

Title: **STAGE 1 ROAD SAFETY AUDIT**

For;

Holybanks Swords

Client: **Cairn Homes/Waterman Moylan**

Date: **January 2021**

Report reference: **0934R01**

VERSION: **FINAL**

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1.0 Introduction

This report was prepared in response to a request from Ms. Laura Ruiz Garrido, Waterman Moylan, Consulting Engineers, for a Stage 1 Road Safety Audit of the proposed Holybanks Swords Scheme.

The Road Safety Audit Team comprised of;

Team Leader: **Norman Bruton**, BE CEng FIEI, Cert Comp RSA

TII Auditor Approval no. NB 168446

Team Member: **Owen O'Reilly**, B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil. Eng CEng MIEI

TII Auditor Approval no. OO1291756

The Road Safety Audit comprised an examination of the drawings and by a site visit by the Audit Team, separately, on the 7th and 8th January 2021.

The weather at the time of the site visits was dry and the road surface was damp.

This Stage 1 Road Safety Audit has been carried out in accordance with the requirements of TII, Publication Number GE-STY-01024, dated December 2017 and in accordance with the Covid-19 advice provided by TII.

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. 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 for road users.

If any of the recommendations within this 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 Observation are intended to be for information only. Written responses to Observations are not required.

A location map showing where each problem occurs is provided in **Appendix A**.

A list of the documents provided to the Audit Team is provided in **Appendix B**.

The feedback form for the Design Team Leader to complete is provided in **Appendix C**.

2.0 Background

It is proposed to construct a residential development between Glen Ellen Road and Jugback Lane in Swords. The scheme is known as Holybanks Swords. As part of the proposed works it is intended to make improvements to the R132 Estuary Road roundabout and the Balheary Road/Glen Ellen Road junction.

Vehicular access to the proposed development will be off Glen Ellen Road and Jugback Terrace.

Glen Ellen Road is a single carriageway Road with a footpath and cycle track on the southern side and footpath on the northern side (development side). It is proposed to provide a footpath and cycle track on the development side. Glen Ellen Road is a bus route.

Jugback Terrace is a narrow single carriageway which provides access to duplex units and access to Applewood Lane.

Jugback Terrace provides vehicular access to a single dwelling at the end of the lane. There is pedestrian access at the end of the lane to Thorleigh Court.

The speed limit on the public roads are 50km/hr except at Estuary Roundabout where the speed limit is 60km/hr.

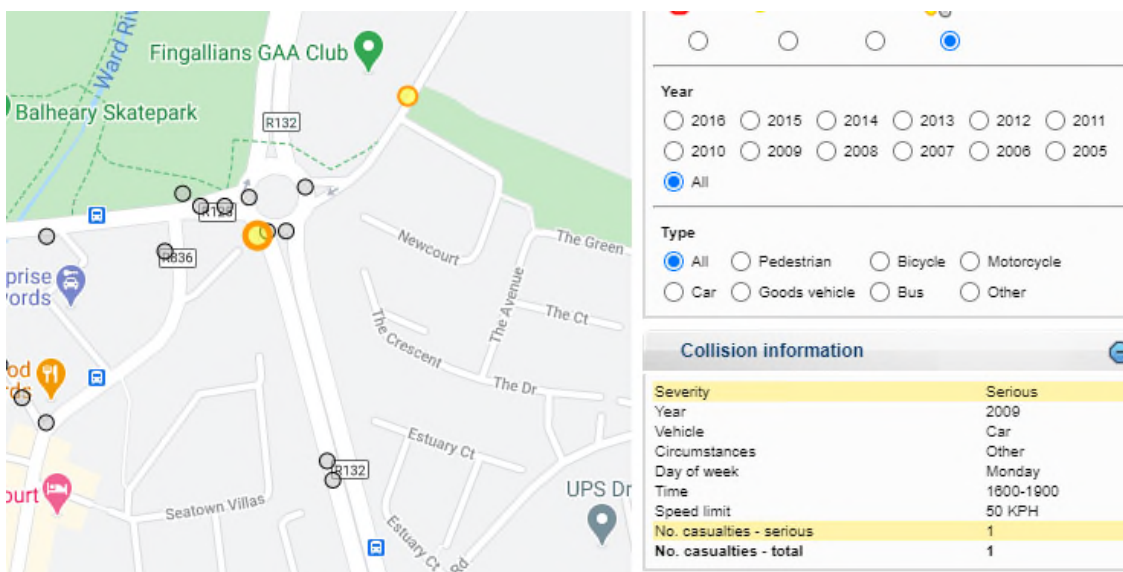
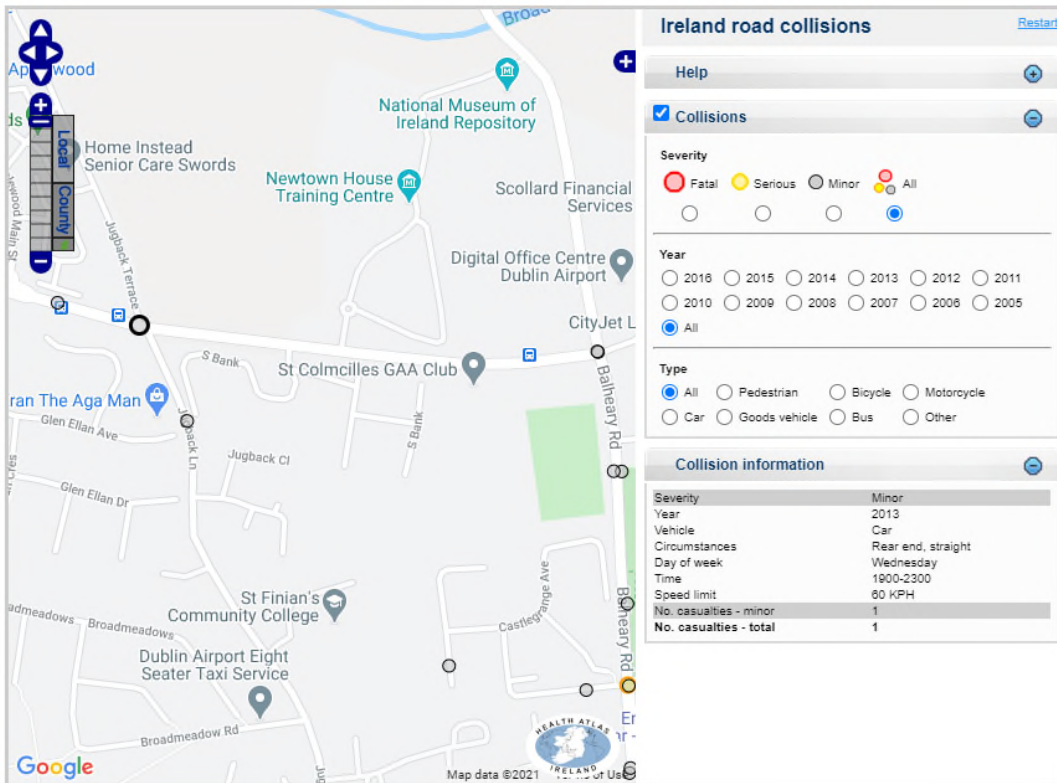
The site is bounded to the North by the Broadmeadow River.

