

Pinnacle Consulting Engineers

Residential Development in Kilcock, Co
Kildare

Stage 1 Road Safety Audit

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2.0	MAH	DOB	TAG	05 th July 2019	Final
1.0	MAH	TAG	TAG	27 th Feb 2019	Draft Report

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1 Introduction

1.1 General

This report results from a Stage 1 Road Safety Audit on the proposed Residential Development in Kilcock, Co Kildare. The road safety audit was carried out at the request of Mr Ronan Kearns of Pinnacle Consulting Engineers.

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

Mr. Aly Gleeson

(MBA, MEng, BSc, CEng, RSACert, MIEI, MSoRSA)
Road Safety Audit Team Leader

Mr. David O'Brien

(BA, BAI, PgDip(PM), CEng, MIEI)
Road Safety Audit Team Member

Mr. Mazen Al Hosni

(BEng, MIEI)
Trainee Observer

The Road Safety Audit took place during February 2019 and comprised an examination of the documents provided by the designers (see Appendix B). In addition to examining the documents supplied the Road Safety Audit Team visited the site of the proposed development on the 21st of February 2019. Weather conditions during the site visit were dry. The road surface was dry. Traffic volumes and speeds were low. The volume of pedestrians and cyclists was considered moderate.

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

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

The scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety and considers the perspective of all road users. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered to require action in order to improve the safety of the scheme and minimise collision occurrence.

If any of the recommendations within this road safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments made within the report under the heading of Observations are intended to be for information only. Written responses to Observations are not required.

1.2 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: -

- Landscaping
- Public Lighting

2 Project Description

A new residential development is proposed in Kilcock, Co. Kildare (see proposed layout in Figure 2-1), with a new access onto the Brayton Park road. The new development is to be located on a greenfield site which is currently fenced off. The residential development is adjacent to lands that are to be used for a new multi-purpose community facility, running/walking track and playing pitches. An existing H.S.E primary care centre is already on site near the proposed residential development.

The existing Brayton Park road is a two-lane single carriageway and includes segregated pedestrian and cycle facilities on both sides of the road. There is an existing school that has an access onto the Brayton Park road, located approximately 100m away from the proposed development access.

The proposed housing development includes a main road with two bus stops that tie-in with Brayton Park road, secondary roads, cycle routes, public open spaces (that includes playground facilities) and footpaths. The development includes three roads that will tie-in to future/existing developments adjacent to the proposed scheme.

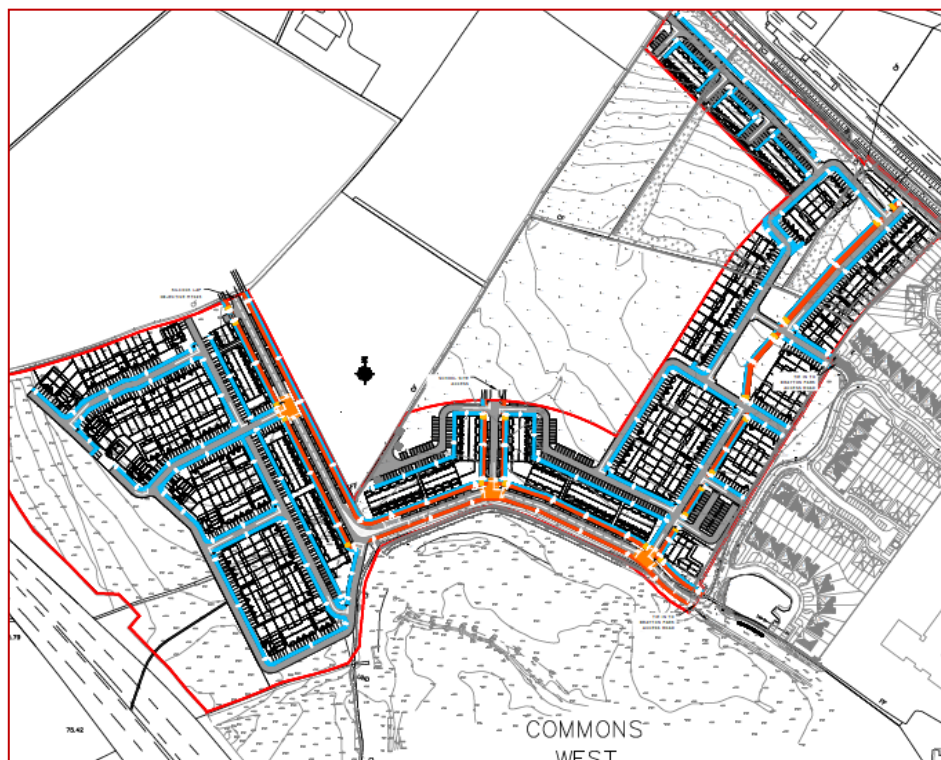


FIGURE 2-1 PROPOSED LAYOUT

3 Main Report

3.1 Problem

Location: General

Summary: Long straight roads may lead to high speeds.

