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CONSULTING ENGINEERS

CIVIL | STRUCTURAL | PROJECT MANAGEMENT

SERVICES REPORT

Including :
Proposed Surface Water Discharge
Proposed Foul water Discharge
Water & Firefighting Supply

**Project Reference: Proposed Errigal Heights Housing Project
Errigal Heights, The Glen, Cork City.**

Client: Cork City Council

Project No.: 0600-482

Design By: D.T.

Date: May 2021



 <p>CONSULTING ENGINEERS CIVIL STRUCTURAL PROJECT MANAGEMENT</p>	Project Proposed Housing at Errigal Heights, Cork city	Job Ref. 0600-482		
	Section	Sheet no./rev		
	Calc. By D.T.	Date May 2021	Chck'd by G.O.M	Date May 2021

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	Section	Surface water discharge	
	Calc. By D.T.	Date May 2021	Chck'd by GOM
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<p>Proposed Surface water discharge</p> <p>Please find attached historical aerial photo of the site showing that the site was previously developed (Errigal Heights flats complex – demolished several years ago.)</p> <p>Please note: The proposed development is on a site that was previously developed and that there is no prerequisite for attenuation of the storm water runoff from the development.</p> <p>The new site proposal includes 28 dwellings. All proposed drainage works is to comply with and be carried out in accordance with the current edition of the <i>Recommendations for site development works for Housing Areas</i> published by the <i>Department of Environment and Local Government</i>. Drainage works shall comply with Irish Water/Local Authority requirements.</p> <p>Sewers carrying domestic surfacewater from this proposed housing development shall have a sewer minimum sewer size of 225mm and the gradients are to achieve self cleansing velocities.</p> <p>Please refer to drainage drawing 1001-PL2 which indicates the proposed point of connection for the proposed surface water sewer. Please note the connection is to be made (subject to Cork City Council's approval) to an existing public surface water sewer.</p>
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Project Proposed Housing at Errigal Heights, The Glen, Cork City	Job Ref. 0600-482				
Section Foul wastewater discharge	Sheet no./rev				
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Proposed Foul Wastewater discharge

28 dwellings proposed on the site.

Please refer to drawing 1001-PL which indicates the proposed point of connection for the proposed surface water sewer. An Irish water pre-connection application was applied for this site and **Wastewater Connection Feasible without infrastructure upgrade by Irish Water** was the recommendation by Irish Water. Reference no. CDS20006413

Sewers carrying domestic wastewater from this proposed housing developments should be designed to carry a minimum wastewater volume of six times dry weather flows (6DWF).

Dry weather flows (DWF) is taken as 600 litres per dwelling (three persons per house and a per capita wastewater flow of 200 litres per head per day.)

Total Dry weather flow (DWF) = $28 \times 600 / 24/60/60 = 0.19 \text{ l/s}$

Foul Pipe Network is designed to carry a minimum wastewater volume of six times dry weather flows (6DWF).

6 DWF = 6 x 0.24 = 1.14 l/s

Typical Organic Loading :

TABLE 1: INFLOW WASTEWATER CHARACTERISTICS* FROM EPA STUDY (DOMESTIC SOURCES)

Parameter	Mean	Standard Deviation
SS	163	136
BOD ₅	168	127
COD	389	310
O-PO ₄	7.1	4.2
Total-N	40.6	19.0
NH ₃ -N	31.5	15.6
NO ₂ -N	0.25	0.41
NO ₃ -N	0.04	0.06
pH	7.5	0.5
Total-coli	1×10^8	2×10^8
E-coli	4×10^7	5×10^7

* all results in mg/l, except bacterial counts which are expressed in colony forming units, CFU per 100 ml

TABLE 2.2 TYPICAL CHARACTERISTICS OF URBAN WASTE WATER

Parameter	Concentration mg/l
BOD	100 - 300
COD	250 - 800
Suspended solids	100 - 350
Total nitrogen (as N)	20 - 85
Ammonia (NH ₃ as N)	10 - 30
Organic phosphorus (as P)	1 - 2
Inorganic phosphorus (as P)	3 - 10
Oils, fats and grease	50 - 100
Total inorganic constituents (Na, Cl, Mg, S, Ca, K, Si, Fe)	100
Heavy metals (Cd, Cr, Cu, Pb, Hg, Ni, Ag, Zn)	<1mg/leach

