Proposed Residential Development at Rathcoole, Co. Dublin

Infrastructure Report

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Quality information

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1. Introduction

1.1 Project Overview

AECOM Ireland Limited (hereafter referred to as 'AECOM') have been commissioned by South Dublin County Council (SDCC) to prepare this Civil Infrastructure Report to support a planning application for a proposed residential development at Rathcoole, Co. Dublin.

This report outlines the extent of known information regarding existing foul, surface water and watermain infrastructure, whilst also presenting proposals for the aforementioned infrastructure to serve the proposed development. A high-level SuDS strategy for the site is also presented herein.

1.2 Site Location

The site comprises greenfield lands located to the south and south-east of Rathcoole Village, adjoining established residential areas. Rathcoole Park lies immediately to the north and connects directly to the subject lands. The overall landholding extends to approximately 17.78 hectares and is divided across three ownerships: South Dublin County Council (c. 5.16 ha), the Department of Education (c. 1.8 ha) and the GAA (c. 10.89 ha). An Irish Water easement runs along the south-eastern extent of the lands.

The site is bounded to the west by the junction of Stoney Lane and Stoney Hill Lane. The northern boundary adjoins an existing residential development, with Rathcoole Park extending further east along this edge. The River Camac, a tributary of the River Liffey, forms the eastern boundary, with the village of Saggart located beyond. To the south, the site is bordered by the Crockshane (Slade) Stream, with additional greenfield lands on the opposite side.

Refer to Figure 1.1 for the site, with the indicative boundary of the proposed masterplan development outlined in red.



Figure 1.1: Proposed Site Location at Rathcoole

1.3 Proposed Development

The proposed development comprises a social and affordable residential neighbourhood, playing pitches and associated open space, access infrastructure and supporting facilities on a site of approximately 11.4 hectares located to the south-east of Rathcoole Village, County Dublin. The site is situated immediately south-west of Rathcoole Park, with the River Camac forming its eastern boundary. Coolamber Drive, Coolamber Road and Greenogue Drive define the northern edge of the site, while Rathcoole Woodlands extends along the western boundary towards the residential areas in the vicinity of Mullally's Lane Roundabout. Agricultural lands lie to the south and south-west. Part of the approved Department of Education school development (Reg. Ref. SD23A/0336) and Mullally's Lane are also included within the application site. The proposed development will consist of:

- 130 residential units, comprising: 43 two-storey houses (39 three-bedroom and 4 four-bedroom units) arranged in 12 terraced rows; 16 duplex apartments (8 one-bedroom and 8 three-bedroom units) within 2 three-storey blocks; 11 age-friendly homes including 4 age-friendly duplex apartments (2 one-bedroom and 2 two-bedroom units) within 1 two-storey block, 7 age-friendly single-storey houses and 1 age-friendly consultation room; and 60 apartments (17 one-bedroom and 43 two-bedroom units) within 4 four to five-storey blocks. 4 traveller accommodation units are included within the proposed unit mix.
- Playing pitches and open space amenity comprising: a park pavilion building with a gross floor area of 137.26 sq.m; 2 GAA sized senior grass pitches with a combined area of approximately 20,800 sq.m; 1 GAA sized junior grass pitch measuring approximately 6,240 sq.m; site levelling, reprofiling and drainage works associated with the pitch area, including the reuse of existing topsoil on site and the importation of sand.
- Car and bicycle parking, comprising: 143 residential car parking spaces, including 24 EV spaces, 4 accessible spaces and 15 combined EV-accessible spaces; 169 residential bicycle parking spaces; and 43 car parking spaces and 12 bicycle parking spaces allocated to open space use and access.
- A new vehicular entrance, access road and active travel infrastructure, including: a new pedestrian and cycle access from Mullally's Lane; widening works along Mullally's Lane to include SDCC held lands and third party lands which will be subject to a separate statutory process including use of rights conferred on the local authority to acquire lands to support the delivery of housing under relevant legislation; cycle path from entrance to development connecting to existing bike lane at Stoney Park; a new T-junction with vehicular and pedestrian access from Greenogue Drive and associated upgrade of access to existing adjoining roundabout including upgrade and modification of existing roundabout to reduce the number of vehicular arms from five to four; pedestrian and cycle access from Coolamber Drive and Coolamber Road; an internal access road connecting the new junction, the approved school development (Reg. Ref. SD23A/0336) and the residential area of the site, including boundary treatments; and a bridge crossing the Coolmine Stream.
- Associated site services, including ESB substations and switch rooms, public lighting, site drainage works, water supply and foul drainage infrastructure, including a pumping station, Sustainable Drainage Systems (SuDS) features, and all associated site development works above and below ground.
- In addition to the above playing facilities landscaping works, including: 11,763 sq.m of public open space incorporating formal and informal play areas; pedestrian and cycle routes throughout the development connecting to existing routes within the park and adjoining links; 1,040 sq.m of communal open space; private open space serving the proposed residential units; implementation of protection measures of existing ecology set out in appended woodland management plan, and EIAR. Landscaping will also include replacement planting, enhancements to riparian corridors and all protection and mitigation measures set out in the proposal and associated boundary treatments.

An Environmental Impact Assessment Report (EIAR) has been prepared in respect of the proposed development.

Refer to Figure 1.2 for an illustration for the proposed residential development.



Figure 1.2: Proposed Site Layout

1.4 Site Topography

AECOM have been provided with a topographical survey carried out by Murphy Geospatial, dated the 27th of August 2025. From this survey, it is evident that overall gradients across the site generally grade from south-west to north-east at an average gradient of circa 1:60, with ground levels for the subject site ranging from approximately 126.70 mOD at the south to 113.00 mOD at the north-east. Refer to Appendix A for the full topographical survey as carried out by Murphy Geospatial.

1.5 Ground Penetrating Radar Survey

AECOM has been provided with a Ground Penetrating Radar (GPR) survey, carried out by Murphy Geospatial, dated 10th of October 2025. The survey covers the extents of the Mullally's Lane junction, located to the immediate east of Development Area A. For Development Area B, there are no existing records or evidence that suggests that there are any existing services traversing the existing site. There are known watermain assets located to the east of the site, but these are clear of the proposed development. Refer to Appendix B for the full utility survey as carried out by Murphy Geospatial.

1.6 Ground Investigation

In the absence of site-specific ground investigation data, AECOM Structures have prepared a scope of works for a project-specific site investigation. This will characterise ground and groundwater conditions and assess infiltration and bearing capacity across the site, informing the proposed drainage and pavement design for the residential development. At the time of writing, these site investigations have not yet been undertaken.

2. Mullally's Lane Junction Upgrade

A feasibility study was undertaken to assess potential upgrade options for the Mullally's Lane junction in support of the proposed development. The study considered three layout options and assessed their implications for existing services, constructability, drainage, and road geometry, with the preferred solution being Option 2.

The preferred Option 2 proposes the removal of the existing Mullally's Lane arm, the provision of a new T-junction from Greenogue Drive, and the repurposing of Mullally's Lane as an active travel route. From a civil infrastructure perspective, this option is considered the least onerous of the three in terms of service interface, while still requiring localised mitigation measures for existing drainage, lighting, and utility infrastructure.

2.1 Existing Services Adjustment Requirements

The proposed junction works will require excavation through an existing landscaped area, with associated level changes necessary to tie into existing road levels. These works will affect a limited number of existing services and will require further detailed utility verification prior to construction.

Refer to Figure 2.1 for an overlay of the existing services with this proposed junction option. For the full extents of the existing services layout overlaid with this proposed junction option, refer to Appendix C.

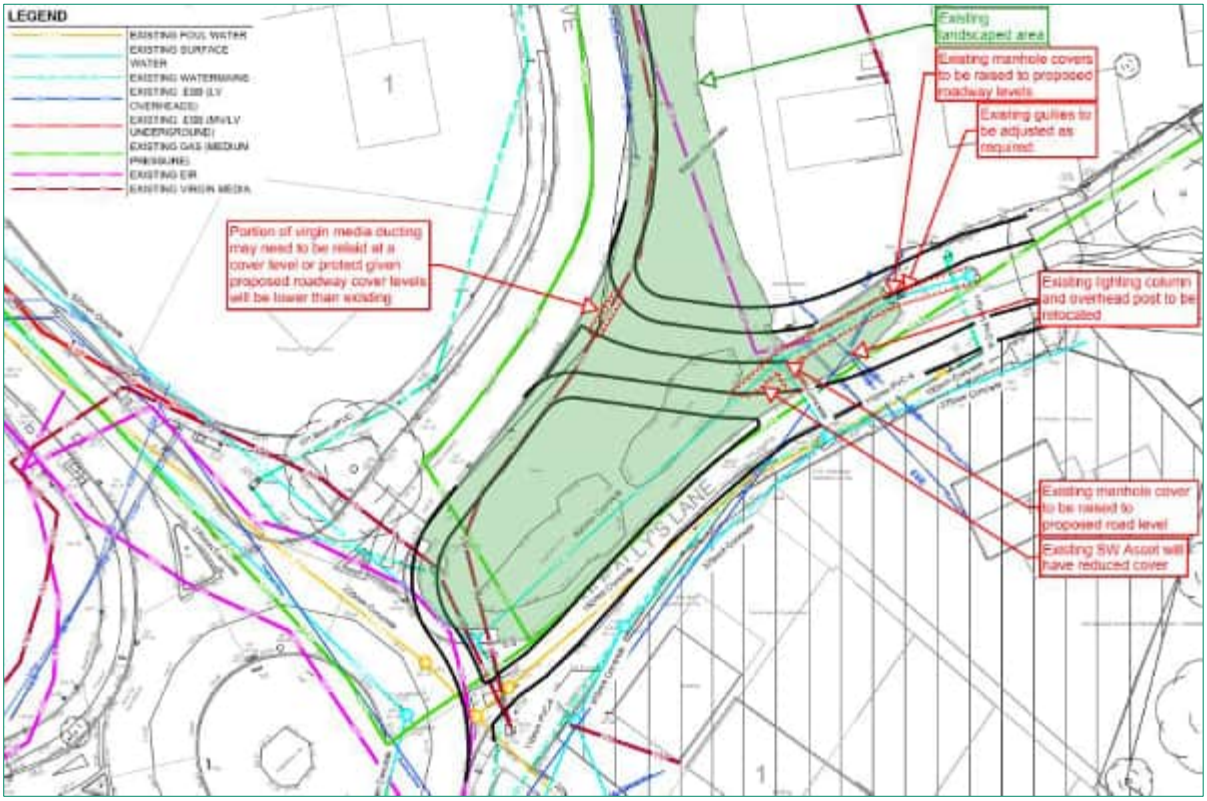


Figure 2.1: Extract of Existing Services Layout Overlaid with Proposed Junction Option 2

2.1.1 Existing Drainage and Watermains

The alignment of the new roadway from the proposed Greenogue T-junction to Mullally's lane runs over an existing 600mm diameter concrete surface water asset which is currently located along the north of Mullally's Lane in the landscaped area. Existing records indicate the assets have a cover depth ranging from 0.940m to 1.070m which is typical for a landscape area however, a minimum cover of 1.2m is required for assets in trafficable areas. Further, given that existing levels will need to be lowered over a portion (approx. 20m length) of this asset to facilitate the new junction layout, cover will be reduced further. This will trigger the requirements to provide a protection slab over the existing asset, divert the asset or re-lay it at a lower level.

Further, approximately 2 no. manhole covers will need to be adjusted to the proposed roadway levels. A total of 2no. gullies may also require minor adjustment to ensure they are positioned correctly along the proposed roadway gutter.

2.1.2 Lighting, Power and Telecoms

The proposed layout also impacts 1 no. existing lighting columns which also carries overhead lines which will need to be relocated to facilitate the proposal. The new connection roadway from Greenogue Drive also traverses an existing virgin media duct (approx. 3.6m) which will likely need to be lower locally to ensure sufficient cover is maintained over the asset, in line with asset owner requirements.

3. Pre-Planning Consultation (Stakeholder Engagement)

3.1 Uisce Éireann Pre-Connection Enquiry Application

An initial scoping consultation with Uisce Éireann (26 March 2026, response 15 June 2026) opened the engagement with the stakeholder.

AECOM submitted a Pre-Connection Enquiry (PCE) to Uisce Éireann on 3 June 2025 (Ref. CDS25004062) to assess the impact of the proposed development on the existing water and wastewater network and to establish a suitable servicing strategy for the site.

The proposed foul drainage arrangement has been developed through ongoing consultation with Uisce Éireann, with particular consideration given to avoiding capacity constraints associated with the Tay Lane Wastewater Pumping Station.

An initial connection proposal submitted in June 2025 identified a discharge point to the existing public foul sewer network at Spring Bank. This option required a pumped connection and involved crossing the Coolmine Stream together with two strategic watermain assets comprising 1200mm and 600mm diameter mains.

During consultation with Uisce Éireann in October 2025, potential constraints associated with the proposed crossing of these watermain assets were discussed. Uisce Éireann advised that an alternative connection to the existing 225mm diameter foul sewer at Beechwood Lawns, located immediately north of the site, may be feasible. While this alternative would also require a crossing of the Coolmine Stream, it would avoid the need to traverse the strategic watermain infrastructure.

Following this engagement, the Beechwood Lawns connection was incorporated into a revised PCE submission in July 2026 (CDS25001642). However, the subsequent Confirmation of Feasibility (CoF) issued by Uisce Éireann on 5 August 2026 referenced the original Spring Bank connection as the discharge location.

As this differed from the servicing strategy discussed during consultation, AECOM requested a revision to the CoF on 10 August 2026 to reflect the agreed connection arrangement.

An updated CoF confirming the proposed connection location is currently awaited, though this approach was supported through the consultation process.

Further details of the proposed foul drainage and watermain infrastructure are provided in Sections 6.2 and 7.2, respectively.

The water connection has been agreed within the current CoF and is feasible without an infrastructure upgrade.

The latest correspondence and CoF can be found in Appendix G.

4. Surface Water Drainage

4.1 Existing Surface Water Drainage

Based on existing SDCC drainage records, an existing 1,050mm diameter concrete surface water sewer is noted to be running east, along the roadway at Fitzmaurice Road, to the north of the proposed site. Along the Beechwood Lawns housing estate to the north-west of the proposed site, 2 No. existing 225mm concrete surface water sewer lines are noted to be running north-east towards Fitzmaurice Road, and west towards Coolamber Drive, respectively. This existing sewer running west towards Coolamber Drive subsequently discharges to SDCC lands via an existing headwall.

Furthermore, at Mullaly's Lane, an existing 375mm and 450mm diameter concrete surface water assets are noted to drain west from the entrance of the proposed development site, before connecting into an existing 600mm diameter concrete surface water asset which continues to drain west along Mulally's Lane. To the immediate east of the site an existing 225mm diameter concrete surface water sewer is noted to be running north along Springbank Saggart, before connecting into an existing 225mm diameter concrete surface water sewer, which runs north along Mill Road. An illustration of the existing SDCC surface water drainage records is presented in Figure 4.1.

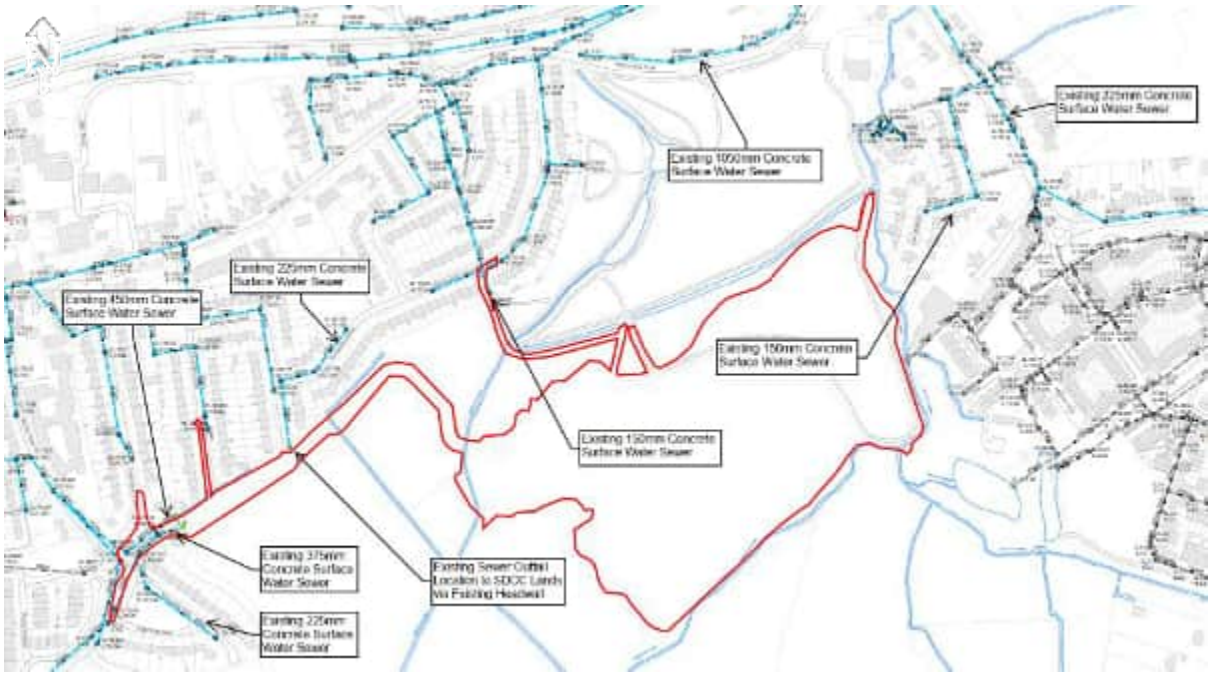


Figure 4.1: Existing Surface Water Drainage Records (SDCC)

4.2 Existing Watercourses

There are a number of existing watercourses located within and around the immediate extents of the proposed development. The Coolmine Stream is noted to be running along the northern boundary of the site, with 2 No. existing water features being located towards the northern end of this stream, to the immediate north of the site.

Along the southern boundary of the site, the Crockshane & Slade Stream run north-east, before running parallel to the eastern boundary of the site. Additionally, the River Camac is situated adjacent to the south-eastern boundary of the site, along with 2 No. additional existing water features.

For illustrations of the existing watercourses within and around the extents of the proposed development, refer to Figure 4.2.



Figure 4.2: Existing Watercourses within Vicinity of Proposed Development

The locations of the streams/ ditches shown in Figure 4.2 are based on information obtained from the following data sources;

- OSI GeoHive Map Viewer;
- Figure 4.1 from the South Dublin County Development Plan SFRA 2022-2028;
- Flood Risk Identification (FRI), 2019;
- Catchment Flood Risk Assessment and Management (CFRAM) modelled river centrelines, viewable on floodinfo.ie.

4.3 Proposed Surface Water Drainage Strategy

The proposed strategy is to retain the existing surface water flow paths, where possible, inclusive of open ditches and land drains within the site boundary. A new gravity surface water network is proposed to convey surface water flows.

The proposed surface water drainage network is designed to cater for surface water runoff generated from the introduction of circa 23,070m^2 of hardstanding areas, proposed as part of this development. Two separate surface water drainage network are proposed with two separate outfalls, each catering for the runoff generated from the 2,070m^2 and 21,000m^2 of hardstanding areas from Development Area A and Development Area B, respectively.

For Development Area A, the proposed surface water drainage network is proposed to discharge to an existing 450mm concrete surface water network at Mullally's Lane, which ultimately drains west into a 600mm surface water asset. For Development Area B, the proposed surface water network is proposed to outfall to the existing Coolmine Stream, located adjacent to the northwest of the proposed development. For the proposed drainage layout, refer to AECOM drawing 60739527-ACM-XX-00-DR-CE-10-0500 to 0502.

A series of SuDS features to intercept, convey and treat runoff before it enters the positive (piped) drainage system. SuDS proposals include the implementation of bioretention raingardens, attenuation basins, wet swales, linear filter drains, and permeable paving areas, to effectively intercept and reduce the quantity of runoff leaving the site. In trafficked areas, an oil separator is to be provided upstream of the proposed outfalls from the site. The proposed SuDS recommendations have been prepared in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) Volume 2, and relevant best practice guidance, in order to ensure that the measures proposed are sufficient to reduce the quantity and improve the quality of runoff entering receiving watercourses from the proposed

site. These SuDS measures are discussed in further detail in Section 5, and have been developed based on the latest proposed site layout.

The Proposed Development also incorporates significant recreational landscape centred on the provision of both formal and informal sporting facilities. Collected water from each grass pitch will be conveyed to a new silt-trap manhole incorporating a flow control unit, which restricts discharge to the greenfield run off rate for the drained are before outfalling to the Coolmine Stream to the North of the Site. The exact location is yet to be determined and agreed with IFI.

