DUKE STREET ANNE STREET SOUTH PUBLIC REALM SCHEME

STAGE 1 - ROAD SAFETY AUDIT

Document Ref: **P22-184-RSA-PD-RP-001**

Table of Contents

[1 Introduction 1](#_Toc119485715)

[2 Project Description 2](#_Toc119485716)

[3 Main Report 2](#_Toc119485717)

[4 Observations 7](#_Toc119485718)

[5 Road Safety Audit Team Statement 8](#_Toc119485719)

[Appendix A – Road Safety Audit Brief Checklist 9](#_Toc119485720)

[Appendix B – Documents Submitted to the Road Safety Audit Team 11](#_Toc119485721)

[Appendix C – Feedback Form 19](#_Toc119485722)

[Appendix D – Problem Locations 21](#_Toc119485723)

# Introduction

## General

This report results from a Stage 1 Road Safety Audit on the proposed Duke Street - Anne Street South Public Realm Scheme carried out at the request of Mr Tim Linehan of Dublin City Council.

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

**Mr. Peter Monahan**
(BE MSc CEng FIEI RSACert)
Road Safety Audit Team Leader

**Ms. Rebecca Farnan**(BA, MAI, MIEI)
Road Safety Audit Team Member

The Road Safety Audit took place during October and November 2022 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 26th October 2022 between 10am and 11am. Weather conditions during the site visit were dry and the road surface was dry. Traffic volumes during the site visit were moderate/high on Duke Street and consisted primarily of delivery vehicles. Traffic volumes were low on the remaining roads within the scheme during the site visit. Pedestrian and cyclist volumes were moderate and traffic speeds were considered to be generally within the posted speed limit.

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

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

## Items Not Submitted for Auditing

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

* + Vehicle swept paths
	+ Visibility splays

# Project Description

## General

It is proposed to amend the existing road layout on Duke Street, Duke Lane Upper, Duke Lane Lower, Lemon Street, Anne Street South and Anne’s Lane in Dublin City Centre all of which are between Grafton Street and Dawson Street.

Duke Street and Anne Street South are two-way single carriageway roads connecting Dawson Street to Grafton Street. Lemon Street is a one-way single carriageway road connecting Duke Lane Upper to Grafton Street. The existing carriageway width on Duke Street is approximately 5.5m wide, on Lemon Street it is approximately 2.8m wide, and on Anne Street South it is approximately 5.5m wide. The existing carriageway widths can vary, for example where an existing temporary buildout is provided on Anne Street South. Existing outdoor dining/seating areas are located outside of some of the businesses on either side of Duke Street and Anne Street South. The road network within the scheme has a posted speed limit of 30kph and there are existing footpaths and lighting facilities on both sides of each road, with the exception of Duke Lane Lower and Anne’s Lane.

The proposed Scheme includes the following:

* Reconstruction of the existing road surface.
* Provision of retractable bollards at the scheme extents on Duke Street, immediately west of the junction with Duke Lane Upper, and on Anne Street South east and west of the junction with Duke Lane Upper and Anne’s Lane, to prevent vehicular access outside of delivery hours.
* Provision of tactile indicators to create a “Safe Zone” for partially-sighted and visually-impaired pedestrians.
* Provision of uncontrolled pedestrian crossings of the side roads at their junctions with Duke Street and Anne Street South.
* Removal of all on-street parking facilities, with the exception of loading bay areas.
* Provision of bench seating at various locations.
* Provision of cycle stands on Duke Street and Anne Street South.
* Play installations on Lemon Street.
* Landscaping works including the provision of trees and in-ground planting.
* The installation of both horizontal and vertical lighting features.

# Main Report

## Problem

Location: Drawing Nos. CA17010 PLAN-P 20 (Rev. A) & CA17010PLAN-P 30 (Rev. A)

Summary: The “Tactile Indicator” paving layout shown within the drawings may not be sufficiently detectible to visually-impaired pedestrians and may lead them towards obstacles within the footpath.