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<p>Proposed Water Supply</p> <p>28 dwellings An Irish water pre-connection application was applied for this site and Water Connection Feasible without infrastructure upgrade by Irish Water was the recommendation by Irish Water. Reference no. CDS20006413.</p> <p>The water demand includes : Average domestic daily demand in the development is established based on daily per-capita consumption, house occupancy, number of properties,. For design purposes the average daily domestic demand is be based on a per-capita consumption of 150 l/person/day and an average occupancy ratio of 2.7 persons per dwelling. 28 residential units :$28 \times 150 \times 2.7 = 13340$ l/day Total average daily demand = 11340 l/day</p> <p>The average day/peak week demand should be taken a 1.25 times the average daily domestic demand. Total average day/peak demand = $11340 \times 1.25 = 14175$ l/day</p> <p>The peak demand for sizing of the pipe network will normally be 5.0 times the average day, peak week demand. Total average day/peak demand = $11340 \times 5.0 = 56700$ l/day</p> <p>Fire fighting Requirements: Pressure and flow to be determined on site to meet the requirements of Irish water/Cork City Council water and fire department. Housing developments with units of houses of not more than two floors should normally have a water supply capable of delivering a minimum of eight litres per second (8 l/s) through any single hydrant. The flows (l/s) and pressure (dynamic – bar) from the existing/adjacent/extended fire water main hydrants should be confirmed in writing to the fire authority, thus to demonstrate an adequate fire water main supply for the fire authority in the event of an emergency.</p>





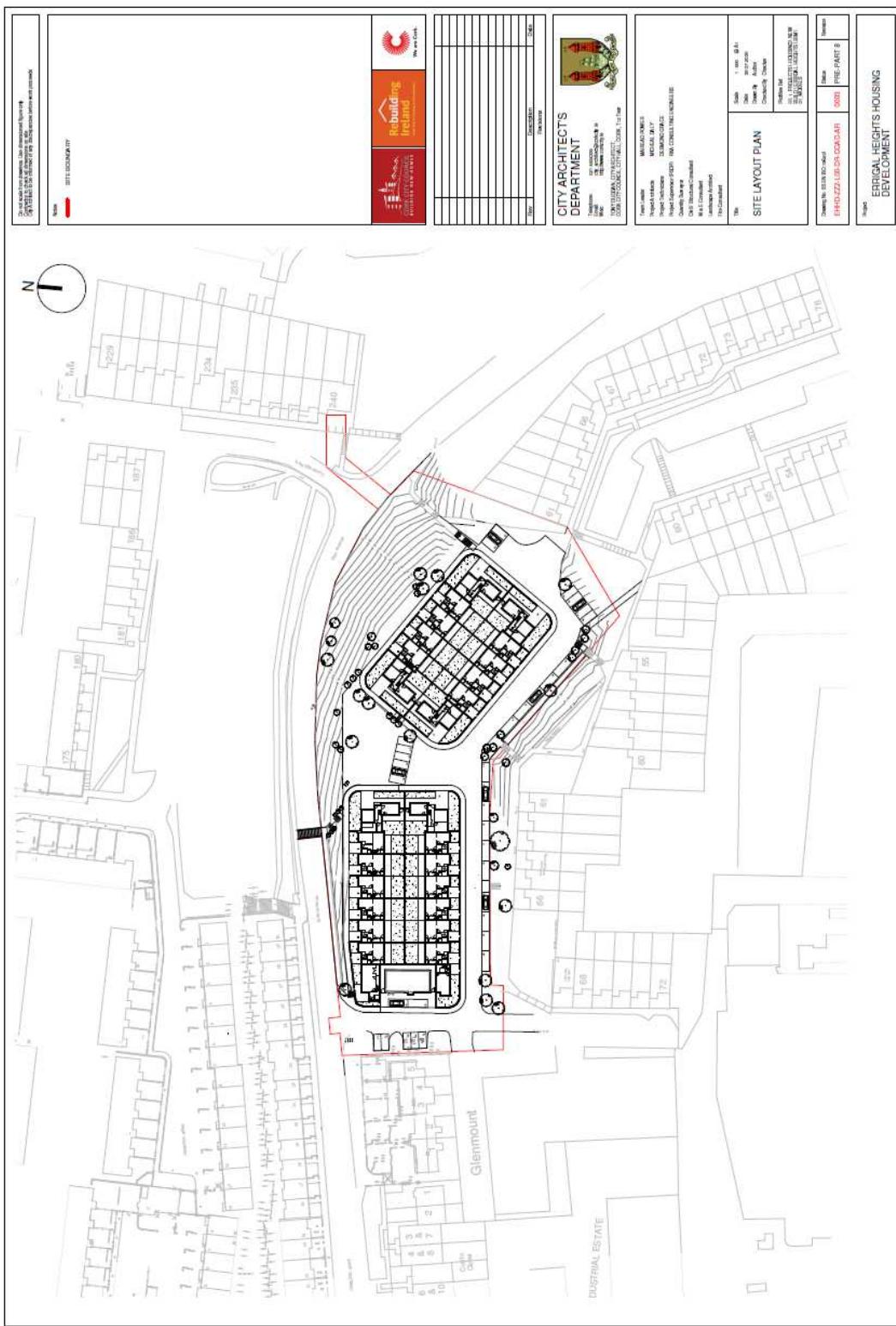
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4.0 Proposed Site Layout (nts)





