

Cronin & Sutton Consulting

Strategic Housing Development at  
North Wall Quay, Co. Dublin

Quality Audit

# Cronin & Sutton Consulting

## Strategic Housing Development at North Wall Quay, Co. Dublin

### Quality Audit

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1.0	TAG	PJM	TAG	30 <sup>th</sup> Sept 2020	Draft Report

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# 1 Introduction

## 1.1 General

This report was prepared in response to a request from Mr. Niall Barrett of Cronin & Sutton Consulting to provide a Quality Audit of a Strategic Housing Development at North Wall Quay, Co. Dublin. The Quality Audit shall consider the following elements:

- Road Safety Audit;
- Accessibility Audit;
- Walking Audit;
- Non-Motorised User Audit; and
- Cycle Audit.

The Quality Audit followed a site visit on the 16<sup>th</sup> September 2020. At the time of the site visit the weather was dry and the ground surface was dry. The traffic volumes during the site visit were low to moderate, and pedestrian and cyclist volumes were considered to be moderate. Note, at the time of the site visit, construction works were underway at the development site, and within neighbouring sites to the east and west. Hoarding was in place at each construction site, with temporary pedestrian walkways used to support pedestrian movement.

This report contains three primary sections, with each section focussing on different implications to the users of the scheme. The Road Safety Audit identifies safety implications of the scheme, whilst the Accessibility & Walking Audit focusses more on accessibility implications for vehicles and pedestrians associated with the development. Finally, the Non-Motorised User and Cycle Audit predominantly focusses on cycle use, as pedestrians have been discussed as part of the accessibility and walking audit, and there are currently no requirements for equestrians as part of this development.

## 2 Background

A new residential development is proposed on a brownfield site in Dublin City. The development is in an urban area, and is bounded to the east by North Wall Avenue and the 3Arena, to the north by Mayor Street Upper, to the west by Castleforbes Road and to the south by North Wall Quay and the River Liffey. The following sections describe the local road network surrounding the proposed development site, all of which have a 50kph posted speed limit.

- **North Wall Quay:** The North Wall Quay road cross section includes a two-way single lane carriageway, and an eastbound bus lane. A segregated two-way cycle track is located adjacent to the southern footway, with a wide promenade between the cycletrack and the River Liffey. North Wall Quay has on-street Pay & Display parking along the development's southern boundary, including general parking, 1 No. Electric Vehicle parking space, a Mobility parking space, and a Loading Bay. Existing public lighting is also provided on North Wall Quay.



Upstream of its junction with North Wall Avenue, the existing eastbound bus lane on North Wall Quay merges into a dedicated Left Turn Lane, permitting access for traffic wishing to turn left into North Wall Avenue.

- **North Wall Avenue:** North Wall Avenue is a two-way single carriageway road that runs in a north-south direction and includes pedestrian footways and public lighting on both sides. Inset parking bays, cycle parking, uncontrolled pedestrian crossing points and traffic calming is provided along its length.



- **Mayor Street Upper:** Mayor Street Upper is a two-way single carriageway road that runs in an east-west direction. Pedestrian footways and public lighting are provided on both sides of the road. The Luas Red Line runs along Mayor Street Upper, and terminates at 'The Point' Luas stop, to the east of the North Wall Avenue/Mayor Street Upper junction.
- **Castleforbes Road:** Castleforbes Road is a two-way single carriageway road that runs in a north-south direction, with pedestrian footways and public lighting provided along its length. Northbound traffic using Castleforbes Road are currently prohibited from turning right into Mayor Street Upper.

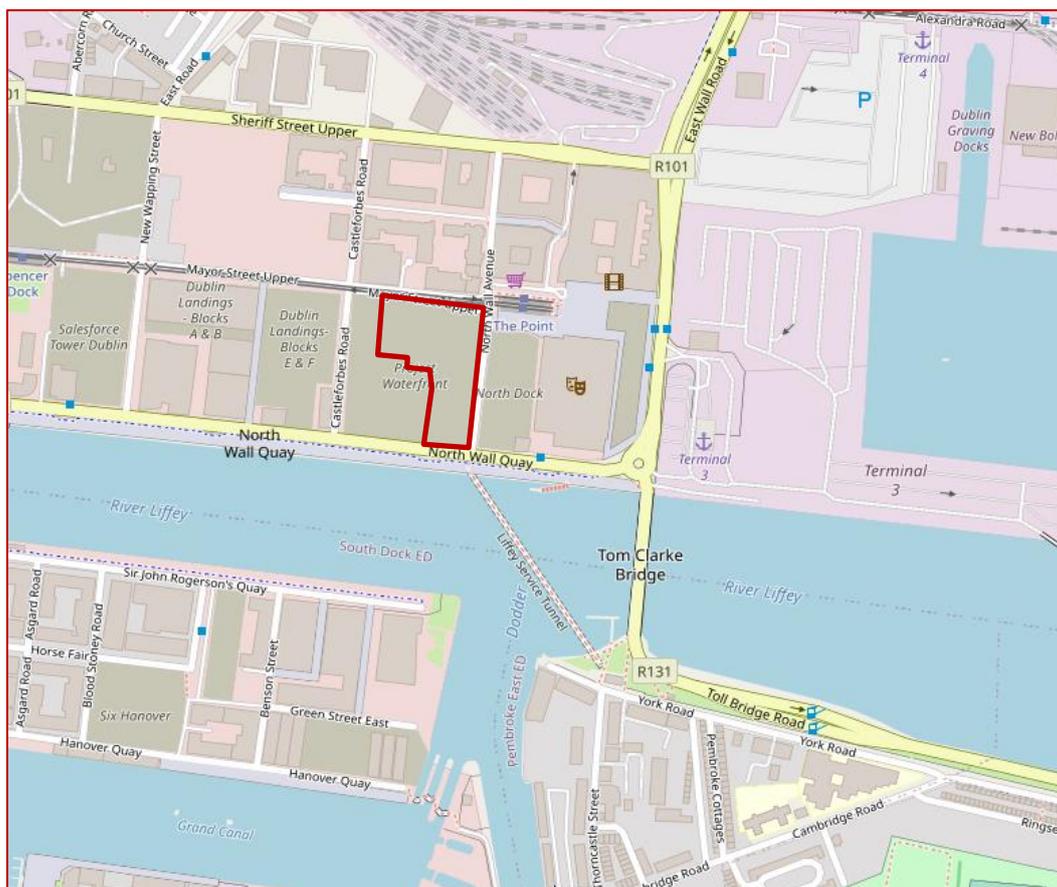


FIGURE 2-1: SITE LOCATION PLAN

## 2.1 Proposed Development

The proposed Strategic Housing Development includes three Apartment Blocks comprising a total of 1,005 No. apartments, a Childcare facility, a Gym/Spa, a Restaurant/Café, a public viewing deck, centrally located public open space, and basement level car parks for vehicles, bicycles and Electric Vehicle and Mobility parking. Minor adjustments to the footways surrounding the development shall be undertaken, as well as reconfiguration of the existing parking layout, which will include bus and taxi set down areas, loading areas, mobility parking and general parking.