The site location is shown below.



STAGE 1 RSA – HOLYBANKS SWORDS
WM

The Road Safety Authority’s website www.rsa.ie shows that there was one minor collision at the junction of Jugback Lane/Terrace and Glen Ellan Road and one minor injury collision at the Glen Ellan Road/Balheary Road junction in the 12-year period 2005 to 2016. There was one serious injury collision and 5 minor injury collisions at the Estuary Road Roundabout on the R132 in the same period.



3.0 Main Report

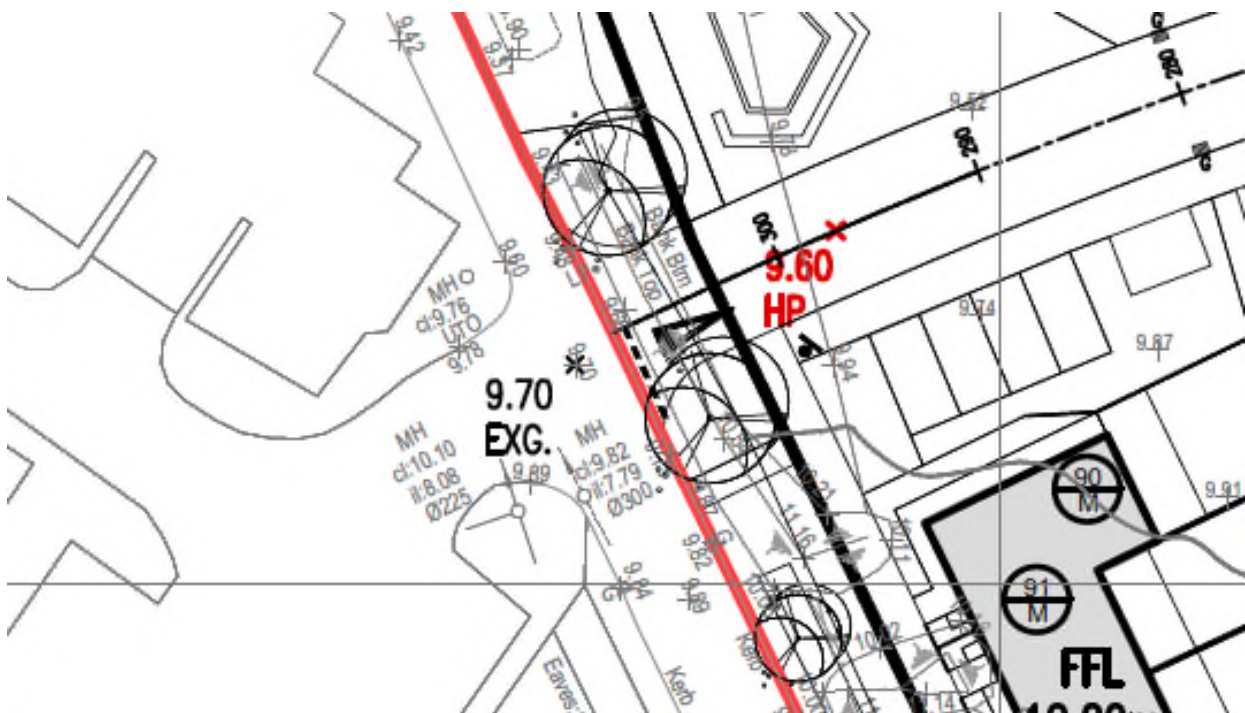
3.1 Problem

LOCATION

Drawing 17-088 P002 Rev -, Jugback Terrace vehicular access.

PROBLEM

It is proposed to provide a crossroads on Jugback Terrace with a yield control for vehicles exiting the proposed development. There is a risk that given the relatively low number of vehicles that will be travelling from the single dwelling at the end of Jugback Terrace that drivers exiting the proposed development may not expect conflicting traffic and may travel across Jugback terrace without yielding or stopping resulting in side-impact collisions.



RECOMMENDATION

It is recommended that the development access be staggered from the access to Applewood Lane.

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3.2 Problem

LOCATION

Drawing 17-088 P002 Rev -, Jugback Terrace.

PROBLEM

Jugback Terrace is a narrow single carriageway road with a pinch-point in the cross section and a crest in the vertical alignment between the proposed vehicular access and the junction with Glen Ellan Road. The increased traffic volumes could lead to an increased likelihood of head-on (vertical) or side-swipe (pinch-point) collisions along the carriageway.



Vertical Crest



Horizontal Pinch point

RECOMMENDATION

It is recommended that the cross section and vertical alignment be checked for compliance with the design speed and with the guidance provided in DMURS for stopping sight distance and for carriageway widths.

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3.3 Problem

LOCATION

Drawing 17-088 P010 Rev -, Jugback Terrace.

PROBLEM

The sightlines on Jugback Terrace are shown for a design speed of 30km/hr. It is unclear if this is based on measured speeds. The speed limit is 50km/hr. An underestimate of the actual speed of vehicles post construction could lead to side-impact or rear-end collisions.



RECOMMENDATION

It is recommended that the speed limit on Jugback Terrace be reduced to 30km/hr.

