DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

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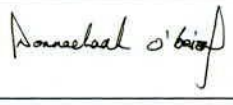
1	05/08/2022	Issue for Planning	Architect	6	

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Contents

1 Introduction

This report has been prepared by Donnachadh O'Brien & Associates Consulting Engineers (DOBA) in support of the planning application by Rathgearan Ltd to South Dublin County Council (SDCC) for a new apartment housing development at Newcastle, Co. Dublin (see Figure 1.1 below).

Figure 1.1: Site Location Map (Source: Google Maps)

This report outlines the proposed development works under the following areas:

- Surface Water Drainage
- Flooding
- Foul Water Drainage
- Water Supply
- Roads

The following report should be read in conjunction with the engineering drawings listed below, which are submitted in support of the pre application consultation process:

0001	Topographical Survey
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0027	Proposed SuDS Details Sheet 2 of 2
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2 Existing Site

The proposed development, shown in DOBA C-0050, is to be located on an existing c. 0.48 ha site which is bound to the West by the R405 (Hazelhatch Road) and to the south by the R120 (Athgoe Road). There are private dwellings to the north and an existing church and cemetery to the east.

The existing site includes a car park and existing building. It was previously used as a local bar which included an existing parking lot. It was in use 7 days a week and popular with visitors and tourists as well as local patrons.

The local topography of the proposed development lands at Newcastle falls from south to the northeast from levels of approx. +91.33m to +89.57m. The Topographical Survey is included on drawing DOBA C-0001.

An existing medieval structure is enclosed by the site and all proposed work is outside of the 15.0m exclusion zone.

3 Proposed Development

The development consists of demolition of all existing derelict structures on the site and the construction of 18 no. residential units provided in 2 separate blocks. Block 1 will be 3 storeys high and will contain 12 units. Block 2 will be 2 storeys high and will contain 6 units. The 18 no units consist of 6 no.1 bed apartments, 6 no. 2 bed apartments, 3 no. 3 bed duplexes and 3 no. 3 bed apartments. Ancillary development including reusing existing vehicular access/egress off Hazelhatch Road, providing a new vehicular egress (only) onto Main Street, car parking, open space, landscaping, boundary treatment (including existing stone boundary wall at east side of the site to be partially removed with main portion repaired and lowered), footpaths, circulation areas and all associated site works.

4 Surface Water Drainage

4.1 Existing Surface Water Drainage

There are no existing surface water pipe networks within the site boundary and Irish Water maps do not indicate a public surface water drainage network adjacent to the site (public maps are included in Appendix A); however, through discussion with SDCC it was determined that an existing surface water pipe network exists on Hazelhatch Road, immediately west of the site which discharges from an outfall approximately 1km north of the site on the R405 (Hazelhatch Road).

A report titled – Residential Development at Newcastle South, Co. Dublin, Infrastructure Design Report, for Cairn Homes Properties Ltd, June 2022 (Planning reference SHD3ABP-313814-22), includes a CCTV survey of the existing surface water network on Hazelhatch Road. The CCTV survey shows the existing surface water pipe to be 225mm diameter. The existing manholes were also checked by a land surveyor engaged by DOBA and it the existing surface water pipe network was noted to be 300mm diameter.

See Figure 4.1 and 4.2 below and refer to Appendix E for a summary of the CCTV report.

Figure 4.1: Southern extent of existing surface water network on Hazelhatch Road (Source: CCTV Report from Planning reference SHD3ABP-313814-22)

Figure 4.2: Northern extent of existing surface water network on Hazelhatch Road (Source: CCTV Report from Planning reference SHD3ABP-313814-22)

4.1.1 Preliminary Site Investigation for Surface Water Design

A preliminary site investigation was carried out by DOBA for determining infiltration rates (refer to Appendix B for the results).

Trial Pits to 1.2m BEGL: Top soil overlies shale and clay which was encountered in depths between 0.5m and 0.9m. The shale and clay layer extended down to the bottom of the trial pits.

No ground water was encountered during the course of excavation and the final depths achieved (1.1m) are not indicative of rock horizon.

BRE Digest 365 soakaway tests: Infiltration tests in accordance with BRE Digest 365 were carried out by DOBA on the site to a depth of up to 1.1m. Infiltration rates up to 7.09 x 10^{-5} m/s were noted.

From the above noted testing it was determined that the infiltration rates are not sufficient to rely only on ground water infiltration for surface water drainage therefore a connection to the public surface water mains will be required.

4.2 Proposed Surface Water Drainage

A pre planning meeting was held on April 6, 2022. During this meeting the surface water requirements were outlined by Ronan Toft from SDCC drainage .

The design and management of surface water for the proposed development will comply with the SuDS policies and guidelines outlined in the Greater Dublin Strategic Drainage Study (GDSDS) and with the requirements of South Dublin County Council. A 20% climate change factor will be included for the design of the surface water network in accordance with the requirements of South Dublin County Council. The proposed SW network has been illustrated on drawing C-0020 attached with this submission.

4.2.1 SuDS Measures

Due to lower infiltration rates onsite it is not possible to design for complete discharge of surface water runoff to ground. The surface water system has been designed to take advantage of any available infiltration while providing sufficient attenuation within SuDS features.

The proposed SuDS strategy includes the following:

- Permeable paving is proposed as a flow through structure beneath the private car parking spaces
- Road gullies shall discharge in the first instance to tree pits (where possible). The tree pits will provide interception of runoff with an overflow connection that will be provided to the piped surface water network.
- GDSDS requires that discharge rates be limited to the greater of QBAR or 2 l/s. We will provide a discharge rate of 2 l/s - Refer to Appendix C for surface water calculations.
- Attenuation storage for storms up to a 1 in 100 year event will be stored onsite through a combination of tree pits, raingardens / bio retention and high porosity stone fill build up under the permeable paving and porous asphalt.
- 20% climate change will be applied to all rainfall events for calculation of attenuation volumes.
- A bypass petrol interceptor will intercept flows prior to discharge from the site to the public surface water network.

4.2.2 Qbar

The greenfield runoff rate for the site has been calculated in accordance with GDSDS. The SOIL type has been assumed as Type 2 based on the infiltration characteristics of the existing subsoils. The Qbar rate is 0.79l/s; however, as mentioned above, the release rate of 2 l/s has been used for sizing the attenuation tank. The SW calculations are included in Appendix C.

4.2.3 Discussions with Local Authority

DOBA had discussions with Ronan Toft from SDCC regarding the surface water design. Potential connection options were discussed and it was decided that the most favourable surface water connection location was off Hazelhatch Road.

5 Flooding

This section of the report deals with the assessment of the potential risk of flooding to the proposed development. The site is located approximately 1.0km southeast of the River Liffey.

5.1 Flood Zones

Flood zones are geographical areas within which the probability of flooding is in a particular range and they are a key tool in flood risk management within the planning process as well as in flood warning and emergency planning.

There are three types or levels of flood zones defined for the purposes of the guidelines:

Flood Zone A – where the probability of flooding from rivers and the sea is highest (greater than 1% or 1 in 100 for river flooding or 0.5% or 1 in 200 for coastal flooding);

Flood Zone B – where the probability of flooding from rivers and the sea is moderate (between 0.1% or 1 in 1000 and 1% or 1 in 100 for river flooding and between 0.1 or 1 in 1000 year and 0.5% or 1 in 200 for coastal flooding);

Flood Zone C – where the probability of flooding from rivers and the sea is low (less than 0.1% or 1 in 1000 for both river and coastal flooding). Flood Zone C covers all areas of the plan which are not in zones A or B

5.2 OPW - CFRAM

The OPW carried out the CFRAM Studies and produced informative maps of areas indicating their susceptibility to flooding up to and including the 0.1% AEP event (1 in 1000 chance of occurrence in any given year) which is the upper limit of the study. The below extract (Figure 5.1) includes the proposed development site location. The map shows that the proposed development is not in an area that is covered by the CFRAMs study.

5.3 Strategic Flood Risk Assessment South Dublin County Development Plan

The Strategic Flood Risk Assessment South Dublin County Development Plan show's that the proposed site is located in Flood Zone C as shown in Appendix F.

Figure 5.1 : Extract from CFRAMs Website

5.4 Pluvial Flood Risk

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high intensity rainfall. Provision of adequate storm water drainage systems will minimize the risk from pluvial flooding sources. As noted in Section 4.2 above, the proposed surface water network has been designed to mitigate against the potential for pluvial flooding for rainfall events up to a 1 in 100 year event + 20% climate change factor.

5.5 Fluvial

Fluvial flooding, as defined by the OPW, occurs when rivers and streams break their banks and water flows out onto the adjacent low-lying areas. Fluvial flooding can arise where the runoff from heavy rain exceeds the natural capacity of the river channel. From detailed review of CFRAMS and The Strategic Flood Risk Assessment South Dublin County Development Plan it has been determined that the proposed development is located within Flood Zone C.

Having reviewed historical flooding in the areas it was determined that there is no history of flooding on the site.

5.6 Coastal

The site is located 18km form the nearest coast line and coastal flooding is not considered a risk.

5.7 Summary

The available CFRAMS map confirms that the site is not at risk from Fluvial, Pluvial or Coastal Flooding and is located in a Flood Zone C. The proposed surface water management strategy on the site confirms that there is no risk from Pluvial Flooding. The proposed site development is deemed appropriate for residential development and no further assessment is required.

6 Foul Drainage

During the pre-planning meeting foul requirements were outlined by Ronan Toft from SDCC drainage . It was noted that the current waste water network is under capacity at present.

6.1 Existing Foul Drainage

There is an existing combined drainage network serving the site which discharges to the existing foul network running along the Athgoe Road adjacent to the site indicated on Irish Water maps. This then flows from west to east and discharges via gravity towards the existing foul network in Peamount Road.

Irish Water maps are included in Appendix A of this report.

6.1.1 Irish Water Pre-Connection Enquiry

A pre connection enquiry was submitted to Irish Water for a new wastewater connection for the proposed development and discussions are ongoing with Irish Water. The existing wastewater connection will be removed.

6.2 Proposed Foul Drainage

The topography of the proposed of the site falls from south to the northeast from levels of approx. +91.33m to +89.57m. The proposed apartment building is located in the highest part of the site, as such there is sufficient fall to connect to the existing foul in Athgoe Road.

The proposed foul network will collect effluent from the new apartment building and will discharge into the existing foul network in Athgoe Road sing a new connection (as noted in Section 4.1.1 above).

It was noted at the pre-planning meeting on April 6 that the existing wastewater system is under capacity at the moment. DOBA engaged CCTV review of the existing site sewer connection in July 2022 and it was determined that surface water runoff from the roof discharges in to the public foul network.

Surface water discharging from the existing site to the foul network will be removed as part of the proposed development through the provision of separate foul and surface water networks to serve the new development and will reduce discharge to the existing public foul network, creating capacity for the proposed development.

As can be seen from Section 6.2.1 below the dry weather flow from the proposed development is 0.085 l/s. It was determined through analysis of the previous use for the site that the foul flow was 0.079 l/s. This is based on an occupancy rate of 1 person for every 1.5 sqm of public floor space and assumes that the pub was at full capacity 40% of the time.

See below summary of assumptions and calculations of previous site use foul flow rate:

Total floor space	460	Sqm
Industry Standard Occupancy Rate	1.5	Sqm / person
Assumed 75% public floor space	345	Sqm
Number of patrons at maximum capacity	230	People at maximum capacity
Assume 3 hour turnaround for 15 hour day	1150	Customers / day (at maximum capacity)
Assume max capacity 40% of the day	460	Customers / day
Flow rate from IW COP for Snack bars and bar meals	15	L / person / day
Flow per day	6900	L / day
Previous Site Use Foul Flow Rate	**0.0799**	**L / s**

Figure 6.1 : Previous site use foul flow rate

The existing surface water discharge from the roof of the existing building was determined to be 7.9 l/s for the one year storm event. As summarized in Figure 6.2 below discharge to the existing foul network will be reduced by 7.984 l/s.

Previous Site Use Foul Flow Rate	0.079 l/s Eliminated
Previous Site Use Surface Water flow from Roof	7.9 l/s Eliminated
Proposed Development Foul Flow Rate	0.085 l/s Added
Net Flow	**-7.894 l/s**

Figure 6.2 : Previous site use foul flow rate

6.2.1 Proposed Development

The proposed discharge from the development connecting into the existing foul network has been calculated using a peak flow factor of 6DWF.

No. of dwellings	18 No.
Occupancy Rate	2.7 persons/dwelling
Population	49 No.
Loading	150 l/person/day (IW CoP Section 3.6)
Daily Loading	7,350 l/day
D.W.F	0.085 l/s
6 D.W.F	0.51 l/s

7 Water Supply

7.1 Existing Water Supply

An existing 101.6 mm asbestos public watermain is located along Athgoe Road and Hazelhatch Road, adjacent to the site, according to the Irish Water Maps. The connection will be removed, the location is unknown at this time. The Irish Water public maps are included in Appendix A.

7.1.1 Irish Water Pre-Connection Enquiry

A pre connection enquiry was submitted to Irish Water for a new wastewater connection for the proposed development and discussions are ongoing with Irish Water. Refer to Appendix D.

