Waterman Moylan
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Engineering Assessment Report

Strategic Housing Development in Kilnahue, Gorey, Co. Wexford

March 2022

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Client Name: Gerard Gannon Properties
Document Reference: 13-119r.012 Engineering Assessment Report
Project Number: 13-119

Quality Assurance ï Approval Status

This document has been prepared and checked in accordance with
Waterman Groupõ IMS (BS EN ISO 9001: 2015 and BS EN ISO 14001: 2015)

Issue	Date	Prepared by	Checked by	Approved by
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2	21 January 2022	Stephen Dent-Neville	Darragh Aiken	Mark Duignan
3	09 March 2022	Stephen Dent-Neville	Darragh Aiken	Mark Duignan
4	28 March 2022	Stephen Dent-Neville	Darragh Aiken	Mark Duignan

Comments

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1. Introduction

1.1 Background of Report

This Engineering Assessment Report has been prepared by Waterman Moylan as part of the documentation in support of a revised planning application for a proposed residential development at a site off Kilnahue Lane, Gorey, Co. Wexford.

An application was previously submitted for planning permission in June 2016 (Planning Reg. Ref. 20160623). This submission received a decision to approve for planning by Wexford County Council on 20 February 2017, but the application was subsequently refused by An Bord Pleanála on 18 July 2017 (Reference PL26.248159) ï refer to the accompanying report titled ñResponse to Previous Reasons for Refusalòfor a summary of the reasons for refusal and a review of how these items have been addressed in the subject application.

This report assesses wastewater and surface water drainage, water supply infrastructure and the road and transportation network in the vicinity of the site, and details the criteria used to design the proposed wastewater and surface water drainage, water supply and transport networks.

1.2 Site Location and Description

The subject site is located at the west of Gorey, Co. Wexford, with access to the site at the north from Gorey Hill/Kilnahue Lane and at the south-west from Carnew Road (R725). The site is bounded by agricultural lands to the west, by Carnew Road (R725), residential properties and agricultural lands to the south and east, and by Gory Hill / Kilnahue Lane to the north. The site location is indicated in the Figure below:

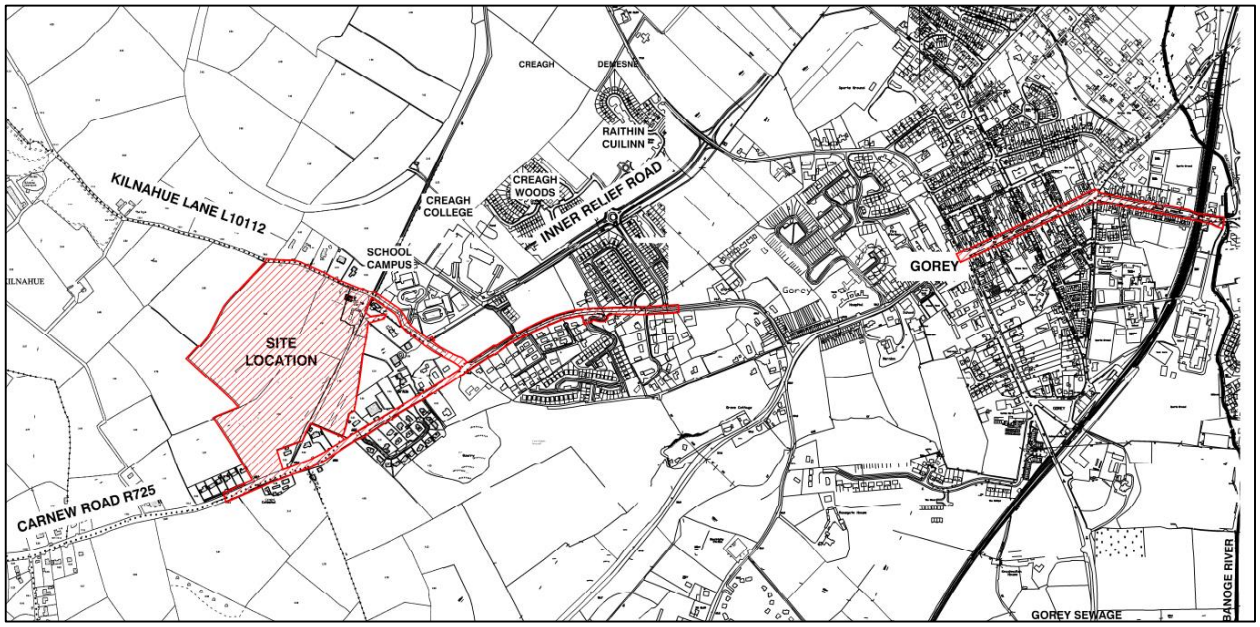


***Figure 1** | Site Location (Image Source: Google Maps)*

The subject site is a greenfield site, currently used for agricultural purposes. Topographic survey data shows that the site falls generally from west to the east, from a high point of approximately 133.5m OD Malin at the west of the site to a low point of approximately 101.5m OD Malin at the east. There is a surface water ditch at approximately 97.50m OD Malin to the east of the site which drains the site to the Banogue River.

1.3 Gorey Town and Environs Local Area Plan 2017-2023

The proposed development falls within the Gorey Town and Environs Local Area Plan 2017-2023. The majority of the site is zoned for new urban blocks, with a portion of the site at the west zoned as a neighbourhood park. One of the reasons for refusal of the previous planning application was inadequate provision of open amenity space in accordance with the Local Area Plan.

The proposed site layout has been revised significantly since the previous application, and now includes a large public open space at the north-west of the site, to serve as a neighbourhood park in accordance with the Environs Local Area Plan 2017-2023.

The Figure below shows an extract of the Place Concept for Gorey, taken from the Gorey Town and Environs Local Area Plan 2017-2023, with the proposed development inset. As can be seen, the proposed road alignments now closely follow the Local Area Plan, with a large neighbourhood park proposed in the same location as set out in the LAP.

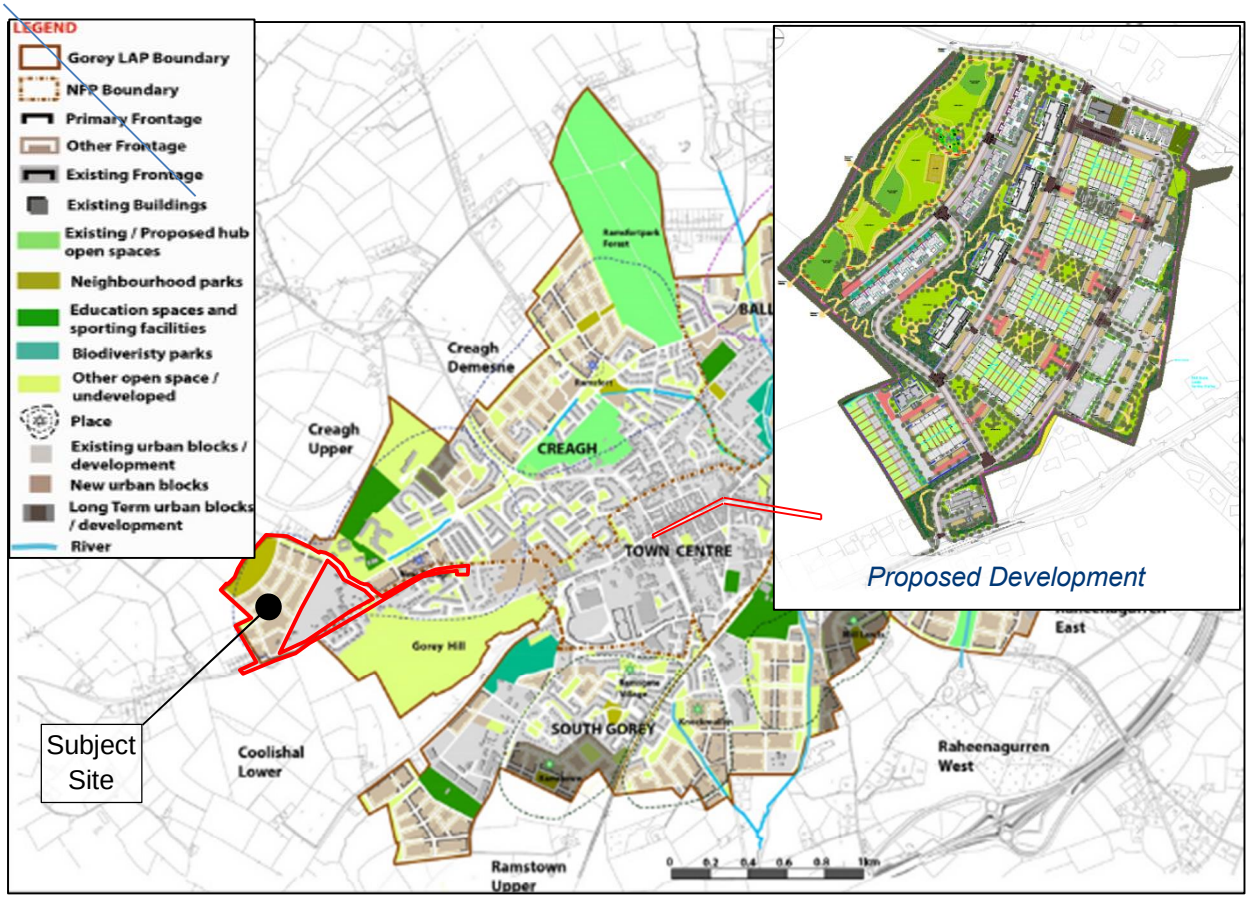


***Figure 2** | Place Concept for Gorey, Extracted from Gorey Town and Environs LAP 2017-2023, with Proposed Development Inset*

1.4 Proposed Development

The proposed development consists of a total of 421 residential units, comprising of 133 houses, 228 apartment units and 60 duplex units, a crèche, two retail units and community rooms. The schedule of accommodation is set out in the Table below:

Description	1-Bed	2-Bed	3-Bed	4-Bed	Total
Houses	-	-	115	18	133
Apartments	76	145	7	-	228
Duplexes	4	26	30	-	60
Crèche	565m²				-
Retail	210m²				-
Total	**80**	**171**	**152**	**18**	**421**

Table 1 | *Schedule of Accommodation*

1.5 Previous Refusal

As noted above, an application was previously submitted for planning permission at the subject site in June 2016 (Planning Reg. Ref. 20160623). That submission received a decision to approve for planning by Wexford County Council on 20 February 2017, but the application was subsequently refused by An Bord Pleanála on 18 July 2017 (Reference PL26.248159).

The proposed development has been designed to specifically address the deficiencies identified in An Bord Pleanálaôs refusal. The reasons for refusal included inadequate provision of open amenity space in accordance with the Local Area Plan, insufficient residential density and uncertainty regarding road and junction upgrade works at the adjacent Kilnahue Lane and Carnew Road.

Refer to the accompanying report titled ñResponse to Previous Reasons for Refusalòfor a summary of the reasons for refusal and a review of how these items have been addressed in the subject application.

2. Foul Water Network

2.1 Existing Foul Water Network

Irish Water records for the surrounding area have been consulted as part of this assessment and are extracted below:

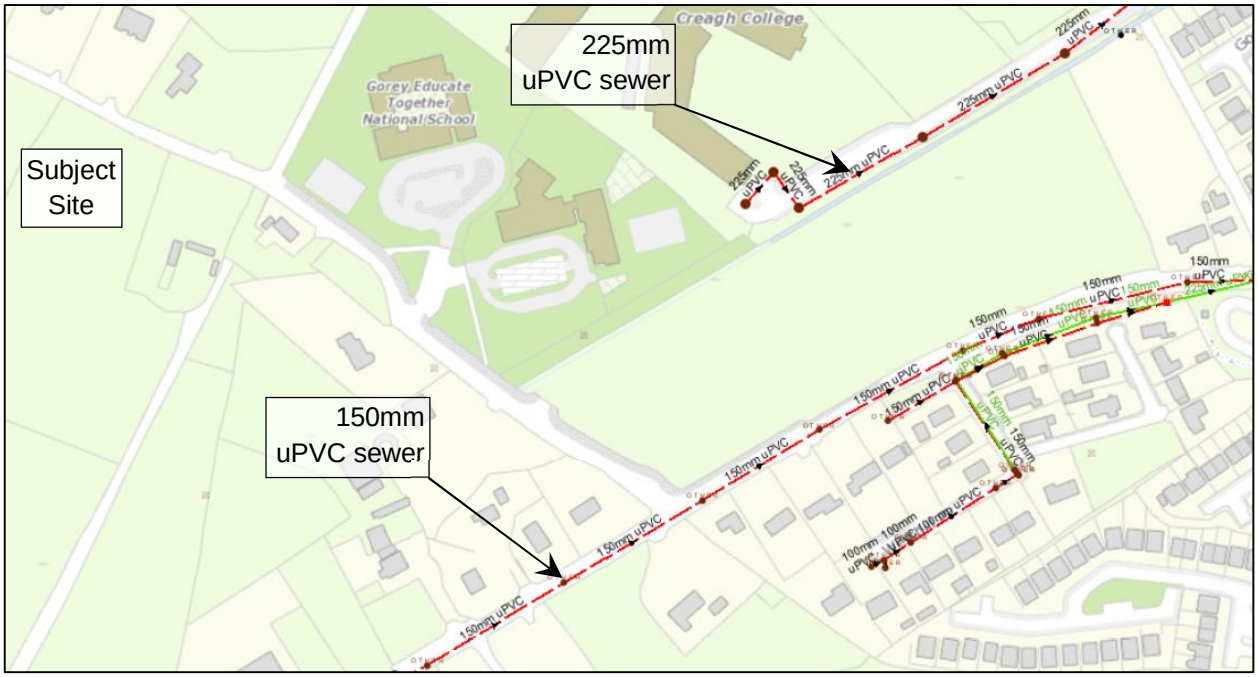


***Figure 3** | Extract of Irish Water's Wastewater Drainage Records*

There is an existing 150mm diameter public foul water sewer in Carnew Road, south-east of the site. This sewer increases in diameter to 225mm approximately 800m east of the site entrance, at Westhill Park.

There is a 225mm diameter foul sewer draining eastwards from Creagh College. There is a new 2m wide pedestrian access along the southern boundary of Gaelscoil Moshíológ, providing a pedestrian connection between Kilnahue Lane, approximately 120m north of the junction with Carnew Road, and the Creagh College roundabout. A new 150mm diameter sewer has been laid along this pedestrian link, connecting to the 225mm Creagh College sewer.

2.2 Proposed Foul Water Network

The majority of the site will drain foul water in a north-easterly direction, via a series of 150mm and 225mm sewers, towards Gorey Hill/Kilnahue Lane. From there, a new wastewater sewer will be laid discharging in a south-easterly direction towards Carnew Road and continuing in a north-easterly direction along Carnew Road, discharging via a new connection to the existing portion of 225mm sewer at Ardmore Water Boosting Station. Please refer to the accompanying drainage drawings 13-119-P4200 to P4205 for the drainage layout and details.

The entrance apartment building at the south of the site will discharge directly to the existing 150mm foul water sewer in Carnew Road. This apartment building is proposed to include 10 no. residential units.

The sewer in Carnew Road continues through to the Main Street of Gorey, and onto Esmonde Street, ultimately discharging to the Courtown Wastewater Treatment Plant. Irish Water have confirmed that the Courtown Wastewater Treatment Plant has capacity to cater for the proposed development.

A pre-connection enquiry for the development was submitted to Irish Water in February 2021 and a Confirmation of Feasibility Letter was issued by Irish Water in August 2021 – refer to Appendix A for a copy of this letter. This letter notes that to facilitate the proposed development, off-site foul sewer upgrades are required on Main Street and Esmonde Street in Gorey town. The required upgrades involve upgrading approximately 550m of 225mm diameter sewer to 375mm diameter.

The upgrades required by Irish Water, based on their 2018 model assessment issued to Waterman Moylan, are indicated in the Figure below:

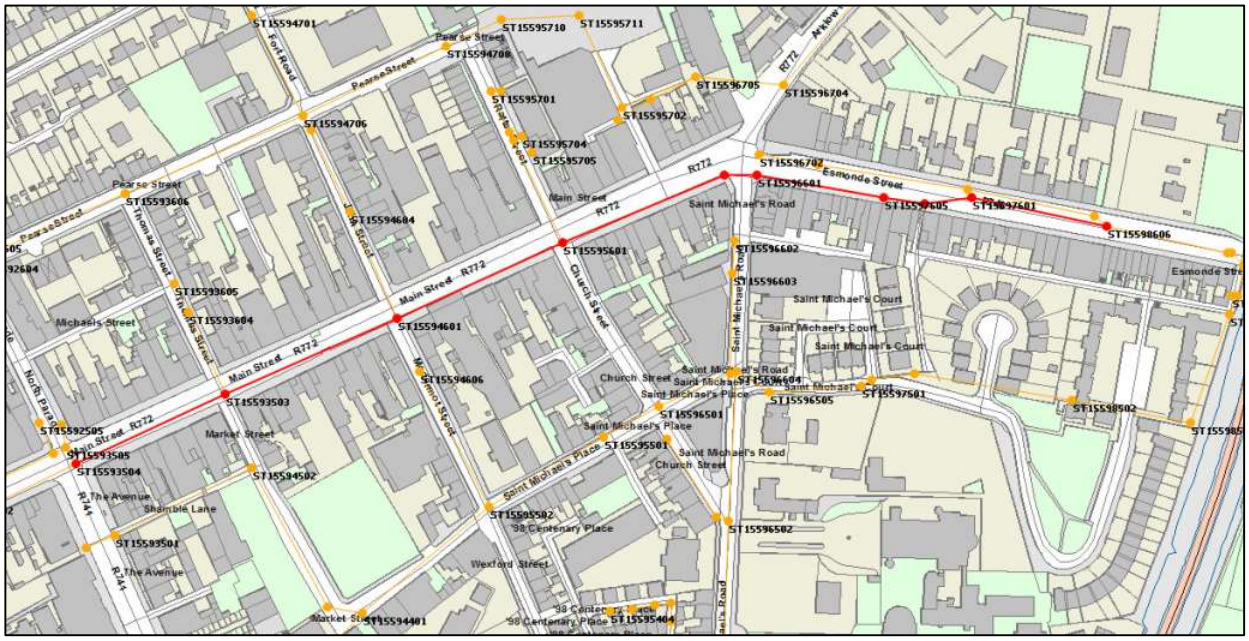


Figure 4 | *Foul Sewer Upgrade on Main Street / Esmonde Street as Required by Irish Water*

A Statement of Design Acceptance has also been received from Irish Water for the proposed development and is also included in Appendix A.

2.3 Foul Water Drainage Calculations

The calculated foul water flows at the subject development are set out in the Table below. Domestic wastewater loads have been calculated based on 2.7 persons per unit with a per capita wastewater flow of 150 litres per head per day along with a 10% unit consumption allowance, in line with Section 3.6 of the Irish Water Code of Practice for Wastewater Infrastructure. Note that the Irish Water Code of Practice assumes 2.7 residents per unit regardless of the unit type.

Per capita wastewater flows for the commercial area (the crèche/childcare facility and retail units) have been based on the flow rates set out in Appendix C of the Code of Practice, and a peak flow multiplier of 6 has been used, as per Section 2.2.5 of Appendix B of the Code of Practice.

Description	Total Population	Load per Capita	Daily Load	Total DWF	Peak Flow
	No. People	*l/hd/day*	*l/day*	*l/s*	*l/s*
133 Houses	359 Residents	150	53,850	0.623	3.740
228 Apartments	616 Residents	150	92,400	1.069	6.417
60 Duplexes	162 Residents	150	24,300	0.281	1.688
Crèche	89 Children	50	4,450	0.052	0.309
	11 Staff	45	1,170	0.014	0.081
Retail & Community	25 Customers	50	1,250	0.014	0.087
	8 Staff	45	360	0.004	0.025
Total	**-**	**-**	**177,780**	**2.058**	**12.346**

Table 2 *| Calculation of Total Foul Water Flow from the Development*

The total dry weather flow from the development is 2.058 l/s, with a peak flow of 12.346 l/s.

2.4 Foul Water Drainage – General

Foul water sewers will be constructed strictly in accordance with Irish Water requirements. No private drainage will be located within public areas.

Drains will be laid to comply with the requirements of the latest Building Regulations, and in accordance with the recommendations contained in the Technical Guidance Document H.

3. Surface Water Network

3.1 Existing Surface Water Network

The proposed development site is a greenfield site. Topographic survey data shows that the site falls generally from west to the east, from a high point of approximately 133.5m at the west of the site to a low point of approximately 101.5m at the east.

There is a surface water ditch at the eastern boundary of the site, at approximately 97.50m OD Malin. This ditch drains in a northerly direction, discharging to the Banogue River.