The cross-sections provided indicate that the footpath would be flush with the adjacent carriageway on Duke Street (West) and Anne Street South (East & West). It is proposed to create a “Safe Zone” for visually-impaired pedestrians through the provision of “tactile indicator” paving.

At these locations, both the footpath and the adjacent carriageway would consist of granite flags or setts. It is unclear if there would be sufficient tonal contrast between the footpath areas and the shared carriageway area, and between the footpath/carriageway and the tactile indicators. It is also unclear what the width and profile of the proposed tactile indicators is to be. Should the tactile indicators be insufficiently detectible, this may create difficulties for partially-sighted and visually-impaired pedestrians identifying the Safe Zone within the street, increasing the difficulties experienced by these road users in independently & safely navigating the proposed street layout.

The tactile indicator layout on the northern side of Anne Street South (east) between The Jewel Casket and Sheridans Mongers and Duke Street (west) in front of The Bailey Bar is indicated as following the kerb line where the footpath widens to provide a buildout area. However, within the Safe Zone created by the tactile indicator there are a number of items of street furniture which could present a hazard to the visually impaired. In some locations the tactile indicator is shown to be in line with the centre of the proposed tree planting which could direct visually-impaired pedestrians into the obstruction.

In addition, the tactile indicator proposed along Anne Street South and Duke Street is not shown extending to meet the existing tactile indicator on Grafton Street. The lack of continuity of measures to assist the visually-impaired could increase the difficulty experienced by these road users in navigating the proposed street layout.

Recommendation

Tactile indicators should be provided in accordance with the Traffic Management Guidelines, which refers to the “Guidance on the Use of Tactile Paving Surfaces” published by UK Department for Transport (Ref. Chapter 6).

The proposed tactile indicator on Duke Street and Anne Street South should be extended to provide a connection into existing tactile delineators along Grafton Street.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: Areas used for existing outdoor dining/seating are not indicated within the drawings.

In the current environment on Duke Street and Anne Street South, sections of the footpaths are occupied by outdoor dining/seating facilities associated with adjacent businesses. However, the plans provided do not indicate if these areas are to be retained in their current form/extents or if they will be modified.

Note: Photo included showing outdoor dining areas occupying full extent of footpaths on Duke Street West outside Davy Byrnes Public House on the southern side and The Bailey Bar on the northern side.

Should the outdoor dining/seating facilities continue to occupy the same extends as they currently do, they will likely occupy the entire “footpath” within the shared streets on Duke Street and Anne Street South. This will effectively prevent visually-impaired pedestrians from navigating these streets independently.

Recommendation

Outdoor dining areas should be considered within the design and a safe route for visually-impaired pedestrians to travel along Duke Street and Anne Street South should be provided.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: The proposed height of the kerb upstands throughout the scheme are unclear.

It is unclear what the proposed height of the kerb upstands are to be. Should the kerb upstand be too low (e.g. < 60mm), this could create a potential trip hazard for pedestrians resulting in trips and falls leading to personal injuries. This problem may be exacerbated should there be an insufficient colour contrast between the kerb and the adjacent carriageway.

Note: Diagram included highlighting examples of uncontrolled crossings on Duke Street across entrance to Davy Stockbrokers car park, across entrance to Duke Lane Lower and across street at Duke Street (West) from Duchess shop to Marks and Spencer.

In addition, it is unclear if proposed kerbs will be flush at the uncontrolled pedestrian crossing locations throughout the scheme. The absence of flush kerbs at crossing locations can present difficulties for the mobility impaired, in particular wheelchair users, in safely and independently navigating the proposed street layout.

Recommendation

Where kerb upstands are proposed, a minimum kerb height of 60mm should be provided and adequate colour contrast should be provided between the kerb/footpath and the adjacent carriageway.

