

Griffith Avenue – Phase 2 Segregated Cycle Lanes

Stage 3 Road Safety Audit

December 2020

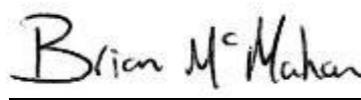
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Prepared by



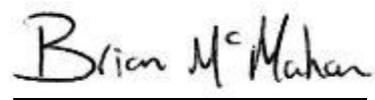
Zachary Cave
Traffic Planner / Engineer

Checked by



Brian McMahon
Associate Director

Approved by



Brian McMahon
Associate Director

Revision History

Revision	Revision date	Details	Authorized	Name	Position
1	07/12/2020	Draft	BMcM	Brian McMahon	Associate Director
2	08/12/2020	Final	BMcM	Brian McMahon	Associate Director

Prepared for:

Dublin City council

Prepared by:

AECOM Ireland Limited
4th Floor
Adelphi Plaza
Georges Street Upper
Dun Laoghaire
Co. Dublin A96 T927
Ireland

T: +353 1 238 3100
aecom.com

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1. Introduction

1.1 Overview Introduction

AECOM has been commissioned by the Dublin City Council to undertake a Stage 3 Road Safety Audit of a recently constructed segregated cycle track scheme along a section of Griffith Avenue, Whitehall in Co. Dublin.

This Stage 3 Audit will assess the safety implications of the scheme for all road users.

The Safety Audit Report indicates each of the problems identified, provides outline recommendations for solving the problems, presents the Audit Team Statement, and describes a schedule of documents reviewed. The members of the Audit Team were:

Audit Team Leader:

Brian McMahon, BE MSc CEng MIEI

Associate Director, AECOM

Audit Team Member:

Zachary Cave, BE MIEI

Traffic Planner / Engineer, AECOM

The audit comprises of an examination of the built scheme only, as no scheme drawings were presented to the audit team. The site visit took place on Wednesday the 2nd of December 2020. On the day of the visit the weather was bright with a dry road surface. During the time of the site visit, there did not appear to be any circumstances that would suggest a deviation from normal traffic conditions. The daytime site visit was undertaken between 09.30hrs and 11.00hrs, with the night-time site visit being undertaken between 19:00hrs and 20:00hrs.

1.2 Scheme Description

The scheme consists of the provision of a new segregated cycle lane on both sides of Griffith Avenue between St. Mobhi Road to Walnut Rise. The cycle lane was facilitated with the narrowing of the road carriageway and the removal of the existing informal on-street parking. The works consisted of changes to the road markings and introduction of bollards. No civil works were undertaken as part of the scheme. The designers noted that high friction beige surfacing has yet to be provided.

The segregated cycle lanes are separated from traffic with the provision of a 0.55m hatch and bollards, with a keep right bollard placed at the start of each cycle link. The existing kerb lines have been maintained. The existing priority junctions through the scheme have been maintained with no changes to their alignments or road markings. The approach lanes at the two signal-controlled junctions, at the eastern and western extents of the scheme, have been narrowed, thus reducing the junction's capacity.

Figure 1.1 demonstrates a section of the constructed scheme.



Figure 1.1 – Section of the Constructed Scheme

1.3 Road Safety Audit

This Safety Audit represents the response of an independent Audit Team to various aspects of the scheme. The recommendations contained therein are the opinions of the Audit Team and are intended as a guide to the designers on how the scheme as constructed can be improved to address issues of road safety.

The terms of reference of the Audit are as described in TII guidelines GE-STY-01024. The team has examined and reported only on the road safety implications of the scheme as presented and they have not examined or verified the compliance of the design to any other criteria.

The Safety Audit guidelines do not provide a facility for the Audit Team to classify individual problems according to their severity, and hence the level of priority to be attached to each. It is instead the task of the design team and/or their representative to take a view on the validity of each of the recommendations and decide on an appropriate course of action.

The response of the Design Team to the Safety Audit should be prepared in the form of a Safety Audit Feedback Form, accepting the changes proposed by the Audit Team or providing an alternative solution to the problem. The Feedback Form is then returned to the Audit Team for review and verification. A template for a Safety Audit Feedback Form is included as Appendix B.

Table 2.1 provides a summary of the scheme location and context.