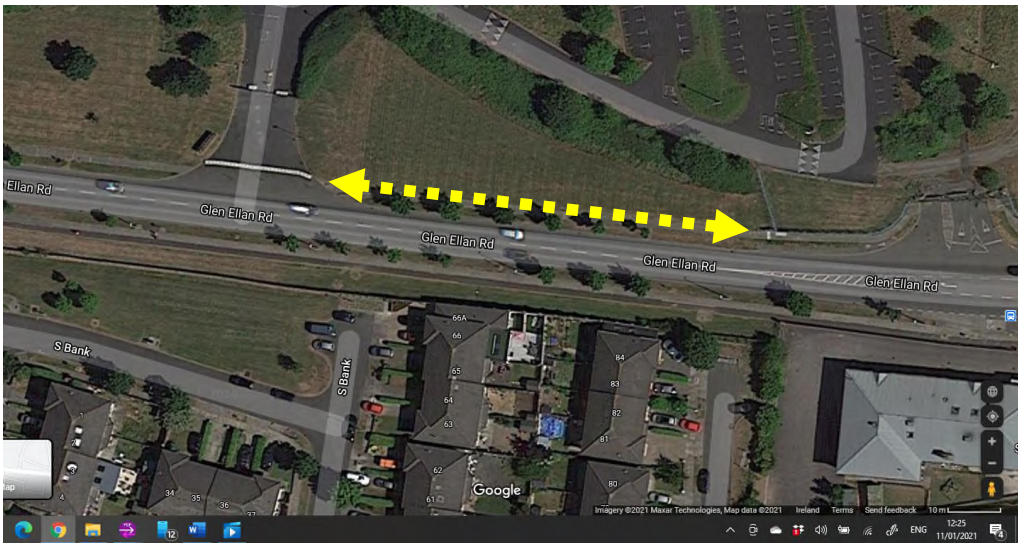
3.4 Problem

LOCATION

Drawing 17-088 P011 Rev -, Glen Ellan Road, Cycle Track.

PROBLEM

It is proposed to terminate the cycle track at the access to private lands at the eastern boundary of the development. This will lead to a short discontinuity in cycle facilities between this point and the approach to the Balheary Road Junction where the cycle track recommences. The merging of cyclists with general traffic will lead to an increased likelihood of a collision.



RECOMMENDATION

It is recommended the cycle track be made continuous along the verge of Glen Ellan Road.

3.5 Problem

LOCATION

Drawing 17-088 P011 Rev -, Glen Ellan Road.

PROBLEM

There is a pedestrian desire line across Glen Ellan Road for those wishing to travel via Jugback Lane to Swords town centre or to Swords Community College. The demand will increase when the new development is constructed. It is unlikely that pedestrians are going to cross at the existing signalised crossing to the West of Jugback Lane.



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RECOMMENDATION

It is recommended that a controlled signalised crossing be provided on Glen Ellan Road that caters for the desire line along Jugback Lane.

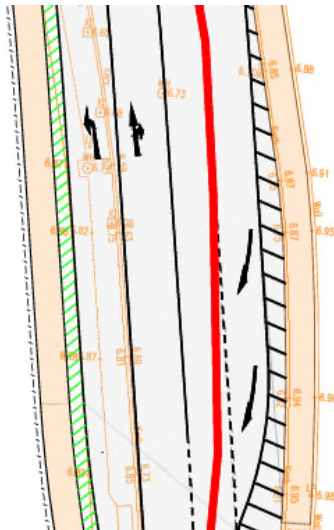
3.6 Problem

LOCATION

Drawing 17-088 S105 Rev -, Balheary Road Junction.

PROBLEM

It is proposed to provide two right turning lanes from Glen Ellan Road to Balheary Road however the second lane terminates on approach to the access to the Swords Business Campus. There is a risk of side-swipe collisions as drivers merge at this point. The addition of extra capacity at the junction would result in a reduction in safety.



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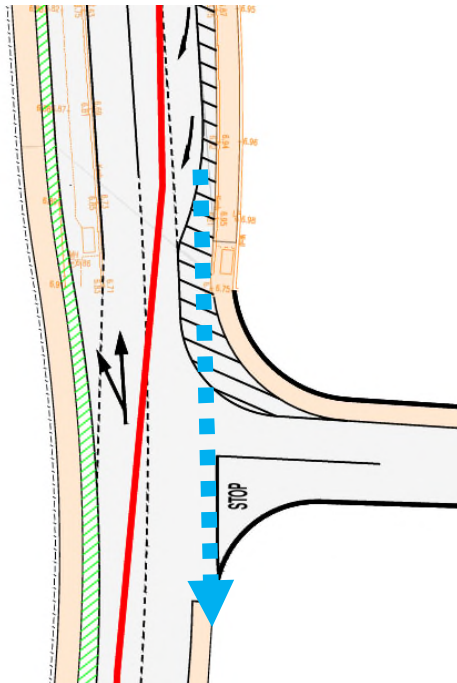
3.7 Problem

LOCATION

Drawing 17-088 S105 Rev -, Balheary Road Junction.

PROBLEM

It is proposed to merge vehicles from two lanes to one at the approach to the Swords Business Park access. There is a risk that the road markings may become faded over time or not be clearly distinguishable during adverse weather. As a result, drivers in the nearside lane may not realise that the lane ends and may travel across the junction mouth either colliding with exiting vehicles or colliding with the footpath/verge on the opposite side of the access due to misaligned carriageway edges on both sides of the access.



RECOMMENDATION

It is recommended that the hatched termination of the lane is replaced with a solid buildout.

3.8 Problem

LOCATION

Drawing 17-088 S105 Rev -, Balheary Road Junction.

PROBLEM

It is proposed to provide an advance stop line for cyclists at the Balheary Road Junction on Balheary road, northbound. There is however no proposed cycle lane or cycle track leading up to that facility. This may lead to cyclists weaving between queuing traffic to get to the turning facility without adequate space to

do so and without any warning for drivers. This could result in collisions between cyclists and vehicular traffic.



RECOMMENDATION

It is recommended that the verge be converted into a cycle lane which connects to the advance stop line for cyclists.

