right onto the correct side of the side road.

**Recommendation**

Cyclists turning right at this location should have adequate visibility to approaching traffic in order to identify an appropriate & safe gap to complete their turning manoeuvre. The position of the gap should be adjusted to guide cyclists turning into Home Farm Road onto the correct side of the carriageway downstream.

### 3.2.36 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-0009 (Rev S3 L02)*

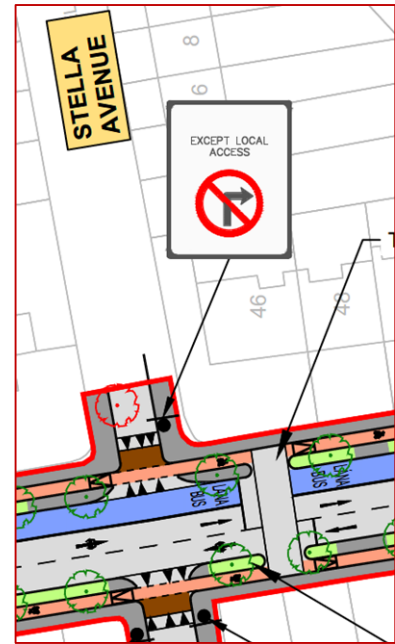
*Summary: Proximity of signalised crossing to side road junction, and the position of planting on the approaches to the crossing, could result in drivers failing to stop resulting in overshoot and possible vehicle/pedestrian collisions.*

The position of the toucan crossing at Chainage A3200 is in close proximity to the Stella Avenue junction, and there is a risk that drivers turning out of Stella Avenue may fail to see the signals, resulting in overshoot into the pedestrian crossing and possible vehicle/pedestrian collisions.

In addition, the vegetation on the approach to the crossing may result in approaching drivers failing to see the signals, resulting in a failure to stop and possible vehicle/pedestrian collisions.

#### Recommendation

All drivers approaching the crossing, either on St Mobhi Road or from the side roads, should have adequate forward visibility to the signals at the crossing.



### 3.2.37 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00011 (Rev S3 L02)*

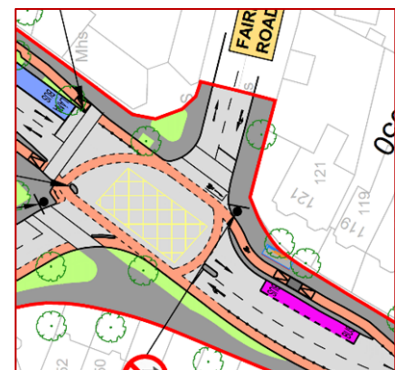
*Summary: No pedestrian crossing indicated on the southern side of the Botanic Road/St Mobhi Road junction along a likely pedestrian crossing desire line.*

No pedestrian crossing has been indicated on the southern side of the Botanic Road/St Mobhi Road junction. The position of the bus stop on the eastern side of Botanic Road may give rise to a pedestrian crossing desire line on the southern side of this junction.

The indicated route for pedestrians would be to cross the three other arms of the junction in order to reach this bus stop, a lengthy route which pedestrians are unlikely to follow, resulting in potentially unsafe crossing manoeuvres and vehicle/pedestrian collisions.

#### Recommendation

A pedestrian crossing of the southern arm of the Botanic Road/St Mobhi Road junction should be provided, with a crossing possibly accommodated within Stage 5 of the signal phasing.



**3.2.38 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00012 (Rev S3 L02)*

*Summary: Angled cycle crossing from Prospect Way onto Finglas Road could lead to vehicle/cyclist or cyclist/cyclist collisions.*

The layout of the northbound cycle lane from Prospect Way onto Finglas Road, which is shown running diagonally across both traffic lanes on Finglas Road, will result in cyclists crossing the northbound traffic lane with limited visibility towards approaching traffic which may come through the signals late or have been stopped in a queue downstream of the pedestrian crossing.



In addition, queued vehicles could extend in both directions over the cycle crossing and present difficulties for cyclists in completing this manoeuvre safely, in particular where visibility towards cyclists on the northbound cycle lane which they are joining is limited, resulting in possible cyclist/cyclist collisions.

**Recommendation**

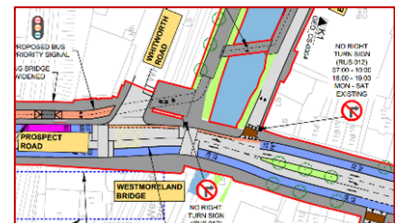
Northbound cyclists should cross at the same location as right-turning cyclists from Finglas Road northbound onto Prospect Way, with this crossing amended to be a Toucan crossing.

**3.2.39 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00013 (Rev S3 L02)*

*Summary: Narrow cycle lane & absence of connectivity between cycle provisions at the Whitworth Road/Prospect Road junction.*

The short length of narrow cycle track through the Whitworth Road junction with Prospect Road, southbound, does not tie-in with the existing cycle facilities to the north and it is unclear how cyclists are to travel from one facility to the other.



Cyclists may traverse the intervening footpath at an inappropriate location, leading to possible cyclist/pedestrian collisions.

In addition, the width of the cycle track through the junction appears to be quite narrow, which may result in cyclists being in close proximity to vehicular traffic through the junction, with a resulting increased risk of being struck by a bus or other vehicle.

**Recommendation**

The cycle facilities at this junction should be continuous, with appropriate connections between the different facilities to permit safe travel by cyclists, and of sufficient width to ensure adequate separation between cyclists and vehicular traffic.