3.2 Proposed Surface Water Network

It is proposed to drain surface water through the site via a series of sewers, ranging in size from 225mm diameter to 450mm diameter. For storm water management purposes, the site has been divided into eight sub-catchments. Seven of these will be attenuated separately but will ultimately combine to outfall to the stream at Kilnahue Lane, north-east of the site. The eighth catchment, at the south of the site, will be attenuated separately and will have a separate outfall to the existing ditch on Carnew Road. The proposed sub-catchments are shown in the Figure below:

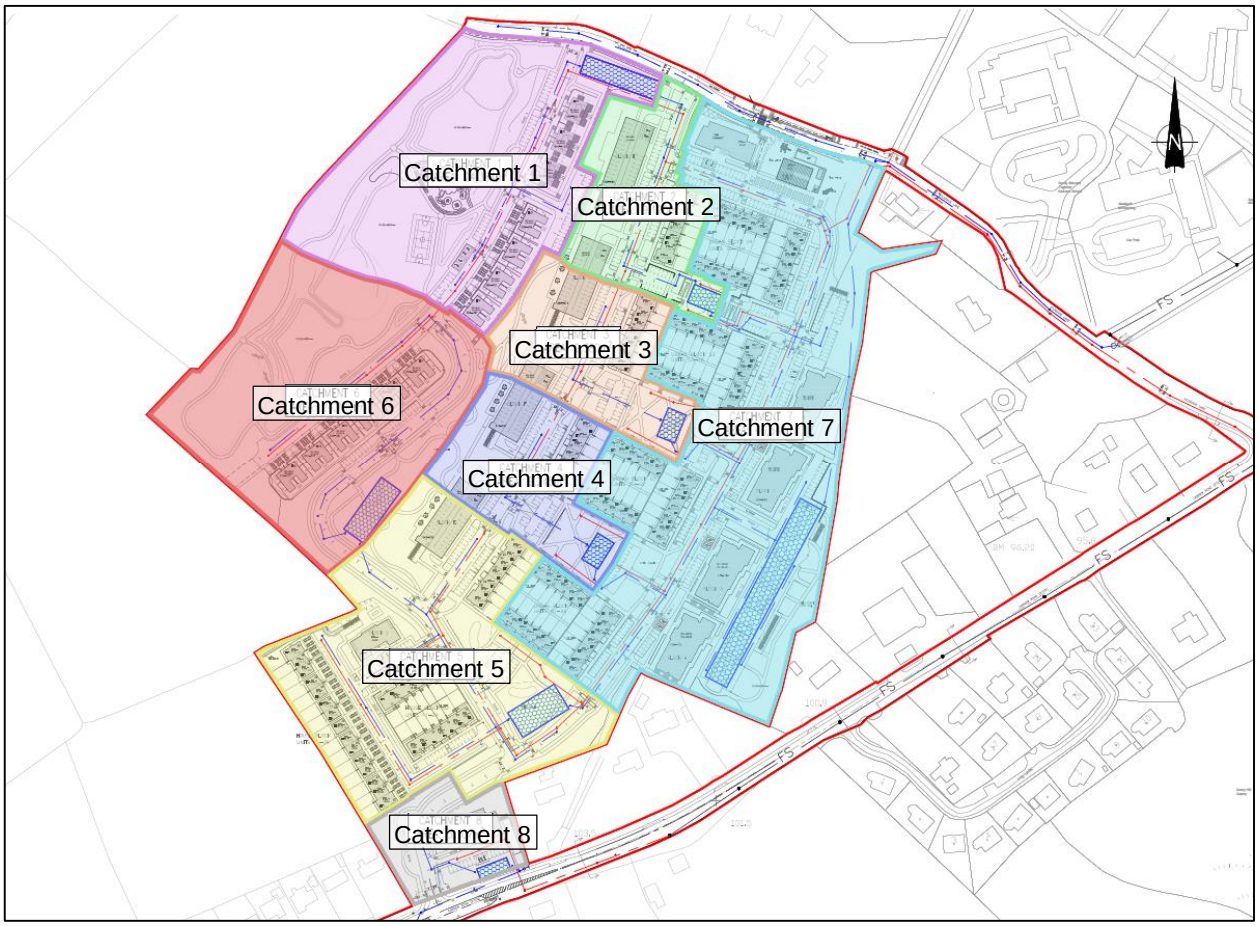


Figure 5 | *Proposed Surface Water Drainage Catchments*

Catchments 1 to 6 will each drain to below ground attenuation with a permeable base to allow for infiltration/soakaway. Each of these attenuation areas will discharge via a Hydrobrake or similar approved flow control device, joining a network which flows to the Catchment 7 attenuation tank. From here, surface

water will discharge at a controlled rate to Kilnahue Lane, continuing east down Kilnahue Lane before outfalling to the stream via a new headwall.

It is proposed to restrict the discharge rate to 75% of the greenfield equivalent rate (as calculated in Section 3.4 below), in order to alleviate downstream capacity constraints. The attenuation storage provided on site for each catchment has been upsized accordingly. The attenuation provided is sufficient to accommodate the 1-in-100 year storm, accounting for a 20% increase due to climate change and accounting for a discharge rate restricted to 75% of the greenfield equivalent rate.

During Site Investigations, a full 1,000l water bowser was added to trial pits following excavations. At the north-western portions of the site, the water did not remain in the pits sufficiently long enough to measure the infiltration rates. Although the attenuation areas have been designed to permit infiltration, it has nonetheless been conservatively assumed that all surface water will discharge to the drainage network rather than infiltrating the soil.

3.3 Proposed SuDS Strategy

The proposed development has been designed to incorporate best drainage practice. Section 3.4, below, sets out the methodology used in determining the existing greenfield runoff rates and calculating attenuation storage requirements for each catchment. The relevant calculations are included in full in Appendix B.

It is proposed to incorporate a Storm Water Management Plan through the use of various SuDS techniques to treat and minimise surface water runoff from the site. The methodology involved in developing a Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual (Ciria C753). Based on three key elements ï Water Quantity, Water Quality and Amenity ï the targets of the SuDS train concept have been implemented in the design, providing SuDS devices for each of the following:

- Source Control
- Site Control
- Regional Control

3.3.1 Source Control

Permeable Paving:

It is proposed to introduce permeable paving in private parking spaces and courtyard areas throughout the development. Downpipes from the roofs of the blocks will drain to filter drains beneath the permeable paving to facilitate maximum infiltration of surface water from paved and roof areas. The goal of permeable paving is to control stormwater at the source to reduce runoff. In addition to reducing surface runoff, permeable paving has the dual benefit of improving water quality by trapping suspended solids and filtering pollutants in the substrata layers.

Green Roof:

It is proposed to introduce green roofing as a source control device. Each block will have green roofing introduced on at least 60% of the roof area.

The substrate and the plant layers in a green roof absorb large amounts of rainwater and release it back into the atmosphere by transpiration and evaporation. They also filter water as it passes through the layers, so the run-off, when it is produced, has fewer pollutants. Rainfall not retained by green roofs is detained, effectively increasing the time to peak and slowing peak flows.

A green roof can reduce annual percentage runoff by between 40% and 80% through this retention and evapotranspiration, with the impact dependent on a range of factors including the depth of substrate, the

saturation of substrate at the onset of a rain event, the angle of the roof, the range of vegetation growing, intensity of rainfall and the time of year.

Planted Areas:

It is proposed to provide open grassed areas with low level planting in various open spaces throughout the site. These will act as soft scape and will significantly slow down and reduce the amount of surface water runoff from the open spaces. Planter boxes and planted areas will also take surface water runoff from the downpipes from apartment buildings before draining to the surface water sewer network.

3.3.2 Site Control

Bioretention Tree Pits:

The proposed development includes significant tree planting throughout the development, with bioretention tree pits included at strategic locations through the site. Trees can help control storm water runoff because their leaves, stems, and roots slow rain from reaching the ground and capture and store rainfall to be released later. Trees help to attenuate flows, trap silts and pollutants, promote infiltration and prevent erosion. Incorporating tree planting offers multiple benefits, including attractive planting features, improved air quality and increased biodiversity whilst helping to ensure adaptation to climate change.

3.3.3 Regional Control

Attenuation Tanks/Soakaways:

It is proposed to provide below ground attenuation for each catchment in the form of pluvial cubes with a permeable membrane at the bottom to allow for infiltration into the ground. This will help control and treat storm water runoff by trapping silts and pollutants and promoting infiltration, while still providing sufficient attenuation storage for extreme storm events.

Regional Flow Control:

A new hydrobrake or similar approved flow control device will be provided at the outfall from each catchment to regulate the discharge rate, limiting flows to 75% of the greenfield equivalent runoff rate.

Downstream Defender:

A downstream defender (trade name for a large chamber that retains solids and hydrocarbons) is intended at the combined outfall from Catchments 1 to 7. This will treat the flows that are to be stored in the attenuation tank before discharging to the public above-ground network.

3.4 Interception or Treatment Storage and Attenuation Storage

As noted above, the methodology involved in developing the Storm Water Management Plan for the subject site is based on recommendations set out in the Greater Dublin Strategic Drainage Study (GDSDS) and in the SuDS Manual. Appendix E of the Greater Dublin Strategic Drainage Study (GDSDS) sets out criteria for determining the provision of interception or treatment storage, attenuation storage and long term storage at a development site. These calculations are included in full in Appendix B and are summarised below:

3.4.1 Criterion 1: River Water Quality Protection

Criterion 1.1: Interception

The Greater Dublin Strategic Drainage Study (GDSDS) states that approximately 30% to 40% of rainfall events are sufficiently small that there is no measurable runoff from greenfield areas into the receiving

waters. These events are generally considered as the first 5mm of rainfall. Assuming 80% runoff from paved surfaces and 0% from pervious surfaces for the first 5mm of rainfall yields the following:

Paved surfaces connected to drainage system	*148625m² x 0.5 x 0.75 =* 55,734.38m²	*148,625m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Interception Storage	*55734.375m² x 5mm x 0.8 =* **222.94m³**	*Paved area directly drained* *5mm rainfall depth* *80% paved runoff factor*

Table 3 | *Interception Storage*

The required interception volume is 222.94m^3.

Criterion 1.2: Treatment Volume

For events larger than 5mm, and in situations where interception storage cannot be provided, surface water runoff treatment is provided in accordance with the CIRIA design manual C521.

Assuming 80% runoff from paved surfaces and 0% from pervious surfaces for the first 15mm of rainfall:

Paved surfaces draining to river	*148625m² x 0.5 x 0.75 =* 55,734.38m²	*148,625m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Treatment Storage	*55734.375m² x 15mm x 0.8 =* **668.81m³**	*Paved area directly drained* *15mm rainfall depth* *80% runoff from paved surfaces*

Table 4 | *Treatment Volume*

The required treatment storage volume is 668.81m^3. The required interception and treatment volumes are provided through the use of SuDS devices as described in Section 3.3 above.

3.4.2 Criterion 2: River Regime Protection

Attenuation storage is provided to limit the discharge rate from the site into receiving waters. As per the GDSDS, the required attenuation volume is calculated assuming 100% runoff from paved areas, and has been calculated for the 1-year, 30-year and 100-year return periods, identifying the critical storm for each ï refer to the calculations included in Appendix B.

The discharge rate has been limited to 75% of the greenfield equivalent runoff rate, to alleviate existing capacity constraints in the stream downstream of the subject site. This results in an increased storage volume requirement. Catchments 1 to 7 all outfall together to the existing stream, and as such have been considered together in the design and in the attenuation calculations. The greenfield equivalent runoff rate for these catchments is 120l/s, and the proposed flow restrictions will limit the outfall to 75% of this rate at 90l/s.

The attenuation volume requirement for this area, as calculated in Appendix B, is 6,794m^3. As noted above, this portion of the site has been divided into 7 catchments, each of which will be attenuated separately, with the attenuation volume and the discharge rate proportional to the area of the catchment.

The proposed attenuation volumes and discharge rates for Catchments 1 to 7 are tabulated below:

Description	Attenuation			Catchment Area	Discharge Rate
	Area	*Depth*	*Volume*		
Catchment 1	591m²	2.0m	1,181m³	24,384m²	14.8l/s
Catchment 2	221m²	2.0m	442m³	9,120m²	5.5l/s
Catchment 3	227m²	2.0m	454m³	9,380m²	5.7l/s
Catchment 4	224m²	2.0m	448m³	9,245m²	5.6l/s
Catchment 5	612m²	2.0m	1,224m³	25,256m²	15.3l/s
Catchment 6	598m²	2.0m	1,197m³	24,700m²	15.0l/s
Catchment 7	1,879m²	1.2m	2,255m³	46,540m²	28.2l/s
Total	**4,352m²**	**1.655m**	**7,200m³**	**148,625m²**	**90.0l/s**

Table 5 *| Attenuation Volumes for Catchments 1-7*

It is proposed to provide 7,200m^3 of attenuation, which exceeds the required 6,794m^3.

The required storage volume for Catchment 8, as calculated in Appendix B, is 280m^3. It is proposed to provide a 280m^3 tank at the south of the site to accommodate this volume.

3.4.3 Criterion 3: Levels of Service

There are four criteria for levels of service. These are:

Criterion 3.1: No external flooding except where specifically planned (30-year high intensity rainfall event).

Criterion 3.2: No internal flooding (100-year high intensity rainfall event).

Criterion 3.3: No internal flooding (100-year river event and critical duration for site storage).

Criterion 3.4: No flood routing off site except where specifically planned (100-year high intensity rainfall event).

Both internal and external flooding have been assessed in the Flood Risk Assessment report which accompanies this Engineering Assessment report. The Flood Risk Assessment has been carried out in accordance with the *DEHLG/OPW Guidelines on the Planning Process and Flood Risk Management* published in November 2009.

The assessment identifies the risk of both internal and external flooding at the site from various sources and sets out mitigation measures against the potential risks of flooding. The sources of possible flooding assessed in the report include coastal, fluvial, pluvial (direct heavy rain), groundwater and human/mechanical errors.

As a result of the flood risk management and mitigation measures proposed, the residual risk of internal or external flooding for the 30-year and 100-year flood events is low, and accordingly all four of the above criteria have been met. Please refer to the accompanying Flood Risk Assessment report for the full analysis of the flood risk at the subject site.

3.4.4 Criterion 4: River Flood Protection

The long term storage volume is a comparison of pre- and post-development runoff volumes. The objective is to limit the runoff discharged after development to the same as that which occurred prior to development.

Of the three methods described in the GDSDS for establishing River Flood Protection by comparison of the pre- and post-development runoff volumes, (Criteria 4.1, 4.2 and 4.3 respectively), Criteria 4.3 is selected for use as the most practical criteria at this stage in the design.

The Criteria 4.3 approach is for all runoff to be limited to either Q_{BAR} or to 2 l/s/Ha, whichever is the greater. The proposed drainage system includes a flow control device to ensure that the discharge rate is limited to the greenfield equivalent and ample attenuation is provided for the 1-in-100 year storm, accounting for a 20% increase due to climate change.

The extra runoff volume of the development runoff over greenfield runoff, Vol_{xs}, as calculated in Appendix B is 1,037m^3 for Catchments 1-7 and 95.36m^3 for Catchment 8. Note that as stated in the GDSDS, this volume is not additional to the attenuation storage volume but is effectively an element of it.

3.5 Water Environment Potential Impact Appraisal

A Water Environment Potential Impact Appraisal has been carried out by Hydro-G to assess the potential impact of the proposed development on the local Hydrology & Hydrogeology, and the full report by Hydro-G accompanies this submission under separate cover.

The assessment notes that agriculture is the main pressure in all catchments across Ireland. Therefore, any land taken out of agricultural use will aid efforts to improve water quality and the aims of the Water Framework Directive.

The assessment concludes that the proposal presents potential for improvement in the catchment as compared to the current scenario, noting that the SuDS proposals for the development are extensive and provide in excess of the attenuation capacity required, which is deemed to adequately provide protection for the receiving waters.

3.6 Surface Water – General

Surface water sewers will generally consist of PVC (to IS 123) or concrete socket and spigot pipes (to IS 6) and laid strictly in accordance with Wexford County Council requirements for taking in charge. It is intended that all sewers within the public domain will be handed over to the relevant Local Authority for taking in charge.

All private outfall manholes will be built in accordance with the Greater Dublin Regional Code of Practice for Drainage Works. No private drainage will be located within public areas.

Drains will be laid in accordance with the requirements of the Building Regulations, Technical Guidance Document H.

3.7 Flood Risk Assessment

A site-specific Flood Risk Assessment has been carried out for the proposed development and accompanies this submission under separate cover. The Flood Risk Assessment analyses the subject lands for risks from tidal flooding, fluvial flooding, pluvial flooding, ground water and failures of mechanical systems. Where risks were identified, mitigation measures have been proposed. As a result of the proposed mitigation measures, the residual risk of flooding from any source is low.

4. Water Supply Network

4.1 Existing Water Supply Network

Irish Water records for the surrounding area have been reviewed as part of this assessment, and are extracted below:

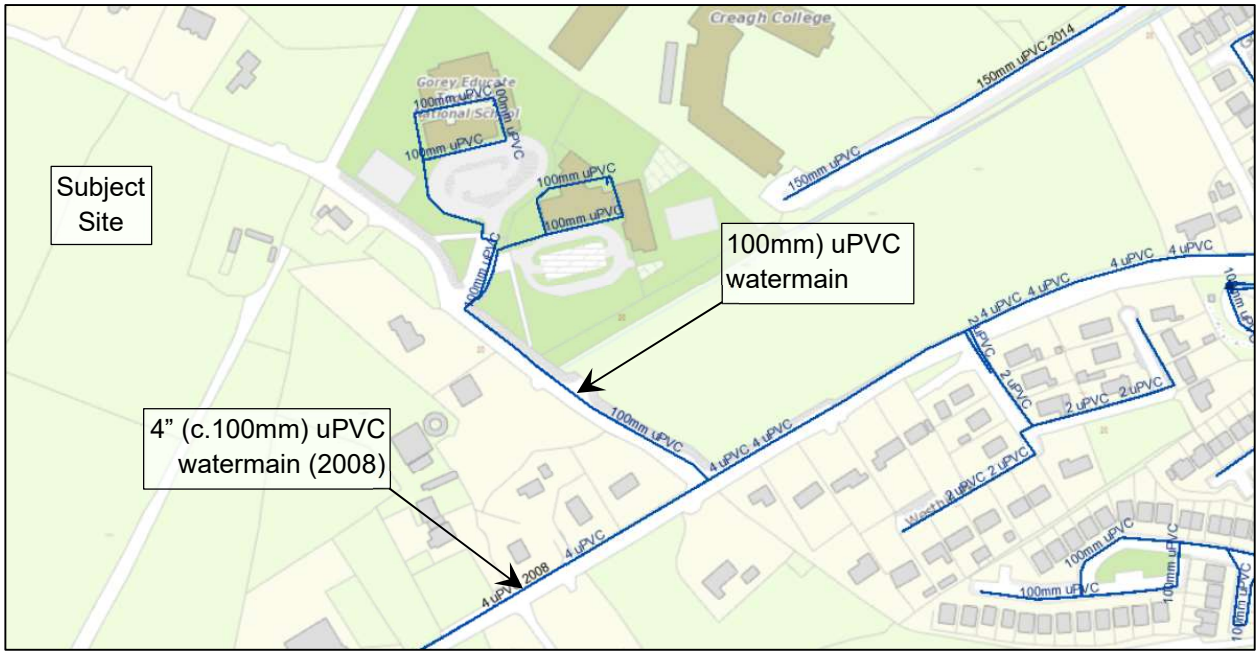


***Figure 6** | Extract of Irish Water's Water Supply Service Records*

There is an existing 100mm watermain in Gorey Hill/Kilnahue Lane, serving the school on the northern side of the road, and there is a 4" (c.100mm) watermain in Carnew Road.

4.2 Proposed Water Supply Network

It is proposed to provide two new connections to the existing public network, one to the existing watermain in Carnew Road and the other to the existing watermain in Gorey Hill/Kilnahue Lane.

A pre-connection enquiry for the development was submitted to Irish Water in February 2021, with a Confirmation of Feasibility Letter issued at the end of August 2021 and included in Appendix A. The letter stipulates that some watermain upgrades are required to facilitate the development.

As such, some off-site watermain upgrades are proposed in accordance with the requirements set out by Irish Water in the Confirmation of Feasibility Letter. These upgrades involve laying a new 150mm main from the Kilnahue Lane access to Ardmore water pumping station on Carnew Road, continuing as far as the 200mm main crossing just east of the pumping station. Additionally, a new booster station is to be included in the development site. Please refer to the accompanying engineering drawings.

A Statement of Design Acceptance has also been received from Irish Water for the proposed development and is also included in Appendix A.

4.3 Water Supply Calculations

The calculated water demand at the subject development is set out in the below table. The average domestic demand has been established based on an average occupancy ratio of 2.7 persons per dwelling

with a daily domestic per capita consumption of 150 litres per head per day and with a 10% allowance factor. Note that the Irish Water Code of Practice assumes 2.7 residents per unit regardless of the unit type.

The average day/peak week demand has been taken as 1.25 times the average daily domestic demand, while the peak demand has been taken as 5 times the average day/peak week demand, as per Section 3.7.2 of the Irish Water Code of Practice for Water Infrastructure.

Description	Total Population	Demand per Capita	Water Demand	Average Demand	Average Peak Demand	Peak Demand
	No. People	*l/hd/day*	*l/day*	*l/s*	*l/s*	*l/s*
133 Houses	359 Residents	150	53,850	0.623	0.779	3.740
228 Apartments	616 Residents	150	92,400	1.069	1.337	6.417
60 Duplexes	162 Residents	150	24,300	0.281	0.352	1.688
Crèche	89 Children	50	4,450	0.052	0.064	0.309
	11 Staff	45	1,170	0.014	0.017	0.081
Retail	25 Customers	50	1,250	0.014	0.018	0.087
	8 Staff	45	360	0.004	0.005	0.025
Total	**-**	**-**	**177,780**	**2.058**	**2.572**	**12.346**

Table 6 *| Calculation of Water Demand for the Development*

The average demand for the development is 2.058 l/s, with a peak demand of 12.346 l/s.

4.4 Water Supply – General

All watermains will be laid strictly in accordance with Irish Water requirements for taking in charge.

Valves, hydrants, scour and sluice valves and bulk water meters will be provided in accordance with the requirements of Irish Water.