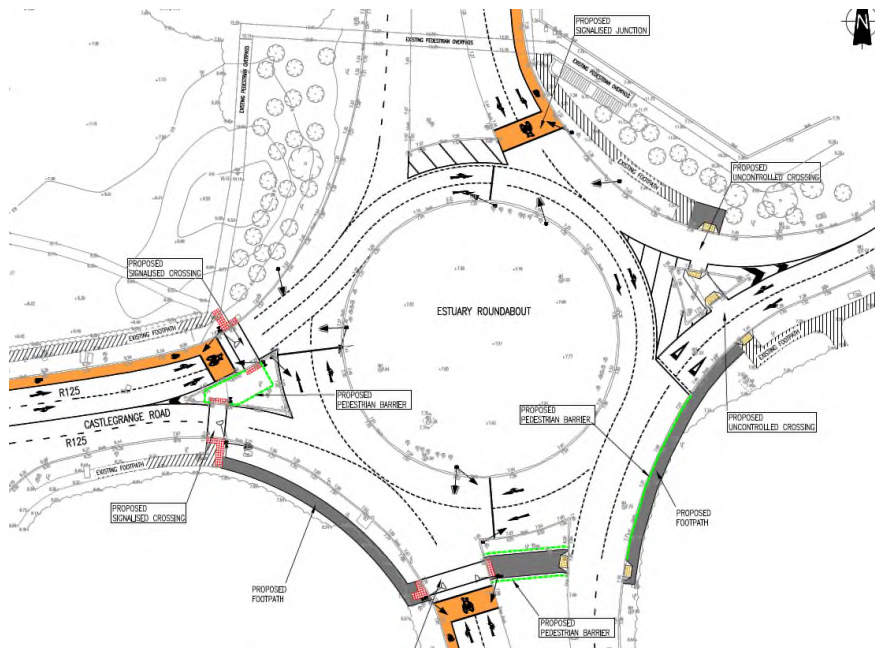
3.9 Problem

LOCATION

Drawing 17-088 S135 Rev -, Estuary Road Roundabout.

PROBLEM

It is proposed to partially signalise Estuary Road Roundabout. It is also proposed that cyclists will use the circulating carriageway and enter the spiral type lane system with other traffic and move into the outer lane at the signals via an advance stop line. There is a risk that cyclists will be struck by weaving traffic on the circulating carriageway.



RECOMMENDATION

It is recommended that the roundabout be converted to a signalised junction similar to the layout currently being displayed to the public on the Fingal Co. Co. website for the Swords Connectivity Project.

3.10 Problem

LOCATION

Drawing 17-088 S135 Rev -, Estuary Road Roundabout.

PROBLEM

It is proposed to have some controlled and some uncontrolled pedestrian crossing at the roundabout. Given the volume of traffic on the R132 and the large inscribed circle diameter of the roundabout turning speeds will be high and gaps in traffic will be small for pedestrians to cross at uncontrolled locations. This could lead to pedestrians attempting to accept insufficient gaps and being struck by turning or approaching vehicles.

RECOMMENDATION

It is recommended that all pedestrian crossings be signalised.

STAGE 1 RSA – HOLYBANKS SWORDS WM

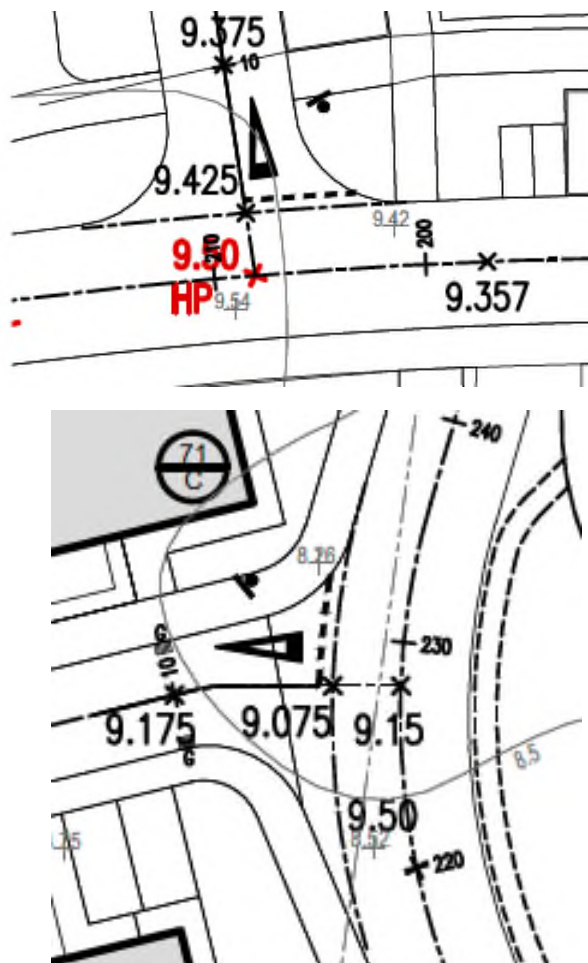
3.11 Problem

LOCATION

Drawing 17-088 P002 Rev -. General Internal Roads.

PROBLEM

The corner radii at the internal junctions appear to be large which leads to higher turning speeds, longer crossings and higher severity injuries if vulnerable road users are struck.



RECOMMENDATION

It is recommended that corner radii are provided in accordance with the guidance provided in DMURS.

3.12 Problem

LOCATION

Drawing 17-088 P002 Rev -. General Internal Roads.

STAGE 1 RSA – HOLYBANKS SWORDS WM

PROBLEM

The internal junctions are proposed to generally have Yield control. This leads to higher turning speeds and higher severity injuries if vulnerable road users are struck.



RECOMMENDATION

It is recommended that Stop control is provided in lieu of Yield control.

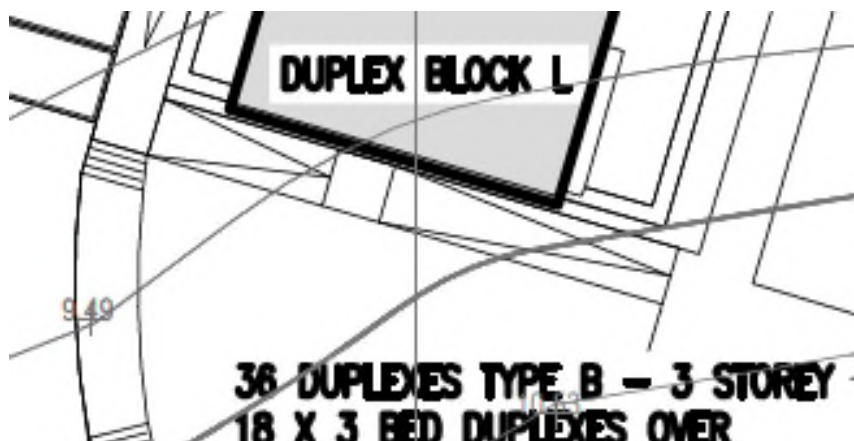
3.13 Problem

LOCATION

Drawing 17-088 P002 Rev -. General Internal Footpaths.