Vehicular access to the proposed development shall be on North Wall Avenue, with ramps providing access to the basement car parks. Pedestrians and cyclists will gain access to the basement car parks via lifts and stairwells, with measures included to prevent pedestrians/cyclists from using the basement access ramps.

## 2.2 Collision History

The Road Safety Authority website (www.rsa.ie) was consulted to identify historical collisions in the vicinity of the proposed development. The website includes summary information on collision occurrence for the period 2005 to 2016 (see Figure 2-2).

Four Minor and one Serious Injury collisions were recorded within the vicinity of the proposed development. These include:

- 1) 1 No Serious Injury in 2014 involving a cyclist, which occurred on a Saturday, 10:00-16:00
- 2) 1 No Minor Injury in 2009 involving a vehicle/pedestrian, which occurred on a Saturday, 19:00-23:00
- 3) 1 No Minor Injury in 2010 involving a bus, which occurred on a Saturday, 23:00-03:00
- 4) 1 No Minor Injury in 2006 involving a car, which occurred on a Thursday, 07:00-10:00
- 5) 1 No Minor Injury in 2005 involving a car, which occurred on a Sunday, 10:00-16:00

The level of detail provided on the RSA collision database does not permit a forensic assessment of the collisions noted above. However, the collision records, and their distribution over time, do not highlight a collision cluster or pattern near the proposed development.

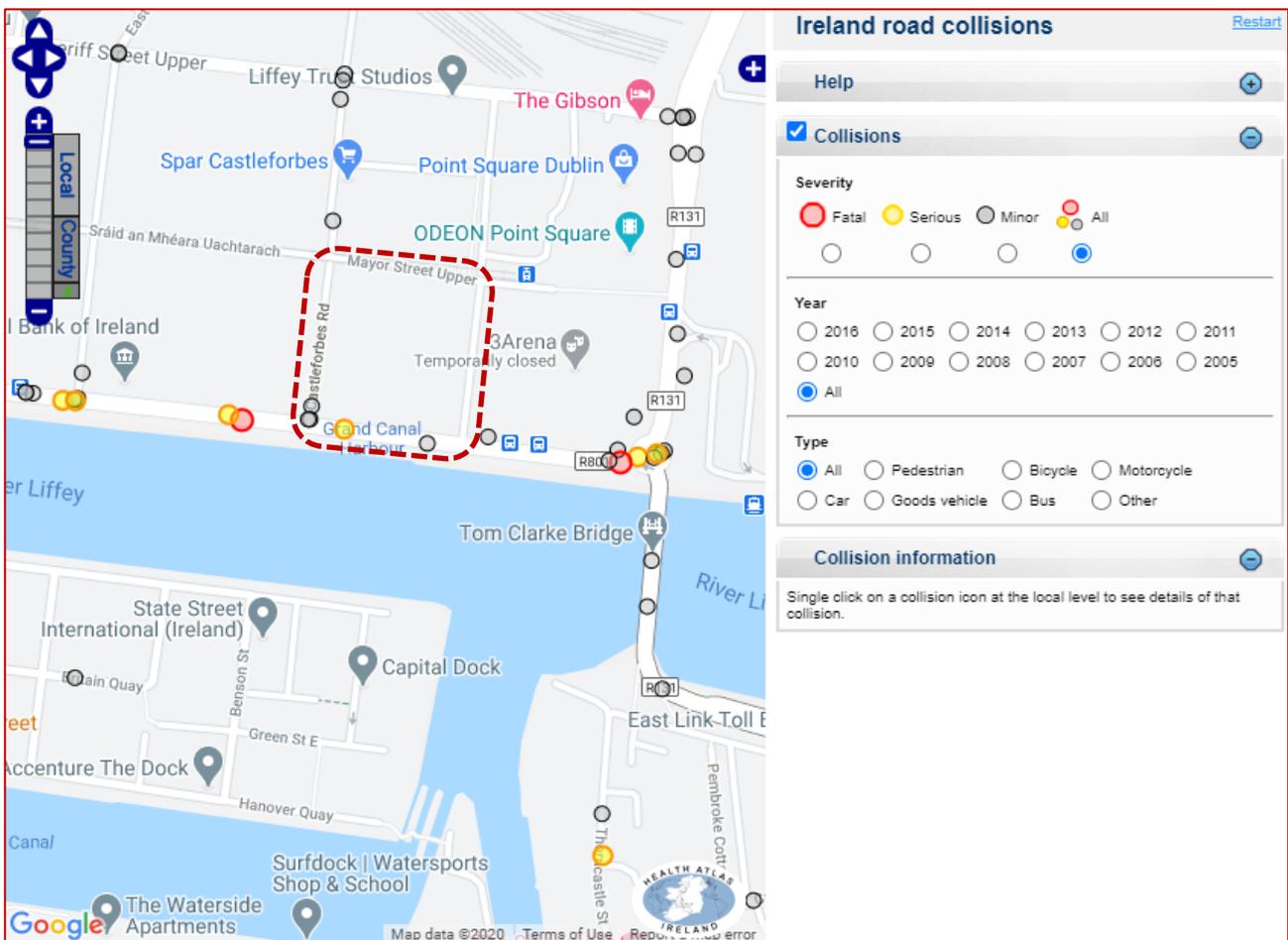


FIGURE 2-2 COLLISIONS RECORDED IN THE VICINITY OF THE PROPOSED DEVELOPMENT

**Note:** The Audit Team were made aware of a Fatal collision involving a cyclist that occurred in September 2020. However, the absence of formal collision data, as collected and verified by An Garda Síochána/the Road Safety Authority precludes further investigation as part of this audit.

## 3 Road Safety Audit

### 3.1 Introduction

This Road Safety Audit has been carried out in accordance with the requirements of GE-STY-01024 (previously NRA HD19/15) dated December 2017, contained on the Transport Infrastructure Ireland (TII) Publications website.