4.3.1 Upstream Catchment

Runoff from the adjacent woodlands, located directly southwest of the proposed development and spanning an area of approximately 24,200m^2, is also to be intercepted and attenuated as part of these proposals. Runoff calculations for these woodlands, and the associated attenuation requirements, are discussed in Section 4.4.3. The approximate extents of the woodlands area to the south of the site are illustrated in Figure 4.3.

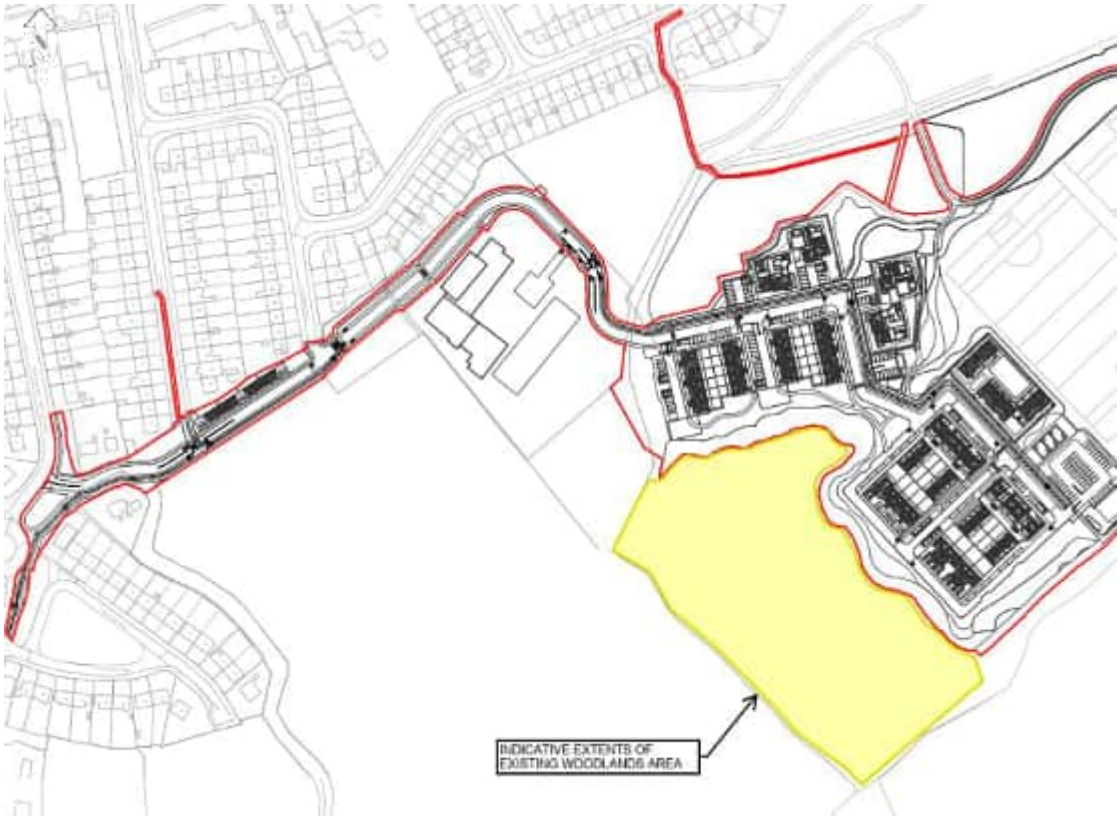


Figure 4.3: Existing Woodlands Area Extents

4.4 Surface Water Network Design

The proposed on-site surface water drainage network has been designed to ensure that the discharge from the proposed development is restricted to the associated greenfield runoff rate, and that sufficient attenuation storage is provided to achieve this.

4.4.1 Q_{BAR} Calculation

For Development Area A, it is proposed to restrict the runoff to the associated greenfield runoff rate (Q_{BAR}). The Q_{BAR} for this area has been calculated as 0.8 l/s, with this calculation being carried out using the Greenfield Runoff Rate Estimation tool on www.uksuds.com. Within this tool, the calculation input parameters are as follows:

- A developed area of 0.321 ha.
- Soil Type 2 (SPR value of 0.3); and
- The Standard Annual Average Rainfall (SAAR) of 920mm.

Given the small orifice diameter required to withhold flow to this discharge rate, it is proposed to increase the

maximum discharge rate for this catchment to **2 l/s**. This should adequately reduce the risk of blockages occurring at the flow control point.

For Development Area B, the Q_{BAR} has been calculated as 13.5 l/s. The calculation input parameters for Area B are as follows:

– A developed area of 5.396 ha.

– Soil Type 2 (SPR value of 0.3); and

– The Standard Annual Average Rainfall (SAAR) of 920mm.

For the upstream woodlands area catchment, the Q_{BAR} for has been calculated as 6.1 l/s. The calculation input parameters for the upstream catchment are as follows:

– A site area of 2.42 ha.

– Soil Type 2 (SPR value of 0.3); and

– The Standard Annual Average Rainfall (SAAR) of 920mm.

Further details relating to these Q_{BAR} calculations are presented in Appendix D.

4.4.2 Surface Water Network Modelling

The design of the proposed surface water drainage network has been designed using InfoDrainage software. The design of the proposed surface water drainage network is based on the following standards and guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS);
- South Dublin County Development Plan 2022 – 2028;
- SDCC SuDS Explanatory Design and Evaluation Guide (2022);
- Department of Housing, Local Government and Heritage (DoHLGH) Water Sensitive Urban Design Best practice Interim Guidance Document;
- Building Regulations Technical Guidance Document H: 2010 – Drainage and Water;
- Department of the Environment, Heritage and Local Government 'Recommendations for Site Development Works';
- BS EN 752 – Drains and Sewer Systems Outside Buildings;
- BS EN 858-2 – Separator System for Light Liquids (e.g. oil and petrol)
- CIRIA Document C753: 2015 – The SuDS Manual;
- CIRIA C768: 2017 – Guidance on the Construction of SuDS;
- No pipe flooding during a 1 in 100-year return period rainfall event;
- Surface water attenuation storage volume sized based on a 1 in-100 year rainfall return period event, and;
- An additional 20% has been allowed for climate change in relation to rainfall intensities.

Additionally, the following design criteria have been used in the design of the proposed surface water drainage network:

- Carrier pipe network velocity – 1.0m/s to 3.0m/s.
- Colebrook White roughness value of 0.6mm for all pipework.
- Return Period: 100 years.
- Met Éireann rainfall return period data for site, including:
  - Shortest storm duration: 15 minutes.
  - Longest Storm duration: 360 minutes (6-hour).
  - M5/60: 20mm.

– Ratio r: 0.271.

Appendix E presents the rainfall return period data collected from the Met Éireann website.

4.4.3 Attenuation Calculations

The proposed surface water attenuation requirements for Development Areas A and B have been calculated using the Innovyze InfoDrainage software, in accordance with the GDSDS Design Guide.

The required attenuation volumes are 88m^3 for Development Area A and 1,172m^3 for Development Area B. were computed for Development Area A and Development Area B, respectively. These volumes have been derived based on 100% impermeable runoff from all roof and hardstanding areas, with discharge restricted to the applicable QBAR rate (unless specified otherwise, see section 4.4.1) via a Hydro-Brake flow control device.

Further details of the surface water calculations, are provided in Appendix F.

4.4.3.1 Attenuation Calculation for Upstream Woodland Catchment

Runoff from the adjacent woodlands is also to be accounted for within the site's surface water attenuation strategy, as outlined in Section 4.2.

Flow velocity (V) and runoff (Q) from the woodland area were estimated using Manning's Equation and the Rational Method were used, respectively. Manning's Equation was applied to determine overland flow velocity, based on assumptions for surface roughness, hydraulic radius, and ground slope. The Rational Method was then used to estimate peak runoff, based on runoff coefficient, rainfall intensity, and contributing catchment area.

- Manning's Equation: $V = \frac{1}{n} \times R^{\frac{2}{3}} \times S^{\frac{1}{2}}$

  Where n is the roughness, R is the hydraulic radius, and S is the slope of the area to be drained.

- The Rational Method: $Q = C \times \mathrm{i} \times A$

  Where C is the runoff coefficient, i is the rainfall intensity, and A is the area to be drained.

The input parameters adopted in the calculations are summarised in Table 4.1.

Table 4.1: Woodlands Area Runoff/Attenuation Calculation Inputs

Calculation Parameter	Calculation Input Value
n	0.8 (assumed value for dense woodlands)
R	0.03m (assumed value for flat woodlands – sheet flow)
S	0.027 (2.7% slope of woodland area)
C	0.1 (assumed value for flat woodland area)
i	$T_C(calculation\ time) = \frac{L}{V}$
L (longest flow path)	137m (approximation from topographical survey)
A	24,200m^2

Based on the above parameters, a time of concentration (T_C) of 115 minutes was calculated. This corresponds to a rainfall depth of 65mm rainfall for a 2-hour storm (equivalent to 32.5mm/hr), as detailed in Appendix E.

With the value for T_C being determined, values for flow velocity and velocity (V) and peak runoff (Q) were calculated as 0.0198 m/s and 0.022 m^3/s, respectively.

Inflow (V_{in}) and outflow (V_{out}) volumes were subsequently determined to establish the required attenuation storage (V_{req}) for the woodland catchment. These calculations assume a design storm duration of up to 6 hours (21,600 seconds) and incorporate a 20% climate change allowance.

- $V_{in} = \frac{P}{1000} \times \mathrm{A} \times C$
- $V_{out} = Q_{BAR} \times \mathrm{t}$

- $V_{req} = (V_{in} - V_{out}) \times (1 + \mathrm{CC})$

Where t is the duration of the design storm, P is the total rainfall depth for the design storm, and CC is the 20% climate change allowance factor. As noted above, these calculations consider rainfall events up to a 6-hour duration (21,600 seconds). Therefore, t = 21,600 seconds.

The required attenuation storage volume (V_{req}) for the woodland area is calculated as 112.84m^3. This volume is to be accommodated within Development Area B, resulting in a total required attenuation volume of 1,284.84m^3 for this area.

4.4.3.2 Attenuation Volumes Required

This storage will be provided through the use of appropriate SuDS measures to limit runoff rates and mimic greenfield conditions. For Development Area A, a single attenuation basin is proposed with a minimum storage volume of 88 m³. For Development Area B, multiple attenuation basins are proposed with a combined minimum storage volume of 1,294m^3 . The proposed SuDS layout is shown on AECOM Drawing 60739527-ACM-XX-00-DR-CE-10-0520 to 0522. The proposals provide sufficient volumes of attenuation to meet current guidance and no increase in flood risk to the site from pluvial flooding.

5. Proposed SuDS Strategy

The proposed development has been assessed in relation to Sustainable Urban Drainage Systems (SuDS) in accordance with the guidelines of the GDSDS, SuDS CIRIA Manual C753. The aim of proposing sustainable drainage systems is to replicate the natural characteristics of the greenfield runoff minimising the environmental impact from rainfall events by reducing the volume of runoff leaving the site.

SuDS are designed to manage water quantity, protect water quality and reduce/prevent the likelihood of flooding from the proposed development, whilst also maximising amenity and biodiversity benefits associated with surface water management. These objectives highlight the importance of integrating SuDS features into the overall drainage strategy.

As per the *Policy GI4: Sustainable Urban Drainage* Systems (refer to Figure 5.1), the importance of implementing SuDS systems on site are as follows:



Policy GI4: Sustainable Urban Drainage Systems

Require the provision of Sustainable Urban Drainage Systems (SUDS) in the County and maximise the amenity and biodiversity value of these systems.

GI4 Objective 1: To limit surface water run-off from new developments through the use of Sustainable Urban Drainage Systems (SuDS) using surface water and nature-based solutions and ensure that SuDS is integrated into all new development in the County and designed in accordance with South Dublin County Council's Sustainable Drainage Systems (SuDS) Explanatory Design and Evaluation Guide.

GI4 Objective 2: To incorporate a SuDS management train during the design stage whereby surface water is managed locally in small sub-catchments rather than being conveyed to and managed in large systems further down the catchment.

GI4 Objective 3: To require multifunctional open space provision within new developments to include provision for ecology and sustainable water management.

GI4 Objective 4: To require that all SuDS measures are completed to a taking in charge standard.

GI4 Objective 5: To promote SuDS features as part of the greening of urban and rural streets to restrict or delay runoff from streets entering the storm drainage network.

GI4 Objective 6: To maintain and enhance existing surface water drainage systems in the County and promote and facilitate the development of Sustainable Urban Drainage Systems (SUDS), including integrated constructed wetlands, at a local, district and County level, to control surface water outfall and protect water quality.

Figure 5.1: Extract of Policy GI4 from the SDCC Sustainable Drainage Explanatory Design & Evaluation Guide 2022

These objectives indicate the importance of SuDS features and therefore, AECOM have reviewed the potential systems to be implemented for this development. Based on the existing site topography, the proposed site layout, and nature of the proposed development, soft SuDS have been prioritised over hard SuDS features where possible. SuDS features that are considered suitable are as follows:

- Bio-retention rain gardens (wherever possible),
- Swales,
- Attenuation basins,
- Permeable paving (at all car park spaces)
- Filter drains,
- Tree pits (wherever possible),
- Oil separator (upstream of outfalls, if possible),
- Soft landscape areas (provided wherever bio-retention areas cannot be provided).

The proposed SuDS features have been designed in accordance with CIRIA C753 SuDS Manual, providing adequate interception and treatment volume on site. Refer to AECOM drawing 60739527-ACM-XX-00-DR-CE-10-0520 to 0522 for the proposed SuDS layout.

5.1 Bio-retention Raingardens

Rain gardens, or otherwise known as bio-retention systems, are planted areas that collect surface water runoff, allowing it to pond temporarily on the surface before filtering through the vegetation and subsequent underlying sub-base/soils. They are particularly effective in treating surface water at source, and also assist in promoting biodiversity site-wide. The bio-retention proposals provide suitable at-source interception and treatment to runoff from adjacent impermeable areas within the site. Bio-retention systems are currently proposed wherever feasible within site area, with surface water runoff to be directed to these areas appropriately. Figure 5.2 illustrates a typical bio-retention section for use adjacent to building structures. No infiltration has been assumed within the proposed bio-retention systems, and the design has been undertaken on this basis. Soft landscaped areas are also incorporated throughout the site in locations where bio-retention systems are not proposed. These areas provide treatment of surface water runoff generated within their extents.

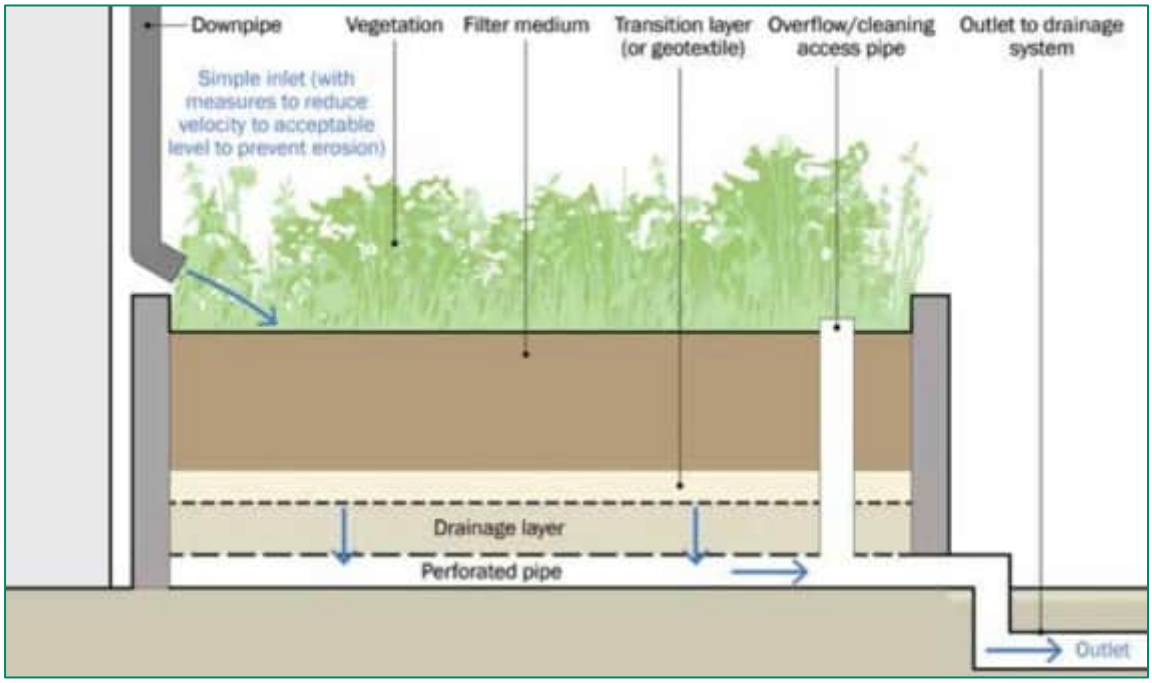


Figure 5.2: Rain Garden – No Infiltration (Source: Ciria C753 SuDS Manual)

5.2 Swales

Swales are shallow, vegetated open channels designed to convey, treat, and attenuate surface water runoff. When incorporated into a drainage design, they can enhance the natural landscape, providing aesthetic and biodiversity benefits. Swales are generally flat bottomed, and can have a variety of profiles, along with being capable of incorporating a range of planting strategies, enhancing the biodiversity of the subject development. Generally, the channel of a swale is broad and shallow, whilst also being covered by vegetation. This vegetation, usually grass, slows the flow of surface water, facilitating sedimentation, evapotranspiration, and infiltration into the underlying soil. An example of a typical conveyance (attenuation) swale is presented in Figure 5.3.

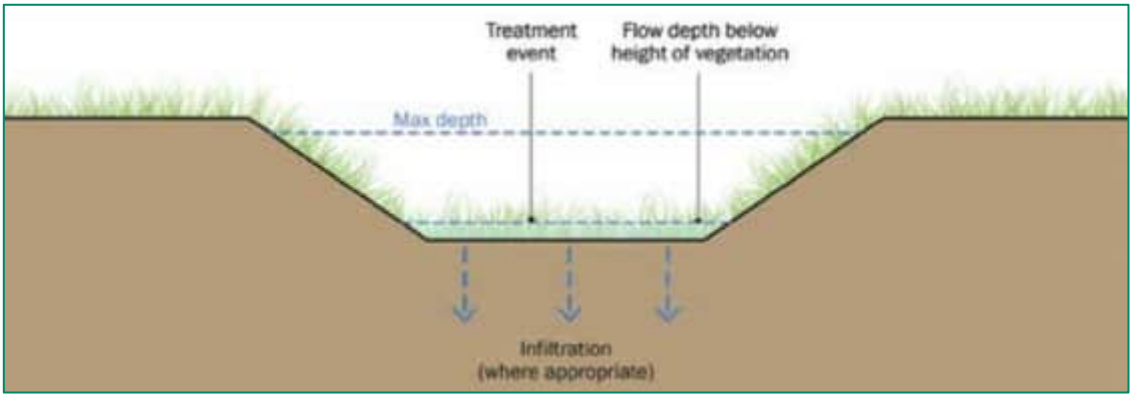


Figure 5.3: Attenuation Swale (Source: Ciria C753 SuDS Manual)

5.3 Attenuation Basins

Attenuation basins are shallow, dry depressions designed to manage surface water runoff by attenuating surface water above ground, whilst also promoting infiltration into the ground if applicable. Typically constructed with permeable materials like gravel or stone, these basins capture stormwater before allowing it to attenuate and subsequently discharge to the downstream network. These basins have no permanent water level and only fill during storm events before emptying gradually at a controlled flow rate.

Attenuation basins are particularly effective in areas with suitable groundwater levels, as they reduce surface water runoff rates, mitigating flood risks and enhancing water quality. By incorporating vegetation that can withstand both wet and dry periods, these basins also support biodiversity and provide aesthetic and recreational benefits.

Infiltration has not been considered as part of the attenuation basin proposals for this development. Attenuation requirements have been calculated on the basis of no infiltration. Refer to Figure 5.4 for a typical example of an attenuation basin.