### 3.2.40 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00013 (Rev S3 L02)*

*Summary: No connectivity has been indicated for cyclists wishing to travel to/from the existing Grand Canal towpath and possible Greenway.*

No connectivity has been indicated for cyclists wishing to travel to/from the Grand Canal towpath, which during the Site Visit was noted to attract moderate volumes of cyclists. It is also understood that the existing towpath may be upgraded in the future to a Greenway, which is likely to result in an increase in the volume of cyclists travelling to/from it and the cycle facilities proposed as part of this scheme.

An absence of appropriate connections could result in cyclists travelling within the footpaths leading to possible cyclist/pedestrian collisions.

### Recommendation

Appropriate connectivity should be provided between the cycle facilities proposed as part of this Scheme and the existing Canal Towpath/future Greenway.

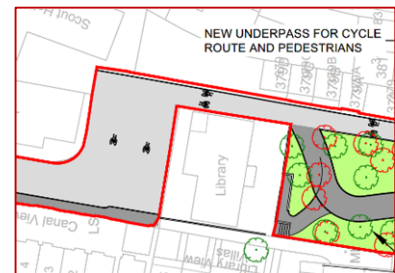
### 3.2.41 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00014 (Rev S3 L02)*

*Summary: Limited forward visibility may lead to collisions between oncoming vehicles and/or cyclists.*

During the Site Visit it was noted that forward visibility for all road users proceeding around the north-eastern corner of the library, north of the North Circular Road, is extremely limited.

The proposed arrangement does not alter the existing road layout at this location, and insufficient forward visibility could result in collisions between opposing traffic, or between opposing vehicle/cyclist traffic.



### Recommendation

Adequate forward visibility should be provided at this location for the anticipated operational speeds. It may be possible to provide build-outs on the northern side of the corner to guide vehicles along a route which maximises, as much as possible, forward visibility towards approaching vehicles/cyclists.

Alternatively, measures should be incorporated to ensure that approaching road users do so at a speed commensurate with the available forward visibility.

### 3.2.42 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00014 (Rev S3 L02)*

*Summary: Two entry lanes for straight-ahead traffic, and a single exit Lane, could lead to side-swipe collisions on the exit from the North Circular Road/Phibsborough Road junction.*

Two straight-ahead eastbound lanes have been indicated on the North Circular Road on the approach to its junction with Phibsborough Road, however only a single effective lane on the exit from the junction.



This could result in side-swipe collisions on the eastbound exit from the junction.

**Recommendation**

The road layout should be amended so that there is a single straight-ahead lane on the North Circular Road approach to this junction.

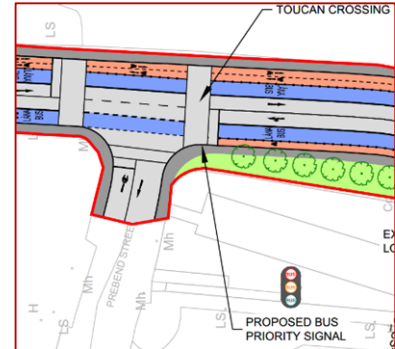
**3.2.43 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00016 (Rev S3 L02)*

*Summary: Potential for cyclists waiting to cross at the Prebend Way Toucan Crossings to block the adjacent footpath or the path of straight-ahead cyclists.*

It is likely that there will be significant volumes of cyclists wishing to cross the road at the two Toucan crossings at the intersection with Prebend Street to/from TUD. No area/reservoir for crossing cyclists to wait, without either blocking pedestrians wishing to travel along the adjacent footpath or blocking cyclists wishing to proceed straight-ahead, has been indicated.

This could result in some cyclists moving out into the adjacent bus lane in order to continue along their route, with an increased risk of being struck by a vehicle in the bus lane.



**Recommendation**

The road layout should accommodate the expected volumes of crossing cyclists at this location without impeding pedestrians on the adjacent footpath or straight-ahead cyclists.

**3.2.44 Problem**

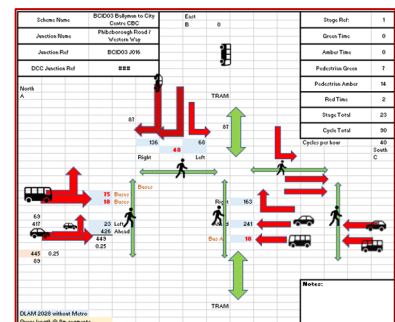
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00016 (Rev S3 L02)*

*Summary: Pedestrian crossing of tramline occurs during a green phase for the trams, resulting in possible tram/pedestrian collisions.*

In Stage 1 of the signal phasing at the Western Way junction, the pedestrian crossing of the Luas tracks, on the eastern side of the junction, is indicated as occurring at the same time as the Luas proceeding, leading to possible conflicts between trams/pedestrians.

**Recommendation**

The pedestrian crossings of the Luas and the tram signals should not have a green/proceed signal on the same signal phase.

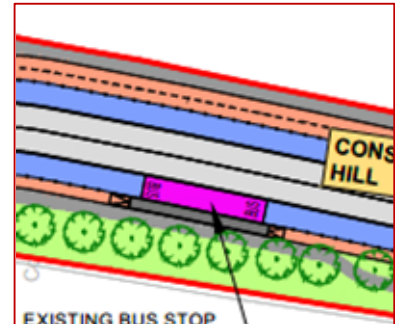


### 3.2.45 Problem

*Location:* Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00016 (Rev S3 L02)

*Summary:* Cyclist proximity to a stationary bus at the bus stop could result in collisions between cyclists and disembarking passengers.

