

N60 Breaffy Active Travel and Safety Measures Scheme

Stage 1 Road Safety Audit Report



Issue 1 - August 2022



N60 Breaffy Active Travel and Safety Measures Scheme

Stage 1 Road Safety Audit

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1. INTRODUCTION

Mayo County Council National Roads Office commissioned Roughan & O'Donovan Consulting Engineers to prepare a design for the proposed N60 Breaffy Active Travel and Safety Measures Scheme in Co Mayo.

Roughan & O'Donovan Consulting Engineers were engaged to carry out the Stage 1 Road Safety Audit in accordance with TII Publication GE-STY-01024.

It is noted that Preliminary Design Stage drawings for this scheme were prepared in 2021 and that a Stage 1 Road Safety Audit was undertaken on the scheme in December 2021. Subsequently, amendments were made to the Preliminary Design and updated Preliminary Design Stage drawings were prepared in 2022. It is noted that this Stage 1 Road Safety Audit report is an audit of the updated Preliminary Design Stage drawings prepared in 2022. This report relates to the Stage 1 Road Safety Audit carried out on the updated Preliminary Design Stage Drawings of the scheme in 2022.

The Road Safety Audit Team Members were appointed from within Roughan & O'Donovan Consulting Engineers and are completely independent of the design team for this scheme.

The Audit Team were provided with a Stage 1 Road Safety Audit Brief by the design team on 25th July 2022.

2. LOCATION & DESCRIPTION OF THE SCHEME

The scheme is located on the existing N60 Castlebar to Roscommon National Secondary Route at the village of Breaffy, located approximately 2km to the Southeast of Castlebar, County Mayo.

The extent of the scheme is approximately 4.2km in length and commences in Castlebar with one section which is 800m in length which follows the N60 road from the existing IDA Roundabout to the existing Kilkenny Cross Roundabout. The scheme continues along the N60 from Kilkenny Cross Roundabout passing through Breaffy Village, ending just beyond Breaffy Post Office at Corratavally at the junction of the N60 with the L5760. The existing arrangement East and West of the village of Breaffy indicate that the N60 has been improved on-line at various times to form a mix of Type 1 and Type 2 single carriageway cross-section, with a posted speed limit of 100km/h. The section through the center of Breaffy Village has been locally bypassed to the south of the original road, which now forms the main street of the village between the church and the school and has a posted speed limit of 50km/h. The village contains a church, a public house, a large primary school, and residential properties. Breaffy House Hotel, Breaffy Woods Hotel, and the Breaffy G.A.A grounds are located south of the N60, opposite the village.

A compact grade separated junction, which is currently under construction as part of the N5 Westport to Turlough Road Scheme, is located between Breaffy Village and Kilkenny Cross Roundabout.

The N60 Breaffy Active Travel and Safety Measures scheme includes:

- segregated footpaths and one way cycle facilities on both sides of the N60 within the 60km/h zone in accordance with DMURS
- shared pedestrian/cycle facilities corridor on one side of the N60 in accordance with DMRB on the 80 km/h zone and 100km/h zone
- provision of a periodic 60km/h zone at school drop-off and pick-up times at Breaffy Village
- eliminate hard shoulder parking at Breaffy village
- provision of new Jug Handle crossing at Ch. 4+110 at 80km/h speed limit change to 60km/h speed limit
- provision of new pedestrian crossing at Ch. 2+640 in the vicinity of local road L5757
- provision of new pedestrian crossing Ch. 1+960 and two bus bays at Breaffy Village
- provision of new pedestrian crossing at Ch. 1+475 in the vicinity of local roads L5782 & L5760
- update of Kilkenny Cross Roundabout to accommodate active travel provisions

The N60 Breaffy Active Travel and Safety Measures Scheme is located in County Mayo – see Figure 1

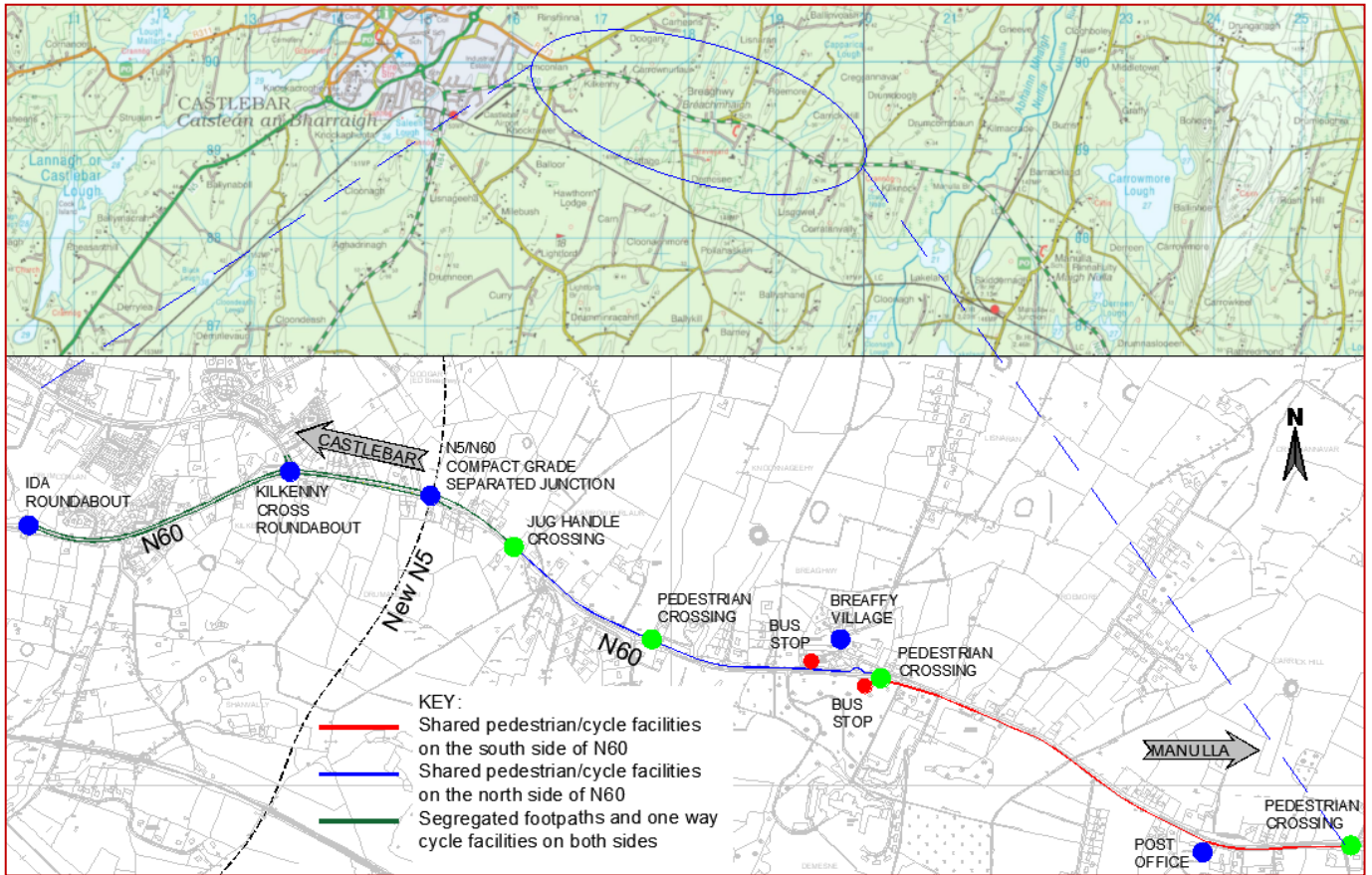


Figure 1: Location Plan

3. SCHEME INFORMATION

3.1 Departures from Standard

Three types of departures have been identified,
Carriageway separation distance departures (DEP-SEG-001 & DEP-SEG-002),
Non-motorised users (NMU) side road crossing arrangements departures (DEP-CRO-001, DEP-CRO-002 & DEP-CRO-003),
Cycleway designs – surface crossfall departure (DEP-SC-001).

3.2 Scheme Drawings

General Layout Drawings – Sheet 1 to Sheet 6:

N60BA-ROD-HWY-SW_AE-DR-CH-30051 Rev.P01
N60BA-ROD-HWY-SW_AE-DR-CH-30052 Rev.P01
N60BA-ROD-HWY-SW_AE-DR-CH-30053 Rev.P01
N60BA-ROD-HWY-SW_AE-DR-CH-30054 Rev.P01
N60BA-ROD-HWY-SW_AE-DR-CH-30055 Rev.P01
N60BA-ROD-HWY-SW_AE-DR-CH-30056 Rev.P01

Typical Cross Sections:

N60BA-ROD-GEN-SW_AE-DR-CH-40003 Rev.P01

3.3 Collisions Statistics

Between 2013 and 2019, a number of collisions have occurred on the sections under consideration:

On the N60 between:

- The junction of the N60/L5760 Corrantavally and the Kilkenny Cross Roundabout
 - Kilkenny Cross Roundabout and IDA Roundabout
- Details of such incidents are noted in Table 1.0. The information in Table 1.0 is based on information received by TII from the Road Safety Authority and Local Authorities.