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

**Mr. Aly Gleeson**  
**(PMCE Ltd.)**  
(MBA, MEng, BSc, CEng, RSACert, MIEI, MSoRSA)  
Road Safety Audit Team Leader

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

The Road Safety Audit took place during September 2020 and comprised an examination of the documents provided by the designers (see Section 3.6). A site visit was undertaken on the 16<sup>th</sup> September 2020. Traffic volumes were considered low to moderate, and pedestrian/cycle numbers were considered moderate.

Where problems are relevant to specific locations these are shown on drawing extracts within the main body of the report. Where problems are general to the proposals sample drawing extracts are within the main body of the report where considered necessary. Road Safety problem locations are also shown in Appendix A.

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.

### 3.2 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 3.3: -

- Lighting
- Drainage
- Signage

### 3.3 Road Safety Audit

#### 3.3.1 Problem

Drawing: P1010A (Rev 5)

Summary: *Insufficient inter-visibility between drivers exiting the basement access ramp and pedestrians/drivers on North Wall Avenue may lead to side-on and vehicle/pedestrian collisions.*

A tree is indicated to the south of the basement carpark access ramp and may reduce inter-visibility between drivers exiting the basement carpark and pedestrians/drivers on North Wall Avenue. Insufficient inter-visibility at the basement carpark access may lead to drivers entering North Wall Avenue, or crossing the footway, when it is unsafe to do so, leading to side-on or vehicle/pedestrian collisions.

Additionally, inset parallel parking bays on North Wall Avenue may further reduce a driver’s visibility when exiting the basement carpark, leading to side-on collisions.



#### Recommendation

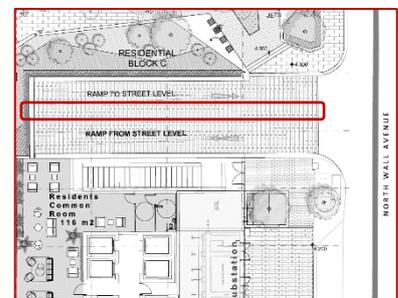
Remove/relocate the tree indicated to the south of the basement carpark access ramp and ensure visibility splays are not obstructed by vehicles parking within the inset parking bays.

#### 3.3.2 Problem

Drawing: P1010A (Rev 5)

Summary: *The absence of lane separation on the basement carpark access ramp may result in low speed head-on collisions.*

The basement carpark access ramp does not include lane separation, such as road markings or physical measures. The absence of lane separation measures to clearly advise drivers of the entry and exit lanes may lead to drivers adopting a central position on the ramp, which may increase the risk of low speed head-on collisions with opposing vehicles.



#### Recommendation

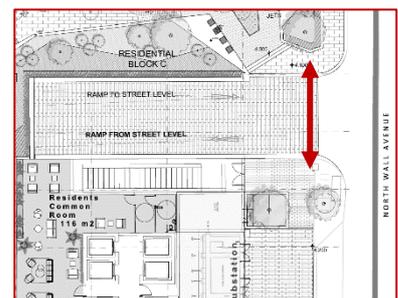
Provide lane separation measures on all vehicle access ramps within the development.

#### 3.3.3 Problem

Drawing: P1010A (Rev 5)

Summary: *No formal pedestrian crossing has been indicated at the development’s basement carpark access ramp, which could lead to slips, trips, and falls.*

A failure to provide dropped kerbs and tactile paving, or a continuous footway across the basement carpark access ramp, could result in mobility and visually impaired pedestrians on North Wall Avenue being unable to cross the access ramp safely and independently. This could result in slips, trips, or falls as these pedestrians attempt to descend the kerb.



## Recommendation

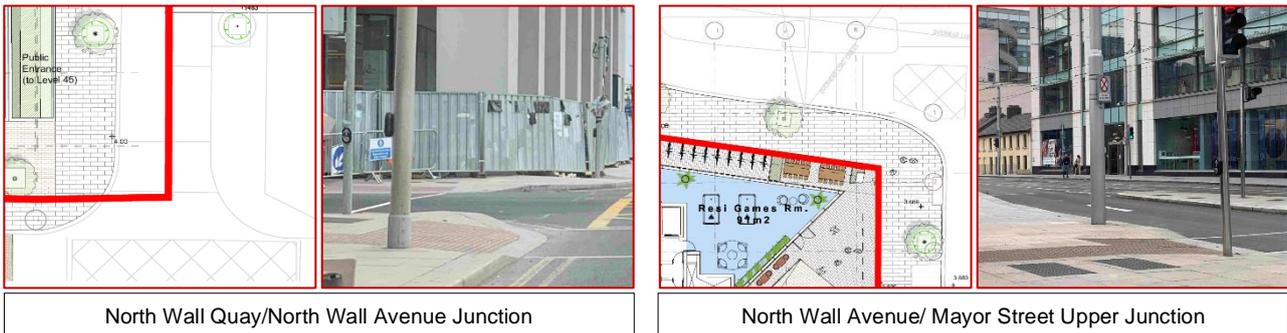
Prioritise pedestrian movements across the development's access by providing a continuous footpath.

Alternatively, a formal uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided at the development's basement carpark access.

### 3.3.4 Problem

*Location:* Site Observation

*Summary:* Removal of existing tactile paving may lead to visually impaired pedestrians being unable to locate the existing controlled pedestrian crossings or stepping into the carriageway without due care and attention, leading to vehicle/pedestrian collisions.



Existing tactile paving at the junction of North Wall Quay/North Wall Avenue and North Wall Avenue/ Mayor Street Upper is not indicated on the design drawings issued for Audit. Should the existing tactile paving be removed as part of the development, or fail to be modified to accommodate the development's footprint, there is a risk that visually impaired pedestrians may find it difficult to locate and correctly use the signalised pedestrian crossings, and enter the carriageway when it is unsafe to do so, leading to vehicle/pedestrian collisions.

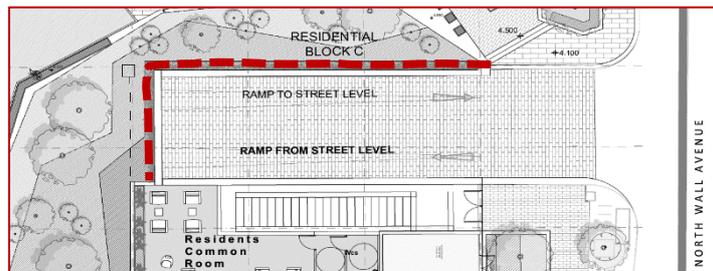
## Recommendation

The existing tactile paving should be incorporated within the development's design and be modified to seamlessly tie-in with the development's footprint (e.g. tactile stem extended to the new back of footway).