The route for northbound cyclists at the bus stop at Chainage A6040 is such that cyclists may be passing close to a stationary bus where visibility to them may be restricted, presenting a risk to disembarking passengers and possibly resulting in collisions between cyclists and disembarking passengers.



### Recommendation

The layout at this location should be amended so that cyclists can safely pass the bus stop away from a stationary bus and waiting passengers.

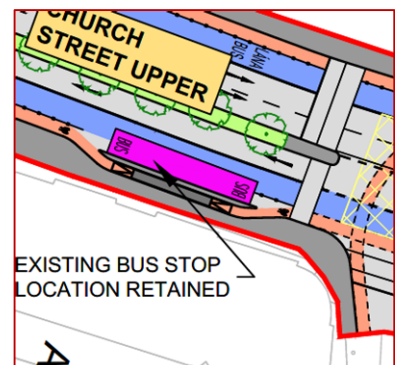
### 3.2.46 Problem

*Location:* Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00017 (Rev S3 L02)

*Summary:* Cyclist proximity to a stationary bus at the bus stop could result in collisions between cyclists and disembarking passengers.

The bus stop at Chainage A6250 has been indicated as being inset from the bus lane, resulting in a very narrow island, a sudden change in direction for cyclists and a narrow footpath width.

The layout is such that cyclists may be passing close to a stationary bus where visibility to them may be restricted, presenting a risk to disembarking passengers and possibly resulting in collisions between cyclists and disembarking passengers.



### Recommendation

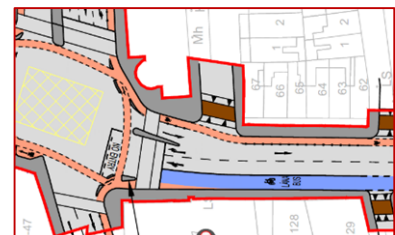
The bus stop should be positioned within the adjacent bus lane and the floating-island increased in width so that there is adequate room for the island to accommodate waiting passengers without impeding cyclists, and to increase the distance between cyclists and disembarking passengers.

### 3.2.47 Problem

*Location:* Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00017 (Rev S3 L02)

*Summary:* Queued right-turning vehicles may impede straight-ahead or left turning vehicles leading to driver frustration, and rash/unsafe manoeuvres.

The length/width of the proposed right turn lane on Church Street northbound, on the approach to its junction with King St. North does not appear to be sufficient to cater for the likely right-turning demand at this location, nor capable of permitting a right-turning vehicle to wait without impeding straight-ahead or left-turning traffic in the adjacent lane.



This could result in driver frustration with straight-ahead or left-turning traffic entering the bus lane upstream of the junction, leading to possible conflicts between vehicles and cyclists in the cycle lane and/or unsafe manoeuvres at the junction.

**Recommendation**

The layout should be amended to provide a single all-movements lane at this location, with measures to prevent vehicle entry to the bus lane from the general traffic lane on the approach to the junction.

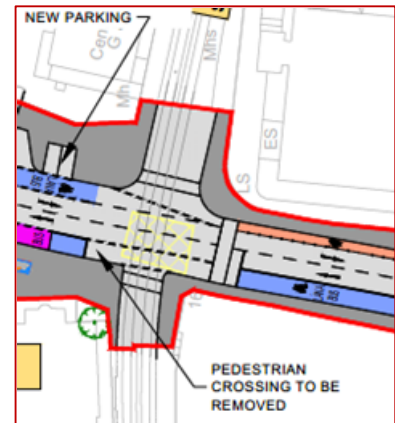
**3.2.48 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00018 (Rev S3 L02)*

*Summary: Merging of the bus lane with the adjacent traffic lane is indicated as occurring within the junction and across the Luas tracks.*

The merging of the southbound bus lane with the adjacent general-traffic lane on the Church Street approach to the junction with Chancery Street is indicated as occurring within the junction, and across the Luas tracks.

This could lead to standing vehicles within the junction and on the tram lines where vehicles in the traffic lane fail to give way to merging buses and where there is a queue downstream, with a resulting increased risk of tram/vehicle conflicts.



**Recommendation**

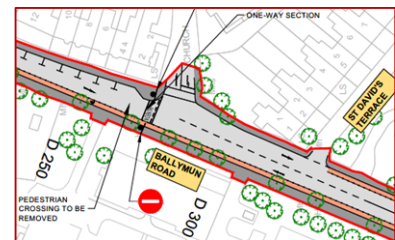
The reduction in the number of lanes should be completed prior to entering the junction, similar to the current arrangement. This junction should be a 'Bus Priority' signals junction.

**3.2.49 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00020 (Rev S3 L02)*

*Summary: Insufficient guidance for southbound drivers on the one-way section of Ballymun Road on the approach to the recommencement of the two-way section of road at Chainage D275*

Vehicles travelling south on the proposed new one-way section of Ballymun Road, approaching the recommencement of the two-way section of road at Chainage D275, may inadvertently enter the oncoming lane leading to collisions with oncoming traffic.



**Recommendation**

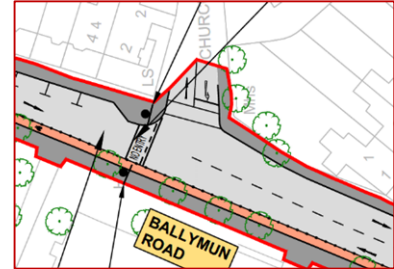
The road layout on the southbound approach should include measures (e.g. a buildout) which aligns southbound traffic with the downstream southbound lane to the south of the junction with Church Avenue.