Details of such incidents are noted in Table 1. The information is based on information received by TII from the Road Safety Authority and Local Authorities.

Collision No.	Primary Collision Type	Date	Time	Collision Type	Severity	Surface Conditions	Light
3	Front collision	22/01/2014	12:20:00	Traffic Collision	Minor Injury	Wet	Day-Good Visibility
4	Angle, Right Turn	06/02/2014	-	Traffic Collision	Minor Injury	Dry	Dark-No Lighting
5	Wall - Brick	20/03/2014	18:30:00	Traffic Collision	Minor Injury	Wet	Day-Good Visibility
6	Side Swipe	31/03/2014	12:30:00	Traffic Collision	Minor Injury	Dry	Day-Good Visibility
7	Rear End, Right Turn	09/04/2014	10:10:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
11	Pedestrian	13/12/2014	17:30:00	Traffic Collision	Minor Injury	Wet	Dark-Poor Lighting
12	Tree	13/12/2014	22:30:00	Traffic Collision	Material Damage Only	Wet	Dark-No Lighting
13	Rear End, Straight	27/02/2015	19:45:00	Traffic Collision	Material Damage Only	Wet	Dark-No Lighting
14	Side Swipe	18/04/2015	10:45:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
15	Fence - Timber	10/05/2015	14:30:00	Traffic Collision	Material Damage Only	Wet	Day-Poor Visibility
16	Pedestrian	16/05/2015	-	Traffic Collision	Fatal	Wet	Dark-No Lighting
17	Side Swipe	19/05/2015	12:00:00	Traffic Collision	Material Damage Only	Wet	Day-Good Visibility

Collision No.	Primary Collision Type	Date	Time	Collision Type	Severity	Surface Conditions	Light
18	Wall - Brick	24/05/2015	23:26:00	Traffic Collision	Minor Injury	Wet	Dark-No Lighting
19	Rear End, Straight	31/05/2015	13:50:00	Traffic Collision	Material Damage Only	Wet	Day-Good Visibility
20	Side Swipe	08/06/2015	12:40:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
21	Animal - Domestic	15/07/2015	00:40:00	Traffic Collision	Material Damage Only	Dry	Dark-No Lighting
23	Pedestrian	30/07/2015	17:04:00	Traffic Collision	Fatal	Dry	Day-Good Visibility
24	Rear End, Straight	02/08/2015	21:00:00	Traffic Collision	Material Damage Only	Not Specified	Not Specified
28	Angle, Both Straight	21/01/2016	15:25:00	Traffic Collision	Material Damage Only	Not Specified	Not Specified
30	Rear End, Straight	25/03/2016	16:40:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
32	Rear End, Straight	07/07/2016	17:45:00	Traffic Collision	Material Damage Only	Not Specified	Not Specified
34	Rear End, Straight	08/11/2016	13:35:00	Traffic Collision	Material Damage Only	Wet	Day-Good Visibility
35	Wall – Pillar of Wall	06/12/2016	-	Traffic Collision	Minor Injury	Wet	Dark-No Lighting
36	Rear End, Straight	03/02/2017	14:05:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
37	Road Verge -	20/02/2017	19:55:00	Traffic Collision	Material Damage	Wet	Dark-Poor Lighting

Collision No.	Primary Collision Type	Date	Time	Collision Type	Severity	Surface Conditions	Light
	Embankment				Only		
38	Pedestrian	24/03/2017	17:40:00	Traffic Collision	Serious Injury	Dry	Day-Good Visibility
39	Pedestrian	30/04/2017	00:15:00	Traffic Collision	Material Damage Only	Dry	Dark-No Lighting
40	Rear End, Straight	18/05/2017	15:00:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
41	Rear End, Left Turn	03/06/2017	11:45:00	Traffic Collision	Serious Injury	Dry	Day-Good Visibility
42	Not Specified	09/07/2017	02:40:00	Traffic Collision	Material Damage Only	Not Specified	Not Specified
43	Angle, Right Turn	09/10/2017	09:20:00	Traffic Collision	Material Damage Only	Wet	Day-Poor Visibility
44	Rear End, Left Turn	30/04/2018	17:40:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
45	Side Swipe	31/05/2018	18:15:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
46	Side Swipe	03/09/2018	09:30:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
47	Rear End, Straight	12/09/2018	08:50:00	Traffic Collision	Material Damage Only	Wet	Day-Good Visibility
48	Rear End, Straight	21/09/2018	-	Traffic Collision	Serious Injury	Dry	Day-Good Visibility
49	Pedestrian	29/09/2018	22:45:00	Traffic Collision	Serious Injury	Wet	Dark-Poor Lighting

Collision No.	Primary Collision Type	Date	Time	Collision Type	Severity	Surface Conditions	Light
50	Angle, Right Turn	17/04/2019	19:53:00	Traffic Collision	Minor Injury	Dry	Day-Good Visibility
51	Rear End, Straight	30/05/2019	09:11:00	Traffic Collision	Material Damage Only	Wet	Day-Poor Visibility
52	Rear End, Straight	17/07/2019	15:02:00	Traffic Collision	Material Damage Only	Dry	Day-Good Visibility
53	Rear End, Right Turn	16/08/2019	17:10:00	Traffic Collision	Minor Injury	Dry	Day-Good Visibility
54	Rear End, Straight	15/11/2019	18:00:00	Traffic Collision	Material Damage Only	Dry	Dark-No Lighting
55	Parked Vehicle	22/11/2019	14:30:00	Traffic Collision	Material Damage Only	Wet	Day-Poor Visibility

Table 1: Traffic Collisions

4. METHODOLOGY

The following people made up the Audit Team:

- Team Leader – Gareth Mitchell, *CEng MIEI*
- Team Member – Michael Murphy, *Eng Tech MIEI*

Roughan & O'Donovan confirms that none of the Audit Team members were involved in the development or design of the scheme.

A daytime site visit took place on 30th November 2021 for the Stage 1 Road Safety Audit undertaken on the Preliminary Design drawings prepared in 2021. Weather conditions were wet and overcast.

The Road Safety Audit Team decided that a new site visit was not warranted as a site visit had been carried out recently and as the existing N60 road alignment and junctions were unchanged since the November 2021 site visit. The audit was prepared in August 2022 at the offices of Roughan & O'Donovan.

5. INFORMATION PROVIDED

The Audit Team were provided with the following drawings to be audited:

Dwg. No.	Title	Status/Rev
N60BA-ROD-HWY-SW_AE-DR-CH-30051 to 30056 incl.	N60 – General Road Layout Sheet 1 to Sheet 6	P01
N60BA-ROD-GEN-SW_AE-DR-CH-40003	Typical Cross Sections	P01

The Audit Team were provided with the following documents:

Document Title	Issue
N60 Active Travel and Safety Measures Scheme – Road Safety Audit Brief (Document No. N60BA-ROD-GEN-SW_AE-RP-ZS-30001 Rev. P1)	25.07.2022

6. FINDINGS

Specific findings and recommendations from the Road Safety Audit are outlined below.

6.1 Entry Path Curvature at the Existing IDA Roundabout

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30051 Rev.P01, it appears that the size of the splitter island has been increased on the eastern arm approach to the roundabout which could reduce the entry path curvature for vehicles travelling westbound along the N60 approaching the roundabout. This could result in high approach speed which could increase the likelihood of collisions between vehicles entering the roundabout and vehicles on the circulatory carriageway.

Recommendation

Care should be taken during the development of the design to ensure that adequate entry path curvature is provided.

