

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, a teal semi-circle in the bottom-right, and a blue semi-circle in the bottom-left containing a white circle. There are also smaller white circles and shapes in the bottom-left and bottom-right corners.

Appendix M1
Emerging Preferred Route
- Road Safety Audit

Aecom

Proposed Blanchardstown to
UCD Core Bus Corridor

Stage 1 Road Safety Audit

Table of Contents

1	Introduction	1
1.1	General.....	1
2	Project Description	1
3	Previous Road Safety Audits	2
4	Main Report.....	3
4.1	General.....	3
4.2	Blanchardstown Terminus (Offline Bus Interchange Option).....	6
4.3	Blanchardstown Terminus (Inline Bus Interchange Option).....	9
4.4	Study Area – Section 1.....	11
4.5	Study Area – Section 2.....	13
4.6	Study Area – Section 3.....	16
4.7	Study Area – UCD to St Stephen’s Green	20
5	Observations	25
6	Road Safety Audit Team Statement	28
	Appendix A – Road Safety Audit Brief Checklist	29
	Appendix B – Documents Submitted to the Road Safety Audit Team	31
	Appendix C – Feedback Form	34
	Appendix D – Problem Locations	41

1 Introduction

1.1 General

This report results from a Stage 1 Road Safety Audit on the proposed Blanchardstown to UCD Core Bus Corridor carried out at the request of Mr. Dimitri Karakaxas of Aecom.

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

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The Road Safety Audit took place during June 2018 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 5th & 6th June 2018. Weather conditions during both site visits were dry and the road surface was dry. Traffic volumes during the site visits were moderate to heavy

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 shown within the main body of the report where considered necessary.

This 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) Publications 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.

2 Project Description

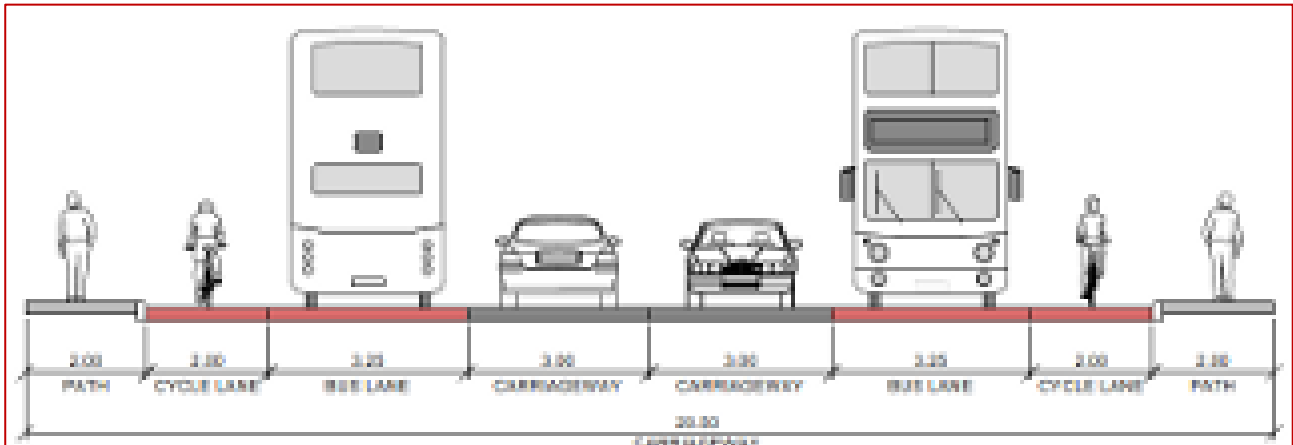
The proposed works consist of the provision of bus priority measures and cycle facilities along two routes. The first route extends from the Blanchardstown Shopping Centre to Ellis Quay, and includes measures on: -

- The roads bounding the Blanchardstown Shopping Centre to the north-west and north-east;
- The L3020 from the Blanchardstown Shopping Centre to the Snugborough Road;
- Snugborough Road Grade Separated Junction Overbridge;
- N3 Navan Road between the Snugborough Road Grade Separated Junction and the Old & New Cabra Road Junction;
- Old Cabra Road;
- Prussia Street, Manor Street, Stoneybatter, Brunswick Street, George's Lane, Queen Street, North King Street, Blackhall Place and Blackhall Street.

Measures at the Snugborough Road Junction are part of the Snugborough Interchange upgrade and there is outside the scope of this Audit. This project received planning approval in 2017 and is due for construction in 2018-2020

The second route extends from the junction of Leeson Street/Earlsfort Terrace to the Belfield Grade Separated Junction.

Both routes are located predominantly within urban areas, however significant sections run along sections of dual carriageways (N3 for the first section, N11 for the second).



The proposals include the provision of: -

- a bus lane in both directions over the entire route,
- bus interchange terminals at Blanchardstown Shopping Centre and at the UCD Belfield Grade Separated Junction,
- cycle facilities (a mixture of one- and two-way cycle lanes and cycle tracks),
- new signals at some junctions, and modified signals at existing signalised junctions, which include bus priority measures.

3 Previous Road Safety Audits

No previous Road Safety Audit has been undertaken on the proposed works.

4 Main Report

4.1 General

4.1.1 Problem

Location: Throughout the Project

Summary: Impact of change in traffic flows and removal of parking facilities along route and on adjacent road network could give rise to safety issues

The proposals will result in significant changes to traffic flows & patterns along the proposed route extending for some distance into the surrounding area. The removal or reduction in available on-street parking will result in displacement of parking demand on to the surrounding road network, or the provision of a high-quality public transport corridor may attract additional parking to the adjacent road network (e.g on Mill Road).

No details have been provided to the Audit Team of an assessment of the likely effects on the surrounding road network. Some of these effects could have safety implications (e.g. where unsafe parking takes place, or where capacity issues arise on the adjacent road network leading to driver frustration, unsafe manoeuvres and/or rat-running within residential areas where there are high volumes of vulnerable road users).

Recommendation

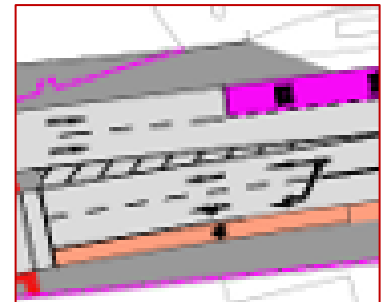
Undertake an assessment of the effects of the proposals on traffic and parking on the adjacent road network. Where necessary incorporate measures to address any issues which may arise as a result of the proposals on the adjacent road network, including any safety measures which may be necessary.

4.1.2 Problem

Location: Throughout the Project

Summary: Proposals at some tie-in locations do not reflect existing road layout

At a number of locations throughout the scheme the road layout at the scheme tie-ins does not match the existing road layout (e.g. tie-in with the Snugborough Road to the north of the project). A failure to adequately tie-in the scheme with the existing road layout could result in late manoeuvres by drivers leading to unsafe manoeuvres and collisions.



Recommendation

Ensure that the proposed road layout ties in safely with existing provisions at the scheme tie-ins, with adequate transitions where necessary between footpaths, cycletracks and carriageways within, and without, the scheme extents.

4.1.3 Problem

Location: Throughout the Project

Summary: Potential for stationary buses within a bus lane to obscure visibility to signals for drivers in the adjacent traffic lane.

Throughout the proposed project there are a number of locations where stationary buses within the proposed bus lane may obscure visibility to upcoming signals, either at signalised junctions or signalised crossings, for a driver in the adjacent traffic lane, possibly resulting in drivers being unaware of the status of the upcoming signals leading to overshoot incidents and side-on collisions within the junction or collisions with crossing pedestrians, resulting in serious injuries.

Recommendation

During the design development ensure that all drivers have adequate visibility to signals on the approach to signalised junctions.

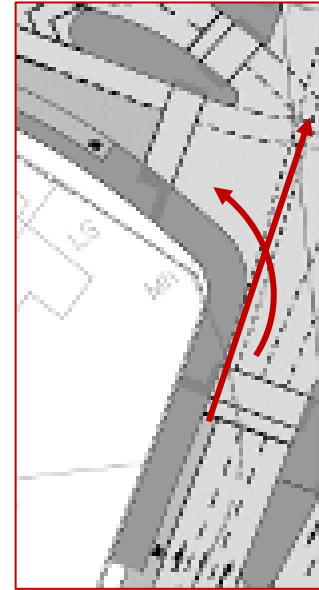
Ensure that the layout and positioning of signals are such that all road users understand which signals relate to them.

4.1.4 Problem

Location: At a Number of Junctions Throughout the Project

Summary: Cyclists at risk of being struck by left-turning vehicles.

At a number of junctions throughout the project straight-ahead cycle lanes have been provided adjacent to left-turning traffic lanes. Cyclists are particularly at risk of being struck by left turning vehicles at these locations, resulting in serious injuries or death, in particular where it is expected that large volumes of HGVs will be turning left (e.g. towards Blanchardstown Shopping Centre).



Recommendation

Review the proposed junction layouts from the perspective of cyclist safety, and where necessary amend the layout to remove this risk to cyclists.

Measures that could be considered include the provision of Advance Stop Lines (ASL), transitioning the straight-ahead cycle lane to a location to the right of left-turning traffic, the provision of grade-separated cycle facilities and/or providing physical separation between the cycle lane and the adjacent traffic lane (to prevent vehicles encroaching on the cycle lane early when turning left).

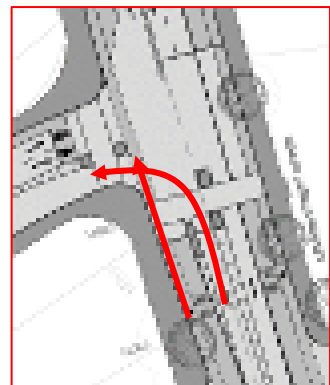
4.1.5 Problem

Location: At a Number of Junctions Throughout the Project

Summary: Cyclists at risk of being struck by left-turning vehicles.

At a number of junctions throughout the project, cycle lanes have been provided adjacent to bus lanes. The Audit Team understand that buses will have their own signal phase at junctions and it is assumed that this signal phase will be vehicle actuated with cyclist's movements permitted through the bus green phase.

It is unclear if cyclists will be able to trigger the green phase resulting in cyclists having to wait for an approaching bus. This may result in cyclists becoming frustrated should they have to wait while traffic proceeds and choosing to cycle straight-ahead through a bus/cycle red phase and being struck by a left-turning vehicle.



Recommendation

Provide activation of the bus/cycle signal phase through detection, or by provision of a push button for cyclists at these junctions.

4.1.6 Problem

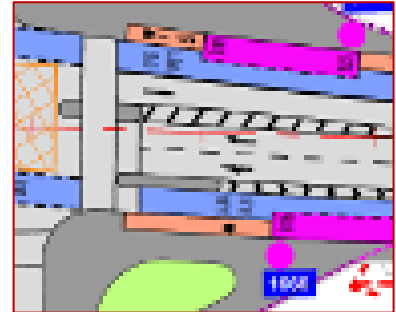
Location: At a Number of Junctions Throughout the Project

Summary: Unclear if proposed splitter islands between bus lanes and the adjacent traffic lanes at signalised junctions are wide enough to accommodate roadside furniture with the necessary lateral clearance from the adjacent traffic lanes.

At a number of locations, primarily at junctions, throughout the scheme it is proposed to separate the bus lane from the adjacent traffic lanes by means of a splitter island.

The Audit Team understand that at these locations buses will be permitted to proceed on a separate signal phase in order to convey priority to buses at these locations.

At this early stage in the design process there is little information on the proposed dimensions of these islands.



Should the islands be of insufficient width to accommodate the likely items of roadside furniture located on them (e.g. regulatory signage, signals, etc) with the necessary lateral clearance to the adjacent traffic lanes there is a risk that vehicles will strike these roadside furniture items resulting in material damage.

Recommendation

Ensure that the proposed splitter islands provided as part of the scheme at the bus priority locations are of sufficient width to accommodate all items of roadside furniture with the required lateral clearances from the traffic lanes.

4.1.7 Problem

Location: Throughout the Project

Summary: Information regarding roadside furniture not provided to the Audit Team.

At this early stage in the design process, information regarding proposed road side furniture has not been provided to the Audit Team. It is assumed that public lighting columns and other road side furniture will be amended, relocated and/or provided throughout the scheme. Due to the change of existing kerblines throughout the scheme, it is unclear where existing and proposed road side furniture will be located.



Should public lighting columns be located within the footpath the effective width of the footpath will be reduced resulting in pedestrians having to enter the carriageway to avoid the obstruction leading to an increased risk of collisions with vehicles. Additionally, the location of road side furniture may not be sufficiently set back from the kerb edge resulting in cyclist and vehicles moving further away from the edge of the carriageway resulting in a side swipe collision with a vehicle in the adjacent lane or a vehicle/cyclist collision.

Recommendation

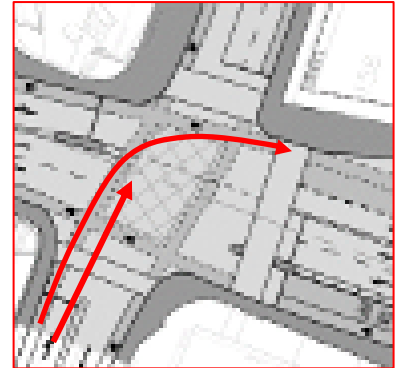
Ensure all road side furniture is located such that it provides sufficient width for passing pedestrians and is set back a minimum of 450mm from the pavement edge.

4.1.8 Problem

Location: Throughout the scheme

Summary: Provisions for right-turning cyclists at junctions

There are a number of locations throughout the scheme which may have significant volumes of cyclists and the provision of an Advance Stop Line (ASL) has not been provided. As a result, cyclist attempting a right turn at these junctions may move into the adjacent traffic lane in order to position themselves to undertake a right-turn manoeuvre, placing themselves at greater risk of being struck by a vehicle continuing straight-ahead, or an oncoming vehicle.



Recommendation

An assessment of the volume of cyclists at junctions should be conducted and measures to facilitate right-turns by cyclists incorporated (e.g. "box-turn" or ASL provisions) should be provided where required.

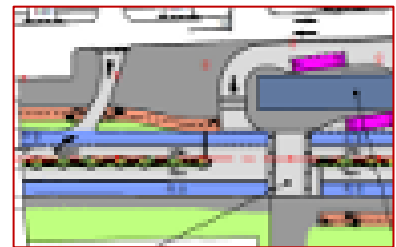
4.2 Blanchardstown Terminus (Offline Bus Interchange Option)

4.2.1 Problem

Location: Drawing SHT_20_CT_S2_100.1 (A)

Summary: Lack of clarity on which road users have priority at the pedestrian/cyclist crossing of the exit from the bus interchange area.

A two-way cycle track is indicated along the road edge to the south-west of the proposed bus interchange. The cycle provision continues on the other side of the road to the north-east of the signalised crossing, and it is presumed that cyclists are intended to cross the exit from the bus interchange in order to access the signalised crossing in order to access the cycle facilities on the other side of the road.



No measures have been indicated to facilitate cyclists crossing the exit from the bus interchange, which could result in confusion as to whether buses or cyclists have priority at this location.

A lack of clarity on which road users have priority at this location could lead to both drivers and cyclists assuming they have priority, leading to collisions and serious injuries.

Recommendation

During the design development clarify the priority between buses and cyclists at this intersection and put in place measures to ensure that all road users clearly understand the relative priority (e.g. provide a raised-table crossing catering for both cyclist and pedestrians).

4.2.2 Problem

Location: Drawing SHT_20_CT_S2_100.1 (A)

Summary: Absence of measures to cater for likely non-motorised road user (NMU) desire lines between the existing signalised crossing and the NMU route within the car park adjacent to the bus interchange.

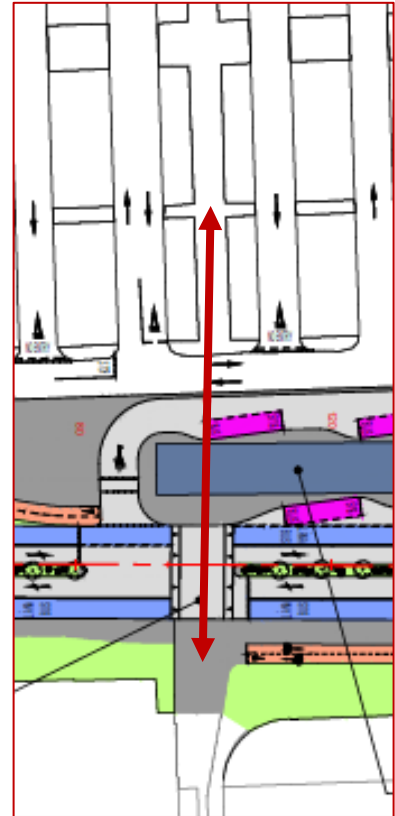
No route has been indicated for non-motorised users (NMUs) wishing to travel to/from the proposed bus interchange and the car park and retail area located to the north-west.