### 3.2.50 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00020 (Rev S3 L02)*

*Summary: Should the Church Avenue & Ballymun Road junction not be signalised, there is a risk of conflicts between right-turning vehicles into Church Avenue and southbound vehicles on Ballymun Road.*

It is unclear if the junction between Ballymun Road and Church Avenue is to be signalised. No stop line has been indicated on the northbound approach to the junction, however a stop line and signalised pedestrian crossing markings appear to be shown on the Church Avenue arm.



Should signals not be provided at this junction, there is an increased risk of conflicting manoeuvres, in particular between right-turning northbound vehicles into Church Avenue & southbound vehicles on Ballymun Road who may presume that they have priority.

### Recommendation

This junction should be signalised.

### 3.2.51 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00021 (Rev S3 L02)*

*Summary: Wide entrance may result in high exit speeds and exposes pedestrians & cyclists to lengthy crossings.*

The layout of the access to the Bon Secours hospital will result in cyclists travelling across the face of the entrance being exposed to exiting vehicles for a lengthy distance, and some exiting vehicles may travel at inappropriately high speeds due to the layout of the exit.

In addition, the access layout will result in a relatively lengthy and circuitous route for pedestrians, who are likely to disregard the indicated pedestrian route and take a more direct route across the access where they would be exposed to possible conflicts with entering/exiting traffic over a greater distance.



### Recommendation

The access layout should be amended to provide a crossing route for pedestrians along the most likely pedestrian desire line, and to reduce the width of the entry/exit in order to reduce the exposure of crossing pedestrians & cyclists to vehicular traffic entering/exiting the hospital. Exiting traffic should be brought to the junction with Glasnevin Hill at an angle as close to 90° as possible.



**3.2.52 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00021 (Rev S3 L02)*

*Summary: A stationary bus at the bus stop may restrict a driver’s visibility towards vehicles overtaking the bus.*

The position of the bus stop immediately north of the entrance to the Bon Secours hospital may impede visibility for drivers exiting the hospital towards approaching vehicles overtaking a stationary bus, leading to unsafe exits and possible side-on collisions.



**Recommendation**

Drivers exiting from the hospital should have adequate visibility to approaching southbound traffic, including traffic passing a stationary bus.

**3.3 Finglas Route**

**3.3.1 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00023 (Rev S3 L02)*

*Summary: Two lane entries and single lane exits at the roundabout may result in an increased risk of side swipe collisions.*

Two-lane entries are indicated on three of the arms at the St Margaret Road roundabout, however not all arms have two-lane exits.

This could result in poor lane discipline on behalf of some drivers, leading to possible side-swipe incidents on the circulating carriageway and at the exits from the roundabout.



**Recommendation**

Concentric spiral markings should be provided within the roundabout circulating carriageway.

**3.3.2 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00023 (Rev S3 L02)*

*Summary: Possible queues extending into circulating carriageway from signalised crossing of exits.*

The proximity of the signalised pedestrian crossings of the St Margaret Road & Casement Road arms of the roundabout could lead to queues extending back from the signals into the circulating carriageway, blocking adjacent entries and leading to driver frustration and rash/unsafe manoeuvres.



**Recommendation**

During the design development, the requirement for yellow junction box markings within the circulating carriageway should be assessed.

### 3.3.3 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00023 (Rev S3 L02)*

*Summary: Gap in proposed footpath provision to/from bus stop.*

A footpath is indicated between North Road & Finglas Road, near the southbound bus stop at Chainage B80, and is shown terminating at a grass verge, which will require pedestrians travelling to/from the bus-stop having to cross an unpaved area leading to possible slips, trips or falls in particular during wet or icy weather.



#### Recommendation

The footpath should extend to the bus stop.

### 3.3.4 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00026 (Rev S3 L02)*

*Summary: Residual width of the footpath may be insufficient to accommodate the likely/expected volumes of pedestrians on Mellowes Road, west of its junction with Finglas Road.*

A cycle track is proposed on the northbound off-ramp at the grade-separated junction with Mellowes Road.



The cycle track is indicated as turning left onto Mellowes Road westbound, and appears to be positioned almost entirely within the existing footpath.

This may result in the residual width of the footpath being insufficient for the volume of pedestrians.

#### Recommendation

The width of the footpath should be adequate to accommodate the expected/likely volume of pedestrians at this location. Given the width of the Mellowes Road carriageway, it may be preferable to reduce the carriageway width in order to accommodate the proposed cycle facility.

### 3.3.5 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00026 (Rev S3 L02)*

*Summary: Unclear how cyclists will turn right, towards Finglas village, from the northbound off-ramp at the Mellowes Road junction with Finglas Road.*

A cycle track is proposed on the northbound off-ramp at the grade-separated junction with Mellowes Road.



It is unclear how it is proposed that northbound cyclists on the off-ramp will turn right towards Finglas village, a likely route for pedestrians/cyclists at this location.

A failure to accommodate right-turning cyclists could lead to unsafe crossing or turning manoeuvres, and possible vehicle/cyclist collisions.

#### Recommendation

During the design development the road layout should be amended to facilitate safe right-turns by cyclists at this location.