The proposed arrangement includes long straight sections within the development. This may encourage higher vehicle speeds within the development, leading to loss of control collisions or vehicle/pedestrian collisions.

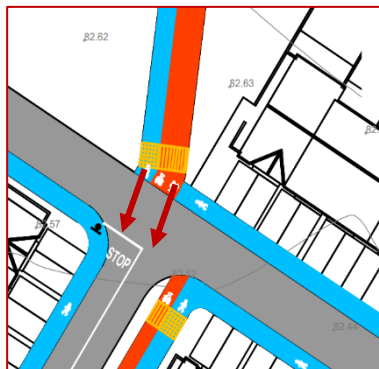
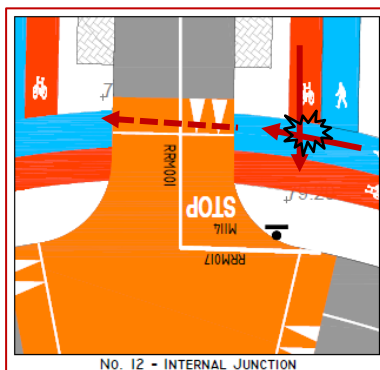
Recommendation

Provide comprehensive traffic calming measures within the development.

3.2 Problem

Location: General

Summary: Pedestrian and Cyclist links not always clear, and sometimes direct VRUs into the middle of a junction.



Several footpath links do not appear to lead to a corresponding footway on the opposite side of the road. Upon entering the road or junction, mobility or visually impaired pedestrians may be 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, which may increase the risk of being struck by a vehicle.

Also, Cycleway yield markings are not indicated where cyclist and pedestrians meet at junctions, or where cyclists enter the carriageway. Insufficient guidance for cyclists at the end of a designated cycleway may result in cyclists failing to yield to other road users, resulting in side-on collisions or pedestrian/cyclist collisions.

Additionally, pedestrian footways appear to coincide with the raised table 'ramp gradient', such that crossing pedestrians are either forced to walk on a sloped surface, or to enter the path of crossing cyclists. This could result in slips, trip and falls, or pedestrian/cycle collisions.

Recommendation

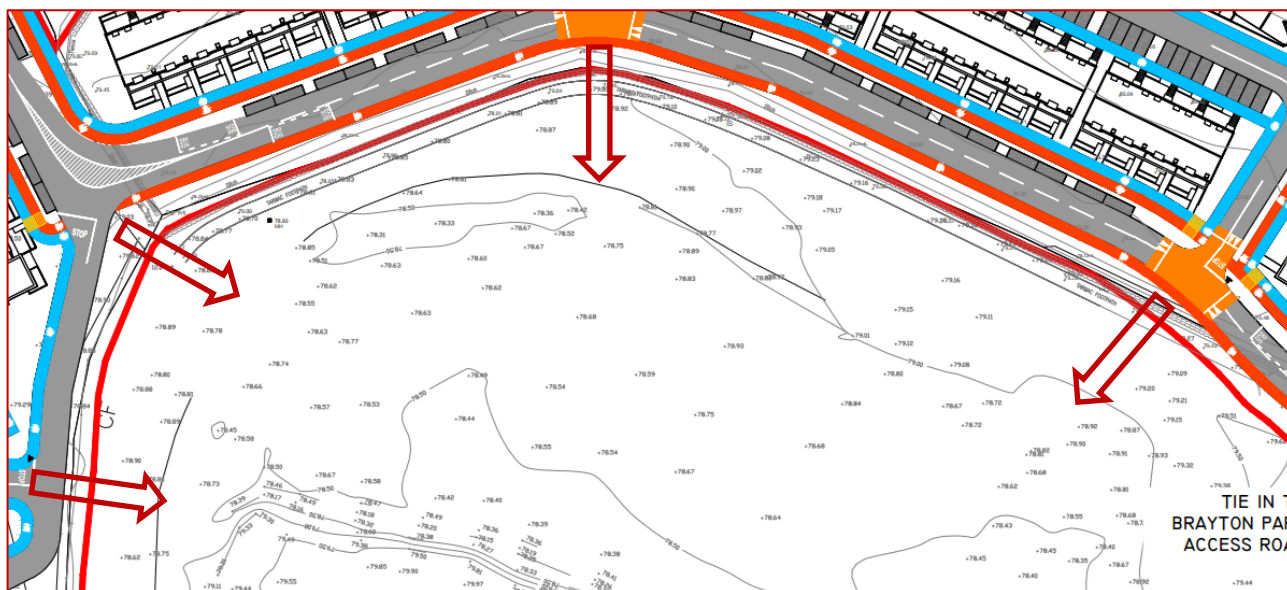
Ensure tactile paving, dropped kerbs, road markings and signage is used to support safe pedestrian and cyclist movement through the development.