7.2 Proposed Water Supply

The proposed water supply to the new development will be designed in accordance with the Irish Water Code of Practice and standard details. A new 100mm diameter HDPE PE-100 looped watermain will be provided from the existing 101.6 mm asbestos public watermain adjacent to the development in Athgoe Road. A bulk meter will be located at the entrance to the development as per the Irish Water standard details. Air and scour valves will be provided at high and low points in the new watermain for maintenance in accordance with Irish Water Standard Details. Hydrants will be installed for firefighting in accordance with the IW standard details and in accordance with accordance with Part B of the Building regulation TGDs and Irish Water regulations.

The watermain layout is shown on drawing C-0040.

The proposed water demand from the development has been calculated as follows:

No. of dwellings	18 No.
Occupancy Rate	2.7 persons/dwelling
Population	49 No.
Per capita consumption	150 l/person/day (IW CoP Section 3.6)
Average daily Domestic Demand	7,350 l/day
Average daily Domestic Demand	0.085 l/s
Average Day/Peak week demand	0.11 l/s
Peak Hour Water Demand	0.55 l/s

7.3 Fire Fighting

The firefighting elements of the water supply have been designed in accordance with Part B of the Building Regulations TGDs. 2 No. Hydrant has been provided on the site (building footprint 904m^2). Refer to DOBA C-0040 for hydrant locations.

8 Roads Infrastructure

During the pre planning meeting John McGee from SDCC Roads Department discussed the road requirements including access requirements, sightlines, swept path analysis and parking requirements.

8.1 Existing Roads Infrastructure

The proposed development site is located at the north east corner of the Junction of the R120 (Athgoe Road)) and the R405 (Hazelhatch Road). Refer to Figure 8.1 below. The existing Athgoe Road and Hazelhatch Road are approximately 7m wide adjacent to the site. There is an existing 2.0m (approx.) wide footpath on the adjacent to the site along Athgoe Road and an existing 1.8m (approx.) wide footpath adjacent to the site along Hazelhatch Road. There is currently an existing pinch point on the sidewalk at the north east corner of the intersection which will be widened as part of the proposed works.

Figure 8.1 : Existing road layout (Source: Google Maps)

8.2 Proposed Roads Infrastructure

It is proposed to reuse the existing access with modifications and improvements from Hazelhatch Road located at the existing western site access and to construct and new access to Athgoe Road on the eastern side of the

site. There will be two-way movement through the site from the Hazelhatch Road access and a 1-way exit only movement from the Athgoe Road access.

The posted speed limit south of the site, along Athgoe Road, and northeast of the site along Hazelhatch Road, is 50 kph. A minimum of 49m sightlines are achievable in each direction at the proposed exit locations in accordance with Table 4.2 in DMURS for a 50 kph speed limit Figure 8.2 below, however, a reduction in the "x" distance to 2.0m on Hazelhatch Road will be required in order to meet the 49m sight line requirement. Refer to DOBA C-0080 for Sightline drawings.

SSD STANDARDS

Design Speed (km/h)	SSD Standard (metres)
10	7
20	14
30	23
40	33
50	45
60	59

Forward Visibility

Design Speed (km/h)	SSD Standard (metres)
10	8
20	15
30	24
40	36
50	49
60	65

Forward Visibility on Bus Routes

Figure 8.2 : Table 4.2 from DMURS

A new 2.2m wide footpath will be installed to eliminate the pinch point on the north east corner of the junction with Athgoe Road and Hazelhatch road.

8.2.1 Parking

The parking requirements are based on SDCC County Development Plan having been calculated using Zone 1 requirements for Apartment Buildings. Figure 8.3 below shows Table 13.26 from the County Development Plan outlining the parking requirements per unit.

Dwelling Type	No. of Bedrooms	Zone 1	Zone 2
Apartment Duplex	1 Bed	1 space	0.75 space
	2 Bed	1.25 spaces	1 space
	3 Bed+	1.5 spaces	1.25 spaces
House	1 Bed	1 space	1 space
	2 Bed	1.5 spaces	1.25 spaces
	3 Bed+	2 spaces	1.5 spaces

Figure 8.2 : Table 13.26 from SDCC County Development Plan

The required number of parking spaces based on the unit types is shown in figure 8.3 below.

Type of Unit	No. of Units	No. of Parking Required / Unit	Total No. of Parking Spaces Required
1 Bed	6	1	6
2 Bed	6	1.25	7.5
3 Bed Duplex	3	1.5	4.5
3 Bed Apartment	3	1.5	4.5
		Total Spaces	**22.5**

Figure 8.3 : Required number of parking stalls

A total of 24 parking spaces have been provided for the site, 2 of which are accessible parking spaces located directly adjacent to the proposed apartment building.

8.3 Road Safety Audit

A road safety Audit was carried out by a third-party independent transport consultant; Bruton Consulting Engineers in July 2022 and can be seen in Appendix G.

DOBA responded to all items raised and have incorporated the agreed recommendations into the scheme.

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Appendix A

Irish Water Maps

Irish Water Web Map

Water Distribution Network
- Water Treatment Plant
- Water Pump Station
- Storage Cell/Tower
- Dosing Point
- Meter Station
- Abstraction Point
- Telemetry Kiosk

Reservoir
- Potable
- Raw Water

Water Distribution Mains
- Irish Water
- Private

Trunk Water Mains
- Irish Water
- Private

Water Lateral Lines
- Irish Water
- Non IW
- Water Casings

Water Abandoned Lines
- Boundary Meter
- Bulk/Check Meter
- Group Scheme
- Source Meter
- Waste Meter
- Unknown Meter , Other Meter
- Non-Return
- PRV
- PSV
- Sluice Line Valve Open/Closed
- Butterfly Line Valve Open/Closed
- Sluice Boundary Valve Open/Closed
- Butterfly Boundary Valve Open/Closed
- Scour Valves
- Single Air Control Valve
- Double Air Control Valve
- Water Stop Valves
- Water Service Connections
- Water Distribution Chambers
- Water Network Junctions
- Pressure Monitoring Point
- Fire Hydrant
- Fire Hydrant/Washout

Water Fittings
- Cap
- Reducer
- Tap
- Other Fittings

Sewer Foul Combined Network
- Waste Water Treatment Plant
- Waste Water Pump station

Sewer Mains Irish Water
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow

Sewer Mains Private
- Gravity - Combined
- Gravity - Foul
- Gravity - Unknown
- Pumping - Combined
- Pumping - Foul
- Pumping - Unknown
- Syphon - Combined
- Syphon - Foul
- Overflow
- Sewer Lateral Lines
- Sewer Casings

Sewer Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown

Discharge Type
- Outfall
- Overflow
- Soakaway
- Standard Outlet
- Other; Unknown

Cleanout Type
- Rodding Eye
- Flushing Structure
- Other; Unknown

Sewer Inlets
- Catchpit
- Gully
- Standard
- Other; Unknown

Sewer Fittings
- Vent/Col
- Other; Unknown

Storm Water Network

Surface Water Mains
- Surface Gravity Mains
- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

Inlet Type
- Gully
- Standard
- Other; Unknown

Storm Manholes
- Standard
- Backdrop
- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

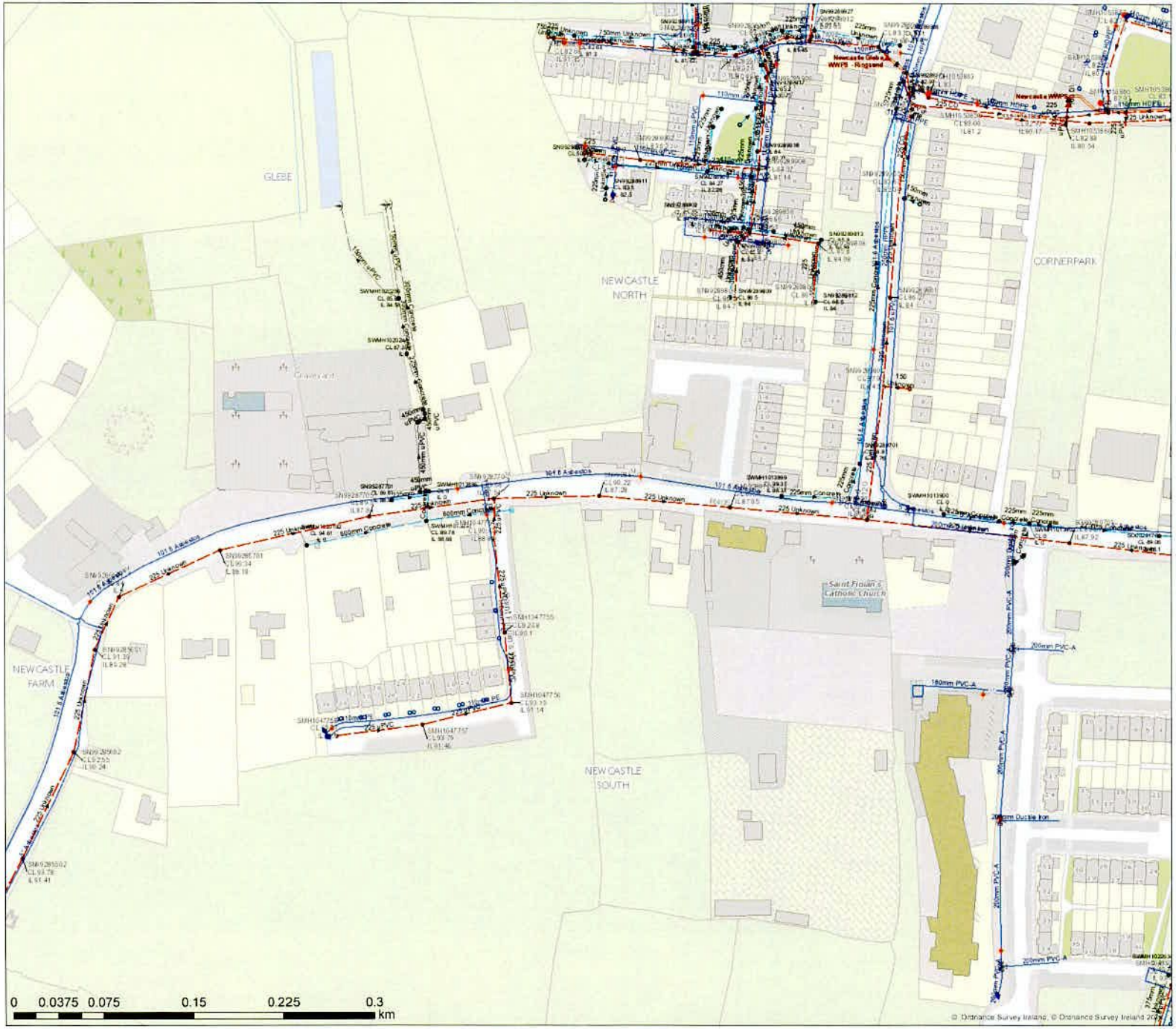
Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

UISCE ÉIREANN : IRISH WATER

Print Date: 21/06/2022

Printed by:Irish Water

Irish Water Web Map



UISCE ÉIREANN : IRISH WATER

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- Fire Hydrant/Washout

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- Overflow

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- Other; Unknown

Sewer Fittings
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Storm Water Network

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- Surface Gravity Mains Private
- Surface Water Pressurised Mains
- Surface Water Pressurised Mains Private

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- Cascade
- Catchpit
- Bifurcation
- Hatchbox
- Lamphole
- Hydrobrake
- Other; Unknown
- Storm Culverts
- Storm Clean Outs
- Stormwater Chambers

Discharge Type
- Outfall
- Overflow
- Soakaway
- Other; Unknown

Gas Networks Ireland
- Transmission High Pressure Gasline
- Distribution Medium Pressure Gasline
- Distribution Low Pressure Gasline

ESB Networks

ESB HV Lines
- HV Underground
- HV Overhead
- HV Abandoned

ESB MVLV Lines
- MV Overhead Three Phase
- MV Overhead Single Phase
- LV Overhead Three Phase
- LV Overhead Single Phase
- MVLV Underground
- Abandoned

Non Service Categories
- Proposed
- Under Construction
- Out of Service
- Decommissioned

Water Non Service Assets
- Water Point Feature
- Water Pipe
- Water Structure

Waste Non Service Assets
- Waste Point Feature
- Sewer
- Waste Structure

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Appendix B

Site Investigation

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UNIT 5C
ELM HOUSE
MILLENNIUM PARK
NAAS
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2203-DOB-XX-XX-SP-S-0001

INFILTRATION TESTING TO BRE DIGEST 365

SPECIFICATION

1. Terms of Reference

Scope:	To carry out 3 No. BRE 365 Infiltration Tests and determine the design Soil Infiltration Rate, f
Location:	Site at Athgoe Rd, Newcastle, Co. Dublin
Client:	Demesne Architecture
Sub-Contractor:	Appointed contractor to carry out infiltration testing as outlined below.

2. Scope of Works

Number and Location

- 3 No. Infiltration Test are to be carried out; 1 No. at each location as indicated on the attached site sketch

Pit Excavation

- The contractor must set up safety signage and barrier protection in the form of Harris fencing around the work location. The barrier protection must be secure if the site is to be left unattended overnight.
- The contractor must check location plans & service drawings, seek local advice on the whereabouts of services and CAT (Cable Avoidance Tool) locate and carefully mark the route of any traced services.