It is likely that an NMU desire line will exist between the signalised toucan crossing at the south-western end of the bus interchange and the existing NMU route within the car park area.

Failure to provide an appropriate facility for non-motorised users along this expected desire line could result in unsafe crossings of the bus interchange circulating carriageway leading to vehicular/NMU collisions and serious injuries.

Recommendation

Identify the likely NMU desire lines in the vicinity of the bus interchange and include measures to cater for these.



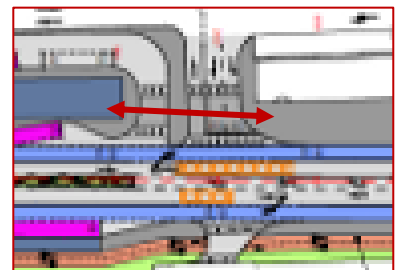
4.2.3 Problem

Location: Drawing SHT_20_CT_S2_100.1 (A)

Summary: Lengthy and potentially confusing pedestrian crossing of adjacent carriageways with multiple traffic lanes could result in unsafe crossing manoeuvres by pedestrians leading to collisions between vehicles and pedestrians.

The existing access/egress to the car park located to the north-west of the proposed bus interchange consists of three traffic lanes, one entry and two exit lanes. This existing arrangement exposes crossing pedestrians to vehicular traffic over a lengthy, and relatively complex, crossing.

The proposed layout introduces an additional carriageway, within the proposed bus interchange, adjacent to the existing access/egress. The provision of the proposed bus interchange is likely to increase the number/volume of pedestrians crossing at this location.



There is a concern that crossing pedestrians may be insufficiently aware of the numerous directions from which traffic approaches the two adjacent crossings, possibly resulting in unsafe crossing manoeuvres and collisions between vehicles and pedestrians.

Recommendation

Amend the layout at this location in order to simplify the crossing for non-motorised users, and to reduce the length of the crossing where possible by provision of an additional pedestrian refuge.

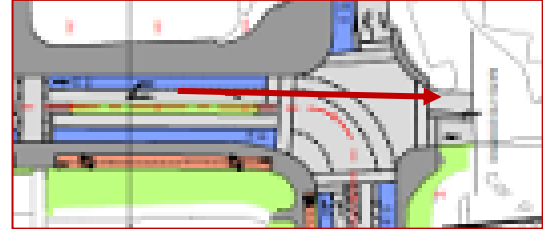
Alternatively provide signals at this location to control all movements and reduce the likelihood of conflicts arising.

4.2.4 Problem

Location: Drawing SHT_20_CT_S2_100.1 (A)

Summary: Unclear lane assignment for straight-ahead north-eastbound vehicles approaching the proposed signalised junction.

It is unclear from the drawings provided whether north-eastbound vehicles approaching the new signalised junction are intended to use the bus lane for proceeding straight-ahead at the signalised junction.



A lack of clarity in this regard could result in unsafe manoeuvres by drivers wishing to proceed straight-ahead into the Crowne Plaza Hotel resulting in side-swipe collisions with buses turning right from the adjacent bus lane leading to material damage.

Recommendation

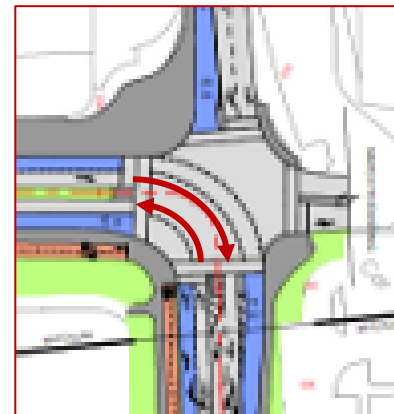
During the design development clarify the proposed road layout for straight-ahead north-eastbound vehicles approaching the junction.

4.2.5 Problem

Location: Drawing SHT_20_CT_S2_100.1 (A)

Summary: Conflict with opposing traffic lanes at junction

It is unclear, at this early stage in the design process, if it is intended that left-turning manoeuvres and right-turning manoeuvres to/from the road bounding the Blanchardstown Shopping Centre will occur simultaneously at the proposed signalised junction.



Should they occur at the same time there is a concern that the guidance markings indicated for these turning movements could lead to low-speed collisions between the opposing traffic lanes, resulting in minor injuries, in particular where large vehicles are turning.

Recommendation

Either: -

- ensure that these opposing turning movements do not occur during the same traffic signal phase, or
- undertake a swept-path analysis to ensure that there is adequate room for opposing traffic to turn without encroaching into the opposing traffic lane, amending the proposed layout if necessary.

4.3 Blanchardstown Terminus (Inline Bus Interchange Option)

4.3.1 Problem

Location: Drawing SHT_30_ST_CT_S2_200.1 (A)

Summary: Pedestrians waiting for, or alighting from, buses at proposed in-line bus interchange may encroach into proposed two-way cycle track resulting in possible cyclist/pedestrian collisions.

During the site visit it was noted that passengers waiting for, or alighting from, buses at the existing bus stops encroached into the adjacent cycle track, partly as a result of the number/volume of passengers waiting at this location and partly in order to access the seating provisions located to the rear of the cycle track provision.



This behaviour presents potential difficulties for cyclists using the two-way cycletracks adjacent to the proposed in-line bus interchange, in particular should the volumes of passengers increase as a result of the provision of the proposed bus interchange. This could lead to cyclist/pedestrian collisions and minor personal injury.

Recommendation

Ensure that the proposed footpath width is sufficient to cater for the anticipated volumes of passengers using the in-line bus interchange and provide segregation (e.g. landscaped area) between the footpath and the cycletracks to deter pedestrians from entering the cycletracks.

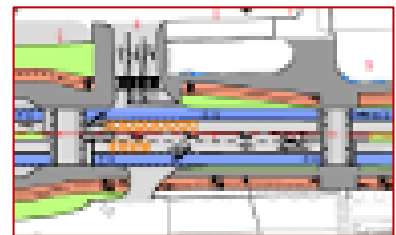
Ensure that any seating provision is located adjacent to the footpath, and not to the rear of the cycle provisions.

4.3.2 Problem

Location: Drawing SHT_30_ST_CT_S2_200.1 (A)

Summary: Existing lengthy and potentially confusing pedestrian crossing of multiple traffic lanes could result in unsafe crossing manoeuvres by pedestrians leading to collisions between vehicles and pedestrians.

The existing access/egress to the car park located to the north-west of the proposed bus interchange consists of three traffic lanes, one entry and two exit lanes. This existing arrangement exposes crossing pedestrians to vehicular traffic over a lengthy, and the relatively complex, crossing.



The proposed layout retains this existing arrangement and the provision of the proposed bus interchange is likely to increase the number/volume of pedestrians crossing at this location.

It is noted that a new signalised pedestrian crossing is proposed to the south-west of the existing car park access.

There is a concern that crossing pedestrians may be insufficiently aware of the numerous directions from which traffic approaches the crossing, possibly resulting in unsafe crossing manoeuvres and collisions between vehicles and pedestrians.

Recommendation

Signalise the car park access/egress, incorporating the adjacent signalised pedestrian crossings, to control all movements and reduce the likelihood of conflicts arising.

4.3.3 Problem

Location: Drawing SHT_30_ST_CT_S2_100.1 (A) & SHT_30_ST_CT_S2_200.1 (A)

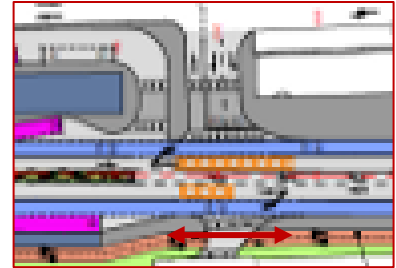
Summary: Discontinuous cycletrack across junction mouth may lead to vehicle/cyclist collision

A cycletrack is proposed on both sides of an existing side road which facilitates a loading area for HGV's. It is intended to give priority to vehicles through the junction. Due to the horizontal alignment of the junction, exiting vehicles may be unaware of cyclists or pedestrians approaching from the south-west and attending to cross the access junction, resulting in vehicle/NMU collisions.



Recommendation

Give priority to cyclist and pedestrians across the access junction by providing a continuous footpath/cycletrack with a dropped kerb for crossing vehicles. Additionally, provide signage advising drivers of vehicles exiting the side road of the requirement to give way to crossing pedestrians and cyclists.



4.3.4 Problem

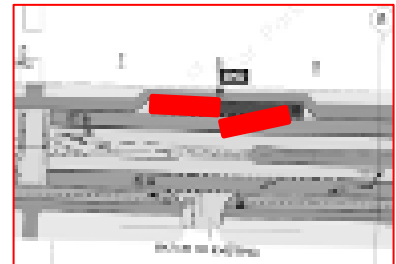
Location: Drawing SHT_30_ST_CT_S2_100.2 (A) & SHT_30_ST_CT_S2_200.2 (A)

Summary: Bus bay may lead to bus encroaching on carriageway

It is proposed to retain the existing bus bay (No. 2960). The exit and entry tapers are relatively short, resulting in a longer-than-normal bus bay, which may lead to a bus parking within the portion of the bus bay.

A bus parked within this bus bay may result in a second bus being unable to completely align with the kerblines at the bus bay footpath which could create a trip hazard for pedestrians and lead to difficulty for mobility impaired pedestrians and those pushing prams/ buggies in alighting.

Additionally, the second bus may encroach into the adjacent lane, and the traffic lane is insufficiently wide enough for a vehicle to pass the bus safely, this could lead to queues developing behind the bus or to driver frustration and the potential for drivers to pass the bus by mounting the kerbed splitter island where there is a risk of collisions with street furniture or a pedestrian waiting on the splitter island.



Recommendation

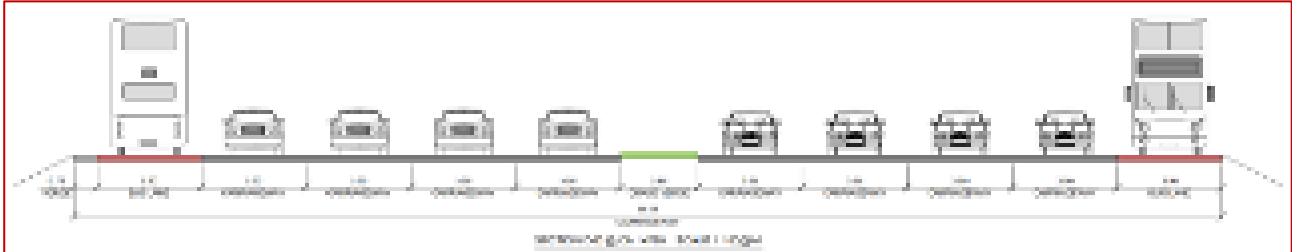
The provision of a new bus terminus should remove the need of a bus waiting at the 2960 bus stop. The entry and exit tapers should be increased to provide sufficient taper for a single bus to align with the kerblines and ensure it does not encroach the carriageway, while at the same time reducing the length of the bus bay and removing the potential for buses to park at this location.

4.4 Study Area – Section 1

4.4.1 Problem

Location: Drawing SHT_20_CT_S1_1B1.4 (A)

Summary: Unclear if adequate width will be available to accommodate Vehicle Restraint System at locations where these are required.



At this early stage in the design development it is not expected that details would be available in relation to proposed Vehicle Restraint Systems. However, it is necessary to ensure that adequate land is available, or acquired where this is necessary, to accommodate a vehicle restraint system at locations where they are required.

The cross-section provided indicates a narrow verge on one side of the N3 dual carriageway, and no verge on the other. It is likely that a vehicle restraint system will be required along sections of the N3 where hazards (e.g. height hazard) exist. The provision of vehicle restraint system will require a lateral offset from the trafficked carriageway, and level ground within the working width of the chosen restraint system.

Recommendation

Ensure that adequate space is available to include a vehicle restraint system at locations where one is likely to be required, including adequate space to accommodate the working width of the barrier system.

The available width should also be sufficient to ensure that no items of roadside furniture are positioned within the working width of the selected barrier system.

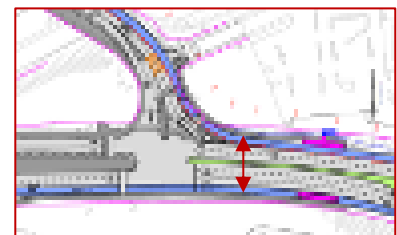
4.4.2 Problem

Location: Drawing SHT_20_CT_S1_1B1.6 (A)

Summary: Pedestrian crossing not provided on eastern side of junction for pedestrians travelling to/from bus stop

It is proposed to provide a new bus stop on the westbound carriageway of the old N3 near the junction with the overbridge connecting with the James Connolly Memorial Hospital.

No pedestrian crossing has been indicated on the eastern side of the nearby signalised junction, and there is a concern that passengers travelling to/from this bus-stop and wishing to access the Hospital or the Gym will attempt to cross the multi-lane dual carriageway away from the proposed pedestrian crossing on the western side of the junction.



Recommendation

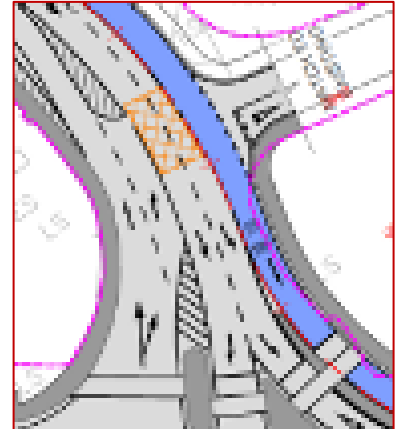
Provide a signalised pedestrian crossing of the eastern arm of the signalised junction.

4.4.3 Problem

Location: Drawing SHT_20_CT_S1_1B1.6 (A)

Summary: Pedestrian crossing not provided at side road

It is proposed to retain the existing footpath on the north-western side of the overbridge crossing the N3. At the location of the entrance to the gym there is currently no dropped kerb to facilitate mobility impaired pedestrians travelling between the bus stops on the old N3 and the James Connolly Memorial Hospital, and no such measure is indicated on the drawings provided. This could result in difficulties for mobility impaired individuals safely and independently travelling between the Hospital and the public transport provisions along the old N3.



Recommendation

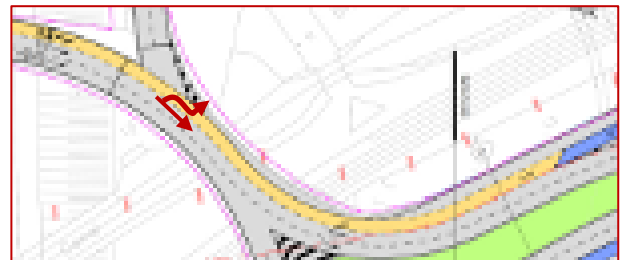
During the design development provide a dropped kerb, with associated tactile paving, across the gym entrance at this location.

4.4.4 Problem

Location: Drawing SHT_20_CT_S1_1B1.7 (A)

Summary: Insufficient notice of left turning lane after rotary exit

The proposed layout on the eastbound exit from the rotary at the N3/M50 Grade Separated Junction requires drivers who wish to exit at the off-ramp immediately downstream of the rotary exit to cross the bus lane within a relatively short distance.



A bifurcation arrow has been indicated at the exit from the rotary, however this may be insufficient notice for drivers wishing to leave at the upcoming off-ramp, resulting in late lane-change manoeuvres and possible side-swipe collisions.

Recommendation

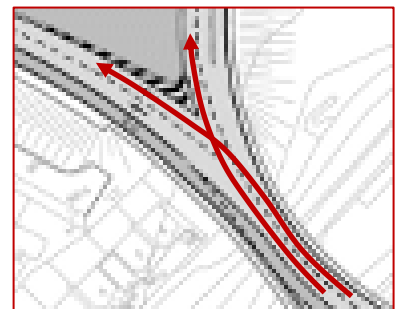
Amend the road layout so that drivers who wish to exit onto the Dunsink Lane off-ramp are advised to enter the nearside lane on the rotary downstream of the signals at the M50 southbound off-ramp.

4.4.5 Problem

Location: Drawing SHT_20_CT_S1_1B1.7 (A)

Summary: Conflicting vehicle manoeuvres on Grade Separated Junction Rotary

The proposed road layout on both the eastbound and westbound exits from the N3/M50 Grade Separated Junction Rotary could result in collisions where a driver in the offside lane upstream of the exit wishes to exit the rotary at the same time as a driver on the nearside lane of the rotary wishes to continue on the rotary.