5. Road and Transport Network

This section provides an overview of the existing and proposed road and transportation network in the vicinity of the site. A comprehensive Traffic and Transport Assessment and a Travel Plan have also been prepared by Waterman Moylan and accompanies this planning application under separate cover

5.1 Existing Transport Network

5.1.1 Existing Road Infrastructure

The subject site is bounded by two roads, Carnew Road (R725) to the south and Gorey Hill/Kilnahue Lane to the north. There is vehicular access to the site from both of these roads.

Carnew Road is the name of this stretch of the R725 Regional Road. The R725 is approximately 53km in length and runs in an eastï west direction from Gorey through Carnew and Shillelagh to Carlow. The speed limit along the R725 adjacent to the proposed site access is 60km/hr, increasing to 80km/hr west of the site and reducing to 50km/hr east of the junction with Gorey Hill/Kilnahue Lane. To the west of the junction with Gorey Hill/Kilnahue Road, the R725 carriageway is 6m wide. To the east of the junction, the R725 is also a 6m carriageway and includes a cycle lane, layby parking and a footpath along the northern side. The layby parking and the cycle path end after 80m, while the footpath continues.

Gorey Hill is a single carriageway road running northï south at the east and north of the subject site from its junction with R725. The eastern portion of the road is known as Gorey Hill, while the portion of the road west of the site is known as Kilnahue Lane. It is generally 6m wide and provides local access to a small number of houses, to two primary schools and to a motor service commercial unit.

The existing primary junctions in the area surrounding the proposed development site are:

- R725 Carnew Road / Kilnahue Lane: an existing priority-controlled T-junction
- Kilnahue Lane / Access Road to School Site: an existing priority-controlled T-junction

5.1.2 Existing Pedestrian & Cycle Infrastructure

The R725 includes a footpath on the northern side of the carriageway to the west of the junction with Gorey Hill/Kilnahue Road, continuing for approximately 240m up to the petrol service station.

To the east of the junction, the R725 includes a cycle lane, layby parking and a footpath along the northern side of the carriageway. The layby parking and the cycle path end after 80m, while the footpath continues.

Gorey Hill/Kilnahue Lane includes a two-way cycle path (5m wide) and a footpath on the north-eastern side of the carriageway, extending for 300m from the junction with Carnew Road (R725). These pedestrian and cycle facilities currently facilitate access to the school site. A pedestrian crossing is provided on Gorey Hill/Kilnahue Lane approaching the intersection with R725.

5.1.3 Existing Public Transport Network

Gorey town is served by several public bus routes. The closest bus stops to the subject site are located in Gorey town centre, approximately 1.60km to 2.25km to the east (18 to 26-minute walk). The routes serving these bus stops are outlined below:

- Route 2 (Expressway): Dublin Airportï Wexford Station

  Towards Wexford, this route operates at a frequency of 1 to 2 hours during the whole day, with the first bus departing from Gorey at 01:50 and the last at 23:46. In the opposite direction, to Dublin

Airport, this route also operates at a 1- to 2-hour frequency during the whole day, with the first bus departing from Gorey at 02:45 and the last at 21:20.

- Route 133X (Bus Éireann): Gorey (Main Street)ï Busáras

  This route operates one service from Gorey to Busáras in Dublin City. The bus leaves Gorey at 06:50 and arrives in Busáras at 08:15. No service is provided in the opposite direction.

- Route 379 (Bus Éireann): Rosslare Harbourï Ballycanewï Wexford Station

  This route operates only one service on Mondays and one service on Saturdays. On Mondays, the bus arrives in Gorey at 14:45 and leaves the town at 15:30. On Saturdays, the bus arrives in Gorey at 09:40 and leaves the town at 12:05 towards Wexford.

- Route 740 (Wexford Bus): Redmond Squareï Dublin Airport

  From Monday to Friday (excluding bank holidays), this route operates at a frequency between 30 minutes to two hours during the whole day. First bus leaves Gorey at 02:25 in the morning and the last at 20:20. In the opposite direction, this route operates at a 20 minute to 1.5 hour frequency during the whole day, with the first bus leaving Gorey at 07:10 and the last at 00:35.

- Route 740A (Wexford Bus): Goreyï Dublin Airport

  On weekdays, this route operates 9 services throughout the day. The frequency is generally hourly with the first bus leaving Gorey at 06:00 and the last at 17:40. On weekends, the service reduces to 6 no., with the first at 07:10 and the last at 17:40.

- NUM11 (Wexford Bus): Gorey (Main Street)ï Whitmore Jeweï Maynooth University

  This route only operates on weekdays, with the only bus leaving Gorey at 07:00 towards Maynooth, and the only return service arriving in Gorey at 19:00 from Monday to Thursday and at 18:55 on Fridays.

- Route X2 (Expressway): Wexford Stationï Dublin Airport

  Only one service per direction is operated by this route. The bus leaves Gorey town on a daily basis at 06:40 towards Dublin Airport and at 18:00 towards Wexford.

- Route 879 (Gorey Bus Links): Goreyï Courtownï Ballygarrettï Ballycanew

  This is a local route linking Gorey to the surrounding towns. From Monday to Friday, it operates three services, leaving Gorey at 09:15, 13:10 and 17:10.

- Route ITC07 (Dunnes Coaches): Gorey Main Streetï Carlow College

  This route operates one single service. It leaves Gorey at 07:20 and arrives back at 18:23.

- Route 389 (Local Link Wexford): Gorey Main Streetï Knockmullenï Pollshone

  From Monday to Friday, this route operates four services, leaving Gorey towards Ardamine at 08:09, 18:40, 19:40 and 20:40. On Saturdays, the bus leaving at 08:09 is substituted by a service at 12:19. On Sundays, two services are provided, one leaving Gorey at 11:19 and the other at 18:49.

These listed bus routes provide frequent service to various locations, including local towns, Dublin City, Dublin Airport, Wexford town and Carlow town. The bus journey time to Dublin City Centre is approximately 2 hours, to Dublin Airport is approximately 2.5 hours and to Wexford town is approximately 1 hour.

5.2 Proposed Road Network

5.2.1 Internal Road Network

Direct vehicular access to the subject development is proposed from Carnew Road to the south and Kilnahue Lane to the north, with one access junction proposed at Carnew Road and two access junctions proposed at Kilnahue Lane. All three junctions will be priority controlled. Refer to Waterman Moylanôs Proposed Road Layout drawing no.ôs 13-119-P4100 to P4103 which accompany this application.

In addition to these vehicular access points, which will be accessible by all modes of transport, there are two pedestrian/cyclist links proposed. These are located to the north of the site, onto Gorey Hill/Kilnahue Lane, and to the south-east of the site, to the existing petrol station, which will lead out to the existing facilities along Carnew Road.

All internal roads in the proposed development are designed for a speed limit of 30km/hr, with generally a 5.5m wide carriageway, 1.5m on-road cycle lanes and minimum 1.8m footpaths along both sides. On-street parking intermixed with soft verges will separate footpaths from the main carriageway. All road intersections within the development itself will be priority controlled with raised tables where appropriate. The low design speeds and traffic calming measures will ensure the safe operation of these junctions.

5.2.2 External Road Upgrades

Several upgrades are proposed to the existing road network. At the request of Wexford County Council, it is proposed to upgrade the Carnew Road/Kilnahue Lane junction to a signalised junction ï refer to Waterman Moylan Drawing No. 13-119-P4131, which accompanies this submission. Appropriate speed limit signage is to be added as part of the junction upgrade.

Road improvements are proposed at Kilnahue Lane, including widening of the carriageway as far as the north-western boundary of the site, introduction of new footpaths and cycle lanes along the road, introduction of new traffic calming measures and introduction of a new unsignalized raised priority controlled zebra crossing with flashing amber beacons. The proposed upgrade works to Kilnahue Lane are shown on Waterman Moylan Drawing No.ôs 13-119-P4130 and 13-119-P4131.

At Carnew Road, it is proposed to extend the existing footpath as far as the proposed site entrance, and continuing south-west beyond the entrance approximately 140m to the existing residential/agricultural access. It is also proposed to introduce a new cycle lane adjacent to the site entrance on Carnew Road, with the roadway to be widened into the verge to accommodate the new cycle lane, and to provide new street lighting and signage. The proposed upgrade works to Carnew Road are shown on Waterman Moylan Drawing No. 13-119-P4110.

These proposed upgrade works have been discussed and agreed with Wexford County Council. All of the proposed road upgrade works are to be carried out during the first phase of construction, and all of the proposed upgrade works are to be fully completed prior to any of the units in the development being occupied.

5.3 Design Manual for Urban Roads and Streets

5.3.1 Background

The stated objective of the Design Manual for Urban Roads and Streets (DMURS) is to achieve better street design in urban areas. This will encourage more people to choose to walk, cycle or use public transport by making the experience safer and more pleasant. It will lower traffic speeds, reduce unnecessary car use and create a built environment that promotes healthy lifestyles and responds more

sympathetically to the distinctive nature of individual communities and places. The implementation of DMURS is intended to enhance how we go about our business, enhance how we interact with each other, and have a positive impact on our enjoyment of the places to and through which we travel.

The proposed development has been designed to meet the objectives of DMURS, and the Design Team considers that the proposed road and street design is consistent with the principles and guidance outlined in DMURS. Outlined below are some of the specific design features that have been incorporated within the proposed scheme with the objective of delivering a design that is in compliance with DMURS.

5.3.2 Creating a Sense of Place

DMURS sets out four characteristics which represent the basic measures that should be established in order to create people friendly streets that facilitate more sustainable neighbourhoods. These characteristics are connectivity, enclosure, active edge and pedestrian activities/facilities.

Connectivity:

"The creation of vibrant and active places requires pedestrian activity. This in turn requires walkable street networks that can be easily navigated and are well connected."

In order of importance, DMURS prioritises pedestrians, cyclists, public transport and private cars.

The proposed development has been designed with pedestrians and cyclists taking precedence over other modes of transport. In this regard, footpaths are provided throughout the development with regular pedestrian crossings along anticipated desire lines.

There are two access points provided to exclusively serve pedestrians and cyclists; one to the north of the site, onto Gorey Hill/Kilnahue Lane, and the other to the south-east of the site, to the existing petrol station, which will lead out to the existing facilities along Carnew Road.

Pedestrian crossings have been designed to allow pedestrians to cross the street at grade. The proposal includes excellent provision for cyclists, with new cycle lanes proposed on each side of the carriageway throughout the development. This provides a safe space for cyclists with the dominance of cars reduced.

Enclosure:

"A sense of enclosure spatially defines streets and creates a more intimate and supervised environment. A sense of enclosure is achieved by orientating buildings towards the street and placing them along its edge. The use of street trees can also enhance the feeling of enclosure."

The proposed development has been designed with residential units overlooking streets and pedestrian routes. High quality landscaping and extensive tree planting are proposed throughout the scheme which creates a definitive sense of place. Road widths of generally 5.5m throughout the development ensure that a strong sense of enclosure is achieved on residential roads.

Active Edge:

"An active frontage enlivens the edge of the street creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings that ensure the street is overlooked and generate pedestrian activity as people come and go from buildings."

As stated in Section 2.2.1 of DMURS, an active frontage enlivens the edge of the street, creating a more interesting and engaging environment. An active frontage is achieved with frequent entrances and openings. Section 3.4.1 of DMURS further notes that designers should avoid the creation of Dendritic networks, which place heavy restrictions on movement.

The provision of pedestrian crossings and cycle lanes will encourage and facilitate pedestrian and cyclist activity. The proposal includes strategically placed pedestrian crossings with raised tables, which will promote lower design speeds while enabling pedestrians to cross the street at grade, in accordance with Section 4.4.7 of DMURS.

On-street parking is provided throughout much of the development. On-street parking separates pedestrians from the vehicle carriageway and, as per DMURS Section 4.4.9, can calm traffic by increasing driver caution, contribute to pedestrian comfort by providing a buffer between the vehicular carriageway and footpath and provide good levels of passive security.

Pedestrian Activities/Facilities:

"The sense of intimacy, interest and overlooking that is created by a street that is enclosed and lined with active frontages enhances a pedestrian's feeling of security and well-being. Good pedestrian facilities (such as wide footpaths and well-designed crossings) also makes walking a more convenient and pleasurable experience that will further encourage pedestrian activity."

As outlined in the items above, the proposed development has been designed to provide excellent pedestrian connectivity, with a network of inter-connecting footpaths providing permeability throughout the site and to the surrounding area.

Throughout the site, pedestrian routes are 1.8m wide or greater which provides adequate space for two wheelchairs to pass one another. The proposal includes strategically placed pedestrian crossings with raised tables, which will promote lower design speeds while enabling pedestrians to cross the street at grade, in accordance with Section 4.4.7 of DMURS.

A shared surface zone is provided adjacent to the proposed crèche. Shared surface zones are streets designed primarily to meet the needs of pedestrians, cyclists, children and residents, where the speeds and dominance of cars is reduced.

5.3.3 Key Design Principles

DMURS sets out four core design principles which designers must have regard to when designing roads and streets. These four core principles are set out below together with a commentary establishing how these design principles have been incorporated into the design of the proposed development.

Design Principle 1: Pedestrian Activity/Facilities:

"To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users and in particular more sustainable forms of transport."

Streets have been designed in accordance with the alignment and curvature recommendations set out in DMURS Section 4.4.6. The road layout is generally orthogonal. Section 3.3.1 of DMURS notes that street networks that are generally orthogonal in nature are the most effective in terms of permeability (and legibility). Regular junctions along with raised pedestrian tables/crossings at main pedestrian desire lines will encourage reduced driving speeds.

Design Principle 2: Multi-Functional Streets:

"The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment."

The road hierarchy includes Local Access roads and home-zone / shared surfaces. The local access streets generally comprise of 5.5m wide carriageways (i.e. 2.75m wide vehicle lanes) with 1.5m wide cycle lanes and 1.8m wide footpaths on either side of the carriageway. Footpaths are often separated from the

carriageway by verges and by on-street parking bays. The inclusion of cycle lanes and footpaths throughout the development will encourage active modes of transport and promote multi-functional streets.

The proposed shared surface zone is designed primarily to meet the needs of pedestrians, cyclists, children and residents, where the speeds and dominance of cars is reduced. It is stated in Section 4.3.4 of DMURS that shared surface streets are highly desirable where movement priorities are low and there is a high place value in promoting more liveable streets, such as on Local streets within Neighbourhood and Suburbs.

The shared surface zone comprises of an 8m wide shared-surface carriageway. This will inform a clear hierarchy within the public realm, reducing the speed and dominance of cars. It is proposed to utilise a buff coloured chipping / macadam or similar approved surfacing at the shared surface zone, subject to Wexford County Council Roads and Transportation approval. Use of a shared-surface buff coloured chipping/macadam indicates to both drivers and pedestrians/cyclists that the road is a shared space. As stated in Section 4.4.2 of DMURS, paving materials can encourage a low vehicle speed shared environment. Entry treatment to the shared surface zone is provided in the form of a ramp up, which helps announce that a driver is entering into a shared surface zone.

Design Principle 3: Pedestrian Focus:

"The quality of the street is measured by the quality of the pedestrian environment."

The design of the scheme has placed a particular focus on the pedestrian. Connectivity throughout the scheme is heavily weighted towards the pedestrian. There are excellent pedestrian links to the surrounding road networks, public transport services and amenities for both residents of the development and the wider public.

Raised tables are provided at crossing pionts, which allow pedestrians to continue at grade. The raised tables also promote lower vehicle speeds.

Design Principle 4: Multi-Disciplinary Approach:

"Greater communication and co-operation between design professionals through promotion plan led multidisciplinary approach to design."

The design of the proposed scheme has been developed through the design team working closely together. The proposed development design is led by Connolly Architects working together with multiple disciplines including Waterman Moylan Consulting Engineers, Downey Planning and Rónán MacDiarmada & Associates Landscape Architects.

Public areas fronting and within the proposed development will be designed by a multidisciplinary design team to accommodate pedestrians and cyclists in accordance with the appropriate principles and guidelines set out in DMURS. In particular the vehicular access and public footways within the remit of the development will incorporate the relevant DMURS requirements and guidelines as set out above.

5.3.4 External Quality Audit

An external Quality Audit has been carried out by Bruton Consulting Engineers in accordance with Section 5.4.2 of DMURS. The audit includes a Road Safety Audit, Access Audit, Cycle Audit and Walking Audit.

The Quality Audit identified several specific issues with the design, and these issues have been remedied accordingly as per the table below:

Item	Problem Identified	Remedy
1	Limited forward visibility/stopping sight distance for drivers travelling westbound on Kilnahue Lane after the school access.	Reduce speed on Kilnahue Lane to 30kph from Junction with Carnew Road to Northern extent of proposed works so SSD = design speed.

2	There is a short section along Kilnahue Lane where the segregated cycle and pedestrian facilities are merged into a shared facility and the cross-sectional width (2.1m) is less than the segregated widths.	Reduce road width locally from 6m to 5.5m increasing shared footpath width to 2.6m.
3	No refuge area on the southern verge of the R725 for dismounted cyclists or pedestrians to wait at uncontrolled pedestrian crossing, may lead to cyclists being ósqueezedô by passing vehicles.	Keep 1 island, remove pedestrian link from north to south of road. Provide cycleways locally through the entry gate. Provide Gateway signage, lighting and markings to make clear.
4	Corner radii at the proposed access on the R725 are 10m.	Entry radii reduced to 6m.
5	The internal junctions within the development are shown to be yield control junctions.	Stop control to be used instead of yield control.
6	The uncontrolled crossing on Road 1, chainage 142 approx is located at the base of the raised table.	The raised table has been extended to include the pedestrian crossing.
7	The topography of the site leads to many steps throughout the footpath network.	Alternative access to the adjacent open spaces is available with gradients that are in accordance with the Technical Guidance Document Part M of the Building Regulations without steps and without excessively long routes.
8	The topography of the site leads to many steps between parking spaces and residential units.	Suitable pedestrian provision with gradients in accordance with the Technical Guidance Document of Part M of the Building Regulations without steps be provided from dedicated car parking spaces to the associated residential units.
9	Trees at the corners of internal junctions could lead to a lack of visibility for drivers.	Tree types and locations are chosen such that the girth, clear stem and canopies will not interfere with visibility both when planted and when mature.
10	There is a notional pedestrian/cycle link to the Circle K Garage on the R725 but is discontinuous and the access point at the service station may not be suitable.	The link to the Topaz garage will not form part of this application.
11	The zebra crossing on Kilnahue Lane is missing tactile paving.	L-shaped red coloured tactile paving is to be provided at the crossing.

***Table 7** | Quality Audit Issues and Remedies*

Refer to Appendix C for the full Quality Audit report.

5.3.5 DMURS Statement of Design Consistency

As set out above, the development has been specifically designed to meet the objectives of DMURS. The Design Team considers that the proposed road and street design is consistent with the principles and guidance outlined in the Design Manual for Urban Roads and Streets (DMURS).

5.4 Traffic and Transport Assessment & Travel Plan

As noted above, a comprehensive Traffic and Transport Assessment and Travel Plan have also been prepared by Waterman Moylan and accompany this pre-planning submission under separate cover.

6. Liaison with Third Parties

This section summarises liaison undertaken with the various bodies in preparation of the SJHD submission:

Name	Party	Discussion
Joanne Kehoe & Tim O'Sullivan	WCC Roads & Drainage	Issued Roads and Surface Water drainage proposals, Quality Audit, comments issued by WCC and updated into proposals.
Nick West,	Irish Rail	Issued foul drainage proposals at Esmonde Street overpass for comment. Recommendations updated into proposals.
PJ Murphy	Irish Water	Proposals for foul and water were submitted. Confirmation of Feasibility and Statement of Design Acceptance have been issued by IW.
Norman Bruton	Bruton Engineering	Quality audit provided for on and off-site proposals and was sent onto WCC Joanne Kehoe.
WCC Meeting	Wexford County Council	Interdepartmental meeting with the Applicant to review proposals.

Appendices

A. Irish Water Confirmation of Feasibility Letter and Statement of Design Acceptance

Darragh Aiken
Waterman Moylan
Block S,
EastPoint Business Park,
Alfie Byrne Road,
Dublin
D03 H3F4

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

30 August 2021

Re: CDS21001761 pre-connection enquiry - Subject to contract | Contract denied

Connection for Multi/Mixed Use Development of 450 unit(s) at Lands at Kilanhue Lane, Gorey, Co. Wexford

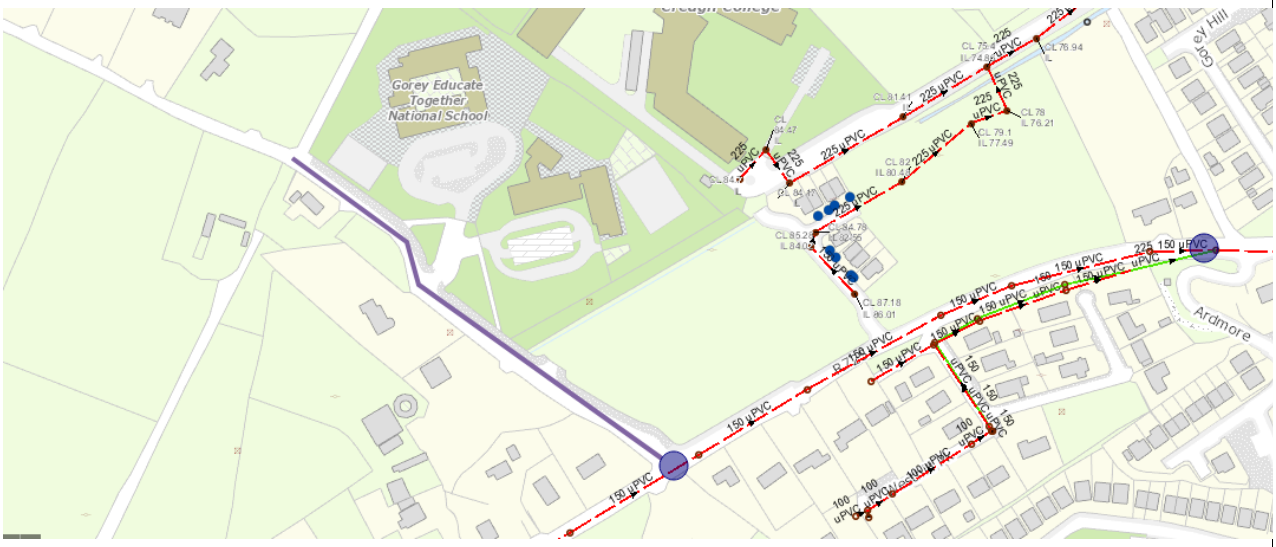
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Lands at Kilanhue Lane, Gorey, Co. Wexford (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Treatment	Feasible without infrastructure upgrade by Irish Water
Wastewater Treatment	Feasible without infrastructure upgrade by Irish Water
Water Network	Upgrades as per modelling report for 350 houses in pervious PCE apply to this PCE. Modelling report in **Appendix A.** Existing pump capacity at Gorey Hill Booster PS to be confirmed and reviewed at the time of connection application. However please note Irish Water have issued a large volume of COF's for Gorey. Should a sufficient number of these developments connect to the network in the interim prior to you receiving a connection offer, additional upgrade to the water network may be required.