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- The contractor must set up excavator so that the driver can see the proposed excavation and use a toothless bucket to dig slowly through any fill material and into the natural soils while continuing to use the CAT as the pit progresses.
- Assuming that no services are found, excavate 3 No. 400mm wide x 2500mm long x 2500mm deep in 300mm lifts to allow the engineer to note the material type. Trial Pits are to be excavated with a backhoe loader or mini excavator. Sides of the pit are to be vertical and trimmed square.
- Each trial pit is to be measured carefully and recorded before commencing the tests.

Initial Soaking

- Each of the 3 No Trial Pits is to be completely filled with water from the base to the Ground Level.
- The Trial Pits are to be left idle for 24 hours to allow them to completely empty prior to carrying out the infiltration testing.
- When filling the pit with water, care is to be taken to ensure that the inflow does not cause the walls of the pit to collapse.
- A considerable volume of water is required to determine the soil infiltration rate. It is recommended that the sub-contractor connect to the nearest water hydrant with permission given by the local authority using standpipes and hoses.
- Alternatively, a sufficient number of water bowsers will be required to fill each pit with a minimum of 2.5m3 of water will be required.
- The contractor will need to supply all necessary plant and equipment such as excavators, hoses, stand pipes, bowsers, etc. to complete the testing.

Infiltration Testing

- The day after the initial soaking has taken place, each of the 3 No. Trial Pits are to be filled with water up to Ground Level and allowed to drain 3 times to near empty.
- The 3 filling and emptying cycles should be on the same or consecutive days.
- During each cycle the level and time to empty the pit from full at 100mm intervals is to be recorded. This will clearly define the water level vs. time.

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Handling of Results

- Soil Infiltration Rate is to be measured for the time taken for the water to fall from the 75% to the 25% effective storage depth of the pit. The sub-contractor is to record the results under Section 3 Field Results of this Specification.
- Use the lowest ***f*** value for the design value.
- Calculations are to be provided by the sub-contractor under Section 4 Calculations of this Specification.
- Backfilling of the pits will be carried out immediately following the completion of the excavation in accordance with the specification.

3. Field Results

Trial Pit No. 1		Trial Pit No. 2		P Test	
Pit Depth	Time (Seconds)	Pit Depth	Time (Seconds)	Pit Depth	Time (Seconds)
Full		Full		Full	
		1150mm			
		1100mm	240		
		1000mm	2,580		
880mm		900mm	5,820		
800mm	660	800mm			
700mm	2,460	700mm			
600mm	4,740	600mm	20,760		
500mm		500mm			
400mm		400mm		400mm	
300mm		300mm		300mm	480
200mm	20,400	200mm		200mm	1,860
100mm		100mm		100mm	4,140
Near empty		Near empty		Near empty	5,640

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4. Calculations

Test pit 1 – 3.33×10^{-5}
Test pit 2 – 2.65×10^{-5}
P Test – 7.09×10^{-5}

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Appendix C

SW Calculations

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Project *Newcastle Apartments*
Project No *DOBA2203*
Title: *Application Site*
Calcs By *SP* Date: 18/07/2022

PRELIMINARY SURFACE WATER STORAGE ESTIMATE (NO LONG TERM STORAGE)

Catchment Characteristics

Greenfield Runoff Flows (Sites < 50 Ha)

denotes Input Value

Standard Average Annual Rainfal (SAAR) =						775	mm	
Soil Index =						0.3		
Total Site Area =						0.3830	Hectares (ha)	
Storm Return Period =						100	Years	
Permissible Outflow per hectare, QBAR =						2.1	l/s/ha	
*** Total Permissible Outflow=**						0.79	l/s	
Outflow limited to greater of QBAR and 2l/s						2.00	l/s	
Proposed Impermeable Area:								
	Hardstanding					0.1429	ha	
	Roofs					0.0904	ha	
	Proposed Open Space					0.1497	ha	

Soil Classification for Runoff Potential

Based on FSR Maps

Soil 1	0	%	Infiltration
Soil 2	100	%	
Soil 3	0	%	
Soil 4	0	%	
Soil 4	0	%	
Soil 5	0	%	

Hardstanding	@	80	% Impermeable
Roofs	@	95	% Impermeable
Proposed Open Space	@	5	% Impermeable

Rainfall Intensity from Met Eireann

1 hectare = 10,000m^2

return period	*grow curve factor*
1	0.85
10	1.7
30	2.1
100	2.6
200	2.9

Duration (min)	Rainfall 1/100 Carragh (mm)	Intensity (mm/hr)	Factored Intensity *** (mm/hr)	Factored Rainfall *** (mm)	Rainfall (m^3/ha)	Volume (m^3)	Permissable Outflow (m^3)	Storage Required (m^3)
5	13.8	165.6	182.2	15.2	151.8	32	1	31
10	19.2	115.2	126.7	21.1	211.2	44	1	43
15	22.5	90.0	99.0	24.8	247.5	51	2	50
30	27.9	55.8	61.4	30.7	306.9	64	4	60
60	34.5	34.5	38.0	38.0	379.5	79	7	72
120	42.6	21.3	23.4	46.9	468.6	97	14	83
180	52.7	17.6	19.3	58.0	579.7	120	22	99
240	59.6	14.9	16.4	65.6	655.6	136	29	107
360	67.5	11.3	12.4	74.3	742.5	154	43	111
540	73.7	8.2	9.0	81.1	810.7	168	65	104
720	83.5	7.0	7.7	91.9	918.5	191	86	104
1080	91.2	5.1	5.6	100.3	1003.2	208	130	79
1440	98.4	4.1	4.5	108.2	1082.4	225	173	52
2880	106	2.2	2.4	116.6	1166.0	242	346	-103
4320	113.2	1.6	1.7	124.5	1245.2	259	518	-260

Value of storage required = 111 m^3 **(Based on 2 l/s)**

Notes

*Total Permissible Outflow calculated in accordance with GDSDS - Regional Drainage Policies (Volume 2 - Chapter 6)

**Permissable Outflow per Hectare multiplied by growth factors

i.e. $QBAR(m^3/s)=0.00108x(Area)^{0.89}(SAAR)^{1.17}(SOIL)^{2.17}$

SOIL : Soil Index Values in range 0.15-0.5 of Catchment values Available from the FSR. The Index derived from:

$$\frac{(0.15Soil\ 1+\ 0.30Soil\ 2\ +\ 0.40Soil\ 3+\ 0.45Soil\ 4+\ 0.50Soil\ 5)}{(Soil\ 1+\ Soil\ 2+\ Soil\ 3+\ Soil\ 4+Soil\ 5)}$$

*** Rainfall Intensity increased by 10% to comply with global warming effects as described in the GDSDS - Regional Drainage Policies (Volume 2 - Section 6.3.2.4 - Table 6.2)

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Appendix D

Irish Water Correspondence

Pre-connection enquiry form

Business developments, mixed use developments, housing developments

This form is to be filled out by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure. If completing this form by hand, please use BLOCK CAPITALS and black ink. Please note that this is a digital PDF form and can be filled in electronically

Please refer to the **Guide to completing the pre-connection enquiry form** on page 14 of this document when completing the form.

*** Denotes mandatory/ required field. Please note, if mandatory fields are not completed the application will be returned.**

Section A | Applicant details

1 ***Applicant details:**

Registered company name (if applicable): Rathgearan Ltd,

Trading name (if applicable):

Company registration number (if applicable):

Parent company registered company name (if applicable):

Parent company registration number (if applicable):

If you are not a registered company/business, please provide the applicant's name:

damien donegan

*Contact name: damien donegan

*Postal address:

Rathgearan Ltd, Unit 2, Riverview Business Centre, Dublin Road, Celbridge, Co. Kildare W23 EA46

Please provide either a landline or a mobile number

Landline:

*Mobile: 087 236 2688

*Email: d7donegan@gmail.com

Application number CDS22004560

2 Agent details (if applicable):

The fields marked with * in this section are mandatory if using an agent

*Contact name: GEORGE BURNS

Company name (if applicable):

*Postal address: UNIT 5C ELM HOUSE,
MILLENNIUM PARK, NAAS,
Co. KILDARE

*Eircode: W91P9P8

Please provide either a landline or a mobile number

Landline: 0459840422

*Mobile 0852176276

*Email: george.burns@doba.ie

3 *Please indicate whether it is the applicant or agent who should receive future correspondence in relation to the enquiry:

Applicant ○ Agent ◉

Section B | Site details

4 *Site address 1 (include Site name/Building name/Building number):

HAZELHATCH ROAD

***Address 2**

***Address 3**

***City/Town** Newcastle

***County** Co. Dublin **Eircode**

5 *Irish Grid co-ordinates (proposed connection point):

Eastings (X) 299567 Northings (Y) 228712

Note: Values for Eastings must be between 015,900 and 340,000. Northings, between 029,000 and 362,000
Eg. co-ordinates of GPO, O'Connell St., Dublin: E(X) 315,878 N(Y) 234,619

6 *Local Authority where proposed development is located:

South Dublin County Council

7 *Has full planning permission been granted? Yes ☐ No ☑

If 'Yes', please provide the current or previous planning reference number:

8 ***Is this development affiliated with a government body/agency?** Yes ☐ No ☑

If 'Yes', please specify the body/agency:

Eg. IDA, HSE, LDA, etc.

Section C | Development details

9 ***Please outline the domestic and/or industry/business use proposed:**

Domestic:

Property type	Number of units	Property type	Number of units
House		Apartments	18
Duplex		Number of Apartment Blocks	

Industry/business:

Property type	Number of units	Property type	Number of units
Agricultural		Brewery / Distillery	
Restaurant / Café / Pub		Car Wash / Valeting	
Creche		Data Centre	
Fire Hydrant		Fire Station	
Food Processing		Hotel Accommodation	
Industrial / Manufacturing		Laundry / Laundrette	
Office		Primary Care Centre	
Residential / Nursing Care Home		Retail	
School		Sports Facility	
Student Accommodation		Warehouse	

Other (please specify type)		No. of Units	

9.1 Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

9.2 Please provide the maximum expected occupancy in number of people, according to the proposed development you selected, e.g. Number of office workers, number of nursing home residents, maximum pub occupancy, number of hotel beds, number of retail workers:

10 ***Approximate start date of proposed development:**

1	6	/	0	3	/	2	0	2	3

11 ***Is the development multi-phased?** Yes ☐ No ☑

If 'Yes', application must include a master-plan identifying the development phases and the current phase number.

If 'Yes', please provide details of variations in water demand volumes and wastewater discharge loads due to phasing requirements.

12 ***Please indicate the type of connection required by ticking the appropriate box below:**

Both Water and Wastewater ◉ Please complete both Sections D and E

Water only ○ Please go to Section D

Wastewater only ○ Please go to Section E

Reason for only applying for one service (if applicable):

Section D | Water connection and demand details

13 ***Is there an existing connection to public water mains at the site?** Yes ☐ No ☑

13.1 If yes, is this enquiry for an additional connection to one already installed? Yes ☐ No ☑

13.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☑

14 **Approximate date water connection is required:** 16 / 03 / 2023

15 ***What diameter of water connection is required to service the development?** 100 mm

16 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ☑

If 'Yes', how many? ☐☐

17 **Please indicate the business water demand (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

18 **Please indicate the industrial water demand (industry-specific water requirements):**

Post-development peak hour water demand		**l/s**
Post-development average hour water demand		**l/s**

Please include calculations on the attached sheet provided. Where there will be a daily/weekly/seasonal variation in the water demand profile, please provide all such details.

19 **What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?**

91.08 m

20 **What is the highest finished floor level of the proposed development above Malin Head Ordnance Datum?**

91.58 m

21 **Is on-site water storage being provided?** Yes ☐ No ☑

Please include calculations on the attached sheet provided.

22 **Are there fire flow requirements?** Yes ☐ No ☑

Additional fire flow requirements over and above those identified in Q17-18		**l/s**

Please include calculations on the attached sheet provided, and include confirmation of requirements from the Fire Authority.

23 **Do you propose to supplement your potable water supply from other sources?** Yes ☐ No ☑

If 'Yes', please indicate how you propose to supplement your potable water supply from other sources (see **Guide to completing the application form** on page 15 of this document for further details):

Section E | Wastewater connection and discharge details

24 ***Is there an existing connection to a public sewer at the site?** Yes ☐ No ☑

24.1 If yes, is this enquiry for an additional connection to the one already installed? Yes ☐ No ☐

24.2 If yes, is this enquiry to increase the size of an existing connection? Yes ☐ No ☐

25 ***Approximate date that wastewater connection is required:** 1 6 / 0 3 / 2 0 2 3

26 ***What diameter of wastewater connection is required to service the development?** 1 5 0 mm

27 ***Is more than one connection required to the public infrastructure to service this development?** Yes ☐ No ☑

If 'Yes', how many? ☐☐

28 **Please indicate the commercial wastewater hydraulic load (shops, offices, schools, hotels, restaurants, etc.):**

Post-development peak discharge		**l/s**
Post-development average discharge		**l/s**

Please include calculations on the attached sheet provided.

29 **Please indicate the industrial wastewater hydraulic load (industry-specific discharge requirements):**

Post-development peak discharge		**l/s**
Post-development average discharge		**l/s**

Please include calculations on the attached sheet provided.