Table 2.1: Summary of Scheme Location

Location	Griffith Avenue
Classification	Regional Road (R102)
Speed Limit	60 km/h
Local Authority Area	Dublin City Council
Type of Roads	Single Carriageway Roads, Urban Environment

2.2 Site Observations

The site visit was undertaken during daytime and night-time on Wednesday the 2nd December 2020; the weather was clear and dry. A number of site observations were noted. These observations are discussed below under a number of key headings.

Road Geometry

- Griffith Avenue is two-way road carriageway. Prior to the construction of the segregated cycle lanes, there was informal parking on both sides of the road carriageway. The construction of the segregated cycle lanes was facilitated with the narrowing of the road carriageway and the removal of the informal parking. The kerb to kerb width of the road carriageway is approximately 12.0m.
- At the western end of the scheme, the cycle lanes are approximately 2.0m with 0.55m wide buffers and a 6.5m wide road carriageway.
- New parking is provided on the eastern end of the scheme, on the northern side of the road carriageway. The parking is offset from the kerb line to facilitate the cycle lane.
- To accommodate the parking, the road carriageway is shifted to the south, and there is a reduction to the cycle lane widths. The cross section at the eastern end of the scheme, from the northern kerb, is a 1.5m wide cycle lane, 0.55m wide buffer between the cycle lane and the 2.0m wide parking space, a 6.4m wide road carriageway, a 0.25m wide buffer and a 1.5m wide cycle lane on the southern side of the road.
- Either end of the scheme has a traffic signal-controlled junction. The scheme connects in with the Walnut Rise junction on the eastern end of the scheme and the St. Mobhi Road junction on the western end of the scheme.
- A crossroads priority junction provides access to the residential houses to the northern and southern side of Griffith Avenue. Three other priority T-junctions provide access to residential estates to the south.

Vehicular Traffic

- Within the scheme extents, the speed limit is 60km/h.
- From the observations during the site visit the majority of motorists appeared to obey the speed limits.

Pedestrians and Cyclists

- 3.0m wide pedestrian footpaths (approximately) are provided either side of Griffith Avenue behind a 2.0m grass verge (approximately).
- An uncontrolled pedestrian crossing is provided on the eastern side of the Rathlin Road Junction.
- Controlled pedestrian crossings are provided at either ends of the scheme at the signal-controlled junctions.
- The newly constructed segregated cycle lanes are 2.0m wide, with bollards and a hatch. The 0.55m hatch is provided on the outside of the line of bollards.
- The majority of cyclists were observed utilising the new cycle lanes. One cyclist was noted on the footpath during the site visit. One cyclist was noted on the road carriageway. During the site visit, there was a near miss incident when a motorist accelerated towards a cyclist and aggressively beeped attempting to force the cyclist into the cycle lane.

Parking

- Parking is provided in two locations. Approximately 5 car parking spaces are provided east of the Lambay Road junction on the northern side of the road carriageway. A further 7 spaces (approximately) are provided east of the Griffith Lawns junction on the northern side of the road carriageway. Signage at the smaller parking location indicate that there is a maximum 1 hour stay.
- The cycle lane is reduced to 1.5m wide as it passes the car parking spaces, with a 0.55m wide buffer.

Surrounding Developments

- Residential homes are found either side of Griffith Avenue, with the majority with off-road parking.
- Griffith Avenue Practice is located at 411 Griffith Avenue, is a group of GPs and Dentist Practices. No dedicated parking facilities have been provided on the grounds of this practice. There is a driveway, but during the time of the site visit, there were no parked vehicles. During the site visit there were queues of up to four people waiting outside.

Street Lighting

- Street lighting is provided along the Griffith Avenue in the vicinity of the proposed scheme, alternating between the north and south side of the road.
- The site visit was carried out during both daylight and night-time hours; lighting levels at the time of the site visit adequately lit the scheme.

Collisions

- The RSA database of road collisions was examined to establish if there are any existing safety issues within the site that were not evident from the site visit.
- The database provides collision records for the period 2005 to 2016, with Figure 2.2 below outlining the recorded collisions over the 12 year period.
- 4 collisions occurred on the Griffith Avenue along the proposed scheme, of which all were minor in severity. 3 of the collisions occurred at the junctions at either ends of the scheme. Two collisions were single vehicle collisions with the other two involving pedestrians. One pedestrian collision occurred at the Mobhi Road junction and the other at the Walnut Rise junction.