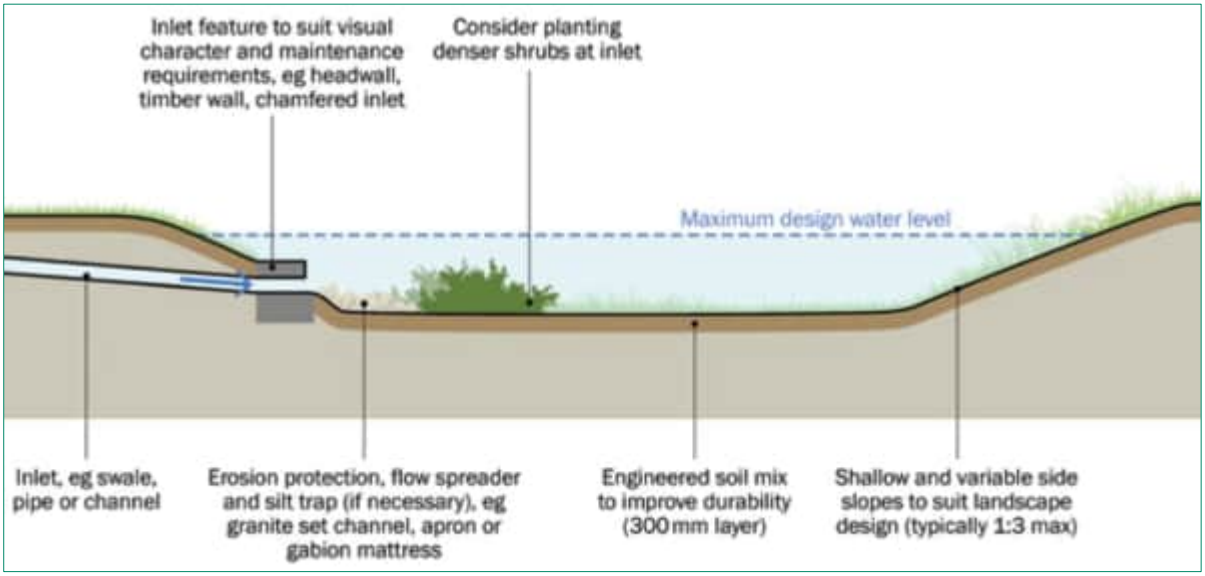


Figure 5.4: Infiltration Basin (Source: Ciria C753 SuDS Manual)

5.4 Permeable Paving and Porous Surfacing

Permeable paving is proposed at all car parking spaces throughout this development. Porous surfacing (paving block or open graded material) which can treat rainwater, at source, and allow infiltration through to an underlying porous subbase where water can be stored within the voids of the subbase before being slowly released to the drainage collection system through natural flow via the porous medium.

The attenuation of surface water in these permeable paving areas, along with the natural process of evaporation, leads results in less run-off from these areas in small rainfall events, thus mimicking the natural response for this catchment. As well as reducing the amount of run-off from the surface, permeable paving will slow down the rate of runoff from the pavement in extreme rainfall events, thus contributing to the attenuation of flows.

In addition, permeable paving will increase the quality of water which is intercepted by the system through filtration, biodegradation, pollutant adsorption and settlement and retention of solids, also the reduction in peak flows to the outfall will enhance settlement and biodegradation of pollutants.

The proposed permeable paving systems have been designed assuming no infiltration. A typical permeable paving system, designed for no infiltration, is presented in Figure 5.5.

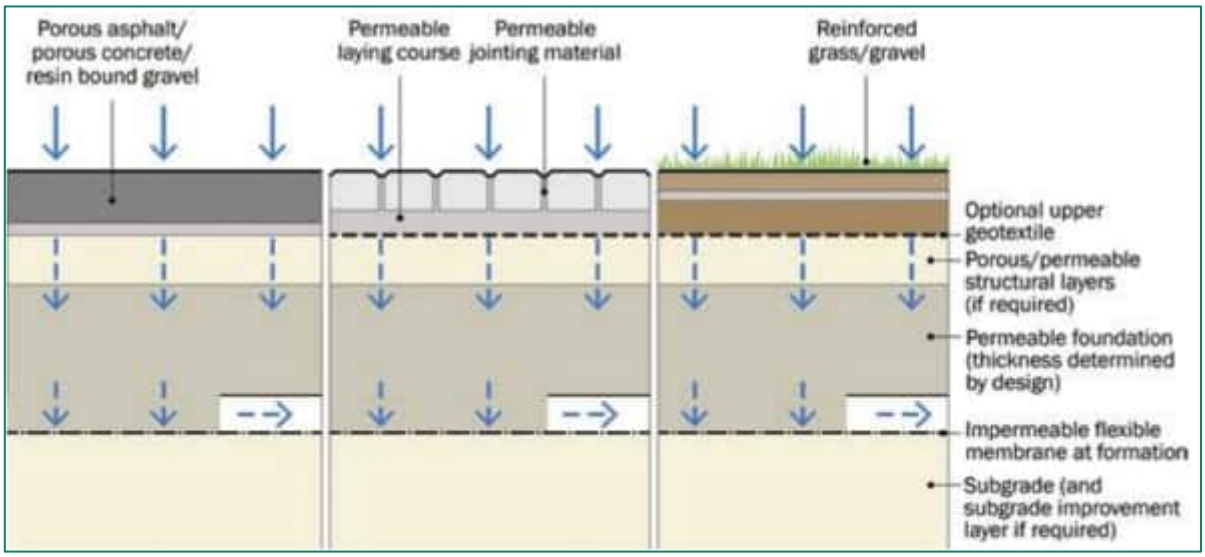


Figure 5.5: Permeable Paving – No Infiltration (Extract from Ciria C753 SuDS Manual)

5.5 Filter Drains

Filter drains are shallow trenches filled with stone/gravel that create temporary subsurface storage for the attenuation, conveyance and filtration of surface water runoff. The stone may be contained in a simple trench lined with a geotextile, geomembrane or other impermeable liner, or within a more structural facility such as a concrete trough. Filter drains can help to reduce pollutant levels in runoff by filtering out fine sediments, metals, hydrocarbons and other pollutants.

Filter drains are generally 1-2m deep, with a minimum depth of filter beneath any inflow distribution pipework and outfall connection system of 0.5m to ensure reasonable levels of pollutant removal. A typical filter drain detail is illustrated in Figure 5.6.

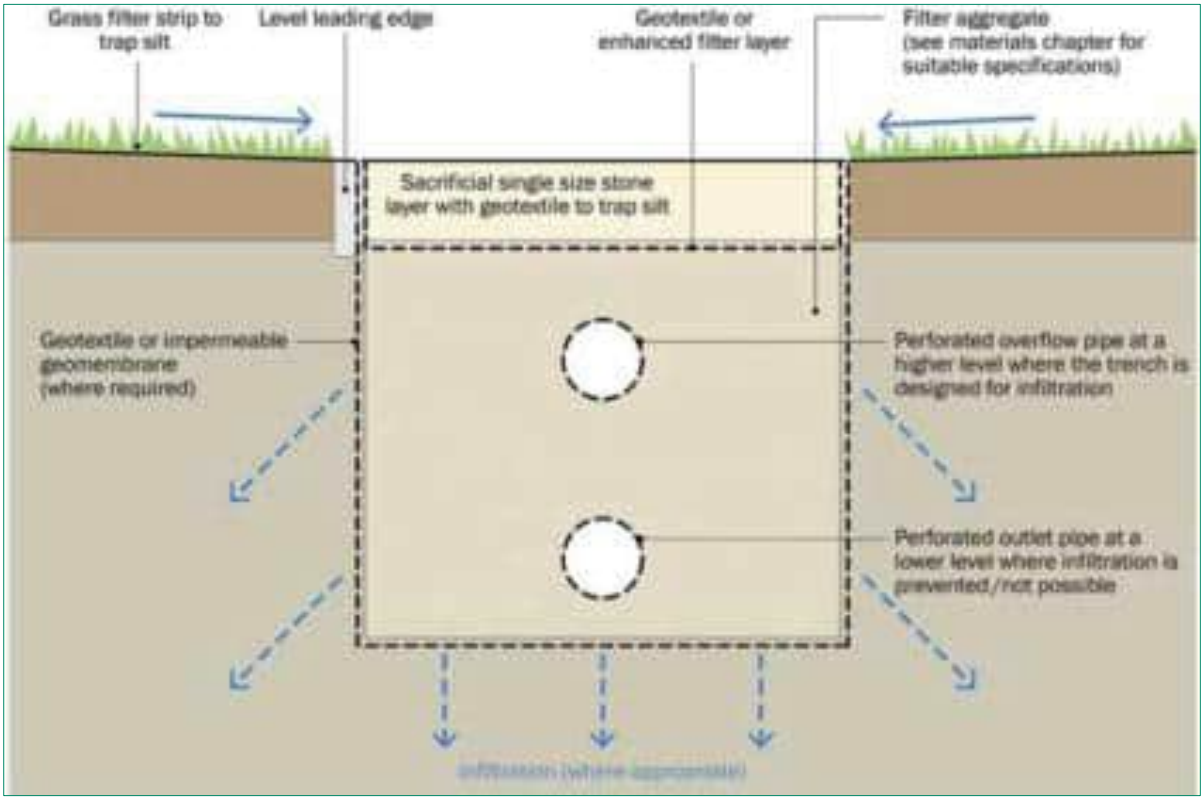


Figure 5.6: Details of Filter Drain (Extract from Ciria C753 SuDS Manual)

5.6 Tree Pits

Trees can be planted within a wide range of infiltration SuDS components, including bio-retention systems, detention basins, and swales, to help improve their performance. Additionally, trees can be used as standalone features within soil-filled tree pits, tree planters or structural soils. Refer to Figure 5.7 for an example of the collection of surface water runoff for trees.

Tree pits and planters can be designed to collect and attenuate runoff by providing additional storage within the underlying structure, while the soils around the trees can also be used to filter out pollutants from runoff directly. Tree pits can also provide further amenity and biodiversity benefits to a development. It is proposed to provide tree pits wherever possible within the site, with stormwater flows conveyed to these areas.

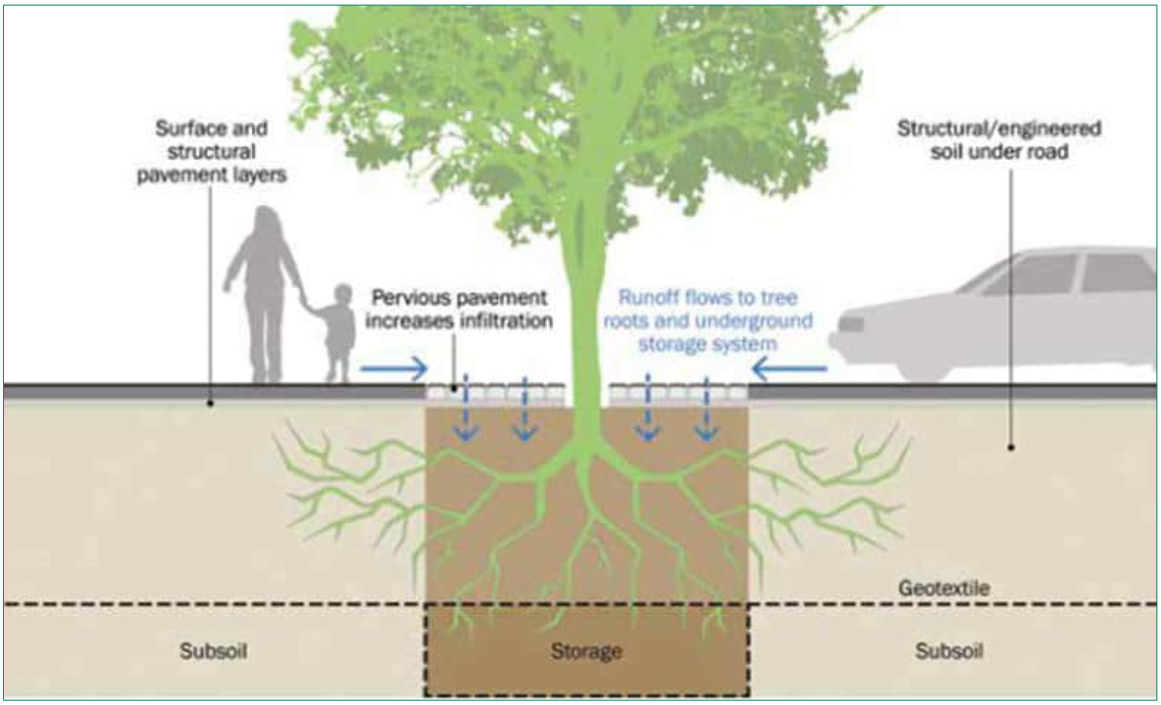


Figure 5.7: Collection of Surface Water Runoff for Trees (Source: CIRIA C753 SuDS Manual)

5.7 Oil Separator

Oil separators, otherwise known as petrol interceptors, are widely used to avoid and prevent hazardous chemical and petroleum products from entering watercourses or public sewers. They should be installed close to the potential pollution source to minimise emulsification of oils and their coating of sediments. A Class 1 bypass interceptor is proposed upstream of each of the outfall locations from the site, if possible. A typical petrol interceptor detail is presented in Figure 5.8.

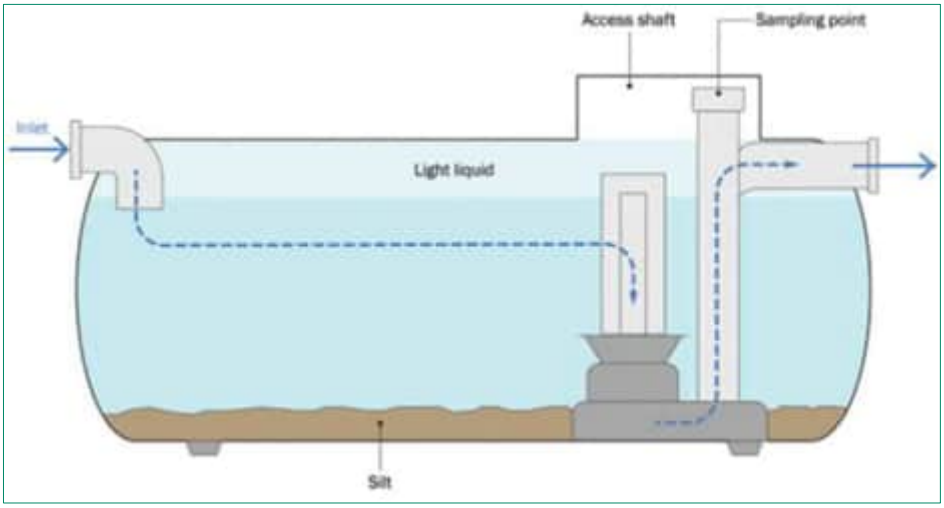


Figure 5.8: Typical Petrol Interceptor Detail (Source: CIRIA C753 SuDS Manual)

6. Foul Water Drainage

6.1 Existing Foul Water Drainage

Based on existing Uisce Éireann drainage records, there is an existing 150mm diameter foul sewer running north along Springbank Saggart, located adjacent to the eastern boundary of the site. this sewer subsequently connects into an existing 375mm foul sewer running north along Mill Road. To the north of the site, an existing 225mm diameter foul sewer is noted to be running north-east along Beechwood Lawns. There is also an existing 225mm diameter foul sewer running west in Beechwood Lawns, to the north-western end of the site, before running north along Coolamber Drive. Additionally, an existing 150mm diameter foul sewer is noted to be running west along Mullally's lane, before connecting into an existing 225mm diameter concrete foul sewer, which runs north-west along Stoney Lane. Refer to Figure 6.1 for an extract of the existing Uisce Éireann foul water drainage records within the vicinity of this development. AECOM also understand that upgrades are required to the existing Tay Lane wastewater pumping station (WWPS) as it is currently close to capacity, which currently serves the aforementioned foul sewers to the north-west of the proposed development.

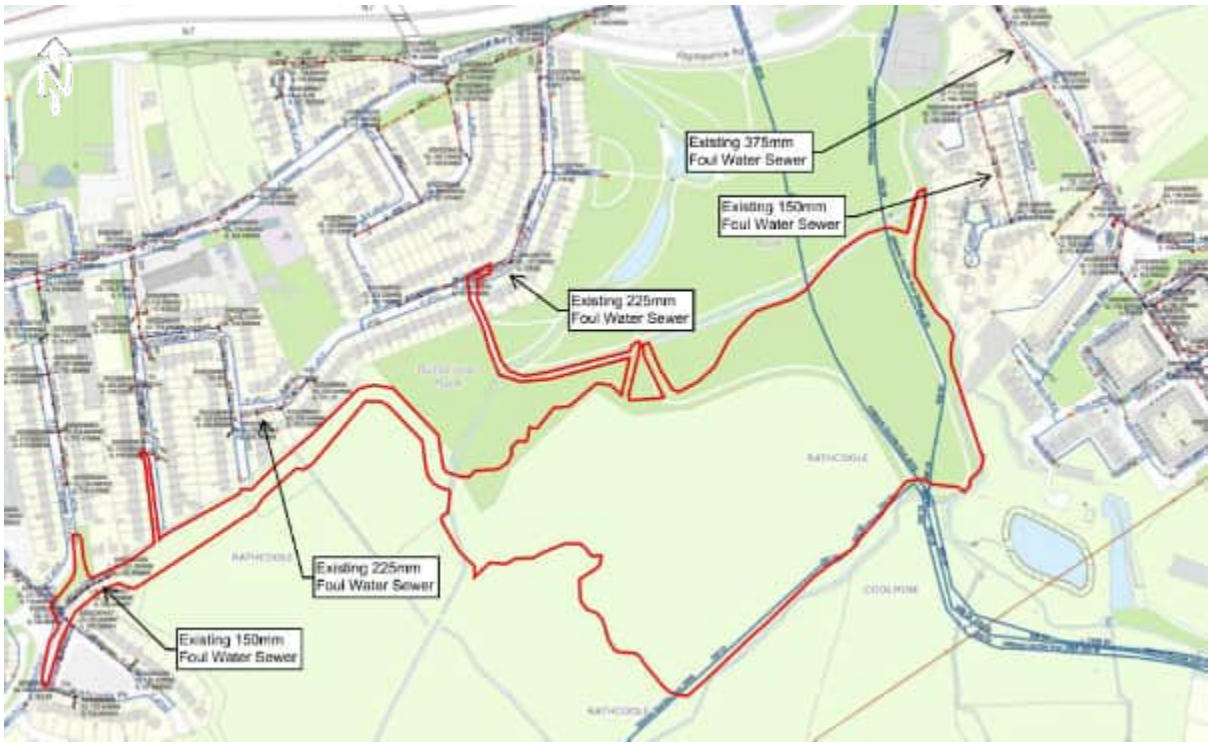


Figure 6.1: Existing Uisce Éireann Foul Water Records (Source: Uisce Éireann)

6.2 Proposed Foul Water Drainage

For Development Area A, it is proposed to provide a foul drainage network, to cater for the 4 No. proposed housing units in this area, by connecting to the existing 150mm diameter concrete foul sewer at Mullally's lane, located immediately outside the western boundary of the site.

Development Area B comprises the remaining 126 No. residential units. As identified in Section 7.1, the existing Tay Lane Wastewater Pumping Station (WWPS), which serves the foul drainage network to the north-west of the proposed development, is currently operating close to capacity and requires upgrading. Consequently, the proposed drainage strategy seeks to avoid placing additional demand on the Tay Lane WWPS and instead discharge to an alternative section of the existing public foul sewer network.

It is therefore proposed to provide a gravity foul drainage network within Development Area B, discharging to a new on-site wastewater pumping station. During the development of the foul drainage strategy, a number of connection options were considered in consultation with Uisce Éireann. The preferred solution comprises a rising main connection to the existing public foul sewer network at Beechwood Lawns, thereby avoiding additional loading on the Tay Lane WWPS and providing a more suitable long-term servicing arrangement for the proposed development.

The proposed WWPS is a Type 3 pumping station in accordance with Uisce Éireann requirements, accommodating the foul water flows generated by the 126 No. residential units. The pumping station will incorporate a minimum emergency storage volume of 54.35m³ and has been positioned to maintain a minimum separation distance of 15m from proposed residential buildings.

As the condition of the existing foul water drainage networks at Mullally's Lane and Beechwood Lawns is currently unknown, the verification of the existing network, and its condition, is subject to a manhole survey and subsequent CCTV survey. The proposed foul drainage network is to be designed in accordance with the Uisce Éireann Code of Practice for Wastewater Infrastructure. For further information regarding the foul drainage proposals for this development, refer to AECOM drawing 60739527-ACM-XX-00-DR-CE-10-0500 to 0502.

6.3 Proposed Foul Water Loading Calculations

As part of this project, a Pre-connection Enquiry (PCE) application has been issued to Uisce Éireann, detailing the proposed foul connection points to the existing foul water drainage networks. This application was issued to Uisce Éireann on the 3rd of June 2025, with a subsequent confirmation noting a customer reference number of CDS25004062.

The estimated wastewater discharge associated with the proposed development has been calculated based on Uisce Éireann's Code of Practice for Wastewater Infrastructure. The estimated proposed foul water loading for this development is outlined in Table 6.1. Uisce Éireann issued the Confirmation of Feasibility (CoF) on 5th August 2026.

Table 6.1: Estimated Proposed Foul Water Loading

Use	No. of Units	Population Equivalent *	Daily Usage (l/p/d) **	Peaking Factor	Foul Discharge (l/d)	Foul Discharge (l/s)	Peak Flow (l/s) ***
Residential (Development Area A)	4	11	165	6	1,782	0.021	0.124
Residential (Development Area B)	126	340	165	6	56,133	0.650	3.898

* *Based on a national average of 2.7 persons/house, as per Uisce Éireann's Wastewater Code of Practice*
** *Based on foul loading 150 l/p/d, allowing 10% infiltration, as per Uisce Éireann requirements*
*** *Based on peak factor of 6, as per Uisce Éireann requirements for a residential development population between 0 - 750*

7. Water Supply

7.1 Existing Water Supply

Based on existing Uisce Éireann records, existing 600mm and 1200mm diameter ductile iron watermains are noted to be running along the eastern boundary within the site. An existing 300mm ductile iron watermain is also noted to be running along the southern boundary of the site, within the site extents.