30 Wastewater organic load:

Characteristic	Max concentration (mg/l)	Average concentration (mg/l)	Maximum daily load (kg/day)
Biochemical oxygen demand (BOD)			
Chemical oxygen demand (COD)			
Suspended solids (SS)			
Total nitrogen (N)			
Total phosphorus (P)			
Other			

Temperature range	
pH range	

31 *Storm water run-off will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer. In the case of such brownfield sites, please indicate if the development intends discharging surface water to the combined wastewater collection system:

Yes ☐ No ☑

If 'Yes', please give reason for discharge and comment on adequacy of SUDS/attenuation measures proposed.

Please submit detailed calculations on discharge volumes, peak flows and attenuation volumes with this application

32 *Do you propose to pump the wastewater? Yes ☐ No ☑

If 'Yes', please include justification for your pumped solution with this application.

33 What is the existing ground level at the property boundary at connection point (if known) above Malin Head Ordnance Datum?

91.08 m

34 What is the lowest finished floor level on site above Malin Head Ordnance Datum? 91.58 m

35 What is the proposed invert level of the pipe exiting the property to the public road?

90.00 m

Section F | Supporting documentation

Please provide the following additional information (all mandatory):

> Site location map: A site location map to a scale of 1:1000, which clearly identifies the land or structure to which the enquiry relates. The map shall include the following details: ☑

i. The scale shall be clearly indicated on the map.

ii. The boundaries shall be delineated in red.

iii. The site co-ordinates shall be marked on the site location map.

> Details of planning and development exemptions (if applicable). ☑

> Calculations (calculation sheets provided below). ☑

> Site layout map to a scale of 1:500 showing layout of proposed development, water network and wastewater network layouts, additional water/wastewater infrastructure if proposed, connection points to Irish Water infrastructure. ☑

> Conceptual design of the connection asset from the proposed development to the existing Irish Water infrastructure, including service conflicts, gradients, pipe sizes and invert levels. ☑

> Any other information that might help Irish Water assess this pre-connection enquiry. ☑

Section G | Declaration

I/We hereby make this application to Irish Water for a water and/or wastewater connection as detailed on this form.

I/We understand that any alterations made to this application must be declared to Irish Water.

The details that I/we have given with this application are accurate.

I/We have enclosed all the necessary supporting documentation.

Any personal data you provide will be stored and processed by Irish Water and may be transferred to third parties for the purposes of the water and/or wastewater connection process. I hereby give consent to Irish Water to store and process my personal data and to transfer my personal data to third parties, if required, for the purposes of the connection process.

If you wish to revoke consent at any time or wish to see Irish Water's full Data Protection Notice, please see **https://www.water.ie/privacy-notice/**

Signature: 

Date: 24/06/2022

Application number CDS22004560

Your full name (in BLOCK CAPITALS):

GEORGE BURNS

Irish Water will carry out a formal assessment based on the information provided on this form.
Any future connection offer made by Irish Water will be based on the information that has been provided here.

Please submit the completed form to **newconnections@water.ie** or alternatively, post to:

Irish Water
PO Box 860
South City Delivery Office
Cork City

Please note that if you are sending us your application form and any associated documentation by email, the maximum file size that we can receive in any one email is 35MB.

Please note, if mandatory fields are not completed the application will be returned.

Irish Water is subject to the provisions of the Freedom of Information Act 2014 ("FOIA") and the codes of practice issued under FOIA as may be amended, updated or replaced from time to time. The FOIA enables members of the public to obtain access to records held by public bodies subject to certain exemptions such as where the requested records may not be released, for example to protect another individual's privacy rights or to protect commercially sensitive information. Please clearly label any document or part thereof which contains commercially sensitive information. Irish Water accepts no responsibility for any loss or damage arising as a result of its processing of freedom of information requests.

Calculations

Water demand

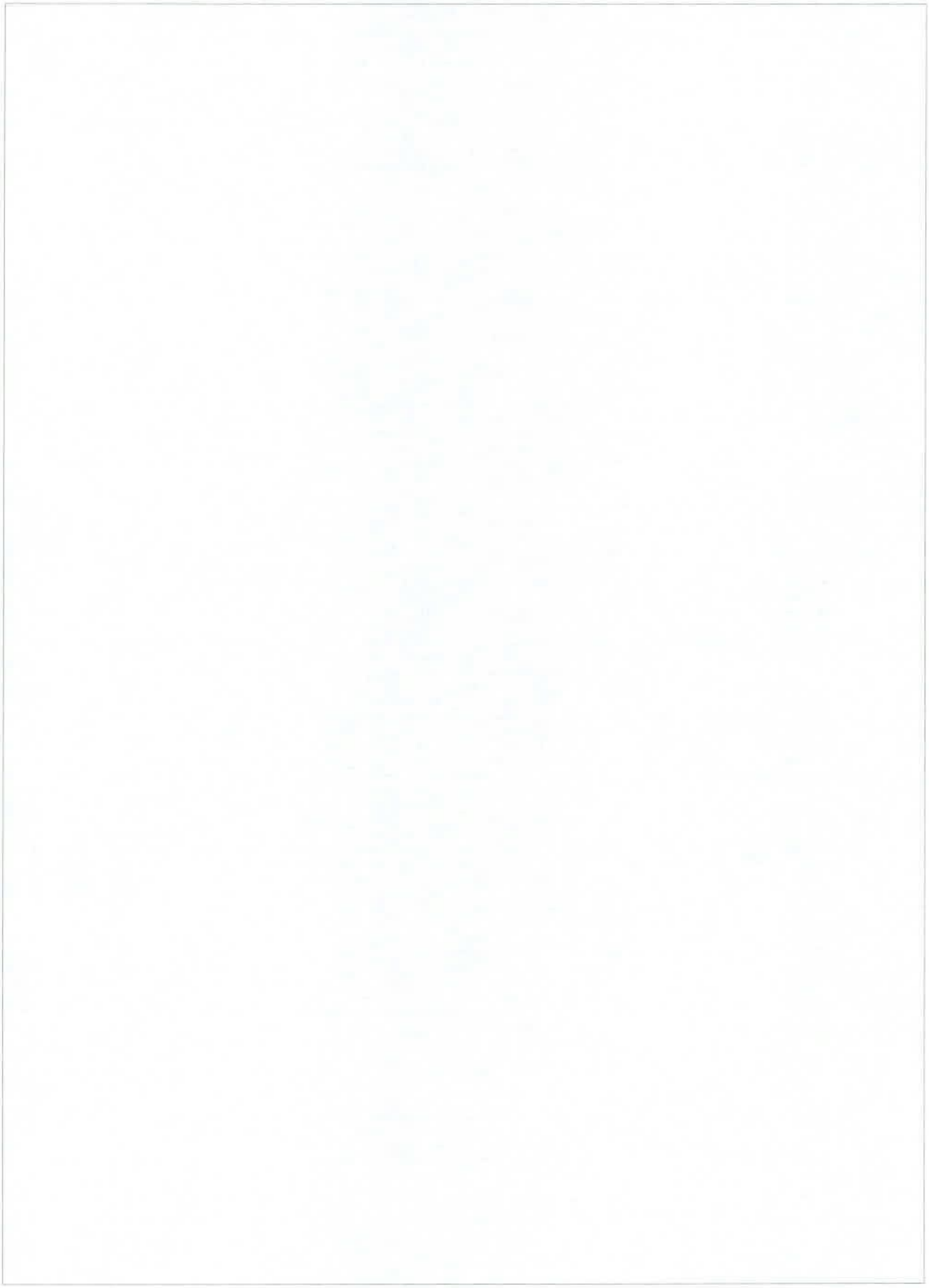
Proposed Water Demand								
Use Type	No. of units	Occupancy Rate (persons/dwelling)	Population (P)	Per capita consumption (L/Person/Day)	Average Daily Domestic Demand (L/Day)	Average Daily Domestic Demand (L/Sec)	Average Day/Peak week demand (L/Sec)	Peak Hour Water Demand (L/Sec)
Residential	18	2.7	49	150	7350	0.085	0.11	0.66
						Peak hour water demand (L/S)		0.66

On-site storage

Fire flow requirements

Foul wastewater discharge

Residential Predicted Development Foul Flows						
Use Type	**No. of units**	**Occupancy Rate (persons/dwelling)**	**Population (P)**	**Loading (L/Person/Day)**	**Daily Loading (L/Day)**	**Daily Loading (L/s)**
Residential	18	2.7	49	150	7350	0.085
Dry weather flow (1 DWF)						**0.085**
Design Foul Flow (6 DWF)						**0.51**



Guide to completing the pre-connection enquiry form

This form should be completed by applicants enquiring about the feasibility of a water and/or wastewater connection to Irish Water infrastructure.

The Irish Water Codes of Practice are available at **www.water.ie** for reference.

Section A | Applicant Details

Question 1: This question requires the applicant or company enquiring about the feasibility of a connection to identify themselves, their postal address, and to provide their contact details.

Question 2: If the applicant has employed a consulting engineer or an agent to manage the enquiry on their behalf, the agent's address and contact details should be recorded here.

Question 3: Please indicate whether it is the applicant or the agent who should receive future correspondence in relation to the enquiry.

Section B | Site details

Question 4: This is the address of the site requiring the water/wastewater service connection and for which this enquiry is being made.

Question 5: Please provide the Irish Grid co-ordinates of the proposed site. Irish grid positions on maps are expressed in two dimensions as Eastings (E or X) and Northings (N or Y) relative to an origin. You will find these coordinates on your Ordnance Survey map which is required to be submitted with an application.

Question 6: Please identify the Local Authority that is or will be dealing with your planning application, for example Cork City Council.

Question 7: Please indicate if planning permission has been granted for this application, and if so, please provide the planning permission reference number.

Question 8: Please indicate if this development is affiliated with a government body/agency, and if so, specify

Section C | Development details

Question 9: Please specify the number of different property/premises types by filling in the tables provided.

Question 9.1: Please provide additional details if your proposed business use are in the Food Processing, Industrial unit/ Manufacturing, Sports Facility or Other Categories.

Question 9.2: Please indicate the maximum expected occupancy in numbers of people according to the proposed development you selected.

Question 10: Please indicate the approximate commencement date of works on the development.

Question 11: Please indicate if a phased building approach is to be adopted when developing the site. If so, please provide details of the phase master-plan and the proposed variation in water demand/wastewater discharge as a result of the phasing of the development.

Question 12: Please indicate the type of connection required by ticking the appropriate box and proceed to complete the appropriate section or sections.

Section D | Water connection and demand details

Question 13: Please indicate if a water connection already exists for this site.

Question 13.1: Please indicate if this enquiry concerns an additional connection to one already installed on the site.

Question 13.2: Please indicate if you are proposing to upgrade the water connection to facilitate an increase in water demand. Irish Water will determine what impact this will have on our infrastructure.

Question 14: Please indicate the approximate date that the proposed connection to the water infrastructure will be required.

Question 15: Please indicate what diameter of water connection is required to service this development.

Question 16: Please indicate if more than one connection is required to service this development. Please note that the connection size provided may be used to determine the connection charge.

Question 17: If this connection enquiry concerns a business premises, please provide calculations for the water demand and include your calculations on the calculation sheet provided. Business premises include shops, offices, hotels, schools, etc. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 18: If this connection enquiry is for an industrial premises, please calculate the water demand and include your calculations on the calculation sheet provided. Demand rates (peak and average) are site specific. Average demand is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak demand for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Water Infrastructure.

Question 19: Please specify the ground level at the location where connection to the public water mains will be made. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 20: Please specify the highest finished floor level on site. This is required in order to determine if there is sufficient pressure in the existing water infrastructure to serve your proposed development. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 21: If storage is required, water storage capacity of 24-hour water demand must usually be provided at the proposed site. In some cases, 24-hour storage capacity may not be required, for example 24-hour storage for a domestic house would be provided in an attic storage tank. Please calculate the 24-hour water storage requirements and include your calculations on the attached sheet provided. Please also confirm that on-site storage is being provided by ticking the appropriate box.

Question 22: The water supply system shall be designed and constructed to reliably convey the water flows that are required of the development including fire flow requirements by the Fire Authority. The Fire Authority will provide the requirement for fire flow rates that the water supply system will have to carry. Please note that while flows in excess of your required demand may be achieved in the Irish Water network and could be utilised in the event of a fire, Irish Water cannot guarantee a flow rate to meet your fire flow requirement. To guarantee a flow to meet the Fire Authority requirements, you should provide adequate fire storage capacity within your development. Please include your calculations on the attached sheet provided, and further provide confirmation of the Fire Authority requirements.

Question 23: Please identify proposed additional water supply sources, that is, do you intend to connect to the public water mains or the public mains and supplement from other sources? If supplementing public water supply with a supply from another source, please provide details as to how the potable water supply is to be protected from cross contamination at the premises.

Section E | Wastewater connection and discharge details

Question 24: Please indicate if a wastewater connection to a public sewer already exists for this site.

Question 24.1: Please indicate if this enquiry relates to an additional wastewater connection to one already installed.

Question 24.2: Please indicate if you are proposing to upgrade the wastewater connection to facilitate an increased discharge. Irish Water will determine what impact this will have on our infrastructure.