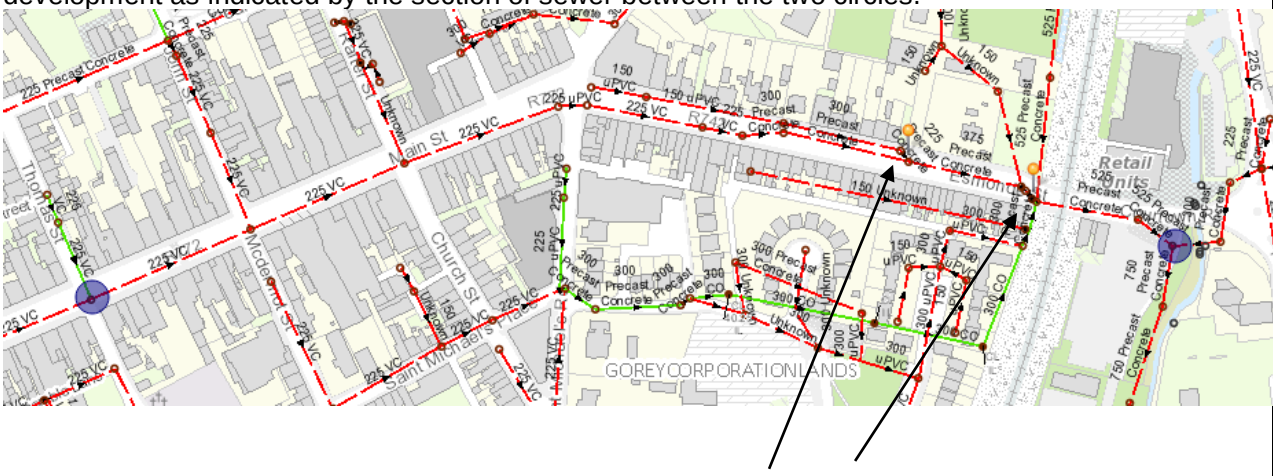
Wastewater Network	The nearest foul sewer is approximately 310m from the proposed development. A sewer extension would be required to service the proposed development with the costs borne fully by the developer. A further 325m approx. of existing DN150 sewer on R725 will need to be upsized. IW have undertaken a review of the impact this development will have on the wastewater network downstream. 611m approx. of sewer in Gorey town centre would need to be upsized to cater for this new development. • 345m approx. of DN225 to be upsized to DN375 in Main Street • 189m approx. of DN225 to be upsized to DN375 in Esmonde Street • 77m approx. of DN525 to be upsized to DN750 in Courtown Road Irish Water will require you to provide a contribution of the relevant portion of the costs for the required upgrades, please contact Irish Water to discuss this further. However please note Irish Water have issued a large volume of COF's for Gorey. In order to support these developments Irish Water is to undertake a Drainage Area Plan (DAP) for Gorey. This DAP is to commence end 2021 but it will be 2023-2024 before a verified model is available – subject to change. Should these studies find additional constraints in the foul network using the verified DAP model, Irish Water may require you to provide a contribution of the relevant portion of the costs for the required upgrades. Any additional works on the wastewater network are within the public realm which should not require planning permission. All upgrades to be confirmed at Connection Application stage.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Sewer network adjacent to the site. 310m approx. sewer extension and 325m approx. of upsizing the existing DN150 on the F725 indicated by the section between the two circles.

611m approx. of sewer in Gorey town centre would need to be upsized to cater for this new development as indicated by the section of sewer between the two circles.



The 70m of existing DN375 sewer to the eastern end of Esmonde Street does not need to be upsized

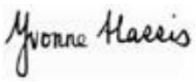
Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network is identified prior to excavations or any other works being carried out. Service connection pipes are not generally shown but their presence should be anticipated.

General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**
2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact PJ Murphy from the design team on 022 52267 or email pjmurphy@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,



Yvonne Harris

Head of Customer Operations

Appendix A

Water Modelling Report

Irish Water Blank Form	Revision: 1.0	Approved By: Lar Spain
IW-AMT-FM-024	**Hydraulic Model Network Assessment**	

Enquiry Type: Pre Connection Enquiry

General Information

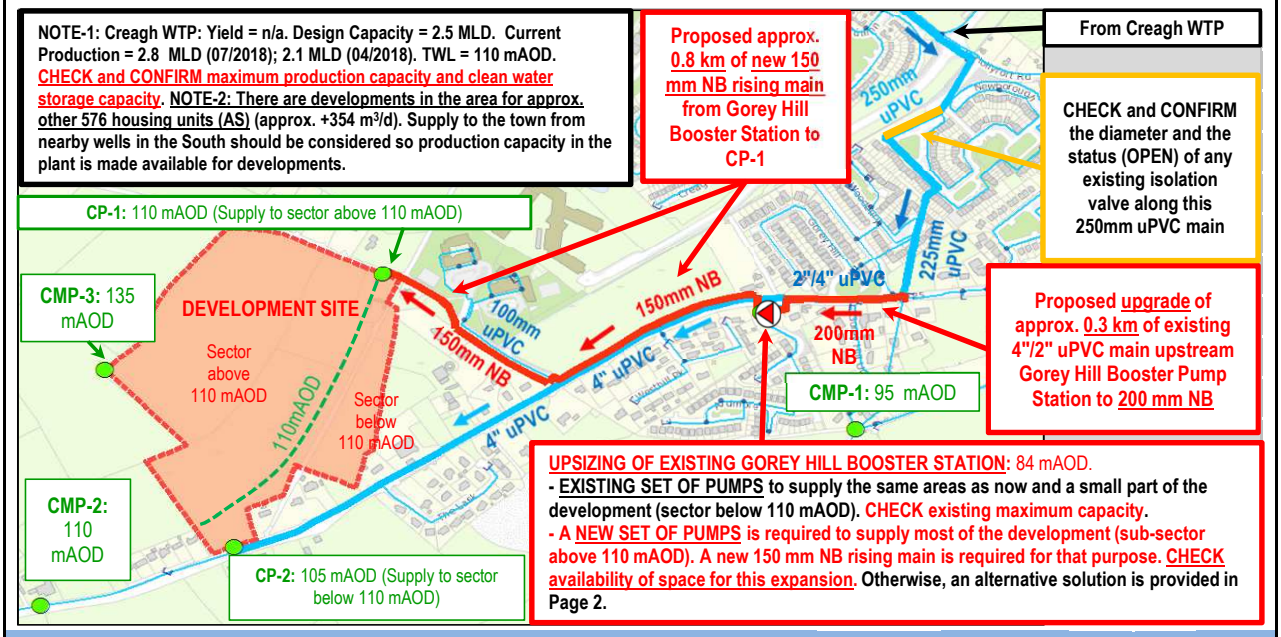
Project Number (AI):	AI-2018-0099	NCE Ref:	N/A
Prepared by:	L. Seminario	Checked by:	M. Conn
Date:	27/06/2018		
Water Supply Scheme:	**Gorey Regional Creagh (SZPUB1972)**		
WTP Name:	Creagh WTP	DMA Ref:	Gorey Main Street (MA03820)
Development Location:	Lands at Kilnahue Lane, Gorey, Co. Wexford.		
Description of the Development:	Housing development (350 units). New water connection(s) required.		

Model Data

Model Used (File Name):	3300_FF04_AST_Q016_Hydraulic Models_Gorey Courtown Design Model.NET	Software:	EPANET
Year of Last Calibration:	2012	Model Type:	Detailed

Development Flow:	Average (l/s)	Peak (l/s)
	2.08	6.59

Option 1. Model-GIS Screenshot of Preferred Solution: Upsizing of Existing Gorey Hill Booster Station



Model Outputs

Does development adversely impact existing customers?	YES. Pressures below are model-based pressures. Values between brackets correspond to pressures without the development. Values outside of the brackets correspond to the situation whether the development would be supplied through the existing network.		
Min. Press. at Connection Point (CP)	CP-1: n/a	CP-2: 14 m (32 m)	
Minimum Pressure at CMP	CMP-1: 10 m (12 m)	CMP-2: 9 m (27 m)	CMP-3: n/a
Maximum Headloss Supply Main	Between 7 and 10 m/km along the 2''/4'' uPVC shown above.		
Is Development Feasible?	**Network Upgrades Required**		

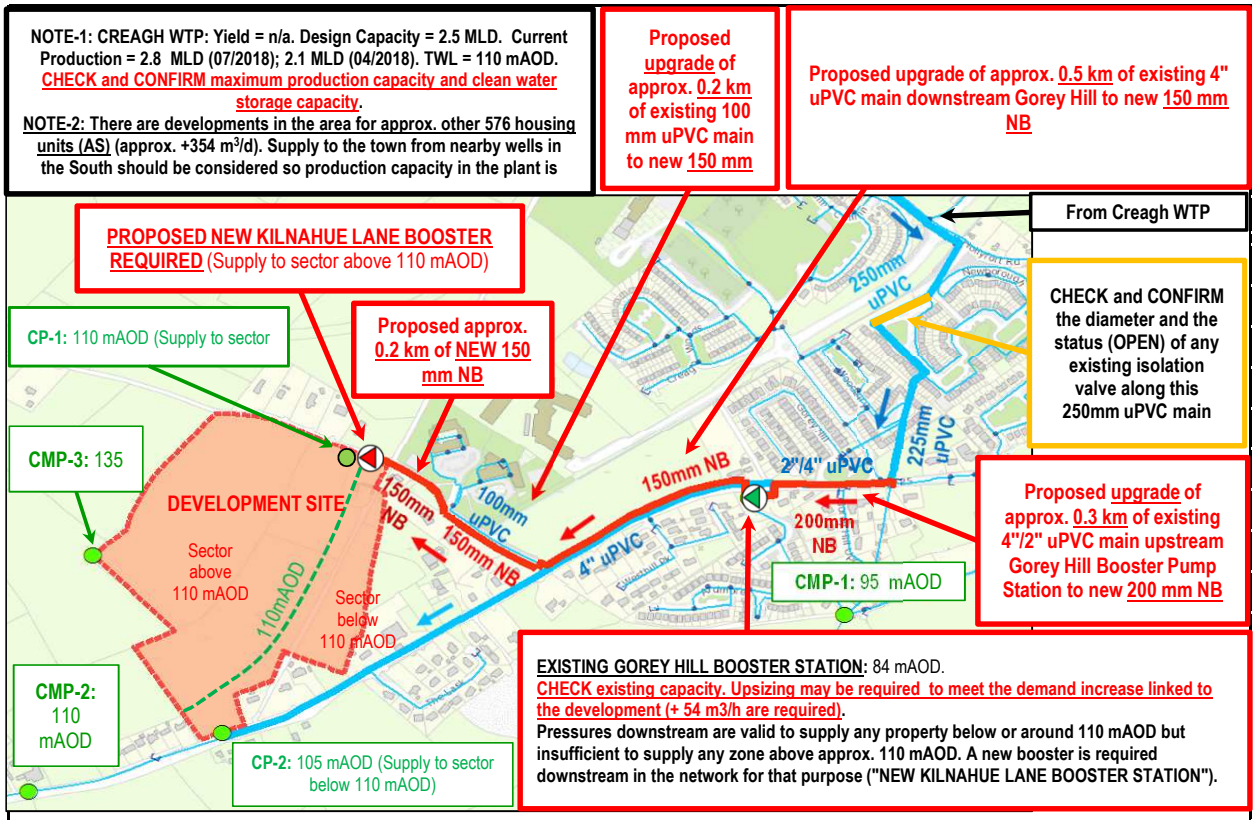
Model Assumptions and Disclaimers

1) Model Calibrated (2012). Model flows checked with Data Book. Telemetry data not available at the time.
2) DMA and/or supply zone boundaries not confirmed with LA.
3) Fireflows (Class A1: 8 l/s). Upgrades and upsizings mentioned above are required to meet fireflow requirements.
4) Existing customers located at highest ground elevation in model, assumed to be CMP (CMP: Critical Monitoring Point).
5) If network upgrades required, they will be analysed on request from New Connections

Page 2 … Option 2. Model-GIS Screenshot of Alternative Solution: New Booster for Development

NOTE-1: CREAGH WTP: Yield = n/a. Design Capacity = 2.5 MLD. Current Production = 2.8 MLD (07/2018); 2.1 MLD (04/2018). TWL = 110 mAOD. CHECK and CONFIRM maximum production capacity and clean water storage capacity.

NOTE-2: There are developments in the area for approx. other 576 housing units (AS) (approx. +354 m³/d). Supply to the town from nearby wells in the South should be considered so production capacity in the plant is



Notes and Comments

Darragh Aiken

Uisce Éireann
Bosca OP 448
Oifig Sheachadta na
Cathrach Theas
Cathair Chorcaí

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

29 October 2021

Re: Design Submission for Lands at Kilanhue Lane, Gorey, Co. Wexford (the "Development")
(the "Design Submission") / Connection Reference No: CDS21001761

Dear Darragh Aiken,

Many thanks for your recent Design Submission.

We have reviewed your proposal for the connection(s) at the Development. Based on the information provided, which included the documents outlined in Appendix A to this letter, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water's current charges for water and wastewater connections are set out in the Water Charges Plan as approved by the Commission for Regulation of Utilities (CRU)(https://www.cru.ie/document_group/irish-waters-water-charges-plan-2018/).

You the Customer (including any designers/contractors or other related parties appointed by you) is entirely responsible for the design and construction of all water and/or wastewater infrastructure within the Development which is necessary to facilitate connection(s) from the boundary of the Development to Irish Water's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:
Name: Pj Murphy
Phone: 022 52267
Email: pjmurphy@water.ie

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Appendix A

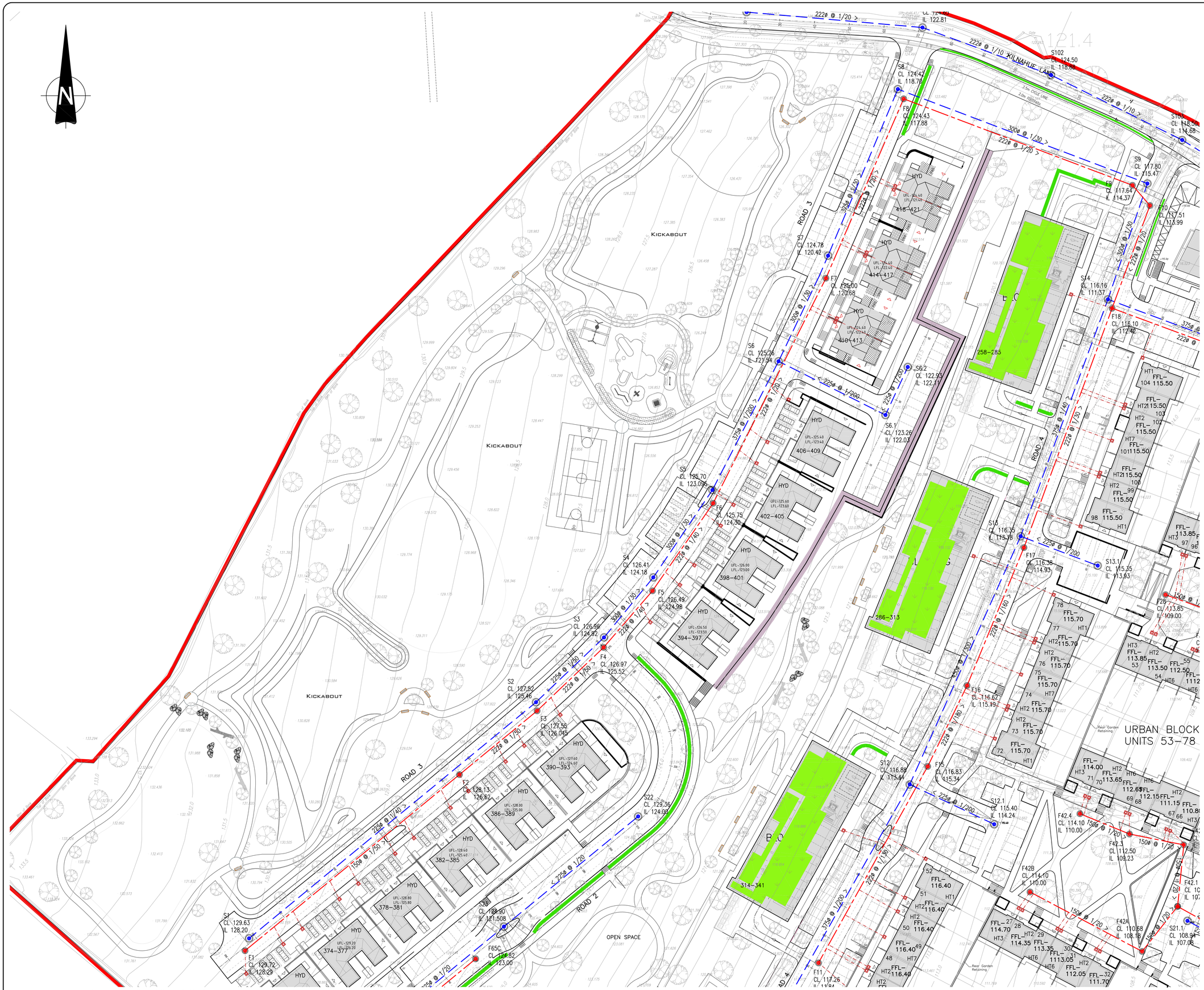
Document Title & Revision

- [13-119-P4201/2/3/4/5 Drainage Layout Sheets 1 to 5 inclusive, 13-119-P4220 Foul Long Sections Sheet 1 to 2 inclusive]

- [13-119-P4301/2/3/4/5/6 Watermain Layouts Sheets 1 to 6 inclusive]

*For further information, visit **www.water.ie/connections***

Notwithstanding any matters listed above, the Customer (including any appointed designers/contractors, etc.) is entirely responsible for the design and construction of the Self-Lay Works. Acceptance of the Design Submission by Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.