PROBLEM

The internal footpaths within the development have ramp type markings and transverse markings. It is unclear what the transverse markings represent. There is a risk that if the gradients are excessive on the footpaths that certain areas will not be accessible to the mobility impaired.



STAGE 1 RSA – HOLYBANKS SWORDS WM

RECOMMENDATION

It is recommended that footpath gradients within the development comply with the limits set out in Part M of the Building Regulations.

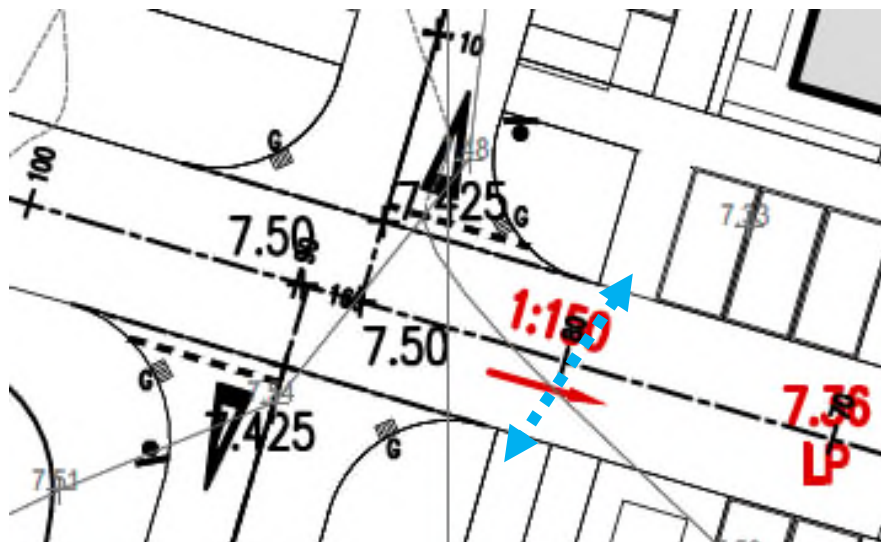
3.14 Problem

LOCATION

Drawing 17-088 P002 Rev -. General Internal Footpaths.

PROBLEM

Some internal footpaths do not align at uncontrolled crossing points of the road network. This could lead to difficulties for crossing of the carriageway for blind or partially sighted pedestrians.



RECOMMENDATION

It is recommended that footpaths at the opposite side of uncontrolled crossings align perpendicular to the direction of vehicular traffic travel.

3.15 Problem

LOCATION

Drawing 17-088 P002 Rev -. General Internal Footpaths.

PROBLEM

There is a risk of surface water ponding at the dropped kerbs associated with uncontrolled pedestrian crossings without adequate drainage upstream. There is a risk of trips and falls if gully gratings are provided in the line of an uncontrolled crossing.



RECOMMENDATION

It is recommended that surface water gullies are provided immediately upstream of all uncontrolled pedestrian crossing points .

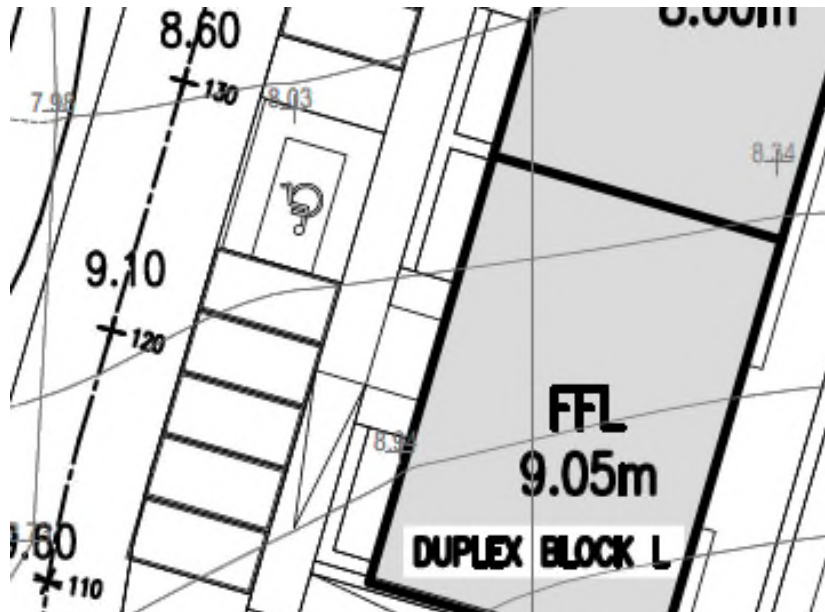
3.16 Problem

LOCATION

Drawing 17-088 P002 Rev -.

PROBLEM

The proposed disabled parking space outside Block L is orientated at 90 degrees to the adjacent parking spaces. It is unclear how a driver could enter/exit this space if the adjacent spaces are occupied. This could result in a lack of facilities for disabled drivers, resulting in parking in areas that may be hazardous for other road users such as footpaths.



RECOMMENDATION

It is recommended that the parking layout be revised.

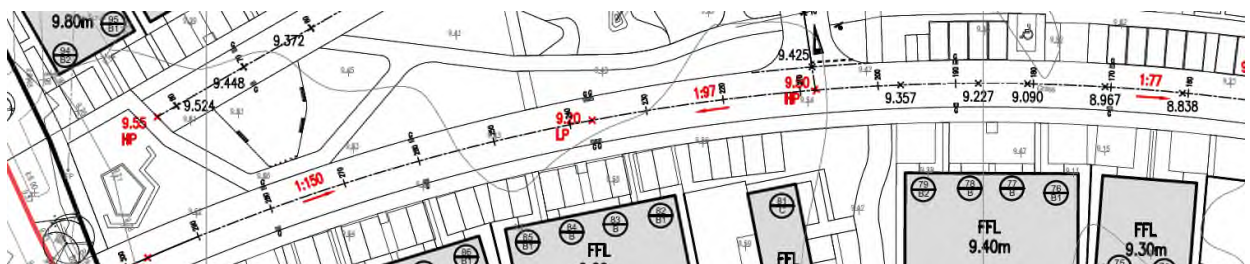
3.17 Problem

LOCATION

Drawing 17-088 P002 Rev -. Access Road from Jugback Terrace.