Question 25: Please specify the approximate date that the proposed connection to the wastewater infrastructure will be required.

Question 26: Please indicate what diameter of wastewater connection is required to service this development.

Question 27: Please indicate if more than one connection is required to service this development. Please indicate number required.

Question 28: If this enquiry relates to a business premises, please provide calculations for the wastewater discharge and include your calculations on the attached sheet provided. Business premises include shops, offices, hotels, schools, etc. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 29: If this enquiry relates to an industrial premises, please provide calculations for the wastewater discharge and include your calculations on the calculation sheet provided. Discharge rates (peak and average) are site specific. Average discharge is the total daily volume divided by a 24-hour time period and expressed in litres per second (l/s). The peak discharge for sizing of the pipe network will be as per the specific business production requirements. For design purposes, please refer to the Irish Water Codes of Practice for Wastewater Infrastructure.

Question 30: Please specify the maximum and average concentrations and the maximum daily load of each of the wastewater characteristics listed in the wastewater organic load table (if not domestic effluent), and also specify if any other significant concentrations are expected in the effluent. Please complete the table and provide additional supporting documentation if relevant. Note that the concentration shall be in mg/l and the load shall be in kg/day. Note that for business premises (shops, offices, schools, hotels, etc.) for which only domestic effluent will be discharged (excluding discharge from canteens/ restaurants which would require a Trade Effluent Discharge licence), there is no need to complete this question.

Question 31: In exceptional circumstances, such as brownfield sites, where the only practical outlet for storm/ surface water is to a combined sewer, Irish Water will consider permitting a restricted attenuated flow to the combined sewer. Storm/surface water will only be accepted from brownfield sites that already have a storm/surface water connection to a combined sewer and the applicant must demonstrate how the storm/surface water flow from the proposed site is minimised using sustainable urban drainage system (SUDS). This type of connection will only be considered on a case by case basis. Please advise if the proposed development intends discharging surface water to the combined wastewater collection system.

Question 32: Please specify if the development needs to pump its wastewater discharge to gain access to Irish Water infrastructure.

Question 33: Please specify the ground level at the location where connection to the public sewer will be made. This is required to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 34: Please specify the lowest floor level of the proposed development. This is required in order to determine if the development can be connected to the public sewer via gravity discharge. Levels should be quoted in metres relative to Malin Head Ordnance Datum.

Question 35: Please specify the proposed invert level of the pipe exiting the property to the public road.

Section F | Supporting documentation

Please provide additional information as listed.

Section G | Declaration

Please review the declaration, sign, and return the completed application form to Irish Water by email or by post using the contact details provided in Section G.

Notes

Notes

George Burns

From: George Burns
Sent: 28 July 2022 11:15
To: 'Kevin McManmon (C)'
Cc: 'd7donegan@gmail.com'
Subject: RE: CDS22004560 Hazelhatch Road, Newcastle, Dublin
Attachments: 2203-DOB-00-SI-DR-C-0030 - PR FOUL SEWER LAYOUT.pdf; 2203-DOB-00-SI-DR-C-0020 - PR SW LAYOUT (2).pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Kevin,

See updated response below

1. What are the current storm and wastewater discharge layouts (Connection points)?

Storm to discharge to Existing line on Hazelhatch road and foul to discharge to existing foul on Athgoe Road. Preliminary drawings attached. Note they are not updated to IW standards as this is the planning set.

2. If the storm and wastewater systems are separated, is the storm attenuated on site and what is the discharge rate for storm in l/s?

Storm is attenuated onsite and discharge limited to predevelopment rate per SDCC – 2.0 l/s

3. What is the existing area in m2 of hardstanding on the site?

0.23 Ha +/- including the building.

Feel free to give me a call if you have any further questions.

Go raibh maith agat

George Burns, Chartered Engineer
Senior Civil / Infrastructural Engineer
Mobile: +353 85 217 6276

DONNACHADH O'BRIEN & ASSOCIATES CONSULTING ENGINEERS
UNIT 5C ELM HOUSE MILLENNIUM PARK NAAS CO. KILDARE
P +353 45 984 042
INFO@DOBA.IE WWW.DOBA.IE

From: George Burns <george.burns@doba.ie>
Sent: 27 July 2022 17:01
To: 'Kevin McManmon (C)' <kmcmanmon@water.ie>
Cc: 'd7donegan@gmail.com' <d7donegan@gmail.com>
Subject: RE: CDS22004560 Hazelhatch Road, Newcastle, Dublin

Thanks Kevin,
I'll get back to you in more detail tomorrow but see below response in red.

Go raibh maith agat

George Burns, Chartered Engineer
Senior Civil / Infrastructural Engineer
Mobile: +353 85 217 6276

DONNACHADH O'BRIEN & ASSOCIATES CONSULTING ENGINEERS
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---

From: Kevin McManmon (C) <kmcmanmon@water.ie>
Sent: 27 July 2022 15:28
To: 'george.burns@doba.ie' <george.burns@doba.ie>
Cc: 'd7donegan@gmail.com' <d7donegan@gmail.com>
Subject: CDS22004560 Hazelhatch Road, Newcastle, Dublin

George,

Irish Water are currently assessing the above mentioned case. The following information is required to fully understand the situation on site.

1. **What are the current storm and wastewater discharge layouts (Connection points)?**

Storm to discharge to Existing line on Hazelhatch road and foul to discharge to existing foul on Athgoe Road. I'll follow up with our drawings.

2. **If the storm and wastewater systems are separated, is the storm attenuated on site and what is the discharge rate for storm in l/s?**

Storm is attenuated onsite and discharge limited to predevelopment rate per SDCC. I'll get back to you with that rate.

3. **What is the existing area in m2 of hardstanding on the site?**

I'll get back to you.

Please note that this case will be placed on hold until this information has been sent through to me.

Regards,
Kevin

Kevin McManmon
CDS - Design Engineer

E: kmcmanmon@water.ie
www.water.ie

Thank you for your attention.

DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

Appendix E

Extract from CCTV Report

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Project

Project Name:	Athgoe Newcastle Surface Water 25-04-22
Project Description:	CCTV Survey
Project Number:	CES 9404
Project Status:	Complete
Project Date:	25/04/2022
Inspection Standard:	MSCC5 Sewers & Drainage GB (SRM5 Scoring)

Cahir Environmental Services

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Table of Contents

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Project Information

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Client

Company:	DBFL
Description:	Consulting Engineers
Contact:	Conor O Loughlin
Department:	Civil Engineer
Street:	Ormond House
Town or City:	Upper Ormond Quay
County:	Dublin 7
Post Code:	D07W704
Phone:	01 - 400 4000
Mobile:	085 - 169 8141
Email:	conor.oloughlin@dbfl.ie

Manager

Company:	Cairn Homes
Description:	Planning Investigation Works
Contact:	Conor O'Loughlin
Department:	Civil Engineer
Street:	Athgoe Road
Town or City:	Newcastle
County:	Dublin
Post Code:	D22XV29
Phone:	01 - 400 4000
Email:	conor.oloughlin@dbfl.ie

Contractor

Company:	CES Environmental Services Ltd.
Description:	CCTV Survey
Contact:	Kieran Murphy
Department:	CCTV & Rehabilitation
Street:	Tracklands Business Park
Town or City:	Clonroad More, Ennis
County:	Clare
Post Code:	V95A598
Phone:	065 - 6866850
Mobile:	085 - 2521556
Email:	kmurphy@cesenvironmental.ie

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
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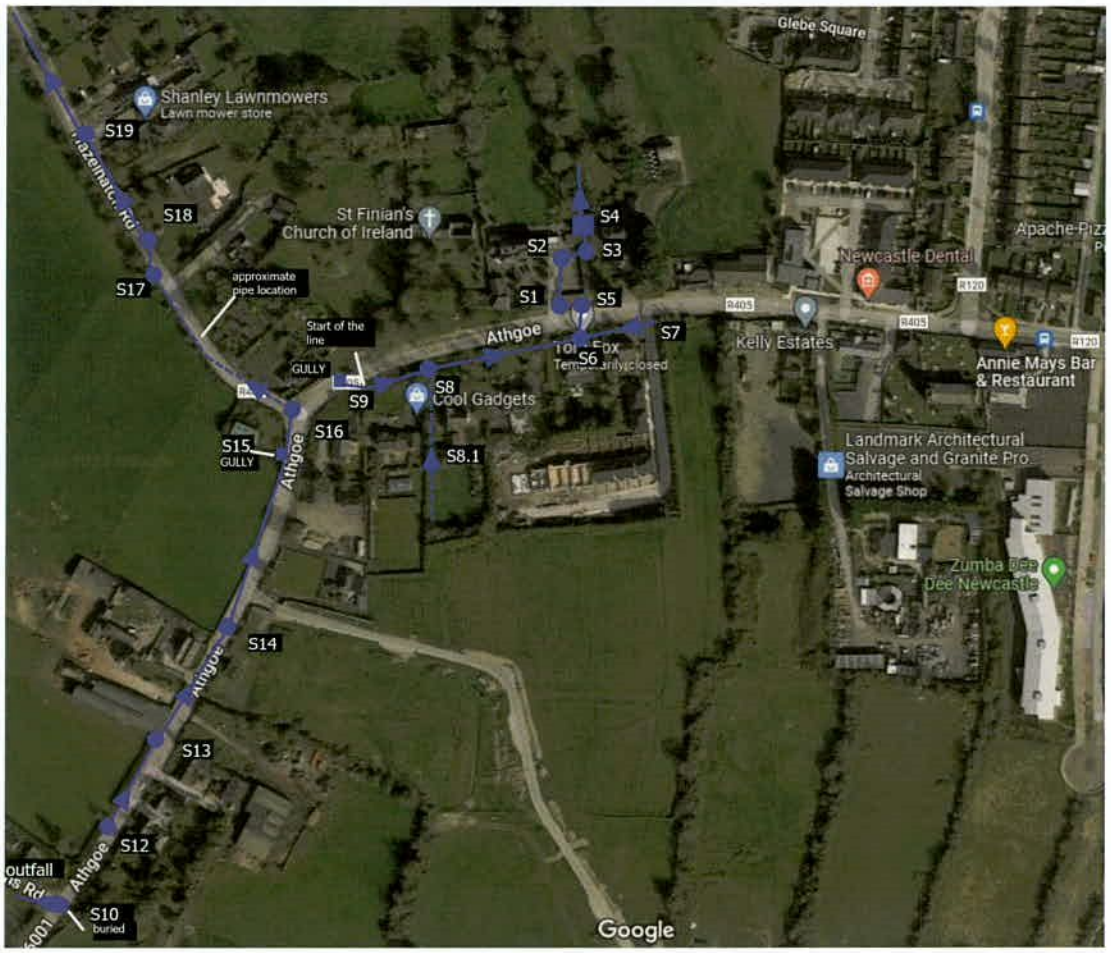
kmurphy@cesenvironmental.ie

Project Information

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Project Drawing, Page 'Athgoe Newcastle Surface Water DBFL 250422'



ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Scoring Summary

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Structural Defects

Grade 3: Best practice suggests consideration should be given to repairs in the medium term.

Grade 4: Best practice suggests consideration should be given to repairs to avoid a potential collapse.

Grade 5: Best practice suggests that this pipe is at risk of collapse at any time. Urgent consideration should be given to repairs to avoid total failure.

Section	PLR	Grade	Description
7	S8X	4	Multiple defects
14	S14X	4	Multiple defects
17	S18X	4	Hole in drain or sewer from 11 o'clock to 1 o'clock
18	S20X	4	Hole in drain or sewer from 11 o'clock to 1 o'clock

Service / Operational Condition

Grade 3: Best practice suggests consideration should be given to maintenance activities in the medium term.

Grade 4: Best practice suggests consideration should be given to maintenance activity to avoid potential blockages.

Grade 5: Best practice suggests that this pipe is at a high risk of backing up or causing flooding.

Section	PLR	Grade	Description
5	S6X	5	Ingress of gravel from 4 o'clock to 8 o'clock, 20% cross-sectional area loss
6	S7X	3	Settled deposits, fine, 15% cross-sectional area loss
7	S8X	5	Roots, mass at joint, 20% cross-sectional area loss
8	S9X	4	Multiple defects
9	S8.1X	3	Ingress of gravel from 5 o'clock to 7 o'clock, 5% cross-sectional area loss
11	S13X	4	Multiple defects
12	S12X	3	Multiple defects
14	S14X	4	Multiple defects
15	S15X	3	Multiple defects
16	S17X	3	Joint displaced, medium, finish
17	S18X	4	Connection defective, connecting pipe is intruding at 2 o'clock, 150mm dia, intrusion: 20%
18	S20X	3	Roots, mass at joint, 15% cross-sectional area loss

Abandoned Surveys

Section	PLR	Description
5	S6X	Survey abandoned
5	S6X	Survey abandoned
6	S7X	Survey abandoned
7	S8X	Survey abandoned

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
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kmurphy@cesenvironmental.ie

Scoring Summary

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Section	PLR	Description
7	S8X	Survey abandoned
8	S9X	Survey abandoned
9	S8.1X	Survey abandoned
11	S13X	Survey abandoned
11	S13X	Survey abandoned
12	S12X	Survey abandoned
13	S13.1X	Survey abandoned
14	S14X	Survey abandoned

Information

These scoring summaries are based on the SRM grading from the WRc.

