

# Longview Estates Development

Lahardane, Ballyvolane, Cork



## Stage 1/2 Road Safety Audit

November 2019



**MHL & Associates Ltd.**  
Consulting Engineers



## Document Control Sheet

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## 1. INTRODUCTION

MHL Consulting Engineers have been engaged by Longview Estates Ltd. to prepare a Road Safety Audit on the proposed road works associated with a proposed Strategic Housing Development Scheme for which a planning application is being sought from An Bord Pleanála. The proposed works consist of the construction of 753 residential units, a 103 pupil creche and all associated services infrastructure and site development works at lands in Lahardane, Ballyvolane, Cork City.

The site in question is located within the Cork City boundary extents. It is located at the northern extents of the city suburbs, at the periphery of the current developed urban area in Ballyvolane. See Figure 1.1 Site Location Map in the pages that follow. The site is currently green field with an agricultural land use. It is located to the east of the R614 Ballyhooly Road, some 1.5 kilometres north of the intersection between the Ballyhooly Road and the R635 North Ring Road. The Ballyhooly Road forms the western site boundary, approximately 650m in length, the northern side of the site is formed by the rear boundary of a number of detached houses that front onto the L2976, a local county road that links the Ballyhooly Road to Rathcooney. There are more agricultural fields to the east and to the south of the development site. See Figure 1.2, an aerial photograph of the site showing the boundary in red.

It is proposed to have 3 direct vehicular accesses for the development, 2 priority junctions onto the Ballyhooly Road (R614) to the west and a further priority access junction with the L2976, to the north of the site. Works are also proposed to upgrade the junction of the R614 and the Kilbarry Link Road to a signalised junction and a new entrance to a proposed Irish Water Pumping Station, located 400m south of the site, is also proposed as part of the development works. Figure 1.3 shows the proposed site layout and the proposed new junctions and junction upgrade locations.

This audit considers all 5 junctions onto the existing road network, namely:

- The three proposed development entrances (J3 and J4 onto the R614 and J5 onto the L2976)
- The proposed signalised junction upgrade (J2 – Ballyhooly Road and Kilbarry Link Road) and
- The proposed entrance into the pumping station on Ballyhooly Road (J1).

The proposed development accesses are within the 80Km/hr speed limit, while the proposed Signalised Junction upgrade and Pumping station entrance are within the 50km/hr speed limit.

The Audit Team consists of Brian Loughrey (team leader) and James Daly (team member) of MHL Consulting Engineers.

The team made a site visit during daylight hours on Thursday 14<sup>th</sup> November 2019. The weather was dry at the time of the visit.

Information provided to assist the Audit consists of the drawings and documents listed in Appendix A. The information provided was considered adequate in terms of detail for the purpose of carrying out a stage 1 road safety audit.

No previous Road Safety Audit reports were provided in relation to the local road network.

No specific Road Collision data was provided to the audit team. The auditors reviewed the RSA Road Collision Statistics, in the vicinity of the applicant site. Ten minor traffic collisions were reported in the period 2005 – 2016 and one fatal traffic collision was reported in 2011.

Refer to Figure 1 in Appendix B which shows a location map of collision statistics. A summary of the collisions is outlined hereunder.

- One minor collision occurred in 2006 near Junction 1. The circumstances were that a car was involved in a right turning movement collision with one minor casualty.
- One minor collision occurred in 2007 near Junction 1. The circumstances were that a car was involved in a head-on conflict collision with one minor casualty.