Also, provide safe crossing points on pedestrian desire lines, and ensure visually and mobility impaired pedestrians can easily access the opposite side of the road at crossing points, and on a surface that is flat and level.

3.3 Problem

Location: General

Summary: Unclear if there is sufficient interconnectivity between the proposed development and proposed playing pitches to the south.



It is not clear from the proposed plans if pedestrian and cyclist provision will be provided between the new residential development and the new playing pitches/walking paths to the south of the development. Pedestrian and cyclist connections or accesses are likely to be in high demand, which may lead to the development of unsafe and informal crossing points or accesses, which may give rise to slips, trips or hazards.

Recommendation

Provide safe crossing points and access links to the playing fields/walking paths, ensuring VRU desire lines are catered for in the development.

3.4 Problem

Location: General

Summary: Unclear where public lighting columns will be located relative to the footpath.

At this early stage in the design process, information regarding proposed public lighting columns has not been provided to the Audit Team. It is assumed that public lighting columns will be provided throughout the proposed development. It is unclear, however, if these public lighting columns will be located within grass verges or within the footpath. Should public lighting columns be located within the footpath the effective width of the footpath will be reduced resulting in pedestrians having to enter the carriageway to avoid the obstruction leading to an increased risk of collisions with vehicles and cyclists.

Recommendation

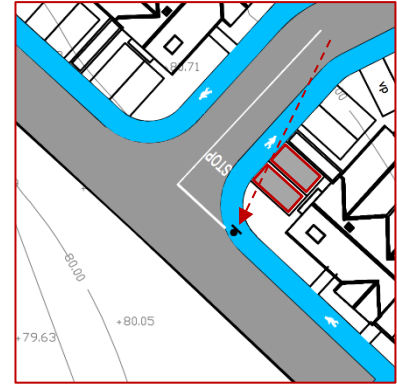
Ensure public lighting columns are located at the back of the footpath or within the grass verge such that they do not constitute a hazard to pedestrians and vehicles.

3.5 Problem

Location: Internal Junction No.1

Summary: Insufficient visibility to Stop signs

On plot parking may reduce visibility to Stop signs for approaching drivers, particularly where signs are positioned beyond the junction mouth radius. Failure to provide clear visibility to Stop signs may lead to late braking and overshoot collisions.



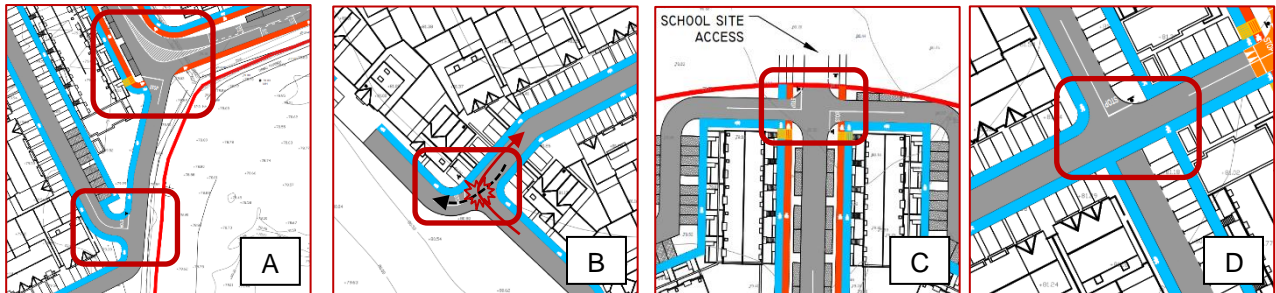
Recommendation

Ensure approaching drivers have clear visibility to Stop signs on approach to a stop control junction.