NOTES:

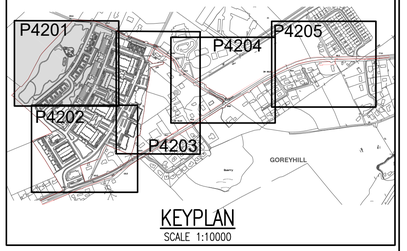
1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

LEGEND:

FS FS — EXF CL X IL X	EXISTING FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
SW SW — EXS CL X IL X	EXISTING SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX uPVC SN8 — FX CL X IL X	PROPOSED FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX — SX CL X IL X	PROPOSED SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
	PROPOSED FOUL INSPECTION CHAMBER AND CONNECTION
	PROPOSED SURFACE WATER INSPECTION CHAMBER AND CONNECTION
	PROPOSED PERFORATED PIPE
G	PROPOSED GULLY AND CONNECTION
	PROPOSED SOAK PIT
	PROPOSED UNDERGROUND ATTENUATION STORAGE

1:500 0 10.0 20.0 30.0 40.0 50.0m

1:1 0 10 20 30 40 50 60 70 80 90 100



KEYPLAN
SCALE 1:10000

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
BLOCK S, EASTPOINT BUSINESS PARK, ALFIE BYRNE ROAD, DUBLIN D03 H3F4 IRELAND. Tel: (01) 664 8900
Email: info@waterman-moylan.ie www.waterman-moylan.ie

CLIENT GERARD GANNON PROPERTIES

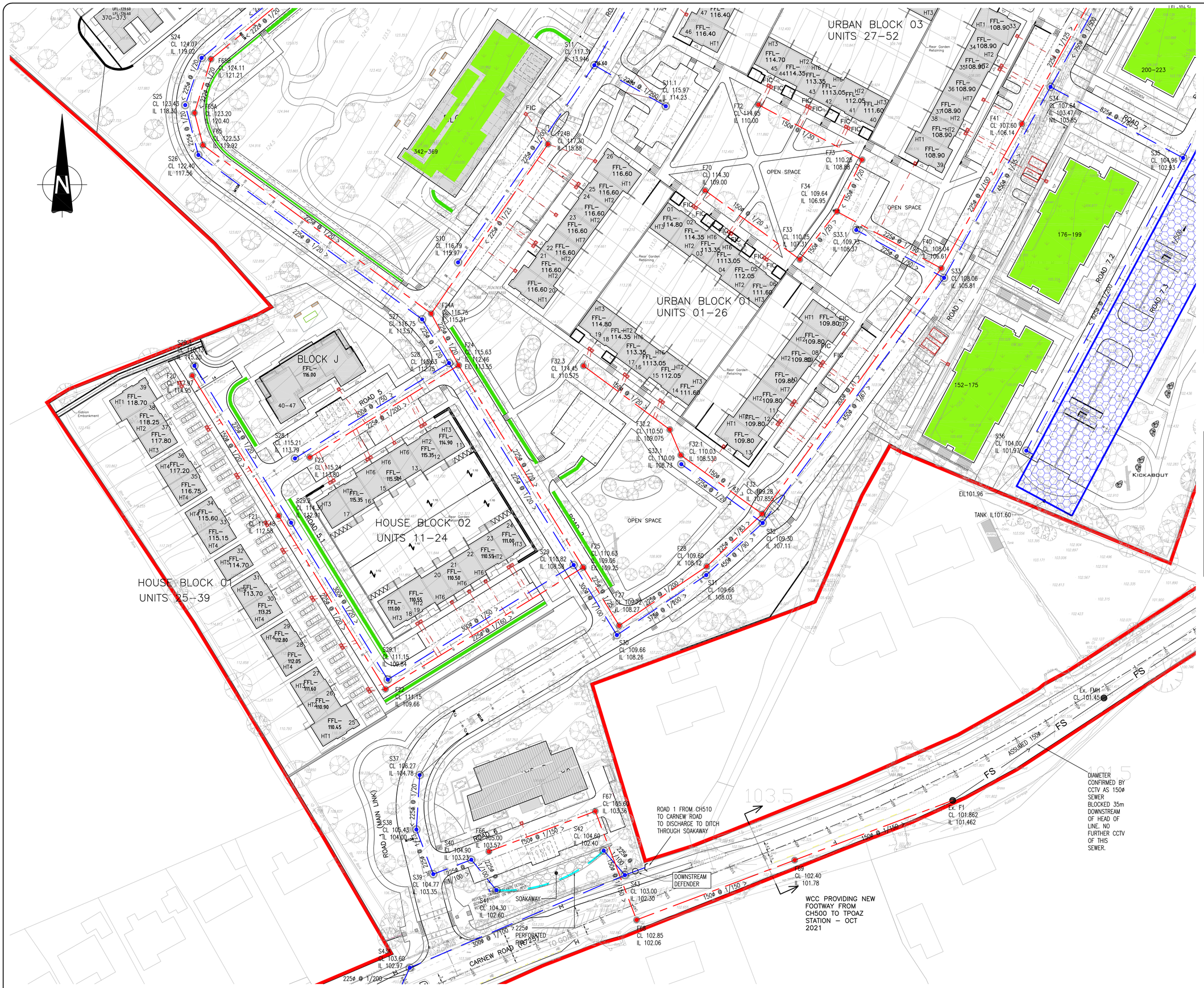
ARCHITECT CONNOLLY ARCHITECTS

PROJECT LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE PROPOSED DRAINAGE LAYOUT SHEET 1 OF 5

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE 1:500 @A1	JOB NO. 13–119	DRG. NO. P4201	REVISION

Oct 21, 2021 - 9:15am Drawing Location: M:\Projects\13\13-119\Cad\Civil\Planning 4 2021\13-119-P4201 to P4205 Drainage Layout Sheets 1 to 5.dwg



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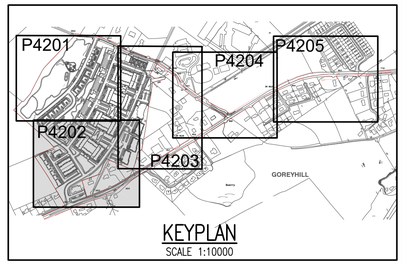
LEGEND:

FS — EXF CL X IL X	EXISTING FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
SW — EXS CL X IL X	EXISTING SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX uPVC SN8 — FX CL X IL X	PROPOSED FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX — SX CL X IL X	PROPOSED SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
	PROPOSED FOUL INSPECTION CHAMBER AND CONNECTION
	PROPOSED SURFACE WATER INSPECTION CHAMBER AND CONNECTION
	PROPOSED PERFORATED PIPE
G	PROPOSED GULLY AND CONNECTION
	PROPOSED SOAK PIT
	PROPOSED UNDERGROUND ATTENUATION STORAGE

1:500 0 10.0 20.0 30.0 40.0 50.0m

1:1 0 10 20 30 40 50 60 70 80 90 100



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Email: info@waterman-moylan.ie www.waterman-moylan.ie

CLIENT GERARD GANNON PROPERTIES

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PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED DRAINAGE LAYOUT
SHEET 2 OF 5

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
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NOTES:

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LEGEND:

- EXF — EXISTING FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- EXS — EXISTING SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- FX — PROPOSED FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL (XXXmmø @ 1/XXX, uPVC SN8)
- SX — PROPOSED SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL (XXXmmø @ 1/XXX)
- PROPOSED FOUL INSPECTION CHAMBER AND CONNECTION
- PROPOSED SURFACE WATER INSPECTION CHAMBER AND CONNECTION
- PROPOSED PERFORATED PIPE
- PROPOSED GULLY AND CONNECTION
- PROPOSED SOAK PIT
- PROPOSED UNDERGROUND ATTENUATION STORAGE

HYDROBRAKE MANHOLE S37 LIMITED TO 2L/S CL104.20 IL101.29

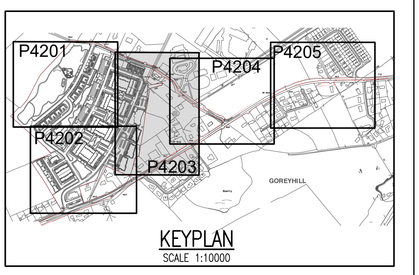
TANK IL101.30

UNDERGROUND ATTENUATION STORAGE 2664m2 x 1.2m Deep VOLUME PROVIDED 3200m3

DOWNSTREAM DEFENDER

DISCHARGE TO EXISTING DITCH SYSTEM6

KEYPLAN
SCALE 1:10000



1:500 0 10.0 20.0 30.0 40.0 50.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

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Email: info@waterman-moylan.ie www.waterman-moylan.ie

CLIENT	GERARD GANNON PROPERTIES
ARCHITECT	CONNOLLY ARCHITECTS
PROJECT	LANDS AT KILNAHUE & GOREY HILL, GOREY
TITLE	PROPOSED DRAINAGE LAYOUT SHEET 3 OF 5

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE	JOB NO.	DRG. NO.	REVISION
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NOTES:

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LEGEND:

- EXF CL X IL X — EXISTING FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- EXS CL X IL X — EXISTING SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- XXXmmø @ 1/XXX uPVC SN8 — FX CL X IL X — PROPOSED FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- XXXmmø @ 1/XXX — SX CL X IL X — PROPOSED SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
- PROPOSED FOUL INSPECTION CHAMBER AND CONNECTION
- PROPOSED SURFACE WATER INSPECTION CHAMBER AND CONNECTION
- PROPOSED PERFORATED PIPE
- G — PROPOSED GULLY AND CONNECTION
- PROPOSED SOAK PIT
- PROPOSED UNDERGROUND ATTENUATION STORAGE

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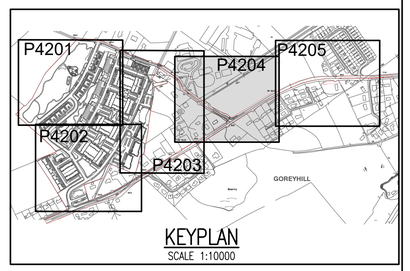

KEYPLAN
SCALE 1:10000

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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED DRAINAGE LAYOUT
SHEET 4 OF 5

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE	JOB NO.	DRG. NO.	REVISION
1:500 @A1	13-119	P4204	

Gorey Educate Together National School
Gaelscoil Mhoshíolog
Sports Surface Multiple Use
Car Park
EX FMH CL 84.47
EX FMH
Ex. F1 CL 84.70 IL 81.14
Ex. F2 CL 84.17 IL 82.96
Ex. F3 CL 81.41 IL 78.94
MANHOLE AT TOP OF BANK IS A BACKDROP
150ø FOUL SEWER IN LANE.
MH BURIED 74m U/S OF MH AT ROUNDABOUT
EX. 150ø FS
DRAGH COLLEGE LANE (EXISTING 2m WIDE BITMAC PEDESTRIAN ACCESS)
END OF 150ø UNLOCATED
S110 CL 90.81 IL 88.82
F57 CL 91.31 IL 89.84
EXISTING STREAM
DOWNSTREAM DEFENDER
DISCHARGE TO EXISTING DITCH SYSTEM6
225ø @ 1/30 >
225ø @ 1/20 >
KILNAHUE LANE
225ø @ 1/50 >
F58 CL 90.12 IL 88.66
225ø @ 1/200 >
F59 CL 92.50 IL 88.44
F60 CL 94.06 IL 88.30
WCC PROVIDED JUNCTION UPGRADE WITH KERBLINES AND VERTICAL ALIGNMENT SHOWN, APPROX 2018
EXISTING FOUL NOT SHOWN DOWNSTREAM OF HERE
225ø @ 1:200 >
CARNEW ROAD (R725)
150ø @ 1:150 >
Ex. FMH CL 95.65
F61 CL 90.40 IL 87.88
Ex. FMH CL 90.09
F62 CL 88.19 IL 86.54
Ex. FMH CL 87.81
225ø @ 1:30 >
225ø @ 1:60 >
150ø @ 1:150 >
Ex. FMH CL 88.23
Ex. FMH CL 88.93
Ex. FMH
WESTHILL PK.
Ex. FMH CL 95.92
Ex. FMH CL 93.41
ARDMORE
FS
SJ
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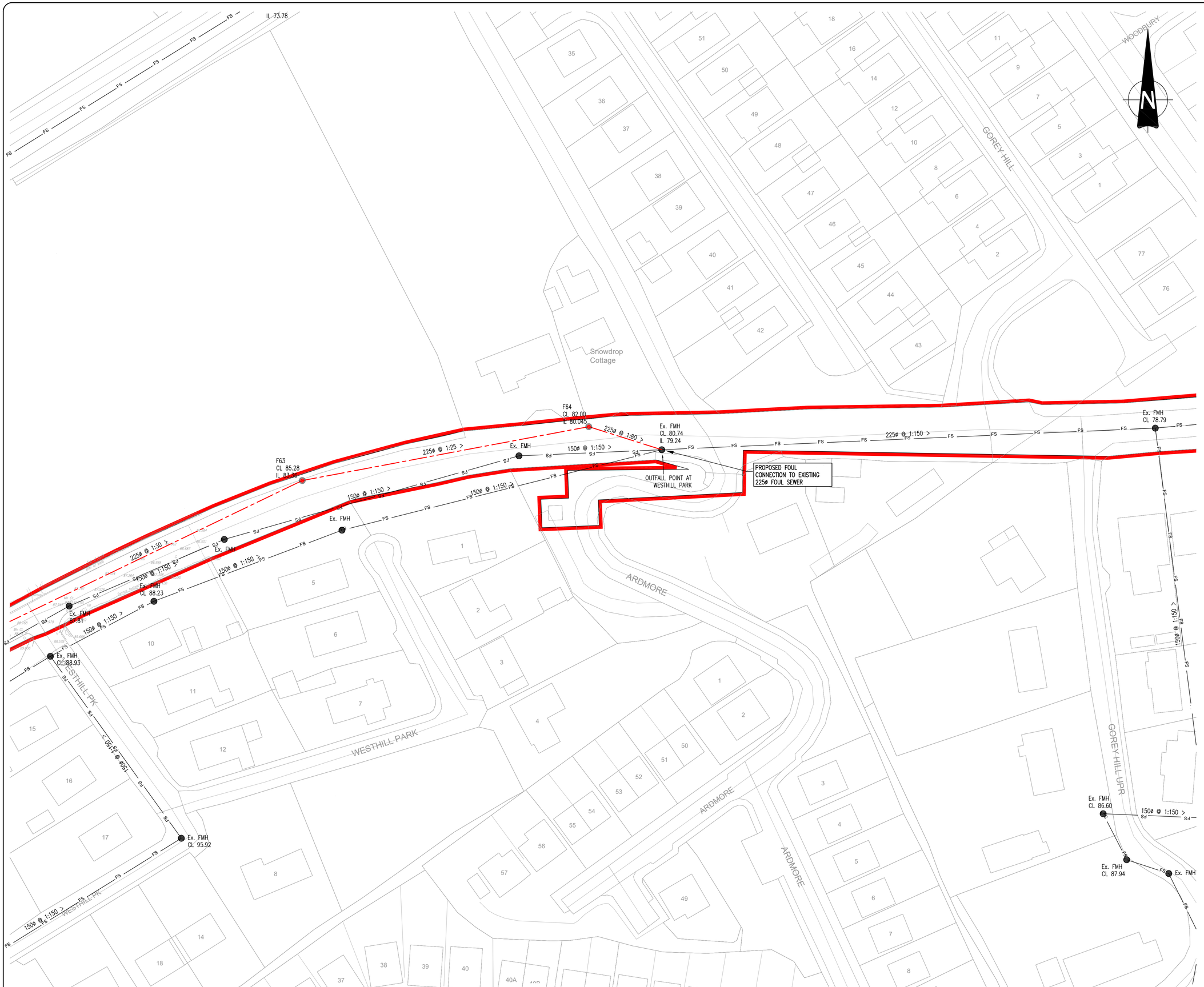
Oct 21, 2021 - 9:18am



NOTES:

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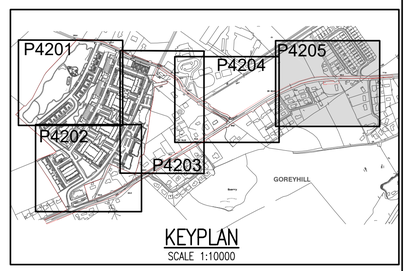
LEGEND:

FS —— FS — EXF CL X IL X	EXISTING FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
SW —— SW — EXS CL X IL X	EXISTING SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX uPVC SN8 — FX CL X IL X	PROPOSED FOUL WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
XXXmmø @ 1/XXX — SX CL X IL X	PROPOSED SURFACE WATER SEWER WITH PIPE SIZE, GRADE, MANHOLE REF. AND INVERT LEVEL
	PROPOSED FOUL INSPECTION CHAMBER AND CONNECTION
	PROPOSED SURFACE WATER INSPECTION CHAMBER AND CONNECTION
	PROPOSED PERFORATED PIPE
	PROPOSED GULLY AND CONNECTION
	PROPOSED SOAK PIT
	PROPOSED UNDERGROUND ATTENUATION STORAGE

1:500 0 10.0 20.0 30.0 40.0 50.0m

1:1 0 10 20 30 40 50 60 70 80 90 100



KEYPLAN
SCALE 1:10000

REV.	DATE	AMENDMENT	DRN	APPD

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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED DRAINAGE LAYOUT
SHEET 5 OF 5

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE	JOB NO.	DRG. NO.	REVISION
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Oct 21, 2021 - 9:19am Drawing Location: M:\Projects\13\13-119\Cad\Civil\Planning 4 2021\13-119-P4201 to P4205 Drainage Layout Sheets 1 to 5.dwg

NOTES:

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Hor Scale 1500 / Ver Scale 250 / Datum (m)105.000						
PN		F13.002		F13.001	F13.000	
Dia (mm)		225		150	150	
Slope (1:X)		189.9		20.0	20.0	
Cover Level (m)	108.040		109.640	111.000		114.300
Invert Level (m)	106.610	106.772	106.952	107.027	107.317	109.000
Length (m)		34.183			33.655	

MH Name	F24A		F65
Hor Scale 1500 / Ver Scale 250 / Datum (m)112.000		10.000	
PN		F11.003	
Dia (mm)		225	
Slope (1:X)		20	
Cover Level (m)	116.750		122.530
Invert Level (m)	113.306	115.325	119.471 119.920
Length (m)		81.464	

MH Name	F24	F24A	F24B
Hor Scale 1500 / Ver Scale 250 / Datum (m)109.000	9.000	11.003	
PN	F10.001	F10.000	
Dia (mm)	225	225	
Slope (1:X)	20.0	23.0	
Cover Level (m)	115.630	116.750	117.300
Invert Level (m)	112.466	113.306 113.306	115.875
Length (m)	11.21	59.092	

MH Name	F40	F12	F28
Hor Scale 1500 / Ver Scale 250 / Datum (m)103.000		12.002	
PN	F8.006	F8.005	
Dia (mm)	225	225	
Slope (1:X)	71.0	83	
Cover Level (m)	108.042	109.280	109.600
Invert Level (m)	106.610	107.850 107.850	108.121
Length (m)	87.266	21.883	

MH Name	F22	F21	F20
Hor Scale 1500 / Ver Scale 250 / Datum (m)108.000			
PN	F8.001	F8.000	
Dia (mm)	225	150	
Slope (1:X)	20.0	20.0	
Cover Level (m)	111.150	114.480	117.970
Invert Level (m)	109.666	112.587 112.662	114.950
Length (m)	58.426	47.306	

MH Name	F34	F73	F72
Hor Scale 1500 / Ver Scale 250 / Datum (m)105.000		13.001	
PN	F14.001	F14.000	
Dia (mm)	150	150	
Slope (1:X)	30.0	30.0	
Cover Level (m)	109.640	110.250	114.650
Invert Level (m)	106.950 108.216	108.877 108.877	110.000 114.650
Length (m)		33.680	

MH Name	F32	F32.1	F32.2	F32.3
Hor Scale 1500 / Ver Scale 250 / Datum (m)105.000	8.005			
PN	F12.002		F12.000	
Dia (mm)	150	150	150	
Slope (1:X)	43	20.0	20.0	
Cover Level (m)	109.280	110.030	110.500	114.450
Invert Level (m)	107.950 107.930	108.535 109.075	109.075	110.575 114.450
Length (m)		28.868	30.794	

MH Name	F65	F65A	F65B	F65C
Hor Scale 1500 / Ver Scale 250 / Datum (m)117.000				
PN		F11.000	F11.000	
Dia (mm)	225	225	225	
Slope (1:X)	20.0	20.0	20.0	
Cover Level (m)	122.530	123.200	124.110	124.820
Invert Level (m)	119.920	120.401 120.401	121.209 121.209	123.000
Length (m)		35.822		

MH Name	F25	F24	F23
Hor Scale 1500 / Ver Scale 250 / Datum (m)107.000	8.002	10.001	
PN	F9.001	F9.000	
Dia (mm)	225	225	
Slope (1:X)	20.0	200.3	
Cover Level (m)	110.630	115.630	115.210
Invert Level (m)	109.060	112.466 113.349	113.800
Length (m)	68.124	50.269	

MH Name	F28	F27	F25	F22
Hor Scale 1500 / Ver Scale 250 / Datum (m)104.000			9.001	
PN	F8.004	F8.003	F8.002	
Dia (mm)	225	225	225	
Slope (1:X)	200.0	25.0	160.0	
Cover Level (m)	109.600	109.720	110.630	111.150
Invert Level (m)	108.121	108.273 108.273	109.060 109.249	109.666
Length (m)	30.349	19.669	66.707	

MH Name	F63	F62
Hor Scale 1500 / Ver Scale 250 / Datum (m)80.000		
PN	F7.012	
Dia (mm)	225	
Slope (1:X)	30.0	
Cover Level (m)	85.280	88.150
Invert Level (m)	83.357	86.544
Length (m)	95.592	

MH Name	F61	F60
Hor Scale 1500 / Ver Scale 250 / Datum (m)85.000		
PN	F7.010	
Dia (mm)	225	
Slope (1:X)	200.0	
Cover Level (m)	90.400	94.060
Invert Level (m)	87.877	88.304
Length (m)	85.308	

MH Name	F58	F57	F56	F55
Hor Scale 1500 / Ver Scale 250 / Datum (m)86.000				
PN	F7.007		F7.006	F7.005
Dia (mm)	225		225	225
Slope (1:X)	50.0		30.0	20.0
Cover Level (m)	90.120	91.310	92.494	94.054
Invert Level (m)	88.663	89.836 89.836	90.927	90.927 92.196
Length (m)	58.635		32.726	25.384

MH Name	F53	F52	F51	F50
Hor Scale 1500 / Ver Scale 250 / Datum (m)98.000				
PN		F7.001		
Dia (mm)	225	225	225	
Slope (1:X)	20	20	20	
Cover Level (m)	102.520	104.500	103.500	108.560
Invert Level (m)	97.991 98.620	99.200 99.200	101.000 101.000	101.390
Length (m)	36.088			

MH Name	EXF	F64	F63
Hor Scale 1500 / Ver Scale 250 / Datum (m)76.000			
PN	F7.014		F7.013
Dia (mm)	225		225
Slope (1:X)	20.0		25.0
Cover Level (m)	80.740	82.000	85.280
Invert Level (m)	79.240 78.951	80.045 80.045	83.357
Length (m)	21.888	82.797	

MH Name	F62	F61
Hor Scale 1500 / Ver Scale 250 / Datum (m)83.000		
PN	F7.011	
Dia (mm)	225	
Slope (1:X)	60.0	
Cover Level (m)	88.150	90.400
Invert Level (m)	86.544	87.877
Length (m)	80.023	

MH Name	F60	F59	F58
Hor Scale 1500 / Ver Scale 250 / Datum (m)85.000			
PN	F7.009		F7.008
Dia (mm)	225		225
Slope (1:X)	200.0		200.0
Cover Level (m)	94.060	92.500	90.120
Invert Level (m)	88.304	88.438 88.438	88.663
Length (m)	26.899		44.964