- Two minor collisions occurred in 2008. One at Junction 2. The circumstances were that a car was involved in a collision with one minor casualty. One near Junction 1. The circumstances were that a car was involved in a collision with two minor casualties.
- Three minor collisions occurred in 2009. One at Junction 2. The circumstances were that a car was involved in a collision with three minor casualties. The second was to the south of Junction 2. The circumstances were that a car was involved in a single vehicle collision with three minor casualties. The third was to the north of Junction 2. The circumstances were that a car was involved in a single vehicle collision with one minor casualty
- One minor collision occurred in 2012 near Junction 1. The circumstances were that a car was involved in a rear-end type shunt collision with one minor casualty.
- One minor collision occurred in 2013 near Junction 1. The circumstances were that a car was involved in a head-on conflict collision with one minor casualty
- One minor collision occurred in 2016 near Junction 3. The circumstances were that a car was involved in a head-on conflict collision with two minor casualties
- One fatal collision occurred in 2011 near Junction 1. The circumstances were that a pedestrian was involved in a collision with one a fatal casualty.

There are a lot of collisions along the stretch of road between proposed junctions J1 and J3. The nature of the collisions suggest a pattern of higher than safe vehicular speeds. The curving alignment also restricts forward sight distance and the transition from rural to urban is not well defined.

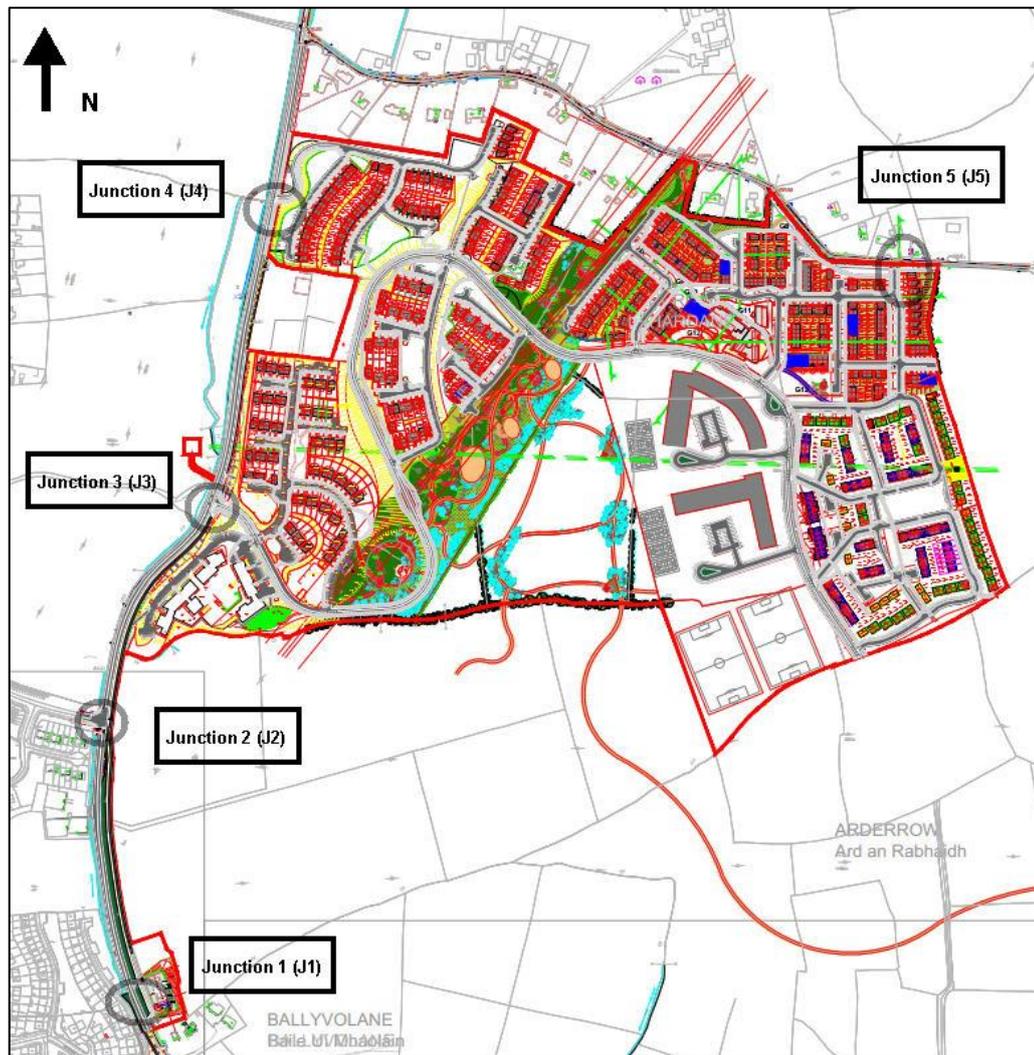
The Audit has been carried out in accordance with the relevant sections of TII Publication GE-STY-01024 (formerly NRA HD 19/15), "Road Safety Audit". The scheme has not been examined or verified for compliance with any other standards or criteria. The team drove the local road network and walked the road along the site road boundaries and compiled a list of road safety problems and associated recommendations which are presented in this report.