Recommendation

During the detailed design ensure that the road markings on the exits from the rotary clearly convey the permitted manoeuvres from each upstream lane. It is likely that solid lane lines will be required in order to clearly convey where drivers are permitted to proceed to at the exit.

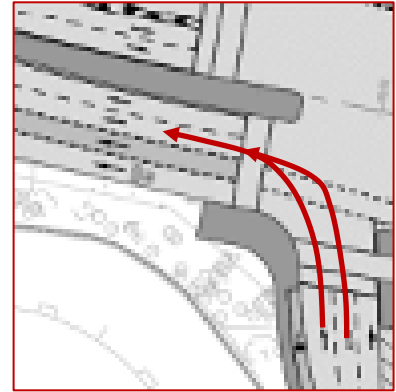
4.5 Study Area – Section 2

4.5.1 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.1 (A)

Summary: Absence of guidance for two left-turning lanes

Two left-turning lanes have been indicated from Auburn Avenue onto the N3 westbound. There is the potential for drivers in both left turning lanes to try and enter the same lane downstream, possibly resulting in side-swipe collisions and resulting in material damage.



Recommendation

Either: -

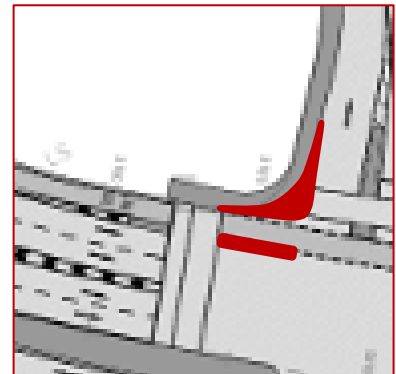
1. provide sufficient guidance on the Auburn Avenue approach to its junction with the N3 on which destination is to be reached from each left-turning lane. This may consist of lane-destination direction signs, lane guidance markings through the junction and/or destination roadmarking text; or
2. amend the layout of the junction so that there are only two traffic lanes downstream, with drivers wishing to access the M50 moving left after completing their left turn from Auburn Avenue.

4.5.2 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.1 (A)

Summary: Drivers may not anticipate vehicle turning left at signalised junction.

The layout of the junction between Dunsink Lane and the N3 is such that drivers may attempt to turn left from the N3 eastbound carriageway onto Dunsink Lane from either the nearside traffic lane or from the bus lane. This manoeuvre may not be anticipated by a following driver, as there is an upstream off-ramp for access to Dunsink Lane, possibly resulting in shunt collisions.



Recommendation

Amend the junction layout, for example by extending the island between the bus lane and the traffic lanes on the N3 eastbound carriageway and amending the corner radius within the junction's north-western quadrant, to clearly convey to drivers that left turns are not permitted at this location. During the design development signs should also be included advising drivers that left turns are not permitted at this location.

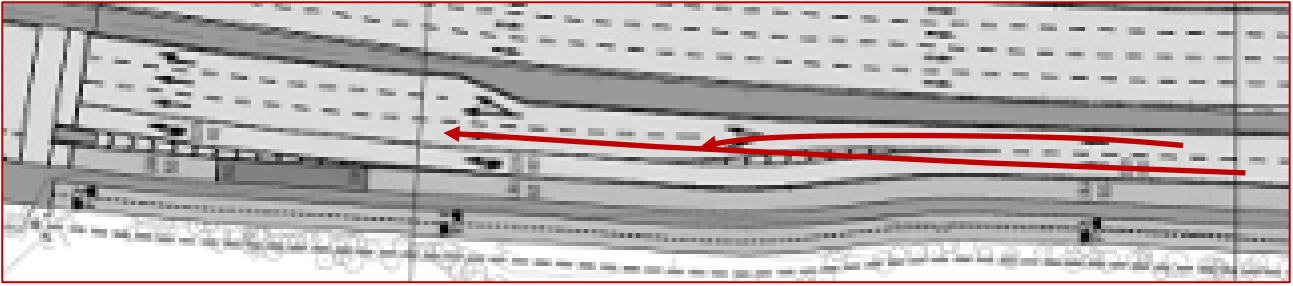
4.5.3 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.1 (A)

Summary: Lane configuration may result in side swipe collision

The proposed road layout on the N3 westbound carriageway approaching the intersection with Auburn Avenue & Dunsink Lane requires vehicles in the nearside traffic lane to move left, while the offside lane splits into two straight-ahead lanes and one right-turn lane.

This arrangement is conveyed via a hatched roadmarking. There is a concern that drivers in the nearside lane may fail to observe the direction to move left, in particular as the hatched roadmarkings may fade over time, leading to potential side-swipe collisions with vehicles from the offside lane moving into the centre straight-ahead lane.



Recommendation

It is recommended that the nearside lane at this location proceed straight-ahead, with a new lane developed on the left-hand side catering for traffic wishing to access the M50 southbound or to turn left onto Auburn Avenue.

4.5.4 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.1 (A)

Summary: Bus lane guidance markings may confuse M50-bound drivers



Lane guidance markings are indicated for the N3 westbound bus lane through the junction with Auburn Avenue. These markings may confuse N3 westbound drivers wishing to join the M50 southbound on-ramp, who should move left as they cross the junction in order to enter the M50 on-ramp lane, but who may misinterpret the guidance markings resulting in them attempting to join the nearside N3 westbound lane downstream of the junction leading to sideswipe collisions with drivers in the adjacent lane.

It is considered that, as the bus lane will have its own phase within the signal arrangements and that buses will be driven by drivers familiar with the route, that they are unlikely to need the additional guidance provided by these markings.

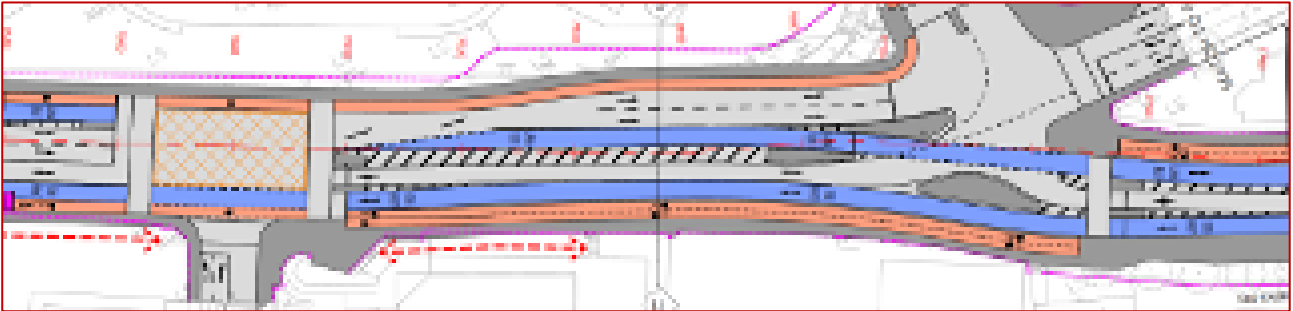
Recommendation

Remove the offside lane guidance markings through the junction, and amend the layout downstream of the junction by building out the kerb so that vehicles from the upstream M50-bound lane first enter the downstream bus/traffic-shared lane, before moving left to join the M50 on-ramp.

4.5.5 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.14 (A)

Summary: Risk to cyclists crossing traffic lanes in order to access cycle track on Old Cabra Road



The cycletrack layout at the junction of the Navan Road, Ratoath Road, New Cabra Road & Old Cabra Road requires south-eastbound cyclists to first cross to the south-western side of the road at the signalised junction at the Library, and then to cross the Old Cabra Road in order to proceed south-eastbound.

This is likely to result in significant delays for cyclists, resulting in many cyclists eschewing this route in favour of joining the bus lane towards the Old Cabra Road, where they are at an increased risk of being struck by a vehicle as they cross, and travel between, the traffic lanes and the bus lane.

Recommendation

Amend the proposed road layout in order to provide a safe & more direct route for south-eastbound cyclists through this junction. The altered layout may remove the need to have the two-way cycle track on the south-western side of the road.

4.5.6 Problem

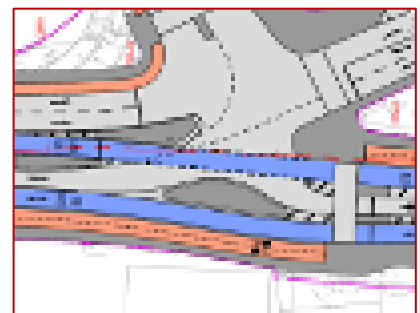
Location: Drawing SHT_20_CT_S1_2A1.100.14 (A)

Summary: Bus lane markings through junction may confuse drivers

Left-turns from the Old Cabra Road westbound onto the N3 Navan Road westbound are permitted. However, the proposed guidance markings for the eastbound bus lane at this location may confuse drivers as it encroaches on the area required for left-turning manoeuvres from the Old Cabra Road, possibly resulting in driver confusion or hesitation.

Recommendation

Omit the bus lane markings through the junction at this location.

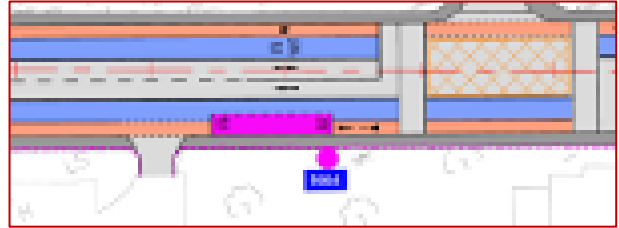


4.5.7 Problem

Location: Drawing SHT_20_CT_S1_2A1.100.9 (A)

Summary: Stationary bus at bus-stop may impede visibility for drivers exiting from school access

A bus stop is proposed immediately upstream of the exit to a national school (No. 1664), on the southern side of the Navan Road. There is a risk that a stationary bus at bus stop may impede visibility for drivers exiting from the national school, leading to unsafe exiting manoeuvres and possible collisions with through traffic.



Recommendation

During the design development relocate the bus stop to ensure that adequate visibility is available for drivers exiting from the national school.

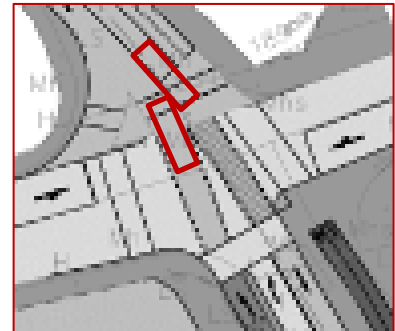
4.6 Study Area – Section 3

4.6.1 Problem

Location: Drawing SK-107 (-) Sheet 3 of 8

Summary: Location of existing splitter island may result in side swipe collisions with opposing traffic

It is unclear if it is intended to retain the existing triangular splitter island on the northern arm of the Old Cabra Road/North Circular Road/Prussia Street Junction.



Should this island be retained it is unclear if buses travelling north from Prussia Street through the junction can do so without encroaching into the path of southbound vehicles from the Old Cabra Road. Should the encroachment occur, there is a risk of low-speed collisions resulting in material damage.

Additionally, the proposed pedestrian crossing on the western arm of the junction does not lead to the splitter island.

Recommendation

Amend the layout of the splitter island to ensure that northbound buses can complete the manoeuvre without encroaching into the opposing traffic lane, and ensure that the pedestrian crossing has an appropriate terminal onto the splitter island to the west of the junction.

4.6.2 Problem

Location: Drawing SK-107 (-) Sheet 5 of 8

Summary: Insufficient visibility to signal heads at junction

The proposed layout of the junction between Prussia Street, Aughrim Street & Manor Street is relatively complex, in particular for northbound road users approaching the intersection.



No splitter islands have been proposed at this location, and there is a concern that the position of signal heads for northbound road users at the junction may make it difficult for drivers, bus drivers and cyclists to be sufficiently aware of the status of the signals for the lane they occupy and their intended destination.

This could result in a failure to stop, or to proceeding on a red signal, leading to collisions with other road users.

Recommendation

During the design development ensure that signals are positioned where they can be readily and clearly seen by all drivers approaching the junction, and that there is clarity on which signals apply to which traffic/cycle lane.

It may be necessary to consider the provision of splitter islands within the junction in order to achieve this.

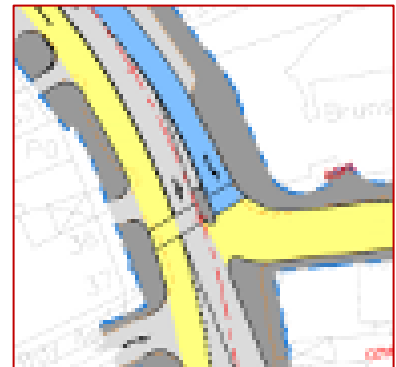
4.6.3 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Insufficient swept path for left turning vehicles

It is unclear if the proposed road layout at the junction between Stoneybatter and Brunswick Street North is capable of accommodating the swept path of all vehicles likely to wish to turn left at this location.

Should the layout not accommodate the swept path of large vehicles there is a risk of these vehicles overrunning the adjacent footpaths and/or pedestrian refuge island with the potential to strike pedestrians or other vulnerable road users.



Recommendation

Ensure that the proposed road layout can accommodate the swept path of all vehicles wishing to turn at this location without encroachment into the adjacent footpaths.

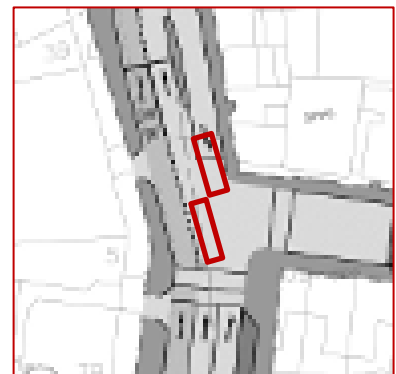
4.6.4 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Signal phasing may result in low-speed head-on collisions due to width of carriageway

It is unclear if northbound straight-ahead traffic from Blackhall Place will proceed at the same time as southbound traffic turning left onto King St.

Should these movements be permitted at the same time there is a risk of low-speed head-on collisions between northbound vehicles in the traffic lane and southbound left turning vehicles due to the alignment of the road.



Recommendation

Ensure that the proposed signal phasing at this junction does not permit southbound & northbound movements at the same time.

4.6.5 Problem

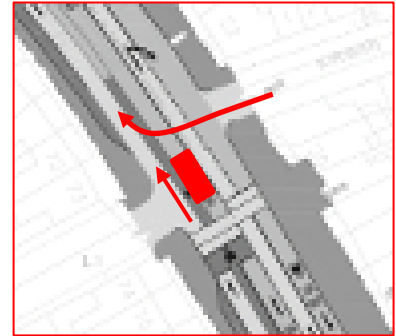
Location: Drawing SK-107 (-) Sheet 5 of 8

Summary: Unclear if signals proposed at Kirwan St junction

It is unclear if it is proposed to signalise the Manor St/Kirwan St/Manor Place junction. Vehicles turning right from Kirwan St onto Manor St must traverse three lanes to proceed northbound.

Should signals not be proposed at this location a northbound bus may block an exiting driver's view of an approaching northbound vehicle or cyclist resulting in unsafe exiting manoeuvres and collisions.

Similarly, a driver attempting a right turn from Manor Place must traverse a cycle and three lanes.



Recommendation

Signalise the Manor St/Kirwan St/Manor Place junction, incorporating the proposed adjacent signalised pedestrian crossing.

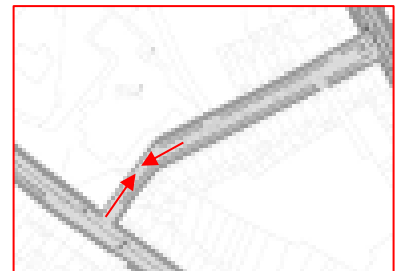
4.6.6 Problem

Location: Drawing SK-107 (-) Sheet 4 of 8

Summary: Unclear if St Josephs Street can cater for two-way traffic.

It is intended to remove an existing northbound lane on Manor St., north of its junction with Aughrim St., to facilitate the bus-only lane. As a result, vehicles wishing to access the DIT Campus are required to proceed north on Aughrim St and turn right onto St Joseph's Road.

It is unclear if St Joseph's Road can cater for the resulting volumes of traffic, and in particular if there is sufficient width for vehicles travelling in either direction to safely pass each other.



Additionally, eastbound vehicles may have to wait to allow a vehicle to pass, resulting in a build-up of traffic on Aughrim Street leading to driver frustration and rash/unsafe manoeuvres.

Recommendation

Ensure the existing road network which will be impacted by the proposed project is capable of accommodating the resulting traffic volumes.