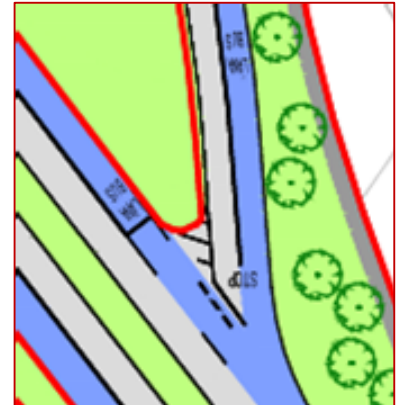
**3.3.6 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00026 (Rev S3 L02)*

*Summary: Orientation of stop line in the general traffic lane could lead to vehicles overhanging into the bus lane on Finglas Road, and the absence of signal control on the merging bus lane could lead to unsafe merging manoeuvres and collisions.*

The angle of the stop line on the southbound on-ramp at the grade-separated junction is not shown as perpendicular to the direction of approaching traffic, which could lead to vehicles at the stop line protruding into the path of vehicles in the bus lane on the Finglas Road.

In addition, no stop line has been indicated on the bus lane on the on-ramp approaching the merge with the Finglas Road. It is unlikely that a bus can merge safely given the entry angle at this location, and the possible lack of visibility towards approaching traffic within the bus lane on the Finglas Road. This could result in collisions between merging bus lane traffic and straight-through southbound bus lane traffic



**Recommendation**

The stop line should be perpendicular to the direction of travel of approaching traffic.

In addition, the stop line should extend across the bus lane on the on-ramp at the grade-separated junction, and the bus lane should operate under signal control.

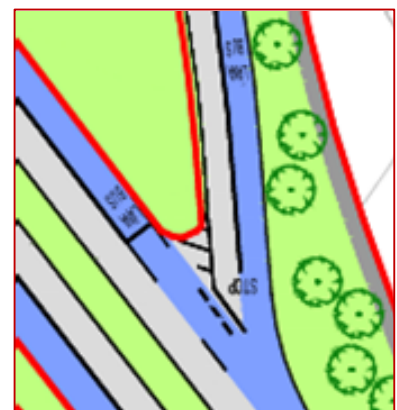
**3.3.7 Problem**

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00026 (Rev S3 L02)*

*Summary: Drivers travelling within the bus lane may attempt to avoid a red signal at the last minute by undertaking a late lane-change manoeuvre leading to side-swipe collisions*

A stop line has been indicated within the bus lane only on the Finglas Road approaching the southbound merge from the Mellowes Road grade-separated junction. It appears that the intention is that only bus lane traffic will be required to stop at the signals, and that traffic in the adjacent traffic lane will be permitted to continue.

There is a risk that some drivers travelling within the bus lane may attempt to minimise perceived delays and avoid a red signal at the last minute, by undertaking a late lane-change manoeuvre leading to possible side-swipe collisions with vehicles in the adjacent traffic lane.



**Recommendation**

Measures should be provided to prevent late manoeuvres on the approach to these signals.

### 3.3.8 Problem

*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00027 (Rev S3 L02)*

*Summary: Requirement for left-turning traffic to cross straight-ahead bus lane traffic may lead to side-swipe collisions.*

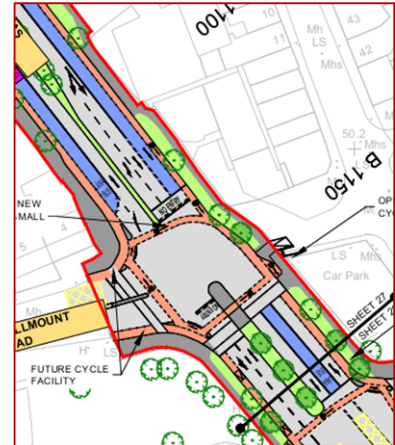
On the southbound approach to the Wellmount Road junction, the signal phasing indicates that general traffic in the straight-ahead lane and traffic in the adjacent bus lane can proceed at the same time.

However immediately downstream of the first intersection, general traffic wishing to turn left must enter the left-turning lane on the nearside of the bus lane.

Permitting both traffic lanes to proceed simultaneously may result in an increased likelihood of side-swipe collisions through the junction.

#### Recommendation

The bus lane traffic and the general traffic lane should proceed on separate signal phases.



### 3.3.9 Problem

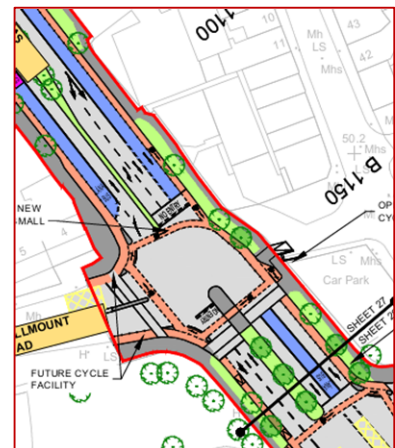
*Location: Drawing No BCIDD-ROT-GEO\_GA-0304\_XX\_00-DR-CR-00027 (Rev S3 L02)*

*Summary: Relatively short distance for traffic to merge downstream of junction may lead to side-swipe collisions.*

The provision of two straight-ahead lanes on the northbound approach to the Wellmount Road junction, with a subsequent requirement to merge downstream of the junction, will require vehicles in the nearside lane having to merge over a relatively short distance on the exit from the junction, leading to possible side-swipe collisions.

#### Recommendation

The nearside lane on the northbound approach to the junction should be a straight-ahead for buses only, and left-turn only for all other vehicles.