3.6 Problem

Location: General Problem

Summary: Junction layout strategy may lead to unsafe vehicle/VRU manoeuvres



Junction form and arrangement varies across the residential development, and may lead to driver confusion, unsafe vehicle manoeuvres, high entry/exit speeds and VRU confusion. The following examples have been identified.

- A. Junctions located at high demand bends may lead to a wide junction mouth that encourages high vehicle entry and exit speeds, particularly where visibility is limited. This could lead to overshoot or side-on collisions where drivers fail to reduce their speed on approach to the junction, or enter the junction without due care and attention.

Additionally, right turn vehicles on the main spine road will likely wait in the hatched area before completing their turning movement, which may lead to side-swipe collisions with buses travelling in the opposite direction (swept path analysis drawing confirms buses traverse hatch area).

- B. It is not clear if this junction is required, as it does not appear to serve any plot access or parking provision. The location of the junction could promote side-on collisions where right turning vehicles move across the path of a vehicle continuing right around the high demand bend.
- C. Crossroad junctions should be avoided where possible, as drivers approaching the Stop 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. This problem may be exacerbated by the nearby school, which may experience high traffic volumes, informal parking and increased pedestrian/cyclist volumes.
- D. It is not clear if this is a cross road junction, or if the proposed footway is designed to create a Cul-de-sac arrangement.

- Crossroad junction: As above, priority control Crossroad junctions should be avoided, as drivers approaching the Stop 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:** If a Cul-de-sac arrangement is proposed, it is not clear 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. HGV drivers may also attempt to mount the footway to gain access to the carriageway on the other side of the closure, leading to vehicle/pedestrian and side-on collisions.

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 seek opportunities to simplify the number of junctions within the development.

3.7 Problem

Location: Cycle/pedestrian track on the northern side of the proposed development

Summary: Locating cycle/pedestrian track through the middle of an open public space may lead to young children playing on the segregated track.

A cycle track and pedestrian footpath has been located through the middle of what is likely to be used as public open space. Young children using this space may frequently enter or cross the segregated route, leading to pedestrian/cycle collisions.



Recommendation

Revise the cycle/pedestrian track so that the public open space is maximised, such that it reduces the interaction between playing children and cyclists.

3.8 Problem

Location: General Problem

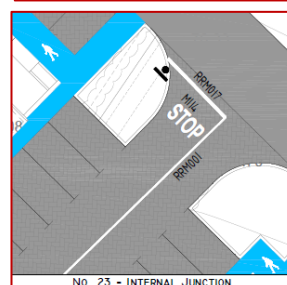
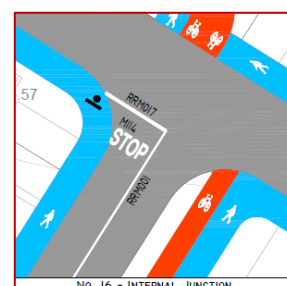
Examples: Junction Nos. 16, 17, 22 and 23 (drawing No. P112 and P113)

Summary: Pedestrian crossing points not clearly identified within the proposal

The uncontrolled pedestrian crossings are not clearly defined within the development. Failure to provide safe and clear crossing facilities for pedestrians, particularly partially sighted or mobility impaired pedestrians, may lead to personal injury collisions.

Recommendation

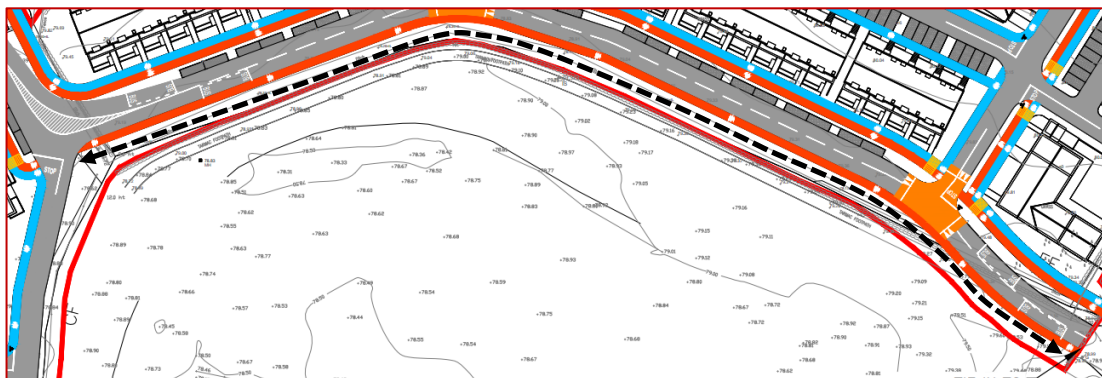
Uncontrolled pedestrian crossing points, including tactile paving and dropped kerb access, should be provided on pedestrian desire lines.