PROBLEM

The proposed access road from Jugback Terrace has a constant large horizontal radius, is 300m long and is the priority route along its length. This may lead to high speeds and result in high severity collisions if vulnerable road users are struck.



RECOMMENDATION

It is recommended that a more sinusoidal alignment is provided or that alternative traffic calming measures be provided.

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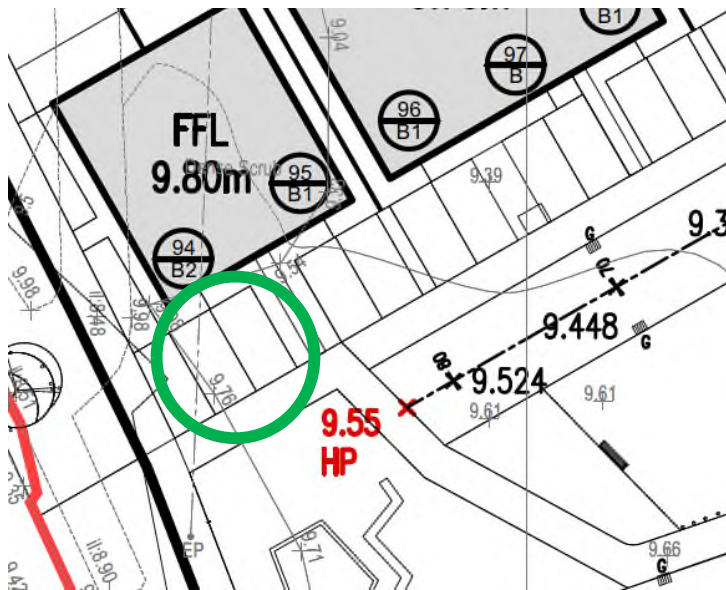
3.18 Problem

LOCATION

Drawing 17-088 P003 Rev -. Parking spaces at unit 94.

PROBLEM

There is no access for the on-curtilage car parking spaces for unit 94. This could lead to drivers travelling/reversing on the footpath or green areas where they could collide with children



RECOMMENDATION

It is recommended that road access be provided to unit 94.

4.0 Observations

4.1 Observation

It is assumed that the short section of proposed bus lane along Glen Ellan Road is intended to be extended towards Balheary Road in the future by Fingal County Council .

4.2 Observation


There do not appear to be any electric parking spaces provided.

5.0 Audit Statement

We certify that we have examined the site on the 7th & 8th January 2021. The examination has been carried out with the sole purpose of identifying any aspects of the design which could be added, 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 audit has been carried out by the persons named below who have not been involved in any design work on this scheme as a member of the Design Team.

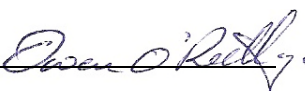
Norman Bruton

Signed: 

(Audit Team Leader)