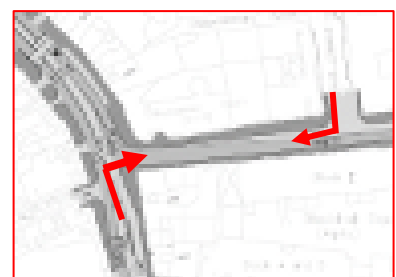
4.6.7 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Unclear how vehicles access/egress Stanley St.

The existing road layout at the Stoneybatter/Brunswick St junction allows northbound vehicles to turn right onto Brunswick St and allows vehicles from Stanley St to turn right onto Brunswick St towards Stoneybatter.

It is intended to amend the permitted movements, so that Brunswick Street is one-way only eastbound. Under the proposed arrangements it is unclear how vehicles travelling from the south will access Stanley St. as northbound traffic from George's Lane cannot proceed onto Grangegorman Lower.



The resulting lengthy route may encourage northbound drivers to attempt to turn right from Stoneybatter onto Brunswick Street, which could lead to collisions with southbound buses/vehicles turning left onto Brunswick Street.

Recommendation

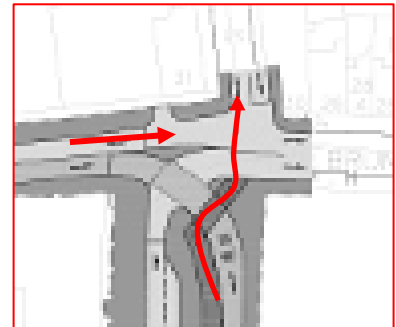
Amend the proposed road layout to allow northbound vehicles to turn right onto Brunswick St from Stoneybatter.

4.6.8 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Unclear cyclist movements

It is unclear from the drawings provided how cyclist movements are catered for at the George’s Lane/Brunswick St junction. Eastbound vehicles on Brunswick St may have insufficient visibility to cyclists attempting to continue north from George’s Lane leading to vehicle/cyclist collisions.



Recommendation

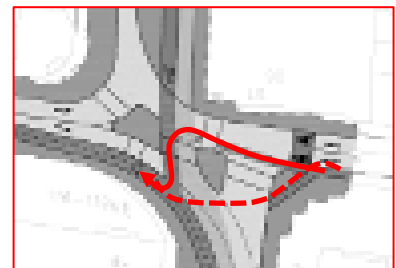
Revise the junction layout to ensure safe movements for cyclists travelling north from George’s Lane.

4.6.9 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Complex cyclist movements at junction

It is proposed to provide cycling facilities to and from each arm of the King St/Queen St/ George’s Lane junction. Cyclists travelling from King St wishing to continue west must undertake an unintuitive, complex, manoeuvre which may result in them failing to observe an approaching vehicle in a traffic lane or bus lane that they are about to cross, resulting in an unsafe crossing manoeuvre leading to a collision with an approaching vehicle.



Recommendation

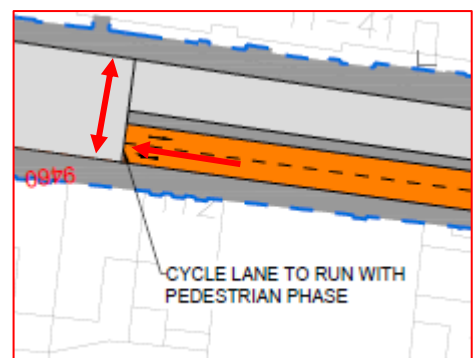
Revise the junction layout to ensure safe movements for cyclists travelling west from King St.

4.6.10 Problem

Location: Drawing SK-107 (-) Sheet 6 of 8

Summary: Pedestrians continuing while cyclists crossing may result in conflict

It is proposed to allow cyclist to cycle through a signalised junction during a pedestrian crossing phase. The Audit Team are concerned that cyclists travelling through the junction may continue at speed as pedestrians attempt to cross resulting in a vehicle/cyclist collision.



Recommendation

Provide separate phases for cyclists and pedestrians at the junction.

4.7 Study Area – UCD to St Stephen’s Green

4.7.1 Problem

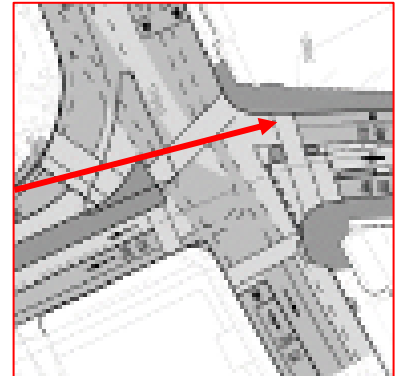
Location: Drawing SHT_20_CT_S3_1A1.300.1 (A)

Summary: Removal of cycle lane may result in informal crossings

The existing St Stephens’s Green/Leeson St/Earlsfort Terrace junction provides a cycle lane on the western arm of the junction for east bound cyclists which is proposed to be removed. This may result in cyclists informally crossing the junction resulting in vehicle/pedestrian collision.

Recommendation

Provide measures to allow cyclists to continue on Leeson St. from the western arm of the junction.



4.7.2 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.1 (A)

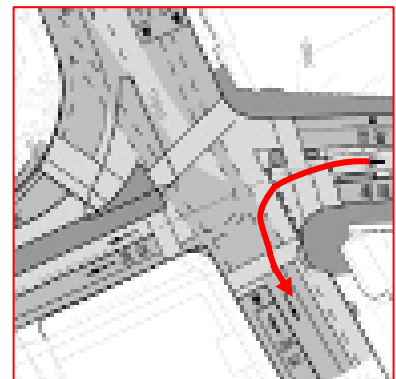
Summary: Unclear how bus lane will tie into the existing road layout.

The existing St Stephens’s Green/Leeson St/Earlsfort Terrace junction allows vehicles from Leeson St to turn left onto Earlsfort Terrace. The proposed road marking arrows indicate that this movement will continue to be permitted. However, it is also proposed to make the Earlsfort Terrace arm of the junction two-way bus-only.

It is unclear how the southbound only lane will tie into the existing network as all vehicles are permitted to turn left. The permissible movements at the junction may be unclear and it is unclear how the scheme will tie-in with the existing road layout. This could result in late manoeuvres by drivers leading to unsafe manoeuvres and collisions.

Recommendation

Revise the proposed layout to allow all vehicles to turn left from Leeson St onto Earlsfort Terrace.



4.7.3 Problem

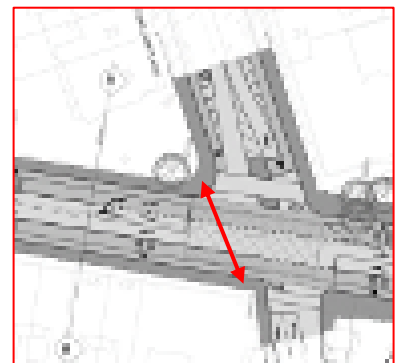
Location: Drawing SHT_20_CT_S3_1A1.300.2 (A)

Summary: Removal of pedestrian crossing may lead to informal crossings.

It is intended to remove an existing pedestrian crossing and central refuge which allows pedestrians to cross Leeson St to/from Adelaide Road/Fitzwilliam Place. The existing pedestrian crossing to the north may not be within the likely pedestrian desire line. This may result in pedestrians attempting to cross two cycle lanes and four lanes of traffic resulting in a vehicle/pedestrian or cyclist/pedestrian collision.

Recommendation

Provide a pedestrian crossing at the Leeson St/Fitzwilliam Place/Adelaide Road junction to reduce the risk of pedestrians informally crossing.

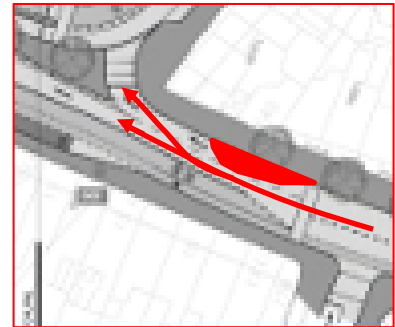


4.7.4 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.3 (A)

Summary: Lane configuration may result in side swipe collision

The proposed arrangement at the Leeson St/Sussex Road junction requires eastbound vehicles to move left, while the offside lane includes a right turn onto Sussex Road. Drivers who intend to continue straight-ahead on Leeson St, and who are unfamiliar with the proposed layout, or insufficiently attentive, may enter the right-turn-only lane inadvertently resulting in them undertaking late lane-change manoeuvres leading to side-swipe collisions with vehicles in the straight-ahead lane.



Recommendation

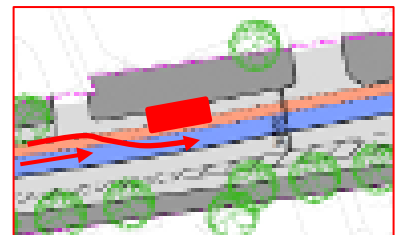
Amend the layout downstream of the junction by building out the kerb so that approaching vehicles are guided into the straight-ahead lane and vehicles wishing to turn right must move right into the right turn lane.

4.7.5 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.3 (A)

Summary: Footpath does not extend to cycletrack which may result in informal parking

It is proposed to change the existing footpath kerbline on the northern side of Sussex road. The proposed kerbline does not extend to the edge of the cycletrack and may be of insufficient width to provide a parking arrangement. This may result in informally parked vehicles encroaching into the proposed cycletrack causing cyclists to swerve into the adjacent bus lane. This may result in a cyclist/vehicle collision.



Recommendation

Extend the footpath to the cycletrack to reduce the risk of vehicles parking.

4.7.6 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.5 (A)

Summary: Width of raised table may result in an uneven surface for pedestrians

A raised table is proposed for pedestrians and cyclists crossing the entrance of the Hampton Hotel. The width of the raised table does not extend over the width of the approaching footpath which may result in a trip hazard for pedestrians.



Recommendation

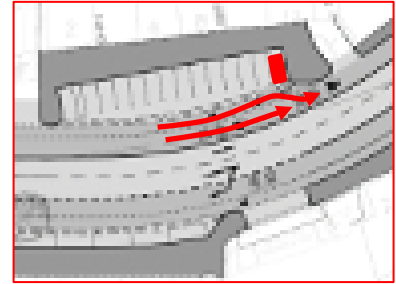
Extend the width of the raised table to provide an even surface for pedestrians crossing the entrance of the hotel.

4.7.7 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.7 (A)

Summary: Perpendicular parking located on high volume road

It is intended to retain the existing perpendicular parking arrangements on the northern side of Donnybrook Road. The Audit Team are concerned that vehicles reversing out of these parking bays must do so onto a heavily trafficked section of road which may result in a collision with an approaching vehicle or cyclist.



In addition the cyclelane proposed along the northern side of Donnybrook Road ends abruptly to the east of the perpendicular parking where cyclists must join and continue within the bus lane. The abrupt end to the cycle lane could result in cyclists suddenly entering the bus lane leading to them being struck by a bus approaching from the rear.

Recommendation

Ensure vehicles exiting the car parking can do so safely, and that they have adequate visibility towards approaching traffic/cyclists from either direction.

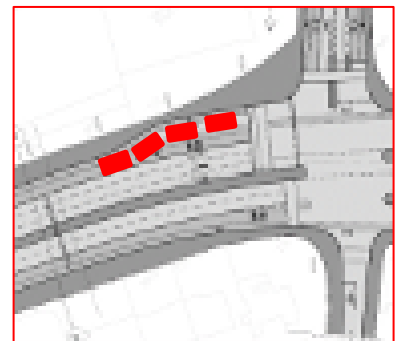
Provide a smoother transition from the cycle lane into the shared bus lane, possibly relocated to a point further east.

4.7.8 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.11 (A)

Summary: Reduced length of left-turn lane may result in vehicles blocking cycle track and bus lane.

It is proposed to reduce the length of the left turn lane for vehicles turning left onto Nutley Lane. The Audit Team were not provided with a traffic assessment of the junction and it is unclear if the reduction in length of the left-turn lane will result in vehicles waiting in the cycletrack and bus lane. This could lead to queues developing within the bus lane, driver frustration and the potential for cyclists moving into the traffic lane where they are at an increased risk of being struck by a vehicle.



Recommendation

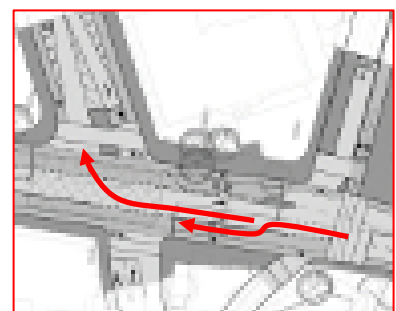
Complete a traffic assessment of the proposed layout out to ensure the proposed left turn lane can cater for likely queues.

4.7.9 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.02 (A)

Summary: Vehicles may use bus lane to pass right turning vehicle.

The proposed arrangement allows right turning movements for northbound vehicles at the Leeson St/Fitzwilliam Place/Adelaide Road junction. If northbound drivers are not provided with an unopposed signal phase, right turning drivers may block drivers attempting to continue straight. As a result, drivers may move suddenly into the bus lane to pass a stationary right turning vehicle, leading to possible collisions with buses.



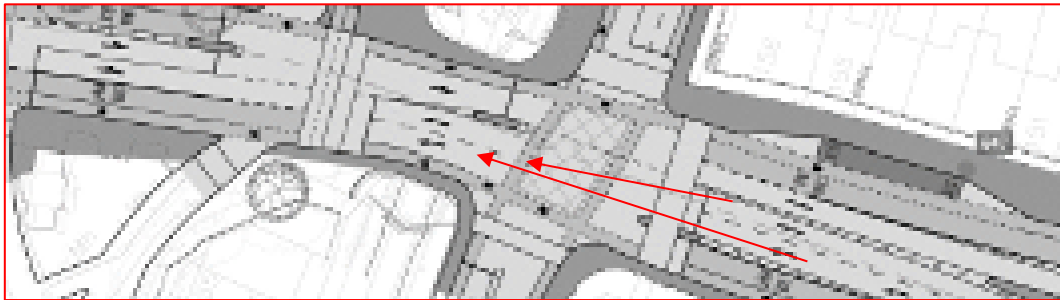
Recommendation

Ensure the signal phasing at this junction does not result in waiting right-turning vehicles blocking straight-ahead vehicles.

4.7.10 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.02 (A)

Summary: Vehicles in the left turn lane may attempt to continue straight



The road markings on the northbound approach to the Grand Parade/Leeson St. Upper junction indicate that the nearside traffic lane on the approach to the Grand Parade junction is for left-turns onto Grand Parade only. However, over time, it is likely that this lane will also be used by drivers wishing to turn left onto Adelaide Road downstream of the Grand Parade junction.

A vehicle in the northbound straight-ahead lane at this location who wishes to subsequently turn left onto Adelaide Road may have their route obstructed by a vehicle who proceeds straight-ahead from the nearside lane, resulting in side swipe collisions or sudden braking and shunt type collisions.

Recommendation

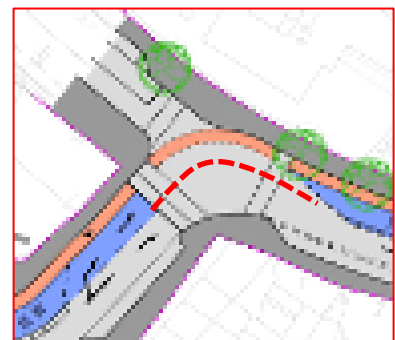
Allow vehicles to turn left and continue straight from the nearside lane through the Grand Parade/Leeson St. junction.

4.7.11 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.02 (A)

Summary: Poor lane discipline leading to side-swipe collisions on Sussex Road

A traffic lane, and a bus lane proceed right on Sussex Road through its junction with Sussex Terrace. The absence of proposed guidance markings around this bend could result in poor lane discipline leading to side-swipe collisions.