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
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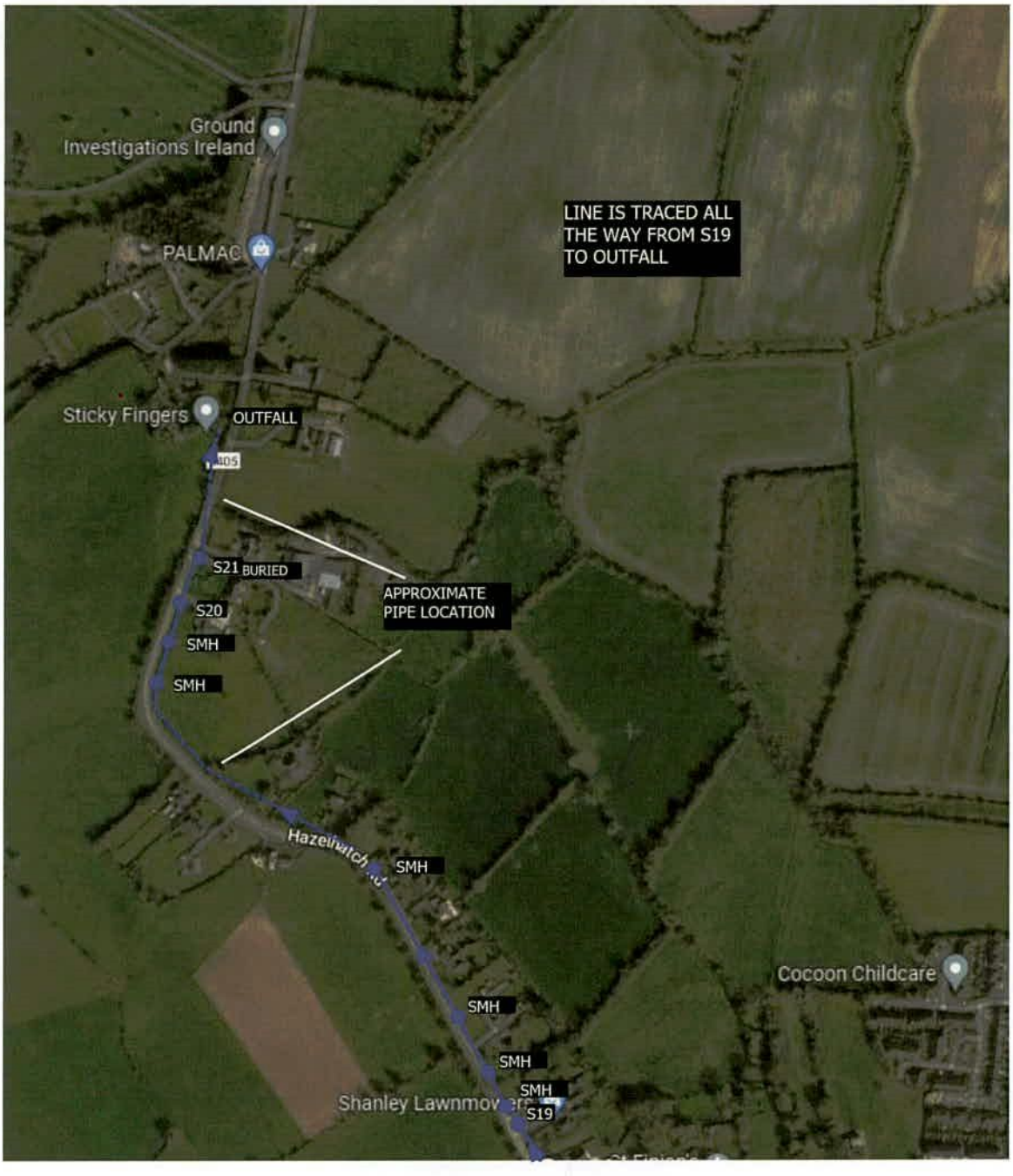
kmurphy@cesenvironmental.ie

Project Pictures

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022



hazelhatch_road

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Section Profile

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Circular, 225 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
12	S12	S13	26/04/2022	Athgoe	Polyvinyl chloride	27.01 m	27.01 m
14	S14	S15	26/04/2022	Athgoe	Polyvinyl chloride	118.39 m	118.39 m
15	S15	S16	27/04/2022	Athgoe	Concrete	13.45 m	13.45 m
16	S17	S18	27/04/2022	Athgoe	Concrete	7.62 m	**7.56 m**

Total: 4 Inspections x Circular 225 mm = 166.47 m Total Length and 166.41 m Inspected Length

Circular, 300 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
17	S18	S19	27/04/2022	Hazelhatch road	Concrete	81.93 m	81.93 m
18	S20	S21	28/04/2022	Hazelhatch road	Concrete	71.19 m	71.19 m

Total: 2 Inspections x Circular 300 mm = 153.12 m Total Length and 153.12 m Inspected Length

Circular, 375 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
8	S9	S8	25/04/2022	Athgoe	Concrete	37.00 m	37.00 m
10	S10	Outfall	26/04/2022	Athgoe	Concrete	37.34 m	37.34 m

Total: 2 Inspections x Circular 375 mm = 74.34 m Total Length and 74.34 m Inspected Length

Circular, 450 mm

Item No.	Upstream Node	Downstream Node	Date	Road	Material	Total Length	Inspected Length
1	S1	S2	25/04/2022	Athgoe	Polyvinyl chloride	31.55 m	31.55 m
2	S2	S3	25/04/2022	Athgoe	Polyvinyl chloride	3.29 m	3.29 m
3	S3	S4	25/04/2022	Athgoe	Polyvinyl chloride	2.80 m	2.80 m
4	S5	S1	25/04/2022	Athgoe	Polyvinyl chloride	6.63 m	6.63 m

Total: 4 Inspections x Circular 450 mm = 44.26 m Total Length and 44.26 m Inspected Length

Total: 12 Inspections = 438.18 m Total Length and 438.12 m Inspected Length

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Project Summary

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

Inspection Summary

Pipe No.	Insp. No.	Upstream Node	Downstream Node	Dir.	Operator	Insp. Date	Insp. Time	Str	Ser	Final Observation	Length
1	1	S1	S2	DS	Aaa	25/04/2022	10:35	1	1	MHF, UNABLE TO LOCATE	31.55 m
2	1	S2	S3	DS	Aaa	25/04/2022	10:50	1	1	MHF	3.29 m
3	1	S3	S4	DS	Aaa	25/04/2022	10:54	1	1	OCF, HOLDING TANK	2.80 m
4	1	S5	S1	US	Aaa	25/04/2022	11:03	1	1	MHF, CULVERT	6.63 m
5	**1**	**S6**	**S5**	**DS**	**Aaa**	**25/04/2022**	**11:42**	**1**	**5**	**SA, ECXTENSIVE JETTING REQUIRED.**	**0.48 m**
5	**2**	**S6**	**S5**	**US**	**Aaa**	**25/04/2022**	**11:21**	**1**	**4**	**SA, SILT IN LINE. ECXTENSIVE JETTING REQUIR**	**0.40 m**
6	**1**	**S7**	**S6**	**US**	**Aaa**	**25/04/2022**	**11:46**	**1**	**3**	**SA, ECXTENSIVE JETTING REQUIRED**	**1.22 m**
7	**1**	**S8**	**S6**	**DS**	**Aaa**	**25/04/2022**	**12:07**	**4**	**5**	**SA, UNABLE TO PASS THE ROOTS. CUTTING RE**	**49.17 m**
7	**2**	**S8**	**S6**	**US**	**Aaa**	**25/04/2022**	**11:53**	**4**	**3**	**SA, SILT IN LINE. ECXTENSIVE JETTING REQUIR**	**0.76 m**
8	1	S9	S8	US	Aaa	25/04/2022	15:39	1	4	BRF, START OF THE LINE. NO MANHOLE	37.00 m
8	**2**	**S9**	**S8**	**US**	**Aaa**	**25/04/2022**	**12:41**	**1**	**4**	**SA, UNABLE TO SURVEY. ECXTENSIVE JETTING**	**0.21 m**
9	**1**	**S8.1**	**S8**	**US**	**Aaa**	**25/04/2022**	**15:59**	**1**	**3**	**SA, UNABLE TO REACH THE PIPE FROM THE MA**	**0.00 m**
10	1	S10	OUTFALL	US	Aaa	26/04/2022	8:18	1	1	MHF, buried	37.34 m
11	**1**	**S13**	**S14**	**US**	**Aaa**	**26/04/2022**	**11:31**	**1**	**4**	**SA, UNABLE TO SURVEY. EXTENSIVE JETTING I**	**20.08 m**
11	**2**	**S13**	**S14**	**DS**	**Aaa**	**26/04/2022**	**10:22**	**1**	**4**	**SA, UNABLE TO SURVEY. ECXTENSIVE JETTING**	**34.49 m**
12	1	S12	S13	US	Aaa	26/04/2022	10:36	1	3	MHF	27.01 m
12	**2**	**S12**	**S13**	**US**	**Aaa**	**26/04/2022**	**10:29**	**1**	**3**	**SA, UNABLE TO SURVEY. JETTING REQUIRED.**	**16.50 m**
13	**1**	**S13.1**	**S13**	**US**	**Aaa**	**26/04/2022**	**11:13**	**1**	**1**	**SA, UNABLE TO SURVEY. CULVERT**	**0.13 m**
14	1	S14	S15	DS	Aaa	26/04/2022	12:59	4	4	GYF	118.39 m
14	**2**	**S14**	**S15**	**DS**	**Aaa**	**26/04/2022**	**11:50**	**1**	**4**	**SA, NEEDS JETTING**	**57.69 m**
15	1	S15	S16	DS	Aaa	27/04/2022	9:40	1	3	MHF, BURIED	13.45 m
16	1	S17	S18	US	Aaa	27/04/2022	14:59	2	3	MHF, BURIED	7.56 m
17	1	S18	S19	DS	Aaa	27/04/2022	15:04	4	4	MHF, SILT TRAP MANHOLE	81.93 m
18	1	S20	S21	DS	Aaa	28/04/2022	11:22	4	4	MHF, BURIED. NO COVER. GULLY CONNECTED	71.19 m
										Total:	**619.25 m**

ENVIRONMENTAL SERVICES

CES Environmental Services Ltd.
Tracklands Business Park, Clonroad More, Ennis
Tel. 065 - 6866850
kmurphy@cesenvironmental.ie

Project Summary

Project Name	Project Number	Project Date
Athgoe Newcastle Surface Water 25-04-22	CES 9404	25/04/2022