Furthermore, existing 101.6mm uPVC watermains are noted to be situated within Coolamber Drive, situated towards the north-western end of the site, before connecting to a 101.6mm Asbestos main running along Main Street. Refer to Figure 7.1 for an extract of the existing Uisce Éireann watermain records within the vicinity of this development.

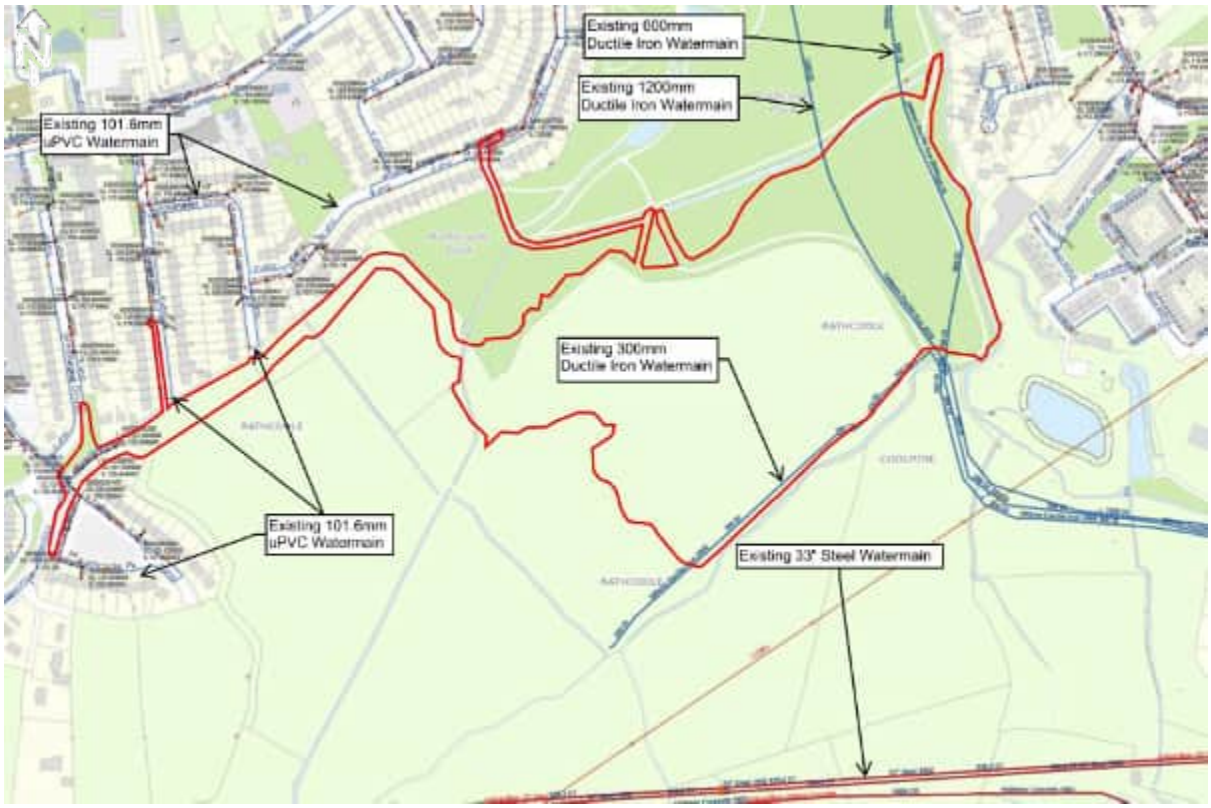


Figure 7.1: Existing Uisce Éireann Watermain Records (Source: Uisce Éireann)

7.2 Proposed Water Supply

It is proposed to service the 4 No. proposed housing units at Development Area A via a new 100mm diameter watermain connection to the existing 101.6mm uPVC watermain running along Coolamber Road, located to the immediate north of this development area.

For Development Area B, it is proposed to service this development area via a new 100mm diameter watermain connection to the existing 101.6mm uPVC watermain running along Coolamber Drive, located to the north-west of this development area. The proposed watermain infrastructure is to be designed in accordance with the Uisce Éireann Code of Practice for Water Infrastructure and includes the necessary fire hydrant and sluice valve provisions. For further information regarding the watermain infrastructure proposed for this development, please refer to AECOM drawing 60739527-ACM-XX-00-DR-CE-10-2700 - 2702.

7.3 Proposed Water Demand Calculations

As noted in Section 6.3, a PCE application has been issued to Uisce Éireann, detailing the proposed watermain connections to the existing watermain infrastructure. This application was issued to Uisce Éireann on the 3rd of June 2025, with a subsequent confirmation noting a customer reference number of CDS25001642. Uisce Éireann issued a CoF to AECOM for this development on 5th August 2026 confirming the proposed water connection is feasible without infrastructure upgrades.

The estimated water supply demand associated with the proposed development has been calculated based on Uisce Éireann's Code of Practice for Water Infrastructure. The estimated proposed water supply demand for this development is outlined in Table 7.1.

Table 7.1: Estimated Proposed Water Supply Loading

Use	No. of Units	Population Equivalent *	Daily Usage (l/p/d) **	Average Water Demand (l/d)	Average Day / Peak Week Water Demand (l/s) ***	Peak Demand (l/s) ****
Residential (Development Area A)	4	11	150	1,620	0.023	0.117
Residential (Development Area B)	126	340	150	51,030	0.738	3.691

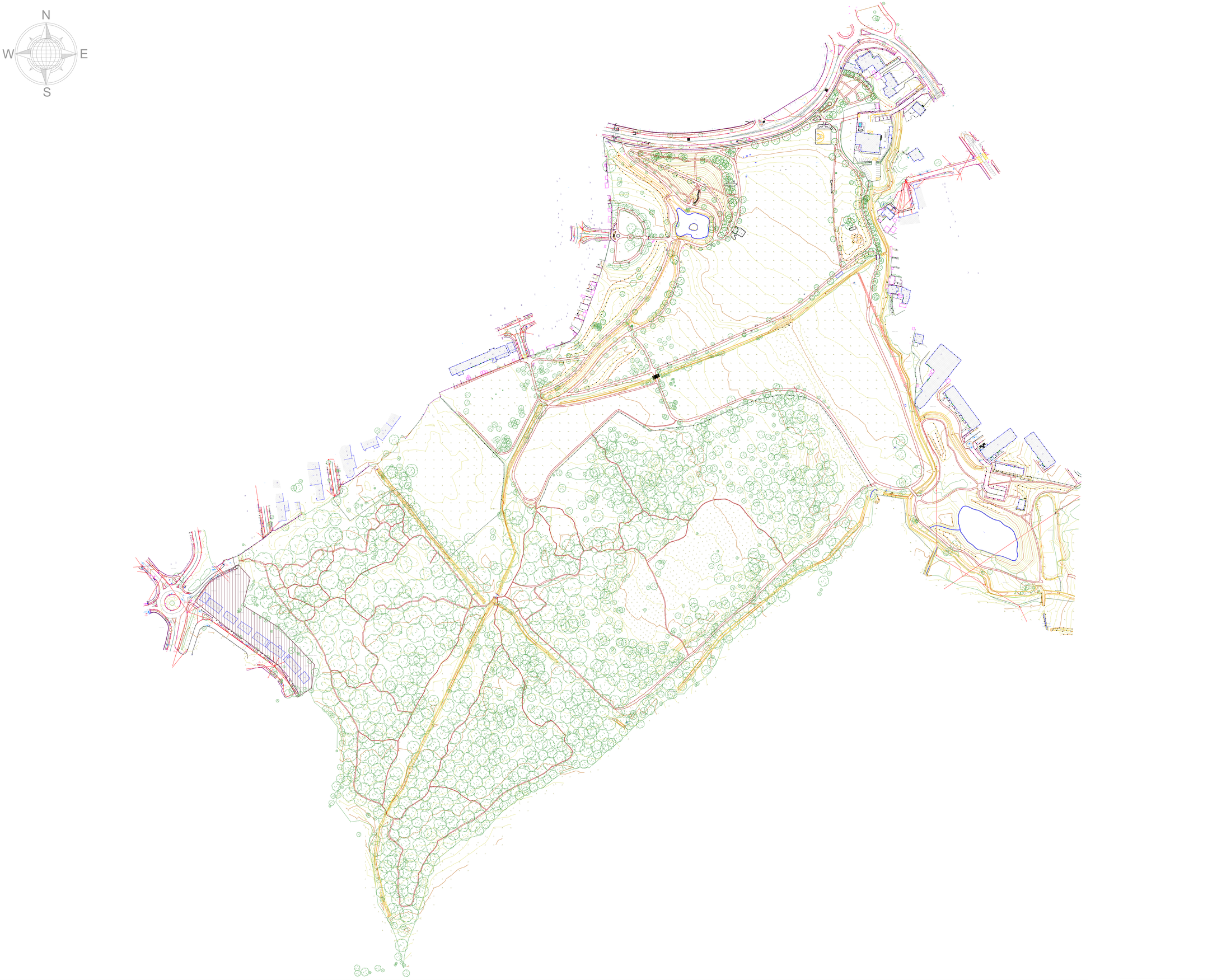
* *Based on a national average of 2.7 persons/house, as per Uisce Éireann Code of Practice*

** *Based on per-capita consumption of 150 l/p/d, as per Uisce Éireann requirements*

** *Average day / peak week demand is 1.25 times the average daily domestic demand, as per Uisce Éireann requirements*

**** *Peak Demand is 5 times the average day / peak week demand for sizing of the network, as per Uisce Éireann requirements*

Appendix A – Topographical Survey



LEGEND
Street furniture & Services

- Over Head Wires (LUAS) - Pylon ESB
- Flowerbed
- Pipe
- Lift
- Barrier
- Pump
- Trial Pit
- Bus/Tram Shelter
- Postbox
- Valve - General
- Water Valve
- Gas Valve
- Sluice Valve
- Air Valve
- Stop Cock
- C P Post
- Marker Post
- Traffic light
- Parking Meter
- Plane Aerial Mark
- Smart Card Validator
- Unknown Valve
- Bus Stop
- Bollard
- Beacon
- Coalhole Cover
- Bore Hole
- Electricity Pole
- Telegraph pole
- OCS Pole
- CCTV Camera Pole
- Lamp Post
- Foul Manhole
- Surface Water MH
- Manholes
- Air Conditioning Vents
- Services Inspection Cover
- Traffic Inspection Cover
- Cable TV Inspection Cover
- ESAT Inspection Cover
- NTL Inspection Cover
- Eircom Inspection Cover
- Rodding Eye
- Road Sign
- Bench Seat
- Kiosk
- Gully
- Waste Bin
- Hydrant
- Fire Hydrant
- ESB Box
- ESB Inspection Cover
- Traffic Control Box
- LUAS Technical Cubicle
- Ticket Vending Machine
- Water Meter Cover
- Telecom Inspection Cover
- Monument / Toilets
- Tank Storage
- Basement: MH, Cover & Pipe
- Dished Aerial Mark
- Stay for pole
- Pipe Protection
- Washout
- Phone Box
- Duct
- Gas Cover
- C P Box
- LUAS Car Park Vent

Natural Features

Natural Features

- Surface Change
- Land Drain
- Bottom of Slope
- Top of Slope
- Ditch
- Water Edge / Lake / Pond
- Hedge / Trees Drip Line / Vegetation
- Tree Coniferous
- Tree Deciduous
- Water Level
- Crown Level
- Invert level
- Bed Level
- Spotheight

Golf

- Fair Way
- Green
- Tee Box

Other

- Survey Station
- Photo point
- Top of Tree

Built Features

Roads & Road Markings

- Building
- Edge of Road
- Kerb Bottom
- Kerb Top
- Bridge Abutment
- Bridge Deck
- Bridge Parapet
- Building Façade
- Footpath / Platform Train & Tram
- Damp Proof Course / Verge
- Bridge Pier / Wall & Gate Pillar / LUAS Trackbed
- Cycleway / Private Landing Area
- Fence
- Gate
- Road Centreline
- Top of Wall
- Hoarding
- Property Line
- Road Scar
- Top of Fence
- Wall / Retaining Wall
- Railway / Tram Rail / Grating / Ramp
- Building Canopy / Roof / Overhang
- Floor Level
- Apex Height
- Eaves Height
- Parapet Height
- Soffit Elevation
- Step Level
- Concrete Pad
- Track

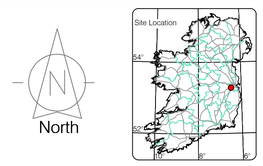
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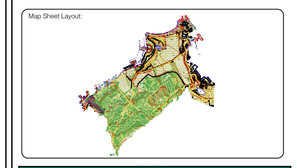
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The Company shall not be liable for any inaccuracy of the data provided beyond the specified scale or accuracy, or for any matters resulting from their use for purposes other than that stated in the Contract. No liability shall attach to the Surveyor in respect of any consequential loss or damages suffered by the Client.

The Client must promptly notify the Company of any errors in mapping of which it becomes aware. If misleading, inaccurate or otherwise inappropriate information is brought to the Company's attention or the Company itself identifies any such imprecision or error in a survey, it shall use its reasonable endeavours to fix or remove it and if necessary in certain instances, the Company being on notice of any such misleading, inaccurate or otherwise inappropriate information, it will re-conduct the survey and reproduce the data to within the specified scale or accuracy.

Site Location





Revisions

Rev	Description	Surveyed by	Drawn by	Checked by
0	Draft Drawing	DZ JP - June 2025	AR - 17/07/2025	SD - 11/08/2025
0	First Drawing	-	-	SD - 27/08/2025

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Topographic surveys, Measured Building Surveys, Setting-Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Rectified Photography

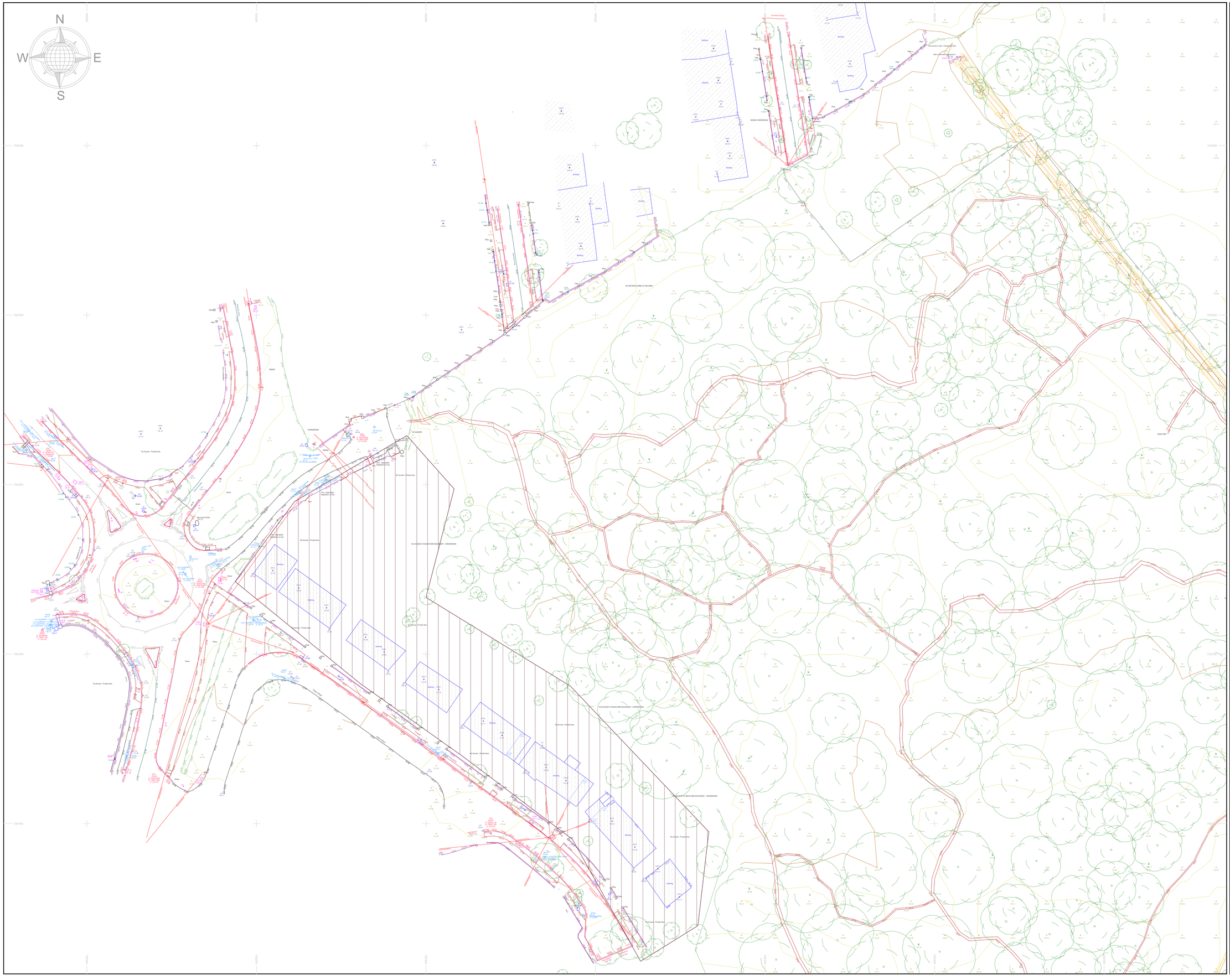
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Offices in London, Birmingham, Manchester, Glasgow, Dublin, Cork, Kildare, Cologne, Barcelona, Genoa.

Client	Metropolitan Workshop
Project	Rathcoole Housing - Topo
Description	Topographical Survey
Survey Grid	ITM15
Survey Datum	Malin Head
RICS Band	Band E
Presentation Scale	NTS@A1
MGS Project ID	63597
Drawing Number	MGS63975_T_ITM_Rev0-00

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LEGEND
Street furniture & Services

Over Head Wires (LUAS) - Pylon ESB · Flowerbed · Pipe · Lift · Barrier · Pump · Trial Pit · Bus/Tram Shelter · Postbox · Valve - General · Water Valve · Gas Valve · Sluice Valve · Air Valve · Stop Cock · C P Post · Marker Post · Traffic light · Parking Meter · Plane Aerial Mark · Smart Card Validator · Unknown Valve

Bus Stop · Bollard · Beacon · Coalhole Cover · Bore Hole · Electricity Pole · Telegraph pole · OCS Pole · CCTV Camera Pole · Lamp Post · Foul Manhole · Surface Water MH · Manholes · Air Conditioning Vents · Services Inspection Cover · Traffic Inspection Cover · Cable TV Inspection Cover · ESAT Inspection Cover · NTL Inspection Cover · Eircom Inspection Cover · Rodding Eye

Road Sign · Bench Seat · Kiosk · Gully · Waste Bin · Hydrant · Fire Hydrant · ESB Box · ESB Inspection Cover · Traffic Control Box · LUAS Technical Cubicle · Ticket Vending Machine · Water Meter Cover · Telecom Inspection Cover · Monument / Toilets · Tank Storage · Basement: MH, Cover & Pipe · Dished Aerial Mark · Stay for pole · Pipe Protection · Washout

Phone Box · Duct · Gas Cover · C P Box · UIG Vent · UIG Car Park Vent

Natural Features

Surface Change · Land Drain · Bottom of Slope · Top of Slope · Ditch · Water Edge / Lake / Pond · Hedge / Trees Drip Line / Vegetation · Tree Coniferous · Tree Deciduous

Water Level · Crown Level · Invert level · Bed Level · Spotheight

Golf: Fair Way · Green · Tee Box

Other: Survey Station · Photo point · Top of Tree

Built Features

Roads & Road Markings

Building · Edge of Road · Kerb Bottom · Kerb Top · Bridge Abutment · Bridge Deck · Bridge Parapet · Building Façade · Footpath / Platform Train & Tram · Damp Proof Course / Verge · Bridge Pier / Wall & Gate Pillar / LUAS Trackbed · Cycleway / Private Landing Area

Fence · Gate · Road Centreline · Top of Wall · Hoarding · Property Line · Road Scar · Top of Fence

Floor Level · Apex Height · Eaves Height · Parapet Height · Soffit Elevation · Step Level · Concrete Pad · Track

Wall / Retaining Wall · Railway / Tram Rail / Grating / Ramp · Building Canopy / Roof / Overhang

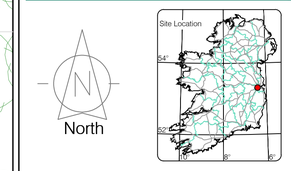
Murphy Geospatial Disclaimer

The user or recipient of this survey data understands and acknowledges this data may be inaccurate or contain errors or omissions and the user or recipient assumes full responsibility for any risks or damages resulting from, arising from, or in connection with any use of or reliance upon data displayed herein. Although significant care has been exercised to produce surveys that satisfy survey accuracy standards, these surveys are only as accurate as the source data from which they were compiled. Although all reasonable steps have been taken to locate all features visible at the time of the survey, there is no guarantee that all will be shown on the drawing, as some above ground features may have obstructed the survey. Wherever possible, areas unable to be surveyed will be labelled as **'UTS'** (Unable To Survey).