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5.0 Historic Aerial Photo of Site (nts)



5.0 Recent Aerial Photo of Site (nts)





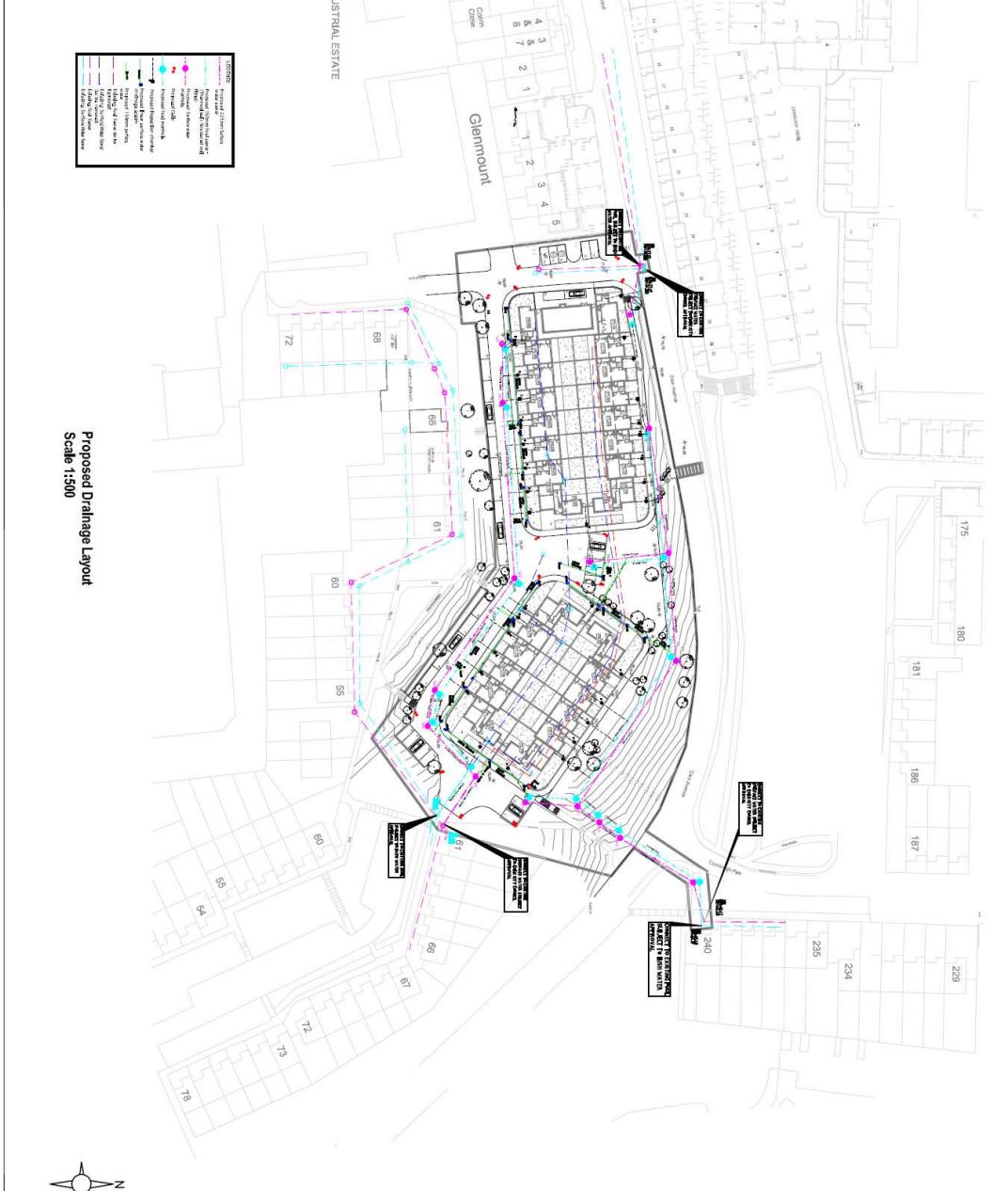
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Original Drawing Size A4	100 x 148 mm
Noise	100 x 148 mm