### 3.3.5 Problem

*Drawing:* P1010A (Rev 5)

*Summary:* Unprotected height hazard at the basement carpark access could lead to serious personal injury or fatal incidents.



Ground level edge protection has not been indicated adjacent to the basement carpark ramp. There is a risk that pedestrians at ground level, especially small children, may inadvertently fall onto the ramp below and suffer serious or fatal injuries.

**Recommendation**

Provide edge protection at locations where there is a level difference between adjacent platforms.

**3.3.6 Problem**

Drawing: P1010A (Rev 5)

Summary: *Unprotected water feature could lead to serious personal injury, or drowning.*

It is unclear if any edge protection is proposed at the water feature near Apartment Block A. The absence of edge protection at the water feature may increase the risk of pedestrians, particularly small children, falling into the water feature and suffering serious injury, or drowning.



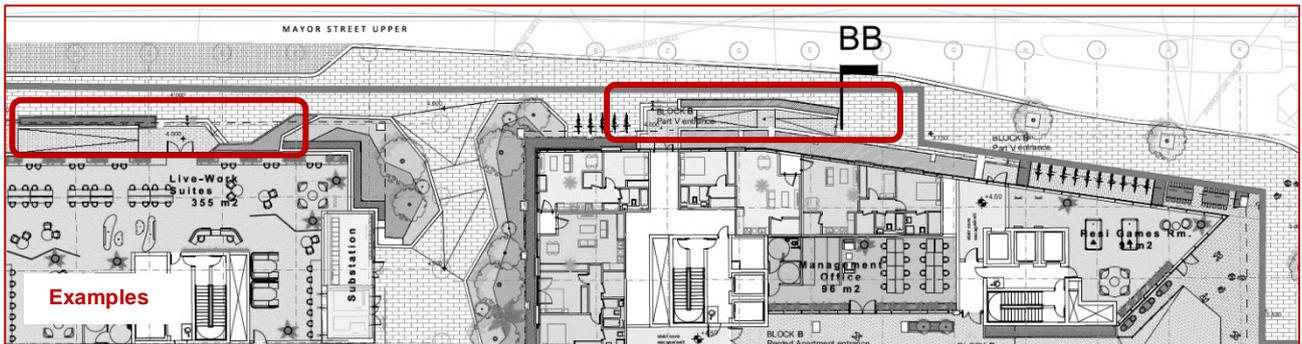
**Recommendation**

Suitable edge protection measures should be provided at the water feature.

**3.3.7 Problem**

Location: General Problem

Summary: *Hazard tactile paving has not been indicated at the top and bottom of steps and ramps within the development.*



Steps and ramps have been indicated throughout the development, for example, at the entrance to Apartment Block A on Mayor Street Upper. Hazard tactile paving has not been indicated at the top or bottom of these steps/ramps. This could lead to visually impaired pedestrians being insufficiently aware of the vertical hazard ahead, resulting in them inadvertently entering the steps/ramps resulting in trips, falls and serious injuries.

**Recommendation**

Hazard (i.e. corduroy) tactile paving should be provided at the top and bottom of steps and ramps.

### 3.3.8 Problem

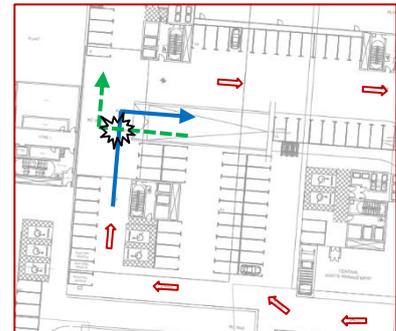
*Drawing: R064-217 (Rev -)*

*Summary: Direction of one-way system on Basement Level -3 may increase risk of conflicts at ramp access, leading to side-on and material damage collisions.*

The clockwise direction of the one-way system indicated on Basement Level -3 will require vehicles entering/exiting the ramp to cross at the ramp access. This crossing manoeuvre may increase the risk of side-on and material damage collisions.

#### Recommendation

The direction of the one-way system should be reversed, such that traffic travels in an anti-clockwise direction, thus negating the need for vehicles to cross at the ramp access.



### 3.3.9 Problem

*Location: General Problem*

*Summary: Basement carpark do not include clearly designated pedestrian routes, which may increase the risk of vehicle/pedestrian collisions.*

Basement carpark layouts do not indicate pedestrian walkways or designated pedestrian routes. As a result, pedestrians may unintentionally choose routes that bring them into direct conflict with vehicles, particularly in locations where inter-visibility is reduced by structural columns and walls.

Similarly, the basement carpark layouts indicate that pedestrians travelling from the stairwell/elevator will need to pass between narrow gaps in the parking arrangement, where inter-visibility between drivers and pedestrians will be significantly reduced.

Insufficient inter-visibility between drivers and pedestrians may increase the risk of vehicle/pedestrian collisions.



#### Recommendation

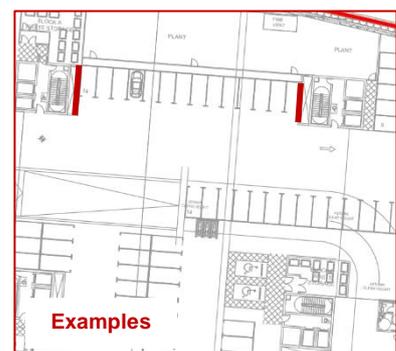
Provide clear pedestrian routes within the basement carpark and ensure adequate inter-visibility between drivers and pedestrians on key pedestrian desire lines.

### 3.3.10 Problem

*Location: General Problem*

*Summary: Drivers exiting parking spaces adjacent to the basement walls will have restricted visibility, which may lead to side-on or vehicle/pedestrian collisions.*

Vehicles exiting from parking spaces immediately adjacent to the elevator/stairwell blocks will have restricted visibility towards approaching vehicles/pedestrians on the internal circulating lanes. This could result in low-speed side-on or vehicle/pedestrian collisions.