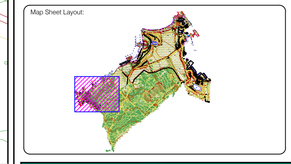
The Company shall not be liable for any inaccuracy of the data provided beyond the specified scale or accuracy, or for any matters resulting from their use for purposes other than that stated in the Contract. No liability shall attach to the Surveyor in respect of any consequential loss or damages suffered by the Client.

The Client must promptly notify the Company of any errors in mapping of which it becomes aware. If misleading, inaccurate or otherwise inappropriate information is brought to the Company's attention or the Company itself identifies any such imprecision or error in a survey, it shall use its reasonable endeavours to fix or remove it and if necessary in certain instances, the Company being on notice of any such misleading, inaccurate or otherwise inappropriate information, it will re-conduct the survey and reproduce the data to within the specified scale or accuracy.

Site Location



Map Sheet Layout:



Revisions

Rev.	Description	Surveyed by	Drawn by	Checked by
0	Draft Drawing	DZ,JP - June 2025	AR - 17/07/2025	SD - 11/08/2025
0	First Drawing	-	-	SD - 27/08/2025

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Ireland Head Office

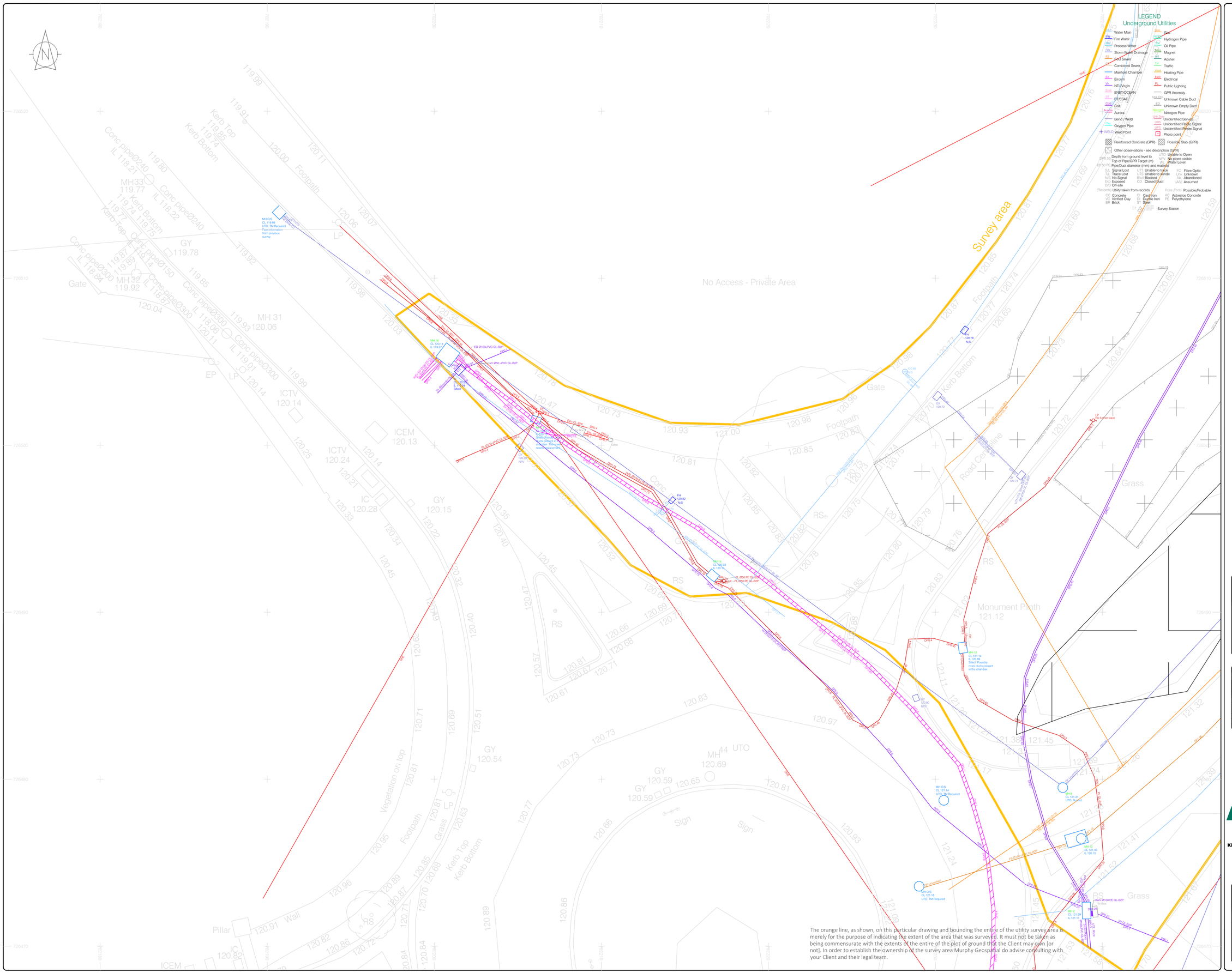
Global House Business Campus
Kilcullen
R56 K376, Ireland
Phone: +353 (0)45 484 040 Email: info@murphygs.ie

Offices in London, Birmingham, Manchester, Glasgow, Dublin, Cork, Kildare, Cologne, Barcelona, Genoa

Client	Metropolitan Workshop
Project	Rathcoole Housing - Topo
Description	Topographical Survey
Survey Grid	ITM15
Survey Datum	Malin Head
RICS Band	Band E
Presentation Scale	1:500 @A1
MGS Project ID	63597
Drawing Number	MGS63975_T_ITM_Rev0-01

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Appendix B – Utility (GPR) Survey



The orange line, as shown, on this particular drawing and bounding the entire of the utility survey area is merely for the purpose of indicating the extent of the area that was surveyed. It must not be taken as being commensurate with the extents of the entire of the plot of ground that the Client may own [or not]. In order to establish the ownership of the survey area Murphy Geospatial do advise consulting with your Client and their legal team.

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- Locational accuracy is determined by referring to the manufacturers guidelines for the detectors used.
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- GPR surveying operates best within high resistivity material. Clay overburden can impair GPR surveying.
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- The depth penetration and quality of the data depends on the ground conditions on the site. Poor data may be a result of areas with high conductivity. Also, high reflective materials close to the surface i.e. rebar may hide deeper anomalies.
- It is not always possible to trace the entire length of each underground service.
- It is always our intention to use the Utility providers' details, if supplied prior to survey commencement as a guide for location purposes. However, should we not be able to locate those guided services we shall not be held responsible for the accuracy, or otherwise, of the location of that service, as issued by the utility provider and therefore shown "Taken from Records" on the drawing and we are not liable for any loss that may arise due to the lack of accuracy in the guided information.
- Unless otherwise stated, all services and sub surface structures shown on Murphy Geospatial Limited plan drawings have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to run straight.
- Plan accuracies of the order of + or - 150mm may be achieved but this figure will depend on the depth of the service below ground level. Where similar services run on close proximity, separation may be impossible. Successful tracing of non metallic pipes may be limited.
- Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate.
- Services which have been untraceable are shown from Records where possible.
- DP represents distance from the surface level to the top of the service/ radar.

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All work carried out by Murphy Geospatial Limited (MGS) conforms to the guidelines set out by The Survey Association (TSA).

Map Sheet Layout:

Surveyed by :	MGS
Drawn by :	CM/AB
Checked by :	DS
Date:	Sep 2025
Date:	07.10.25
Date:	08.10.25
Datum	Malin Head
Grid System:	Irish National Grid ☐ ITM ☒

Revisions

No.	Date	Description
0	08.10.25	First Drawing

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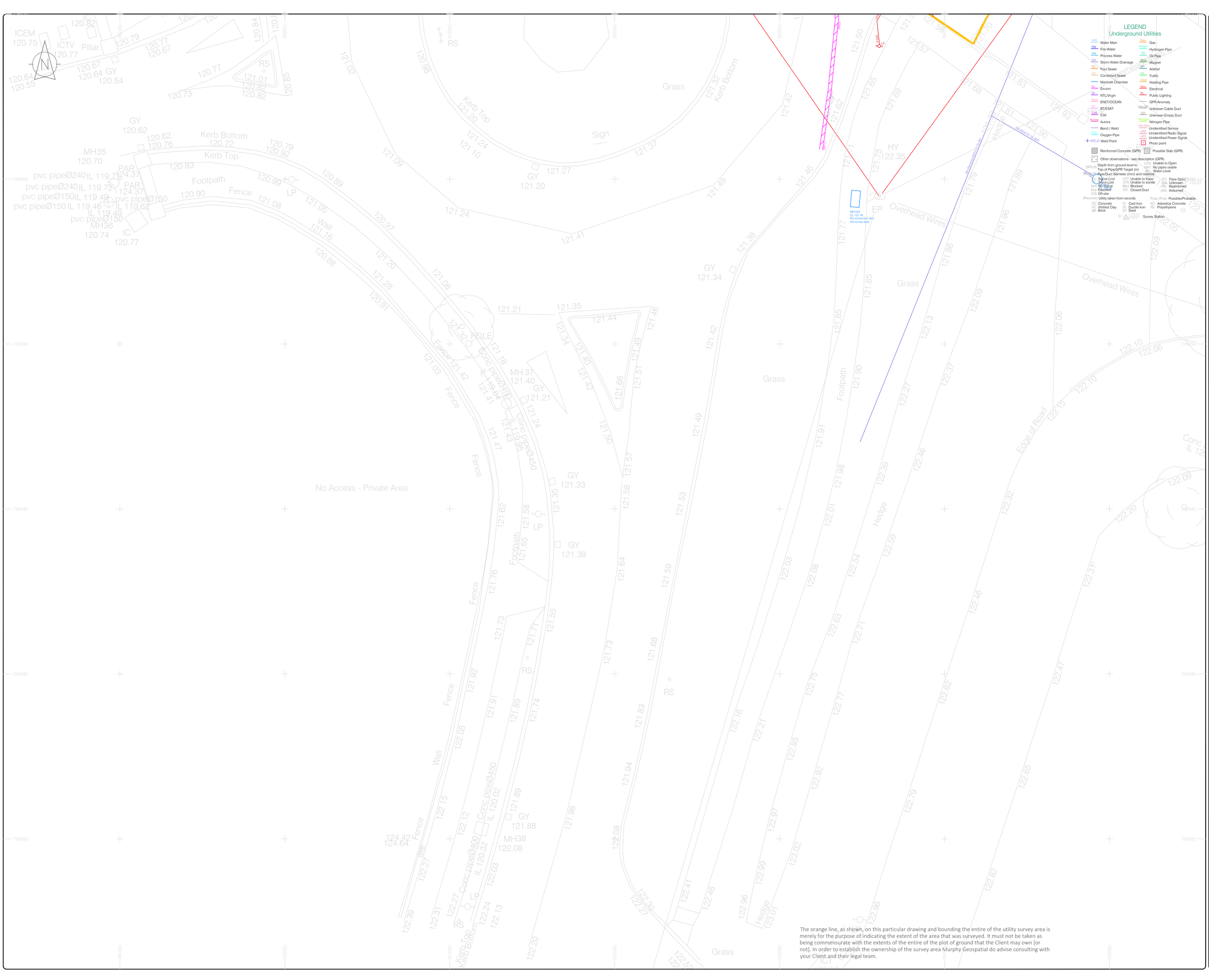
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Phone: (+353) 045 484040
Fax: (+353) 045 484004
Email: info@murphygs.ie

Client :	Metropolitan Workshop
Project :	2430 Rathcoole Housing
Date :	08.10.2025
Scale :	1:100@A1
Description :	Utility survey Sheets 1 of 9
Drawing Number :	MGS65356_U

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Map Sheet Layout:

Surveyed by : MGS	Date: Sep 2025	Datum : Main Head
Drawn by : CM/AB	Date: 07.10.25	Grid System:
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒

Revisions

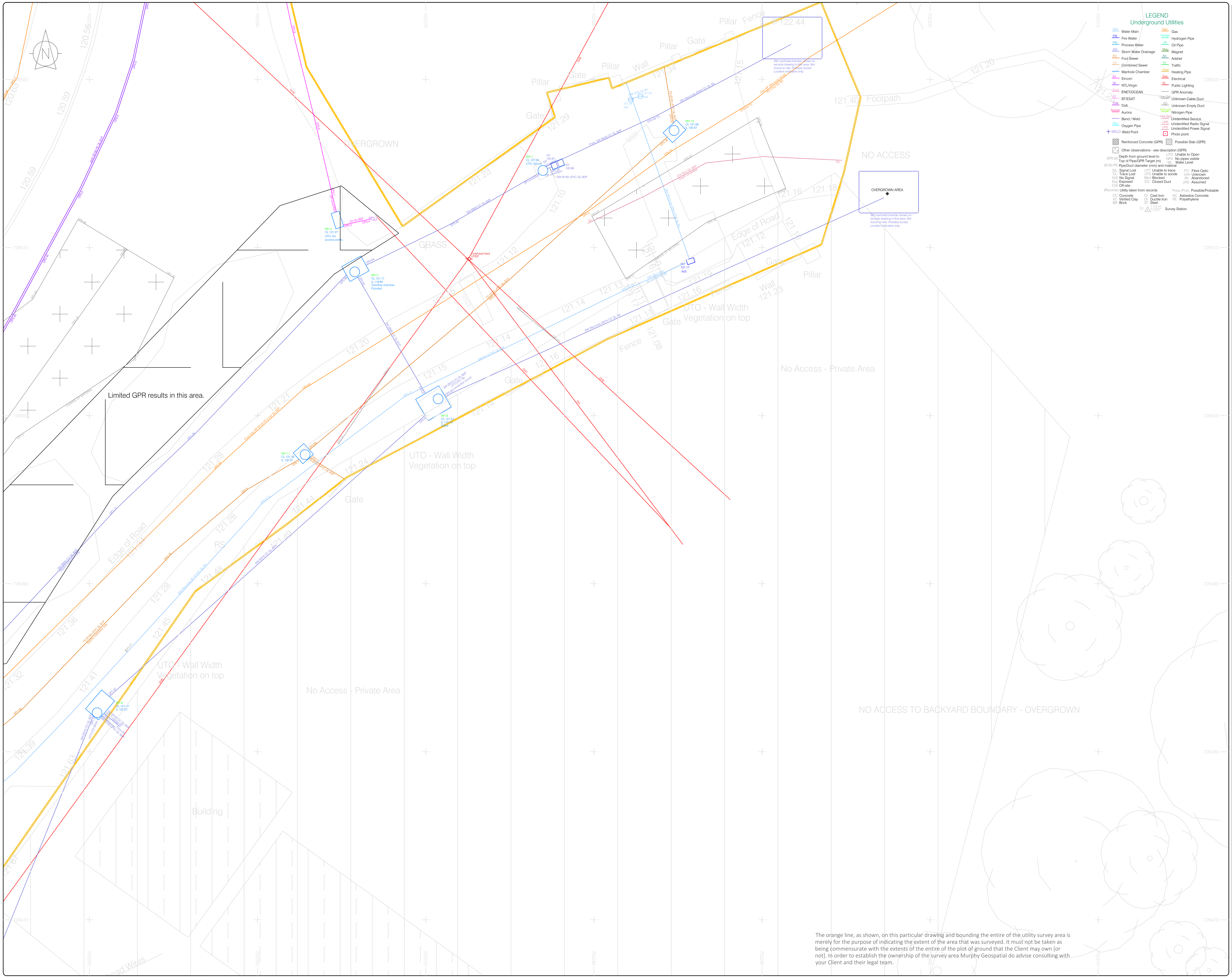
No.	Date	Description
0	08.10.25	First Drawing

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THE SURVEY ASSOCIATION FULL MEMBER
EUROPEAN GPR ASSOCIATION

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Phone: (+353) 045 484040
Fax: (+353) 045 484004
Email: info@murphygs.ie

Client :	Metropolitan Workshop
Project :	2430 Rathcoole Housing
Date : 08.10.2025	**Scale :** 1:100@A1
Description :	Utility survey Sheets 2 of 9
Drawing Number :	**MGS65356_U**

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LEGEND
Underground Utilities

WM	Water Main	Gas	Gas
FW	Fire Water	Hydgn	Hydrogen Pipe
PW	Process Water	Oil	Oil Pipe
SW	Storm Water Drainage	Mag	Magnet
FS	Foul Sewer	Ad	Adshel
CS	Combined Sewer	Trf	Traffic
	Manhole Chamber	Heat	Heating Pipe
Eir	Eircom	Elec	Electrical
Vir	NTL/Virgin	PL	Public Lighting
Enet	ENET/OCEAN		GPR Anomaly
BT	BT/ESAT	Unk Cbl	Unknown Cable Duct
Colt	Colt	ED	Unknown Empty Duct
Aurora	Aurora	Nitrogen	Nitrogen Pipe
	Bend / Weld	Unk Serv	Unidentified Service
Oxy	Oxygen Pipe	URS	Unidentified Radio Signal
		UPS	Unidentified Power Signal
WELD	Weld Point		Photo point

Reinforced Concrete (GPR) — Possible Slab (GPR)

Other observations - see description (GPR)

DP0.55 Depth from ground level to Top of Pipe/GPR Target (m)

Ø150 PE Pipe/Duct diameter (mm) and material

UTO Unable to Open; NPV No pipes visible; WL Water Level

S/L Signal Lost; T/L Trace Lost; N/S No Signal; Exp Exposed; O/S Off-site

UTT Unable to trace; UTS Unable to sonde; Blkd Blocked; CD Closed Duct

FO Fibre Optic; Unk Unknown; Ab. Abandoned; (AS) Assumed

(Records) Utility taken from records; Poss./Prob. Possible/Probable

CC Concrete; VC Vitrified Clay; BR Brick; CI Cast Iron; DI Ductile Iron; ST Steel; AC Asbestos Concrete; PE Polyethylene

S1 Survey Station

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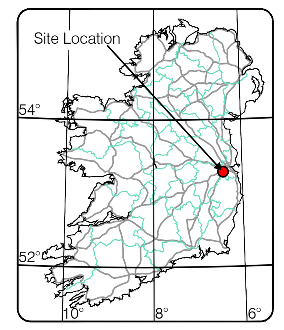
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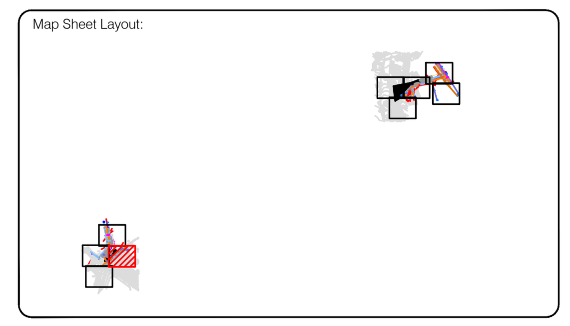
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North





Surveyed by : MGS	Date: Sep 2025	Datum : Malin Head
Drawn by : CM/AB	Date: 07.10.25	Grid System:
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒

Revisions

No.	Date	Description
0	08.10.25	First Drawing

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Phone: (+353) 045 484040
Fax: (+353) 045 484004
Email: info@murphygs.ie

Client : Metropolitan Workshop

Project : 2430 Rathcoole Housing

Date : 08.10.2025 **Scale :** 1:100@A1

Description : Utility survey Sheets 3 of 9

Drawing Number : MGS65356_U

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LEGEND
Underground Utilities

WM	Water Main	Gas	Gas
FW	Fire Water	Hydgn	Hydrogen Pipe
PW	Process Water	Oil	Oil Pipe
SW	Storm Water Drainage	Mag	Magnet
FS	Foul Sewer	Ad	Adshel
CS	Combined Sewer	Trf	Traffic
	Manhole Chamber	Heat	Heating Pipe
Eir	Eircom	Elec	Electrical
Vir	NTL/Virgin	PL	Public Lighting
Enet	ENET/OCEAN		GPR Anomaly
BT	BT/ESAT	Unk Cbl	Unknown Cable Duct
Colt	Colt	ED	Unknown Empty Duct
Aurora	Aurora	Nitrogen	Nitrogen Pipe
	Bend / Weld	Unk Serv	Unidentified Service
Oxy	Oxygen Pipe	URS	Unidentified Radio Signal
WELD	Weld Point	UPS	Unidentified Power Signal
			Photo point