MH Name	F55	F54	F53
Hor Scale 1500 / Ver Scale 250 / Datum (m)92.000			
PN	F7.004		F7.003
Dia (mm)	225		225
Slope (1:X)	20.0		20.0
Cover Level (m)	94.054	95.520	102.520
Invert Level (m)	92.337	94.253 94.253	97.991
Length (m)	38.320	74.768	

LEGEND

INDICATES PROPOSED GROUND LEVEL

INDICATES PROPOSED uPVC SN8 FOUL PIPE

1:250 0 5.0 10.0 15.0 20.0 25.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

1:1500 0 30.0 60.0 90.0 120.0 150.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT

LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE

FOUL DRAINAGE LONGINITUDINAL SECTIONS
SHEET 1 OF 2

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA	MD	OCT '21
SCALE	JOB NO.	DRG. NO.	REVISION
1:250V, 1:1500H	13-119	P4220	

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

MH Name	F42		F41		F40
Hor Scale 1500 / Ver Scale 250 / Datum (m) 101.000			3.002		
PN			F5.001		F5.000
Dia (mm)			225		225
Slope (1:X)			125		100.0
Cover Level (m)	107.270		107.600		108.040
Invert Level (m)	105.752		106.140	106.140	106.615
Length (m)			47.507		47.507

MH Name	F		F50	F48
Hor Scale 1500 / Ver Scale 250 / Datum (m) 99.000				
PN				
Dia (mm)		225	225	
Slope (1:X)		20	20	
Cover Level (m)	103.50	108.560	108.130	
Invert Level (m)	101.000	101.397	101.795	
Length (m)				

MH Name	F43	F42		F42.1	F42A	F42B
Hor Scale 1500 / Ver Scale 250 / Datum (m) 104.000			5.001		4.002	
PN		F3.003	F3.002	F3.001	F3.000	
Dia (mm)		225	225	150	150	
Slope (1:X)		100.0	20.0	20.0	20.0	
Cover Level (m)	107.710	107.800		108.721	110.600	114.100
Invert Level (m)	105.564	105.752	105.752	107.280	107.355	108.180	108.180	110.000
Length (m)		18.835		30.554		36.450	

MH Name	F17		F16	F15		F11
Hor Scale 1500 / Ver Scale 250 / Datum (m) 110.000						
PN		F2.002		F2.001		F2.000
Dia (mm)		225		225		225
Slope (1:X)		160.0		180.0		130.0
Cover Level (m)	116.380		116.620	116.830		117.260
Invert Level (m)	114.928	115.195	115.195	115.339	115.339	115.835
Length (m)		42.815		25.828		64.508

MH Name	F34		F48	F47	F30	F29		F28
Hor Scale 1500 / Ver Scale 250 / Datum (m) 104.000			3.005					
PN			F6.004					F6.000
Dia (mm)			225	225	225	225		225
Slope (1:X)			32	20	20	20		20
Cover Level (m)	107.270		108.060	108.400	111.000	111.500		113.850
Invert Level (m)	105.210	107.270	106.065	106.265	106.830	107.458	107.533	108.125	108.125	109.000
Length (m)			34.234					

MH Name	F42.1	F42.2	F42.3	F42.4
Hor Scale 1500 / Ver Scale 250 / Datum (m) 105.000		3.001		
PN		F1.010	F1.011	F1.012
Dia (mm)		150	150	150
Slope (1:X)		20.0	20.0	20.0
Cover Level (m)	108.721	110.600	112.500	114.100
Invert Level (m)	107.280	107.551	108.438	108.438	109.231	109.231	110.000
Length (m)				

MH Name	F48	F34	F43
Hor Scale 1500 / Ver Scale 250 / Datum (m) 99.000		6.004	
PN		F3.006	F3.004
Dia (mm)		225	225
Slope (1:X)		20.0	200
Cover Level (m)	108.130	107.300	107.710
Invert Level (m)	101.795	105.217	105.564
Length (m)		58.597	52.977

MH Name	F18	F17
Hor Scale 1500 / Ver Scale 250 / Datum (m) 109.000	1.004	
PN	F2.003	
Dia (mm)	225	
Slope (1:X)	30.0	
Cover Level (m)	116.100	116.380
Invert Level (m)	112.420	114.928
Length (m)	73.182	

MH Name	F10	F9		F8		F7
Hor Scale 1500 / Ver Scale 250 / Datum (m) 114.118						
PN		F1.007				F1.006
Dia (mm)		225				225
Slope (1:X)		20.0				20.0
Cover Level (m)	117.510	117.640		124.430		125.000
Invert Level (m)	113.99	114.371	114.371	117.484	117.484	120.689
Length (m)		70.247				56.112

MH Name	F4		F3	F2		F1
Hor Scale 1500 / Ver Scale 250 / Datum (m) 122.000						
PN		F1.002		F1.001		F1.000
Dia (mm)		225		225		150
Slope (1:X)		50.0		50.0		50.0
Cover Level (m)	126.970	127.550		128.130		129.720
Invert Level (m)	125.520	126.445	126.445	126.622	126.697	128.290
Length (m)		26.385		28.848		79.648

MH Name	F66	F67	F68	F69	EXF1
Hor Scale 1500 / Ver Scale 250 / Datum (m) 105.000			PROPOSED PIPE TO BE ENCASED IN CONCRETE		TIE INTO EXISTING FOUL MANHOLE
PN		F16.000	F16.001	F16.002	F16.003
Dia (mm)		150	150	150	150
Slope (1:X)		150	150	150	150
Cover Level (m)	105.000	105.600	102.850	102.400	101.862
Invert Level (m)	103.370	103.360	102.060	101.780	101.462
Length (m)		32.68	33.40	48.50	48.50

MH Name	F49	F19	F18	F10
Hor Scale 1500 / Ver Scale 250 / Datum (m) 107.000			2.003	
PN		F1.011	F1.010	F1.009
Dia (mm)		225	225	225
Slope (1:X)		20.0	20.0	20.0
Cover Level (m)	109.000	112.500	116.100	117.510
Invert Level (m)	101.700	107.264	109.840	109.840	112.417	112.417	113.988
Length (m)		51.534		51.534		31.420

MH Name	F7		F6	F5	F4
Hor Scale 1500 / Ver Scale 250 / Datum (m) 118.000					
PN		F1.005		F1.004	F1.003
Dia (mm)		225		225	225
Slope (1:X)		20.0		45.0	40.0
Cover Level (m)	125.000		125.750	126.490	126.970
Invert Level (m)	120.689	124.301	124.301	124.981	124.981	125.517
Length (m)		72.241		30.574	21.463

LEGEND

INDICATES PROPOSED GROUND LEVEL

INDICATES PROPOSED uPVC SN8 FOUL PIPE

1:250 0 5.0 10.0 15.0 20.0 25.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

1:1500 0 30.0 60.0 90.0 120.0 150.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
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CLIENT **GERARD GANNON PROPERTIES**

ARCHITECT **CONNOLLY ARCHITECTS**

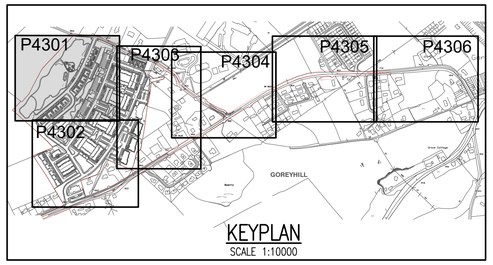
PROJECT

LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE

FOUL DRAINAGE LONGINITUDINAL SECTIONS SHEET 2 OF 2

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA	MD	OCT '21
SCALE	JOB NO.	DRG. NO.	REVISION
1:250V, 1:1500H	13-119	P4221	



KEYPLAN
SCALE 1:10000

NOTES:

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2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

N

LEGEND:

110mm ø	PROPOSED 110ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 160ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 150ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
XXXmm ø	EXISTING WATERMAIN WITH PIPE SIZE
SV	PROPOSED SLUICE VALVE
H	PROPOSED HYDRANT
ScV	PROPOSED SCOUR VALVE
AV	PROPOSED AIR VALVE
NRV	PROPOSED NON-RETURN VALVE
M	PROPOSED BULK WATER METER TO IRISH WATER DETAILS
SWMH	SURFACE WATER MANHOLE
WATERMAIN ScV NRV SWMH	TYPICAL SCHEMATIC CONNECTION OF OFFLINE SCOUR VALVE
BB	PROPOSED BOUNDARY BOX AND CONNECTION
LP	ROAD LOW POINT
HP	ROAD HIGH POINT

1:500 0 10.0 20.0 30.0 40.0 50.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

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CLIENT GERARD GANNON PROPERTIES
ARCHITECT CONNOLLY ARCHITECTS
PROJECT LANDS AT KILNAHUE & GOREY HILL, GOREY,
TITLE PROPOSED WATERMAIN LAYOUT SHEET 1 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE 1:500 @A1	JOB NO. 13-119	DRG. NO. P4301	REVISION

Oct 28, 2021 - 1:24pm Drawing Location: M:\Projects\13\13-119\Cad\Civil\Planning 4 2021\13-119-P4301 to P4306 Watermain Layouts Sheets 1 to 6.dwg

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

LEGEND:

110mm ø	PROPOSED 110ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 160ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 150ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
XXXmm ø WM WM	EXISTING WATERMAIN WITH PIPE SIZE
SV	PROPOSED SLUICE VALVE
H	PROPOSED HYDRANT
ScV	PROPOSED SCOUR VALVE
AV	PROPOSED AIR VALVE
NRV	PROPOSED NON-RETURN VALVE
M	PROPOSED BULK WATER METER TO IRISH WATER DETAILS
SWMH	SURFACE WATER MANHOLE
WATERMAIN ScV NRV SWMH	TYPICAL SCHEMATIC CONNECTION OF OFFLINE SCOUR VALVE
BB	PROPOSED BOUNDARY BOX AND CONNECTION
LP	ROAD LOW POINT
HP	ROAD HIGH POINT

1:500 0 10.0 20.0 30.0 40.0 50.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED WATERMAIN LAYOUT
SHEET 2 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA		AUG 2021
SCALE 1:500 @A1	JOB NO. 13-119	DRG. NO. P4302	REVISION

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

LEGEND:

110mm ø	PROPOSED 110ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 160ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
160mm ø	PROPOSED 150ø HDPE SDR17 WATERMAIN WITH PIPE SIZE
XXXmm ø	EXISTING WATERMAIN WITH PIPE SIZE
SV	PROPOSED SLUICE VALVE
H	PROPOSED HYDRANT
ScV	PROPOSED SCOUR VALVE
AV	PROPOSED AIR VALVE
NRV	PROPOSED NON-RETURN VALVE
M	PROPOSED BULK WATER METER TO IRISH WATER DETAILS
SWMH	SURFACE WATER MANHOLE
WATERMAIN ScV NRV SWMH	TYPICAL SCHEMATIC CONNECTION OF OFFLINE SCOUR VALVE
BB	PROPOSED BOUNDARY BOX AND CONNECTION
LP	ROAD LOW POINT
HP	ROAD HIGH POINT

NEW KILNAUE LANE
BOOSTER STATION
EXISTING GL:105mOD
BOOSTER STATION &
KISOK TO BE TO IRISH
WATER STANDARD DETAILS
STD-W-25 & 26

XAB
248–257

80ø SERVICE PIPE TO CRECHE

Play Area

Childcare Building

Play Area

Shared Surface Pedestrian Zone

URBAN BLOCK 04
UNITS 79–104

BLOCK 03
3–78

110ø SERVICE PIPE TO BLOCK D

UFL–107.00
LFL–103.70

224–247
BLOCK D

UFL–107.80
LFL–104.50

110ø SERVICE PIPE TO BLOCK C

BLOCK C
200–223

110ø SERVICE PIPE TO BLOCK B

UFL–107.80
LFL–104.50

176–199
BLOCK B

110ø SERVICE PIPE TO BLOCK A

KICKABOUT

OPEN SPACE
1200 Msq

LP
107.25
SWMH
ScV

Traffic Barrier

RC Retaining Wall To Engineers Deotil

Rear Garden Retaining

EX 100ø WATERMAIN

160ø WATERMAIN

110ø WATERMAIN

150ø WATERMAIN

EX 160ø WATERMAIN

EX S

EX 100ø WATERMAIN
KILNAHUE LANE

RENAULT CAR
DEALERSHIP

TOPAZ GARAGE
SERVICE STATION

TAR ENTRANCE WAY

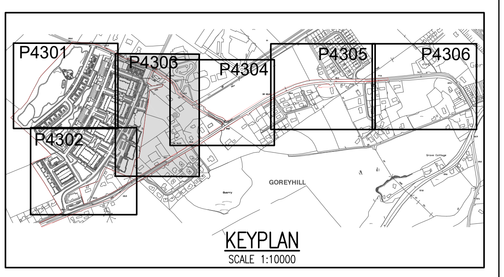
TAR ENTRANCE WAY

R725

WCC PROVIDED NEW FOOTWAY TO CH230 APPROX 2018

BM 96.2

100.9



KEYPLAN
SCALE 1:10000

1:500 0 10.0 20.0 30.0 40.0 50.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

Waterman Moylan
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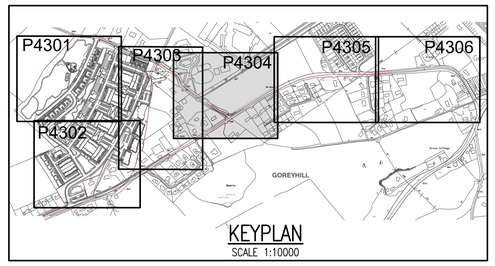
CLIENT	GERARD GANNON PROPERTIES
ARCHITECT	CONNOLLY ARCHITECTS
PROJECT	LANDS AT KILNAHUE & GOREY HILL, GOREY
TITLE	PROPOSED WATERMAIN LAYOUT SHEET 3 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	PJD		AUG 2021
SCALE 1:500 @ A1	JOB NO. 13-119	DRG. NO. P4303	REVISION

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.



KEYPLAN
SCALE 1:10000

LEGEND:

- XXXmm ø — EXISTING WATERMAIN WITH PIPE SIZE
- 150mm ø — PROPOSED 150ø WATERMAIN
- 200mm ø — PROPOSED 200ø WATERMAIN

Gorey Educate Together National School

Gaelscoil Mhoshíolog

Sports Surface Multiple Use

Car Park

CROAGH COLLEGE LANE (EXISTING 2m WIDE BITMAC PEDESTRIAN ACCESS)

KILNAHUE LANE

CARNEW ROAD

EX 100ø WATERMAIN

150ø WATERMAIN

WCC PROVIDED JUNCTION UPGRADE WITH KERBLINES AND VERTICAL ALIGNMENT SHOWN, APPROX 2018

EX SV

EX H

99.82

94.9

93.3

94.0

95.8

BM 96.20

1:500 0 10.0 20.0 30.0 40.0 50.0m

1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

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Engineering Consultants
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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED WATERMAIN LAYOUT
SHEET 4 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA		AUG 2021
SCALE 1:500 @A1	JOB NO. 13-119	DRG. NO. P4304	REVISION

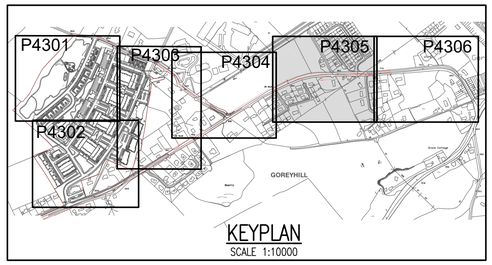
NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

N

LEGEND:

- XXXmm ø — EXISTING WATERMAIN WITH PIPE SIZE
- XXXmm ø — EXISTING WATERMAIN ENTERING AND EXISTING BOOSTER STATION TO DECOMMISSIONED ONCE WATERMAIN HAS BEEN UPSIZED
- 150mm ø — PROPOSED 150ø WATERMAIN
- 200mm ø — PROPOSED 200ø WATERMAIN



KEYPLAN
SCALE 1:10000

GOREY HILL ESTATE
WESTHILL PARK ESTATE
ARDMORE ESTATE
Snowdrop Cottage
CARNEW ROAD
WESTHILL PARK
WESTHILL PK
ARDMORE
GOREY HILL
WOODBURY

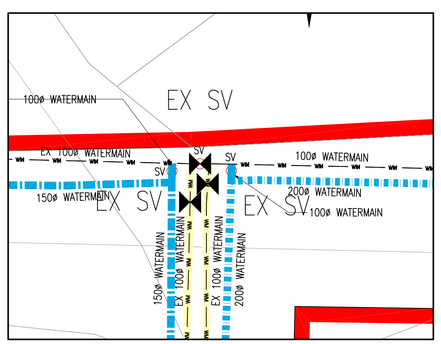
EXISTING 100ø WATERMAIN ENTERING BOOSTER STATION TO BE UPSIZED TO 150ø

EXISTING 100ø WATERMAIN EXITING BOOSTER STATION TO BE UPSIZED TO 200ø

EXISTING GOREY HILL BOOSTER PUMP STATION TO BE UPSIZED WITH NEW PUMPS FOR 150ø & 200ø PIPES

INSERT A

EX 100ø WATERMAIN
150ø WATERMAIN
200ø WATERMAIN
EX 150ø WATERMAIN
EX SV
EX H



INSERT A
SCALE 1:200

1:500 0 10.0 20.0 30.0 40.0 50.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

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CLIENT GERARD GANNON PROPERTIES

ARCHITECT CONNOLLY ARCHITECTS

PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY

TITLE
PROPOSED WATERMAIN LAYOUT
SHEET 5 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA		AUG 2021
SCALE	JOB NO.	DRG. NO.	REVISION
1:500 @ A1	13-119	P4305	

Oct 21, 2021 - 9:12am Drawing Location: M:\Projects\13\13-119\Cad\Civil\Planning 4 2021\13-119-P4301 to P4306 Watermain Layouts Sheets 1 to 6.dwg

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
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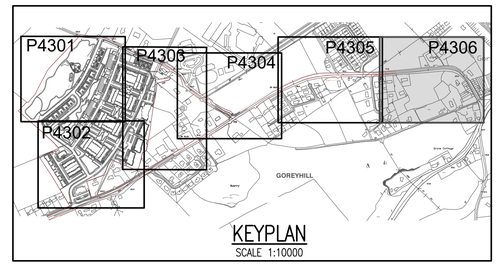

KEYPLAN
SCALE 1:10000

LEGEND:

XXXmm ø	EXISTING WATERMAIN WITH PIPE SIZE
150mm ø	PROPOSED 150ø WATERMAIN
200mm ø	PROPOSED 200ø WATERMAIN

1:500 0 10.0 20.0 30.0 40.0 50.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

Waterman Moylan
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CLIENT GERARD GANNON PROPERTIES
ARCHITECT CONNOLLY ARCHITECTS
PROJECT
LANDS AT KILNAHUE & GOREY HILL, GOREY
TITLE
PROPOSED WATERMAIN LAYOUT
SHEET 6 OF 6

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA		AUG 2021
SCALE 1:500 @A1	JOB NO. 13-119	DRG. NO. P4306	REVISION

Oct 21, 2021 - 9:14am Drawing Location: M:\Projects\13\13-119\Cad\Civil\Planning 4 2021\13-119-P4301 to P4306 Watermain Layouts Sheets 1 to 6.dwg

GRATTAN
R725
CARNEW ROAD
WOODBLOCK
CONNECT TO EXISTING 225ø WATERMAIN
EX 225ø WATERMAIN
EX 100ø WATERMAIN
200ø WATERMAIN
EX 150ø WATERMAIN
EX 250ø WATERMAIN
EX SV
EX H
74.7
77.6
69.3

B. GDSDS Attenuation Calculations

Waterman Moylan
Engineering Consultants

Block S, EastPoint Business Park,
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Calculation By:	SDN
Approved by:	DA

Project Data

Project Name	Kilnahue, Gorey, Catchments 1-7
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Description		%	Area
Total Site Area		-	148,625m²
Paved Area	Total	50%	74,313m²
	Drained	100%	74,313m²
Soil Area	Total	50%	74,313m²
	Drained	0%	0m²

Soil Type:	Type 4
SPR Index (from FSR):	0.47
SAAR:	1052mm
Rain Data:	Kilnahue, Gorey
Climate Change Factor:	20%

Greenfield Runoff:

$Q_{BARrural} = 0.00108 \times Area^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$

Area = 0.14863km² … *Total site area in km²*
SAAR = 1,052mm … *Standard Average Annual Rainfall in mm*
SOIL = 0.47 … *The "SPR" index from FSR*

Note: Where a site is <0.5km², the $Q_{BARrural}$ formula should be applied for 0.5km² and the result factored based on the ratio of the actual site area and the applied area.