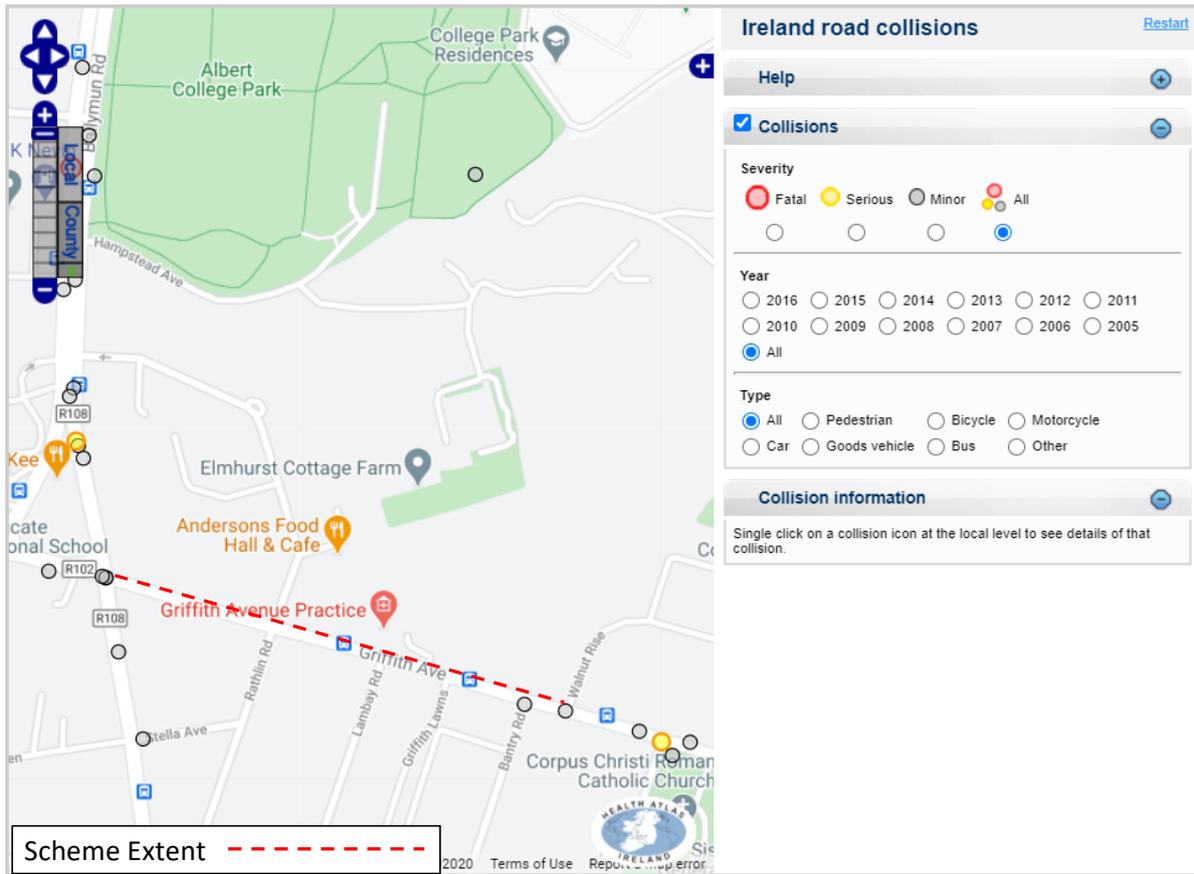


Figure 2.2 – RSA Collisions Records (2005-2016) in vicinity of the proposed scheme (www.RSA.ie)

3. Departures from Standards

3.1 General

No departures from standards have been notified to the audit team.

4. Items Resulting from this Stage 3 Road Safety Audit

4.1 Overview

This Safety Audit has reported on issues relating to the cycle scheme along Griffith Avenue. This is classified as a Stage 3 Road Safety Audit, as defined within the TII Road Safety Audit Guidelines.