## 4 Observations

- 4.1 While tactile paving has not been indicated at this early stage in the design process, it will be required at all controlled & uncontrolled pedestrian crossings, and also at the interface between segregated pedestrian/cyclist facilities and shared surfaces, for example the shared surface which extends out to the “floating island” bus stop arrangements.

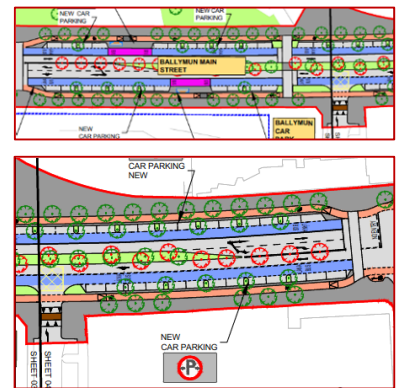
In addition, measures will be required at the proposed “floating island” bus stop arrangements to ensure that visually impaired public transport users are guided safely to/from the bus stop and the adjacent footpath.

- 4.2 New parking spaces have been indicated on either side of Ballymun Main Street between Chainage A1020 & A1250, approximately.

No mobility impaired parking spaces have been indicated, which could result in mobility-impaired drivers having difficulties in accessing/egressing their vehicle when parked, in particular where access/egress is required from/into the adjacent bus lane.

The time required for a mobility-impaired driver to enter/exit their vehicle would expose these drivers to an increased risk of being struck by a vehicle in the bus lane.

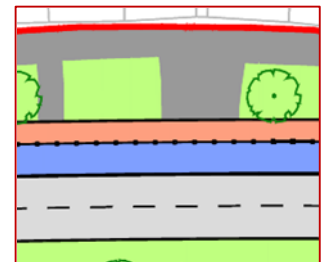
Mobility impaired parking spaces should be provided which permit safe access/egress for these drivers to/from their vehicles.



- 4.3 Trees have been indicated within the median of the Ballymun Road. Some have been indicated in close proximity to the signalised crossings at Northwood Avenue. No information is available at this early stage in the design process on the proposed tree species.

Care will be required during the design development to ensure that any proposed planting close to a pedestrian crossing and/or signalised junction does not impede an approaching driver’s visibility to the signals, or the inter-visibility between a pedestrian about to commence crossing and an approaching driver.

- 4.4 Bollards have been indicated across the private accesses along the eastern side of the Ballymun Road between Chainage A1550 to A1800, on the western side of the road immediately north of the Collins Avenue junction and on the eastern side to the south of the Collins Avenue junction. This is assumed to be a CAD error, however a gap at the private accesses should be provided.



- 4.5 The signal phasing at the Mobhi Road/Griffith Avenue junction does not include a phase to permit cyclists to proceed straight/turn right onto Griffith Avenue eastbound. However, there appears to be ample opportunity to facilitate this manoeuvre within the signal phasing in conjunction with the proposed pedestrian crossing phases.

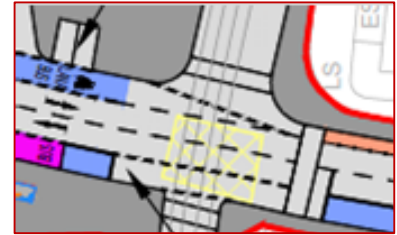
During the design development the signal phasing should allow for this manoeuvre.

- 4.6 The signal phasing at the Botanic Road/Prospect Way does not appear to cater for southbound cyclists from the Finglas Road turning right onto the two-way cycle track along Botanic Road. However, there appears to be ample opportunity to facilitate this manoeuvre within the signal phasing in conjunction with the proposed pedestrian crossing phases.

During the design development the signal phasing should allow for this manoeuvre.

- 4.7 No stop line has been indicated on the Church Street southbound approach to its junction with Chancery Street.

This is presumed to be a drafting error/omission. During the design development a stop line should be included for this approach to the junction.



- 4.8 Bus cage markings have been indicated within the bus lane on the southbound carriageway at Chainage A2000 approximately. These are indicated to the south of the proposed floating-island bus stop, and may be a draughting error.

## 5 Road Safety Audit Team Statement

We certify that we have examined the drawings referred to in this report. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme.

The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

No one on the Road Safety Audit Team has been involved with the design of the scheme.

### ROAD SAFETY AUDIT TEAM LEADER

Peter Monahan

Signed:



Dated:

22<sup>nd</sup> December 2021

### ROAD SAFETY AUDIT TEAM MEMBER

Mazen Al Hosni

Signed:



Dated:

22<sup>nd</sup> December 2021

## **Appendix A – Road Safety Audit Brief Checklist**



Have the following been included in the audit brief?: (if 'No', reasons should be given below)

	<b>Yes</b>	<b>No</b>
1. The Design Brief	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Departures from Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Scheme Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Scheme Details such as signs schedules, traffic signal staging	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Previous Exception Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Start date for construction and expected opening date	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Any elements to be excluded from audit	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**Any other information?**

(if 'Yes', describe below)

<input type="checkbox"/>	<input checked="" type="checkbox"/>
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## **Appendix B – Documents Submitted to the Road Safety Audit Team**