### Recommendation

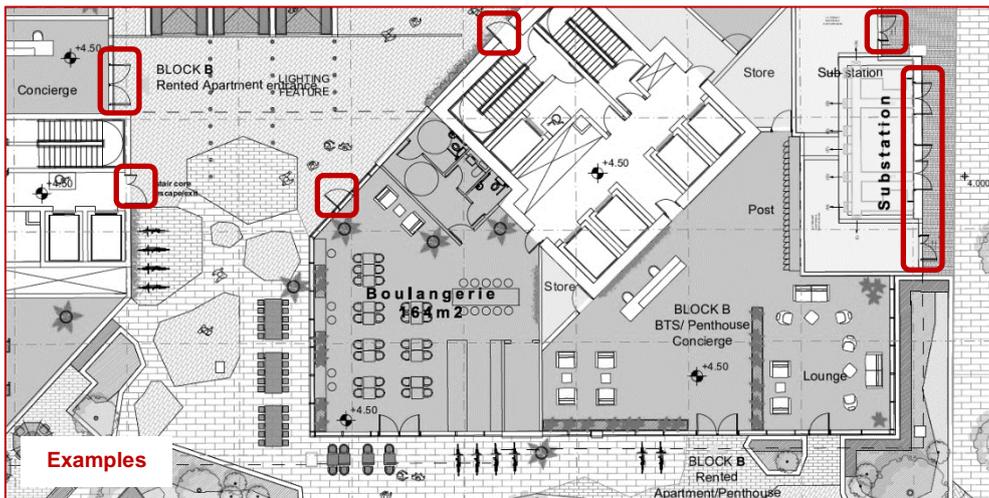
Remove parking spaces that are directly adjacent to the elevator/stairwell blocks.

Alternatively, use road markings to create a buffer zone that positions vehicles/pedestrians away from the elevator/stairwell block when travelling within the carpark.

#### 3.3.11 Problem

Location: General Problem

Summary: Doors opening into the footway may conflict with pedestrians and cyclists, leading to personal injury collisions.



A number of external doors associated with the development (e.g. substation onto the concourse near the northern extent of the development) are indicated as opening outwards. This arrangement can present a hazard to pedestrians/cyclists who may not anticipate a door opening into their path, leading to personal injury collisions, whilst also presenting difficulties for mobility-impaired road users.

### Recommendation

Doors should open into the building so as not to obstruct or conflict with pedestrians and cyclists on the footway.

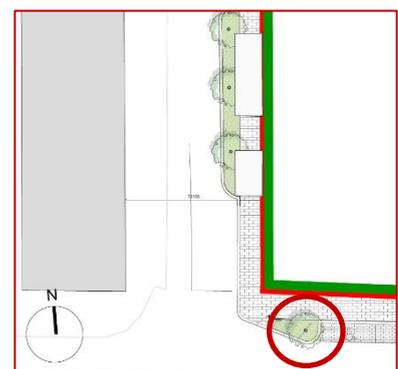
However, this recommendation should not be adopted should it directly contradict building and fire safety regulations. Should building and fire regulations require the doors to open into the footway (i.e. open outwards), measures should be provided to alert pedestrians and cyclists.

#### 3.3.12 Problem

Drawing: P1010A (Rev 5)

Summary: Visibility exiting Castleforbes Road may be restricted by planting indicated within the footpath, which could lead to side-on collisions.

Planting has been indicated within the North Wall Quay footpath at its junction with Castleforbes Road. The planting/tree could restrict a driver's visibility towards approaching vehicles when stationary at the stop line. This could result in drivers entering North Wall Quay ahead of oncoming vehicles when it is unsafe to do so, leading to side-on collisions.



## Recommendation

Ensure the planting of trees within the scheme does not impede a driver's visibility when exiting side roads.

### 3.3.13 Problem

*Location: Site Observation*

*Summary: The existing junction control at the Castleforbes Road/North Wall Quay T-junction is not clear and may lead to side-on or overshoot collisions.*

The existing junction control at the Castleforbes Road/North Wall Quay T-junction is not clear and is absent from the design drawings provided to the Audit Team.

This could lead to driver confusion and potentially to the risk of drivers failing to come to a complete stop at the junction, resulting in them exiting Castleforbes Road when it is unsafe to do so. This could increase the risk of side-on and overshoot collisions.



## Recommendation

A Stop control junction should be provided at the Castleforbes Road/North Wall Quay T-junction with associated signs/markings.

### 3.3.14 Problem

*Location: General Problem*

*Summary: It is unclear if the scheme's concourse/central pedestrian plaza proposes a sufficient level of tonal contrast between safe zones and shared surfaces where the movement of cyclists is promoted. This could lead to pedestrian/cyclist collisions.*

The location of the elevators to the underground bicycle parking area, and the position of bicycle parking within these concourse areas on the ground floor suggest that the internal concourse areas and the external paths around the development are to be shared paths between pedestrians and cyclists.

However, no tactile paving at the transition between the shared use paths/concourses and the external road environment, which is a segregated arrangement, have been indicated.

The absence of tactile guidance surfaces and colour contrast may lead to visually impaired pedestrians becoming confused, and unintentionally straying into shared areas where cyclists are present. This could lead to pedestrian/cyclist collisions.



## Recommendation

Ensure that vulnerable road users, in particular the visually impaired, are adequately informed of when they are expected to share space with cyclists.

### 3.4 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.

The Road Safety Audit Team has not been involved in the design of this scheme.

#### ROAD SAFETY AUDIT TEAM LEADER

Aly Gleeson

Signed:



Dated:

5<sup>th</sup> Jan 2021

#### ROAD SAFETY AUDIT TEAM MEMBER

Peter Monahan

Signed:



Dated:

5<sup>th</sup> Jan 2021

### 3.5 Road Safety Audit Brief Checklist

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

	Yes	No
1. The Design Brief	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Departures from Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Scheme Drawings	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4. Scheme Details such as signs schedules, traffic signal staging	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5. Collision data for existing roads affected by scheme	<input checked="" type="checkbox"/>	<input type="checkbox"/>
6. Traffic surveys	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7. Previous Road Safety Audit Reports and Designer's Responses/Feedback Form	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8. Previous Exception Reports	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9. Start date for construction and expected opening date	<input type="checkbox"/>	<input checked="" type="checkbox"/>
10. Any elements to be excluded from audit	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Any other information?</b> (if 'Yes', describe below)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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### 3.6 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Lower Ground Floor Level -01 Scenario A	P1009A	5
Basement Level -03 Scenario A	P1007A	5
Proposed Ground Floor Plan Scenario A	P1010A	5
Lower Ground Floor Level Full Layout	R064-215	-
Basement -2 Full Layout	R064-216	-
Basement -3 Full Layout	R064-217	-
<b>For Information</b>		
Traffic Impact Assessment	R064 TIA SHD (18.09.2020)	B (Draft)

### 3.7 Road Safety Audit Feedback Form

**Scheme:** Residential Development at North Wall Quay, Co. Dublin

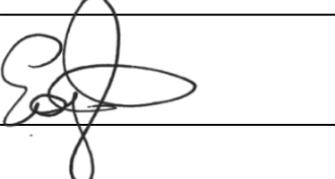
**Route No.:** R801 (North Wall Quay)