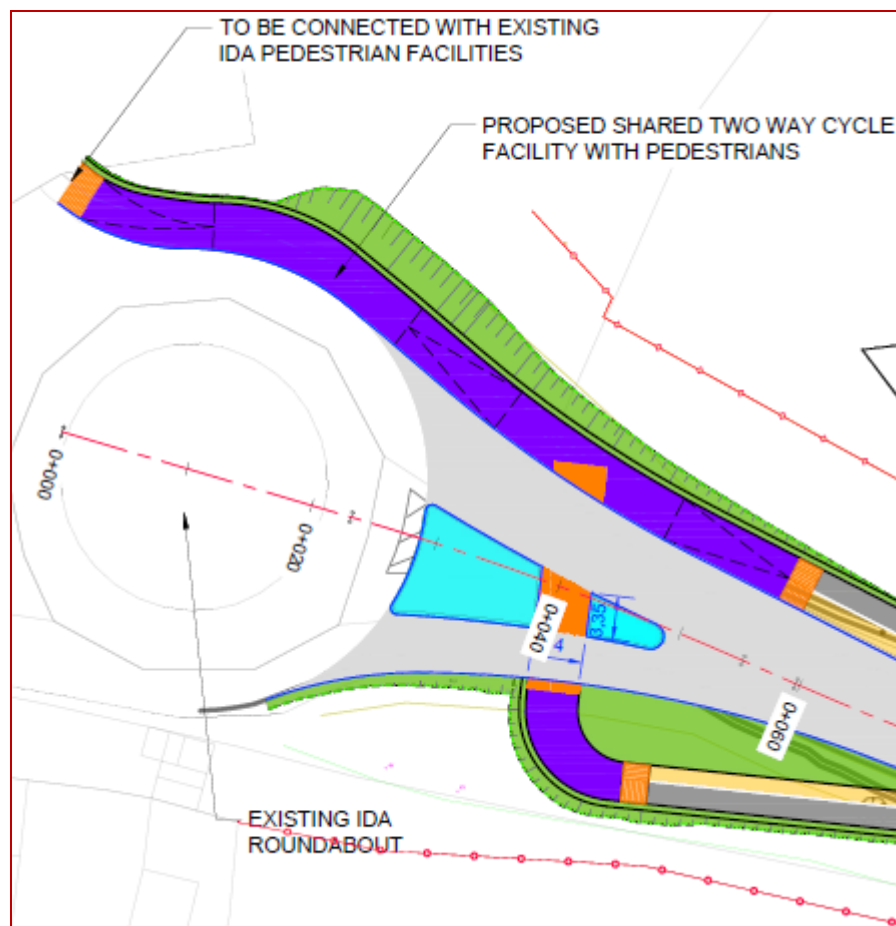


Figure 6.1: Entry Path Curvature at IDA Roundabout.

6.2 Shared Facility Crossing Junctions and Direct Accesses along the Scheme

Problem

The drawings indicate the shared pedestrian / cyclist facility continuing across the mouth of direct accesses and junctions at various locations and it is unclear if priority lies with pedestrians / cyclists or with vehicles on the public road. It appears that the shared facility continues through the junction with the same priority as the mainline traffic. As this is a two-way shared facility, exiting vehicular traffic may not expect cyclists arriving from the opposite side of the road. This increases the risk of collision between vehicles entering and egressing the local road junction or direct access and pedestrians / cyclists on the shared facility crossing.

Recommendation

The shared facility pavement construction should be carried across the entrance to clearly indicate priority to pedestrian / cycle traffic and the road entrance should be at the same level as the shared facility. Appropriate road markings should be provided at the crossing to reinforce the arrangement.



Figure 6.2: Typical Layout of Two-Way Shared Facility Crossing at Junctions and Direct Accesses

6.3 Visibility Splay at Local Road Priority Junctions to Shared Facility

Problem

The layout of the shared facility crossing at Local Road priority junctions will result in the STOP line for vehicles being located further back from the edge of the N60 carriageway, behind the shared facility. This could result in the driver's visibility splay along the N60 being impeded where the existing boundary wall or existing hedge or vegetation is located at the back of the verge. This increases the risk of collision between exiting vehicles and N60 through traffic.

Recommendation

Care should be taken during the design to ensure that the appropriate visibility splay is provided so that a driver stopped at the Local Road junction can clearly see any approaching through traffic on the N60.

6.4 Existing Signs, Poles and Street Furniture located in the Verge

Problem

At various locations along the scheme, it was observed on site that existing signs, ESB and Telecom poles, public lighting poles and street furniture is located within the verge on either side of the N60. It is unclear if these will be relocated away from the shared facility to allow for adequate lateral clearance for cyclists travelling along the shared facility who might lose control and collide with a pole or street furniture.

Recommendation

The design should ensure that any existing signs, ESB / Telecom poles, street lighting poles and any street furniture are relocated away from the shared facility.



Figure 6.4: Existing Sign Poles located within the Verge

6.5 Separation between the One-Way Cycle Facility and N60 Carriageway

Problem

The drawings indicate that there are locations along the scheme where adequate lateral separation does not appear to be provided between the one-way cycle facility and the N60 carriageway, which could lead cyclists to unintentionally entering the carriageway, increasing the likelihood of cyclists colliding with vehicles travelling along the N60 which could result in serious injury to the cyclist.

Recommendation

Adequate lateral separation should be provided between the N60 carriageway and the cycle facility along the full extent of the scheme.

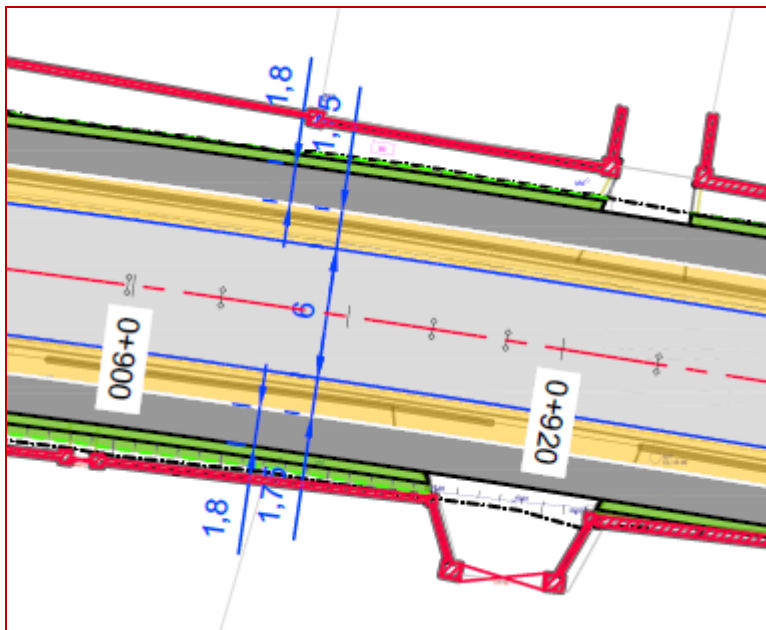


Figure 6.5: Example of inadequate lateral separation between N60 carriageway and cycle facility

6.6 One-Way Cycle Facility Crossing Direct Accesses and Junctions along the Scheme

Problem

The drawings indicate the one-way cycle facility continuing across the mouth of direct accesses at various locations, and it is unclear if priority lies with the cyclists or with the vehicle on entry or egress to/from the direct access. This increases the risk of collision between vehicles entering and egressing the direct access and cyclists on the cycle facility crossing.

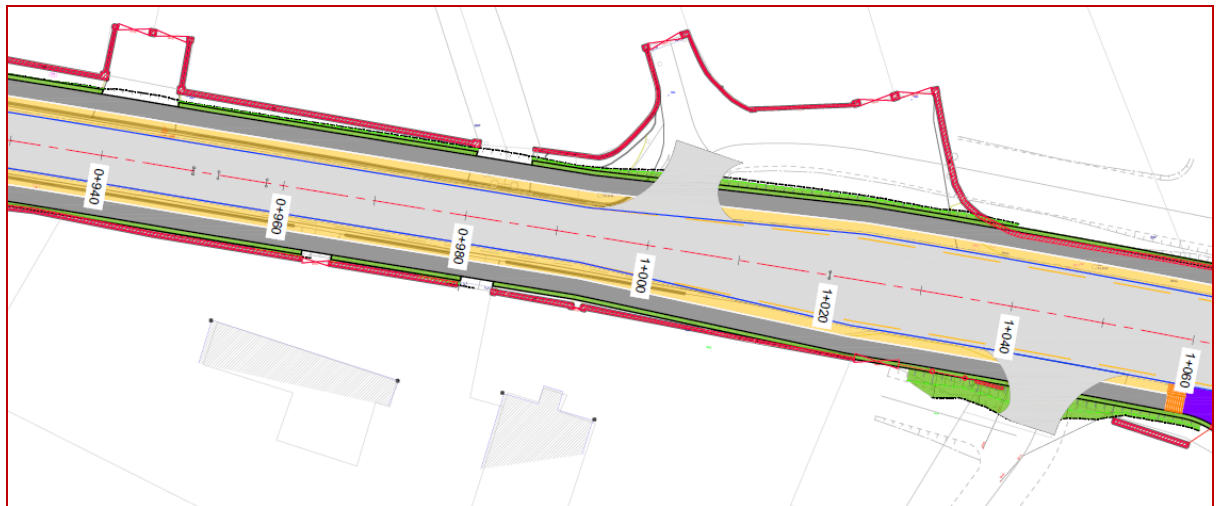


Figure 6.6: Typical Layout of One-Way Cycle Facility Crossing at Direct Accesses and Junctions

Recommendation

The cycle track pavement construction should be carried across the entrance to clearly indicate priority to cycle traffic. Cycle symbol road markings and additional paint lines should be provided to clearly indicate the presence of the cycle facility to motorists. Colour contrast could be provided along the cycle route warning cyclists of the upcoming conflict with motorised vehicles using the direct access. Adequate visibility splay should be provided so that drivers are aware of any oncoming cyclists.