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 1 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0001	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 2 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0002	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 3 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0003	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 4 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0004	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 5 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0005	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 6 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0006	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 7 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0007	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 8 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0008	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 9 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0009	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 10 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0010	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 11 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0011	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 12 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0012	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 13 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0013	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 14 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0014	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 15 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0015	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 16 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0016	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 17 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0017	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 18 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0018	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 19 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0019	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 20 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0020	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 21 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0021	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 22 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0022	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 23 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0023	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 24 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0024	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 25 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0025	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 26 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0026	L02
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Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 30 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0030	L02
Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 31 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0031	L02
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Ballymun / Finglas to City Centre Scheme General Arrangement Sheet 34 of 37	BCIDD-ROT-GEO_GA-0304_XX_00-DR-CR-0034	L02
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19117 Proposed Signal Staging Ballymun Final Issue	-	-
19117 Proposed Signal Staging Finglas FINAL REV3	-	3

## Appendix C – Feedback Form

## Road Safety Audit Feedback Form

**Scheme:** BusConnects Core Bus Corridors Ballymun/Finglas to City Centre Scheme

**Route No.:** Local urban roads within Dublin City

**Audit Stage:** Stage 1 Road Safety Audit      **Date Audit Completed:** 9<sup>th</sup> Sept. 2021

		To Be Completed by Designer		To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.1.1	Yes	No	<p>Straight-ahead cyclists generally progress initially with the bus stage. This establishes the movement for cyclists prior to any permitted left turning stage for general traffic. Where the left turning traffic volumes exceed the international best practice threshold of 150 PCU/hr the straight-ahead cycle movement is stopped while left turns are permitted. The layout is not dissimilar to junctions in the Netherlands where left turns are separated from cyclists by a wide separator island, and is in line with the NTA BusConnects Guidance document.</p> <p>Nevertheless, each junction will be examined further during detailed design and if necessary additional measures may be included.</p>	Yes
3.1.2	Yes	Yes		
3.1.3	Yes	No	<p>The bus shelter will be located on the footpath rather than the island to encourage pedestrians to wait here. The floating island function here is to allow pedestrians a chance to board without risk of a cyclist following behind or the bus ramp to be laid without creating a hazard to cyclists. It is not intended to accommodate waiting patrons since there is insufficient space to provide such an island.</p> <p>The islands will be of sufficient width to accommodate the expected volumes of passengers safely.</p>	Yes
3.1.4	Yes	Yes		
3.1.5	Yes	Yes		

## Road Safety Audit Feedback Form

**Scheme:** BusConnects Core Bus Corridors Ballymun/Finglas to City Centre Scheme

**Route No.:** Local urban roads within Dublin City

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3.1.6	Yes	No	<p>A Metro station is proposed in future on Albert College Drive and those currently banned right turn movements may be required, in which case the junction would be signalised. Providing physical measures now, such as closing off the median, creates additional expense for the metro project which will be forced to break out the median again.</p> <p>As an interim measure the median opening can be narrowed with pencil bollards. Additional "No entry" marking and sign will be provided at the median for traffic coming from Albert College Drive</p>	Yes
3.1.7	Yes	Yes		
3.2.1	Yes	Yes		
3.2.2	Yes	No	<p>The straight-ahead and left-turn northbound movements will not occur in the same signal phase.</p> <p>Taxis will not be permitted to make separate movements as permitted from the Bus Lane and will be required to join the general traffic lane upstream to make the straight-ahead movement.</p>	Yes
3.2.3	Yes	No	A lane destination sign will be provided to alert drivers of the nearside lane being a left turn lane, and lane-guidance markings provided through the junction.	Yes
3.2.4	Yes	No	Planning is being sought for side road junctions to tie into future anticipated cycle facilities. At the locations where this will occur, a label "Future cycle facility" will be added. In the event these planned cycle facilities have not progressed by detailed design stage, the side road will tie into existing appropriately.	Yes

## Road Safety Audit Feedback Form

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**Route No.:** Local urban roads within Dublin City

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3.2.5	Yes	Yes	The pedestrian phase is not to coincide with right turning phase.	
3.2.6	Yes	Yes		
3.2.7	Yes	Yes		
3.2.8	Yes	Yes		
3.2.9	Yes	Yes		
3.2.10	Yes	Yes		
3.2.11	No	No	<p>Right turning traffic, where opposed by ahead cyclists, are also opposed by ahead general traffic. Where the right turns and ahead traffic and cycle movements are green within the same stage, the right turns will be allowed to proceed only once safe to do so as is the case with any other junction. The junction is long enough to provide adequate forward visibility of ahead moving cyclists through the junction.</p> <p>Similarly, for left turning vehicles the junction is long enough for a turning vehicle to notice an adjacent ahead cyclist.</p> <p>The junction layout is not dissimilar to junctions in the Netherlands where left turns are separated from cyclists by a wide separator island and is in line with the NTA BusConnects Guidance document.</p>	Yes
3.2.12	Yes	Yes		
3.2.13	Yes	Yes		
3.2.14	Yes	Yes		
3.2.15	Yes	Yes		

## Road Safety Audit Feedback Form

**Scheme:** BusConnects Core Bus Corridors Ballymun/Finglas to City Centre Scheme

**Route No.:** Local urban roads within Dublin City

**Audit Stage:** Stage 1 Road Safety Audit **Date Audit Completed:** 9<sup>th</sup> Sept. 2021

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3.2.16	Yes	Yes		
3.2.17	Yes	Yes		
3.2.18	Yes	Yes		
3.2.19	Yes	Yes		
3.2.20	Yes	Yes	Upstream lane destination markings	
3.2.21	Yes	No	Junction layout will be amended to have a single downstream lane exiting the junction in both northbound and southbound directions.	Yes
3.2.22	Yes	Yes		
3.2.23	Yes	Yes		
3.2.24	Yes	Yes		
3.2.25	Yes	Yes		
3.2.26	Yes	No	The bus lane on the approach to the junction will be extended to the stop line as is proposed at all other junctions. Left turn manoeuvres will take place from the centre lane and no general traffic manoeuvres will take place from the bus lane. The nearside lane downstream will be a continuous bus lane.  The buses and general traffic movements will be separately signalled.  The junction layout will be further reviewed in line with the response provided above for Problem 3.1.1.	Yes
3.2.27	Yes	No	Right turning cyclists will be facilitated at a downstream toucan crossing and the cycle lane markings into the side road will be omitted.	Yes