Kerbs at pedestrian crossing locations should be flush with the adjacent carriageway or raised-table, with a maximum upstand of 6mm.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: An insufficient depth of tactile paving has been indicated at various uncontrolled pedestrian crossings throughout the scheme.

At the uncontrolled crossings along Duke Street at its junctions with Dawson Street, Duke Lane and Anne Street South, as well as at the uncontrolled crossing of Anne’s Lane, the depth of the tactile paving does not appear to be sufficient for an in-line approach to the crossing.

Should the tactile paving provided at these locations be of an insufficient depth this could lead to visually-impaired pedestrians stepping over the tactile paving layout and inadvertently entering the carriageway where there is an increased risk of being struck by a vehicle.

Note: Diagrams included highlighting examples of insufficient depth of tactile paving at uncontrolled crossings at Duke Street Lower, Duke Street Upper and Anne’s Lane.

Recommendation

The tactile paving provided at in-line uncontrolled crossings should be a minimum of 1.2m (three rows) deep across the full width of the dropped kerb.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: Proposed “Play Installations” and “In-ground Planting” areas on Lemon Street and Duke Lane Upper may present a hazard to pedestrians and reduce the effective width of the footpath.

Two “Play” areas/installations are proposed on Lemon Street along with some “in-ground planting areas”. At this early stage in the design development it is unclear what items of furniture, and their layout, are proposed on Lemon Street. If inappropriate roadside furniture items are proposed, or if there placed in an inappropriate location, they could present a hazard to inattentive pedestrians or to the visually-impaired/partially-sighted. Should the installations and in-ground planting areas result in the effective width being too narrow, they could create an obstacle to the mobility impaired, in particular wheelchair users.

In addition, an “In-ground Planting” area is indicated on the east side of Duke Lane Upper opposite Kehoe’s Public House at the junction with Anne Street South. This could reduce the effective width of the footpath creating difficulties for the mobility impaired, in particular wheelchair users, travelling within the footpath.

Recommendation

During the Detailed Design phase, ensure that the proposed landscaping and “Play Installations” do not create hazards for non-motorised road users or obstacles for the mobility-impaired.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: The operation of the retractable bollards is unclear.

Retractable bollards have been indicated at entrance to Duke Street West opposite Marks and Spencer, at entrance to Anne Street South (West) opposite Smiles Orthodontics, on Anne Street South (East) opposite Aviary Lane Hairdresser and at junction Anne Street South (East) and Dawson Street. It is assumed that these bollards will be raised outside of delivery hours. There is a risk that road users may be insufficiently aware of the dynamic bollards as they transition from being inactive (i.e. down) to active (i.e. raised).

Should road users be insufficiently aware of the activation (rising/lowering) of the bollards, they may be fail to react to, and avoid, the bollards in time. This could result in material damage or personal injury collisions.

Recommendation

The proposed retractable bollards should include audible and visual signals to alert all road users of their transitioning operation and should be designed to remain inactive if an approaching vehicle is detected or a stationary vehicle is detected overhead.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: Drivers may be insufficiently aware that there is no vehicular access to Lemon Street.

It is assumed that no vehicular access is intended to Lemon Street. However, as the pavement of the Lemon Street and the adjacent Duke Lane Upper carriageway appear to be at the same level, drivers may fail to understand this and attempt to drive onto Lemon Street, with resulting increased risk of vehicular/pedestrian collisions.

Where a driver has inadvertently commenced turning onto Lemon Street, they may then attempt reversing back into Duke Lane Upper with a resulting increased risk of result in a vehicle-pedestrian collision.

Note: Diagram included showing right and left turning vehicular movements from Duke Lane Upper into Lemon Street.

Recommendation

During the Detailed Design measures should be provided to clearly advise drivers on Duke Lane that vehicles should not enter Lemon Street.

## Problem

Location: Drawing No. CA17010 PLAN-P 20 (Rev. A)

Summary: A relatively wide gap has been indicated between the proposed retractable bollards on Anne Street South at the junction with Dawson Street, which may result in vehicles entering outside of the permitted hours.