3.12 Problem

Location: General Problem

Summary: Pedestrian footway missing between entrance and high demand bend.



A pedestrian footway has not been provided between the development's entrance and the westbound bus stop located on the spine road. This route will serve as an important pedestrian route through the development, and for pedestrians wishing to access the playing fields and walking paths. It will also accommodate residents wishing to use the bus stop currently proposed.

Failure to provide a footway may lead to an informal path being created, which could lead to slips, trips and falls. It may also encourage pedestrians to use the cycle track, where there is an increased risk of being struck by a cyclist, or forcing cyclists to use the carriageway where there is an increased risk of being struck by a vehicle.

Recommendation

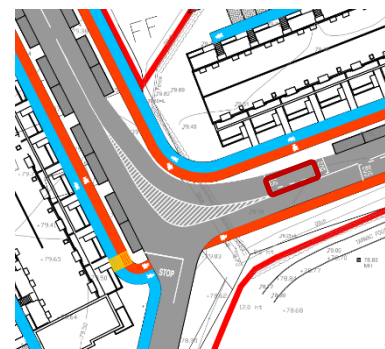
Provide a footpath along the southern side of the main road.

3.13 Problem

Location: Bus stop on spine road

Summary: Bus stop provided directly after high demand bend.

The eastbound bus stop has been proposed directly after a high demand bend. A stationary bus may not be seen by eastbound vehicles travelling around the bend, leading to rear-end-shunt collisions.



Recommendation

Ensure eastbound drivers have adequate SSD to stationary buses at the bus stop.

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.

No one on the Road Safety Audit Team has been involved with the design of the scheme.

ROAD SAFETY AUDIT TEAM LEADER

Aly Gleeson

Signed:



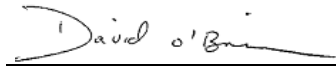
Dated:

05/07/2019

ROAD SAFETY AUDIT TEAM MEMBER

David O'Brien

Signed:



Dated:

05/07/2019

OTHERS INVOLVED

Mazen Al Hosni (Trainee Observer)

Appendix A – Road Safety Audit Brief Checklist

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

	Yes	No
1. The Design Brief	<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 type="checkbox"/>	<input checked="" type="checkbox"/>
6. Traffic surveys	<input type="checkbox"/>	<input checked="" 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"/>

Any other information?

(if 'Yes', describe below)

☐ ☒

Appendix B – Documents Submitted to the Road Safety Audit Team

DOCUMENT/DRAWING TITLE	DOCUMENT/DRAWING NO.	REVISION
Sight Lines Layout Sheet 1 of 3	P140	--
Sight Lines Layout Sheet 2 of 3	P141	--
Sight Lines Layout Sheet 3 of 3	P142	--
Road Cross Sections	P130	--
AutoTrack Layout Bus	P124	1
AutoTrack Layout HGV Vehicle	P123	--
AutoTrack Layout Refuse Vehicle Sheet1 of 3	P120	--
AutoTrack Layout Refuse Vehicle Sheet 2 of 3	P121	2
AutoTrack Layout Refuse Vehicle Sheet3 of 3	P122	2
Road Markings & Signage Layout Sheet 1 of 3	P111	--
Road Markings & Signage Layout Sheet 2 of 3	P112	--
Road Markings & Signage Layout Sheet 3 of 3	P113	--
Road Markings & Signage Construction Details	P110	--
Proposed Access Road Tie In	P105	--
General Layout Sheet 1 of 3	P101	--
General Layout Sheet 2 of 3	P102	--
General Layout Sheet 3 of 3	P103	--
General Layout	P100	--
Watermain and Levels Layout Sheet 1 of 2	202	1
Watermain and Levels Layout Sheet 2 of 2	203	--

Appendix C – Feedback Form

Road Safety Audit Feedback Form


Scheme: Residential development in Kilcock Co Kildare


Route No. -

Audit Stage: Stage 1 Road Safety Audit

Date Audit Completed: 26th February 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)
3.1	Yes	Yes		
3.2	Yes	Yes		
3.3	Yes	Yes		
3.4	Yes	Yes		
3.5	Yes	Yes		
3.6	Yes	Yes		
3.7	Yes	Yes		
3.8	Yes	Yes		
3.9	Yes	Yes		
3.10	Yes	Yes		
3.11	Yes	Yes		
3.12	Yes	Yes		
3.13	Yes	Yes		

Signed:  Designer Date 05/07/19

Signed:  Audit Team Leader Date 05/07/2019

Signed: _____Employer Date _____

Appendix D – Problem Locations

General Problem 3.1: Long straight roads may lead to high speeds.