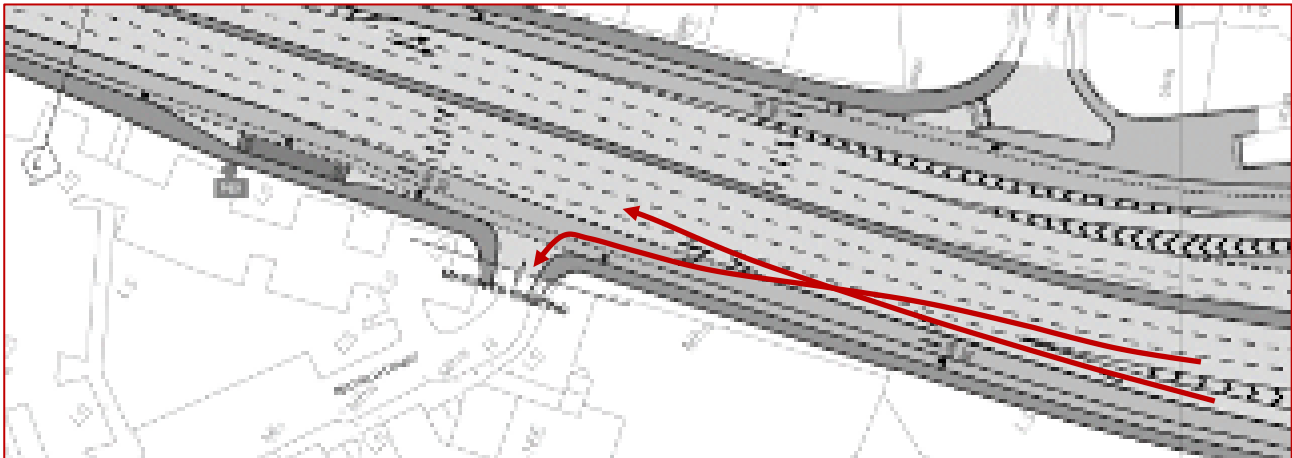
Recommendation

Provide lane guidance markings to guide vehicles through the junction.

4.7.12 Problem

Location: Drawing SHT_20_CT_S3_1A1.300.12 (A)

Summary: Precarious access manoeuvre for vehicles entering Belfield Court



It is proposed to extend the length of the northbound merge taper from the UCD grade separated junction. Vehicles on the Stillorgan Road wishing to access Belfield Court must cross merging traffic in order to enter the bus lane before turning left into Belfield Court. This manoeuvre is relatively precarious involving weaving between slowing vehicles wishing to turn left into Belfield Court and accelerating vehicles wishing to emerge from the on-ramp and is likely to result in side-swipe collisions.

Recommendation

Restrict access to Belfield Court to vehicles on the UCD on-ramp.

4.7.13 Problem

*Location: Drawing SHT_20_CT_S5_100.1 (A) &
SHT_20_CT_S5_100.3 (A)*

Summary: Right turns by cyclists not catered for, possibly resulting in collisions with other road users

No provisions have been indicated for right turning cyclists at the Nutley Lane/Stillorgan Road and Nutley Lane/Merrion Road junctions.

Southbound cyclists on the Merrion Road wishing to turn right onto Nutley Lane are required to enter and cross multiple traffic lanes in order to turn right, with a resulting increased risk of being struck by a vehicle.

Cyclists turning right from Nutley Lane onto either the Stillorgan Road northbound or the Merrion Road southbound may be at risk of being struck by a left-turning bus.

Recommendation

Provide a jug turn for southbound cyclists on Merrion Road wishing to turn right onto Nutley Lane.

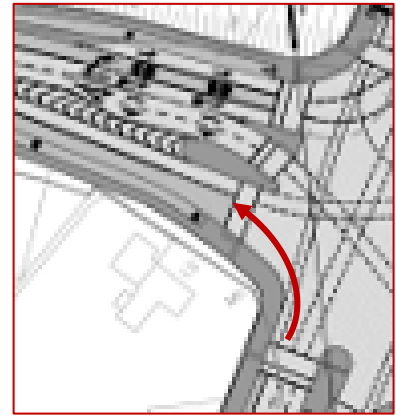
Ensure right-turning cyclists from Nutley Lane onto either the Stillorgan Road or the Merrion Road are not at risk of being struck by left turning vehicles.



5 Observations

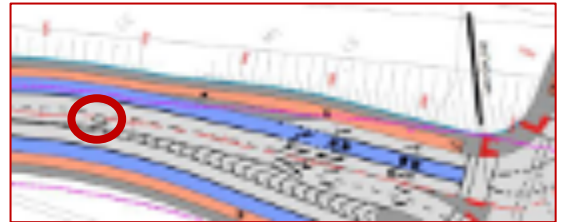
- 5.1 Left turning movements from the Snugborough Road (R843) onto the L3020 towards the Blanchardstown Shopping Centre are not readily cater for by the proposed layout of the commencement of the bus lane at this location.

The start of the bus lane should be amended in order to cater for, and adequately guide, left turning traffic at the junction.



- 5.2 A left-turn arrow has been indicated within the straight-ahead lane on the L3020 approach to its junction with Snugborough Road.

It is presumed that this is a drafting error which will be corrected during the detailed design stage.



- 5.3 At the first offside lane drop on the N3 eastbound carriageway, downstream of the junction with Auburn Avenue/Dunsink Lane, the roadmarkings indicated on the drawings do not clearly convey to drivers the nature of the upcoming road layout (e.g. offside lane drop). This could lead to late lane-change manoeuvres and side-swipe collisions. It is considered that this is a drafting error and that the roadmarkings should be amended during the detailed design stage.



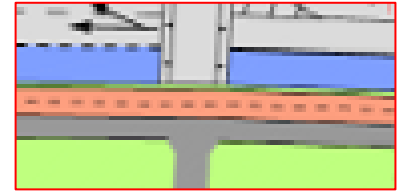
- 5.4 It is proposed to create a relatively short length of a bus lane south-eastbound on the Old Cabra Road, with a bus-gate on the exit from the bus lane. It is not clear if this facility is warranted given the restrictions on traffic permitted to access the Old Cabra Road.

If this layout is not warranted it could result in an unnecessarily complex road layout which grants little benefit, but could increase potential driver confusion. Review the need for this arrangement during the design development.

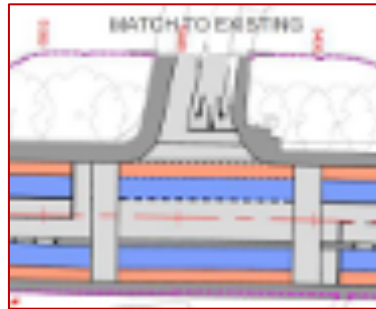


5.5 A cycletack is shown crossing a pedestrian crossing within Blanchardstown shopping centre.

The cyclists should yield to the pedestrian crossing, or a shared surface provided.

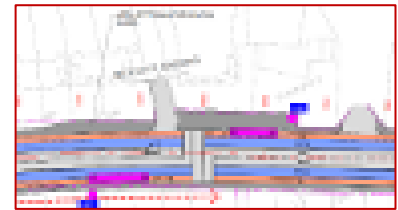


Inconsistent arrangements have been indicated at similar junctions along the Navan Road (e.g. Ashtown Grove Junction and Kempton Avenue Junction). A lack of consistency could result in driver confusion as they navigate the revised road layout. It is preferable to adopt similar arrangements at similar locations along the route.



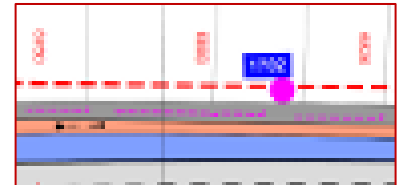
5.6 It is proposed to retain an existing school bus set-down area on the Navan Road at the Our Lady Help of Christians Church. No details have been provided on the intended layout at this location.

Care will be required during the detailed design to ensure that the proposed layout will be safe, that the adjacent footpaths are of adequate width, and that stationary buses in the set-down area do not impede other road users (e.g. cyclists) or obscure visibility for vehicles entering/exiting the accesses adjacent to the set-down area.



5.7 It is unclear from the drawings provided whether it is intended to retain the existing bus stop (No. 1702), on the Navan Road inbound.

No bus cage has been shown on the plans provided, however a give way symbol has been indicated within the cycletrack immediately upstream of the existing bus stop location. During the design development clarify the proposals in relation to the bus stop provision at this location.



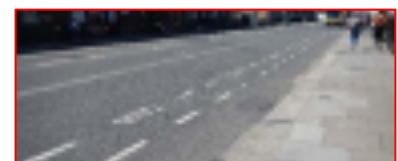
5.8 It is unclear from the drawings provided whether it is intended to retain existing bus stops on the Old Cabra at its junction with Cabra Drive. During the design development clarify the proposals in relation to the bus stop provision at this location.



5.9 Cycling facilities at the Manor St & Aughrim St junction do not continue north of the junction and it is not clear if a shared cycle and bus lane is proposed. During the design development, clarify the proposed layout providing the appropriate lane widths.



5.10 It is unclear if it is intended to retain the existing Taxi rank on Leeson St. in both directions. Ensure the operating hours of the Taxi rank are not within the operating hours of the bus lane.



- 5.11 A tree is proposed at an existing bus stop. It is assumed this is a drafting error as the position of the tree does not permit a bus shelter and may result in a bus driver failing to fully align with the kerbline.



- 5.12 There are a number of locations throughout the scheme where short segments of cycletracks are proposed through bus stops. Cyclists may not yield twice in quick succession to pedestrians and it is considered that a shared surface at these locations may work more efficiently.



6 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.

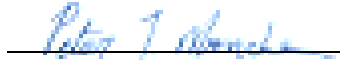
The problems identified have been noted in this report together with associated safety improvement suggestions, which we would recommend should be studied for implementation.

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:



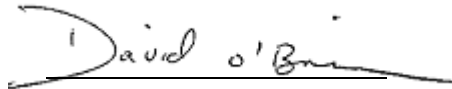
Dated:

13/09/2018

ROAD SAFETY AUDIT TEAM MEMBER

David O'Brien

Signed:



Dated:

13/09/2018

Appendix A – Road Safety Audit Brief Checklist

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

	Yes	No
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 type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input type="checkbox"/>	<input checked="" 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"/>
--------------------------	-------------------------------------

Appendix B – Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
KEYPLAN LAYOUT	SHT_20_CT_S1_KEYPLAN	A
PROPOSED OFF-LINE BUS INTERCHANGE BLANCHARDSTOWN PREFERRED OPTION KEY PLAN	SHT_20_CT_S2_100	A
PROPOSED OFF-LINE BUS INTERCHANGE BLANCHARDSTOWN - PREFERRED OPTION SHEET 1 OF 2	SHT_20_CT_S2_100.1	A
PROPOSED OFF-LINE BUS INTERCHANGE BLANCHARDSTOWN - PREFERRED OPTION SHEET 2 OF 2	SHT_20_CT_S2_100.2	A
EMERGING PREFERRED ROUTE CYCLE FACILITIES	SHT_30_BxU_CT_GDA	A
EMERGING PREFERRED SCHEME STUDY AREA SECTION 1 SHEET 1 OF 8	SHT_20_CT_S1_1B1.1	A
EMERGING PREFERRED SCHEME STUDY AREA SECTION 1 SHEET 2 OF 8	SHT_20_CT_S1_1B1.2	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 3 OF 8	SHT_20_CT_S1_1B1.3	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 4 OF 8	SHT_20_CT_S1_1B1.4	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 5 OF 8	SHT_20_CT_S1_1B1.5	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 6 OF 8	SHT_20_CT_S1_1B1.6	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 7 OF 8	SHT_20_CT_S1_1B1.7	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 1 SHEET 8 OF 8	SHT_20_CT_S1_1B1.8	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 1 OF 14	SHT_20_CT_S1_2A1.100.1	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 2 OF 14	SHT_20_CT_S1_2A1.100.2	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 3 OF 14	SHT_20_CT_S1_2A1.100.3	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 4 OF 14	SHT_20_CT_S1_2A1.100.4	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 5 OF 14	SHT_20_CT_S1_2A1.100.5	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 6 OF 14	SHT_20_CT_S1_2A1.100.6	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 7 OF 14	SHT_20_CT_S1_2A1.100.7	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 8 OF 14	SHT_20_CT_S1_2A1.100.8	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 9 OF 14	SHT_20_CT_S1_2A1.100.9	A
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BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 12 OF 14	SHT_20_CT_S1_2A1.100.12	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 13 OF 14	SHT_20_CT_S1_2A1.100.13	A
BLANCHARDSTOWN TO LIFFEY QUAYS STUDY AREA SECTION 2 SHEET 14 OF 14	SHT_20_CT_S1_2A1.100.14	A
STUDY AREA SECTION 3 SHEET 1 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 2 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 3 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 4 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 5 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 6 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 7 OF 8	SK - 107	-
STUDY AREA SECTION 3 SHEET 8 OF 8	SK - 107	-
PROPOSED IN-LINE BUS INTERCHANGE BLANCHARDSTOWN SHEET 1 OF 2	SHT_30_ST_CT_S2_200.1	A
PROPOSED IN-LINE BUS INTERCHANGE BLANCHARDSTOWN SHEET 2 OF 2	SHT_20_CT_S2_200.2	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME KEY PLAN	SHT_20_CT_S3_KEY	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 1 OF 13	SHT_20_CT_S3_1A1.300.1	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 2 OF 13	SHT_20_CT_S3_1A1.300.2	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 3 OF 13	SHT_20_CT_S3_1A1.300.3	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 4 OF 13	SHT_20_CT_S3_1A1.300.4	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 5 OF 13	SHT_20_CT_S3_1A1.300.5	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 6 OF 13	SHT_20_CT_S3_1A1.300.6	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 7 OF 13	SHT_20_CT_S3_1A1.300.7	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 8 OF 13	SHT_20_CT_S3_1A1.300.8	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 9 OF 13	SHT_20_CT_S3_1A1.300.9	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 10 OF 13	SHT_20_CT_S3_1A1.300.10	A

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 11 OF 13	SHT_20_CT_S3_1A1.300.11	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 12 OF 13	SHT_20_CT_S3_1A1.300.12	A
UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 13 OF 13	SHT_20_CT_S3_1A1.300.13	A
BALLSBRIDGE TO UCD BUS CORRIDOR KEYPLAN LAYOUT	SHT_20_CT_S5_KEY	A
BALLSBRIDGE TO UCD BUS CORRIDOR EMERGING PREFERRED SCHEME SHEET 1 OF 3	SHT_20_CT_S5_100.1	A
BALLSBRIDGE TO UCD BUS CORRIDOR EMERGING PREFERRED SCHEME SHEET 2 OF 3	SHT_20_CT_S5_100.2	A
BALLSBRIDGE TO UCD BUS CORRIDOR EMERGING PREFERRED SCHEME SHEET 3 OF 3	SHT_20_CT_S5_100.3	A

Appendix C – Feedback Form

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.1.1	Yes	Yes		
4.1.2	Yes	Yes		
4.1.3	Yes	Yes		
4.1.4	Yes	Yes		
4.1.5	Yes	Yes		
4.1.6	Yes	Yes		
4.1.7	Yes	Yes		
4.1.8	Yes	Yes		
4.2.1	Yes	Yes		
4.2.2	Yes	Yes		
4.2.3	Yes	Yes		
4.2.4	Yes	Yes		
4.2.5	Yes	Yes		
4.3.1	Yes	Yes		
4.3.2	Yes	Yes		
4.3.3	Yes	Yes		

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.3.4	Yes	Yes		
4.4.1	Yes	Yes		
4.4.2	Yes	No	We propose installation of a barrier in the median, south of the junction, to ensure pedestrians use the designated pedestrian crossing on the northern side of the junction.	Yes
4.4.3	Yes	Yes		
4.4.4	Yes	Yes		
4.4.5	Yes	Yes		
4.5.1	Yes	Yes		
4.5.2	Yes	No	Design amended to reflect existing operation, the bus gate eliminates conflicts.	Yes
4.5.3	Yes	No	To avoid potential confusion by drivers before the hatching, we propose to: a) Ensure additional left turning guiding road markings will be included repeatedly in advance of the junction; b) Provide an overhead gantry with lane direction signage to ensure vehicles get in the right lane as they approach the junction.	Yes

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.5.4	Yes	No	We agree with the removal of the offside lane guidance markings through the junction. Conflicts identified are addressed with a separate signal stage (bus gate). Also, we propose to have the guidance markings for the M50 traffic instead of the buses travelling through the junction northbound.	Yes
4.5.5	Yes	Yes		
4.5.6	Yes	Yes		
4.5.7	Yes	Yes		
4.6.1	Yes	No	It is proposed to retain the pedestrian island at this location. An AutoTRACK Assessment has been carried out on these movements and 2 busses can pass simultaneously without encroaching into the pedestrian island. The pedestrian crossing will be altered to tie into the island appropriately.	Yes
4.6.2	Yes	Yes		

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.6.3	No	No	An AutoTRACK assessment has been carried out on this movement for intending vehicles, and buses can complete the manoeuvre. It is not intended to allow large articulated vehicles to turn left at this junction. Larger vehicles will proceed to the next junction, travel along King St North and north up Georges Lane to access Brunswick St North.	Yes
4.6.4	No	No	These movements will be accommodated in different stages of the signal cycle.	Yes
4.6.5	Yes	No	The operation of this junction will be reviewed at preliminary design stage. A no left turn from Kirwan Street may be introduced; the junction (including the western Manor Place arm) may be signalised, or the priority arrangement may be retained subject to modelling and risk assessment.	Yes
4.6.6	No	No	The access shown on the drawings for DIT is for Pedestrians and Cyclists only, and therefore traffic flows on Joseph's Street will not increase.	Yes
4.6.7	No	No	The design will allow traffic to access Grangegorman Road Lower from George's Lane.	Yes