4.2 Road Geometry

4.2.1 Problem		
Location:	Approach to Build-Out for Parking	
Drawing:	NA	
Summary:	Sudden turn at Parking	
Description:		<p>At the eastern extent of the scheme, the road narrows and is shifted to the south on the approach to the new vehicle parking spaces. The change in the horizontal alignment is indicated with the change in the centreline, a deflection arrow, and four keep right flexi-signs.</p> <p>The deflection arrow is provided very close to parking build-out and may not give motorists sufficient warning to turn before the vehicle parking spaces which could result in a collision with a parked vehicle.</p>
Recommendation:		<p>An additional deflection arrow should be provided, at a suitable distance, on approach to the parking bays. Consideration should be given to lengthening the hatched area.</p>

Figure 4.1 – Parking Bay on the North Side of Griffith Avenue

4.2.2 Problem		
<i>Location:</i>	Bus Stops	
<i>Drawing:</i>	NA	
<i>Summary:</i>	Buses pulling in tight to the Bus Stop	
Description:		<p>There are 2 Bus Stops within the scheme. It was noted during the site visit, that one of the buses did not pull in tight to the existing kerb line. It is unclear whether bollards used as part of the cycle scheme are preventing buses from pulling in tight to the kerbside.</p> <p>Buses should be able to manoeuvre into a bus stop right up to the kerbside. Gaps of 100mm or more can present access difficulties for some users such as the elderly; people with push chairs or wheelchairs and people with sight impairment or with walking difficulties, with could result in a trip and injury.</p>
Recommendation:		<p>It should be ensured that the bollards used as part of the cycle scheme do not prevent buses manoeuvring into a bus stop right up to the kerbside.</p>

Figure 4.2 – Existing Bus Stop

4.3 Signing & Lining

4.3.1 Problem		
Location:	Priority junctions throughout scheme	
Drawing:	NA	
Summary:	'STOP' road markings or signage not provided	
<p>Description:</p> <p>The existing priority junctions have not been upgraded as part of this scheme. However, the introduction of a cycle lane across these junctions means that the attention of a driver should not solely be focused on approaching vehicles and the acceptance of gaps but that they should now also be focused on cyclists in the cycle lane. The vulnerable road users should be higher in the movement hierarchy.</p>		<p>Figure 4.3 – Lambay Road Priority Junction</p>
<p>Recommendation:</p> <p>'STOP' road markings and signage should be provided at all the residential estates junctions.</p>		

4.3.2 Problem		
<i>Location:</i>	Approach to St. Mobhi Road Junction	
<i>Drawing:</i>	NA	
<i>Summary:</i>	Redundant 'Clearway' Signage	
<p>Description:</p> <p>During the site visit it was noted that there are 'Clearway' signs provided on approach to the St. Mobhi Road signalised junction, which prohibits vehicles parking between 07:00 until 19:00. The audit team understand that these cycle lanes are to remain clear of traffic at all times. With these signs still in place, drivers may interpret that parking is permitted outside of the posted hours in the cycle lane. This could result in cyclists being forced out into the vehicle carriageway or vehicles suddenly stopping in the cycle lane resulting in a collision with a cyclist.</p>		<p>Figure 4.4 – Existing Clear Way Sign</p>
<p>Recommendation:</p> <p>These 'Clearway' signs should be removed.</p>		

4.4 Pedestrians & Cyclists

<p>4.4.1 Problem</p>		
<p><i>Location:</i></p>	<p>Parking</p>	
<p><i>Drawing:</i></p>	<p>NA</p>	
<p><i>Summary:</i></p>	<p>Narrow Car Parking and Buffer and Widths</p>	
<p>Description:</p>		<p>Figure 4.5 – Car Parked in Hatching</p>
<p>The car parking provided is approximately 2.0m wide with a buffer provided between the parking and the cycle lane of approximately 0.55m.</p> <p>There is a risk that with a narrow car parking space and buffer that a motorist may open their door suddenly, without checking, which swings out into the cycle lane resulting in a collision with a passing cyclist.</p>		
<p>Recommendation:</p> <p>A minimum of 2.1m wide car parking and 0.75m buffer should be provided, either by narrowing the road carriageway or cycle lane width at these locations.</p> <p>The widened hatching should be extended to driveways at both ends of the parking.</p>		

4.5 Drainage & Maintenance

4.5.1 Problem		
Location:	Eastern end of Scheme	
Drawing:	NA	
Summary:	Risk of ponding	
<p>Description:</p> <p>Ponding was noted in one of the chambers at the western end of the scheme on the northern side. If ponding was to build up in the cycle lane and freeze there is a risk that cyclists could skid on it, falling off their bike onto the vehicle carriageway, resulting in a collision.</p> <p>Recommendation:</p> <p>The chamber lid should be raised to ensure that ponding does not occur at this location.</p>		<p>Figure 4.6 – Ponding the Chamber Cover</p>