6.7 Tactile Paving & Dished Kerbing at Crossing Point at Junctions along the Scheme

Problem

It is noted from the drawings that tactile paving is not indicated at the crossing point at various priority junction locations along the scheme. It is unclear if dropped kerbs are provided at the crossing point. This could increase the likelihood of visually impaired pedestrians being unaware of the presence of the junction and unintentionally entering the carriageway and colliding with vehicles, which could result in serious injury to the pedestrian.

Recommendation

Care should be taken during the development of the design to ensure that appropriate tactile paving and dropped kerbs are provided throughout the scheme.

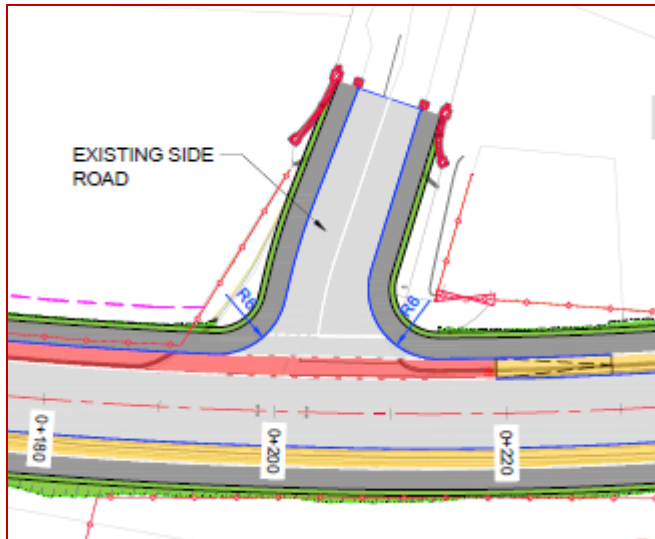


Figure 6.7: Typical Layout of One-Way Cycle Facility Crossing at Priority Junction

6.8 Existing 100 km/h Speed Limit Signs

Problem

It was noted on Google Street View that a 100kmh speed limit sign is located within the verge along the N60 on the eastern side of the IDA Roundabout. It appears that this is inconsistent with the speed limit zones shown on the scheme drawings, which indicate a 60kmh speed limit zone at this location. This could lead to drivers driving at inappropriately high speed at this location.

Recommendation

Care should be taken during the development of the scheme to ensure that existing speed limit signs are consistent with the speed limit zones for this scheme and any signs which do not comply with the proposed speed limit zones of the scheme should be removed



Figure 6.8: Existing 100kmh Speed Limit Signs Within the 60kmh Zone for the Scheme

6.9 Parking on Footpaths and Verges along N60 Adjacent to Kilkenny Cross Roundabout

Problem

It was noted on site that vehicles were parking within the grass verge and footpath on either side of the N60 approaching Kilkenny Cross Roundabout. This could lead to vehicles colliding with a vehicle door being opened out towards the carriageway by a person in the parked vehicle. Parking could impede forward visibility of drivers approaching the roundabout which could lead to collisions between vehicles on the N60 carriageway. Parking could impede visibility of drivers to pedestrians crossing at the entry to the roundabout. Parking could also impede pedestrian movements, causing them to step into the carriageway, increasing the risk of collision with vehicles.

Recommendation

Care should be taken during the development of the design of the scheme to prevent vehicles from parking within the grass verges and footpaths on the approach to the roundabout junction.



Figure 6.9: Parking within N60 Verges and Footpaths adjacent to Kilkenny Cross Roundabout

6.10 Kilkenny Cross Roundabout Reconfiguration

Problem

The drawings provided indicate that the layout of the roundabout with segregated cycle facilities may not be consistent with other roundabout junctions in this area. It is unclear if the layout is readily understandable by cyclists in that they will need to use the crossing points at the splitter islands to travel around the roundabout. The typical roundabout layout in similar locations, cyclists are required to use the circulatory carriageway. This could increase the likelihood of collisions between cyclists and pedestrians / vehicles if cyclists fail to use the dedicated crossing points.

Recommendation

Care should be taken during the development of the design of the scheme at this roundabout junction to ensure the layout is clear to cyclists so that they understand the roundabout layout. Additional signing, lining and appropriate road markings should be provided to help cyclist understand the new layout.

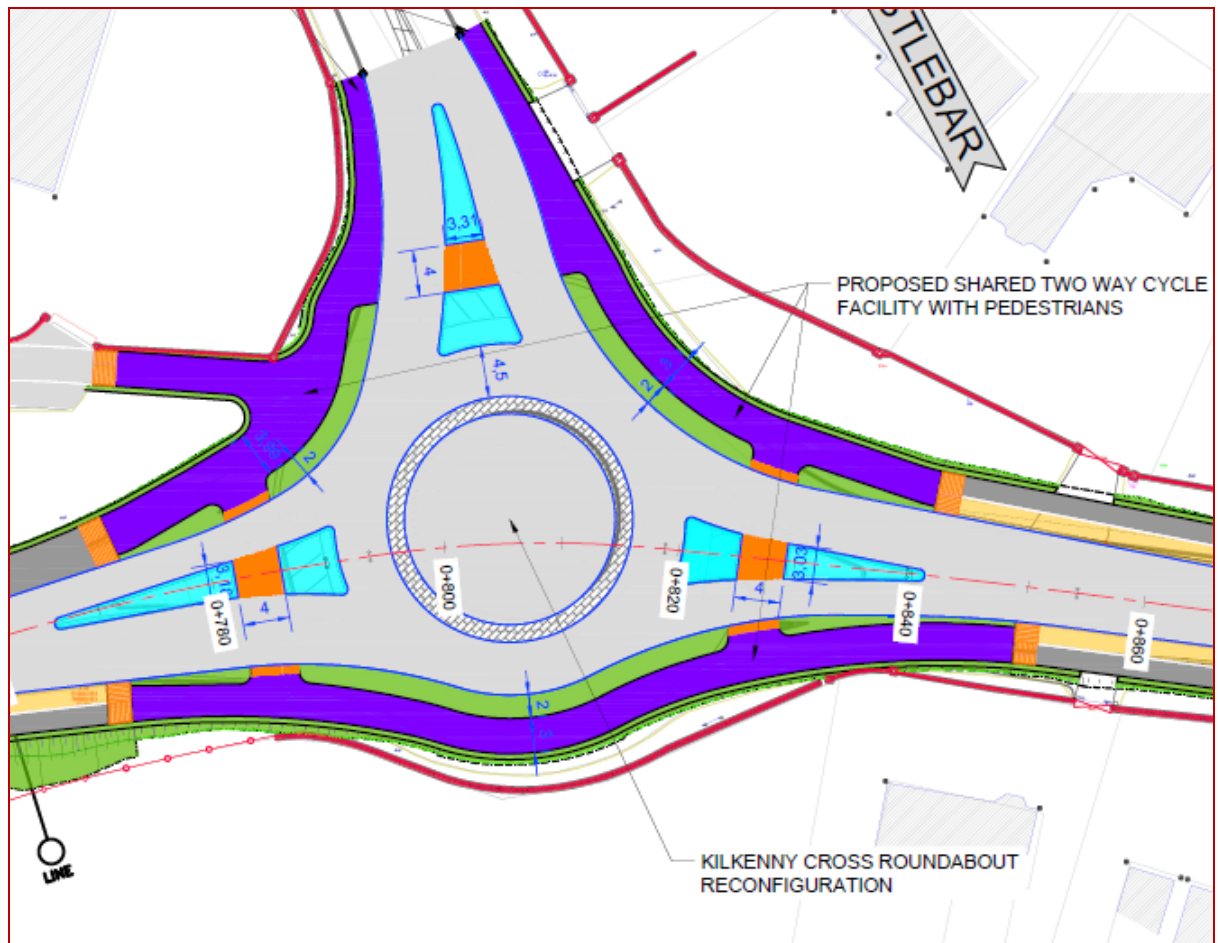


Figure 6.10: Kilkenny Cross Roundabout – Reconfigured Layout with New Pedestrian & Cyclist Facilities

6.11 Provision of Speed Limit Signs at 100 km/h, 80 km/h & 60km/h Zones

Problem

The drawings indicate the start / finish of the 60kmh / 80kmh speed limit zones at Ch.1+475m and the 80km/h to 100km/h speed limit zone at Ch.3+055m, however, it is unclear if speed limit signs or gateways will be provided at these locations.

Recommendation

Speed limit signs or gateways should be provided on either side of the N60 at these locations to notify drivers of the change in speed limit.