$Q_{BARrural}$ = 0.116m³/s
$Q_{BARrural}$ = 115.569 l/s *Note: Allowable discharge reduced to c.75% (90.00l/s)*
$Q_{BARrural}$ = 7.776 l/s/Ha

Return Period	1-year	30-year	100-year
Growth Factor	0.85	2.10	2.60
Q_{BAR} (l/s)	98.23	242.69	300.48
Q_{BAR} (l/s/Ha)	6.61	16.33	20.22
Allowable Discharge	90.00	90.00	90.00

Rainfall Data:

Rain Data From: Kilnahue, Gorey *(provided by Met Eireann)*
Climate Change Factor: 20%

Duration	Return Period *(Years)*						
(Hours)	1	5	10	20	30	50	100
0.5	13.1	16.8	19.4	22.2	23.9	26.3	29.9
1	18.2	23.4	27.0	31.0	33.4	36.6	41.6
2	25.4	32.6	37.7	43.1	46.6	51.1	58.0
4	35.4	45.5	52.6	60.1	64.9	71.3	80.9
6	43.1	55.2	63.8	73.1	78.8	86.6	98.3
12	60.0	77.0	89.2	101.9	109.9	120.8	137.2

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Calculation By:	SDN
Approved by:	DA

Summary

Project Name	Kilnahue, Gorey, Catchments 1-7
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Summary of GDSDS Calculations:

Criterion 1: River Protection Volume

Interception Volume	**222.94m³**
Treatment Volume	**668.81m³**

Criterion 2: River Regime Protection

1-in-1-Year Storm	1,668.33m³
1-in-30-Year Storm	2,945.77m³
1-in-100-Year Storm	2,024.27m³
Reduction of Long-Term Storage	-1,037.09m³
Volume Required	**5,601.28m³**

… Includes head-loss correction

Criterion 4: River Flood Protection

Long Term Storage *(no interception provided)*	**1,037.09m³**
Long Term Storage *(Interception provided)*	**814.15m³**

Total Attenuation Volume Requirement:

1-in-100 Year Storm

1-in-1-Year Storm	1,668.33m³
1-in-30-Year Storm	2,945.77m³
1-in-100-Year Storm	2,024.27m³
Total	**6,638.37m³**

The maximum attenuation volume required is 6,638.37m³

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Calculation By:	SDN
Approved by:	DA

Criterion 1
River Protection Volume

Project Name	Kilnahue, Gorey, Catchments 1-7
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

1.1 Interception

Paved surfaces connected to drainage system	*148625m² x 0.5 x 0.75 =* 55,734.38m²	*148,625m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Interception Storage	*55734.375m² x 5mm x 0.8 =* **222.94m³**	*Paved area directly drained* *5mm rainfall depth* *80% paved runoff factor*

1.2 Treatment Volume

Paved surfaces draining to river	*148625m² x 0.5 x 0.75 =* 55,734.38m²	*148,625m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Treatment Storage	*55734.375m² x 15mm x 0.8 =* **668.81m³**	*Paved area directly drained* *15mm rainfall depth* *80% runoff from paved surfaces*

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Calculation By:	SDN
Approved by:	DA

Criterion 2
River Regime Protection

Project Name	Kilnahue, Gorey, Catchments 1-7
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

1-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	72.67	540.00	0.00	540.00	972.0	90.00	162.0	450.00	810.0
1	50.67	376.52	0.00	376.52	1,355.5	90.00	324.0	286.52	1,031.5
2	35.33	262.57	0.00	262.57	1,890.5	90.00	648.0	172.57	1,242.5
4	24.58	182.68	0.00	182.68	2,630.7	90.00	1,296.0	92.68	1,334.7
6	19.94	148.21	0.00	148.21	3,201.4	90.00	1,944.0	58.21	1,257.4
12	13.89	103.21	0.00	103.21	4,458.8	90.00	3,888.0	13.21	570.8

30-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	132.67	985.88	0.00	985.88	1,774.6	90.00	27.9	895.88	277.9
1	92.67	688.63	0.00	688.63	2,479.1	90.00	123.3	598.63	820.4
2	64.67	480.55	0.00	480.55	3,460.0	90.00	340.4	390.55	1,477.3
4	45.08	335.03	0.00	335.03	4,824.4	90.00	805.8	245.03	2,193.7
6	36.50	271.24	0.00	271.24	5,858.8	90.00	1,281.2	181.24	2,580.1
12	25.44	189.08	0.00	189.08	8,168.4	90.00	2,675.7	99.08	2,945.8

100-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	166.00	######	0.00	######	2,220.5	90.00	-174.9	######	-2,222.0
1	115.67	859.55	0.00	859.55	3,094.4	90.00	-176.6	769.55	-1,510.1
2	80.50	598.22	0.00	598.22	4,307.2	90.00	-110.0	508.22	-621.3
4	56.17	417.39	0.00	417.39	6,010.4	90.00	119.3	327.39	434.0
6	45.50	338.12	0.00	338.12	7,303.4	90.00	391.4	248.12	1,079.0
12	31.75	235.94	0.00	235.94	######	90.00	1,248.3	145.94	2,024.3

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Calculation By:	SDN
Approved by:	DA

Criterion 4
River Flood Protection

Project Name	Kilnahue, Gorey, Catchments 1-7
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Vol_{XS} = RD x A x 10 [(PIMP/100 x α0.8) + (1 - (PIMP/100))(β x Soil) - Soil]

Vol_{XS}			*… Extra runoff volume of development over Greenfield runoff*
RD	=	98 mm	*… Rainfall depth of the 100 year, 6 hour event mm*
A	=	14.863 Ha	*… Area of site*
PIMP	=	50%	*… Impermeable area of total site*
α0.8	=	100%	*… Proportion of paved area drained to drainage network or river with 80% runoff*
β	=	60%	*… Proportion of pervious area drained to the network or river*
Soil	=	0.47	*… SPR index*

Vol_{XS} = 1,037.09m³

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Calculation By:	SDN
Approved by:	DA

Project Data

Project Name	Kilnahue, Gorey, Catchment 8
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Description		%	Area
Southern Catchment		-	5,107m²
Paved Area	Total	50%	2,554m²
	Drained	100%	2,554m²
Soil Area	Total	50%	2,554m²
	Drained	0%	0m²

Soil Type:	Type 2
SPR Index (from FSR):	0.30
SAAR:	1052mm
Rain Data:	Kilnahue, Gorey
Climate Change Factor:	20%

Greenfield Runoff:

$Q_{BARrural} = 0.00108 \times Area^{0.89} \times SAAR^{1.17} \times Soil^{2.17}$

Area = 0.00511km² … *Total site area in km²*
SAAR = 1,052mm … *Standard Average Annual Rainfall in mm*
SOIL = 0.30 … *The "SPR" index from FSR*

Note: Where a site is <0.5km², the $Q_{BARrural}$ formula should be applied for 0.5km² and the result factored based on the ratio of the actual site area and the applied area.

$Q_{BARrural}$ = 0.001m³/s
$Q_{BARrural}$ = 1.499 l/s
$Q_{BARrural}$ = 3.916 l/s/Ha

Return Period	1-year	30-year	100-year
Growth Factor	0.85	2.10	2.60
Q_{BAR} (l/s)	1.70	4.20	5.20
Q_{BAR} (l/s/Ha)	3.33	8.22	10.18
Allowable Discharge	2.00	2.00	2.00

Rainfall Data:

Rain Data From: Kilnahue, Gorey *(provided by Met Eireann)*
Climate Change Factor: 20%

Duration	**Return Period** *(Years)*						
(Hours)	**1**	**5**	**10**	**20**	**30**	**50**	**100**
0.5	13.1	16.8	19.4	22.2	23.9	26.3	29.9
1	18.2	23.4	27.0	31.0	33.4	36.6	41.6
2	25.4	32.6	37.7	43.1	46.6	51.1	58.0
4	35.4	45.5	52.6	60.1	64.9	71.3	80.9
6	43.1	55.2	63.8	73.1	78.8	86.6	98.3
12	60.0	77.0	89.2	101.9	109.9	120.8	137.2

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Calculation By:	SDN
Approved by:	DA

Summary

Project Name	Kilnahue, Gorey, Catchment 8
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Summary of GDSDS Calculations:

Criterion 1: River Protection Volume

Interception Volume	**7.66m³**
Treatment Volume	**22.98m³**

Criterion 2: River Regime Protection

1-in-1-Year Storm	83.51m³
1-in-30-Year Storm	127.47m³
1-in-100-Year Storm	69.56m³
Reduction of Long-Term Storage	-95.36m³
Volume Required	**185.18m³**

… Includes head-loss correction

Criterion 4: River Flood Protection

Long Term Storage *(no interception provided)*	**95.36m³**
Long Term Storage *(Interception provided)*	**87.70m³**

Total Attenuation Volume Requirement:

1-in-100 Year Storm

1-in-1-Year Storm	83.51m³
1-in-30-Year Storm	127.47m³
1-in-100-Year Storm	69.56m³
Total	**280.54m³**

The maximum attenuation volume required is 280.54m³

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Calculation By:	SDN
Approved by:	DA

Criterion 1
River Protection Volume

Project Name	Kilnahue, Gorey, Catchment 8
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

1.1 Interception

Paved surfaces connected to drainage system	*5107m² x 0.5 x 0.75 =* 1,915.13m²	*5,107m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Interception Storage	*1915.125m² x 5mm x 0.8 =* **7.66m³**	*Paved area directly drained* *5mm rainfall depth* *80% paved runoff factor*

1.2 Treatment Volume

Paved surfaces draining to river	*5107m² x 0.5 x 0.75 =* 1,915.13m²	*5,107m² site area* *50% of the site is paved* *75% of the paved area*
Volume of Treatment Storage	*1915.125m² x 15mm x 0.8 =* **22.98m³**	*Paved area directly drained* *15mm rainfall depth* *80% runoff from paved surfaces*

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Calculation By:	SDN
Approved by:	DA

Criterion 2
River Regime Protection

Project Name	Kilnahue, Gorey, Catchment 8
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

1-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	72.67	18.56	0.00	18.56	33.4	2.00	3.6	16.56	29.8
1	50.67	12.94	0.00	12.94	46.6	2.00	7.2	10.94	39.4
2	35.33	9.02	0.00	9.02	65.0	2.00	14.4	7.02	50.6
4	24.58	6.28	0.00	6.28	90.4	2.00	28.8	4.28	61.6
6	19.94	5.09	0.00	5.09	110.0	2.00	43.2	3.09	66.8
12	13.89	3.55	0.00	3.55	153.2	2.00	86.4	1.55	66.8

30-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	132.67	33.88	0.00	33.88	61.0	2.00	-0.6	31.88	-9.4
1	92.67	23.66	0.00	23.66	85.2	2.00	1.0	21.66	11.2
2	64.67	16.51	0.00	16.51	118.9	2.00	5.2	14.51	37.7
4	45.08	11.51	0.00	11.51	165.8	2.00	14.8	9.51	70.2
6	36.50	9.32	0.00	9.32	201.3	2.00	24.9	7.32	91.3
12	25.44	6.50	0.00	6.50	280.7	2.00	56.7	4.50	127.5

100-Year Return Period
(Climate Change Factor = 20%)

Duration	Rainfall Rate	Runoff = Rainfall Rate x Area x Soil Type				Discharge		Storage	
		Paved	Green	Total	Volume	Rate	Volume	Rate	Volume
Hours	*(l/s/Ha)*	l/s	l/s	l/s	m³	l/s	m³	l/s	m³
0.5	166.00	42.39	0.00	42.39	76.3	2.00	-6.0	40.39	-121.6
1	115.67	29.54	0.00	29.54	106.3	2.00	-6.9	27.54	-95.2
2	80.50	20.56	0.00	20.56	148.0	2.00	-6.5	18.56	-60.7
4	56.17	14.34	0.00	14.34	206.5	2.00	-2.7	12.34	-16.6
6	45.50	11.62	0.00	11.62	251.0	2.00	2.8	9.62	13.5
12	31.75	8.11	0.00	8.11	350.2	2.00	22.8	6.11	69.6

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Calculation By:	SDN
Approved by:	DA

Criterion 4
River Flood Protection

Project Name	Kilnahue, Gorey, Catchment 8
Project Number	13-119
Client	Gerard Gannon Properties
Architect	Connolly Architects
Status	Planning
Date	09/11/2021

Vol_{XS} = RD x A x 10 [(PIMP/100 x α0.8) + (1 - (PIMP/100))(β x Soil) - Soil]

Vol_{XS}			*… Extra runoff volume of development over Greenfield runoff*
RD	=	98 mm	*… Rainfall depth of the 100 year, 6 hour event mm*
A	=	0.511 Ha	*… Area of site*
PIMP	=	50%	*… Impermeable area of total site*
α0.8	=	100%	*… Proportion of paved area drained to drainage network or river with 80% runoff*
β	=	60%	*… Proportion of pervious area drained to the network or river*
Soil	=	0.30	*… SPR index*

Vol_{XS} = 95.36m³

C. External Quality Audit

Title: **QUALITY AUDIT**

INCLUDING

Road Safety Audit, Access Audit, Cycle Audit and Walking Audit.

For;

Proposed Strategic Housing Development, Kilnahue, Gorey, Co. Wexford.

Client: **Water Moylan/Gannon Properties**

Date: **October 2021**

Report reference: **1178R01**

VERSION: **FINAL (15-11-2021)**

Prepared By:

Bruton Consulting Engineers Ltd

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CONTENTS SHEET

Contents

1.0 Introduction

This report was prepared in response to a request from Mr. Stephen Dent Neville, Waterman Moylan Consulting Engineers, for a Quality Audit of the proposed strategic housing development (SHD) at Kilnahue, Gorey , Co. Wexford.

The Quality Audit has been carried out in accordance with the guidance in the Design Manual for Urban Roads and Streets (DMURS), produced by Department of Transport Tourism and Sport in March 2013 and as updated in June 2019.

This portion of the Quality Audit is a design stage audit and includes a Stage 1 Road Safety Audit (in accordance with TII Publication GE-DTY-01024, dated December 2017), an access audit, a walking audit and a cycling audit. (i.e. aspects of a quality Audit carried out independent of the Design Team and generally included as appendices to the overall Audit)

The Road Safety and Quality Audit Team comprised of;

Team Leader:	**Norman Bruton,** BE CEng FIEI, Cert Comp RSA.
	TII Road safety Auditor approval number: NB 168446
Team Member:	**Owen O'Reilly**, B.SC. Eng Dip Struct. Eng NCEA Civil Dip Civil. Eng CEng MIEI
	TII Auditor Approval no. OO 1291756

This portion of the Quality Audit involved the examination of drawings and other material and a site visit by the Audit Team, on the 7th of October 2021. The weather at the time of the site visit was mainly dry with some rain and the road surface was wet.

The problems raised in this Quality Audit may belong to more than one of the categories of Audit named above. A table has been provided at the start of Section 3 of this report detailing which category of audit each problem is associated with.

Recommendations have been provided to help improve the quality of the design with regard to the areas described above. A feedback form has also been provided for the designer to complete indicating whether or not he/she will accept those recommendations or provide alternative recommendations for implementation.

The information supplied to the Audit Team is listed in **Appendix A.**

A feedback form for the Designer to complete is contained in **Appendix B.**

A plan drawing showing the problem locations is contained in **Appendix C**.

2.0 Background

It is proposed to construct a SHD at Kilnahue and Kilnahue Lane, Gorey, Co. Wexford. The development consists of 421 no. residential units comprising of 133 no. houses, 60 no. duplexes and 228 no. apartments and a creche.

The site is located west of Gorey town. It is bounded to the northeast by Kilnahue Lane, to the northwest and southwest by greenfield lands and to the southeast by the R725 Carnew Road, a filling station and some existing residential dwellings.

It is proposed to provide priority junction vehicular accesses onto the R725 (1 no. access with right turning lane) and Kilnahue Lane (2 no. accesses) from the development. A footpath will be provided along Carnew Road from the combined access for 6 no. houses west of the proposed development access to join with the existing footpath closer to the town centre, at the filling station.

Pedestrian and cycle facilities will be provided on Kilnahue Lane connecting with the existing facilities at the school and onwards to Carnew Road.

Creagh College and Gaelscoil Moshíológ are located off Kilnahue Lane closer to the Carnew Road junction than the proposed development accesses.

Cycle facilities within the development will be on-road and footpath swill be provided throughout the internal road network.

Gorey Town centre is served by public buses.

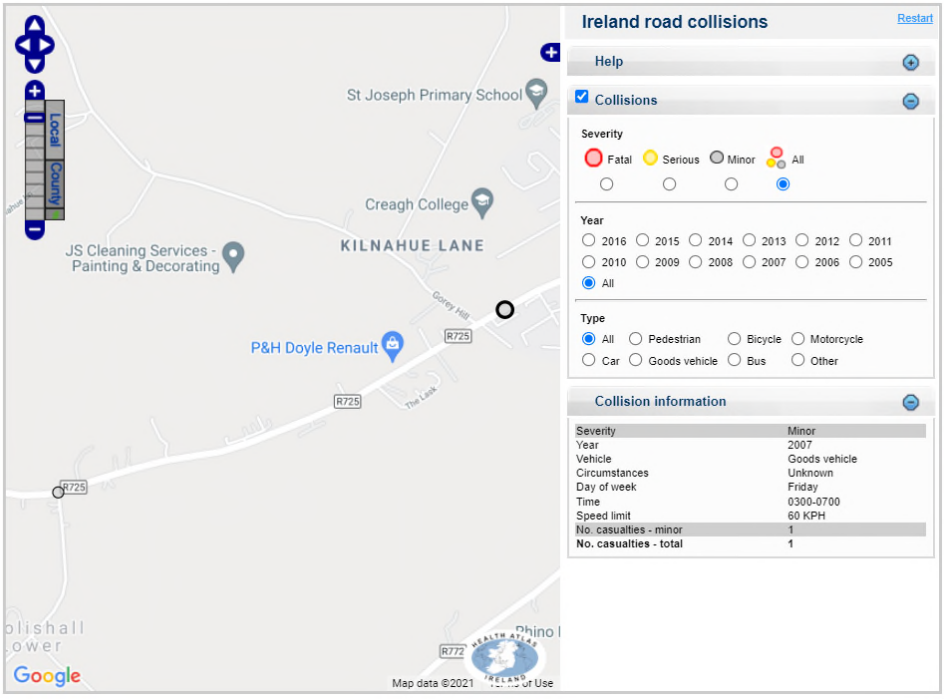
Gorey has a train station on the Dublin to Wexford rail line.

The speed limit at the proposed Carnew Road junction location is 60km/hr, the speed limit reduces to 50km/hr before the Kilnahue Lane Junction. The speed limit on Kilnahue Lane increases to 80km/hr after the schools.

The site location map is shown below.

Site Location Map (image courtesy of openstreetmap.org

The Road Safety Authority's website shows that in the 12-year period 2005 to 2016 that there were two minor injury collisions on the R725 Carnew Road in the vicinity of the proposed development site.



3.0 Issues Identified in the Stage 1 Quality Audit

Summary Table of Problem Categories

Problem Reference	Access Audit	Walking Audit	Cycling Audit	Road Safety Audit	Quality Audit
3.1				✓	✓
3.2		✓	✓	✓	✓
3.3		✓	✓	✓	✓
3.4		✓	✓	✓	✓
3.5		✓	✓	✓	✓
3.6		✓		✓	✓
3.7	✓				✓
3.8	✓				✓
3.9				✓	✓
3.10	✓	✓	✓		✓
3.11		✓	✓		✓

3.1 Problem

LOCATION

Drawing 13-119 P4103 Rev -, Kilnahue Lane.

ISSUE

There is very limited forward visibility/stopping sight distance for drivers travelling westbound on Kilnahue Lane after the school access due to the boundary hedge of the private residential property. This could lead to drivers being unable to stop if a hazard (e.g. pedestrian or stopped vehicle) is located on the road ahead resulting in collisions.

RECOMMENDATION

It is recommended that the hedge be taken back. If this is not feasible due to 3rd party ownership then the speeds on Kilnahue Lane should be reduced by the introduction of additional traffic calming such that the stopping sight distance available matches the design speed. Some adjustment to the ghost island road markings for the right turning lane may also improve visibility.

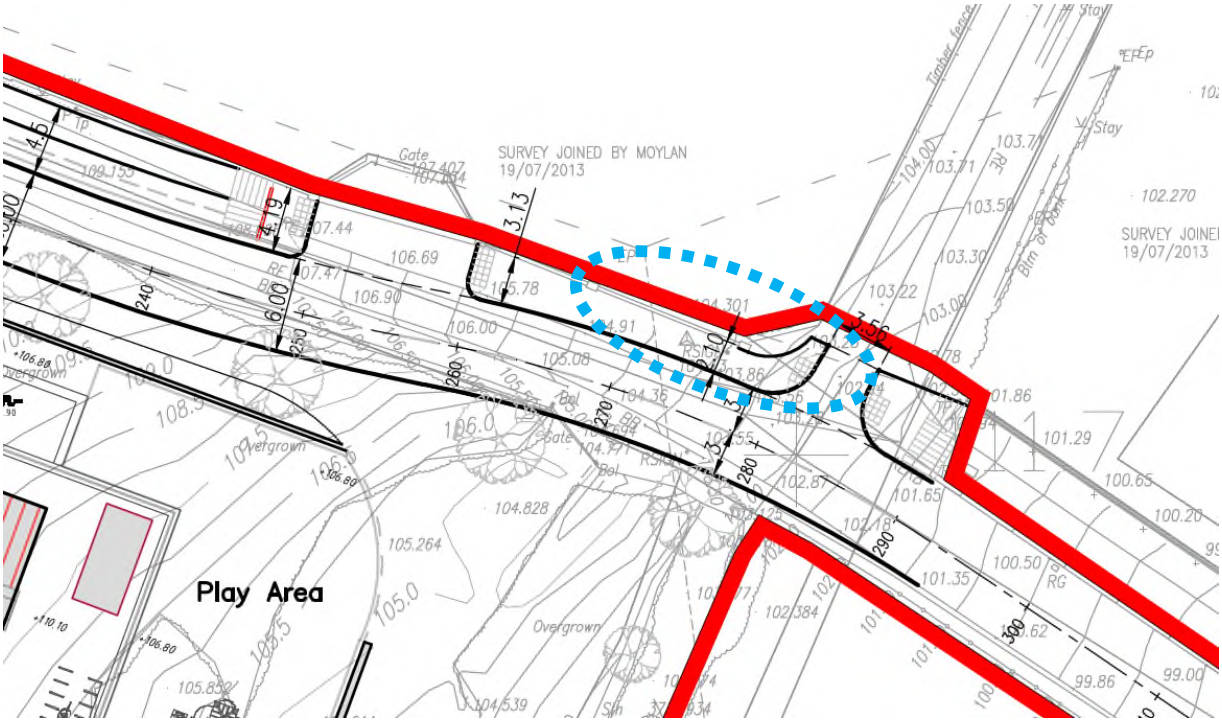
3.2 Problem

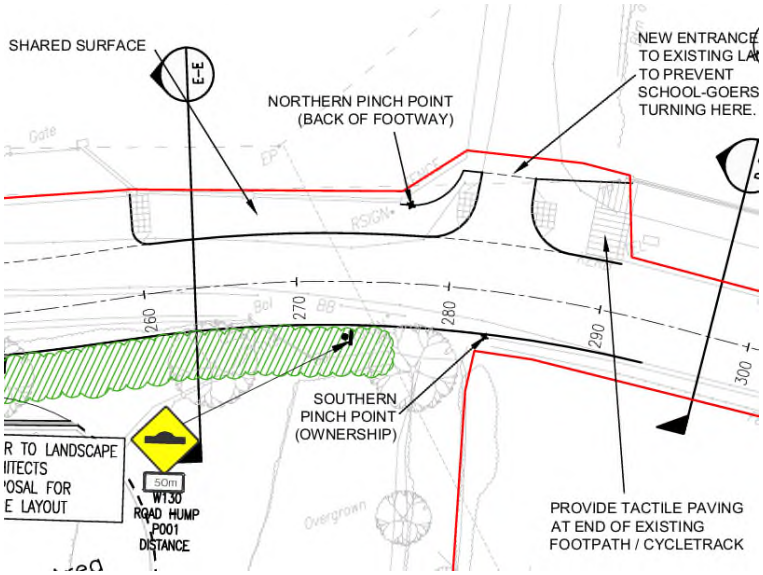
LOCATION

Drawing 13-119 P4103 & P4130 Rev -, Kilnahue Lane.