Reinforced Concrete (GPR) — Possible Slab (GPR)

Other observations - see description (GPR)

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Ø150 PE Pipe/Duct diameter (mm) and material

UTO Unable to Open
NPV No pipes visible
WL Water Level

S/L	Signal Lost	UTT	Unable to trace	FO	Fibre Optic
T/L	Trace Lost	UTS	Unable to sonde	Unk	Unknown
N/S	No Signal	Blkd	Blocked	Ab.	Abandoned
Exp	Exposed	CD	Closed Duct	(AS)	Assumed
O/S	Off-site				

(Records) Utility taken from records — Poss./Prob. Possible/Probable

CC	Concrete	CI	Cast Iron	AC	Asbestos Concrete
VC	Vitrified Clay	DI	Ductile Iron	PE	Polyethylene
BR	Brick	ST	Steel		

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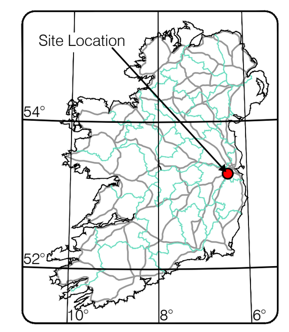
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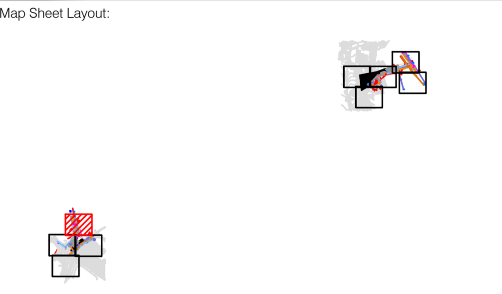
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Map Sheet Layout:



Surveyed by : MGS	Date: Sep 2025	Datum : Malin Head
Drawn by : CM/AB	Date: 07.10.25	Grid System:
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒

Revisions

No.	Date	Description
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Topographic surveys, Measured Building Surveys, Setting-Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Rectified Photography

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Email: info@murphygs.ie

Client : Metropolitan Workshop

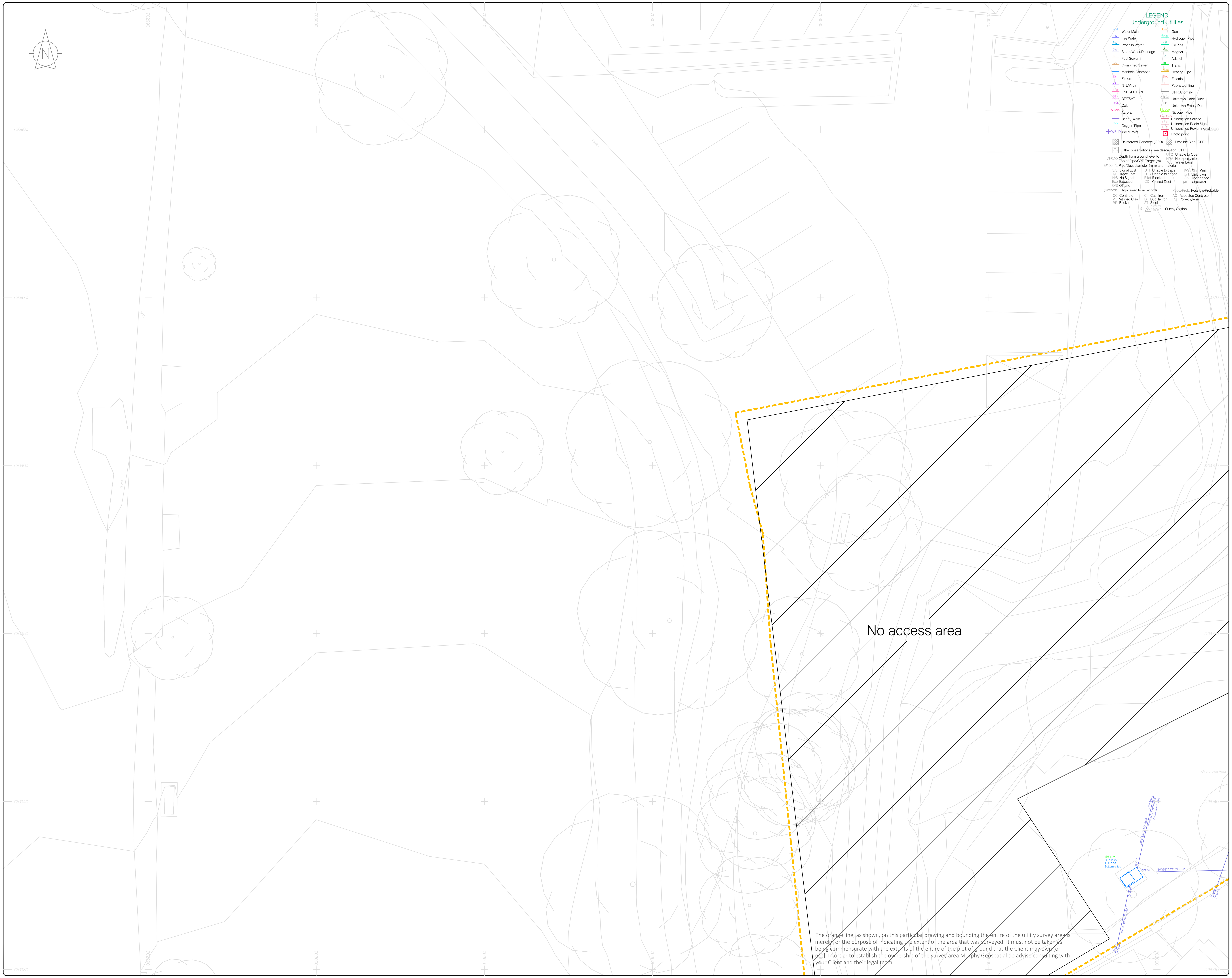
Project : 2430 Rathcoole Housing

Date : 08.10.2025 **Scale :** 1:100@A1

Description : Utility survey Sheets 4 of 9

Drawing Number : MGS65356_U

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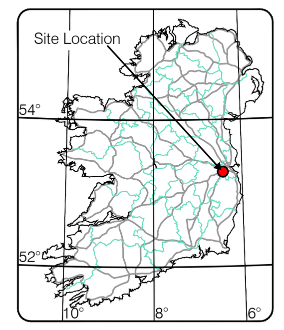
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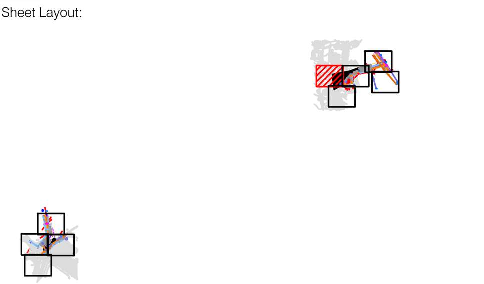
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Revisions

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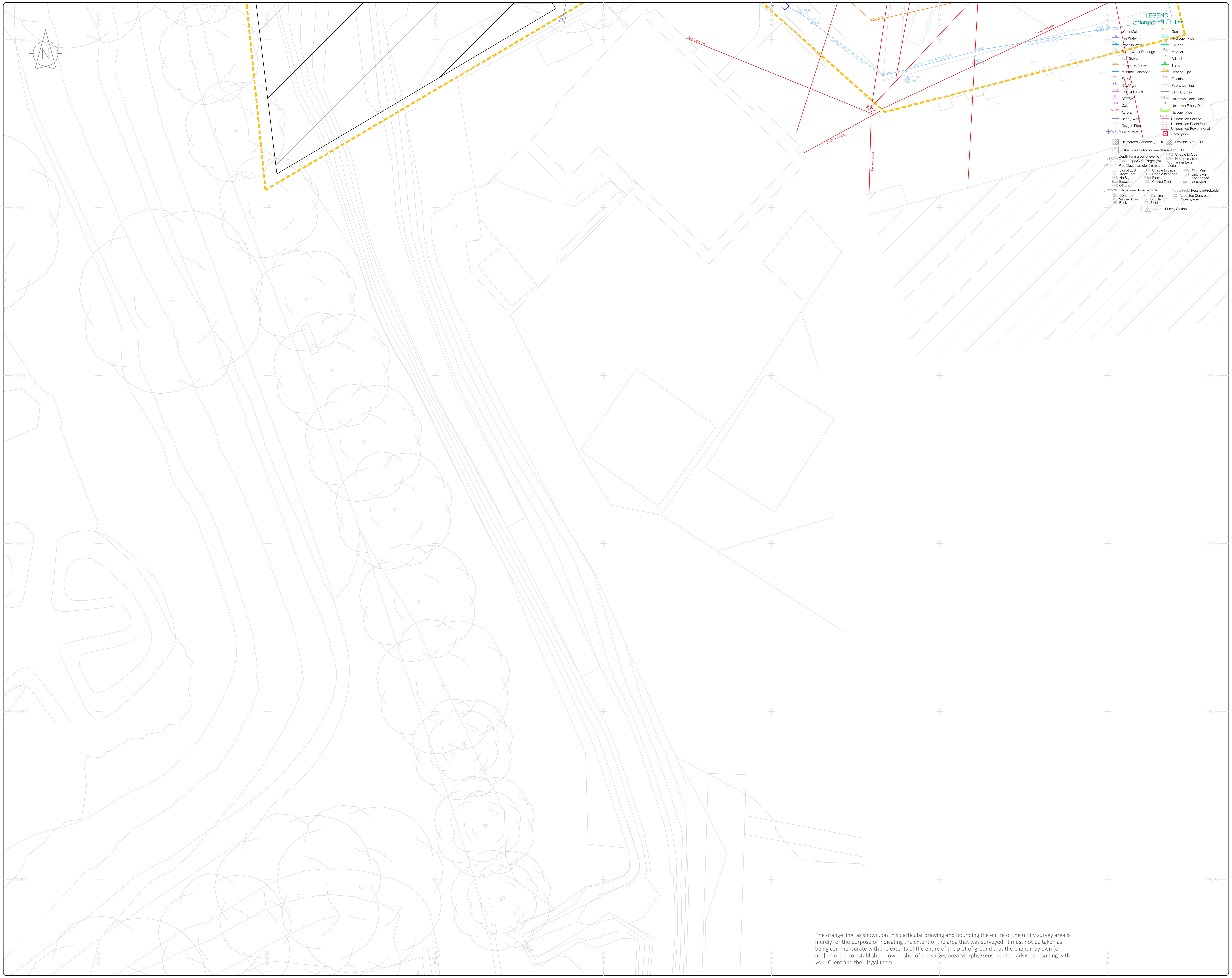
Project : 2430 Rathcoole Housing

Date : 08.10.2025 **Scale :** 1:100@A1

Description : Utility survey Sheets 5 of 9

Drawing Number : MGS65356_U

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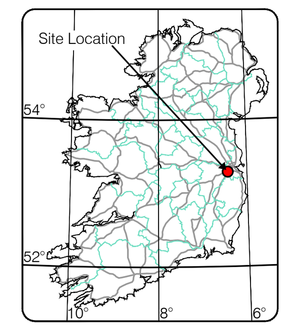
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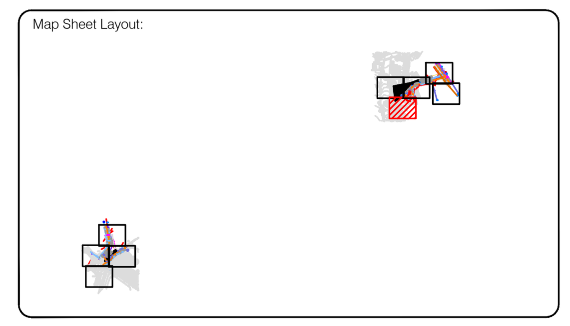
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Revisions

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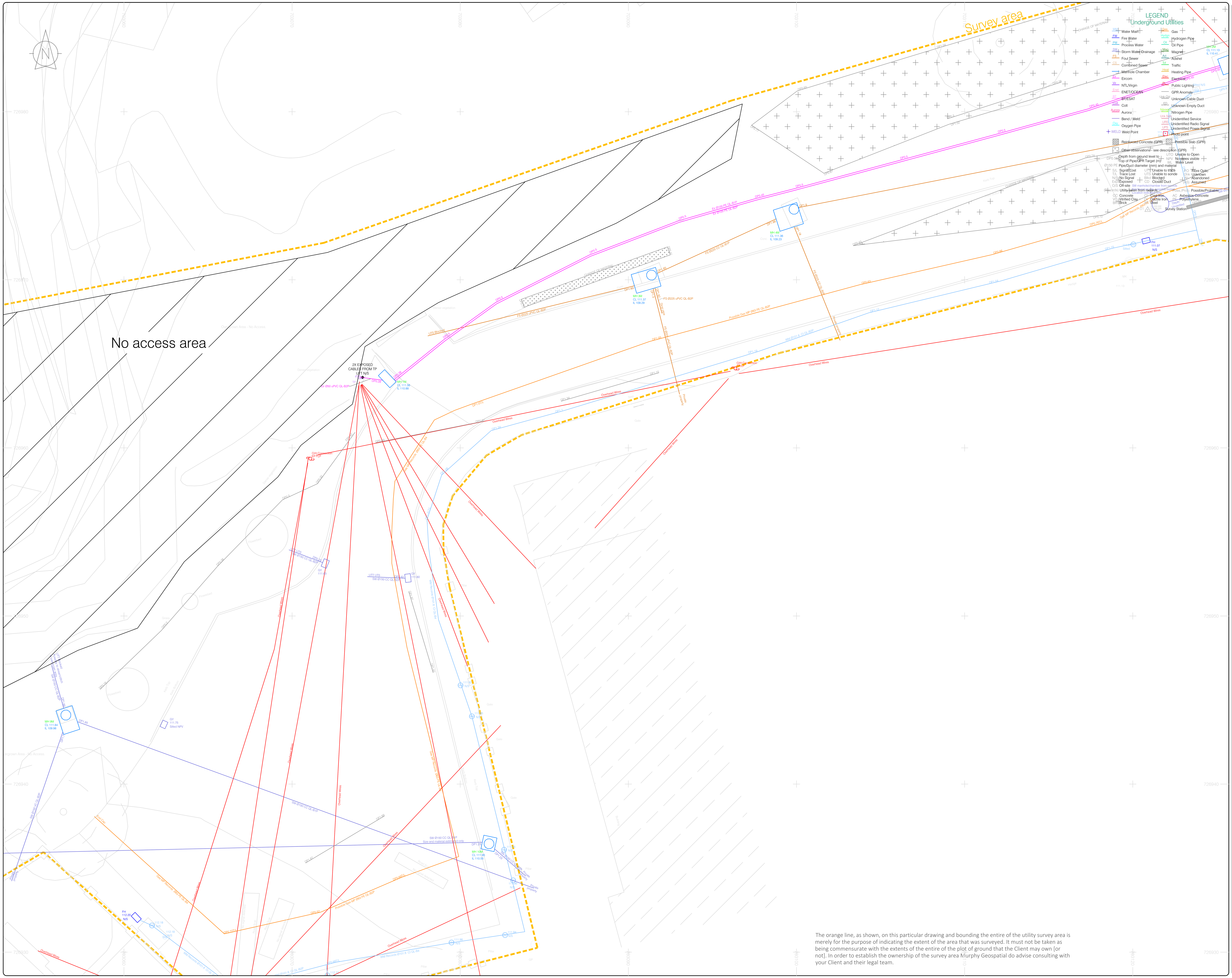
Project : 2430 Rathcoole Housing

Date : 08.10.2025 **Scale :** 1:100@A1

Description : Utility survey Sheets 6 of 9

Drawing Number : MGS65356_U

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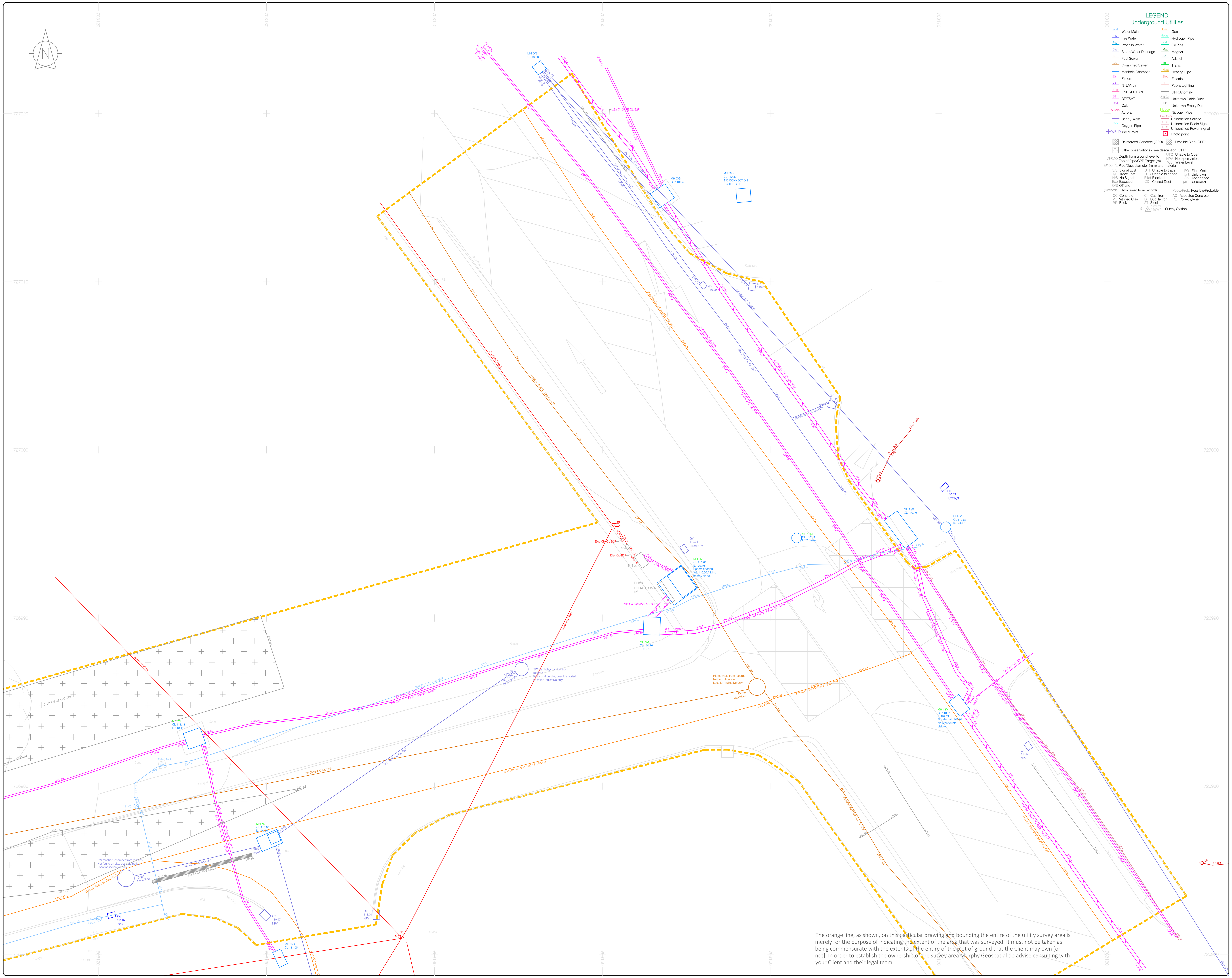
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Description : Utility survey Sheets 7 of 9

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Please note that our Quotation does not allow for location of individual service feeds to properties unless reasonable to do so, as access would be required into each property to apply direct connections to inlet points and this would significantly increase the scope of work, survey cost and also cause possible disruption to occupants.
All work carried out by Murphy Geospatial Limited (MGS) conforms to the guidelines set out by The Survey Association (TSA).