An Audit Team Statement is included at the end of the Report. Appendix C contains the Safety Audit Feedback Form.





Figure 1.2 – Aerial Photograph showing Site Extents



**Figure 1.3 –Proposed site layout and Junction locations**

## 2. AUDIT ISSUES

### 2.1 General Issues

#### 2.1.1 Problem 1: Lack of Road Surface Water Drainage

Presently, surface water on the R614 drains into the grass verge. As part of the development it is proposed to construct a cyclelane/footpath to the east of the R614. No details have been submitted to the audit team in relation to surface water drainage proposals. Inadequate road drainage facilities could lead to water ponding on the R614 with the potential for loss of vehicle control type collisions due to aquaplaning.

##### **Recommendation 1**

Provide a surface water drainage design for the upgraded R614.

#### 2.1.2 Problem 2: Lack of Road Signage and Road Markings

No signage details or priority road markings have been provided at the proposed junctions onto the local road or along the cycle track. Inadequate road markings or signage could lead to collisions between vehicles and/or collisions between vehicles and pedestrians/cyclists due to a lack of understanding of priorities by road users.

##### **Recommendation 2**

Provide adequate design of signage and road markings at all the network roads and junctions. All signs should be located outside of sightline splay area.

### 2.2 Junction 1 (J1)

#### 2.2.1 Problem 3: Unsafe Pedestrian/Cyclist Crossing Detail at J1

Priority has been given to vehicles at the point where the cycle/pedestrian facility passes the entrance to the proposed pump station. Failure to provide an appropriate crossing point with priority for vulnerable road users on a ped/cycle facility may lead to pedestrians/cyclists/ or visually/mobility impaired users misinterpreting priority at junctions resulting in collisions with entering and exiting vehicles. Refer to Figure 2.1.

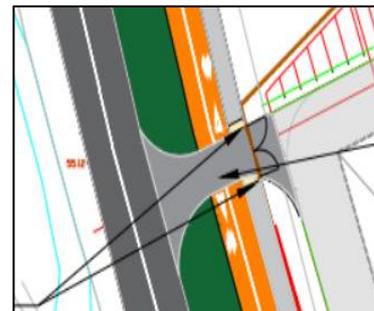


Figure 2.1

##### **Recommendation 3**

Provide a raised entry treatment with appropriate tactile paving at the crossing point in accordance with the relevant guidelines.

#### 2.2.2 Problem 4: Unsafe End of Cycle-Track & Crossing

No warning has been provided to motorists of the pedestrian/cyclist crossing facility and no warning has been provided to cyclists of the termination of the cycle facility. The lack of a Stop or yield road markings for the cycle facility may lead to incorrect assumptions of priority. The potential for vehicle/cyclist or vehicle/pedestrian collisions is high, particularly given the historical collision statistics. See Figure 2.2.



Figure 2.2

##### **Recommendation 4**

Provide the appropriate signage and road marking at and in advance warning of the cycle lane ending and crossing point in accordance with the relevant standards and guidelines.