Dated: 1/2/2021

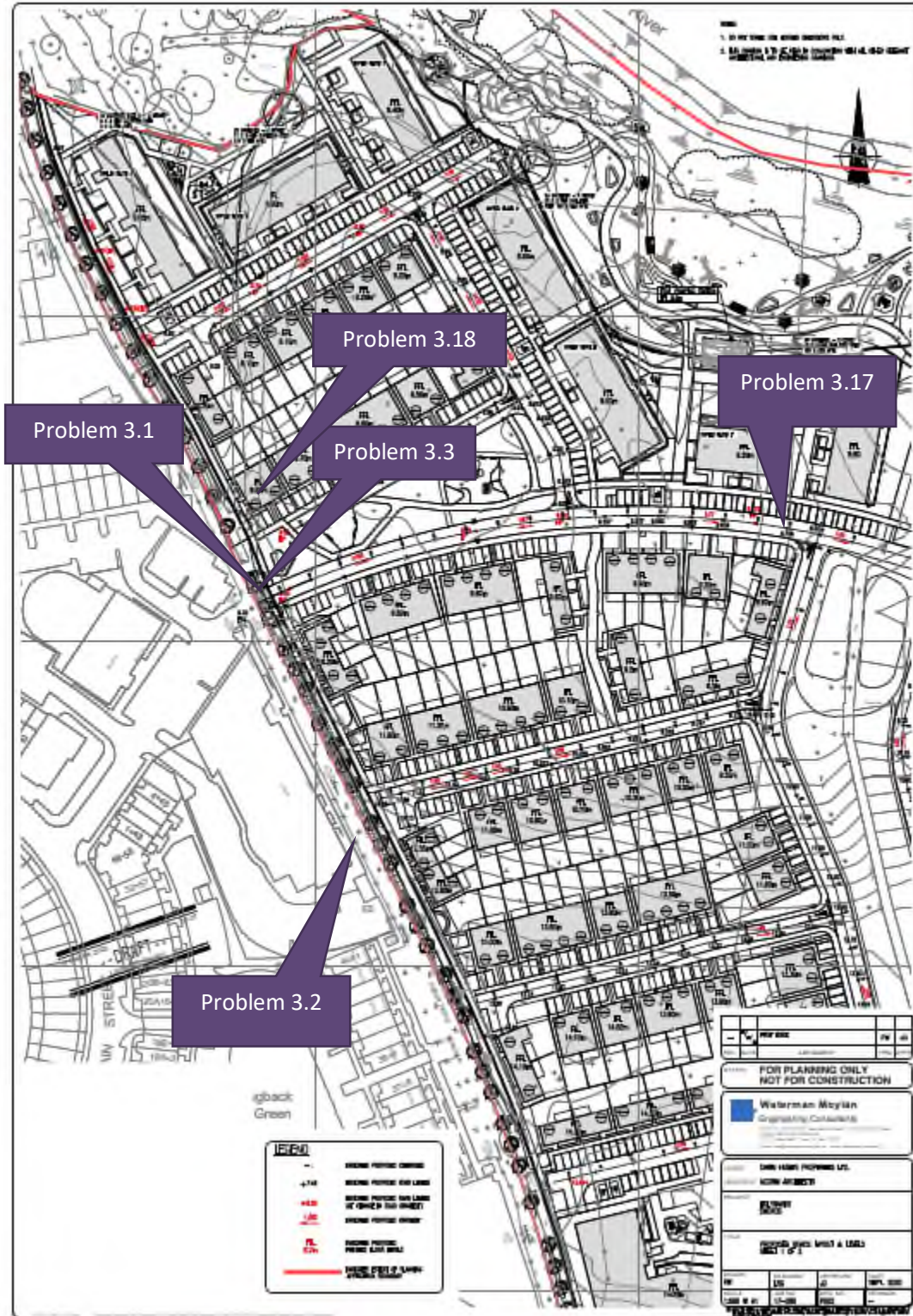
Owen O'Reilly

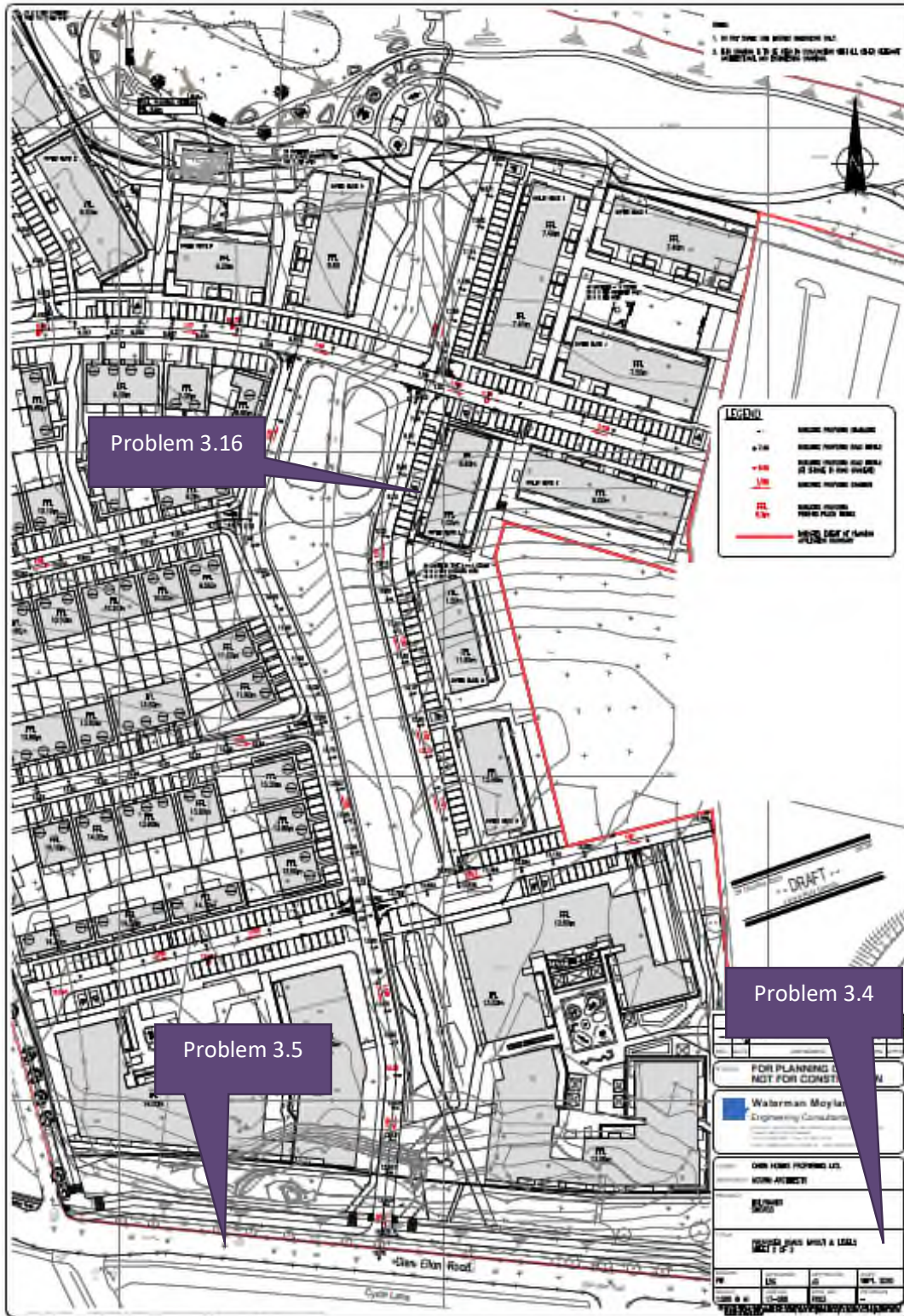
Signed: 

(Audit Team Member)