North

Site Location

Map Sheet Layout:

Surveyed by : MGS	Date: Sep 2025	Datum : Malin Head	
Drawn by : CM/AB	Date: 07.10.25	Grid System:	
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒	

Revisions

No.	Date	Description
0	08.10.25	First Drawing

SCSI Chartered property, land and construction surveyors
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Murphy GEOSPATIAL
Topographic surveys, Measured Building Surveys, Setting-Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Rectified Photography
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Email: info@murphygs.ie

Client : Metropolitan Workshop

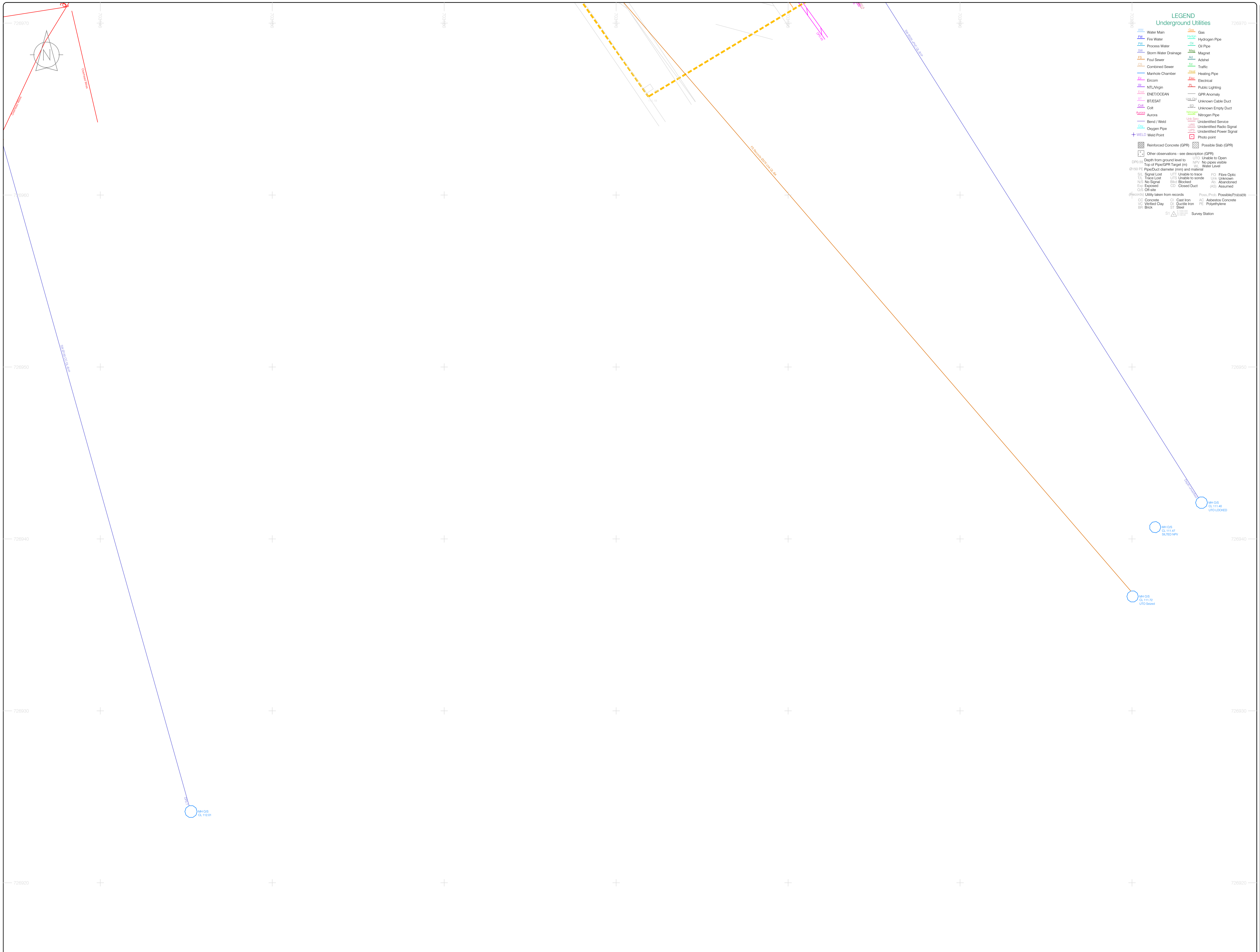
Project : 2430 Rathcoole Housing

Date : 08.10.2025 **Scale :** 1:100@A1

Description : Utility survey Sheets 8 of 9

Drawing Number : MGS65356_U

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The orange line, as shown, on this particular drawing and bounding the entire of the utility survey area is merely for the purpose of indicating the extent of the area that was surveyed. It must not be taken as being commensurate with the extents of the entire of the plot of ground that the Client may own [or not]. In order to establish the ownership of the survey area Murphy Geospatial do advise consulting with your Client and their legal team.

Murphy Geospatial Ltd. Disclaimer

The survey aims to map all existing utilities and sub surface structures and provide information with respect to pipe size, material type and drainage connectivity. However GPR surveying is limited by the following guidelines and it may not be possible to accurately survey, define and locate all services and sub surface features.

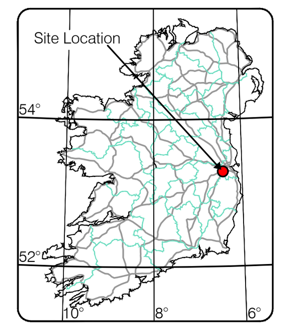
- Locational accuracy is determined by referring to the manufacturers guidelines for the detectors used.
- Existing record information showing underground services is often incomplete and unknown accuracy; therefore it should be regarded only as an indication.
- In ideal conditions these spatial accuracies for the underground utilities are +/- 5% for the RD4000 and +/- 10% of depth for the GPR to 2.5m deep. However, variations within the subsurface may alter this estimated accuracy.
- Although all reasonable steps have been taken to locate all features, there is no guarantee that all will be shown on the drawing as some above ground features may have obstructed the survey.
- GPR surveying operates best within high resistivity material. Clay overburden can impair GPR surveying.
- Due to the attenuation of the radar signal with depth, resolution is restricted, hence making identification of anomalies difficult with increasing depth.
- The depth penetration and quality of the data depends on the ground conditions on the site. Poor data may be a result of areas with high conductivity. Also, high reflective materials close to the surface i.e. rebar may hide deeper anomalies.
- It is not always possible to trace the entire length of each underground service.
- It is always our intention to use the Utility providers' details, if supplied prior to survey commencement as a guide for location purposes. However, should we not be able to locate those guided services we shall not be held responsible for the accuracy, or otherwise, of the location of that service, as issued by the utility provider and therefore shown "Taken from Records" on the drawing and we are not liable for any loss that may arise due to the lack of accuracy in the guided information.
- Unless otherwise stated, all services and sub surface structures shown on Murphy Geospatial Limited plan drawings have been surveyed using approved detectors and the connections between manholes, if not traced, are assumed to run straight.
- Plan accuracies of the order of + or - 150mm may be achieved but this figure will depend on the depth of the service below ground level. Where similar services run on close proximity, separation may be impossible. Successful tracing of non metallic pipes may be limited.
- Please note that not all buried pipes, cables and ducts can be detected and mapped in consideration of their depth, location, material type, geology and proximity to other utilities. Even an appropriate and professionally executed survey may not be able to achieve a 100% detection rate.
- Services which have been untraceable are shown from Records where possible.
- DP represents distance from the surface level to the top of the service/ radar.

No allowance has been made within our quotation, unless otherwise stated, for the location and mapping of undeclared services. Failure to detect or fully map any declared service will be recorded within the notes accompanying our final drawings.
Where technically possible, depth indications will be given. These should be used for guidance only and wherever critical accuracy is required these should be confirmed by the Client by undertaking trial excavations or similar. Bends, lateral service connections, or the close proximity of other services and local magnetic, atmospheric or ground conditions, could in certain situations influence the accuracy of the plan and depth indication facility. Depths will not be provided unless we are reasonably confident of their validity.
Where Murphy Geospatial Limited issues a CAD drawn utility service plan, this should be read in conjunction with all available public utility records etc. As part of our exhaustive Quality Control procedures, Murphy Geospatial Limited Endeavour to add relevant Public Utility record information onto the final issue drawing. An allowance should be made for the width of services, particularly where these are laid in bands or are of significant size etc. For clarification or appropriate easement bands, we would recommend that direct contact is made with the Asset Owner or Statutory Undertaker.
We exclude the following, except where otherwise specified and possible to do so;

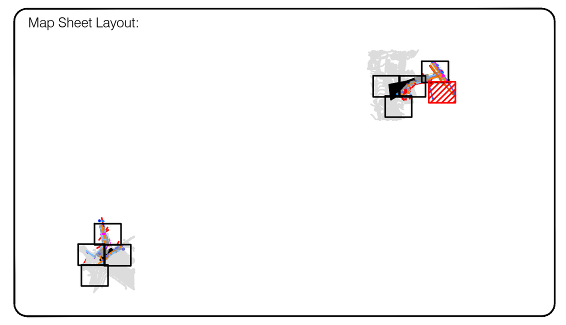
- All private service connections, (including water or gas fittings where no through flow of applied signal is possible.
- Pot ended or disconnected cables or terminated short lengths of pipe.
- Internal building services
- Fibre optic cables (except where laid with a standard communications cable or built in tracer wire or similar conductor system) or can be clearly located using ground penetrating radar.
- Small diameter cables less than 17mm diameter, or pipes less than 38mm diameter.
- Above ground services unless specifically requested.
- Lifting manhole covers which require longer than 10 minute effort using standard heavy duty lifting apparatus.
- Services positioned directly below other pipes or cables etc (i.e. masking signal) - intrusive verification options available on request.
- Deep non metallic pipes, ducts or culverts (unless probing or Pipe Track 3d is specified as part of the fully invasive survey option).
- Passing through defective pipework (displaced joints etc) or acute bends between access points.

Please note that our Quotation does not allow for location of individual service feeds to properties unless reasonable to do so, as access would be required into each property to apply direct connections to inlet points and this would significantly increase the scope of work, survey cost and also cause possible disruption to occupants.
All work carried out by Murphy Geospatial Limited (MGS) conforms to the guidelines set out by The Survey Association (TSA).

North



Map Sheet Layout:



Surveyed by : MGS	Date: Sep 2025	Datum : Malin Head	
Drawn by : CM/AB	Date: 07.10.25	Grid System:	
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒	

Revisions

No.	Date	Description
0	08.10.25	First Drawing

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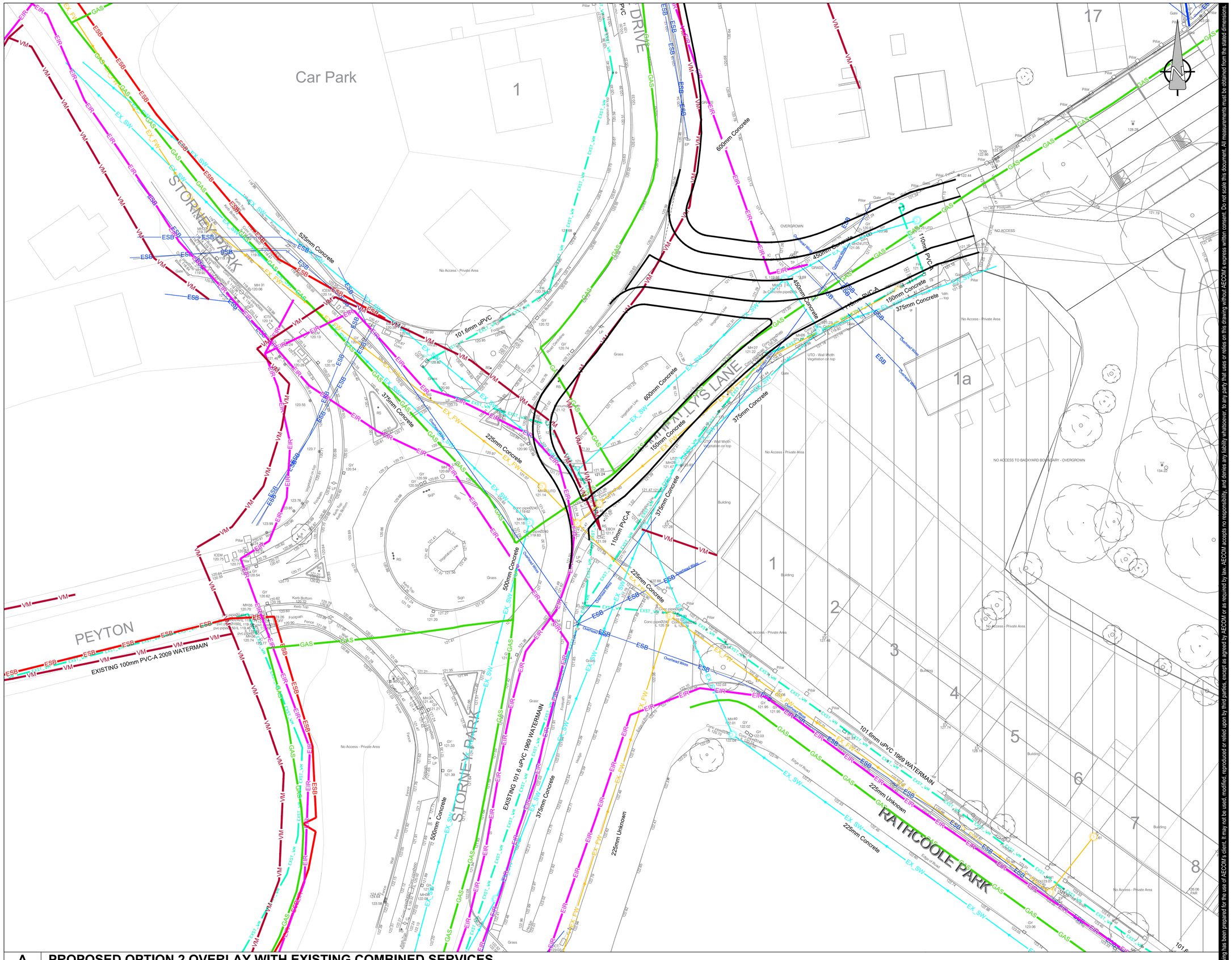
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Phone: (+353) 045 484040
Fax: (+353) 045 484004
Email: info@murphygs.ie

Client : Metropolitan Workshop	
Project : 2430 Rathcoole Housing	
Date : 08.10.2025	**Scale :** 1:100@A1
Description : Utility survey Sheets 9 of 9	
Drawing Number : MGS65356_U	

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Appendix C – Existing Combined Services Layout Overlaid with the Proposed Mullally's Lane Junction Upgrade

Project Management Initials: Designer: CD Checked: SG Approved: LS



A	PROPOSED OPTION 2 OVERLAY WITH EXISTING COMBINED SERVICES
0012	Scale: 1:500

Last saved by: DICKSONC1(2025-09-02) Last Plotted: 2025-09-02
Filename: C:\USERS\DICKSONC1\AECOM\SDCC RATH - DOCUMENTS\GENERAL\900_CAD_GIS\904_CE\01_WIP\05_SKETCHES\60664395-ACM-XX-00-SK-CE-10-0012.DWG

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AECOM

PROJECT

SDCC RATHCOOLE

CLIENT

SOUTH DUBLIN COUNTY COUNCIL

CONSULTANT

AECOM
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BURLINGTON ROAD,
DUBLIN 4, D04 RH96, IRELAND
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Fax: +353 (0)1 238 3199
www.aecom.com

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT ARCHITECTURAL AND ENGINEERING DRAWINGS, ANY DISCREPANCIES, ERRORS OR OMISSIONS TO BE BROUGHT TO THE ATTENTION OF THE DESIGNER.
2. ALL DIMENSIONS TO BE CHECKED BY THE CONTRACTOR ON SITE PRIOR TO COMMENCEMENT OF WORKS.
3. AECOM LIMITED TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO THE COMMENCEMENT OF WORKS ON SITE.
4. DIMENSIONS OF ALL BOUNDARIES AND ADJOINING ROADS TO BE CHECKED ON SITE PRIOR TO COMMENCEMENT OF WORKS.
5. DO NOT SCALE, ALL MEASUREMENTS AND COORDINATES TO BE CHECKED ON SITE.

LEGEND

EX_FW	EXISTING FOUL WATER
EX_SW	EXISTING SURFACE WATER
EXST_WM	EXISTING WATERMAINS
ESB	EXISTING ESB (LV OVERHEADS)
ESB	EXISTING ESB (MV/LV UNDERGROUND)
GAS	EXISTING GAS (MEDIUM PRESSURE)
EIR	EXISTING EIR
VM	EXISTING VIRGIN MEDIA

AECOM

FOR INFORMATION ONLY

KEY PLAN



ISSUE/REVISION

I/R	DATE	DESCRIPTION
01	03.09.2025	ISSUE FOR INFORMATION

PROJECT NUMBER

60739527

SHEET TITLE

PROPOSED OPTION 2 OVERLAY WITH EXISTING COMBINED SERVICES

SHEET NUMBER

60739527-ACM-XX-00-SK-CE-10-0012

Appendix D – Q_{BAR} Calculations

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

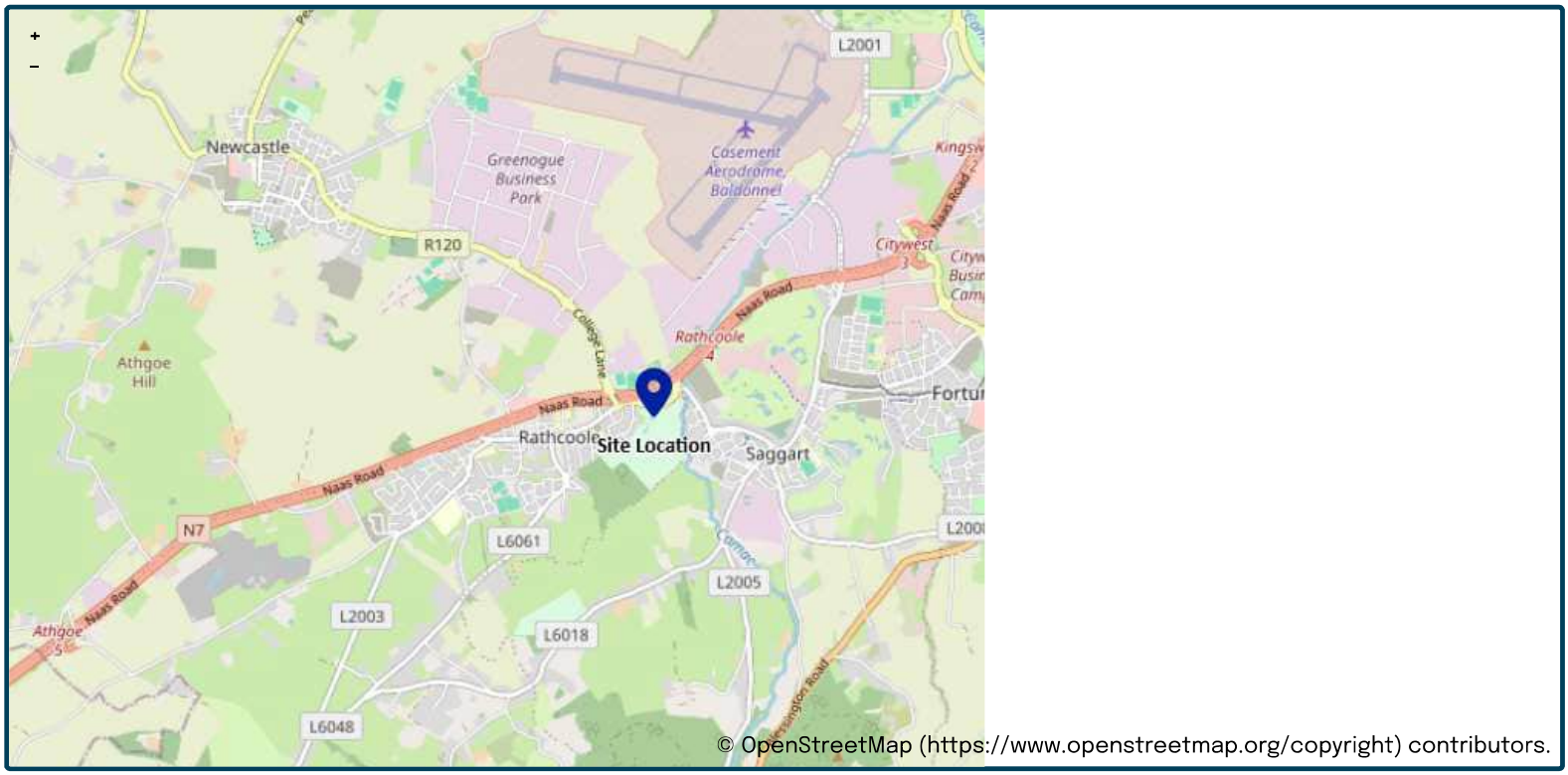
⚠ Problems have been identified with the input values, please review them carefully.

Project details

Date	27/04/2026
Calculated by	SG
Reference	Proposed Residential Development at Rathcoole, Co. Dublin
Model version	2.2.3

Location

Site name	Development Area A
Site location	Rathcoole, Co. Dublin



Site easting (Irish Grid)	302921
Site northing (Irish Grid)	226736
Site easting (Irish Transverse Mercator)	702849
Site northing (Irish Transverse Mercator)	726764

Site details

Total site area (ha)	0.321 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value	Map value
SAAR (mm)	920 mm	
How should SPR be derived?	WRAP soil type	
WRAP soil type	2	
SPR	0.3	
QBar (IH124) (l/s)	0.8 l/s	

Growth curve factors

	My value	Map value
⚠ There are problems with this field.		
Hydrological region Please select a hydrological region	Please select a value.	
1 year growth factor		
2 year growth factor		
10 year growth factor		
30 year growth factor		
100 year growth factor		
200 year growth factor		

Results

Method IH124

⚠ There are problems with this field.