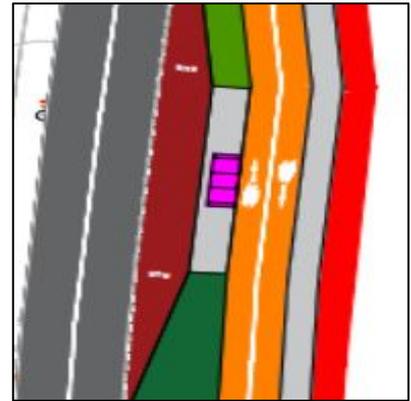
## 2.3 Junction 2 (J2)

### 2.3.1 Problem 5: Poor Pedestrian Access to Bus Stop

The bus stop is segregated from the footpath by a two-way cycle facility, essentially creating an “island bus stop”. Failure to provide an appropriate crossing detail with signage/markings and tactile paving to inform cyclists of the possibility of pedestrians crossing their path could lead to collisions between pedestrians and cyclists at this location. Refer to Figure 2.3.

#### Recommendation 5

Provide the appropriate markings/signage and tactile paving to inform all users about a shared surface at this location in accordance with the NTA National Cycle Manual. *Figure 2.3*



### 2.3.2 Problem 6: Incorrect Tactile Paving Arrangement

The tactile paving arrangement shown at the proposed signalled junction as shown in Figure 2.4 is incorrect. The leg extending away from the road edge should be on the approaching traffic side and it should extend to the back of the footpath. Failure to provide tactile paving to the recommended layouts could lead to confusion for the visually impaired Resulting in potential collisions with passing vehicles.

#### Recommendation 6

Provide the appropriate tactile paving design to inform all road users about the controlled crossing location and form in accordance with the relevant guidelines.

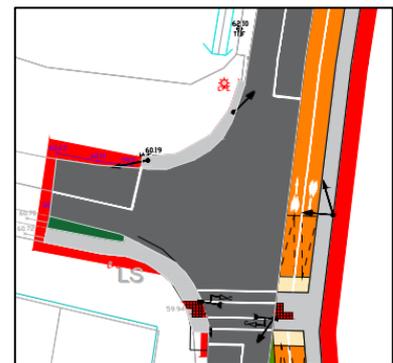


Figure 2.4

### 2.3.3 Problem 7: Inadequate Pedestrian Crossing Width

The width of the proposed crossing is not defined on the drawings. As it is envisaged that both cyclists and pedestrians will want to cross the R614 at this location and the signal aspect diagram indicates same, however there doesn't appear to be adequate width to accommodate both pedestrians and cyclists. Failure to provide appropriate crossing width could lead to collisions between pedestrians and cyclists. Refer to Figure 2.4 above

#### Recommendation 7

Provide the appropriate crossing width that will incorporate both pedestrians and cyclists in accordance with the relevant guidelines. A combined pedestrian/cyclist facility should normally have a minimum width of 4.0m.

### 2.3.4 Problem 8: Unsafe Off Road Cycle Track

The two-way raised off road cycle track from J2 to J3 introduces a contraflow cycle facility arrangement for uphill cyclists, with no protection other than the raised kerb. There is potential for an uphill cyclist (northbound) to wobble out onto the downhill trafficked carriageway with potential for serious vehicle/cycle collisions. As the height of the raised facility is unclear, the higher the kerb the more serious the consequences of a fall from the kerb. See Figure 2.4.

#### Recommendation 8

Provide protection to the cyclists by provision of a barrier between the cycle track and the road or green space similar to between J1 and J2 further south.

### 2.3.5 Problem 9: Traffic Signal Pole Arrangement

There appears to be no primary signal head on the left hand side at carriageway level for traffic approaching from the north towards the proposed signalised junction as per Figure 2.4 above. Failure to provide the appropriate signal heads could lead to vehicles being unable to see the traffic signals in advance of the stop line and misinterpreting priority at the junction and leading to collisions with traffic approaching from the Kilbarry Link road. There is also potential for rear end shunt collisions as drivers become aware of the signal control when it is too late to decelerate over a safe distance.