General Problem 3.4: Unclear where public lighting columns will be located relative to the footpath.

Problem 3.5: Insufficient visibility to Stop signs

General Problem 3.6: Junction layouts may lead to driver and VRU confusion, high entry/exit speeds and possible sight through issues

General Problem 3.8: Pedestrian crossing points not clearly identified within the proposal

General Problem 3.9: Tactile paving details do not include in-line tactile paving arrangements

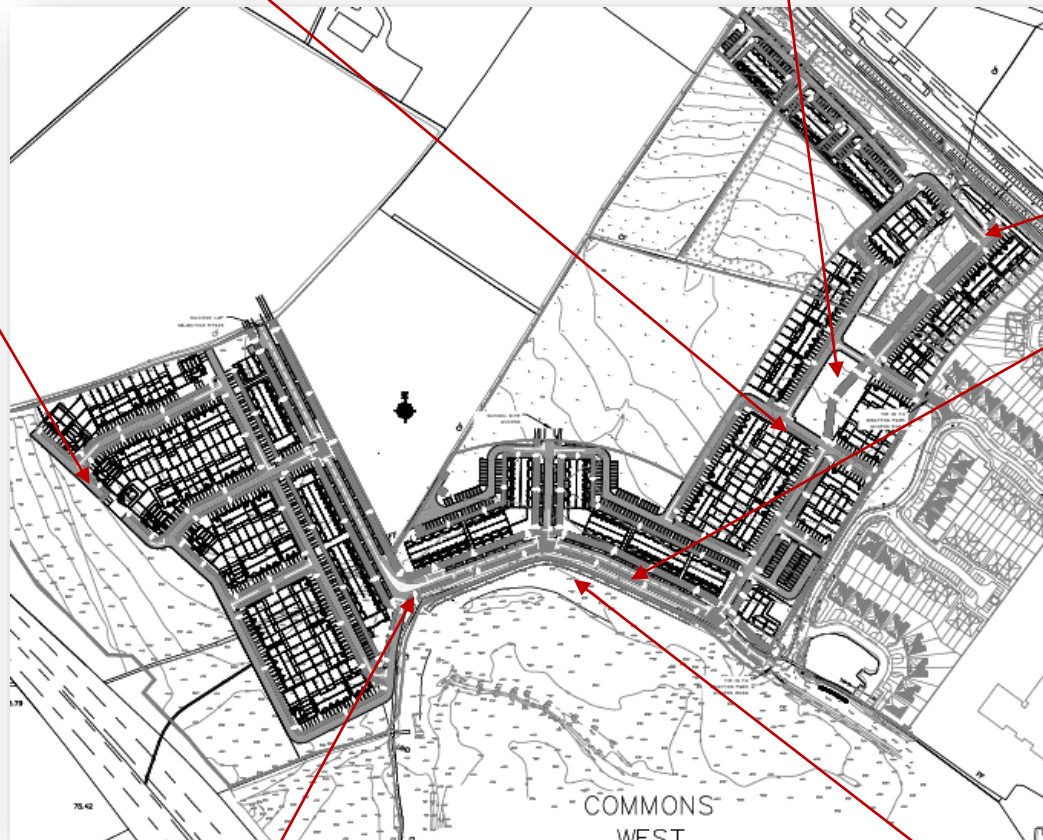
Problem 3.2: Pedestrian and Cyclist links not always clear, and sometimes direct VRUs into the middle of a junction.

Problem 3.7: Locating cycle/pedestrian track through the middle of an open public space may lead to young children playing on the segregated track.

General Problem 3.10: Sections indicate parking on raised footway

General Problem 3.11: Sign proposed on the cycle track

Problem 3.7: Pedestrian footway missing between entrance and high demand bend.



Problem 3.13: Bus stop provided directly after high demand bend.

Problem 3.3: Unclear if there is sufficient interconnectivity between the proposed development and proposed playing pitches to the south.