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.6.8	No	No	This junction is signalised. Cyclists here will be given a dedicated signal stage to allow them to safely cross Brunswick St to get to Grangegorman Lower. The exact layout will be finalised at preliminary design stage.	Yes
4.6.9	Yes	No	Cycle movements will be accommodated through a toucan style arrangement. The precise detail of the signal staging will be developed at preliminary design stage.	Yes
4.6.10	Yes	Yes		
4.7.1	Yes	No	We agree with the problem identified. However, we trust it will be safer to keep the toucan crossings as designed rather than provide a straight ahead cycling lane through the junction, as cyclists would have to mix with traffic approaching the junction southbound, to get in the position to continue straight ahead, south.	Yes
4.7.2	Yes	Yes		
4.7.3	Yes	Yes		
4.7.4	Yes	No	We agree with the problem identified. However, we trust it will be safer to bring the kerb line out, approaching the pedestrian crossing, to enable the development of a dedicated right turn lane immediately after the pedestrian crossing.	Yes

Road Safety Audit Feedback Form

Scheme: Proposed Blanchardstown to UCD CBC

Route No.: N3 & N11

Audit Stage: Stage 1 Road Safety Audit **Date Audit Completed:** 16th June 2018

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)
4.7.5	Yes	Yes		
4.7.6	Yes	Yes		
4.7.7	Yes	No	The road layout will be amended in the next design stage	Yes
4.7.8	Yes	Yes		
4.7.9	Yes	Yes	Signalling to be designed at the next design stage	Yes
4.7.10	Yes	Yes		
4.7.11	Yes	Yes		
4.7.12	Yes	Yes		
4.7.13	Yes	Yes		

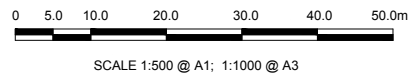
Signed:  Designer **Date** 13/09/2018

Signed: Peter J. Monahan Audit Team Leader **Date** 13/09/2018

Signed: _____ Employer **Date** _____

Appendix D – Problem Locations

Last saved by: STEPHEN CURRAN(2018.04.19) - Last Plotter: 2018.04.20
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No.	Revision	Date	By	Chkd	App'd
	Stage				
	PRELIMINARY				
	APPROVAL				
	TENDER				
	CONSTRUCTION				

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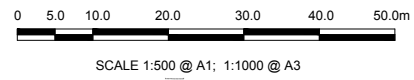
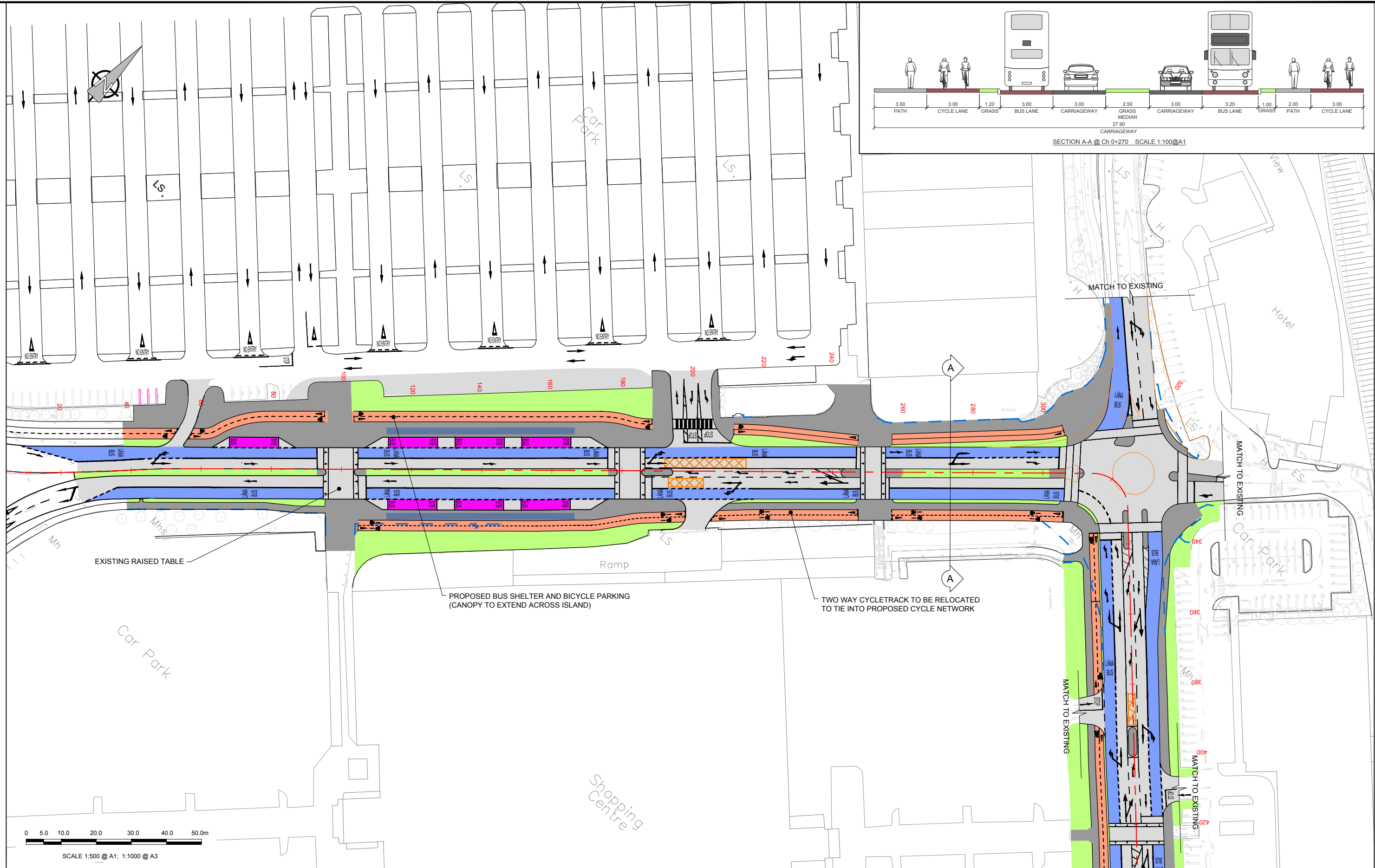
AECOM - Roughan & O'Donovan
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 Fax: +353(0)1 2383199
 www.aecom.com

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Designed: TM Checked: -- Approved: -- Status: CONCEPT

Project Title		BLANCHARDSTOWN TO THE LIFFEY QUAYS	
Drawing Title		PROPOSED OFF-LINE BUS INTERCHANGE BLANCHARDSTOWN - PREFERRED OPTION SHEET 1 OF 2	
Drawn: RH	Job No: 60540050	Drawing No:	Rev:
Scale: 1:500 @A1	Date: MARCH 2018	SHT_20_CT_S2_100.1	A

Last saved by: STEPHEN CUBRAN(2018.04.18) - Last Plotted: 2018.04.18
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No.	Revision	Date	By	Chk'd	App'd
	Stage				
	PRELIMINARY				
	APPROVAL				
	TENDER				
	CONSTRUCTION				

AECOM - Roughan & O'Donovan

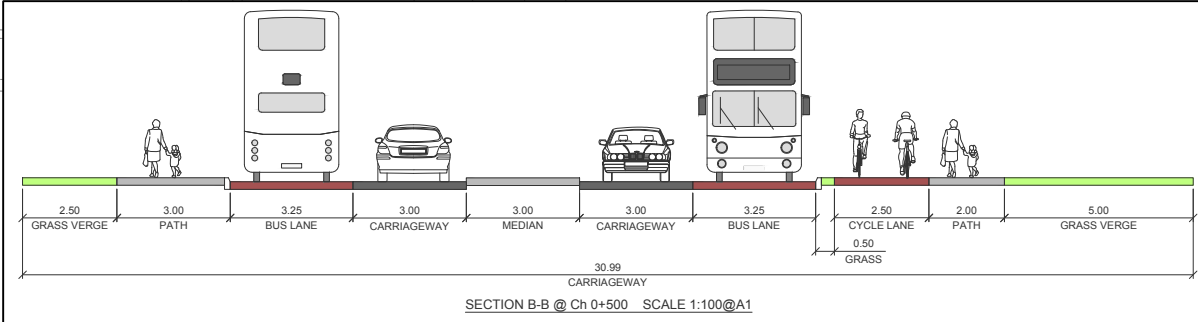
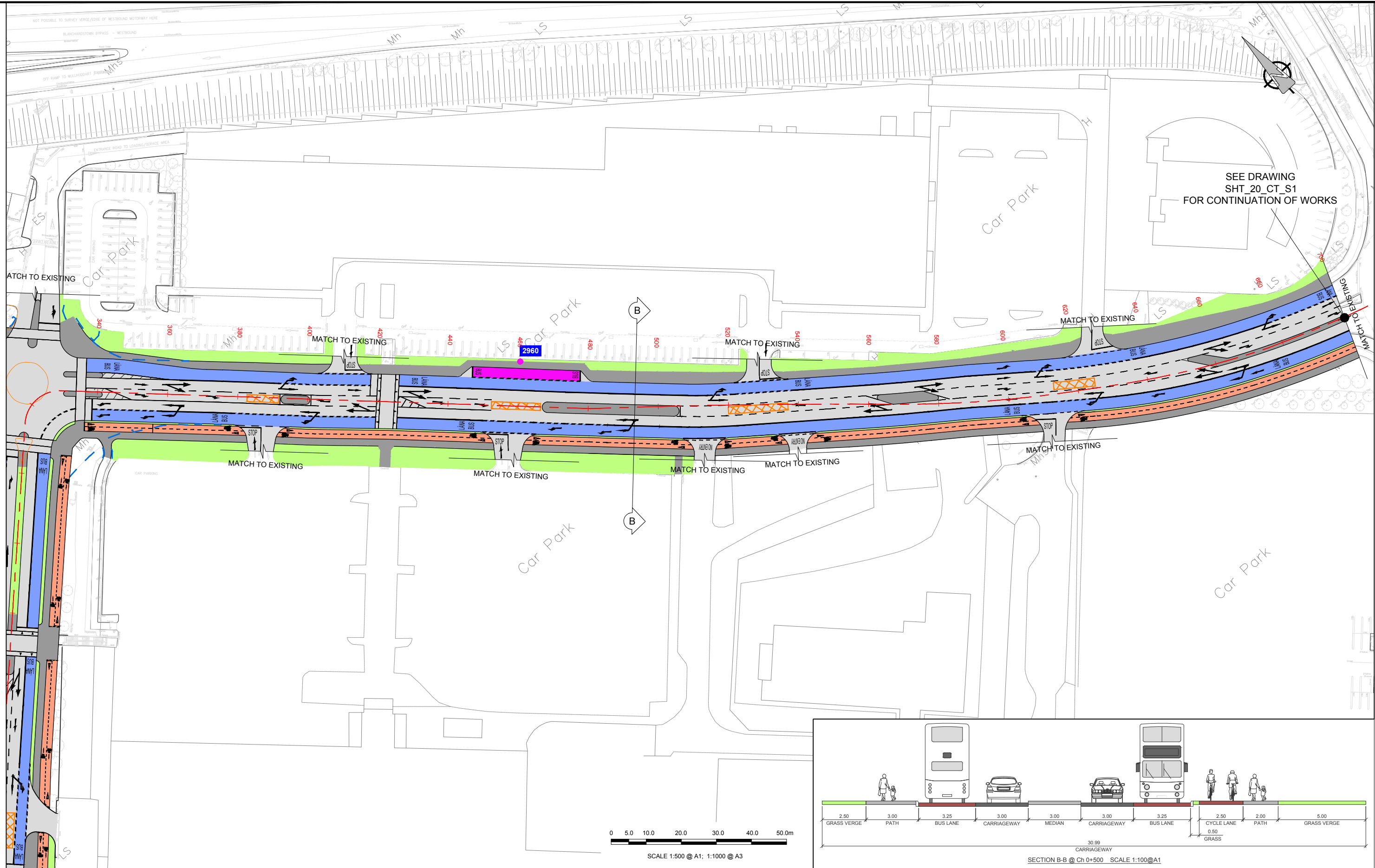
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Designed: TM Checked: -- Approved: -- Status: CONCEPT

Project Title BLANCHARDSTOWN TO THE LIFFEY QUAYS	
Drawing Title PROPOSED IN-LINE BUS INTERCHANGE BLANCHARDSTOWN SHEET 1 OF 2	
Drawn: RH	Job No: 60540050
Scale: 1:500 @ A1	Drawing No: SHT_30_ST_CT_S2_200.1
Date: MARCH 2018	Rev: A

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No.	Revision	Date	By	Chkd	App'd
	Stage				
	PRELIMINARY				
	APPROVAL				
	TENDER				
	CONSTRUCTION				

AECOM - Roughan & O'Donovan

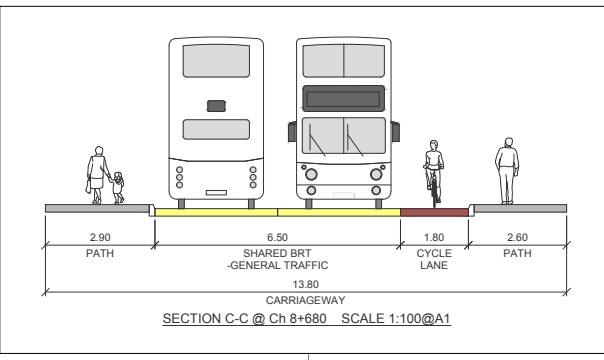
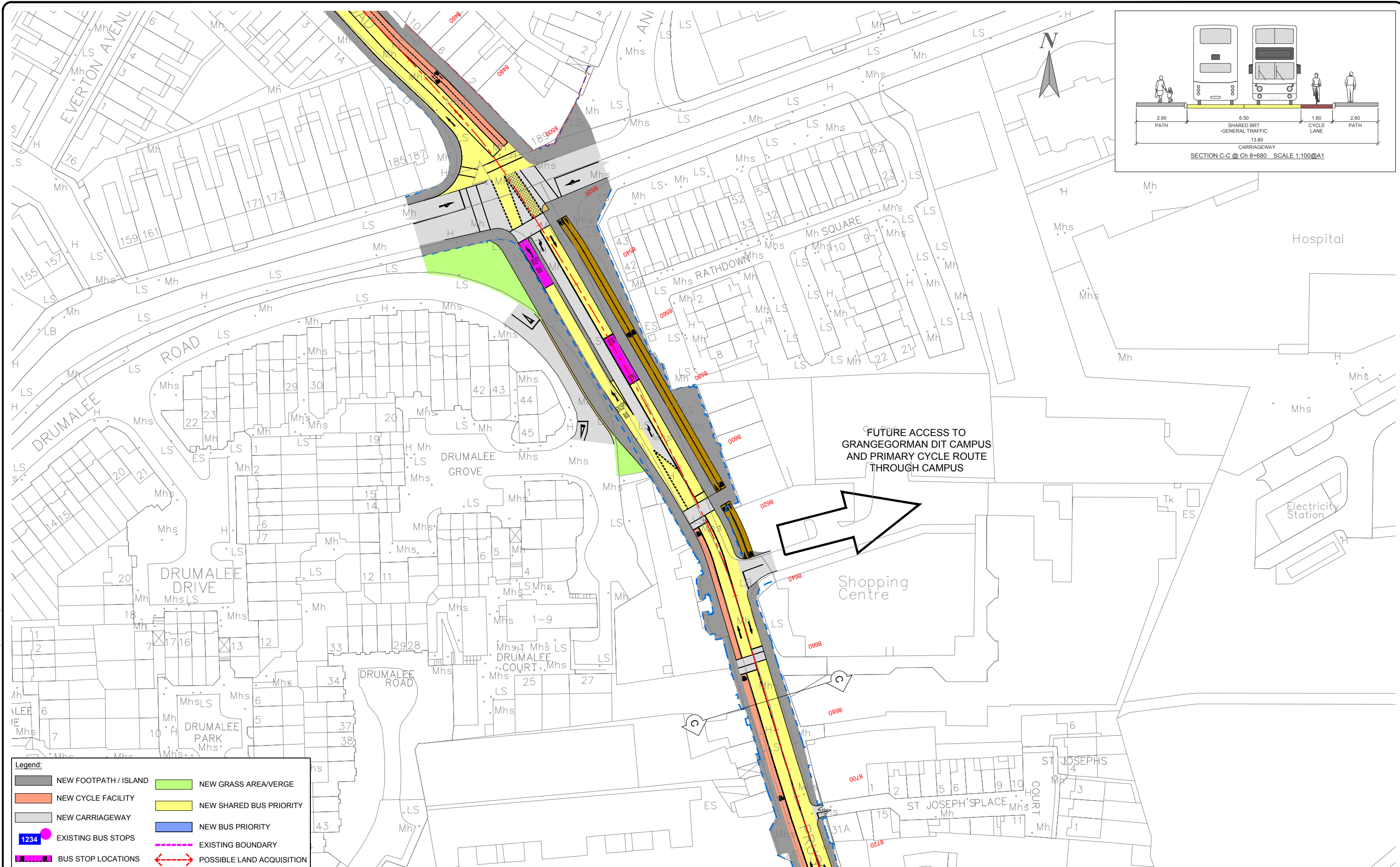
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Designed: TM Checked: -- Approved: -- Status: CONCEPT

Project Title BLANCHARDSTOWN TO THE LIFFEY QUAYS	
Drawing Title PROPOSED IN-LINE BUS INTERCHANGE BLANCHARDSTOWN SHEET 2 OF 2	
Drawn: RH	Job No: 60540050
Scale: 1:500 @A1	Drawing No: SHT_20_CT_S2_200.2
Date: MARCH 2018	Rev: A

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Legend:

	NEW FOOTPATH / ISLAND		NEW GRASS AREA/VERGE
	NEW CYCLE FACILITY		NEW SHARED BUS PRIORITY
	NEW CARRIAGEWAY		NEW BUS PRIORITY
	EXISTING BUS STOPS		EXISTING BOUNDARY
	BUS STOP LOCATIONS		POSSIBLE LAND ACQUISITION



No.	Revision	Date	By	Chk'd	App'd
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	APPROVAL				
	TENDER				
	CONSTRUCTION				

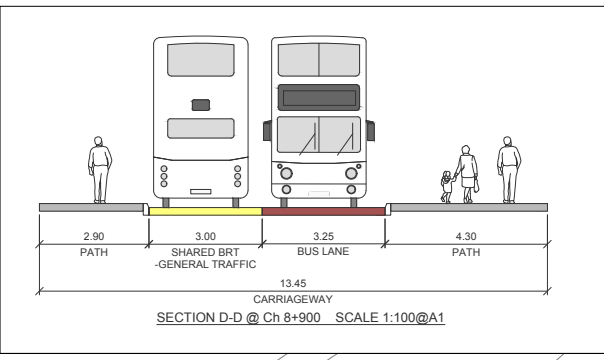
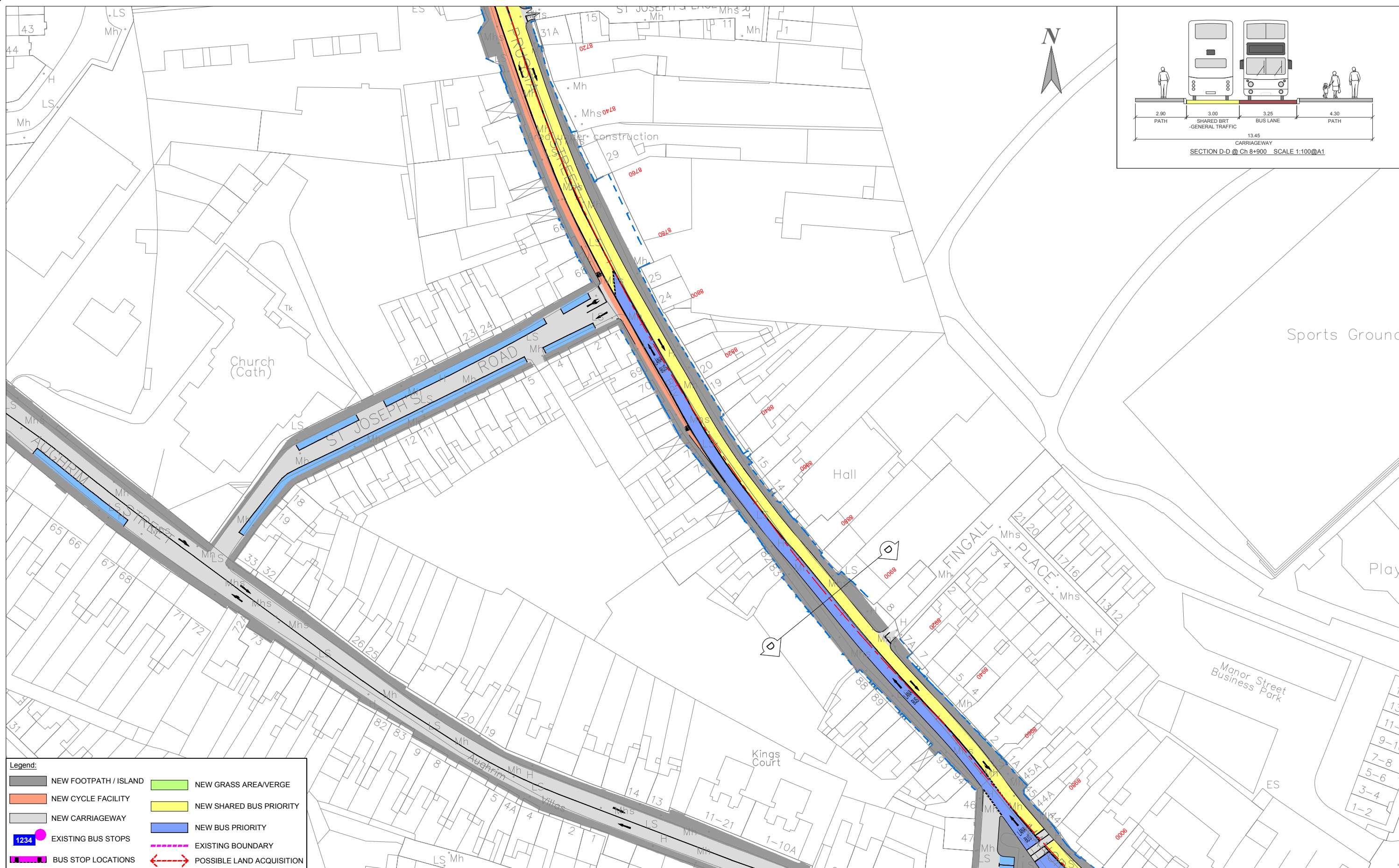
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Project Title BLANCHARDSTOWN TO THE LIFFEY QUAYS			
Drawing Title STUDY AREA SECTION 3 SHEET 3 OF 8			
Drawn: CG	Job No: 17.122	Drawing No: SK - 107	Rev: -
Scale: 1:500 @A1	Date: DEC 2017		

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Legend:

	NEW FOOTPATH / ISLAND		NEW GRASS AREA/AVERGE
	NEW CYCLE FACILITY		NEW SHARED BUS PRIORITY
	NEW CARRIAGEWAY		NEW BUS PRIORITY
	EXISTING BUS STOPS		EXISTING BOUNDARY
	BUS STOP LOCATIONS		POSSIBLE LAND ACQUISITION



No.	Revision	Date	By	Chk'd	App'd
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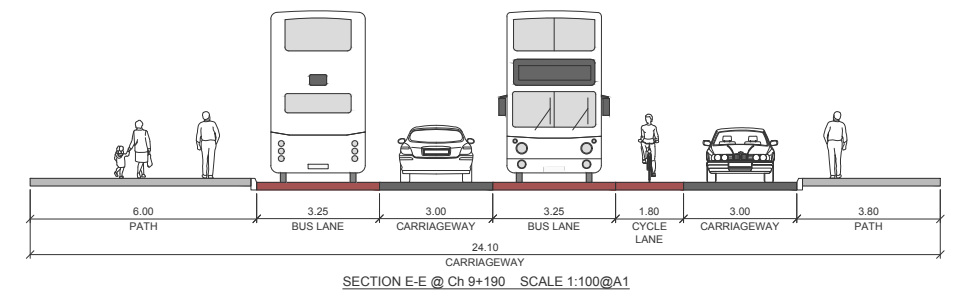
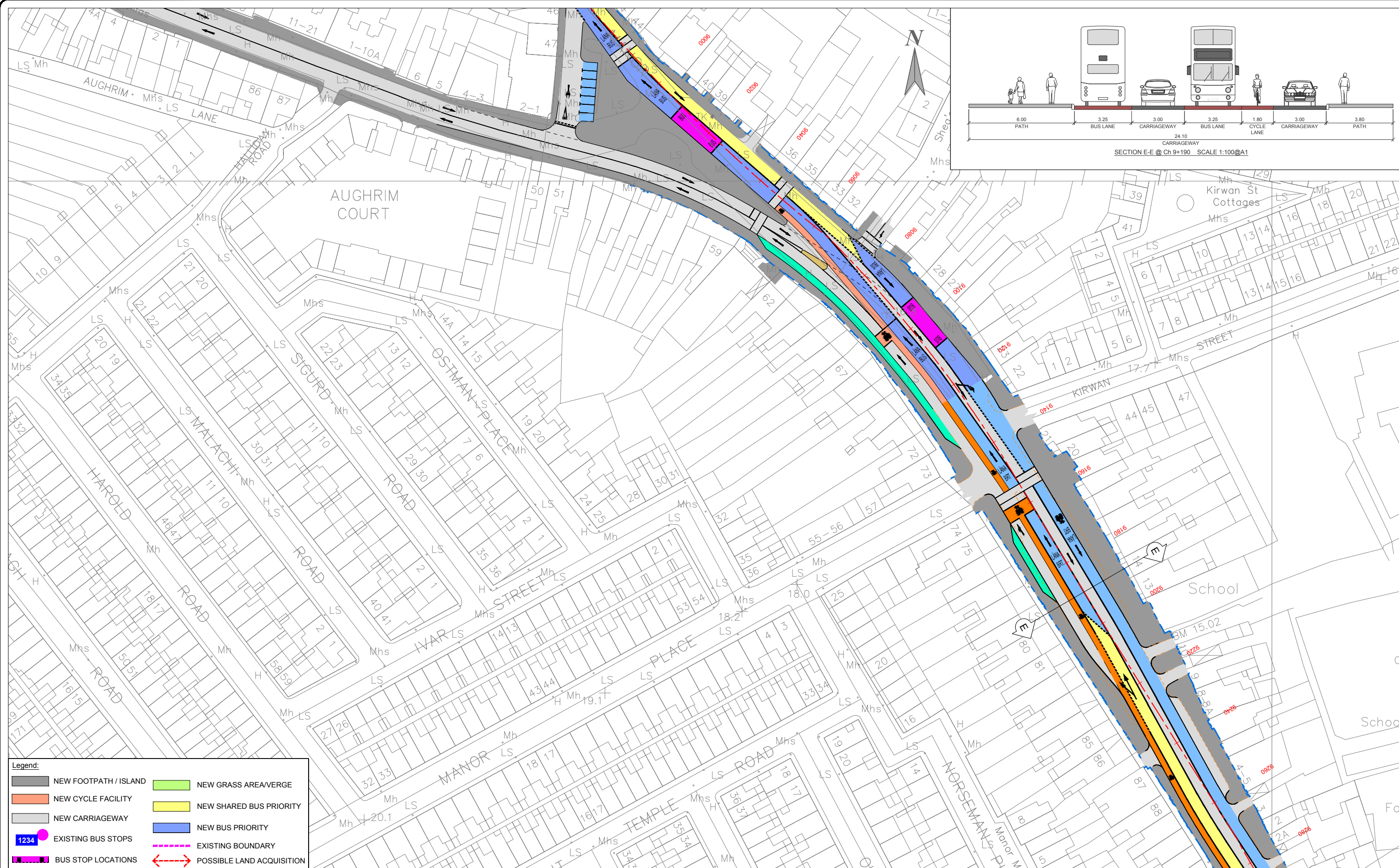
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Designed: EOC	Checked: --	Approved: --	Status: DISCUSSION
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Project Title BLANCHARDSTOWN TO THE LIFFEY QUAYS			
Drawing Title STUDY AREA SECTION 3 SHEET 4 OF 8			
Drawn: CG	Job No: 17.122	Drawing No: SK - 107	Rev: -
Scale: 1:500 @A1	Date: DEC' 2017		

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Legend:

	NEW FOOTPATH / ISLAND		NEW GRASS AREA/AVERGE
	NEW CYCLE FACILITY		NEW SHARED BUS PRIORITY
	NEW CARRIAGEWAY		NEW BUS PRIORITY
	EXISTING BUS STOPS		EXISTING BOUNDARY
	BUS STOP LOCATIONS		POSSIBLE LAND ACQUISITION



No.	Revision	Date	By	Chk'd	App'd
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	CONSTRUCTION				

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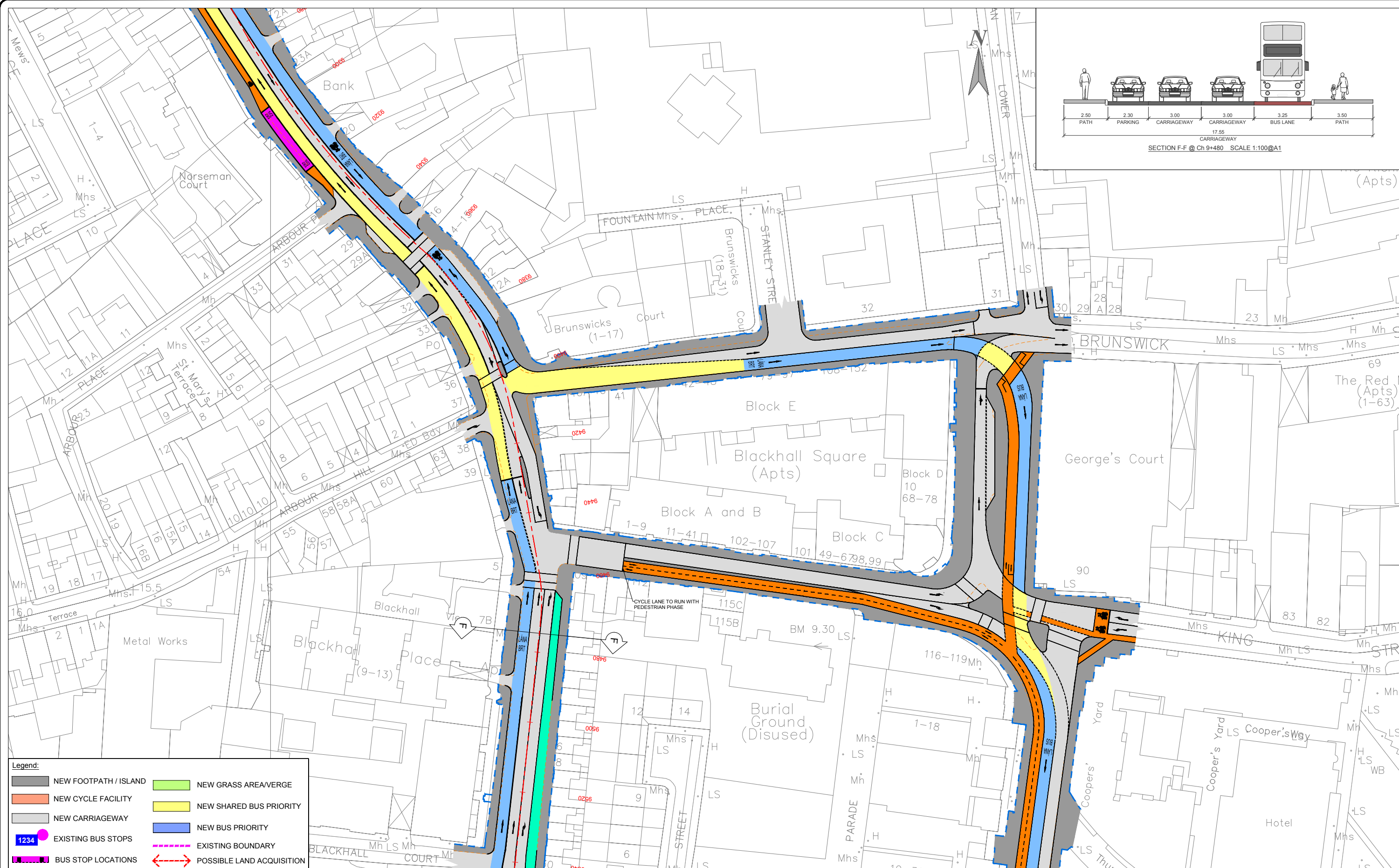
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Project Title BLANCHARDSTOWN TO THE LIFFEY QUAYS			
Drawing Title STUDY AREA SECTION 3 SHEET 5 OF 8			
Drawn: CG	Job No: 17.122	Drawing No: SK - 107	Rev: -
Scale: 1:500 @A1	Date: DEC 2017		

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Legend:

	NEW FOOTPATH / ISLAND		NEW GRASS AREA/AVERGE
	NEW CYCLE FACILITY		NEW SHARED BUS PRIORITY
	NEW CARRIAGEWAY		NEW BUS PRIORITY
	EXISTING BUS STOPS		EXISTING BOUNDARY
	BUS STOP LOCATIONS		POSSIBLE LAND ACQUISITION



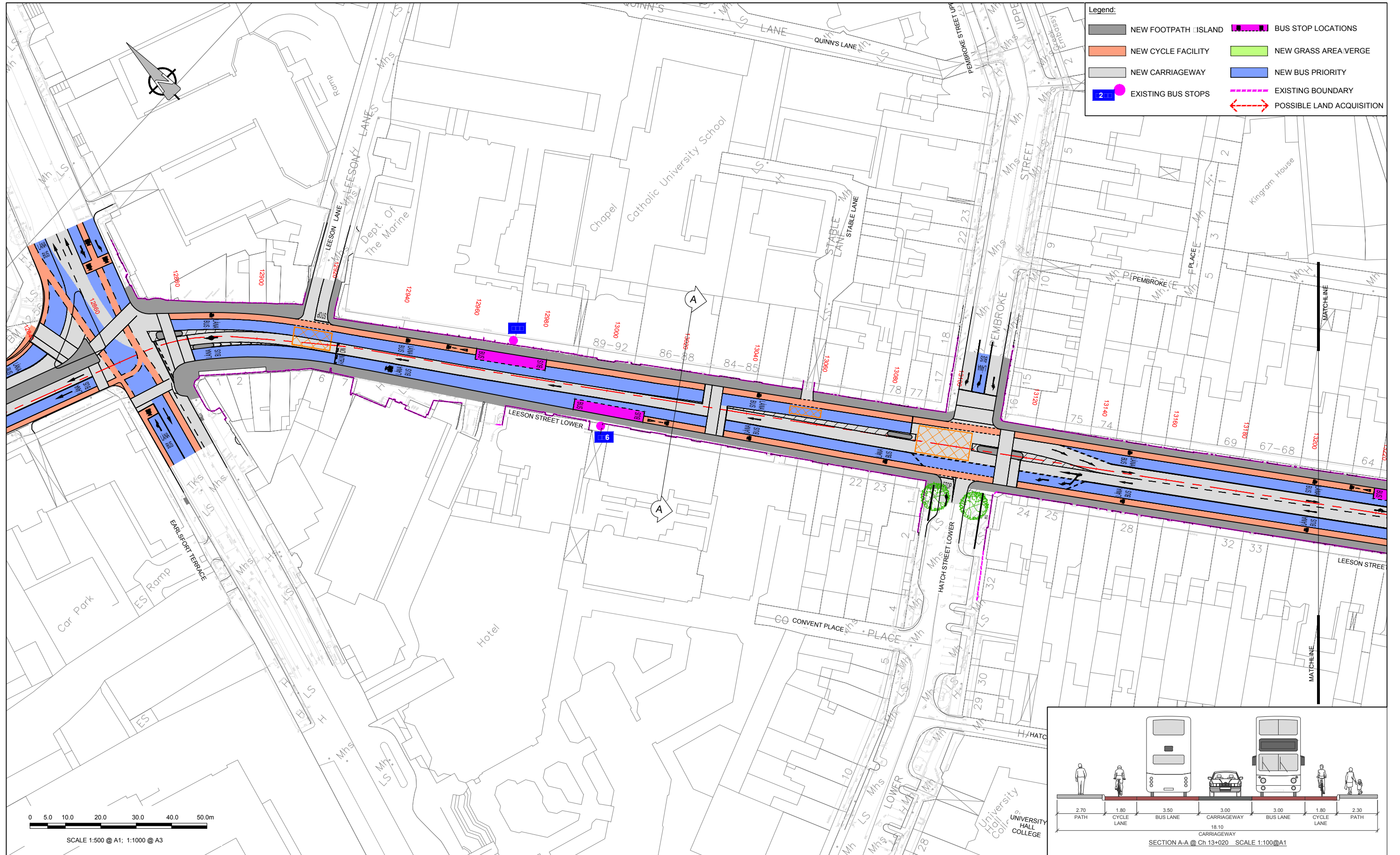
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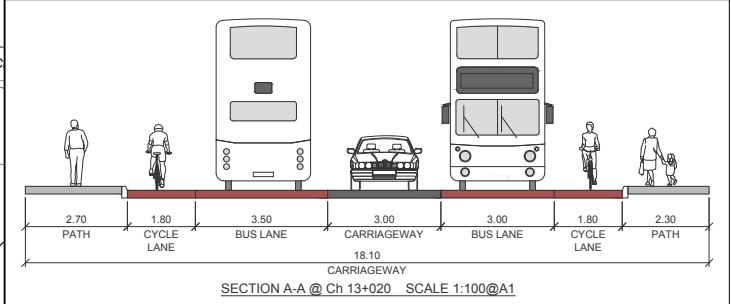
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Drawing Title STUDY AREA SECTION 3 SHEET 6 OF 8			
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Legend:

- NEW FOOTPATH / ISLAND
- NEW CYCLE FACILITY
- NEW CARRIAGEWAY
- EXISTING BUS STOPS
- BUS STOP LOCATIONS
- NEW GRASS AREA / VERGE
- NEW BUS PRIORITY
- EXISTING BOUNDARY
- POSSIBLE LAND ACQUISITION



No.	Revision	Date	By	Chkd	App'd
	Stage				
	PRELIMINARY				
	APPROVAL				
	TENDER				
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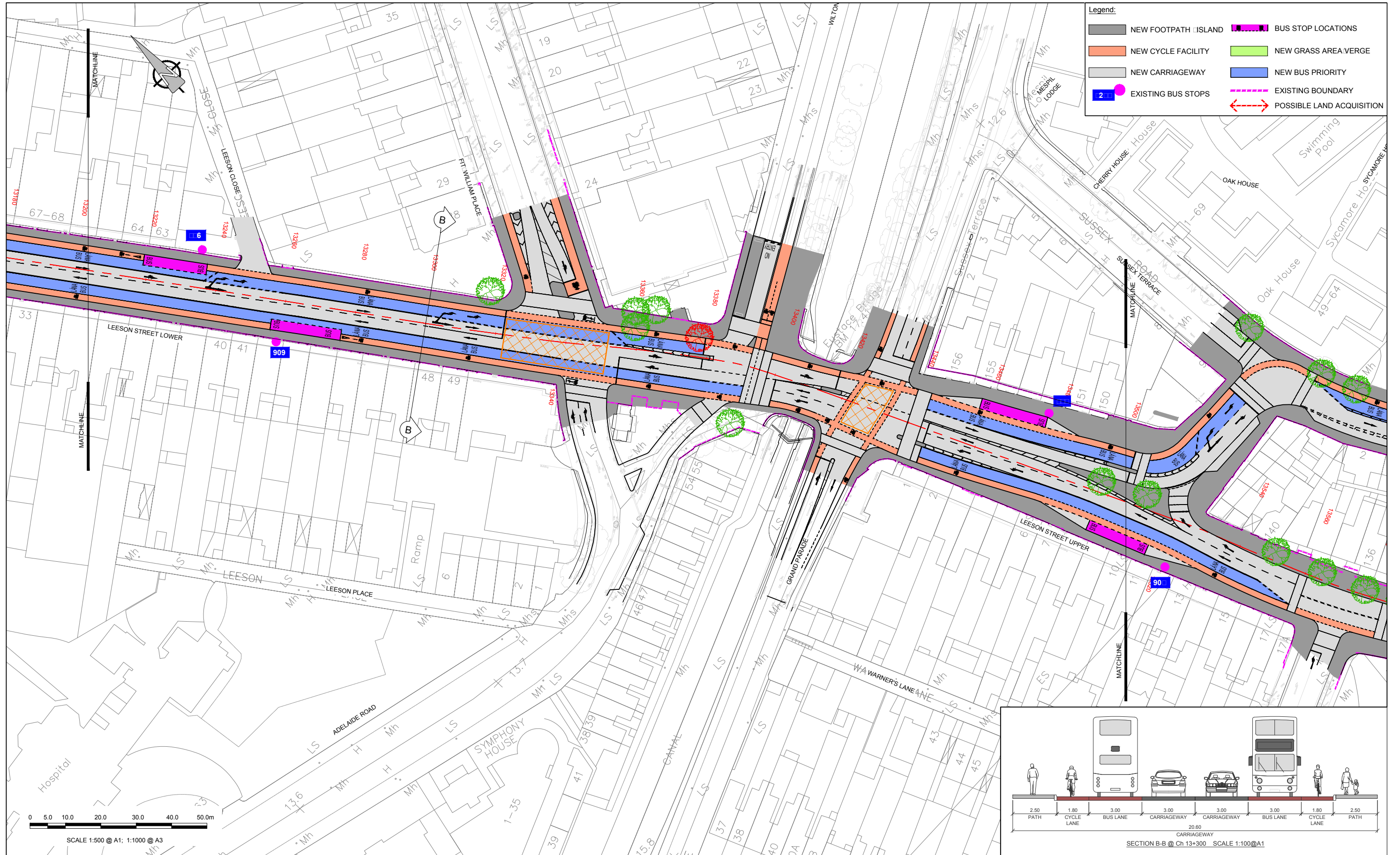
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Designed: RH Checked: -- Approved: -- Status: EMERGING PREFERRED SCHEME

Project Title		UCD TO St. STEPHENS GREEN	
Drawing Title		UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 1 OF 13	
Drawn: RH	Job No: 60540050	Drawing No:	Rev:
Scale: 1:500 @A1	Date: MARCH 2018	SHT_20_CT_S3_1A1.300.1	A

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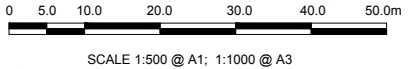
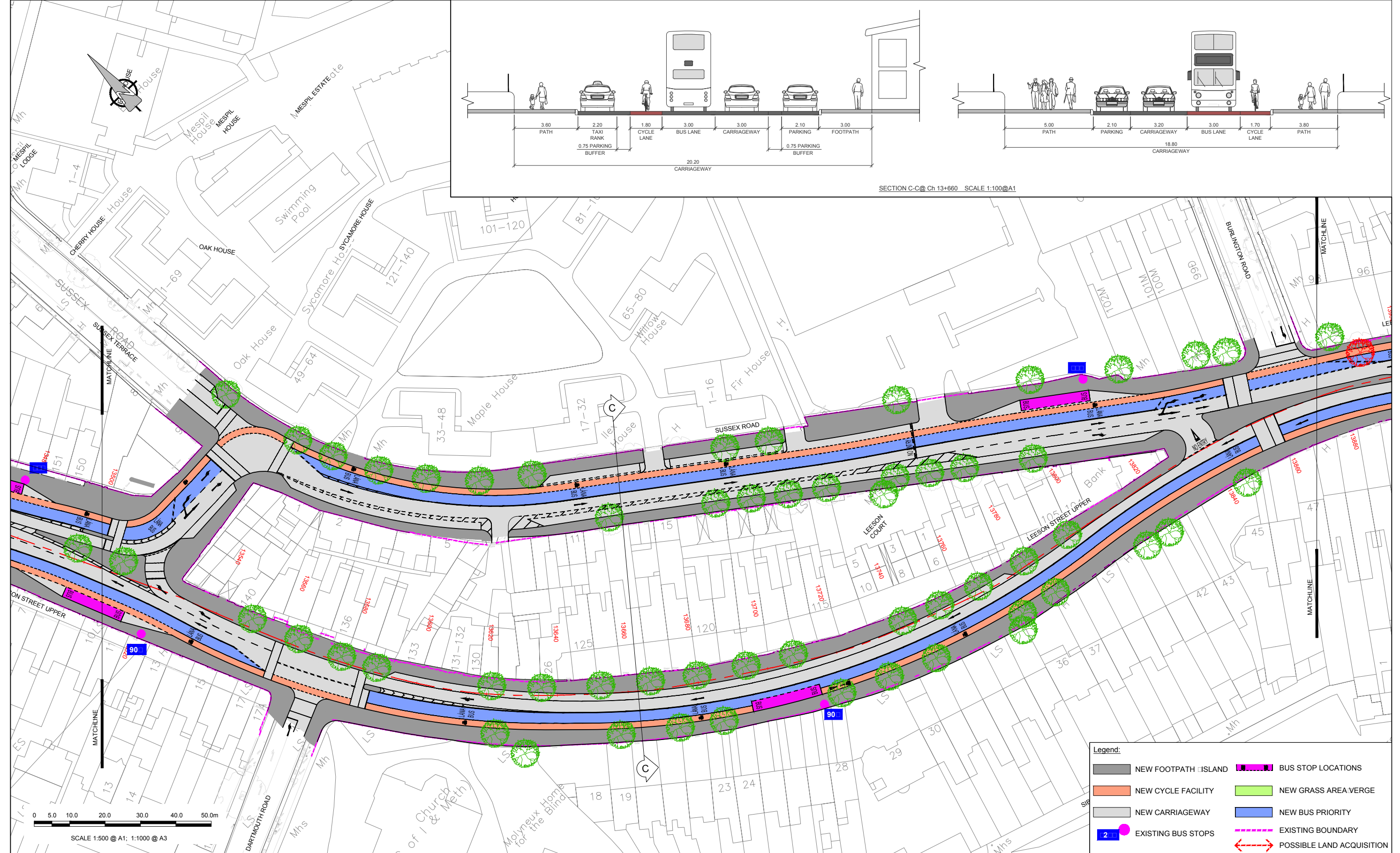
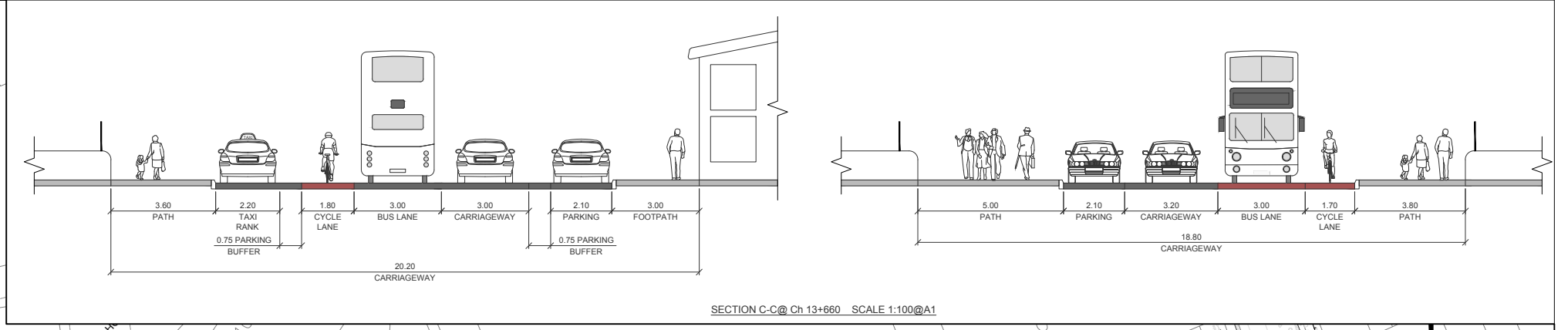
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	APPROVAL				
	TENDER				
	CONSTRUCTION				

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Project Title		UCD TO St. STEPHENS GREEN	
Drawing Title		UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 2 OF 13	
Drawn: RH	Job No: 60540050	Drawing No:	Rev:
Scale: 1:500 @A1	Date: MARCH 2018	SHT_20_CT_S3_1A1.300.2	A



Legend:

- NEW FOOTPATH ISLAND
- BUS STOP LOCATIONS
- NEW CYCLE FACILITY
- NEW GRASS AREA VERGE
- NEW CARRIAGEWAY
- NEW BUS PRIORITY
- EXISTING BUS STOPS
- EXISTING BOUNDARY
- POSSIBLE LAND ACQUISITION



No.	Revision	Date	By	Chkd	App'd
	PRELIMINARY				
	APPROVAL				
	TENDER				
	CONSTRUCTION				

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Designed: RH Checked: -- Approved: -- Status: EMERGING PREFERRED SCHEME

Project Title		UCD TO St. STEPHENS GREEN	
Drawing Title		UCD TO St. STEPHENS GREEN EMERGING PREFERRED SCHEME SHEET 3 OF 13	
Drawn: RH	Job No: 60540050	Drawing No:	Rev:
Scale: 1:500 @A1	Date: MARCH 2018	SHT_20_CT_S3_1A1.300.3	A

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