#### Recommendation 9

Review the existing Traffic Signals layout in accordance with the relevant guidelines. Consider use of high level cantilever poles for the northern approach.

## 2.4 Junction 3 (J3)

### 2.4.1 Problem 10: No End of Cycle Track Design

No provision has been made for uphill cyclists to enter the development from the Ballyhooly Road and getting access to the shared facility inside the estate or to continue on there journey safely uphill on the R614. Failure to design an appropriate end to the cycle track could result in collisions between cyclists crossing the R614 and motorists or with vehicles using the development access.

#### Recommendation 10

Provide the appropriate design with signage and road markings in advance of the cycle facility ending in accordance with the relevant standards.

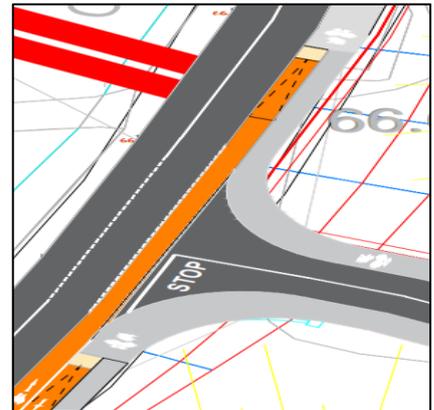


Figure 2.5

### 2.4.2 Problem 11: No Pedestrian Crossing at entrance to Development

No provision has been made for pedestrians to cross at the entrance to the development. Failure to provide an appropriate crossing point may lead to pedestrians and or visually impaired users misinterpreting priority at junctions resulting in collisions with entering and exiting vehicles. Refer to Figure 2.5.

#### Recommendation 11

Provide an appropriate crossing point for pedestrians and all vulnerable road users in accordance with the relevant guidelines. A raised entry treatment should be considered.

## 2.5 Junction 4 (J4)

### 2.5.1 Problem 12: No Pedestrian Crossing at entrance to Development

No provision has been made for pedestrians or cyclists to cross at the entrance to the development. Failure to provide an appropriate crossing point may lead to pedestrians or visually impaired users misinterpreting priority at junctions resulting in collisions with entering and exiting vehicles. Refer to Figure 2.6. Refer to Figure 6.

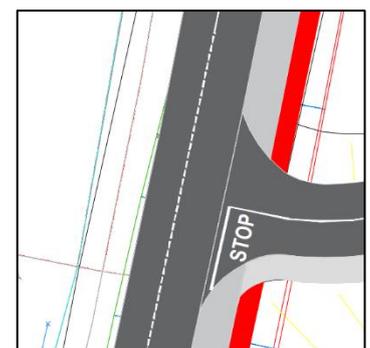


Figure 2.6

#### Recommendation 12

Provide the appropriate crossing point for pedestrians, cyclists, mobility impaired and visually impaired users in accordance with the relevant guidelines.

### 2.5.2 Problem 13: Lack of Footpath connectivity

The footpath/shared surface along the R614 is terminated at approximately 70m south of Junction 4 for a distance of 100m. Failure to provide footpath connectivity along a road will force vulnerable road users to enter the trafficked carriageway leading to potential collisions with passing vehicles. Refer to Figure 2.7.

#### **Recommendation 13**

Ensure that footpath connectivity is provided throughout the extent of the scheme works.

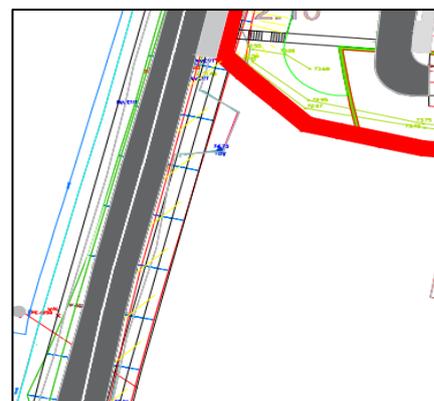


Figure 2.7

## 2.6 Junction 5 (J5)

### 2.6.1 Problem 14: No Pedestrian Crossing at entrance to Development

No provision has been made for pedestrians or cyclists to cross at the entrance to the development. Failure to provide an appropriate crossing point may lead to pedestrians or visually impaired users misinterpreting priority at junctions resulting in collisions with entering and exiting vehicles. Refer to Figure 2.7.