ISSUE

There is a short section along Kilnahue Lane where the segregated cycle and pedestrian facilities are merged into a shared facility and the cross sectional width (2.1m) is less than the segregated widths. These is a risk that at school times this section of the path will not be wide enough to cater for the high volume of cyclists an pedestrians and may lead to cyclists colliding with pedestrians or entering the carriageway by dismounting the kerbs which may not be expected by drivers and could lead to collisions.





RECOMMENDATION

It is recommended that a section of on-road cycle track be provided with suitable transitions from off road-to on road and vice versa at the pinch-point.

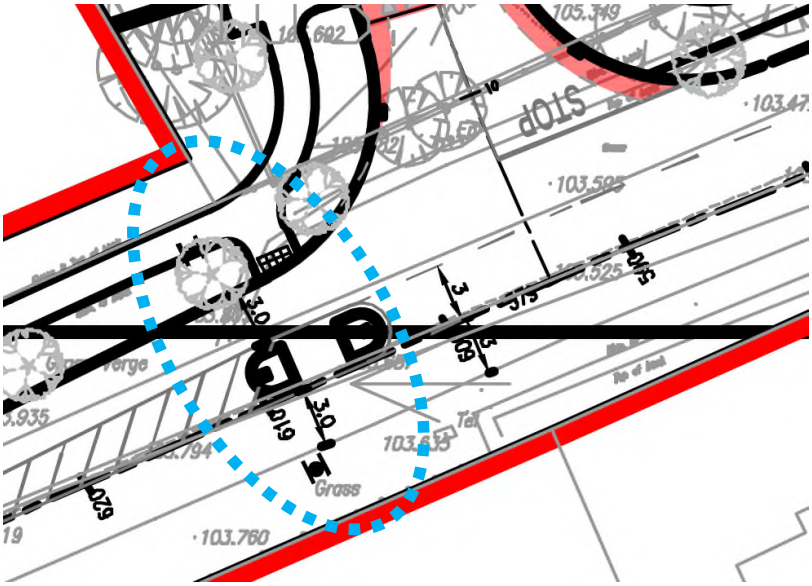
3.3 Problem

LOCATION

Drawing 13-119 P4100 Rev -, Carnew Road, R725.

ISSUE

It is proposed to provide an uncontrolled pedestrian crossing with a traffic island on the R725 just west of the proposed access. It is assumed that this is to allow dismounted cyclists travelling from the town centre direction to cross the R725 and to provide some traffic calming. There is however no refuge area on the southern verge of the R725 for dismounted cyclists or pedestrians to wait. The cross section of the R725 is such that there may be no hard strip. In the town bound direction there will be a 3.0m lane between the traffic island and the kerb of the footpath. This could lead to cyclists being 'squeezed' by passing vehicles.



RECOMMENDATION

It is recommended a gateway type treatment be provided with provision for cyclists in both directions. The gateway should include lighting and signage which denotes the transition into the urban (60km/hr) area for drivers and acts as a traffic calming feature.

3.4 Problem

LOCATION

Drawing 13-119 P4102, R725 Access.

ISSUE

The corner radii at the proposed access on the R725 are 10m. This could lead to high turning speeds, greater blind spots to cyclists for left turning drivers and longer areas for pedestrians to cross if they

take the desire line rather than the route to the raised table and uncontrolled crossing which are set back.

RECOMMENDATION

It is recommended that the corner radii be reduced and that the crossing area be moved closer to the desire line.

3.5 Problem

LOCATION

Internal junctions within the proposed development.

ISSUE

The internal junctions within the development are shown to be yield control junctions. Yield control leads to higher turning speeds which in turn leads to higher injury severity if a vulnerable road user is struck.

RECOMMENDATION

It is recommended that stop control be used instead of yield control.

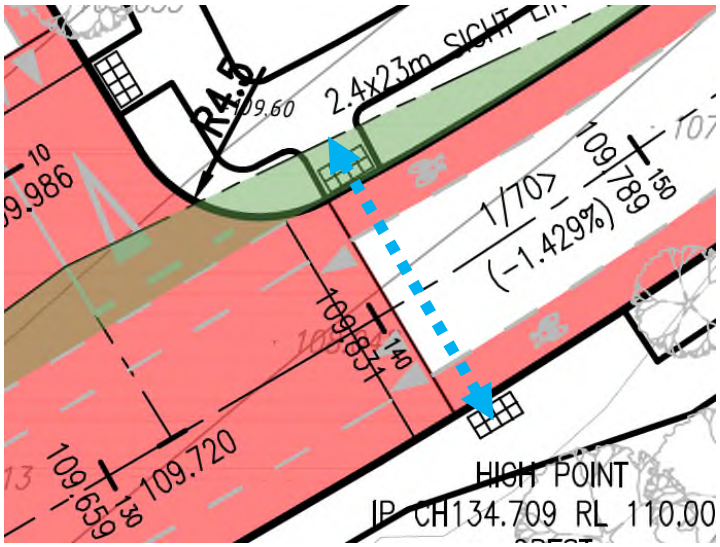
3.6 Problem

LOCATION

Drawing 13-119 P4102, Road 1

ISSUE

The uncontrolled crossing on Road 1, chainage 142 approx is located at the base of the raised table. Pedestrians may be more vulnerable if they cross at this location as it is likely that drivers will feel that they should stop at the crossing point in advance of the ramp.



RECOMMENDATION

It is recommended that the raised table be extended to include the pedestrian crossing.

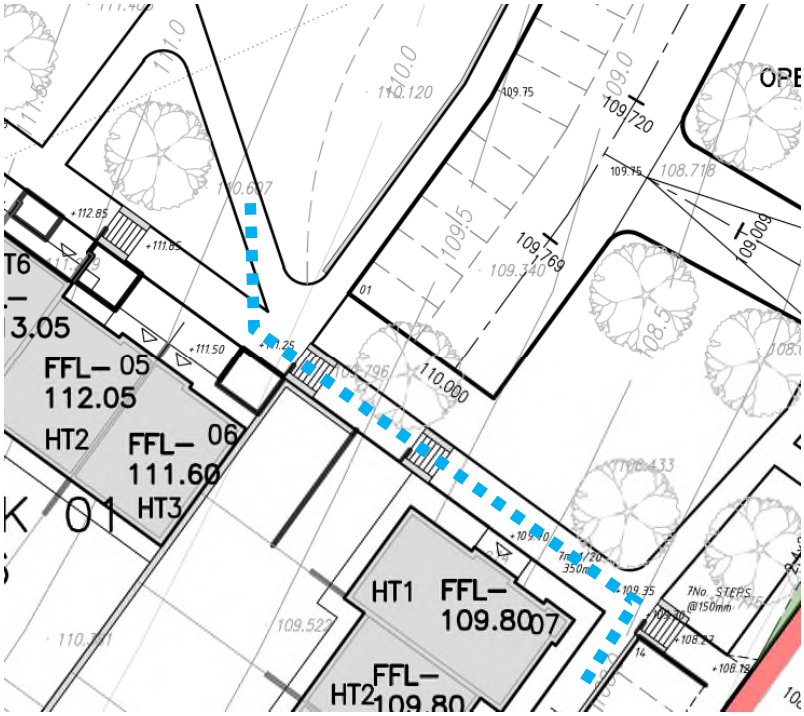
3.7 Problem

LOCATION

Drawing 13-119 P4102, Access to opens paces.

ISSUE

The topography of the site leads to many steps throughout the footpath network. Steps are not accessible by all. These is a risk that the mobility impaired may not be able to get to the open areas adjacent to their houses.



Example only

RECOMMENDATION

Ensure that alternative access to the adjacent open spaces is available with gradients that are in accordance with the Technical Guidance Document of Part M of the Building Regulations without steps an without excessive long routes.

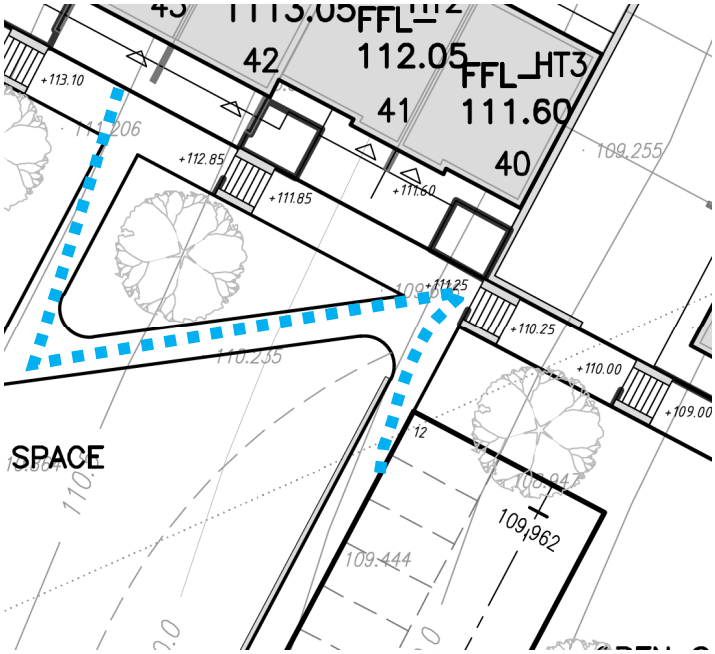
3.8 Problem

LOCATION

Drawing 13-119 P4102, Access to houses from car parking spaces.

ISSUE

The topography of the site leads to many steps throughout the footpath network. Steps are not accessible by all. These is a risk that the mobility impaired may not be able to get to their houses from their car parking areas if steps are encountered along the route.



Example only

RECOMMENDATION

Ensure that suitable pedestrian provision with gradients in accordance with the Technical Guidance Document of Part M of the Building Regulations without steps be provided from dedicated car parking spaces to the associated residential units.

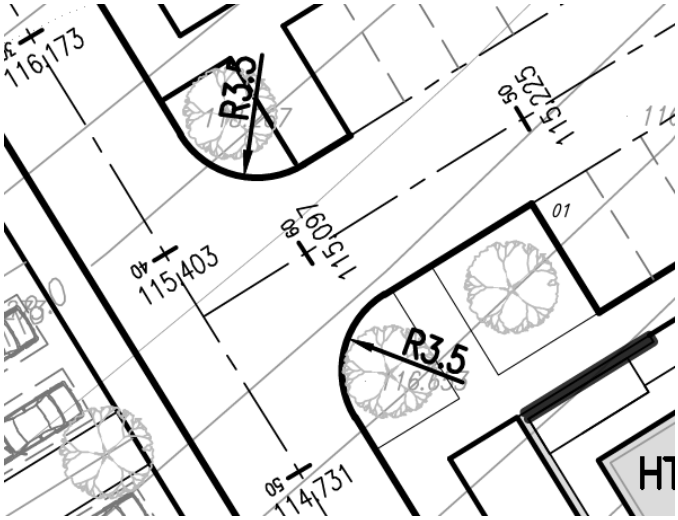
3.9 Problem

LOCATION

Throughout the development, trees

ISSUE

It is proposed to provide trees at the corners of internal junctions,. This could lead to a lack of visibility for drivers exiting the junctions which in turn could lead to side-impact collisions.



RECOMMENDATION

Ensure that tree types and locations are chosen such that the girth, clear stem and canopies will not interfere with visibility both when planted and when mature.

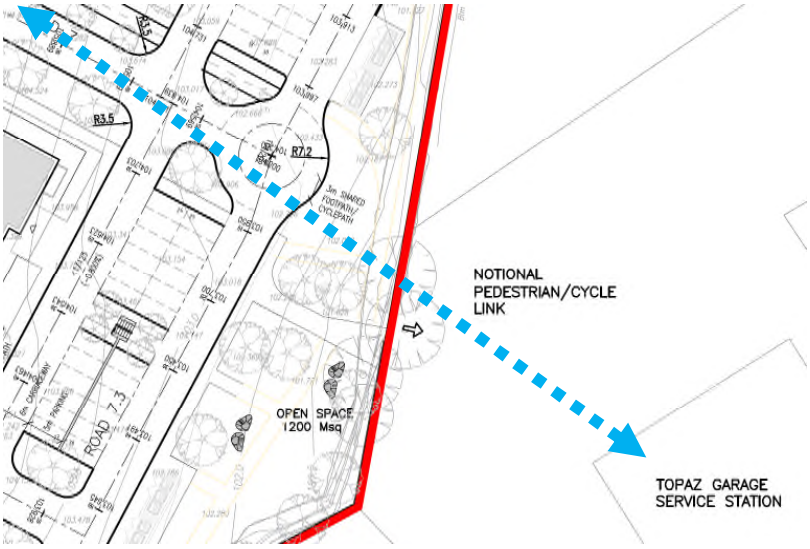
3.10 Problem

LOCATION

Drawing 13-119 P4103, Notional Link to Circle K Service Station.

ISSUE

There is a notional pedestrian/cycle link to the Circle K Garage on the R725 which will be a highly used desire line given that the proposed development is at the out limits of the urban area. The link from Road 1 to the Service station is discontinuous and the access point at the service station may not be suitable for cyclists when deliveries are being made.



RECOMMENDATION

It is recommended that the link between Road 1 and the service station be clearly defined and continuous and that details of the proposed route for pedestrians/cyclists to the shop door/cycle parking be provided to ensure that this is a safe route for users.

3.11 Problem

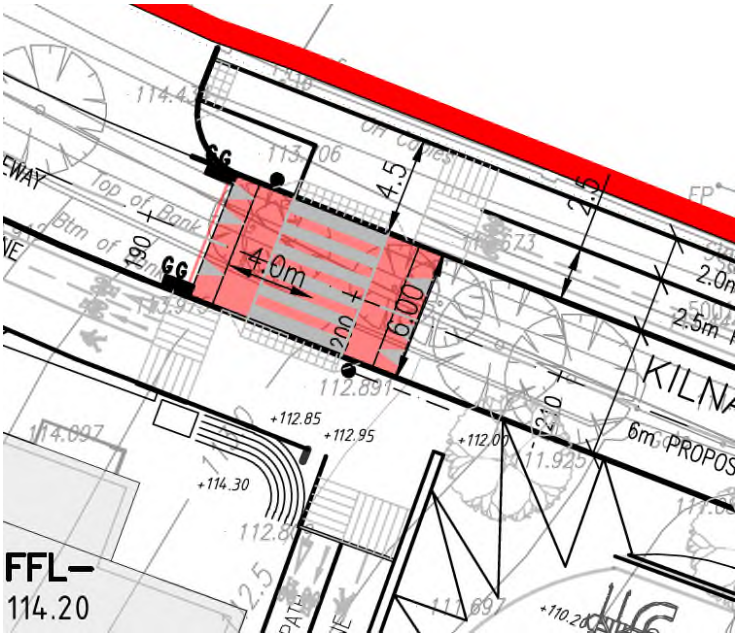
LOCATION

Drawing 13-119 P4103, Zebra crossing on Kilnahue Lane.

ISSUE

It is proposed to provide a zebra crossing on Kilnahue Lane. This crossing is controlled with pedestrian priority. Blind or partially sighted pedestrians may not realise that they have priority if suitable tactile paving is not provided.

There is also a risk of confusion with regard to the sharing of the zebra crossing with cyclists.



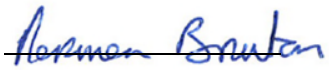
RECOMMENDATION

Provide L shaped red coloured tactile paving at the crossing.

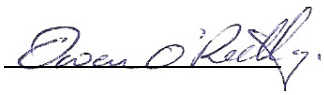
4.0 Quality Audit Statement

This portion of the Quality Audit has been carried out in accordance with the guidance given in DMURS and takes into consideration the principles approaches and standards of that Manual.

The quality 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:** 

(Quality Audit Team Leader) **Dated: 15/11/2021**

Owen O'Reilly **Signed:** 

(Quality Audit Team Member) **Dated: 15/11/2021**

Appendix A

List of Material Supplied for this Quality Audit;

- Drawing13-119-P4102 Proposed Road Layouts & Levels Sheet 2 of 3
- Drawing13-119-P4103 Proposed Road Layouts & Levels Sheet 3 of 3
- Drawing13-119-P4104 Typical Road Construction Details
- Drawing13-119-P4105 Road Longitudinal Sections Sheet 1 of 2
- Drawing13-119-P4106 Road Longitudinal Sections Sheet 2 of 2
- Drawing13-119-P4107 Proposed Traffic Calming
- Drawing13-119-P4110 Carnew Road Improvements
- Drawing13-119-P4130 Kilnahue Lane Upgrade
- Drawing13-119-P4142 Sitelines at Junction of Proposed Carnew Road
- Drawing13-119-P4001 Site Location Plan
- Drawing13-119-P4030 Existing & Proposed Footway links
- Drawing13-119-P4100 Proposed Road Layout General Arrangement
- Drawing13-119-P4101 Proposed Road Layouts & Levels Sheet 1 of 3

Appendix B

Feedback Form

BRUTON CONSULTING ENGINEERS

QUALITY AUDIT FORM – FEEDBACK ON QUALITY AUDIT REPORT

Scheme: SHD Carnew Road, Gorey
Quality Audit- Stage 1
Date Audit (site visit) Completed 7-10-2021

Paragraph No. in Quality 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	Reduce speed on Kilnahue Lane to 30kph from Junction with Carnew Rd to Northern extent of proposed works, keep spacing of ramps where visibility is poor, to a minimum, so SSD = design speed.	
3.2	yes	no	Reduce road width locally from 6m to 5.5m increasing shared footpath width to 2.6m	Yes
3.3	yes	yes	Keep 1 island, remove pedestrian link from north to south of road. Provide cycleways locally through the entry gate. Provide Gateway signage, lighting and markings to make clear.	
3.4	yes	yes	Entry radii reduced to 6m.	
3.5	yes	yes		
3.6	Yes	Yes		
3.7	Yes	Yes		
3.8	Yes	Yes		
3.9	Yes	Yes		
3.10	No	No	The link to the Topaz garage will not form part of this application.	Yes
3.11	Yes	Yes		

Signed..Mark Duignan..... **Date** 15/11/2021
Design Team Leader

Signed.....Norman Bruton..... **Date**: .....15/11/2021 **Audit Team Leader**

Appendix C

Problem Location Plan.

NOTES:

1. DO NOT SCALE. USE FIGURED DIMENSIONS ONLY.
2. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS.

SHEET 1
13-119-P4101

SHEET 2
13-119-P4102

SHEET 3
13-119-P4103

3.11
3.2
3.1
3.7
example
3.6
3.9
example
3.10
3.6
3.5
example
3.4
3.3

1 October 2021 10:44
- - DRAFT - -
Nick Smith

1:1250 0 25.0 50.0 75.0 100.0 125.0m
1:1 0 10 20 30 40 50 60 70 80 90 100

REV.	DATE	AMENDMENT	DRN	APPD

STATUS **FOR PLANNING ONLY NOT FOR CONSTRUCTION**

Waterman Moylan
Engineering Consultants
BLOCK S, EASTPOINT BUSINESS PARK, ALFIE BYRNE ROAD, DUBLIN D03 H3F4 IRELAND. Tel: (01) 664 8900
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CLIENT GERARD GANNON PROPERTIES
ARCHITECT CONNOLLY ARCHITECTS
PROJECT LANDS AT KILNAHUE & GOREY HILL, GOREY
TITLE PROPOSED ROAD LAYOUT GENERAL ARRANGEMENT

DRAWN	DESIGNED	APPROVED	DATE
PJD	DA		AUG 2021
SCALE	JOB NO.	DRG. NO.	REVISION
1:1250 @A1	13-119	P4100	

UK and Ireland Office Locations