6.12 Sharp Skew Angle at Junction between N60 and Access Road at Ch.670m

Problem

The drawings provided indicate that the bell mouth at the junction to the access road at Ch.670 has been tightened, with a corner radius of $R=2.5m$ provided at the eastern corner of the junction. It is noted that the access road is on a sharp skew angle approaching the junction with the N60. Should an insufficient swept path be provided to cater for turning requirements of HGV's and large vehicles turning left from the access road onto the N60 this could increase the likelihood of large vehicles over-running the footpath and colliding with pedestrians which could result in serious injury to the pedestrian. HGV's and large vehicles turning left from the access road may need to use the opposing lane to complete the turning manoeuvre which could

increase the likelihood of collisions with vehicles travelling westbound on the N60 in the opposing lane.

Recommendation

Care should be taken to ensure that the corner radius is adequate to cater for the turning requirements of HGV's and large vehicles.

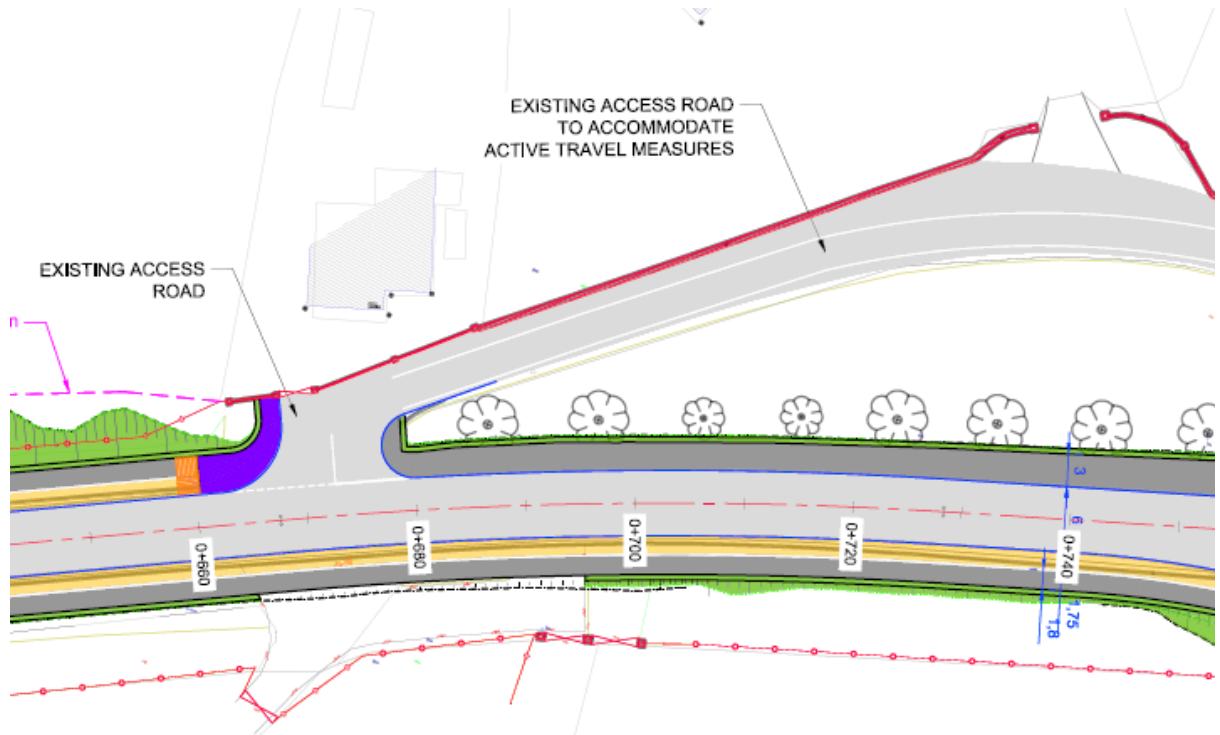


Figure 6.12: Sharp Skew angle at junction Between N60 and Access Road

6.13 Shared Use Two-Way Cycle Facility with Pedestrians at Access Road at Ch.670m

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30051 Rev.P01 indicates that the shared use facility turns sharply through 90 degrees and extends to an existing gate, which could increase the likelihood of cyclists colliding with the gate.

Recommendation

A warning sign should be provided to inform cyclists where the shared area terminates.

6.14 Provision of Active Travel Measures at Access Road at Ch.670m

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30051 Rev.P01 includes a note that, “existing access road to accommodate active travel measures”, however, no details are provided of any active travel measures provided at this location. If the arrangements are unclear, it could increase the likelihood of cyclists colliding with vehicles on the access road.

Recommendation

Care should be taken during the development of the design to include active travel measures along the access road that should clearly delineate the cycle facility from the existing carriageway. Signage should be provided to inform cyclists of the cycle facility.

6.15 Shared Use Two-Way Cycle Facility with Pedestrians at Kilkenny Cross Roundabout

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30052 Rev.P01 indicates that the shared use area on the western side of the roundabout extends from the crossing point along the north side of the N60 to the proposed footpath. This could increase the likelihood of cyclists being directed towards the dedicated footpath and colliding with pedestrians.

Recommendation

Care should be taken during the development of the design to ensure that cyclists are provided with a clear route through the roundabout junction.

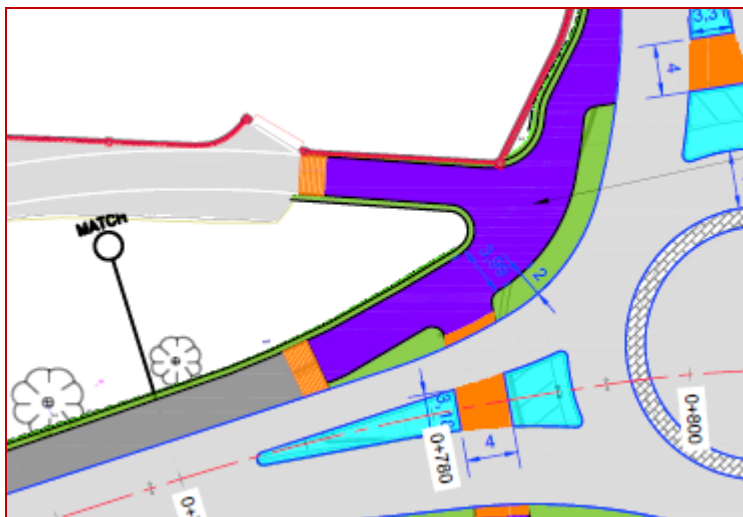


Figure 6.15: Shared Area Link to Footpath at Kilkenny Cross Roundabout

6.16 Direct Access Located Adjacent to Kilkenny Cross Roundabout

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30052 Rev.P01 indicates that a direct access is located near the roundabout along the northern arm. Drivers egressing from the direct access wishing to travel northwards on the R373 could attempt to turn right from the access and join the R373 beyond the splitter rather than turning left and using the roundabout then onto the R373. This could increase the likelihood of collisions between vehicles travelling south on the R373 approaching the roundabout and a vehicle exiting the direct access turning right onto the R373.

Recommendation

Care should be taken during the development of the design to prevent a driver egressing the direct access to turn right onto the R373. A no-right turn sign should be

provided opposite the direct access and the length of the splitter should be increased to prevent right-turning from the direct access.

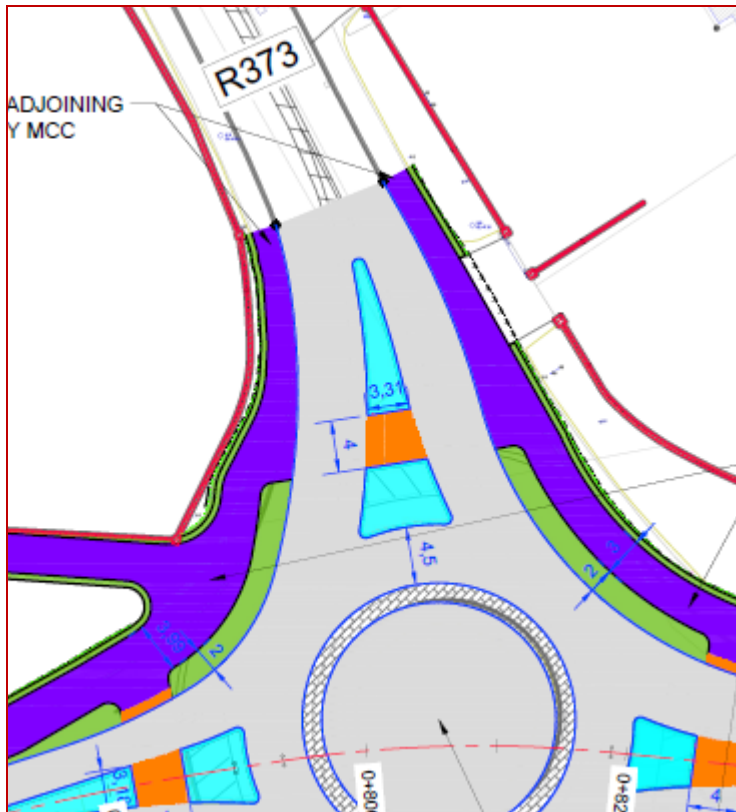


Figure 6.16: Direct Access at Kilkenny Cross Roundabout

6.17 Existing Utility Chamber Cover located within Proposed Cycle Facility

Problem

It was noted on site that existing utility chamber covers are located within the existing footpath which may revert to a cycle facility as part the scheme. This could lead to cyclists losing control while braking or skidding on the chamber cover, particularly in wet conditions if the cover is slippery and not appropriate for use on a cycle facility.