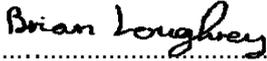
#### **Recommendation 14**

Provide the appropriate crossing point for pedestrians and or visually impaired users in accordance with the relevant guidelines.

### 3. AUDIT TEAM STATEMENT

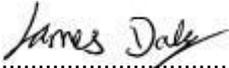
We certify that we have examined the drawings and documents listed in the Appendix to this Report. The examination has been carried out with the sole purpose of identifying any features of the design that could be removed or modified in order to improve the safety of the scheme. The problems identified have been noted in this report, together with associated safety improvement suggestions, which we recommend should be studied for implementation. The Auditors have not been involved with the scheme design.

Mr Brian Loughrey BE CEng MIEI

Signed :  .....

Date : 29/11/2019

Mr James Daly, Beng MIEI

Signed :  .....

Date : 29/11/2019

## **Appendix A – Drawings Submitted for Information**

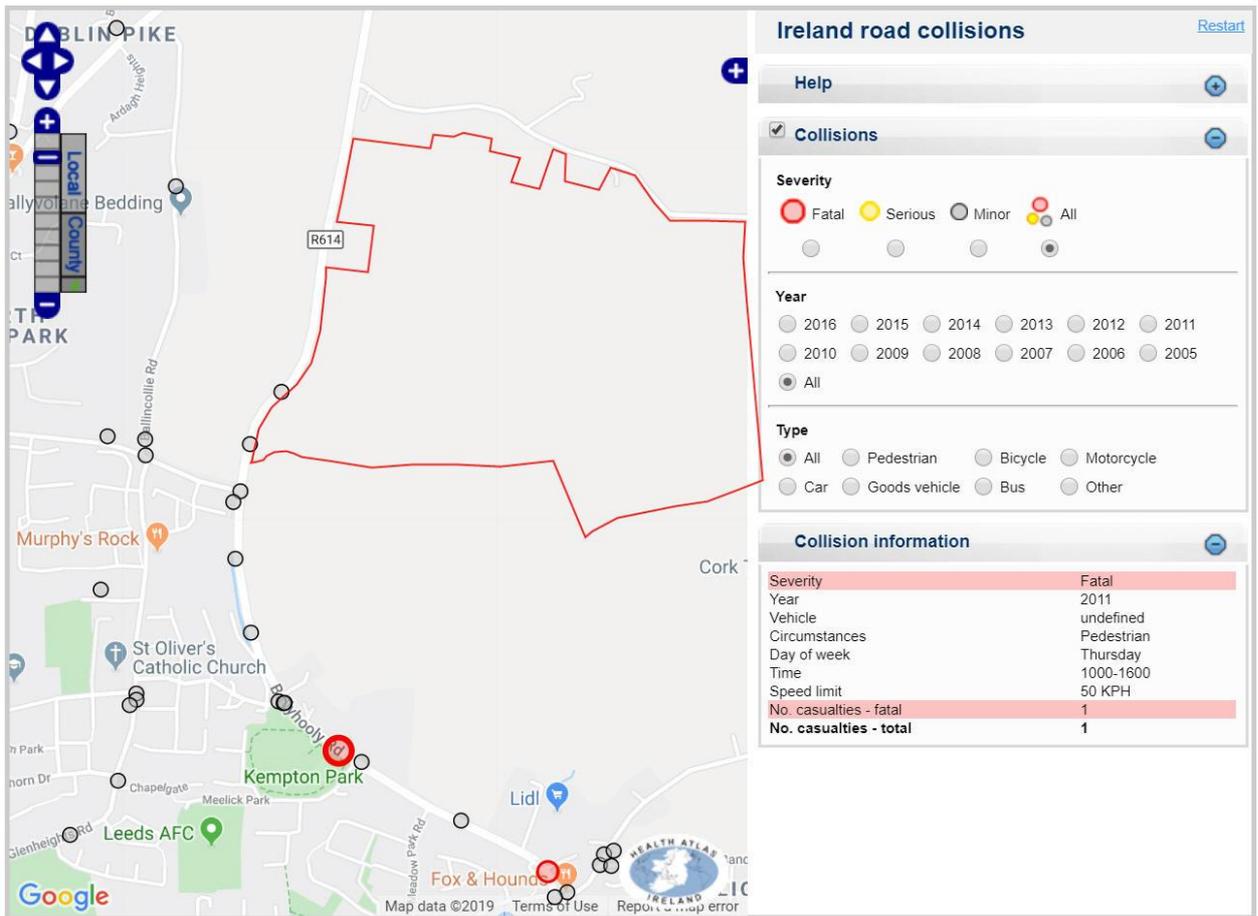
## Drawings and Documents submitted for information