**Audit Stage:** Stage 1 Road Safety Audit      **Date Audit Completed:** 28<sup>th</sup> Sept 2020

To Be Completed by Designer				To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	Problem Accepted (Yes/No)	Recommended Measure(s) Accepted (Yes/No)	Describe Alternative Measure(s). Give reasons for not accepting recommended measure	Alternative Measures or Reasons Accepted by Auditors (Yes/No)
3.3.1	Yes	Yes		
3.3.2	Yes	Yes		
3.3.3	Yes	Yes		
3.3.4	Yes	Yes		
3.3.5	Yes	Yes		
3.3.6	Yes	Yes		
3.3.7	Yes	Yes		
3.3.8	Yes	Yes		
3.3.9	Yes	Yes		
3.3.10	Yes	Yes		
3.3.11	Yes	Yes		
3.3.12	Yes	Yes		
3.3.13	Yes	Yes		
3.3.14	Yes	Yes		

**Signed:**       Designer      **Date** 18.11.2020

**Signed:**       Audit Team Leader      **Date** 5<sup>th</sup> Jan 2021

**Signed:**       Employer      **Date** 18/11/2020

## 4 Accessibility & Walkability Audit

### 4.1 Introduction

A new residential development is proposed on a brownfield site in Dublin City. The development is bounded to the east by North Wall Avenue and the 3Arena, to the north by Mayor Street Upper, to the west by Castleforbes Road and to the south by North Wall Quay and the River Liffey. The development is in an urban area with pedestrian footways and public lighting, and includes signalised pedestrian crossings at the following junctions: -

- North Wall Quay/North Wall Avenue – supporting pedestrian movement across North Wall Quay and North Wall Avenue
- North Wall Avenue/Mayor Street Upper – supporting pedestrian movement across Mayor Street Upper, which is used to access The Point Luas Stop.
- Castleforbes Road/Mayor Street Upper – supporting pedestrian movement across Castleforbes Road and Mayor Street Upper.

Two uncontrolled pedestrian crossings are also provided on North Wall Avenue, which are located on traffic calming measures. A wide pedestrian promenade is located south of North Wall Quay and runs along the River Liffey with connections to river crossings at Tom Clarke Bridge in the east, and Samuel Beckett Bridge in the west.

#### 4.1.1 Access to local bus network

North Wall Quay includes two bus stops that are located at the 3Arena, both of which are within 100m of the proposed development. Bus Stop 7623 is approximately 50m (or < 1min walk) from the development, which provides access to the following bus routes: -

- **Bus Route 33b** – Swords to Portrane
- **Bus Route 33d** – Custom House Quay / St. Stephen's Green Towards Portrane
- **Bus Route 33x** – Custom House Quay / St. Stephen's Green Towards Skerries
- **Bus Route 41x** – UCD Belfield Towards Knocksedan
- **Bus Route 142** – Portmarnock Towards UCD Belfield
- **Bus Route 151** – 33d Docklands (East Rd.) To Foxborough (Balgaddy Rd.)
- **Bus Route 500/500N/500X** – Dublin To Swords
- **Bus Route 534** – Grand Canal Dock, Saint Andrew's Resource Centre - Portrane, Seaview Estate
- **Bus Route 702** – Dublin Airport - Greystones
- **Bus Route 703** – Killiney - Dublin Airport
- **Bus Route 833** – Lusk, The Forge Estate - Dublin, Eden Quay
- **Bus Route 903** – North Wall, The Green Room - Dundalk

Bus Stop 106421 is approximately 100 (or c. 1min walk) from the development, which provides access to the following bus routes: -

- **Bus Route 22** – Dublin to Ballina, Co. Mayo (Bus Eireann)
- **Bus Route 23** – Dublin to Sligo IT (Bus Eireann)
- **Bus Route 100x** – Dublin to Dundalk (Bus Eireann)
- **Bus Route 101x** – Drogheda – Balbriggan – Dublin City (Bus Eireann)
- **Bus Route 109A** – Dublin Airport/City Centre - Ashbourne - Ratoath - Dunshaughlin - Navan - Kells
- **Bus Route 193** – Ashbourne, Meath to Ballsbridge, Dublin

Pedestrian footways and pedestrian crossings are provided between the development and the existing bus stops. As such, the development is considered to have good access to local bus services.

#### 4.1.2 Access to The Luas

The development is located within 100m of 'The Point' Luas stop, which is on the Red line.

Given its proximity to the Luas Red line, which provides broader access to other rail and light rail connections within Dublin (see Figure 4-1), and the pedestrian crossing facilities at Mayor Street Upper, the development is considered to have high quality access to Dublin's rail network.



FIGURE 4-1 RAIL NETWORK IN DUBLIN

### 4.1.3 Local Amenities

The development’s location within Dublin City provides good access to different amenities, all of which will benefit residents of the new housing development. Key amenities are identified in Table 4-1, including the development’s distance to the amenity and the walking/cycling time.

**TABLE 4-1: LOCAL AMENITIES CLOSE TO THE PROPOSED DEVELOPMENT**

Amenity	Distance (approx.)	Pedestrian Journey Time (min)	Cyclist Journey Time (min)
Grocery/Retail	130m	2 mins	<1 min
The Luas Red Line (The Point)	140m	2 mins	<1 min
Gym	220m	3 mins	<1 min
Odeon Cinema	290m	3 mins	1 min
ATM	350m	3 mins	1 min
3Arena	350m	4 mins	2 mins
Collection of Restaurants/Cafés	350m	4 mins	2 mins
The Convention Centre	700m	9 mins	3 mins
Docklands Rail Station	900m	11 mins	3 mins
St Laurence O’Toole Church	1.1km	13 mins	5 mins
Life Pharmacy Hanover Quay	1.3km	15 mins	6 mins
Banks	1.3km	15 mins	6 mins
City Quay National School	1.8km	21 mins	7 mins
Ferry Terminal	2.2km	27 mins	8 mins

Given the variety of amenities available to residents of the new development, as highlighted in Table 4-1, the development is considered to be well located for pedestrians and cyclists wishing to use these services and amenities.

## 4.2 Building & Public Open Space Accesses

Some accessibility issues relating to Building and Public Open Spaces are discussed in Sections 3.3.7 and 3.3.14.

### 4.2.1 Issue

Visually impaired pedestrians may find it difficult to navigate the public areas on the ground floor of the development, as the pavement layout and pallet of materials may not support a clear pedestrian corridor to key entrances and amenities.