6.0 Proposed Drainage Layout (nts)





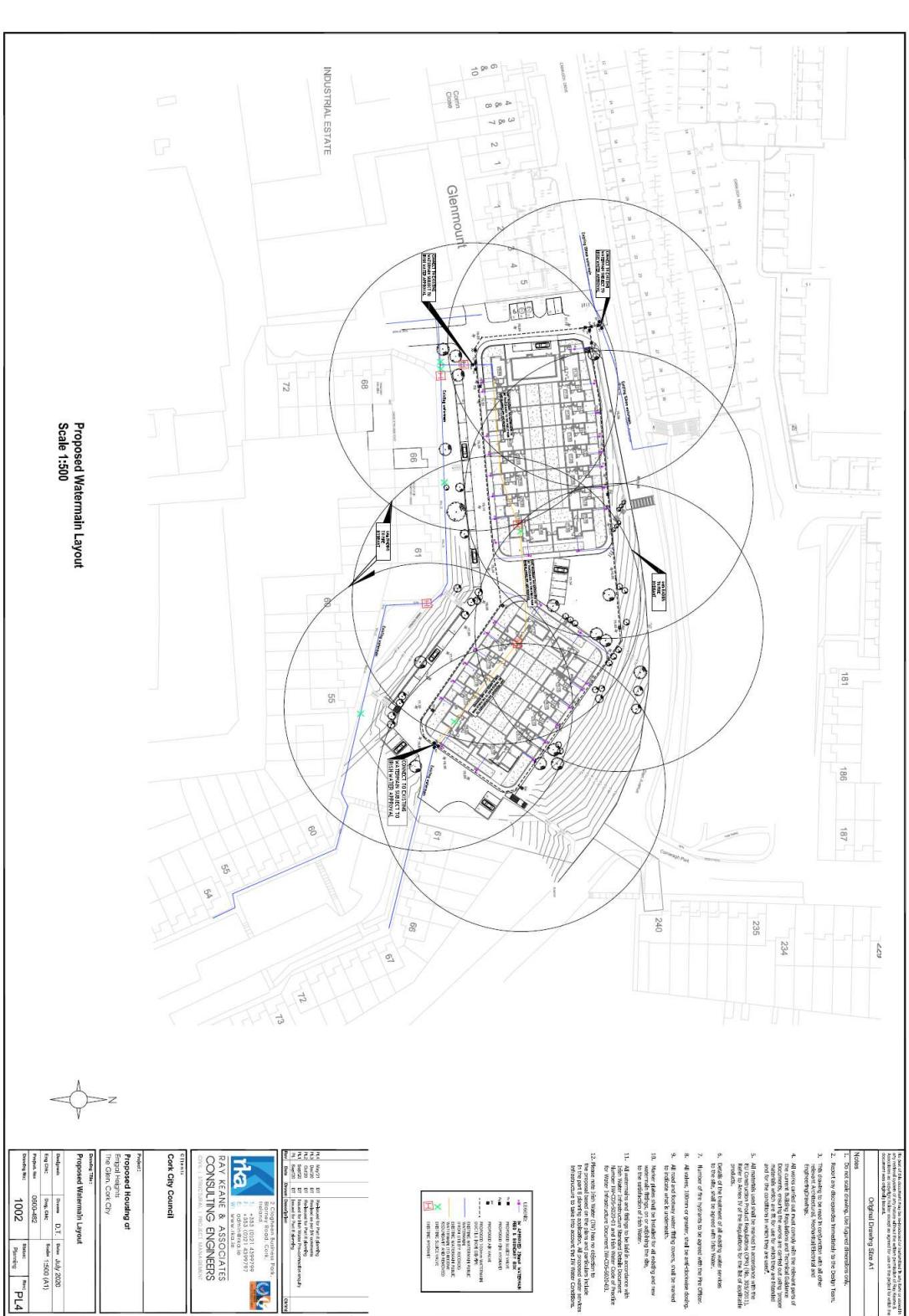
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7.0 Proposed Watermain Layout (nts)