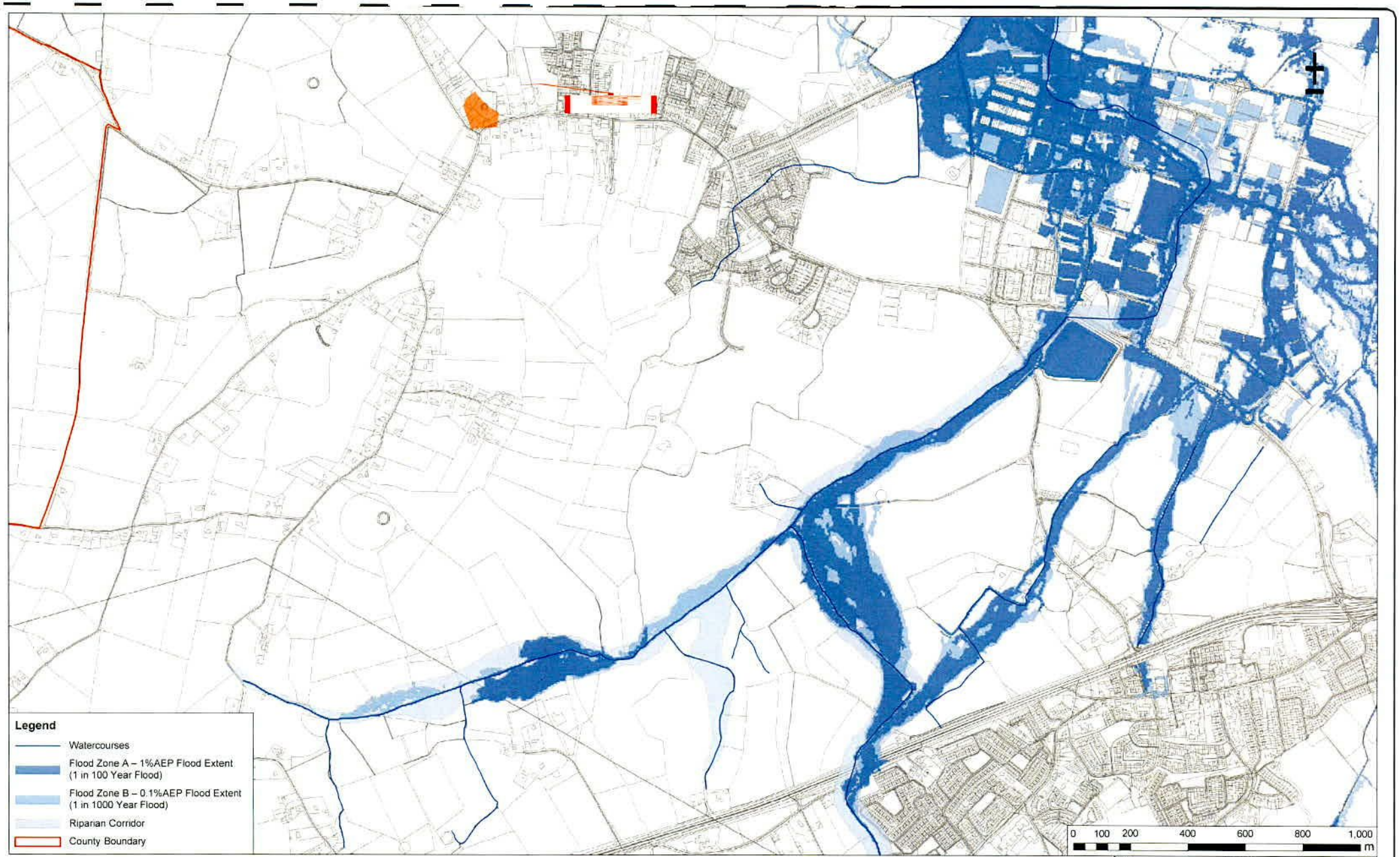
Defect Summary

				CCTV Drainage Survey Observation Count																			
				General				Structural Condition									Service Condition						Misc	
Sect. No.	Insp. No.	Upstream Node	Downstream Node	Insp. Length (m)	No. Grade 4/5 Obs.	Survey Abandoned	Camera Under Water	Cracks	Fractures	Broken	Deformed	Collapsed	Holes	Surface Damage	Displaced Joints	Open Joints	Roots	Infiltration	Encrustation	Silt	Grease	Obstruction	Water Level	Line Deviates
1	1	S1	S2	31.6												3							1	
2	1	S2	S3	3.3																			1	
3	1	S3	S4	2.8												1							1	
4	1	S5	S1	6.6																			1	
5	**1**	**S6**	**S5**	**0.5**		**1**												**1**					**1**	
5	**2**	**S6**	**S5**	**0.4**		**1**														**1**			**1**	
6	**1**	**S7**	**S6**	**1.2**		**1**														**1**			**1**	
7	**1**	**S8**	**S6**	**49.2**		**1**			**1**				**1**		**4**		**5**			**4**			**2**	
7	**2**	**S8**	**S6**	**0.8**		**1**			**3**											**2**			**1**	
8	1	S9	S8	37.0											11		5			1			2	
8	**2**	**S9**	**S8**	**0.2**		**1**														**2**			**1**	
9	**1**	**S8.1**	**S8**	**0.0**		**1**												**1**					**1**	
10	1	S10	OUTFALL	37.3																			3	
11	**1**	**S13**	**S14**	**20.1**		**1**										**1**				**5**			**2**	
11	**2**	**S13**	**S14**	**34.5**		**1**														**1**			**4**	
12	1	S12	S13	27.0																4			1	
12	**2**	**S12**	**S13**	**16.5**		**1**														**2**			**1**	
13	**1**	**S13.1**	**S13**	**0.1**		**1**																	**1**	
14	1	S14	S15	118.4					1		1		1		9	1				1			1	
14	**2**	**S14**	**S15**	**57.7**		**1**									**1**					**2**			**2**	
15	1	S15	S16	13.4											4								1	
16	1	S17	S18	7.6				2							2		1						1	
17	1	S18	S19	81.9				1	3				1		2		10						1	
18	1	S20	S21	71.2									1				4						2	
			Total:	**619.3**		**12**		**3**	**8**		**1**		**4**		**33**	**6**	**25**	**2**		**26**			**34**	

DONNACHADH O'BRIEN
& ASSOCIATES CONSULTING ENGINEERS

Appendix F

Flood Map from the Strategic Flood Risk Assessment South Dublin County Development Plan



Comhairle Contae Átha Cliath Theas
South Dublin County Council

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No	Revision	Date	By	Chkd	Appd

ROD
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Drawn	Designed	Checked	Approved	Suitability Code - Description
LA	WV	WV	JPR	S2 - Information

Project Stage: DRAFT

Project Title: SDCC County Development Plan
Strategic Flood Risk Assessment

Drawing Title: SFRA Flood Zone Mapping
Sheet 13 of 26

Drawing Number	Project	Originator	Volume	Location	Type	Role	Number
	SDSFRA	ROD	EWE	SW_AE	DR	ENV	40013

Scale (A1)	Date	Job No	Rev
1:5,000	April 2021	20126	

DO NOT SCALE USE FIGURED DIMENSIONS ONLY

Appendix G

Road Safety Audit

Title: **STAGE 1 ROAD SAFETY AUDIT**

For;

Proposed housing Development, Main Street, Newcastle, Co. Dublin.

Client: **DOBA Consulting Engineers.**

Date: **July 2022**

Report reference: **1572R01**

VERSION: **FINAL (29-7-2022)**

Prepared By:

Bruton Consulting Engineers Ltd

Glaspistol
Clogherhead
Drogheda
Co. Louth.

Tel: 041 9881456
Mob: 086 8067075
E: admin@brutonceng.ie
W: www.brutonceng.ie

BRUTON CONSULTING ENGINEERS

CONTENTS SHEET

Contents

1.0 Introduction

This report was prepared in response to a request from Mr. George Burns, Donnachagh O'Brien Consulting Engineers, for a Stage 1 Road Safety Audit of a proposed housing development at the junction of Hazelhatch Road and Athgoe Road in Newcastle Co. Dublin.

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 other material provided and a site visit on the 26th of July 2022.

The weather at the time of the daytime site visit was dry and the road surface was dry.

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.

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 is provided in **Appendix C.**

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2.0 Background

It is proposed to construct a small housing development at the junction of Hazelhatch Road and Athgoe Road in Newcastle, Co. Dublin.

There would be a vehicular access off Hazelhatch Road for both access and egress from the development and there would be an exit only vehicular access onto Athgoe Road/Main Street. Pedestrian access would be at both locations.

It is proposed to upgrade the existing public footpath along the side boundary between the two access points.

The speed limit is 50km/hr on the public roads and it is assumed that the speed limit within the development will be 30km/hr.

Surface level car parking is proposed including 2 no. disabled parking bays. Cycle parking is also proposed.

The site location is shown below.

Image courtesy of openstreetmap.org

3.0 Issues Identified in This Road Safety Audit

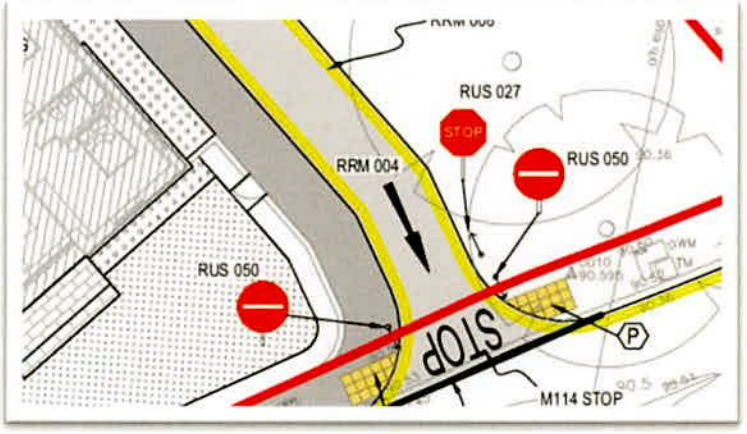
3.1 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Cyclists.

PROBLEM

Cyclist travelling to the proposed development from Newcastle town centre may travel contra flow on the exit only road to take the most direct route to the development. This could lead to collisions with exiting vehicles.



RECOMMENDATION

It is recommended that the footpath be widened to accommodate cyclists as a shared use path or that a contra-flow cycle lane be provided.

3.2 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Public Lighting.

PROBLEM

It was observed during the site visit that there is some public lighting at the junction. Given the proposed increase in pedestrian numbers associated with the development there is a risk that the lighting is not of a sufficient quality for drivers to be able to see crossing pedestrians during the hours of darkness. This could lead to collisions with pedestrians or cyclists.

RECOMMENDATION

It is recommended that adequate lighting be provided both internally and along the public road and footpath for a residential area. Lighting columns should not be located in the middle of the footpath.

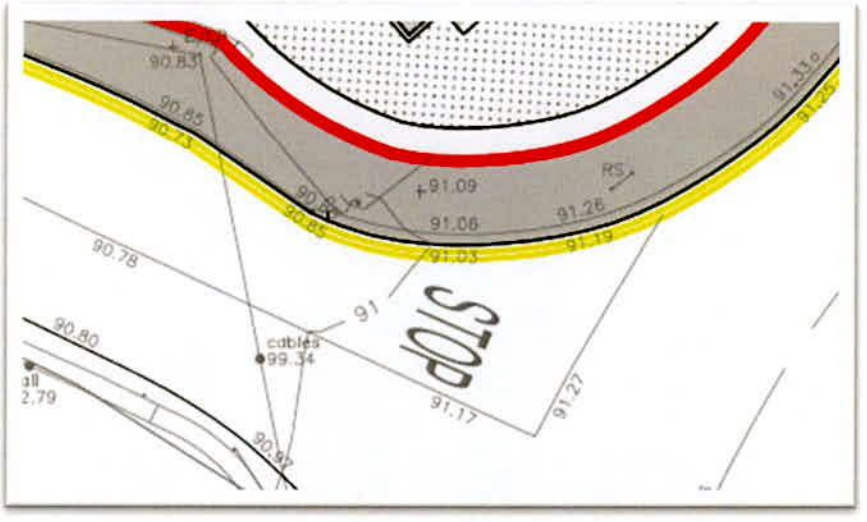
3.3 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Hazelhatch Road.

PROBLEM

There is no 'Stop' sign existing or proposed on Hazelhatch Road at the junction. Drivers on this regional road will be used to having priority and without adequate warning may overshoot the stop line resulting in side-impact collisions.



RECOMMENDATION

It is recommended that a stop sign be provided.

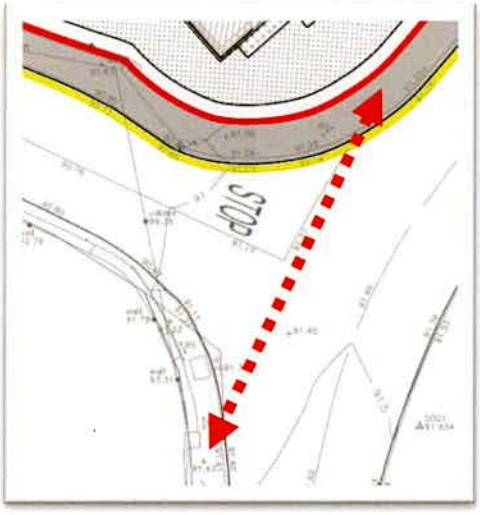
3.4 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Hazelhatch Road.

PROBLEM

There will be a pedestrian desire line across the mouth of the junction of Hazelhatch road. Without adequate crossing facilities the crossing may be inaccessible to the mobility impaired and may lead to trips and falls on the high kerbs.



RECOMMENDATION

It is recommended that dropped kerbs and tactile paving be provided at a suitable location on both side of the junction.

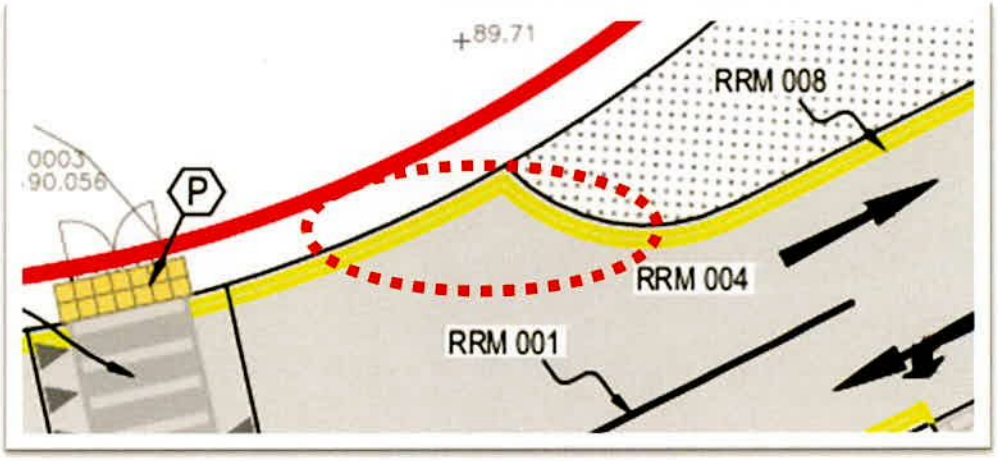
3.5 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Internal Roads.

PROBLEM

There is some 'dead space' to the east of the internal raised crossing. Although double yellow lines are proposed there is a risk that parking could occur due to a lack of enforcement at this location and result in blocking of drivers visibility to crossing pedestrians. This could lead to collisions with pedestrians.



RECOMMENDATION

It is recommended that any 'dead space' be build out to avoid parking adjacent to the pedestrian crossing.