The absence of tactile guidance surfaces and colour contrast may lead difficulties for visually impaired pedestrians independently navigating these spaces.



### Recommendation

Ensure that visually impaired pedestrians are able to independently navigate the pedestrian concourse through the application of carefully considered pavement materials, colours, and tactile paving.

#### 4.2.2 Issue

It is not clear from the design drawings if the public garden spaces is flush with the surrounding paved areas, or if a kerb upstand is provided around its perimeter.

Should the public garden spaces be provided on a raised level, without ramps or dropped kerbs for access, mobility impaired users may be unable to access, and be discouraged from using, the amenity.

#### Recommendation

Ensure mobility impaired users can safely access the public garden spaces.

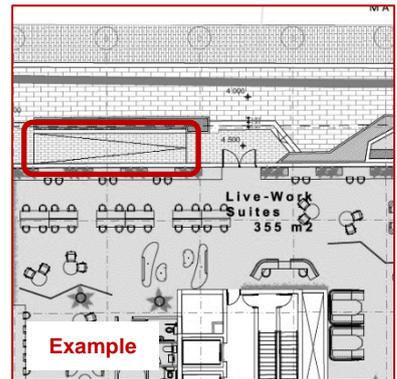


#### 4.2.3 Issue

Footway gradients within the development are unclear and could lead to user discomfort if long ramps with gradients steeper than 1:20 are provided.

#### Recommendation

Ensure ramps are constructed in accordance with the National Disability Authority's guidance publication "Building for Everyone (External Environment and Approach)".



### 4.3 Pedestrian Facilities

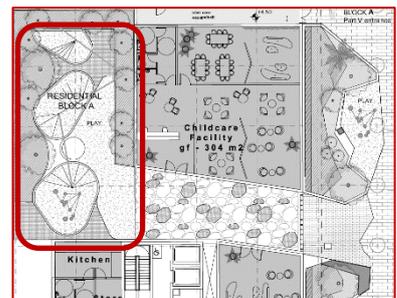
Some accessibility issues relating to Pedestrian Facilities have been discussed in Sections 3.3.3, 3.3.4, 3.3.9 and 3.3.14.

#### 4.3.1 Issue

It is unclear if families will have access to the Play area, or if this will be for the Childcare Facility's use only. Should families have access to the Play area, parents/grandparents may wish to sit and supervise their children/grandchildren, however, no seating has been indicated. This may require users to stand when supervising their children/grandchildren, leading to discomfort for the elderly or mobility impaired.

#### Recommendation

Provide additional seating at or close to the play area.

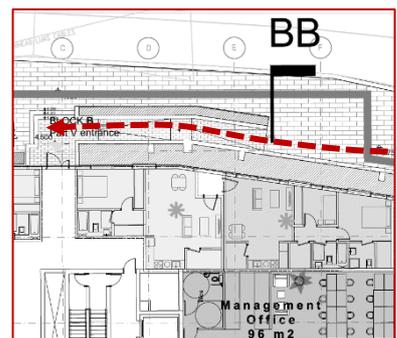


#### 4.3.2 Issue

Visually impaired pedestrians walking in a westbound direction on Mayor Street Upper may unintentionally continue onto the pedestrian basement access ramp, which has no through route, and become disoriented and confused.

#### Recommendation

Provide corduroy tactile paving at the start of the pedestrian basement access ramp, and colour contrast, to better advise and direct visually impaired pedestrians using Mayor Street Upper.



## 4.4 Target Groups

No accessibility issues have been identified relating to Target Groups.

## 4.5 Subways

No accessibility issues have been identified relating to Subways.

## 4.6 Junctions

Accessibility issues relating to junctions have been discussed in Sections 3.3.1, 0, 3.3.12 and 3.3.13.

## 4.7 Signage

### 4.7.1 Issue

The layout of the pedestrian plaza/concourse is relatively complex, and may be difficult for users, particularly those new to the area, to navigate the development correctly and efficiently. This may lead to users becoming disorientated, confused, and lost.

#### Recommendation

Provide measures (i.e. wayfinding signage) throughout the development to advise and direct users to key amenities and exits.

## 4.8 Public Transport

No accessibility issues have been identified relating to Public Transport.

## 4.9 Lighting

No accessibility issues have been identified relating to Lighting.

## 4.10 Visibility

Accessibility issues relating to visibility have been discussed in Section 3.3.1, 3.3.9, 3.3.10 and 3.3.12

## 4.11 Waste Facilities within the Development

### 4.11.1 Issue

It is unclear how refuse will be collected from the development, and how refuse trucks will access the location of the bin stores. The absence of a detailed refuse strategy could lead to refuse trucks having difficulty in accessing the refuse stores, or refuse bins being left in unsafe locations on the footway.

#### Recommendation

Ensure a refuse strategy is developed clearly explaining how refuse is to be collected and how refuse vehicles are to access the bin stores.

## 4.12 Carriageway Markings for Pedestrians

Accessibility issues relating to Carriageway Markings for Pedestrians have been discussed in Section 3.3.9.

## 4.13 Parking

### 4.13.1 Issue

Electric Vehicle (EV) parking spaces typically require additional width to support potentially different charging port connections on vehicles. The additional width allows space for electric cables, as well as user access to connect/disconnect the charging cables. The EV parking spaces within the basement carpark appear to have similar dimensions as neighbouring parking spaces, which may limit or preclude access for EV car owners.

#### Recommendation

Provide wider Electric Vehicle parking spaces within the basement carpark (see section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings' for guidance).

### 4.13.2 Issue

An existing EV parking space is currently located on North Wall Quay, providing electric charging for general members of the public. This EV parking space is not indicated on the design drawings, so it is assumed the EV parking space is to be removed.

The removal of this facility may inconvenience members of the general public who may currently charge their vehicle at this location.



#### Recommendation

The EV parking space should be retained on North Wall Quay or moved to a nearby location on North Wall Quay, Castleforbes Road or North Wall Avenue.

## 5 Non-motorised User and Cycle Audit

### 5.1 External Cycle Provision

No accessibility issues have been identified relating to External Cycling Provision.

### 5.2 Internal Cycle Provision

Accessibility issues relating to internal cycle provision have been discussed in Section 3.3.11 and 3.3.14.