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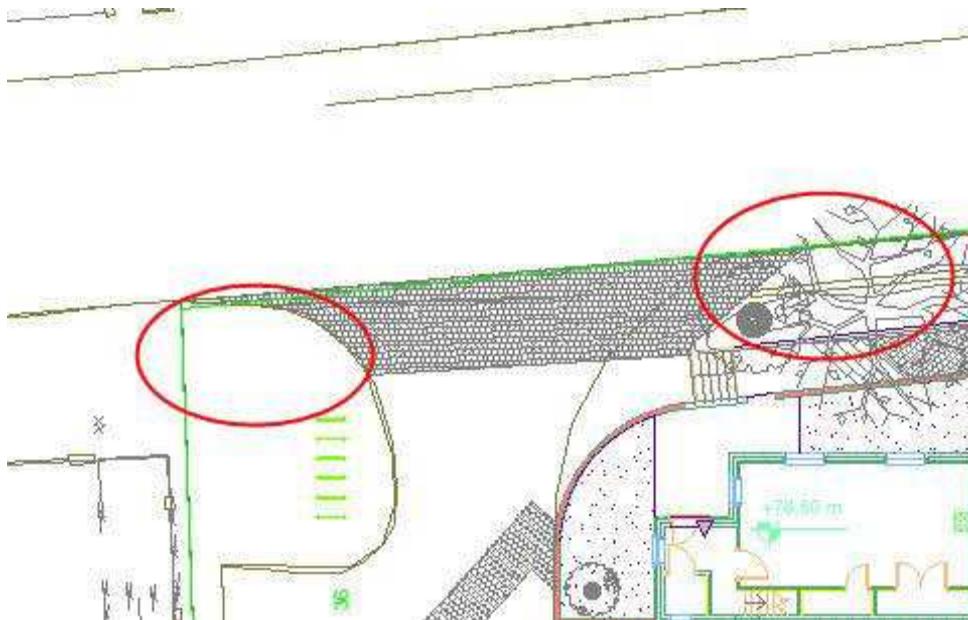
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Please refer to MHL & Associates Ltd. Consulting Engineers
Stage 1/2 Road safety Audit

Stage 1/2 Road safety Audit recommendations Feedback



Recommendation 2.1

Provide the appropriate warning tactile paving at both sides of the Errigal Heights road junction with Glen Avenue in accordance with the relevant guidelines. Clarify if a raised entry treatment is to be provided across the access road or not, otherwise dropped kerbs and dished footpaths will be required to accommodate wheelchair users and the mobility impaired.