4.5.2 Problem		
<i>Location:</i>	Throughout the scheme	
<i>Drawing:</i>	NA	
<i>Summary:</i>	Maintenance of the cycle lanes	
Description:		<p>Figure 4.7 – Example of Leaves Along the Cycle Lane</p>
<p>Due to trees being provided along both sides of the carriageway adjacent to the cycle lanes, there is a risk that should regular maintenance not be undertaken that this would lead to a build-up of debris in the cycle lanes. This would result in the cycle lane becoming slick with leaves and may lead to cyclists losing grip and falling off their bike.</p>		
Recommendation:		
<p>An appropriate maintenance strategy should be developed to keep the cycle lane clear of tree foliage and debris.</p>		

4.6 Public Lighting

4.6.1 Problem		
Location:	Throughout the scheme	
Drawing:	NA	
Summary:	Maintenance of existing trees	
<p>Description:</p> <p>Due to trees being provided along both sides of the carriageway adjacent to the cycle lane, there is a risk that should regular maintenance not be undertaken that the existing lighting levels will be reduced. This may result in poor visibility between cyclists and motorists and could result in a collision at conflict points.</p> <p>Recommendation:</p> <p>An appropriate maintenance strategy should be developed to keep the trees from obstructing the streetlights.</p>		<p>Figure 4.8 – Night-time lighting levels</p>

5. Audit Team Statement

We certify that the site was visited and that this audit has been carried out in accordance with the Transport Infrastructure Ireland Road Safety Audit Guidelines GE-STY-01027-01 and Standard GE-STY-01024-07.

The Road Safety Audit 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.

No one on the audit team has been involved with the scheme design.

AUDIT TEAM LEADER: SENIOR ROAD SAFETY AUDITOR

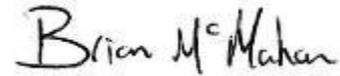
Name: Brian McMahon BE MSc CEng MIEI

Position: Associate Director

Organisation: AECOM

Address: Adelphi Plaza
George's Street Upper
Dun Laoghaire

Signed



Date 07.12.2020

AUDIT TEAM MEMBER: ROAD SAFETY AUDITOR

Name: Zachary Cave

Position: Traffic Planner / Engineer

Organisation: AECOM

Address: Adelphi Plaza
George's Street Upper
Dun Laoghaire

Signed



Date 07.12.2020

OTHERS INVOLVED:

Members of the local authority attended the day and night-time visits. The Gardai were invited to attend but they did not have availability.

Appendix A Documents Submitted to the Audit Team

No documents were submitted to the Audit Team.

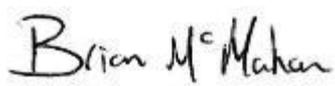
Appendix B Road Safety Audit Feedback Form

Scheme: Griffith Avenue– Phase 2					
Audit Stage: Stage 3					
Date Audit Completed: 07.12.20					
Paragraph No. in Safety Audit Report	To Be Completed by 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.	Designers Comments	Alternative measures or reasons accepted by auditors (yes/no)
4.2.1	Yes	Yes		An addition arrow will be installed. The hatching will be modified.	
4.2.2	Yes	Yes		We will contact Dublin Bus and enquire if their drivers have issues with this bus stop. We will modify bollards as required.	
4.3.1	Yes	Yes		We will arrange for Stop lines and signs to be installed	
4.3.2	Yes	Yes		We will arrange for the Clearway signs to be removed	
4.4.1	Yes	Yes		We will widen the buffer to a minimum of 0.750m and extend the hatching to driveways where present.	
4.5.1	Yes	No		It should not be necessary to raise this chamber. We intend on surfacing the entire cycle lane with a buff anti-skid and this should take care of any ponding issue.	
4.5.2	Yes	Yes		The Cleansing Department is aware of this issue and are purchasing additional compact mini-sweepers to maintain protected cycle lanes.	

4.6.1	Yes	Yes		The Parks Department has been made aware of this concern.	
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Designer's Signature: 

Date: 21/12/2020

Auditor's Signature: 

Date: XX/XX/2020