Recommendation

Care should be taken during the development of the scheme to ensure that the cover of any existing utility chambers, which are currently located in the existing footpath, should be checked to confirm that it is appropriate for use on a cycle facility. Any chamber covers that are not suitable for use on a cycle facility should be replaced with appropriate chamber covers.

6.18 Proposed Taper along N60 at Various Locations Along the Scheme

Problem

The drawings provided indicate that the proposed road widths narrow, and it is noted that the taper rates appear to be sharp at various locations along the scheme. This could increase the likelihood of drivers colliding with the kerb at the narrowing sections, particularly at night.

Recommendation

Care should be taken during the development of the scheme to ensure that a smooth transition in road width is provided at these locations. Warning signs should also be provided to inform drivers that the road narrows ahead.

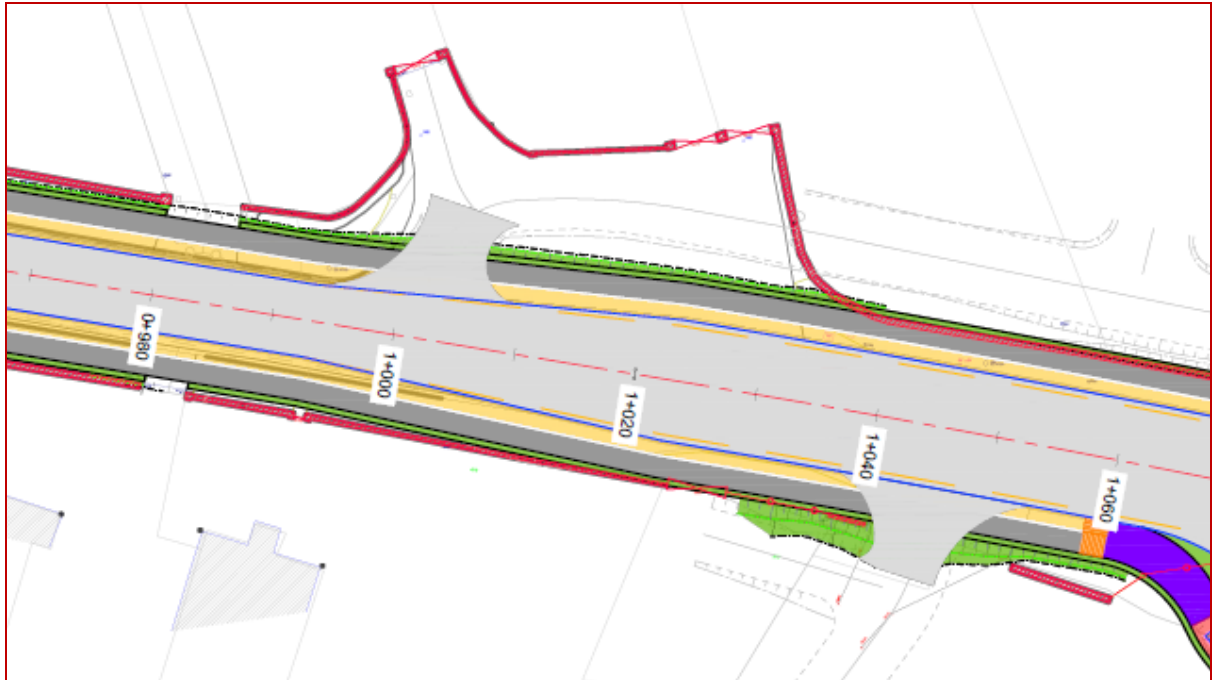


Figure 6.18: Example of Taper along N60

6.19 Provision of a Bend Out Crossing with a Central Island at Priority Junctions Along the Scheme

Problem

The drawings provided indicate a bend out crossing with a central island at priority junctions at various locations along the scheme, however, the proposed layout of the central island including road markings is not consistent with Figure 5.9 Bend Out Crossing with a Central Island shown in TII Publications DN-GEO-03060. This could increase the likelihood of vehicles colliding with pedestrians and cyclists using the crossing.

Recommendation

Care should be taken during the development of the scheme to ensure that the central island at bend out crossings is safe for use by pedestrians and cyclists.