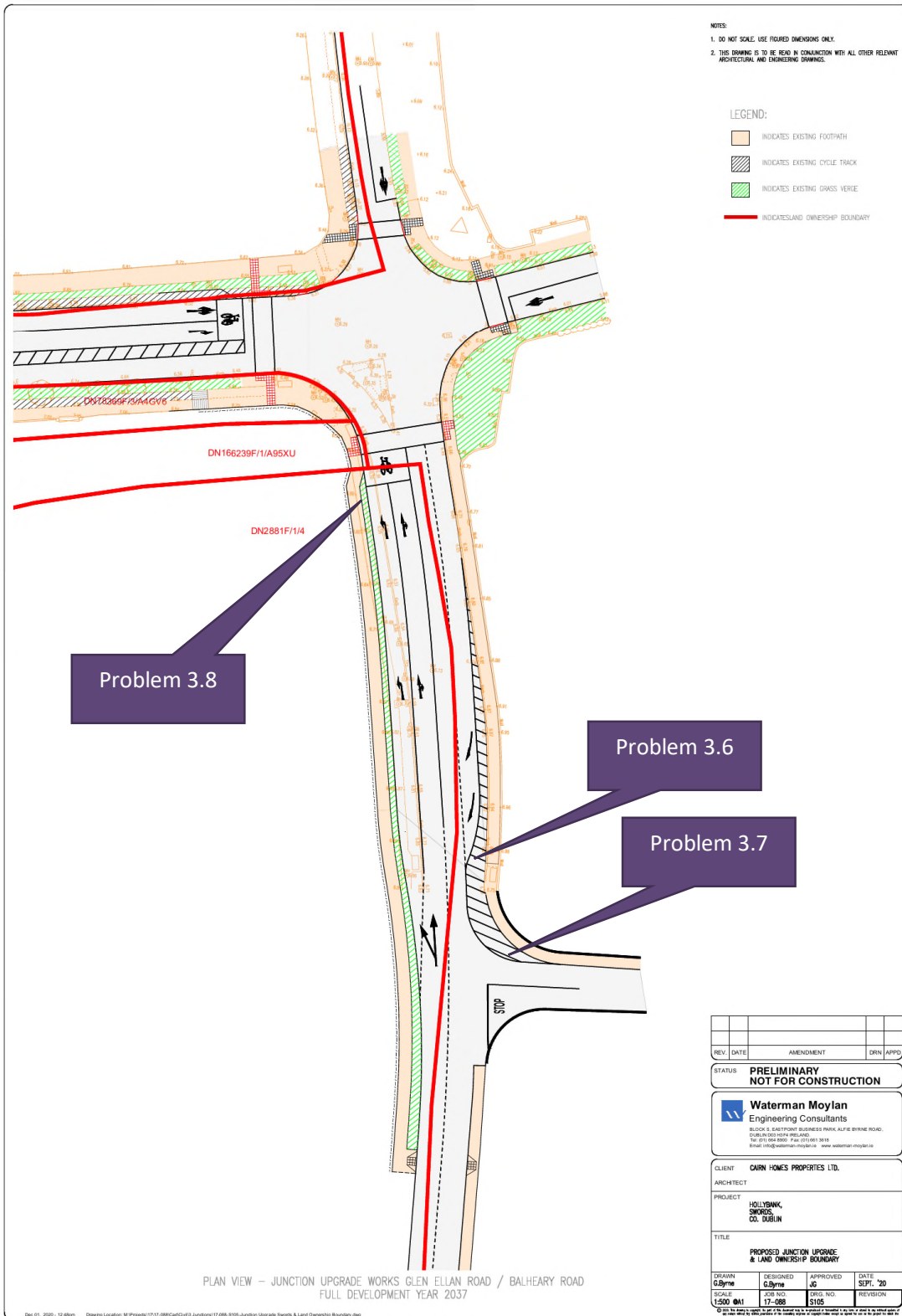
Dated: 1/2/2021

Appendix A – Problem Location Map





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Appendix B

Information Supplied to the Audit Team

- Drawing 17-088 P002 Rev –
- Drawing 17-088 P003 Rev -
- Drawing 17-088 P004 Rev -
- Drawing 17-088 P005 Rev -
- Drawing 17-088 P006 Rev -
- Drawing 17-088 P010 Rev -
- Drawing 17-088 P011 Rev -
- Drawing 17-088 S103 Rev -
- Drawing 17-088 S105 Rev -



Appendix C

Feedback Form

SAFETY AUDIT FORM – FEEDBACK ON AUDIT REPORT

Scheme: Holybanks Swords


Stage: 1 Road Safety Audit

Date Audit (Site Visit) Completed: 7th & 8th January 2021

Paragraph No. in Safety Audit Report	Problem accepted (yes/no)	Recommended measure accepted (yes/no)	Alternative measures (describe)	Alternative measures accepted by Auditors (Yes/No)
3.1	Yes	No	Due to the very low traffic likely to be on Jugback Terrace it is proposed to change the priority. A stop line will be installed on both sides of Jugback Terrace. See attached amended drawing no. 17-088/ P002 Rev A	Yes
3.2	Yes	No	Jugback Terrace is outside of the redline boundary. There is no vehicular access/parking to the proposed residential units on Jugback Terrace. There is existing parking on Jugback Terrace. Jugback Terrace is intended to be primarily used as a pedestrian/cycle route. The existing pinch point serves to reduce traffic speeds. Additional signage and road markings will be installed to highlight the pedestrian and cycle activity.	Yes
3.3	No	No	Junction priority is proposed to be changed as per response to Problem 3.1 above.	Yes
3.4	Yes	Yes	Continuity of cycle track along Glen Ellen Road is outside the applicants control. The matter will be referred to Fingal County Council. We would note that the lands fronting this section of Glen Ellen Road are zoned for development and consequently are likely to be developed in the future. Continuity of the cycle lane can be provided at this time.	Yes

3.5	Yes	No	Due to locations of existing bus stops it is not possible to locate the pedestrian crossing at the desire line. The existing crossing is only 60m from the junction.	Yes
3.6	Yes	No	Traffic modelling of the junction has optimized the traffic signals, however this still requires 2 no. right turning lanes. Additional signage will be provided to warn motorists regarding merging traffic. The junction upgrade is proposed as a temporary measure and will be subject to a future upgrade by Fingal County Council	Yes
3.7	Yes	Yes	Solid buildout will be provided.	
3.8	Yes	Yes	Cycle lane will be provided	
3.9	Yes	Yes	The proposals currently shown are temporary pending the upgrade of the junction to a fully signalized junction by Fingal County Council as per current public display. It is expected that the proposals shown will not need to be constructed, however in the event that they are needed this arrangement will only be for a short period of time.	
3.10	Yes	Partially	Signals will be provided on the southern leg of the roundabout on the R132 where traffic volumes are high. There is existing uncontrolled crossing points on Seatown Road. RSA Accident statistics indicate no pedestrian incidents/accidents on this uncontrolled crossing point.	Yes
3.11	No	No	Corner Radii are generally 4.5m to accommodate occasional large vehicles (refuse trucks). See drawing 17-088/P004 and P005 which complies with DMURS for occasional larger vehicles as per Figure 4.43 in DMURS	Yes
3.12	Yes	Yes	Stop signs will be provided at internal junctions.	Yes

3.13	Yes	Yes	Footpath gradients will be reviewed at detailed design stage in order to comply with Building Regulation guidelines for mobility access. The traverse lines are a landscape architect paving feature which have been removed from our engineering drawings.	
3.14	Yes	Yes	Uncontrolled pedestrians' crossings have been amended to ensure perpendicular crossings.	
3.15	Yes	Yes	Gullies have been relocated immediately upstream of all uncontrolled pedestrian crossing points and road levels adjusted to have the low at the new gully locations.	
3.16	Yes	Yes	Disabled space has been relocated	
3.17	Yes	Yes	Additional traffic calming measures will be provided at detailed design stage, which may include build outs along the open space to reduce traffic speeds and or raised tables.	
3.18	Yes	Yes	Road has been extended to provide safe access to on-curtilage parking at unit 94.	

Signed  Laura Ruiz
Design Team Leader

Date 01/02/2021

Signed 
Audit Team Leader

Date 27/1/2021

Signed 
Employer/Developer

Date 01/02/2021