Two retractable bollards are indicated on Anne Street South at the junction with Dawson Street and there appears to be a gap approximately 2.75m wide between them. A space of this width would allow a vehicle to pass and may insufficiently deter all drivers from entering, or attempting to enter, Anne Street South outside of the permitted delivery hours while the bollards are raised.

Should a vehicle enter Anne Street South while the retractable bollards are raised, there is a risk that they may strike a pedestrian travelling within the carriageway. Additionally, the vehicle may become trapped due to the closely spaced proposed retractable bollards located westwards on Anne Street South.

Recommendation

The spacing of the proposed retractable bollards within the scheme should be such that vehicles are unable to pass between the bollards when raised.

## Problem

Location: Drawing No. CA17010 PLAN-P 29 (Rev. A)

Summary: It is unclear where the proposed “Vertical Feature Lighting” installations will be mounted.

Two areas of “Vertical Feature Lighting Installations” are indicated on Duke Lane Lower (Side of Marks and Spencer) and Anne’s Lane opposite the Trinity Clinic. It is unclear from the information provided whether the proposed “Vertical Feature Lighting” installations will be mounted on the pavement or on building façades.

If mounted on the pavement, they may reduce the effective width of the footpaths within which they are mounted, presenting a potential obstacle to the mobility impaired, in particular wheelchair users, or lead to pedestrians stepping into the adjacent carriageway where they are at risk of being stuck by a vehicle.

Recommendation

During the Detailed Design the proposed “Vertical Feature Lighting Installations” should be designed such that they do not reduce the effective width of the footpaths.

# Observations

1. The retention of the uncontrolled crossings at the side road junctions on (i) Duke Street at Duke Lane Lower and Upper and (ii) Anne Street South at Duke Lane Upper and Anne’s Lane may impact accessibility for visually-impaired or partially-sighted pedestrians, as they may be unable to cross at these locations without assistance.

It may be more appropriate to provide continuous footpaths across these side road junctions, with a “vehicle crossover” arrangement which prioritises pedestrians over vehicles turning into/out of the side roads.

# 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: 14th Nov. 2022

**ROAD SAFETY AUDIT TEAM MEMBER**

Rebecca Farnan Signed:

 Dated: 14th Nov. 2022

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 ☑ □

2. Departures from Standard □ ☑

3. Scheme Drawings ☑ □

4. Scheme Details such as signs schedules, traffic signal staging □ ☑

5. Collision data for existing roads affected by scheme ☑ □

6. Traffic surveys ☑ □

7. Previous Road Safety Audit Reports and

 Designer's Responses/Feedback Form ☑ □

8. Previous Exception Reports □ ☑

9. Start date for construction and expected opening date ☑ □

10. Any elements to be excluded from audit □ ☑

**Any other information?** □ ☑

*(if ‘Yes’, describe below)*

Appendix B – Documents Submitted to the Road Safety Audit Team

**List of Documents/Drawings**

1. Site Location Map, Drg 221013\_CA17010 PLAN-P 01, Rev A
2. Existing Overall Layout, Drg 221013\_CA17010 PLAN-P 10, Rev A
3. Proposed Layout – Overall, Drg 221013\_CA17010 PLAN-P 20, Rev A
4. Feature Lighting Plan, Drg 221013\_CA17010 PLAN-P 29, Rev A
5. Proposed Street Sections, Drg 221013\_CA17010 PLAN-P 30, Rev A
6. Project Extents, Drg RD-3402-SE-001-A
7. Universal Access Statement, Ref No. 220012-1
8. NCBI Submission
9. Summary of Vehicle and Pedestrian Traffic Counts, 7th – 8th April 2022
10. Collision Data provided by TAMS System - 24th May 2022
11. Collisions on Duke Street/Anne Street South and College Green Area
12. Proposed Workfronts Layout, Drg RD-3402-RK-001, Rev A
13. Part 8 Design Report - CA17010, 16th August 2022
14. VVI Submission - 22nd May 2022
15. Footpath Assessment Report - July 2022
16. Design Intent Minutes 4th July 2022
17. DCC Public Liability Claims West of Grafton Street - 3rd May 2022
18. College Green, Duke Street Claims Mapping - April 2022, Rev 1
19. Traffic Count Tables 2022 and 2018
20. Traffic Counts 2022 Duke Street and Anne Street South Area Summary Table