Recommended measure accepted





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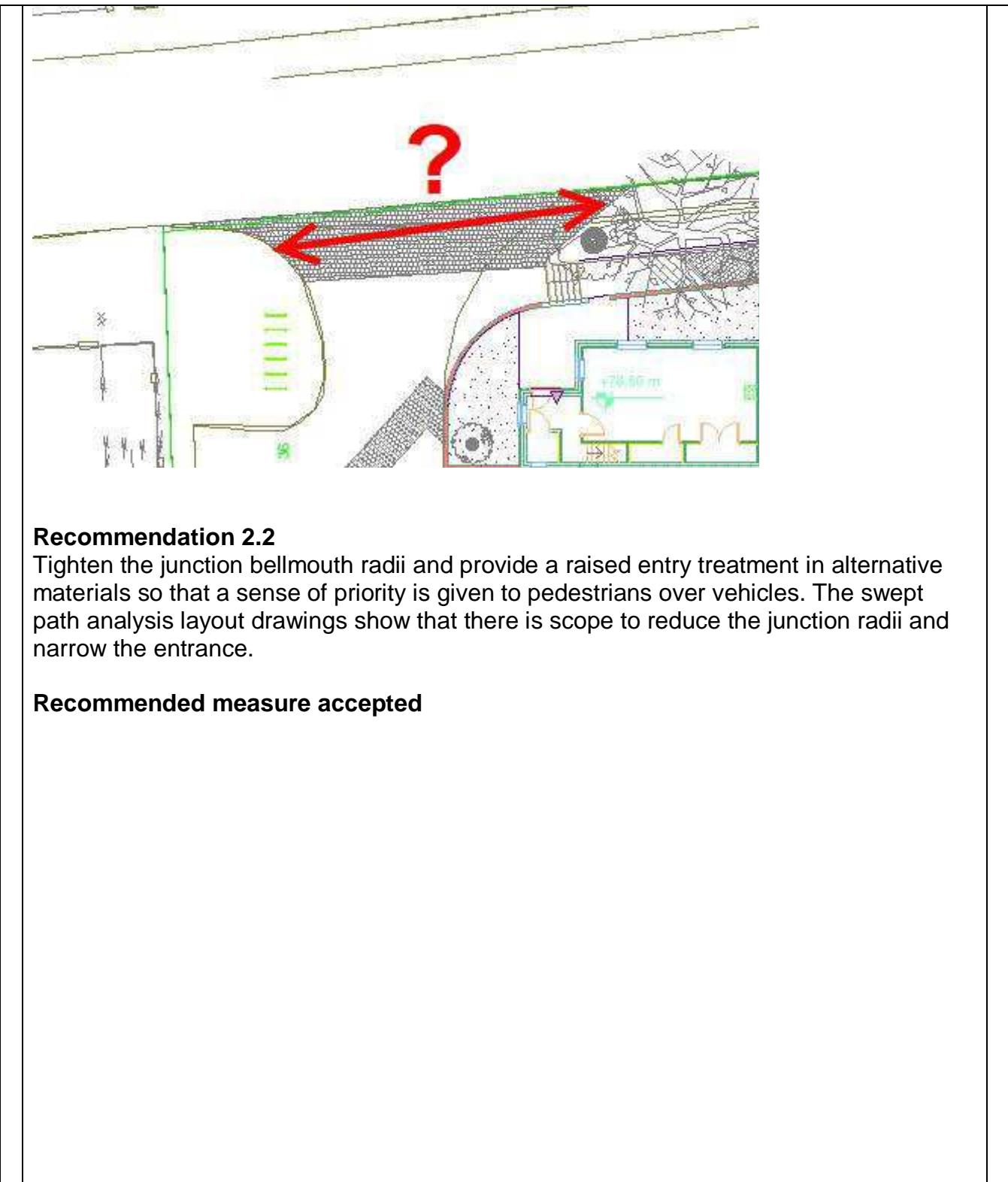
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Recommendation 2.2

Tighten the junction bellmouth radii and provide a raised entry treatment in alternative materials so that a sense of priority is given to pedestrians over vehicles. The swept path analysis layout drawings show that there is scope to reduce the junction radii and narrow the entrance.

Recommended measure accepted





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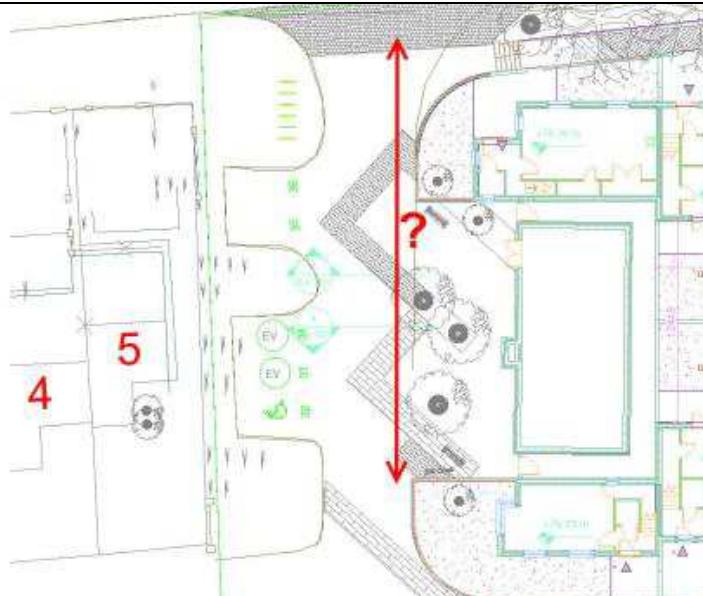
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Recommendation 2.3