### 5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.2	Hazard tactile paving has not been indicated at the top and bottom of steps and ramps within the development.	Corduroy tactile paving should be provided at the top and bottom of steps and ramps.	1	B
4.2	It is unclear if the scheme's concourse/central pedestrian plaza proposes a sufficient level of tonal contrast between safe zones and shared surfaces where the movement of cyclists is promoted. This could lead to pedestrian/cyclist collisions.	Ensure that vulnerable road users, in particular the visually impaired, are adequately informed of when they are expected to share space with cyclists.	1	B
4.2.1	Visually impaired pedestrians may find it difficult to navigate the development, as the pavement layout and pallet of materials may not support a clear pedestrian corridor to key entrances and amenities. The absence of tactile guidance surfaces and colour contrast may lead to visually impaired pedestrians becoming confused and lost.	Ensure that visually impaired pedestrians are able to independently navigate the pedestrian concourse through the application of carefully considered pavement materials, colours, and tactile paving.	1	B
4.2.2	It is not clear from the design drawings if the public open space is flush with the surrounding paved areas, or if a kerb upstand is provided on its perimeter. Should the public open space be provided on a raised level, without dropped kerb access, mobility impaired users may be unable to access, or be discouraged from using, the public open space amenity.	Ensure mobility impaired users can safely access the public open space.	1	A
4.2.3	Footway gradients within the development are unclear and may lead to user discomfort, particularly where long ramps with gradients steeper than 1:20 are provided.	Ensure ramps are construct in accordance with the National Disability Authority's guidance publication "Building for Everyone (External Environment and Approach).	1	A
4.3	No formal pedestrian crossing has been indicated at the development's basement carpark access ramp, which could lead to slips, trips and falls.	A formal uncontrolled pedestrian crossing, including dropped kerbs and tactile paving, should be provided at the development's basement carpark access.  Alternatively, prioritise pedestrian movements across the development's access by providing a continuous footpath.	1	A
4.3	Removal of existing tactile paving may lead to visually impaired pedestrians being unable to locate the existing controlled pedestrian crossings, or stepping into the carriageway without due care and attention, leading to vehicle/pedestrian collisions.	The existing tactile paving should be incorporated within the development's design and be modified to seamlessly tie-in with the development's footprint (e.g. tactile stem extended to the new back of footway).	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.3	Basement carparks do not include clearly designated pedestrian routes, which may increase the risk of vehicle/pedestrian collisions.	Provide clear pedestrians routes within the basement carpark and maximise inter-visibility between drivers and pedestrians on key pedestrian desire lines.	1	B
4.3.1	It is unclear if families will have access to the Play area, or if this will be for Childcare Facility use only. Should families have access to the Play area, parents/grandparents may wish to sit and supervise their children/grandchildren, however, no seating has been provided. This may force users to stand when supervising their children/grandchildren, leading to discomfort.	Provide additional seating at or close to the play area.	2	A
4.3.2	Visually impaired pedestrians walking in a westbound direction on Mayor Street Upper may unintentionally continue onto the pedestrian basement access ramp, which has no through route, and become disoriented and confused.	Provide corduroy tactile paving at the start of the pedestrian basement access ramp, and colour contrast, to better advise visually impaired pedestrians using Mayor Street Upper.	1	A
4.6	Direction of one-way system on Basement Level -3 may increase risk of conflicts at ramp access, leading to side-on and material damage collisions.	The direction of the one-way system should be reversed, such that traffic travels in an anti-clockwise direction, thus negating the need for vehicles to cross at the ramp access.	1	A
4.6	Visibility exiting Castleforbes Road may be restricted by planting indicated within the footpath, which could lead to side-on collisions.	Ensure the planting of trees within the scheme does not impede a driver's visibility when exiting side roads.	1	A
4.6	The existing junction control at the Castleforbes Road/North Wall Quay T-junction is not clear and may lead to side-on or overshoot collisions.	A Stop control junction should be provided at the Castleforbes Road/North Wall Quay T-junction.	1	A
4.7.1	The layout of the pedestrian plaza/concourse is relatively complex, and may be difficult for users, particularly those new to the area, to navigate the development correctly and efficiently. This may lead to users becoming disorientated, confused, and lost.	Provide measures (i.e. wayfinding signage) throughout the development to advise and direct users to key amenities and exits.	1	B
4.10	Drivers exiting parking spaces adjacent to basement walls will have restricted visibility, which may lead to side-on or vehicle/pedestrian collisions.	Remove parking spaces that are directly adjacent to the elevator/stairwell blocks.  Alternatively, use road markings to create a buffer zone that positions vehicles away from the elevator/stairwell block when travelling on the internal circulating lanes.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
4.11	It is unclear how refuse will be collected from the development, and how refuse trucks will access the location of the bin stores. The absence of a detailed refuse strategy could lead to refuse trucks having difficulty in accessing the refuse stores, or refuse bins being left in unsafe locations on the footway.	Ensure a refuse strategy is developed clearly explaining how refuse is to be collected and how refuse vehicles are to access the bin stores.	1	A
4.13.1	Electric Vehicle (EV) parking spaces typically require additional width to support potentially different charging port connections on vehicles. The additional width allows space for electric cables, as well as user access to connect/disconnect the charging cables. The EV parking spaces within the basement carpark appear to have similar dimensions as neighbouring parking spaces, which may limit or preclude access for EV car owners.	Provide wider Electric Vehicle parking spaces within the basement carpark (see section 7.6.16 of the Traffic Signs Manual (2019), Chapter 7 'Road Markings' for guidance).	1	A
4.13.2	An existing EV parking space is currently located on North Wall Quay, providing electric charging for general members of the public. This EV parking space is not indicated on the design drawings, so it is assumed the EV parking space shall be removed. The removal of this facility may inconvenience members of the general public who may currently charge their vehicle at this location.	The EV parking space should be retained on North Wall Quay or moved to a nearby location on North Wall Quay, Castleforbes Road or North Wall Avenue.	1	A
5.2	Doors opening into the footway may conflict with pedestrians and cyclists, leading personal injury collisions.	Doors should open into the building so as not to obstruct or conflict with pedestrians and cyclists on the footway.  However, this recommendation should not be adopted should it directly contradict building and fire safety regulations. Should building and fire regulations require the doors to open into the footway (i.e. open outwards), measures should be provided to alert pedestrians and cyclists.	1	A

**Priority**

- 1 – Immediate works required;
- 2 – Essential works required within 1 year;
- 3 - Desirable works required within 2 years;
- 4 – Long term works;
- 5 - Specific needs (e.g. pedestrian desire line not catered for)

**Cost (Indicative cost only)**

- A – Up to €2,500
- B – From €2,500 up to €10,000
- C - Between €10,000 up to €20,000

## 6 Appendix A - Road Safety Audit Problem Locations