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3.2.28	No	No	This is an indicative access location for the Metro Link project. There will be no exit from this arm into the junction and the normal left turn yield requirements will apply across the cycle track. The detail of this access will be developed by Metro Link and appropriate changes to the signals / junction developed also. This access will not be constructed as part of this scheme but is being indicatively shown for planning purposes only.	Yes
3.2.29	Yes	Yes		
3.2.30	Yes	No	The two-way cycle track will be continued across the southern St Mobhi Road arm to facilitate the right turn without needing to undertake the three crossing manoeuvres around the junction.	Yes
3.2.31	Yes	Yes		
3.2.32	Yes	No	Traffic will be properly advised about the bus gate with prominent advance signs further south at Hart's Corner and Botanic Road. There is an appropriate alternative route available via Botanic Road. In the event an errant vehicle continues along St. Mobhi Road, there are several opportunities along the way to turn into side streets and re-route. Otherwise drivers can continue through the bus gate and accept a fine.	Yes
3.2.33	Yes	Yes		
3.2.34	Yes	Yes		
3.2.35	Yes	No	Right-turn facility to be omitted.	Yes
3.2.36	Yes	Yes		

## Road Safety Audit Feedback Form

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3.2.37	Yes	Yes		
3.2.38	No	No	<p>This has been provided as an improvement to existing cycle facilities. The numbers of cyclists will be too high for shared crossing with pedestrians to the island. Traffic stop lines are sufficiently set back to prevent queuing across the cycle lane. Vissim modelling has shown the arrangement to work well.</p> <p>The signal phasing will be such that vehicles will clear the cycle lane before cyclists are given a green signal.</p>	Yes
3.2.39	No	No	<p>This short section of cycle track is to guide cyclists, who have deviated from the off-road cycle track upstream and intend to head through Phibsborough Village, between the sections of bus lane up and downstream of the junction. The off-road cycle track routes cyclists via Eglinton Terrace and Royal Canal Bank which may not be the desired route for some cyclists.</p>	Yes
3.2.40	Yes	No	<p>The east-west crossing for the Royal Canal greenway is being relocated south in line with the towpath locations as part of another project which is currently underway. There will be appropriate connectivity between the BusConnects north-south cycle infrastructure and the east-west Royal Canal infrastructure as a result.</p>	Yes
3.2.41	Yes	Yes		
3.2.42	Yes	No	<p>No changes are proposed to the existing road layout on North Circular Road in this scheme. The issue will be raised with the Client.</p>	Yes
3.2.43	Yes	Yes		

## Road Safety Audit Feedback Form

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3.2.44	Yes	Yes		
3.2.45	Yes	Yes		
3.2.46	Yes	Yes		
3.2.47	Yes	No	There is sufficient stacking space within the junction for up to 3 vehicles and the subsequent stage allows for all right turning vehicles to clear the junction. Approx. 6 right turn vehicles per cycle are expected to arrive with sufficient gaps in opposing traffic expected to accommodate all such vehicles.	Yes
3.2.48	Yes	No	The drawing lacked the proposed stop lines at the northern arm. The signal staging will be such that both lanes will be separately signalled, and no merging manoeuvres will take place within or downstream of the junction.	Yes
3.2.49	Yes	Yes		
3.2.50	Yes	No	Traffic volumes at this junction are low and signals are not warranted. Road layout will be amended to ensure right turning vehicles yield to ahead vehicles from the north. A solid island will be provided in place of hatched marking to ensure no vehicle can proceed straight ahead.	Yes
3.2.51	Yes	Yes		
3.2.52	Yes	Yes		
3.3.1	Yes	No	All entry and exit arms will be reverted to existing layout. The southbound exit will be two-lane until downstream of the pedestrian crossing.	Yes

## Road Safety Audit Feedback Form


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3.3.2	Yes	Yes	The proposed signal crossings are located at the recommended distance from the roundabout in accordance with the design standard. The pedestrian demand at the northern and western arms are not expected to be so high to create a build-up of traffic within the roundabout circulatory carriageway. A yellow box will be provided at St. Margaret's Road exit arm given its proximity to the northern arm and the expected higher pedestrian demand.	
3.3.3	Yes	Yes		
3.3.4	Yes	No	The cycle track will bring cyclists onto the c/way at the top of the ramp.	Yes
3.3.5	Yes	No	Dublin City Council has separate proposals for cycle tracks along Mellows Road that will address this issue which is expected to be implemented prior to this scheme.	Yes
3.3.6	Yes	Yes		
3.3.7	Yes	Yes		
3.3.8	Yes	Yes		
3.3.9	Yes	Yes		

**Signed:**  Designer      **Date** 10/01/2022

**Signed:**  Audit Team Leader      **Date** 22/12/2021

**Signed:**  Employer      **Date** 14th July 2022