Provide dedicated, designated pedestrian routes or footpaths from Glen Avenue to the cross roads development entrance with linkage to the houses to the south and to the industrial park entrance. Provide safe pedestrian routes from the building entrances to the public road footpaths all around the site and to all car parks.

Recommended measure accepted



Recommendation 2.4

Provide adequate visibility splays at the Glen Avenue junction in accordance with relevant geometric design standards.

Recommended measure accepted





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Recommendation 2.5

Provide adequate "STOP" road markings and signage at Glen Avenue. Decide on junction priority form for cross roads junction and provide regulatory road markings and warning signage.

Recommended measure accepted



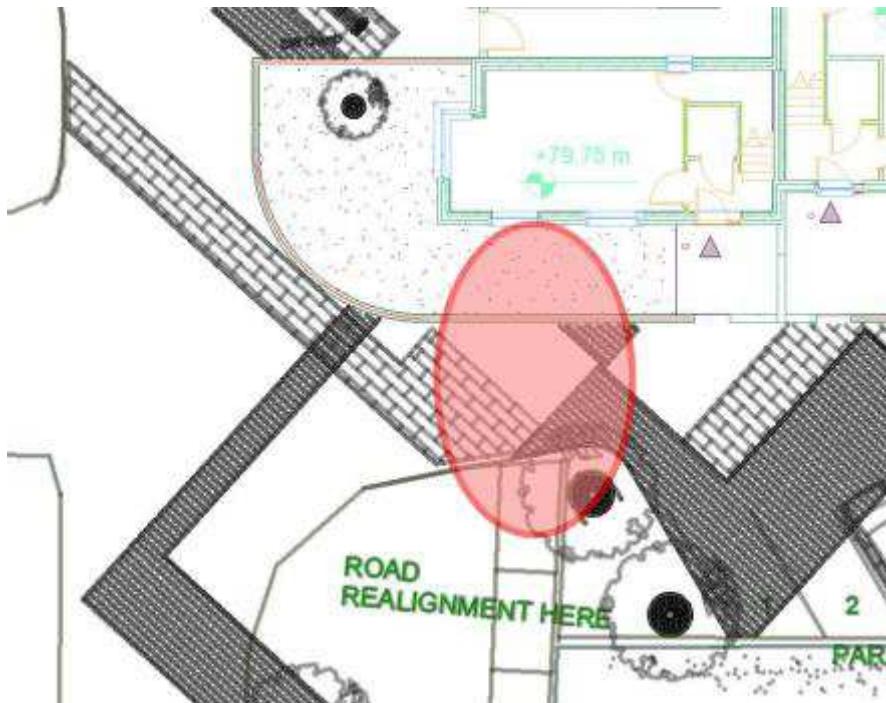
Recommendation 2.6

The proposed junction width and junction radii should be reviewed and a solution should be proposed that can achieve adequate width for passage of the design vehicle while still achieving a DMURS style layout design that is safe for vulnerable road users. The optimal entry/exit widths can be designed using swept path analysis tools for the Design Vehicle.

Recommended measure accepted



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Recommendation 2.7

Provide an appropriate crossing point with warning tactile paving at both sides of the access road junction in accordance with the relevant guidelines. A raised entry treatment or dropped kerbs and dished footpaths will be required to accommodate wheelchair users and the mobility impaired.

Recommended measure accepted

Recommendation 2.8

Ensure an adequately designed lighting scheme is provided for the scheme.

Recommended measure accepted

Recommendation 2.9

Provide accessible routes within the development site to and from the buildings to the car parks and to the public footpath network.

Recommended measure accepted

Recommendation 2.10

Provide a public road footpath of adequate width along Glen Avenue within the curtilage of the site.

Recommended measure accepted