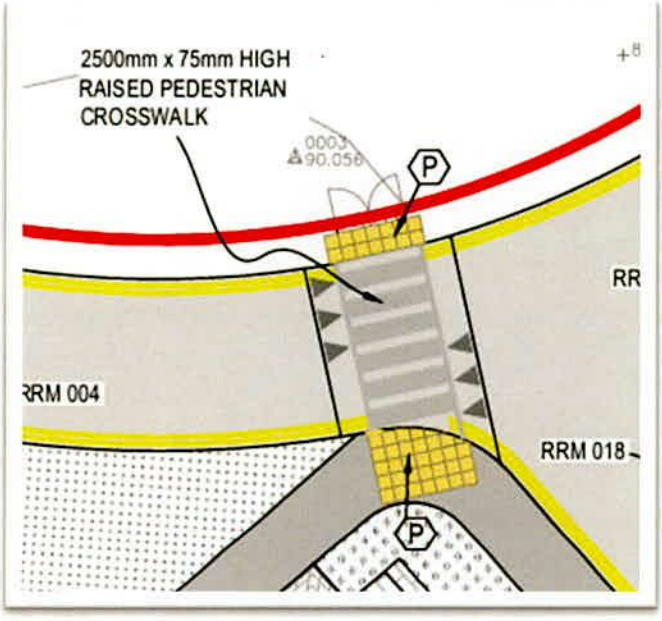
3.6 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Raised pedestrian crosswalk.

PROBLEM

There raised pedestrian crossing is shown to have black and white zebra crossing type stripes. This could lead to confusion over priority between pedestrians and drivers resulting in collisions.



RECOMMENDATION

It is recommended that either the stripes be removed or that belisha beacons and other road markings associated with zebra crossings be provided.

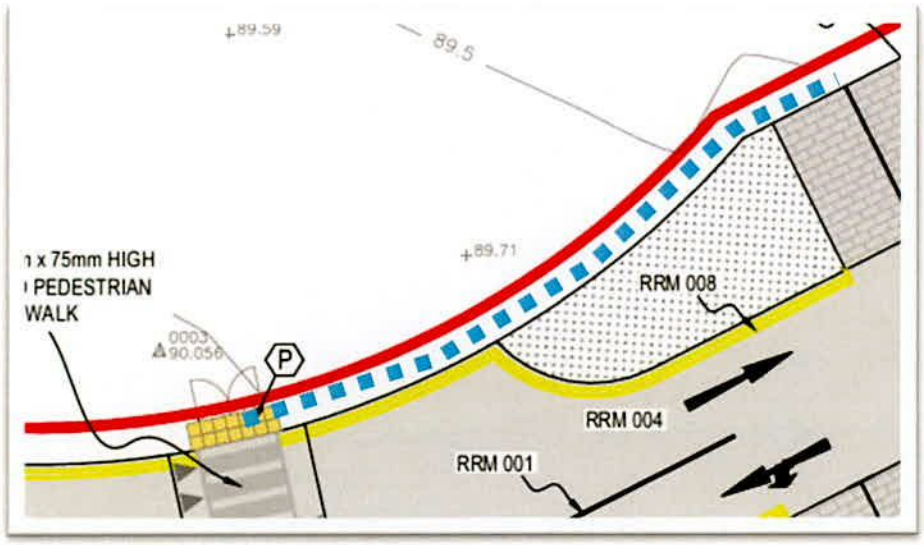
3.7 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Footpath Width.

PROBLEM

The footpath between the pedestrian crossing and the car park to the east appears narrow. This could lead to pedestrians opting to stay on the carriageway where they would be at greater risk of being struck by a passing or turning vehicle.



RECOMMENDATION

It is recommended that a footpath of suitable width be provided here and throughout the development.

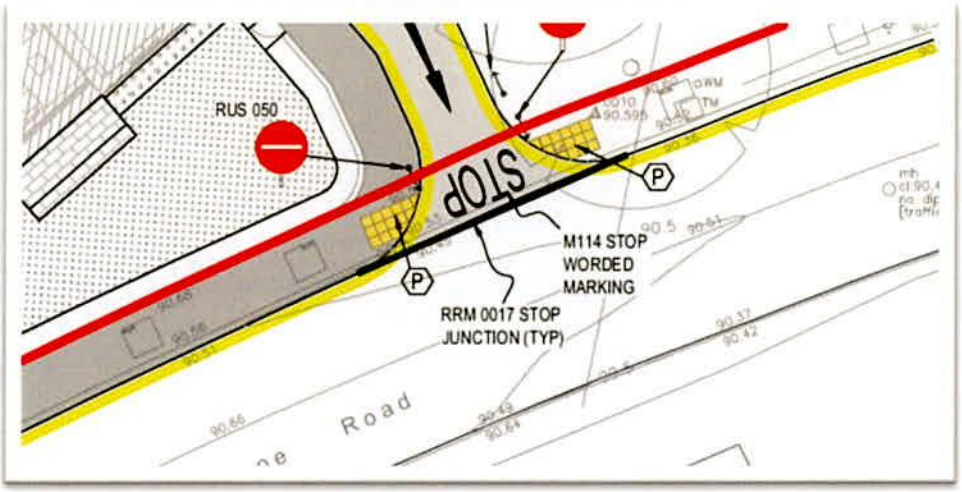
3.8 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0060 S2 P01, Main Street.

PROBLEM

There will be a pedestrian desire line to cross Main Street close to the exit-only access junction. Without adequate crossing facilities the crossing may be inaccessible to the mobility impaired and may lead to trips and falls on the high kerbs.



RECOMMENDATION

It is recommended that a pedestrian crossing be provided.

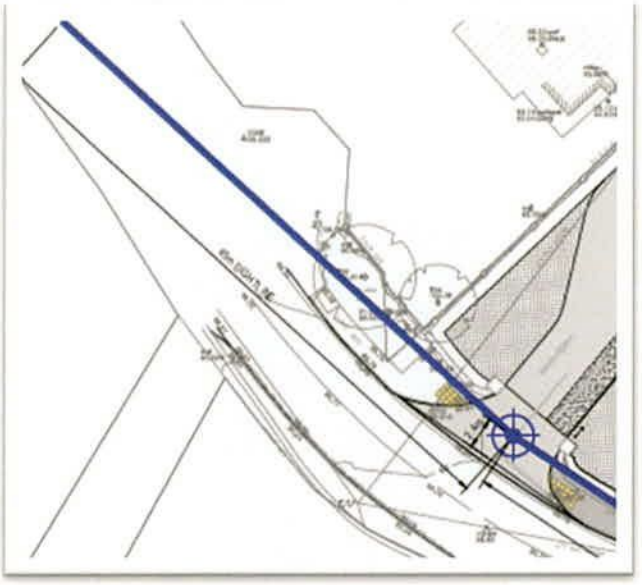
3.9 Problem

LOCATION

Drawing 2203-DOB-XX-SI-DR-C-0080 S2 P01, Hazelhatch Road.

PROBLEM

Visibility to the right for drivers exiting the development on Hazelhatch Road may be obscured due to vegetation growth in the neighbouring property. This could result in side-impact or rear-end collisions.



RECOMMENDATION

Ensure the visibility splay is kept free from obstacles.

4.0 Observations

4.1 Observation

There is a kink in the kerb line on Hazelhatch Road on approach to the stoop line. This could be smoothened at the construction stage.

4.2 Observation

There are some sharp kinks in the kerb lines on the internal roads. These could be smoothened at construction stage, so that the sharp edges do not cause tyre punctures.

5.0 Audit Statement

We certify that we have examined the information provided and visited the site. 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:** Norman Bruton

(Audit Team Leader) **Dated: 29-7-20222**

Owen O'Reilly **Signed:** Owen O'Reilly

(Audit Team Member) **Dated: 29-7-2022**

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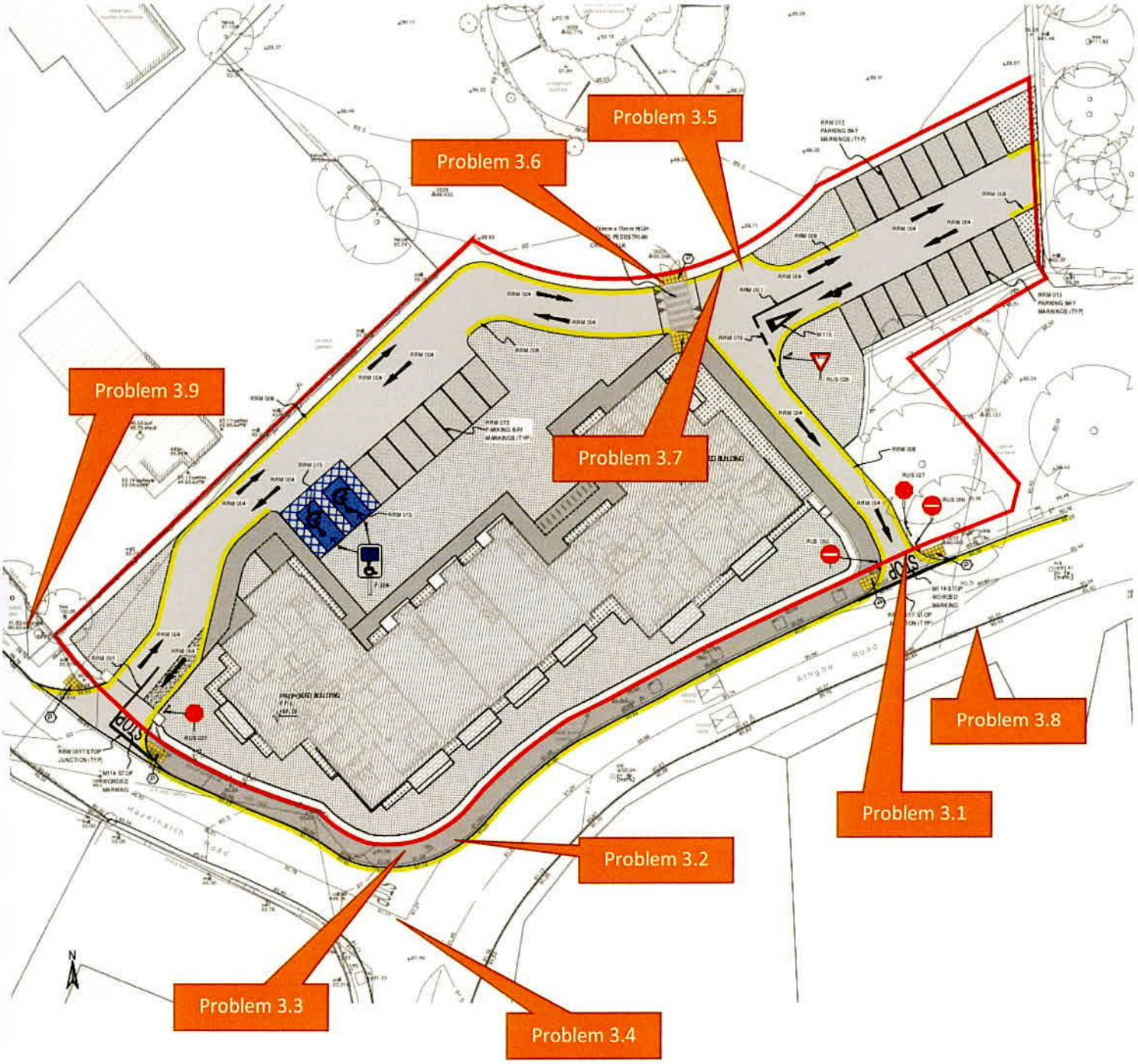
Appendix A – Problem Location Map



Appendix B

Information Supplied to the Audit Team

- Drawing 2203-DOB-00-SI-DR-C-0060 - PR ROAD MARKINGS AND SIGNAGE LAYOUT
- Drawing 2203-DOB-00-SI-DR-C-0080 - PR SIGHTLINE DRAWING
- Drawing 5432 SITE PLAN-0200
- Drawing 2203-DOB-00-SI-DR-C-0001 - TOPOGRAPHICAL SURVEY

Appendix C

Feedback Form

SAFETY AUDIT FORM – FEEDBACK ON AUDIT REPORT

Scheme: Residential development, Hazelhatch Road, Newcastle

Stage: 1 Road Safety Audit

Date Audit (Site Visit) Completed: 26-7-2022

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	Yes		
3.2	Yes	Yes		
3.3	Yes	Yes		
3.4	Yes	Yes		
3.5	Yes	Yes		
3.6	Yes	Yes		
3.7	No	No	The highlighted section is not a footpath it is a planted area (refer to architect drawings)	Yes
3.8	No	No	In our opinion pedestrian traffic crossing here will be minimal as there are no amenities across the road from the proposed development (residential buildings only) The existing path on the side of the proposed development (north) is more desirable for pedestrians as it is wider for approximately 250m heading east of the development. The closest westbound bus stop is 400m to the east and it is likely that pedestrians walking to the proposed development from here will cross closer to the bus stop.	Yes
3.9	Yes	Yes		

BRUTON CONSULTING ENGINEERS

Signed..... **Date**29-7-2022.....

Design Team Leader

Signed..... **Date**...29-7-2022.....

Audit Team Leader

Signed..... PP Damien Donegan **Date**29-7-2022.....

Employer/Developer