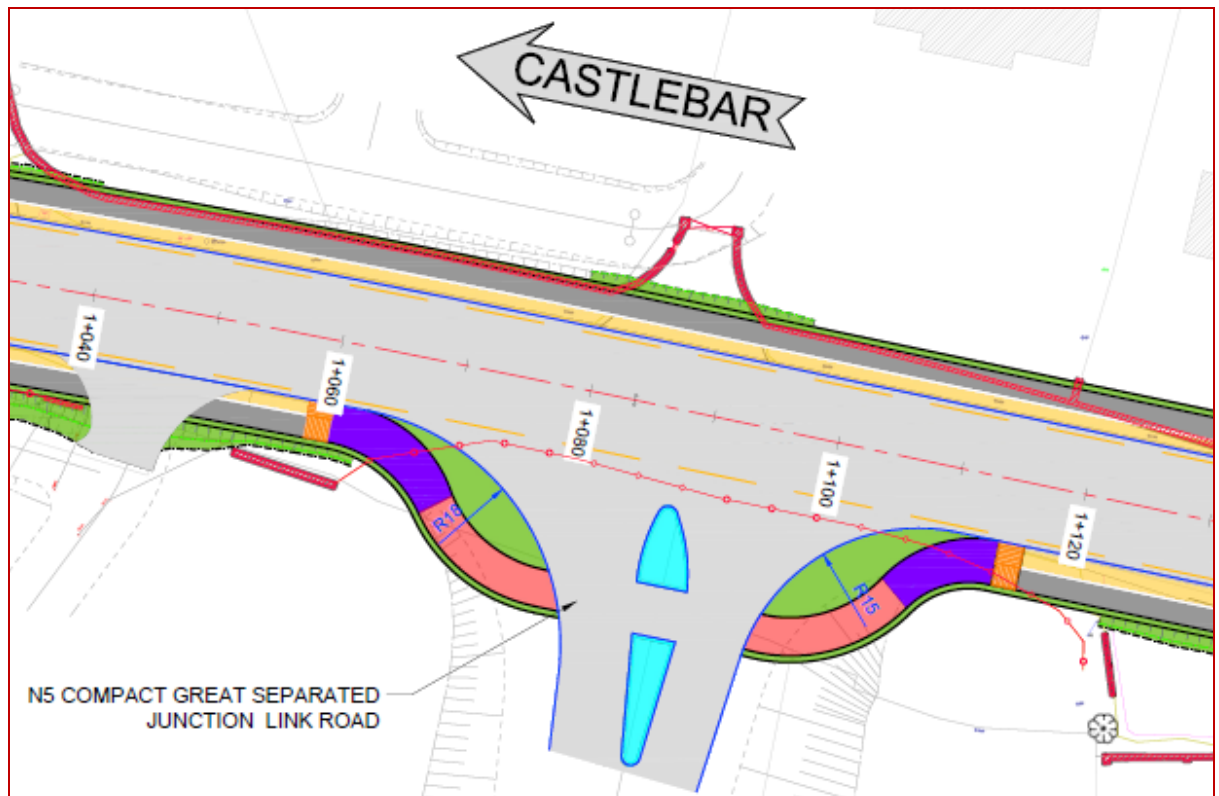


Figure 6.19: Example of Central Island at Bend Out Crossing

6.20 Provision of a New Crossing adjacent to the Priority Junction at Local Road L5757

Problem

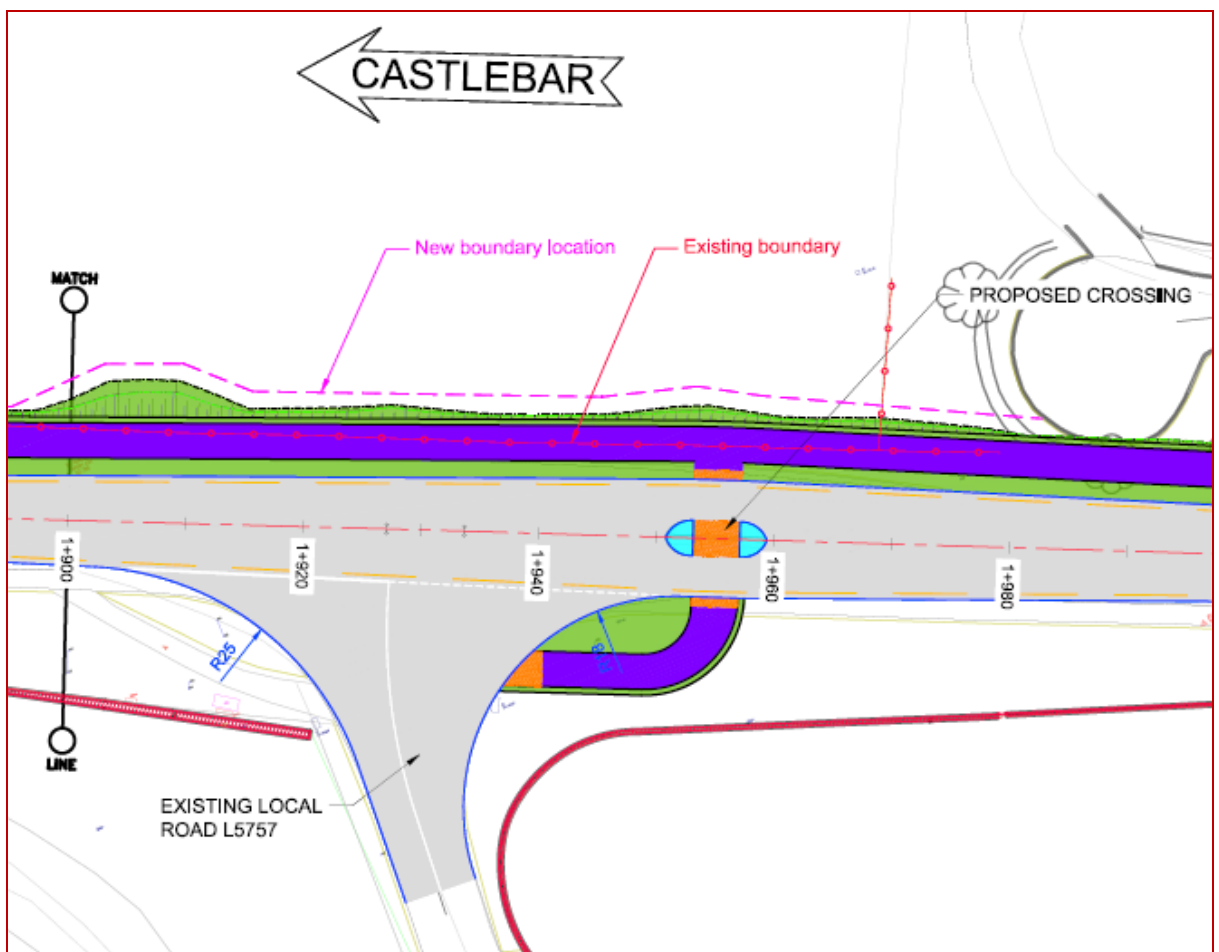
Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30053 Rev.P01 indicates that a new crossing point for pedestrians and cyclists is located adjacent to Local Road L5757, however, it is unclear if the crossing point is linking to an existing footpath on the southern side of the N60. If a pedestrian / cycle facility is not provided at this location this could increase the likelihood of pedestrian and cyclists entering the carriageway at an inappropriate and unsafe location.

Recommendation

Care should be taken during the development of the scheme to ensure that a pedestrian / cycle facility is provided on the southern side of the N60 at this location, linking to the crossing point. If it is not intended to provide a pedestrian and cycle facility, the provision of the new crossing point should be relocated.



Figure 6.20: Existing Layout at Priority Junction at Local Road L5757



6.20a: Proposed Crossing Point at Priority Junction at Local Road L5757

6.21 Provision of a New Crossing Point at One-Way Access to Breaffy Village

Problem

Drawing No. N60BA-ROD-HWY-SW_AE-DR-CH-30054 Rev.P01 indicates that a new crossing point is located at the existing one-way access road to Breaffy Village. It is unclear if kerbing is provided at this location. Without the provision of kerbing, drivers turning left off the N60 could over-run the grass verge to smoothen the turn and thus maintain higher speed. It is noted that tactile paving is not provided at the crossing which could increase the likelihood of visually impaired pedestrians unintentionally entering the carriageway and colliding with vehicles.

Recommendation

Care should be taken during the development of the scheme to ensure that kerbing is provided to clearly define the junction and tactile paving should be provided to cater for the requirements of visually impaired pedestrians.

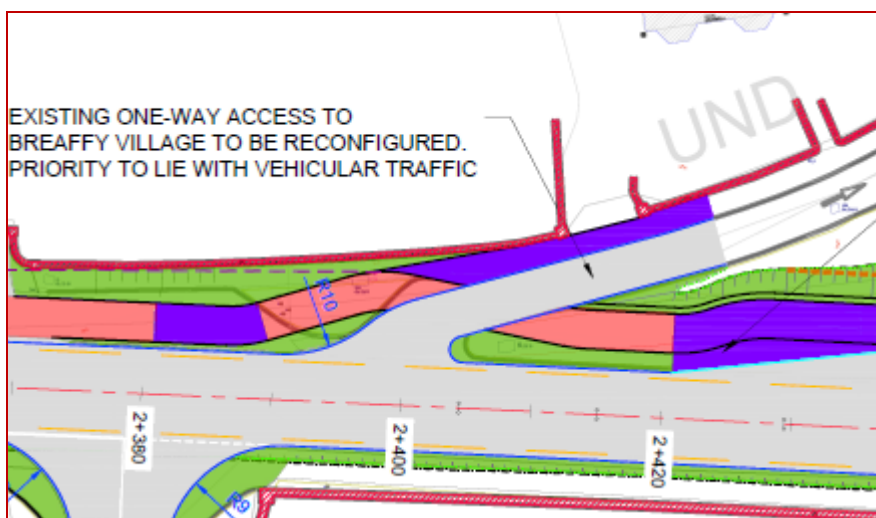


Figure 6.21: Proposed Crossing Point at One-Way Access to Breaffy Village

6.22 Provision of Warning Signs at Crossing Point for Shared Facility at Ch.2+640m

Problem

It is unclear whether signs or road markings will be provided to inform pedestrians / cyclists of the presence of the crossing point at Ch.2+640 and that the shared facility switches to the opposite side of the road. This is particularly relevant for pedestrians travelling westbound on the southern side of the N60 where the shared facility appears to continue straight for a distance, leading to the proposed bus bay.

Recommendation

Care should be taken during the development of the design to ensure that pedestrians / cyclists are informed that the shared facility switches to the opposite side of the N60 and are directed to the crossing point with provision of signs or road markings.

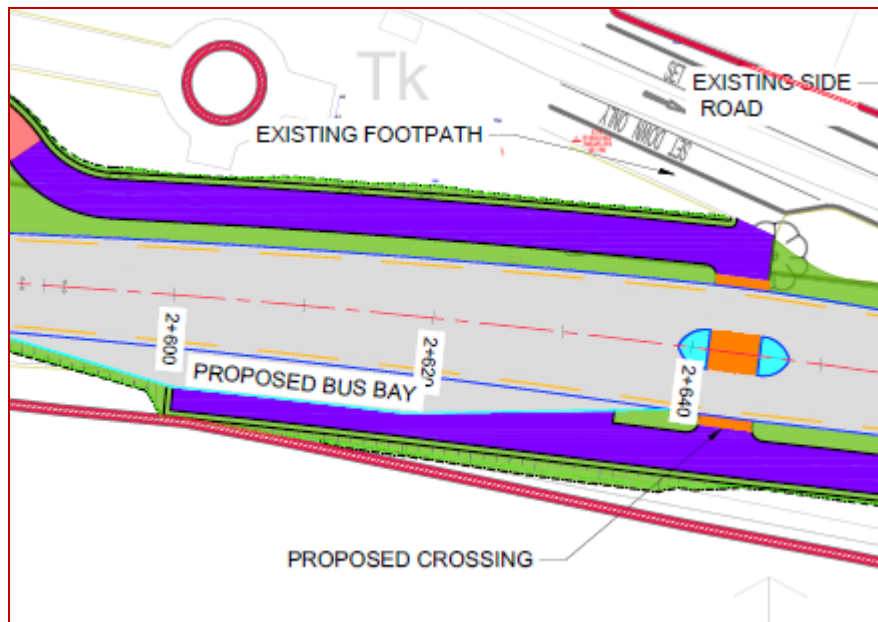


Figure 6.22: Shared Facility Crossing Point at Breaffy Village

6.23 Priority Junction L5783 adjacent to Premises

Problem

A priority junction is located between the N60 / Local Road L5783 at Ch.3+000m. An existing private premises is located on the east side of the L5783 facing onto the N60 but directly adjacent to the junction. It is unclear if access to the premises is provided at the corner of the junction. This could increase the likelihood of a vehicle accessing and egressing the premises colliding with a vehicle on the public road.