Appendix C – Feedback Form

# Road Safety Audit Feedback Form

**Scheme:**  Duke Street - Anne Street South Public Realm Scheme

**Route No.:**  Duke Street, Duke Lane Lower, Duke Lane Upper, Lemon Street, Anne Street South, and Anne’s Lane

**Audit Stage:** 1 D**ate Audit Completed:** 27th Oct. 2022

**Summary of Feedback Form**

Dublin City Council as Designer and Employer accepted in writing the recommendations as stated by the Auditor PMCE Consultants in the Stage 1, Safety Audit Report, to address Problems 3.1 to 3.9 (inclusive).

Dublin City Council suggested the following alternative measure to address the issue of Problem 3.1 as follows:

*“In addition to complying with guidelines the design team will work with Disabled Person’s Organisations to select a suitable material for use as the tactile indicator”*

This alternative measure to address issue of Problem 3.1, was accepted in writing by the Auditor, PMCE Consultants.

Appendix D – Problem Locations

# Problems Locations indicated on plan diagrams

## Problem Location 3.1 – Tactile Indicator

Duke Street & Anne Street South at Junction Grafton Street at end of tactile indicator and 2nr tree locations in front of the Bailey Bar on the northern side of Duke Street West.

## Problem Location Area 3.2 – Presence of Outdoor Dining

Duke Street outdoor dining areas in front of The Bailey Bar on the northern side of Duke Street West, Carlucci’s corner of Dawson Street and Butler’s Chocolate Bar corner of Dawson Street. Anne Street South.

Anne Street South (East) northern side outdoor dining area in front of Isabelles and Coffee Angel.

Anne Street South (West) northern side outdoor dining areas in front of premises between Bunsen and Kehoe’s public house.

Anne Street South (West) southern side outdoor dining area in front of Xiam Street Food.

## Problem Location Areas 3.3 – Proposed height of kerb upstand

Crossing (East/West) at car park entrance (Davy Stockbrokers) located on the southern side of Duke Street (East).

## Problem Location 3.3 & 3.4 (Insufficient depth of tactile paving)

Uncontrolled crossings at following locations:

1. Duke Street junctions Duke Lane Lower & Upper (East/West);
2. Duke Street Junction Dawson Street (South/North)
3. Anne Street South junctions Duke Lane Upper & Anne’s Lane (East/West)
4. Anne Street South Junction Dawson Street (South/North)

## Problem Location 3.5 – Play Installation & In-Ground Planting Areas

Various locations on Lemon Street in front of Victoria’s Secret, Hayes Recruiting and Paddy Power

Duke Lane Upper opposite Kehoe’s Public House

## Problem Location 3.6 – Retractable Bollards

Retractable bollards at entrance to Duke Street West opposite Marks and Spencer, at entrance to Anne Street South (West) opposite Smiles Orthodontics, on Anne Street South (East) opposite Aviary Lane Hairdresser and at junction Anne Street South (East) and Dawson Street.

## Problem Location 3.7 – Vehicular Access to Lemon Street

Junction Lemon Street Duke Lane Upper

## Problem Location 3.8 – Wide gap between retractable bollards

Jct Anne Street South and Dawson Street

## Problem Location 3.9 – Vertical Feature Lighting

Duke Lane Lower Jct Duke Street at side of The Duke Bar

Anne’s Lane Jct Anne Street South at the side of Links