By MHL & Associates Ltd

Longview Estates Development Lahardane, Ballyvolane, Cork

Drawing No.	Drawing Title	Status	Scale	Revision
LHD-PC-P01	Proposed Connectivity Works	Planning	1:2500@A1	
LHD-PC-P04	Proposed Connectivity Works	Planning	1:500@A1	
LHD-PC-P06	Proposed Connectivity Works	Planning	1:500@A1	
LHD-PC-P08	Proposed Connectivity Works	Planning	1:500@A1	
LHD-PC-P09	Proposed Connectivity Works	Planning	1:500@A1	
LHD-PC-P10	Proposed Connectivity Works	Planning	1:250@A1	
LHD-PL-P02	Proposed Public Lighting Neighbourhood 6	Planning	1:500@A1	
LHD-PL-P03	Proposed Public Lighting Neighbourhood 1	Planning	1:500@A1	
LHD-PL-P08	Proposed Public Lighting Ballyhooly Road	Planning	1:2000@A1	
LHD-SSD-P01	Stopping Sight Distance Southern Access	Planning	1:1000@A3	
LHD-SSD-P02	Stopping Sight Distance Northern Access	Planning	1:1000@A3	
LHD-SSD-P03	Stopping Sight Distance Neighbourhood 2 Access	Planning	1:500@A3	

## **Appendix B – RSA Collision Statistics**



**RSA Collision Statistics on Local Road Network in the vicinity of the Site**

## **Appendix C – RSA Feedback Form**

# Road Safety Audit Feedback Form

Scheme: Longview Estates Development, Lahardane, Ballyvolane, Cork  
 Audit Stage: 1/2  
 Date Audit Completed: 15/11/2019

Paragraph No. in Safety Audit Report	To be completed by the Designer			To be Completed by Audit Team Leader
	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted	Alternative measures or reasons accepted by auditors (yes/no)
2.1.1	y	y	Detail to be provided at detail design stage	
2.1.2	y	y		
2.2.1	y	y		
2.2.2	y	y		
2.3.1	y	y		
2.3.2	y	y		
2.3.3	y	y		
2.3.4	y	y	1M verge to be included at detail design stage	
2.3.5	y	y		
2.4.1	y	y		
2.4.2	y	y	Crossing added.	
2.5.1	y	y	" "	
2.5.2	y	y	Signage to be noted at detail design stage for alt. Path	
2.5.1	y	y	Crossing added	

Signed: Ken Marley Designer Date 3/12/19

Signed: Brian Loughrey Audit Team Leader Date 03/12/2019

Signed: John Curran Employer Date 1/12/19