Recommendation

Care should be taken during the development of the scheme to ensure that access is not permitted to the premises via the corner of the priority junction. A single defined access to the premises should be provided which should be located away from the priority junction to enable clear demarcation between the direct access to the premises and the priority junction.

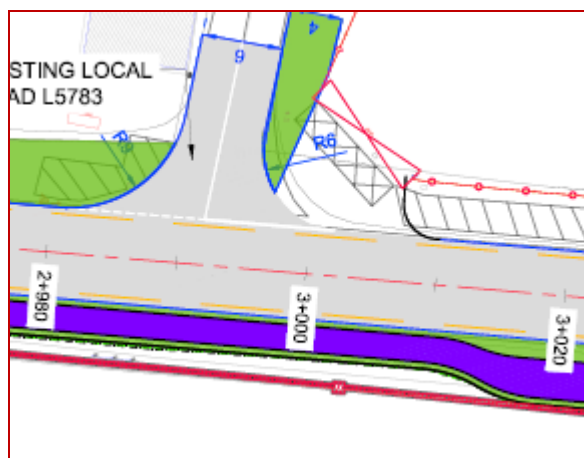


Figure 6.23: Access to Premises on Eastern Side of Priority Junction at the L5783

6.24 Access from Private Dwellings along the N60 to the Shared Use Facility Opposite

Problem

The drawings indicate that on the northern side of the N60 from Ch.3+400m to Ch.3+540m and from Ch.3+800m to Ch.3+900m, a total of ten private dwellings are located on the opposite side to the proposed shared use facility. This could lead to pedestrians / cyclists from these private dwellings attempting to cross the N60 at inappropriate locations to access the shared use facility which could lead to collisions between vehicles travelling along the N60 and pedestrians / cyclists crossing the road.

Recommendation

Care should be taken during the development of the design of the scheme to ensure that adequate crossing facilities linking to the shared use facility are provided for NMU's within the scheme based on the NMU demands. A short section of new shared use facility should be provided on the northern side of the N60, servicing these dwellings and leading pedestrians / cyclists to a single crossing point to the shared facility at an appropriate and safe location.

6.25 Existing Sign Blocking Visibility

Problem

It was noted on site that a sign for 'Breaffy House Resort' is located within the verge on the southern side of the N60 which could impeded visibility towards the crossing point at Breaffy Village. If the position of the existing the sign impedes visibility of drivers towards the crossing point, there is an increased risk of collision between NMU's and vehicles.

Recommendation

Care should be taken during the development of the scheme to ensure that signs are relocated away from the visibility requirements of drivers.

6.26 Provision of Signage for Non-Motorised Users (NMU's)

Problem

The drawings provided do not indicate if signage will be provided informing pedestrians and cyclists of the commencement and the termination of the pedestrian and cyclist facilities at the extents of the scheme.

Recommendation

Care should be taken during the development of the design of the scheme to ensure that adequate signage is provided at appropriate locations informing them of the presence of pedestrian and cyclist facilities.

7. ROAD SAFETY AUDITOR STATEMENT

This Road Safety Audit has been prepared following examination of the information provided to the audit team who have not in any way been involved with the design of this scheme.

The Audit Team confirm this Road Safety Audit for proposed N60 Breaffy Active Travel and Safety Measures Scheme, has been conducted for the sole purpose of identifying any features of the design that could be removed or modified to improve the safety of the scheme.

The findings have been documented in this report, together with recommendations for the improvement of the safety of the scheme, which should be considered by the design team.



Gareth Mitchell, *CEng MIEI*
Road Safety Audit Team Leader
ROUGHAN & O'DONOVAN

Date: 12/8/2022



Michael Murphy, *Eng Tech MIEI*
Road Safety Audit Team Member
ROUGHAN & O'DONOVAN

Date: 12/08/2022

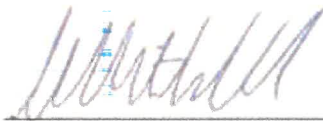
APPENDIX A - FEEDBACK FORM

To be Completed by the Designer				To be completed by the Audit Team Leader
Item No.	Problem Accepted (YES/NO)	Recommended measures accepted (YES / NO)	If NO describe alternative measure(s). Give reason for not accepting recommendation	Alternative reason accepted by reviewers (YES / NO)
6.1	Yes	Yes		
6.2	No	Yes	The proposed design solution is following DN-GEO-03060, giving priority to the cyclists. The shared facility pavement is carried across the entrance with coloured surfacing to highlight the conflict area. The vehicle access is at the same level as the shared facility. Marking will be included at detailed design.	Yes
6.3	No	No	The shared facility layout crossing the existing local roads will be a bend out crossings arrangement in accordance with DN-GEO-03060 with cyclist yielding to allow the vehicle stop line to remain at the edge of the N60. The visibility splay for the driver stopped at the local road junction will not change. There is one exception at local tertiary road L57601 that is treated as an access based on very low usage and adjoining physical constraints, for which a departure application has been submitted.	Yes
6.4	Yes	Yes		

6.5	No	No	Adequate lateral clearance has been provided, which in this 60kph zone is provided in accordance with the Design Manual for Urban Road and Streets and the National Cycle Manual. The 1.75m cycle facility is made up of 1.25m single file + overtaking cycle track with 0.5m outside edge against a raised kerb.	Yes
6.6	Yes	Yes		
6.7	Yes	YES - Tactile paving and dropped kerbs have been provided throughout the scheme but are not shown on the general layout drawings submitted for stage 1 audit.		
6.8	Yes	Yes - Signage to be addresses at Detail Design		
6.9	Yes	Yes		
6.10	Yes	Yes - Signage and marking to be addresses at Detail Design		
6.11	Yes	Yes - Signage to be addresses at Detail Design. Gateways not proposed.		
6.12	Yes	Yes		
6.13	Yes	Yes - Signage and marking to be addresses at Detail Design		

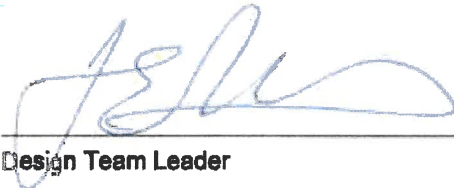
6.14	Yes	No	In accordance with the National Cycle Manual this local access road is to be a shared street. Signage and marking to be addresses at Detail Design.	Yes
6.15	Yes	Yes- The section west of the crossing point to be clearly defined as pedestrian only with cyclists directed to the shared street.		
6.16	Yes	Yes		
6.17	Yes	Yes		
6.18	No	No	The tapers relate to the development of right turn pockets and the introduction of hard strips through the grade separated junction. The layout will be clear once the road markings are in place. Road narrows signs would not be appropriate.	Yes – Care should be taken in the development of the road markings design to ensure appropriate tapers are provided.
6.19	No	No	Proposed islands are sized to meet the requirements of both DN-GEO-03060 and DN-GEO-03043. Signage and marking to be addresses at Detail Design	Yes
6.20	Yes	No	It is not intended to provide a pedestrian and cycle facility on the south of the N60. The existing short section of footpath west of the junction will be removed to avoid confusion. The crossing is provided to connect housing on the L5757 to the new facility and has been located to be consistent with previous recommendation that this should be on the right of the junction.	Yes
6.21	YES	YES - Kerbing and tactile paving have been designed at this location but are not shown on the general layout drawings submitted for stage 1 audit.		
6.22	Yes	Yes - Signage and marking to be addresses		

		at Detail Design		
6.23	Yes	No	This existing access is necessary for the operation of the premises. The proposed kerbed islands to the west of the junction are intended to prevent entry across the corner of the junction and force a slow deliberate turning manoeuvre into the premises. The access arrangements will be reviewed in discussion with the landowner and the local authority at the detailed design stage to ensure traffic cannot cut across the corner of the priority junction and increase the separation between the local road and the access.	Yes
6.24	No	No	There is good visibility which will result in pedestrians/cyclist crossing immediately in front of their properties rather than diverting to a centralised crossing point which is not considered to be required and would be unlikely to be used.	Yes
6.25	Yes	Yes - Signage to be addresses at Detail Design		
6.26	Yes	Yes - Signage to be addresses at Detail Design		



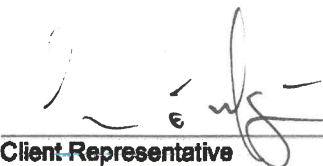
Gareth Mitchell
Road Safety Audit Team Leader

Date: 12/08/2022



Design Team Leader

Date: 12/8/2022



Client Representative

18/8/2022
Date: