Pinnacle Consulting Engineers

Academy Street Development, Navan, Co. Meath

Quality Audit

P·M·C·E

October 2019

Pinnacle Consulting Engineers

Academy Street Development, Navan, Co. Meath

Quality Audit

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Rev	Prepared By	Reviewed By	Approved By	Issue Date	Reason for Revision
2.0	MAH/DOB	TAG	DOB	13th November 2019	Final Report
1.0	MAH/DOB	TAG	DOB	29th October 2019	Draft Report

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1 Introduction

1.1 General

This report was prepared in response to a request from Mr. Ronan Kearns of Pinnacle Consulting Engineers to provide a Quality Audit of the Academy Street Development, Navan in Co. Meath. The Quality Audit shall consider the following elements:

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

The Quality Audit followed a site visit on the 22nd October 2019. At the time of the site visit the weather was dry and the ground surface was dry. The traffic volumes during the site visit, in the vicinity of the site, were low to moderate, and pedestrians and cyclist volumes, as well as traffic speeds, were considered low.

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 in Navan in Co. Meath, which includes 544 dwellings comprising of 260 residential housing units, 284 apartment units and a creche. The development site is located (see Figure 2.1) in a greenfield site surrounded by existing residential developments, with proposed accesses onto Academy Street (3No. accesses) and an upgrade of Academy street/Dublin Road T-junction to a signalised junction. Pedestrian links are also provided in the north, south, east and west sides of the development.

FIGURE 2.1: SITE LOCATION PLAN (SOURCE: OPENSTREETMAP)

The development is bounded to the north by a greenfield site reserved for a school, to the south by residential development, to the east by Academy Road, and to the west by a residential development. The proposed development will have vehicle access on Academy Street.

- **Academy Street:** Academy Street is an existing road with a posted speed limit of 50kph which runs in a north-south direction along the development's eastern boundary. The road consists of two wide lanes, on-street parking and footpaths on both sides. Academy Street forms a Crossroad junction with Bridge Street and the R161 Circular Road at its northern end. Academy Street forms a T-junction with Dublin Road (R147) at its southern end.

- **Dublin Road (R147):** Dublin Road is a two-way single carriageway with a posted speed limit of 50kph, which runs in a north-south direction parallel to Academy Street. Dublin Road (R128) connects Navan in the north to Dunshaughlin in the south as well as Dublin via the M3. A pedestrian footway is provided adjacent the southbound lane and the footpath which terminates c.50m from the Dublin Road/Academy Street T-junction. Two existing bus stops are located on Dublin Road, near the proposed pedestrian access, servicing Bus Route NX (Wilton Terrace – Navan Mercy Convent).

The proposed development shall include the following key elements:

- 260 Residential Units with off street parking.
- 284 apartment Units with parking.
- Approximately 2.7ha of Public Open Space.
- Traffic Calming at junctions within the development.
- A signalised junction between Academy Street and Dublin Road, including pedestrian crossings at each arm of the junction.
- Cycle lane on the northern access road through the development.
- Pedestrian footways throughout the development site.
- Pedestrian linkages to residential areas (school) surrounding the development (in the north, south, east and west).

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. David O'Brien
(PMCE Ltd.)
(BA, BAI, PgDip(PM), CEng, MIEI, RSACert)
Road Safety Audit Team Leader

Mr. Mazen Al Hosni
(PMCE Ltd.)
(BEng, MIEI,)
Road Safety Audit Team Member

The Road Safety Audit took place during October 2019 and comprised an examination of the documents provided by the designers (see section 3.6). A site visit was undertaken on the 22nd October 2019. Traffic volumes were considered low to moderate and speeds were considered low, as were pedestrian and cycle numbers.

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 Road Safety Audit

3.2.1 Problem

Drawing: *General Problem*

Summary: *Insufficient forward visibility to parking arrangements*

It is proposed to provide parking for residential units at bends and junctions within the development. The Audit Team are aware this is a low speed environment however, it is unclear if sufficient forward visibility is provided to drivers entering/exiting proposed parking spaces. Should insufficient visibility be provided, this may result in side-on collisions.

Recommendation

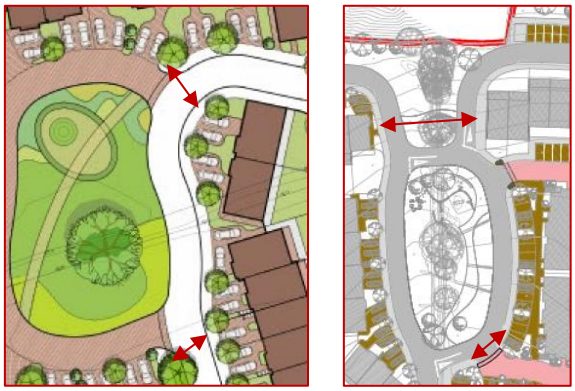
Ensure sufficient inter-visibility is provided between drivers continuing along main routes and cars entering/exiting parking spaces throughout the development.

3.2.2 Problem

Drawing: General Problem

Summary: *Designated crossing points within the residential road network have not been indicated at junctions.*

Pedestrian crossing points, including dropped kerbs and tactile paving, have not been indicated at several locations within the proposed development. A failure to provide dropped kerbs at crossing points, and along pedestrian desire lines, could result in mobility impaired pedestrians being unable to safely and independently enter the carriageway to cross to the opposite footpath. This could result in slips, trips or falls as these pedestrians attempt to descend the kerb, or where tactile paving is not provided, an increased risk of visually impaired pedestrians unintentionally entering the carriageway where they could be struck by vehicles.



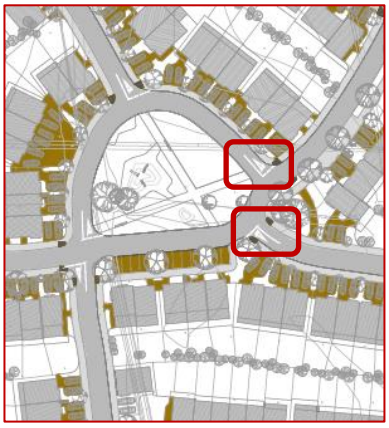
Recommendation

Pedestrian crossings, including dropped kerbs and tactile paving, should be provided across all junctions within the proposed development, and should be located to reflect desire lines.

3.2.3 Problem

Drawing: *General Problem*

Summary: *Unclear if Yield controlled junctions* can meet the more onerous visibility requirements



Throughout the internal layout of the scheme, yield controls are indicated at a number of junctions. The use of yield/give-way controls may encourage drivers to approach at a speed that leads to them failing to stop when required. Four arm junctions may be particularly susceptible to vehicle overshoot incidents due to its layout. Additionally, it may not be possible to meet the more onerous visibility requirements associated with a Yield control junction, which may exacerbate this problem.

Recommendation

'Stop' controls should be provided at the internal junctions with the associated signs & markings so that drivers are clear on the relative priorities.

3.2.4 Problem

Drawing: *General Problem*

Summary: *It is unclear if there is sufficient swept path for vehicles entering/exiting parking spaces throughout the scheme.*

There are a number of locations throughout the scheme where insufficient swept path may be provided to vehicles entering/exiting parking spaces. This may result in vehicles having to undertake complex turning manoeuvres to access the parking spaces, leading to material damage collisions.

Recommendation

Swept path analysis should be undertaken to ensure sufficient turning space is provided to all car parking spaces. Where necessary, the layout should be adjusted to accommodate swept path.

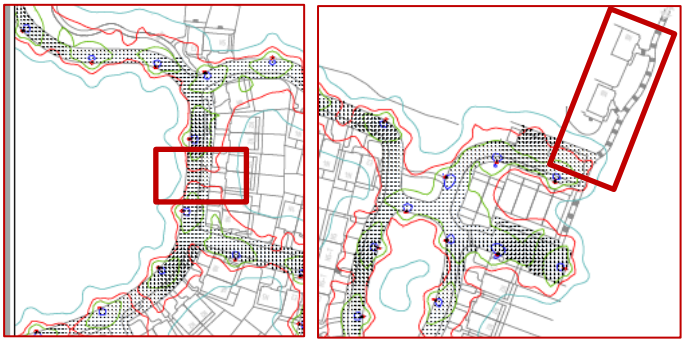
3.2.5 Problem

Drawing: *General Problem*

Summary: *Potential dark spots within carriageway and pedestrian footpaths.*

Lighting columns are proposed throughout the scheme, however, the spacing of lighting columns along carriageways may result in dark spots. Dark spots within the carriageway could result in drivers being unable to see vulnerable road users at crossings or to distinguish the edge of carriageway from the footpath leading to VRUs being struck by a vehicle or to vehicles colliding with the kerb and sustaining material damage.

Additionally, lighting columns have not been indicated along all pedestrian routes. Insufficient lighting within walkways may result in pedestrians conflicting with other pedestrians and/or cyclists, resulting in slips, trip or falls.



Recommendation

Sufficient lighting should be provided within pedestrian walkways and the carriageway. Lighting columns should be located to the back of the footway to maximise the effective footway width.

3.2.6 Problem

Drawing: *General Problem*

Summary: *Proposed trees may block visibility at junctions, pedestrian crossings and to parked vehicles within the development.*

It is unclear if the proposed location of trees within verges throughout the scheme shall obstruct visibility for drivers exiting junctions and proposed parking within the proposed development. This could result in drivers exiting side roads and driveways when it is unsafe to do so ahead of oncoming vehicles leading to side-on collisions.

Additionally, the location of trees may block visibility to pedestrians attempting to cross which may result in vehicle/pedestrian collisions.

Recommendation

Ensure sufficient visibility is provided at all junctions, parking arrangements and pedestrian crossings within the proposed development.

3.2.7 Problem

Drawing: *General Problem*

Summary: *Insufficient information regarding gradients provided.*

Insufficient information regarding gradients have been provided to the Audit Team. Steep gradients within pedestrian facilities may lead to pedestrians/cyclists being unable to safely access areas within the development. This may result in fatigue, resulting in slips, trips, falls and mobility impaired pedestrians losing control while attempting to traverse inclines.

Additionally, it is unclear if guardrails (or other measures) are provided throughout the development. Without the provision of guardrails (or other measures) down steps/stairwells, there is an increased risk of pedestrians and cyclists falling from height, leading to serious personal injury.

Recommendation

Ensure gradients on footpaths are in accordance with national disability authority guidelines and provide measures that protect pedestrians and cyclists from height hazards.

3.2.8 Problem

Drawing: *General Problem*

Summary: *Parking bay may overhang the footpath, reducing the effective footway width*

Perpendicular parking bays are proposed within the development. Vehicles parking within these parking bays may overhang the adjoining footpath. This may result in a reduced effective footpath width, where pedestrians may have to step into the grass verge, resulting in slips, trips and falls as a result of an uneven surface.

Recommendation

Provide measures to ensure the effective footpath width is not reduced below 1.8m.

3.2.9 Problem

Drawing: *General Problem*

Summary: *Information regarding lighting along Academy Street not provided to the Audit Team*

A lighting column exists where the proposed southern access to the development onto Academy Street is located. No public lighting columns have been indicated at the proposed access. A lack of public lighting provision may lead to drivers being unable to see vulnerable road users on the footway or in the carriageway during the hours of darkness, resulting in an increased risk of collisions between vehicles and vulnerable road users.

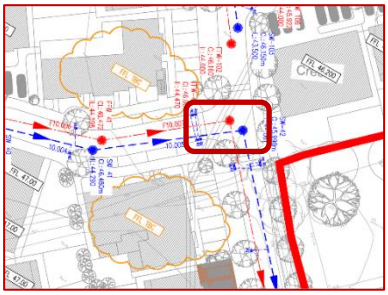
Recommendation

Ensure sufficient lighting is provided on Academy Street where changes are proposed.

3.2.10 Problem

Drawing: *General Problem*

Summary: *Chamber covers within the carriageway may result in loss of traction.*



The proposed drainage layout indicates chamber covers located within the carriageway. Chamber covers located within the carriageway may result in a loss of traction for vehicles during wet or icy conditions leading to loss of control type collisions, a particular concern for powered two-wheeled vehicles and where the chamber covers are located within junctions.

Recommendation

Where possible, chamber covers should be located within the grass verges.

Alternatively, chamber covers with anti-slip surfacing could be provided.

3.2.11 Problem

Drawing: *General Problem*

Summary: *Junction layout strategy may lead to unsafe vehicle manoeuvres*

The proposed road layout within the development results in unclear and potentially unsafe junction arrangements including;

- Crossroads - Crossroad junctions should be avoided where possible, as drivers approaching the Yield line may be unable to discern the crossing road at the junction, leading to vehicles entering the crossing road without slowing/stopping. This could result in overshoot incidents and side-on collisions with vehicles travelling on the major road.

- Cul-de-Sac – It is unclear how large vehicles will perform a 180° turn. If HGV drivers are unable to turn their vehicle, they may be forced to reverse along the road where there is an increased risk of a rear-end-shunt, vehicle/pedestrian, vehicle/cyclist or material damage collision.

Recommendation

A high-level review should be undertaken to identify junction forms and arrangements which are more consistent with DMURS, and better mitigate the problems identified above.

Additionally, the designer should determine if the number of junctions proposed is required, and where possible, seek opportunities to simplify the number of junctions within the development and ensure side road drivers have sufficient visibility at junctions with advance warning to priority junctions.

3.2.12 Problem

Drawing: *General Problem*

Summary: *No provision for mobility carparking spaces*

It appears from the drawings that there are no mobility impaired parking bays provided within the development. In a development of this scale, it may be necessary to cater for mobility impaired parking spaces. Lack of provision of designated parking spots may result in mobility impaired drivers or passengers having to park a significant distance from their residential block resulting in possible vehicle-pedestrian collisions.

Recommendation

Ensure adequate mobility impaired parking is located within close proximity to entrances to apartment blocks and the proposed Crèche.

3.2.13 Problem

Drawing: *General Problem*

Summary: *Visibility to pedestrians may be impeded by parked cars*

It is proposed to provide parking within close proximity to junctions which may result in reduced visibility to crossing pedestrians. This may result in vehicle/pedestrian collisions, particularly where high sided vehicles are parked in parking bays.

Recommendation

Ensure parking arrangements are sufficiently set back from junctions and pedestrian crossings to provide sufficient inter-visibility to pedestrians.

3.2.14 Problem

Drawing: *General Problem*

Summary: *Shared surface indicated adjacent to house may be too narrow for a vehicle*

Shared surfaces are proposed between a number of houses within the scheme. There is a concern that drivers may attempt to continue where insufficient width is provided leading to material damage collisions

Recommendation

Where insufficient width is provided for shared surfaces, amend the layout to a footpath and provide measures to reduce the risk of drivers continuing along pedestrian routes.

3.2.15 Problem

Drawing: *General Problem*

Summary: *Unclear pedestrian links leading into junction mouth.*

Several footpath links are proposed throughout the scheme that do not have an adjoining footpath, or effectively direct pedestrians into the mouth of junctions. This may result in pedestrians being unable to access the footway on the opposite side of the carriageway, and be forced to travel along the road edge until dropped kerb access is provided. This may result in an increased risk of a pedestrian/vehicle collision.

Recommendation

Ensure pedestrians are directed to safe and direct crossing points which are supported by dropped kerbs and tactile paving.

3.2.16 Problem

Drawing: *General Problem*

Summary: *Visually impaired pedestrians unable to cross shared surfaces.*

It is proposed to provide shared surfaces at a number of locations with the scheme with adjoining footpaths. Without sufficient warning, visually impaired pedestrians may continue across shared surfaces and be unable to locate the adjoining footpath. This may result in visually impaired pedestrians walking into the carriageway resulting in a vehicle/pedestrian collision.

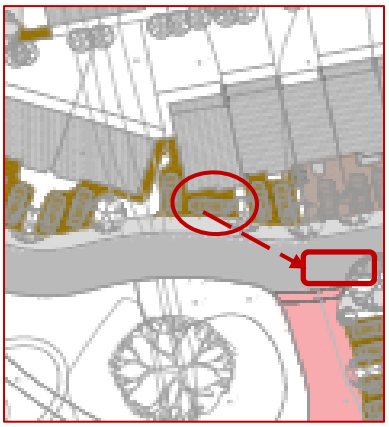
Recommendation

Provide a continuous footpath across proposed parking arrangements and ensure visually impaired pedestrians are sufficiently warning of change of surfaces using tactile paving.

3.2.17 Problem

Drawing: *Drawing No D061/038*

Summary: *Unsafe entering/exiting manoeuvres to proposed car parking space.*



It is unclear how drivers will adequately enter/exit the proposed car parking space and if sufficient visibility is provided to approaching vehicles. Insufficient swept path may lead to drivers having to undertake complex turning manoeuvres over the footpath to access the parking spaces, leading to vehicle pedestrian/material damage collisions. Additionally, insufficient visibility to approaching drivers may result in a side swipe collision.

Recommendation

The proposed parking arrangement should be amended to ensure ease of access to/from the residential unit and sufficient inter-visibility is provided to approaching vehicles.

3.2.18 Problem

Location: *Academy Street proposed northern access*

Summary: *Unclear if the parallel parking on Academy Street to be removed.*

It is unclear to the Audit Team if an existing utility pole at the proposed access and parallel parking on Academy Street is to be removed where visibility spays may be impeded. Insufficient visibility could result in unsafe exiting manoeuvres and reduced reaction time for drivers on Academy Street, resulting in side-on collisions.

Recommendation

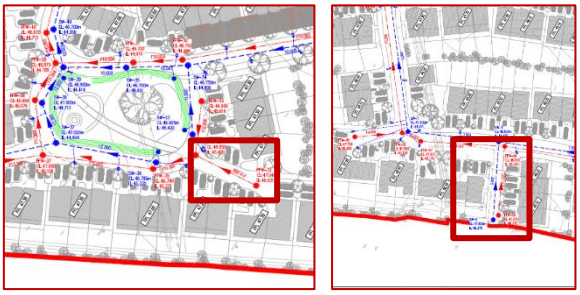
Ensure sufficient visibility splays are provided at accesses, and that parking spaces/utility poles are removed/relocated where necessary.

3.2.19 Problem

Location: *Drawing No D061/070*

Summary: *Unclear if there is sufficient drainage provision within the proposed development.*

It is unclear if sufficient drainage provision has been provided within the development, particularly on shared surfaces Road No. 9B and 5B. Should inadequate drainage measures be provided, this could lead to ponding on the footpath or carriageway resulting in slips, trips and falls during wet or icy weather.



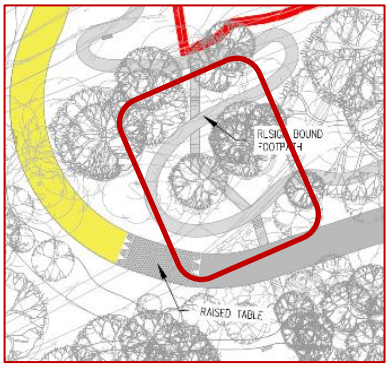
Recommendation

Ensure that the footpath and carriageway is adequately drained.

3.2.20 Problem

Drawing: *Footpath at open Space*

Summary: *No Hazard Tactile paving at top and bottom of steps*



It proposed to provide a spiralling footpath with an alternative footpath (with steps) crossing at a number of locations. Without hazard tactile paving at these crossings, visually impaired pedestrians may continue along the footpath with steps and be insufficiently aware of the vertical hazard. This may result in slips trips, falls and serious injuries.

Recommendation

Warning tactile paving should be provided at the top and bottom of steps.

3.2.21 Problem

Drawing: *Academy Road proposed entrance to apartment blocks*

Summary: *Visibility to approaching drivers to right turners impeded.*

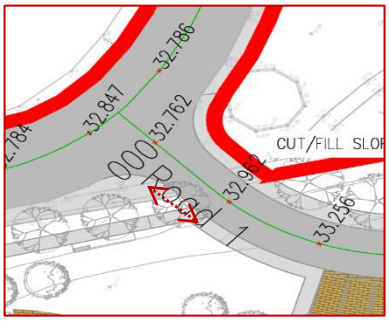
There is an existing construction site with hoarding on the eastern side of Academy Street. Drivers continuing north along Academy Street may have restricted visibility to right turners attempting to access the apartments. Insufficient visibility to right turning vehicles may result in side-on collisions.

Recommendation

Ensure visibility to vehicles entering/exiting the proposed access is sufficient for all users and is not impeded by the existing hoarding or approved future development on the eastern side of Academy Street.

3.2.22 Problem

Drawing: *Proposed southern access onto Academy Street*



Summary: *Footpath terminates with no link to Academy Street footpath.*

The proposed pedestrian footway at the southern access to the development is not linked to Academy Street and it is unclear if there is a pedestrian crossing at this location. A lack of safe crossing facilities or a link between footpaths for pedestrians, particularly partially sighted or mobility impaired pedestrians, may lead to pedestrians crossing where it is unsafe to do so or continuing along uneven surfaces leading to slips, trips and falls.

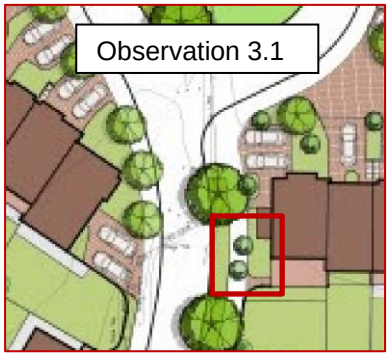
Recommendation

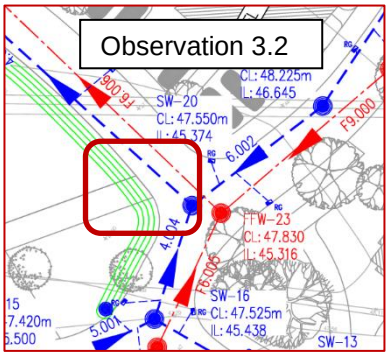
Provide a link between the internal footpath, and the footpath on Academy Street.

3.3 Observations

3.3.1 Trees are indicated within pedestrian footpaths. It is assumed this is a CAD error and trees are to be located within grass verges.

3.3.2 It is proposed to provide swales along the carriageway edge at open spaces. Swales are indicated within pedestrian footpaths and it is assumed this is a CAD error. It is assumed drainage will be underground for a sufficient distance either side and underneath footpaths to ensure no vertical hazards are located along pedestrian desire lines.





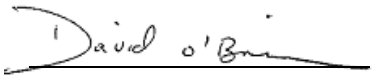
3.4 Road Safety Audit Team Statement

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.

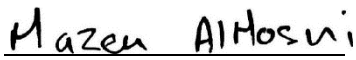
The Road Safety Audit Team has not been involved in the design of this scheme.

ROAD SAFETY AUDIT TEAM LEADER

David O'Brien Signed: 

Dated: 13/11/2019

ROAD SAFETY AUDIT TEAM MEMBER

Mazen Al Hosni Signed: 

Dated: 13/11/2019

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	☑	☐
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)

3.6 Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Site Layout 1-1000 A1	-	-
Phasing	1828 P 110	-
P190101 - NAVAN, Belmont - Traffic & Transport Assessment (No Appendices)	P190101	May 2019
P190101 - NAVAN, Belmont - Traffic & Transport Assessment (Full)	P190101	May 2019
P190101 - NAVAN Belmount - Construction Traffic Managment Plan_Rev1	P190101	May 2019
Open Space	1828 P 109	-
eircom_CBYD (002)		15/05/19
D061-SK67	D061-SK67	-
D061-SK073- Road Layout-Sheet 2 Of 2	-	-
D061-SK072- Road Layout-Sheet 1 Of 2	-	-
D061-SK071 Drainage Layout Sheet 2 Of 2	-	-
D061-SK070 Drainage Layout Sheet 1 Of 2	-	-
D061-053-A_Road Markings&Signs 1_1000	D061-053	A
D061-052-A_Road Layout 1_1000	D061-052	A
D061-049-A_Swept Path Analysis Medium Car 4 of 4	D061-049	A
D061-048-A_Swept Path Analysis Medium Car 3 of 4	D061-048	A
D061-047-A_Swept Path Analysis Medium Car 2 of 4	D061-047	A
D061-046-A_Swept Path Analysis Medium Car 1 of 4	D061-046	A
D061-045-A_Swept Path Analysis Fire Tender	D061-045	A
D061-044-A_Swept Path Analysis Refuse Vehicle	D061-044	A
D061-043-C_Sightlines and Junction Arrangements	D061-043	C
D061-039-A_Road Markings&Signs 4 of 4	D061-039	A
D061-038-A_Road Markings&Signs 3 of 4	D061-038	A
D061-037-A_Road Markings&Signs 2 of 4	D061-037	A
D061-036-A_Road Markings&Signs 1 of 4	D061-036	A
D061-035-A_Proposed Road Profiles 4 of 4	D061-035	A
D061-034-A_Proposed Road Profiles 3 of 4	D061-034	A
D061-033-A_Proposed Road Profiles 2 of 4	D061-033	A
D061-032-A_Proposed Road Profiles 1 of 4	D061-032	A
D061-031-A_Road Layout 4 of 4	D061-031	A
D061-030-A_Road Layout 3 of 4	D061-030	A
D061-029-A_Road Layout 2 of 4	D061-029	A
D061-028-A_Road Layout 1 of 4	D061-028	A
Accommodation Mix	1828 P 108	-
Academy Street Energy statement	-	0
Site service layouts proposed public lighting layout (c) Sheet 3 of 3	3114[6-]03	0
Site service layouts proposed public lighting layout (b) Sheet 2 of 3	3114[6-]02	0
Site service layouts proposed public lighting layout (A) Sheet 1 of 3	3114[6-]01	0
20180828-028_A3	-	28/8/18
Tree classification	18221_T_101	Apr19
Tree Survey_ Report	18221	Jan 19
Tree protection & removal	18221-T-103	Apr19
Tree constraints	18221-T-102	Apr19
18221-D05-LVIA-BaselineReport	-	Apr19
18221-D04-LandArchReport	-	Apr19

Road Safety Audit Feedback Form

Scheme: Academy Street Development, Navan, Co. Meath

Route No. -

Audit Stage: Quality Audit

Date Audit Completed: 26th October 2019

	To Be Completed By Designer			To Be Completed by Audit Team Leader
Paragraph No. in Safety Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure**	**Alternative measures or reasons accepted by auditors (yes/no)**
3.2.1	Yes	Yes		
3.2.2	Yes	Yes		
3.2.3	Yes	Yes		
3.2.4	Yes	Yes		
3.2.5	Yes	Yes		
3.2.6	Yes	Yes		
3.2.7	Yes	Yes		
3.2.8	Yes	Yes		
3.2.9	Yes	Yes		
3.2.10	Yes	Yes		
3.2.11	Yes	Yes		
3.2.12	Yes	Yes		
3.2.13	Yes	Yes		

3.2.14	Yes	Yes		
3.2.15	Yes	Yes		
3.2.16	Yes	Yes		
3.2.17	Yes	Yes		
3.2.18	Yes	Yes		
3.2.19	Yes	Yes		
3.2.20	Yes	Yes		
3.2.21	Yes	Yes		
3.2.22	Yes	Yes		

Signed: **Designer** **Date 12/11/19**

Signed: **Audit Team Leader** **Date** 13/11/2019

Signed: _____ **Employer** **Date**_____

4 Accessibility & Walkability Audit

4.1 Introduction

A new residential development is proposed in Navan in Co. Meath, which includes 544 dwellings comprising of 260 residential housing units, 284 apartment units and a creche. The development site is located (see Figure 4.1) with proposed accesses onto Academy Street (3No accesses), and upgrading the Academy Street/Dublin Road T-junction to a signalised junction. Pedestrian links are also provided in the north, south, east and west sides of the development as shown in Figure 4.1.

FIGURE 4.1: PEDESTRIAN LINKS WITHIN THE DEVELOPMENT (SOURCE: OPENSTREETMAP)

As part of the proposed signalised junction between Academy Street and Dublin Road it is proposed to provide a new footpath linking the existing footpath along Academy Street to the signalised junction to facilitate a controlled pedestrian crossing of Academy Street and Dublin Road.

The width of the proposed pedestrian footways has not been provided, though they are expected to be between 1.8m-2.0m to allow for obstructed movement of pedestrians.

The existing pedestrian footway width along Academy Street is approximately between 1.2m-2.0m, varying along its length. The footway is narrow (1.2m approx.) at sections along Academy Street including at the proposed south-eastern link to the development.

4.1.1 Access to local bus network

Existing bus stops are located within 200m of the proposed south-eastern pedestrian access to the development serving bus routes NX, 179, 109, 109a, 109x, 110a/b/c and 190a. A bus stop, denoted as “Ma Owyer's Guesthouse”, is located approximately 100m north of the access for both northbound and southbound routes. Additionally, a bus stop, denoted as “Ardboyne Hotel”, is located approximately 200m south of the pedestrian access. It is considered that the development will have good access to the bus network as shown in Table 4-1 below.

TABLE 4-1 BUS ROUTE NEAR DEVELOPMENT

Bus Stop (Name)	Proximity to the development	Bus Route	Travelling between
Ma Owyer's Guesthouse	C.100m north of the south-eastern access	NX	Navan (Rathholdren Road) and Dublin (Wilton Terrace.
Ardboyne Hotel	C.200m south of the south-eastern access	179	Cootehill (Market Street) and UCD Sports Centre.
		190a	Drogheda – Navan – Trim
		109a	Dublin (Busáras) and Kells (Business Park)
		109	Dublin (Busáras) and Virginia
		109x	Dublin (Busáras) and Cavan (Bus Station – Farnham St)
		110a/b/c	Local bus route to/from Navan Shopping Centre

4.1.2 Local Amenities

Navan Town Centre is located approximately 900m from the northern vehicular access to the development which includes a number of typical amenities within a 12min walk from the development site, including schools, supermarkets, sporting facilities, pharmacies, theatres, health centres, bars and restaurants. As noted in Table 4-2, Johnstown Shopping Centre is also located less than a 14min walk from the proposed pedestrian access within the south-eastern corner of the development.

TABLE 4-2: LOCAL AMENITIES CLOSE TO THE PROPOSED DEVELOPMENT

Amenity	Distance (approx.)	Journey Time (approximately from a development access)	Direction from Development
Johnstown Shopping Centre	1.1km	14min	Southeast
Kiddy Academy (Montessori)	<100m	1min	East
Maxol MACE Riverside	<100m	1min	East
Playmate Pre School	<100m	1min	North
John Smyths Mini Market	350m	4min	North
The Seven Arches Restaurant	400m	4min	North
Bozena Sarek Hairdressing	450m	5min	North
P Clarke's Bar	700m	9min	North
Navan Rugby Football Club	500m	6min	South
Ardboyne Hotel	350m	5min	South

Amenity	Distance (approx.)	Journey Time (approximately from a development access)	Direction from Development
Navan Tennis Club	500m	6min	South
Ard Rí Community National School	600m	8min	South
Balreask School	850m	11mon	South
Beaufort College	1.3km	16min	West
Gaelscoil Éanna	1km	13min	West

4.1.3 Cycle Facilities

It is proposed to provide cycle facilities within the proposed development from the northern vehicular access to the location of the entrance site reserved for a school. Currently, there are no cycle facilities along Academy Street or the Dublin Road. However, the Dublin Road is part of the cycle network plan with reference NA2 as indicated in Figure 4-2.

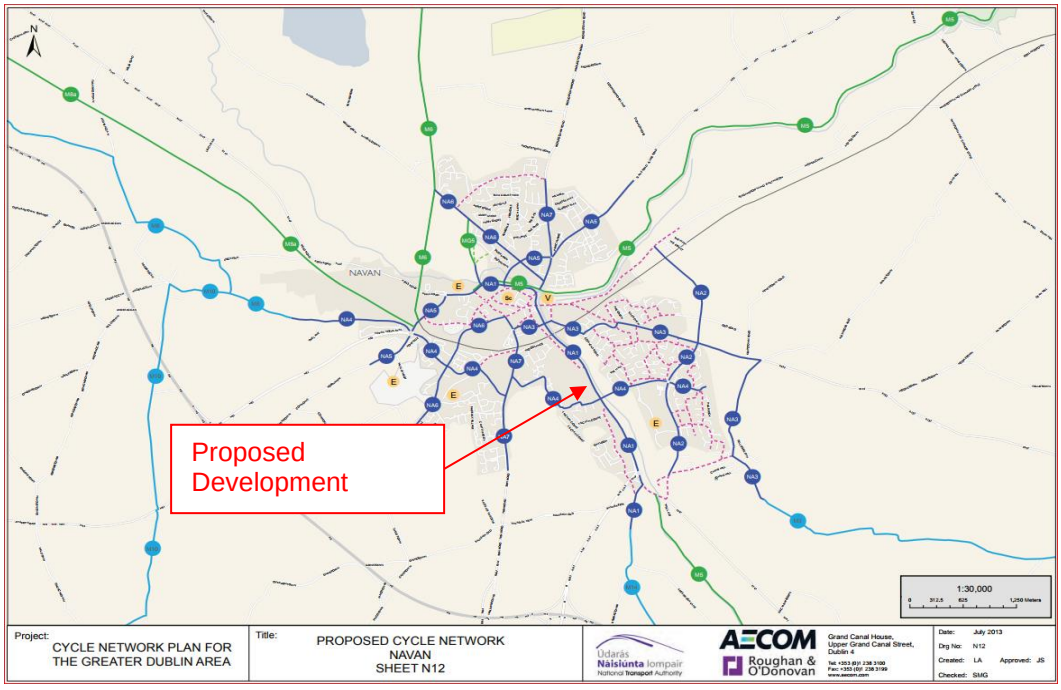


FIGURE 4-2 NAVAN CYCLE NETWORK PLAN

4.2 Building Accesses

4.2.1 Issue

Steps have been indicted on the footpath leading to the pedestrian access which links to bus stop and 2no houses. Without adequate provisions for mobility impaired and/or pedestrians with wheeling prams/buggies, pedestrians may be unable to access the 2no. houses, so will have extended journey times to/from houses within the development.

Recommendation

Provide access for mobility impaired pedestrians to/from the proposed pedestrians access leading onto Dublin Road.

4.3 Pedestrian Crossing Facilities

Accessibility issues relating to pedestrian crossing facilities have been discussed in Section 3.2.2, 3.2.13 & 3.2.15.

4.4 Target Groups

Accessibility issues relating to target groups have been discussed in Section 3.2.7, 3.2.16 & 3.2.20

4.5 Subways

No accessibility issues have been identified relating to Subways.

4.6 Junctions

No accessibility issues have been identified relating to Junctions.

4.7 Signage

No accessibility issues have been identified relating to Signage.

4.8 Public Transport

No accessibility issues have been identified relating to Public Transport.

4.9 Lighting

Accessibility issues relating to lighting have been discussed in Section 3.2.5, 3.2.9

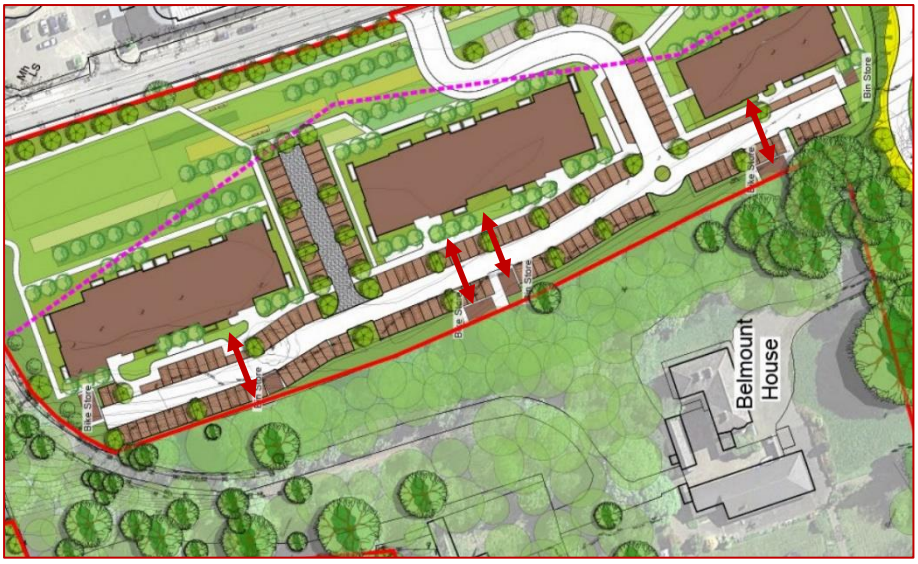
4.10 Visibility

Accessibility issues relating to visibility have been discussed in Section 3.2.6

4.11 Waste Facilities within the Development

4.11.1 Issue

It is unclear if sufficient access is provided to bin stores located outside apartments blocks. Without adequate pedestrian links, pedestrians, particularly mobility impaired may be unable to access bin stores where no dropped kerbs are provided, and they may be required to travel between parked vehicles.



Recommendation

Ensure sufficient links are provided to the bin stores from apartment blocks and are unobstructed by parked vehicles.

4.12 Carriageway Markings for Pedestrians

No accessibility issues have been identified relating to carriageway markings for pedestrians.

4.13 Parking

Accessibility issues relating to parking have been discussed in Section 3.2.4, 3.2.8 & 3.2.12

4.13.1 Issue

A number of private residential accesses indicate that two car parking spaces are provided. However, where two cars are illustrated, it is unclear if sufficient space is maintained for pedestrians to access the proposed residential unit. Without sufficient space, pedestrians, particularly mobility impaired may be unable to access the proposed unit.

Recommendation

Ensure sufficient pedestrian access is maintained to residential units within the development.

5 Non-motorised User and Cycle Audit

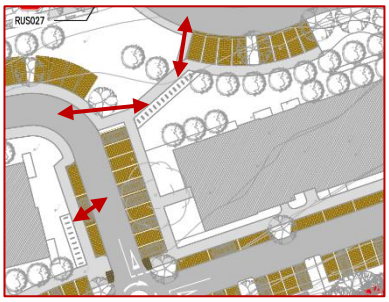
5.1 External Cycle Provision

No accessibility issues have been identified relating to External Cycle Provisions.

5.2 Internal Cycle Provision

5.2.1 Issue

The drawings indicate cycle parking within the proposed development. However, it is unclear how cyclists will gain access to the cycle parking area. Additionally, it is unclear how many bicycle stands are proposed and if they are sheltered/secured.



Recommendation

To encourage cycle use, bicycle stands should be located in a well-lit open space which is easily accessed. Additionally, the cycle stands should be sheltered and secured.

5.3 Quality Audit Action Plan

Issue	Situation	Action/Adjustment	Priority	Cost
4.2.1	Steps have been indicted on the footpath leading to the pedestrian access which links to bus stop and 2no houses. Without adequate provisions for mobility impaired and/or pedestrians with wheeling prams/buggies, pedestrians may be unable to access the 2no. houses, so will have extended journey times to/from houses within the development.	Provide access for mobility impaired pedestrians to/from the proposed pedestrians access leading onto Dublin Road.	1	C
4.3	Pedestrian crossing points, including dropped kerbs and tactile paving, have not been indicated at several locations within the proposed development. A failure to provide dropped kerbs at crossing points, and along pedestrian desire lines, could result in mobility impaired pedestrians being unable to safely and independently enter the carriageway to cross to the opposite footpath. This could result in slips, trips or falls as these pedestrians attempt to descend the kerb, or where tactile paving is not provided, an increased risk of visually impaired pedestrians unintentionally entering the carriageway where they could be struck by vehicles.	Pedestrian crossings, including dropped kerbs and tactile paving, should be provided across all junctions within the proposed development, and should be located to reflect desire lines.	1	C
	It is proposed to provide parking within close proximity to junctions which may result in reduced visibility to crossing pedestrians. This may result in vehicle/pedestrian collisions, particularly where high sided vehicles are parked in parking bays.	Ensure parking arrangements are sufficiently set back from junctions and pedestrian crossings to provide sufficient inter-visibility to pedestrians.	1	A
	Several footpath links are proposed throughout the scheme that do not have an adjoining footpath, or effectively direct pedestrians into the mouth of junctions. This may result in pedestrians being unable to access the footway on the opposite side of the carriageway, and be forced to travel along the road edge until dropped kerb access is provided. This may result in an increased risk of a pedestrian/vehicle collision.	Ensure pedestrians are directed to safe and direct crossing points which are supported by dropped kerbs and tactile paving.	1	A
4.4	Insufficient information regarding gradients have been provided to the Audit Team. Steep gradients within pedestrian facilities may lead to pedestrians/cyclists being unable to safely access areas within the development. This may result in fatigue, resulting in slips, trips, falls and mobility impaired pedestrians losing control while attempting to traverse inclines. Additionally, it is unclear if guardrails (or other measures) are provided throughout the development. Without the provision of guardrails (or other measures) down steps/stairwells, there is an increased risk of pedestrians and cyclists falling from height, leading to serious personal injury.	Ensure gradients on footpaths are in accordance with national disability authority guidelines and provide measures that protect pedestrians and cyclists from height hazards	1	C

Issue	Situation	Action/Adjustment	Priority	Cost
	It is proposed to provide shared surfaces at a number of locations with the scheme with adjoining footpaths. Without sufficient warning, visually impaired pedestrians may continue across shared surfaces and be unable to locate the adjoining footpath. This may result in visually impaired pedestrians walking into the carriageway resulting in a vehicle/pedestrian collision.	Provide a continuous footpath across proposed parking arrangements and ensure visually impaired pedestrians are sufficiently warning of change of surfaces using tactile paving.	1	C
	It proposed to provide a spiralling footpath with an alternative footpath (with steps) crossing at a number of locations. Without hazard tactile paving at these crossings, visually impaired pedestrians may continue along the footpath with steps and be insufficiently aware of the vertical hazard. This may result in slips trips, falls and serious injuries.	Warning tactile paving should be provided at the top and bottom of steps.	1	B
4.9	Lighting columns are proposed throughout the scheme, however, the spacing of lighting columns along carriageways may result in dark spots. Dark spots within the carriageway could result in drivers being unable to see vulnerable road users at crossings or to distinguish the edge of carriageway from the footpath leading to VRUs being struck by a vehicle or to vehicles colliding with the kerb and sustaining material damage. Additionally, lighting columns have not been indicated along all pedestrian routes. Insufficient lighting within walkways may result in pedestrians conflicting with other pedestrians and/or cyclists, resulting in slips, trip or falls.	Sufficient lighting should be provided within pedestrian walkways and the carriageway. Lighting columns should be located to the back of the footway to maximise the effective footway width.	1	C
	A lighting column exists where the proposed southern access to the development onto Academy Street is located. No public lighting columns have been indicated at the proposed access. A lack of public lighting provision may lead to drivers being unable to see vulnerable road users on the footway or in the carriageway during the hours of darkness, resulting in an increased risk of collisions between vehicles and vulnerable road users	Ensure sufficient lighting is provided on Academy Street where changes are proposed.	1	B

Issue	Situation	Action/Adjustment	Priority	Cost
4.10	It is unclear if the proposed location of trees within verges throughout the scheme shall obstruct visibility for drivers exiting junctions and proposed parking within the proposed development. This could result in drivers exiting side roads and driveways when it is unsafe to do so ahead of oncoming vehicles leading to side-on collisions. Additionally, the location of trees may block visibility to pedestrians attempting to cross which may result in vehicle/pedestrian collisions.	Ensure sufficient visibility is provided at all junctions, parking arrangements and pedestrian crossings within the proposed development.	1	A
4.11.1	It is unclear if sufficient access is provided to bin stores located outside apartments blocks. Without adequate pedestrian links, pedestrians, particularly mobility impaired may be unable to access bin stores where no dropped kerbs are provided, and they may be required to travel between parked vehicles.	Ensure sufficient links are provided to the bin stores from apartment blocks and are unobstructed by parked vehicles.	1	A
4.13	There are a number of locations throughout the scheme where insufficient swept path may be provided to vehicles entering/exiting parking spaces. This may result in vehicles having to undertake complex turning manoeuvres to access the parking spaces, leading to material damage collisions.	Swept path analysis should be undertaken to ensure sufficient turning space is provided to all car parking spaces. Where necessary, the layout should be adjusted to accommodate swept path.	1	A
	Perpendicular parking bays are proposed within the development. Vehicles parking within these parking bays may overhang the adjoining footpath. This may result in a reduced effective footpath width, where pedestrians may have to step into the grass verge, resulting in slips, trips and falls as a result of an uneven surface.	Provide measures to ensure the effective footpath width is not reduced below 1.8m.	1	B
	It appears from the drawings that there are no mobility impaired parking bays provided within the development. In a development of this scale, it may be necessary to cater for mobility impaired parking spaces. Lack of provision of designated parking spots may result in mobility impaired drivers or passengers having to park a significant distance from their residential block resulting in possible vehicle-pedestrian collisions.	Ensure adequate mobility impaired parking is located within close proximity to entrances to apartment blocks and the proposed Crèche.	1	A
4.13.1	A number of private residential accesses indicate that two car parking spaces are provided. However, where two cars are illustrated, it is unclear if sufficient space is maintained for pedestrians to access the proposed residential unit. Without sufficient space, pedestrians, particularly mobility impaired may be unable to access the proposed unit.	Ensure sufficient pedestrian access is maintained to residential units within the development.	1	A

Issue	Situation	Action/Adjustment	Priority	Cost
5.2.1	The drawings indicate cycle parking within the proposed development. However, it is unclear how cyclists will gain access to the cycle parking area. Additionally, it is unclear how many bicycle stands are proposed and if they are sheltered/secured.	To encourage cycle use, bicycle stands should be located in a well-lit open space which is easily accessed. Additionally, the cycle stands should be sheltered and secured.	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

Problem 3.2.18: Unclear if the parallel parking on Academy Street to be removed

Problem 3.2.21 : Visibility to approaching drivers to right turners impeded.

Problem 3.2.22 : Footpath terminates with no link to the Academy Street footpath.

Problem 3.2.1 (General Problem): Insufficient forward visibility to parking arrangements

Problem 3.2.2 (General Problem): Designated crossing points within the residential road network have not been indicated at junctions.

Problem 3.2.3 (General Problem): Unclear if Yield controlled junctions can meet the more onerous visibility requirements.

Problem 3.2.4 (General Problem): It is unclear if there is sufficient swept path for vehicles entering/exiting parking spaces throughout the scheme.

Problem 3.2.5 (General Problem): Potential dark spots within carriageway and pedestrian footpaths.

Problem 3.2.6 (General Problem): Proposed trees may block visibility at junctions, pedestrian crossings and to parked vehicles within the development.

Problem 3.2.7 (General Problem): Insufficient information regarding gradients provided.

Problem 3.2.8 (General Problem): Parking bay may overhang the footpath, reducing the effective footway width

Problem 3.2.9 (General Problem): Information regarding lighting along Academy Street not provided to the Audit Team.

Problem 3.2.20 (General Problem): No Hazard Tactile paving at top and bottom of steps.

Problem 3.2.16 (General Problem): Visually impaired pedestrians unable to cross shared surfaces

Problem 3.2.15 (General Problem): Unclear pedestrian links leading into junction mouth.

Problem 3.2.14 (General Problem): Shared surface indicated adjacent to house is too narrow for a vehicle

Problem 3.2.13 (General Problem): Visibility to pedestrians may be impeded by parked cars.

Problem 3.2.12 (General Problem): No provision for mobility carparking spaces.

Problem 3.2.11 (General Problem): Junction layout strategy may lead to unsafe vehicle manoeuvres.

Problem 3.2.10 (General Problem): Chamber covers within carriageway may result in loss of traction.

Problem 3.2.17: Unsafe entering/exiting manoeuvres to proposed car parking space.

Problem 3.2.19 : Unclear if there is sufficient drainage provision within the proposed development