Flow rate 1 year (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 2 year (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 10 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 30 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 100 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 200 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

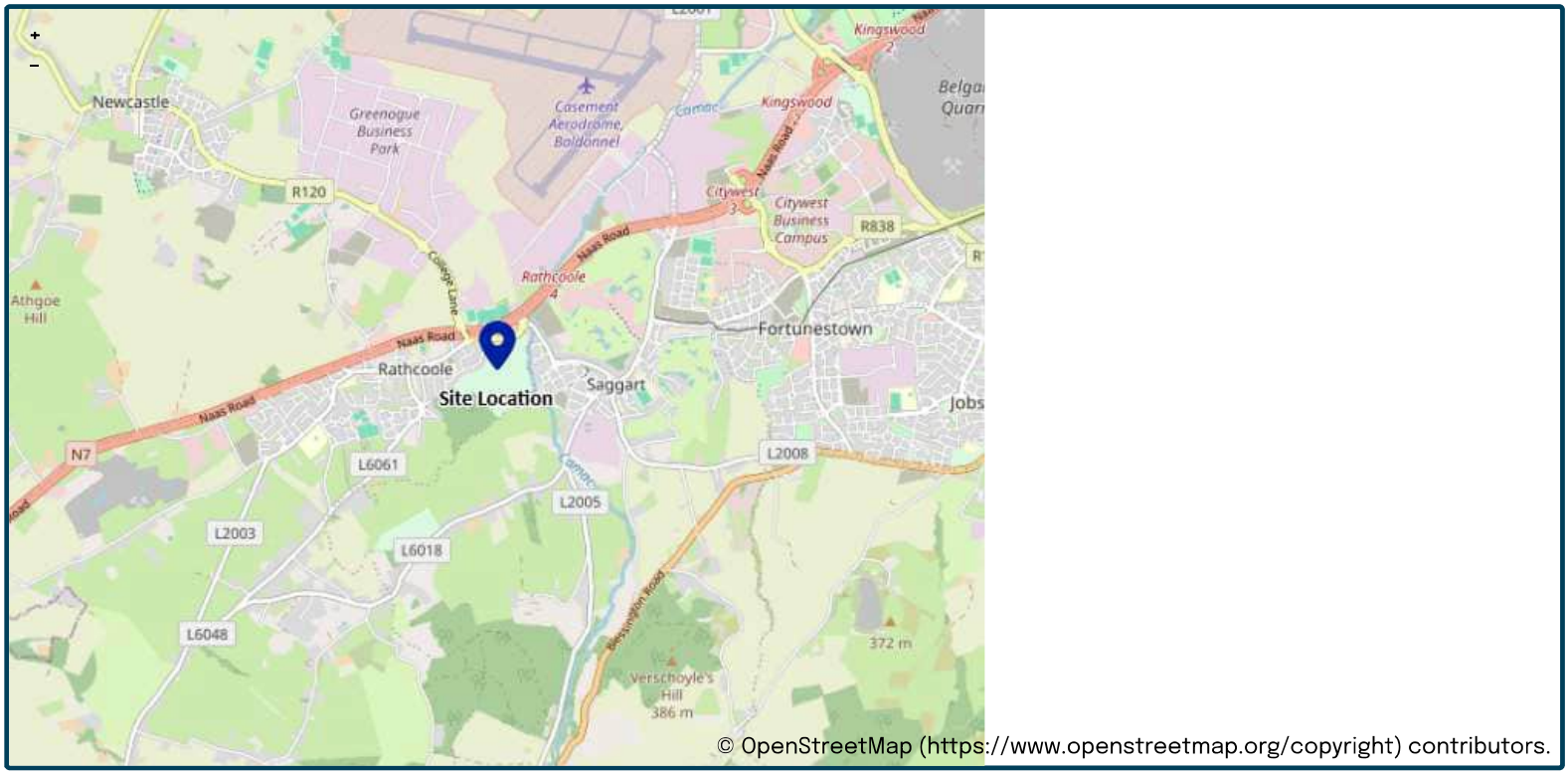
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	24/07/2025
Calculated by	SG
Reference	Proposed Residential Development at Rathcoole, Co. Dublin
Model version	2.0.1

Location

Site name	Development Area A
Site location	Rathcoole, Co. Dublin



Site easting	102899
Site northing	385138

Site details

Total site area (ha)	5.396 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value		Map value
SAAR (mm)	920 mm		920
How should SPR be derived?	WRAP soil type		
WRAP soil type	2		2
SPR	0.3		
QBar (IH124) (l/s)	13.5 l/s		

Growth curve factors

	My value		Map value
Hydrological region	12		12
1 year growth factor	0.85		
2 year growth factor	0.95		
10 year growth factor	1.72		
30 year growth factor	2.13		
100 year growth factor	2.61		
200 year growth factor	2.86		

Results

Method	IH124
Flow rate 1 year (l/s)	11.5 l/s
Flow rate 2 year (l/s)	12.9 l/s
Flow rate 10 years (l/s)	23.3 l/s
Flow rate 30 years (l/s)	28.8 l/s
Flow rate 100 years (l/s)	35.3 l/s
Flow rate 200 years (l/s)	38.7 l/s

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.0.1) developed by HR Wallingford and available at uksuds.com (https://www.uksuds.com/). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

Greenfield runoff rate estimation tool

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

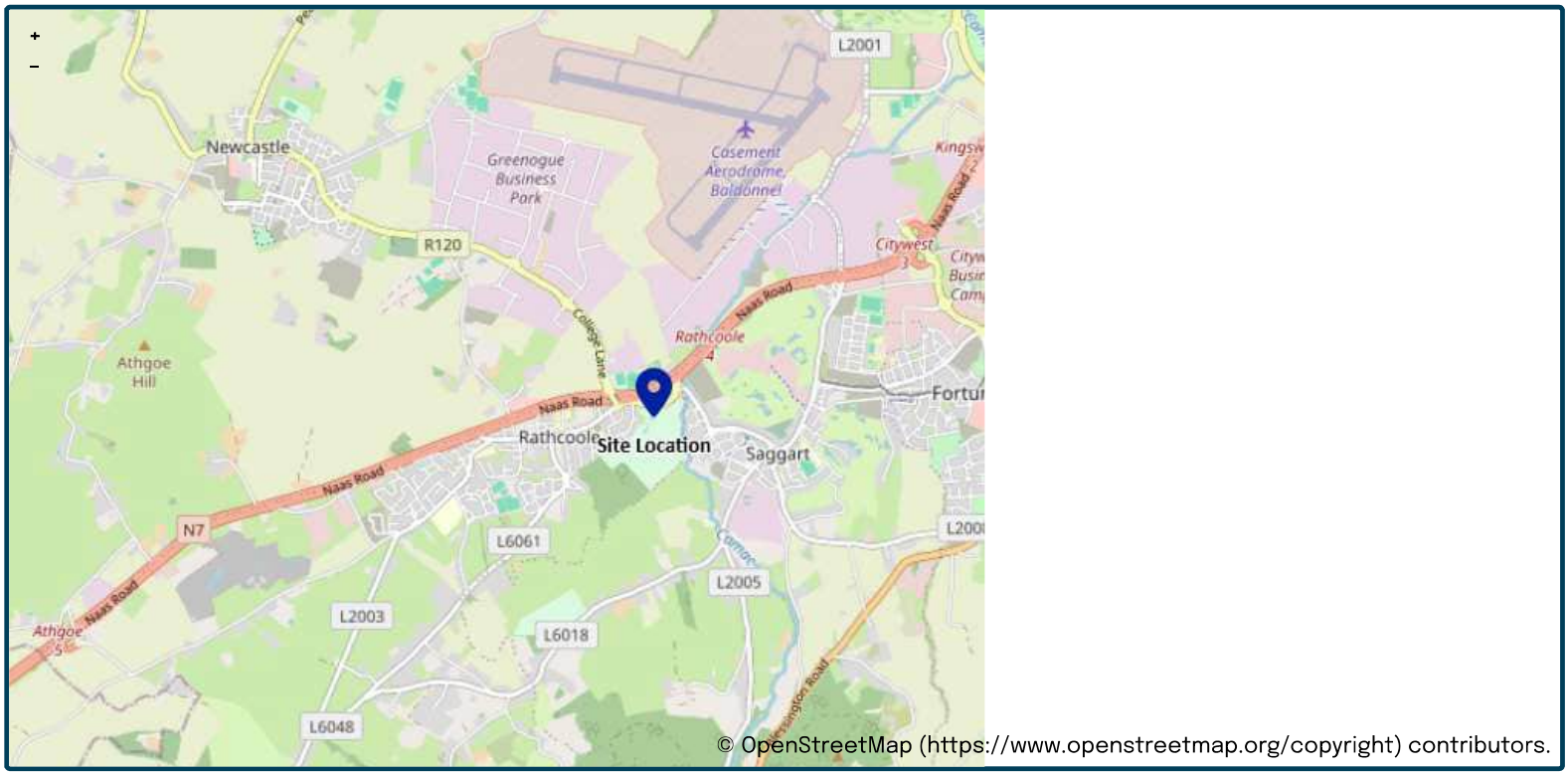
⚠ Problems have been identified with the input values, please review them carefully.

Project details

Date	27/04/2026
Calculated by	SG
Reference	Proposed Residential Development at Rathcoole, Co. Dublin
Model version	2.2.3

Location

Site name	Woodlands Area
Site location	Rathcoole, Co. Dublin



Site easting (Irish Grid)	302921
Site northing (Irish Grid)	226736
Site easting (Irish Transverse Mercator)	702849
Site northing (Irish Transverse Mercator)	726764

Site details

Total site area (ha)	2.42 ha

Greenfield runoff

Method

Method	IH124

IH124

	My value	Map value
SAAR (mm)	920 mm	
How should SPR be derived?	WRAP soil type	
WRAP soil type	2	
SPR	0.3	
QBar (IH124) (l/s)	6.1 l/s	

Growth curve factors

	My value	Map value
⚠ There are problems with this field.		
Hydrological region	Please select a value.	
Please select a hydrological region		
1 year growth factor		
2 year growth factor		
10 year growth factor		
30 year growth factor		
100 year growth factor		
200 year growth factor		

Results

Method IH124

⚠ There are problems with this field.

Flow rate 1 year (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 2 year (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 10 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 30 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 100 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

⚠ There are problems with this field.

Flow rate 200 years (l/s) – l/s

Unable to estimate runoff rate with current inputs.

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

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Appendix E – Met Éireann Rainfall Return Period Data

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 302758, Northing: 226656,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	2.7,	4.1,	4.8,	6.0,	6.8,	7.4,	9.5,	12.0,	13.7,	16.1,	18.3,	20.0,	22.7,	24.8,	26.6,	N/A ,
10 mins	3.8,	5.7,	6.7,	8.3,	9.4,	10.3,	13.2,	16.7,	19.0,	22.4,	25.5,	27.9,	31.6,	34.6,	37.1,	N/A ,
15 mins	4.5,	6.7,	7.9,	9.8,	11.1,	12.1,	15.6,	19.7,	22.4,	26.4,	30.0,	32.8,	37.2,	40.7,	43.6,	N/A ,
30 mins	5.9,	8.7,	10.2,	12.6,	14.3,	15.6,	19.9,	25.0,	28.4,	33.3,	37.7,	41.2,	46.6,	50.9,	54.5,	N/A ,
1 hours	7.7,	11.3,	13.3,	16.3,	18.4,	20.0,	25.4,	31.7,	36.0,	42.0,	47.5,	51.7,	58.4,	63.6,	68.0,	N/A ,
2 hours	10.1,	14.7,	17.2,	21.0,	23.6,	25.7,	32.5,	40.3,	45.6,	53.0,	59.7,	65.0,	73.1,	79.5,	84.8,	N/A ,
3 hours	11.9,	17.1,	20.0,	24.4,	27.4,	29.7,	37.5,	46.4,	52.3,	60.8,	68.3,	74.3,	83.4,	90.6,	96.6,	N/A ,
4 hours	13.3,	19.1,	22.3,	27.1,	30.4,	33.0,	41.5,	51.2,	57.7,	66.9,	75.2,	81.6,	91.6,	99.4,	105.9,	N/A ,
6 hours	15.6,	22.3,	26.0,	31.5,	35.3,	38.2,	47.9,	58.9,	66.3,	76.7,	86.0,	93.3,	104.5,	113.3,	120.6,	N/A ,
9 hours	18.3,	26.0,	30.2,	36.6,	40.9,	44.2,	55.2,	67.8,	76.1,	87.9,	98.4,	106.6,	119.2,	129.1,	137.3,	N/A ,
12 hours	20.5,	29.1,	33.7,	40.7,	45.4,	49.1,	61.1,	74.9,	84.0,	96.8,	108.3,	117.2,	130.9,	141.6,	150.5,	N/A ,
18 hours	24.0,	33.9,	39.2,	47.2,	52.6,	56.8,	70.5,	86.1,	96.4,	111.0,	123.9,	133.9,	149.4,	161.4,	171.3,	N/A ,
24 hours	26.9,	37.8,	43.7,	52.5,	58.4,	63.0,	78.1,	95.1,	106.4,	122.2,	136.3,	147.2,	164.0,	177.0,	187.8,	225.7,
2 days	34.0,	46.4,	52.9,	62.5,	68.9,	73.9,	89.9,	107.6,	119.2,	135.3,	149.4,	160.3,	176.9,	189.7,	200.3,	236.9,
3 days	39.8,	53.3,	60.4,	70.7,	77.6,	82.8,	99.6,	118.1,	130.1,	146.6,	161.0,	172.1,	188.9,	201.7,	212.3,	248.7,
4 days	44.9,	59.5,	67.0,	77.9,	85.1,	90.6,	108.2,	127.4,	139.7,	156.6,	171.4,	182.6,	199.7,	212.7,	223.3,	259.9,
6 days	53.9,	70.2,	78.5,	90.5,	98.3,	104.3,	123.1,	143.5,	156.5,	174.2,	189.6,	201.2,	218.8,	232.1,	243.0,	280.2,
8 days	62.0,	79.7,	88.7,	101.5,	109.9,	116.3,	136.2,	157.6,	171.2,	189.6,	205.5,	217.5,	235.6,	249.3,	260.5,	298.3,
10 days	69.5,	88.5,	98.0,	111.6,	120.5,	127.2,	148.1,	170.4,	184.5,	203.6,	220.0,	232.4,	250.9,	264.9,	276.3,	314.9,
12 days	76.5,	96.7,	106.7,	121.1,	130.3,	137.3,	159.1,	182.3,	196.8,	216.5,	233.4,	246.1,	265.0,	279.4,	291.0,	330.2,
16 days	89.6,	111.8,	122.8,	138.4,	148.4,	156.0,	179.3,	204.0,	219.4,	240.1,	257.8,	271.0,	290.8,	305.7,	317.7,	358.1,
20 days	101.8,	125.9,	137.7,	154.4,	165.1,	173.1,	197.8,	223.8,	239.9,	261.6,	280.0,	293.7,	314.2,	329.5,	341.9,	383.4,
25 days	116.3,	142.4,	155.1,	173.0,	184.4,	193.0,	219.2,	246.6,	263.6,	286.3,	305.4,	319.8,	341.0,	356.9,	369.7,	412.5,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

Appendix F – Surface Water Attenuation Storage Volume

Project:	Date:		
Rathcoole	22/06/2026		
	Designed by:	Checked by:	Approved By:
	LB	PM	PM
Report Title:	Company Address:		
Rainfall Analysis Criteria	2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	Scotland And Ireland
M5-60 (mm)	20.0
Ratio R	0.271
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0.000
30.0	0.000
100.0	20.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by: PM	Approved By: PM
Report Details: Type: Inflows Summary Storm Phase: Development A	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Inflow

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by: PM	Approved By: PM
Report Details: Type: Inflows Summary Storm Phase: Development A	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area (13)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.2	2.403
Catchment Area (12)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.3	3.396
Catchment Area (11)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.3	3.378
Catchment Area (10)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.4	3.399
Catchment Area (9)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.3	3.381
Catchment Area (8)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.3	3.396
Catchment Area (7)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.3	3.390
Catchment Area (6)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.2	0.537
Catchment Area (5)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.8	3.618
Catchment Area (4)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.2	0.537
Catchment Area (3)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.8	3.630
Catchment Area (2)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.5	0.705
Catchment Area (1)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.2	1.953
Catchment Area	FSR: 100 years: +20 %: 15 mins: Winter	0.03	14.4	6.666
Landscape 7	FSR: 100 years: +20 %: 15 mins: Winter	0.00	0.4	0.174

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by: PM	Approved By: PM
Report Details: Type: Junctions Summary Storm Phase: Development A	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Resident Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
MH70	FSR: 100 years: +20 %: 480 mins: Winter	121.897	120.796	121.288	0.492	3.0	0.556	0.000	2.6	33.299	Surcharged
MH71	FSR: 100 years: +20 %: 480 mins: Winter	121.742	120.666	121.288	0.622	6.8	0.703	0.000	6.5	80.208	Surcharged
MH72	FSR: 100 years: +20 %: 480 mins: Winter	121.573	120.017	121.288	1.271	8.8	1.437	0.000	8.7	102.995	Flood Risk
MH73	FSR: 100 years: +20 %: 480 mins: Winter	121.431	120.484	121.287	0.804	9.2	0.909	0.000	9.1	108.714	Flood Risk
MH74	FSR: 100 years: +20 %: 480 mins: Winter	121.319	119.902	121.288	1.386	2.1	1.567	0.000	2.0	95.484	Flood Risk
MH75	FSR: 1 years: +0 %: 15 mins: Summer	121.292	119.842	119.871	0.029	1.3	0.000	0.000	1.3	1.450	OK

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by: PM	Approved By: PM
Report Details: Type: Stormwater Controls Summary Storm Phase: Development A	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond Development A	FSR: 100 years: +20 %: 480 mins: Winter	121.288	121.288	0.829	0.829	11.1	83.615	0.000	0.000	2.1	97.143	4.497	OK

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by: PM	Approved By: PM
Report Details: Type: Connections Summary Storm Phase: Development A	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S70.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH70	MH71	121.897	120.908	0.134	9.747	0.7	0.3	21.1	OK
S70.001	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH71	MH72	121.742	120.862	0.300	22.616	0.6	0.27	43.2	OK
S70.002	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH72	MH73	121.573	120.864	0.300	0.119	0.8	1.11	58.8	Surcharged
S70.005	FSR: 100 years: +20 %: 480 mins: Winter	Pipe	MH74	MH75	121.319	121.288	0.036	95.444	0.5	0.05	2.0	Flood Risk
S70.003	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH73	Pond Development A	121.431	120.864	0.300	28.196	1.1	0.86	61.0	Surcharged
S70.004	FSR: 30 years: +0 %: 15 mins: Summer	Pipe	Pond Development A	MH74	121.314	120.698	0.300	3.269	0.2	0.05	13.0	OK

Development A
FSR: 100 years: Increase Rainfall (%): +20: 480 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
MH75			2.0	95.444
TOTAL	12.0	137.388	2.0	95.444

Project:	Date:		
Rathcoole	22/06/2026		
	Designed by:	Checked by:	Approved By:
	LB		
Report Title:	Company Address:		
Rainfall Analysis Criteria	2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Shortest
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	Scotland And Ireland
M5-60 (mm)	20.0
Ratio R	0.271
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0.000
30.0	0.000
100.0	20.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area (46)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.1	2.828
Catchment Area (41)	FSR: 100 years: +20 %: 15 mins: Winter	0.11	43.2	19.945
Catchment Area (40)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.092
Catchment Area (39)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.6	1.218
Catchment Area (38)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.092
Catchment Area (37)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.086
Catchment Area (36)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.0	1.385
Catchment Area (35)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.8	1.301
Catchment Area (34)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.8	1.301
Catchment Area (33)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.7	1.697
Catchment Area (32)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.092
Catchment Area (31)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.086
Catchment Area (30)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.4	1.559
Catchment Area (29)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.4	1.559

Catchment Area (28)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.7	2.174
Catchment Area (27)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.8	1.769
Catchment Area (26)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.4	1.571
Catchment Area (25)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.8	1.745
Catchment Area (24)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.095
Catchment Area (23)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.098
Catchment Area (22)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.6	1.664
Catchment Area (21)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.7	1.709
Catchment Area (20)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.4	1.559
Catchment Area (19)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.3	2.909
Catchment Area (18)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.1	2.369
Catchment Area (17)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.8	1.298
Catchment Area (16)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.6	1.664
Catchment Area (15)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.7	1.694
Catchment Area (14)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.7	1.715
Catchment Area (47)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.3	2.435
Catchment Area (48)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.9	1.814

Catchment Area (49)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.1	2.348
Catchment Area (50)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.5	4.837
Catchment Area (51)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.4	4.786
Catchment Area (52)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.3	4.273
Catchment Area (53)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.2	2.873
Catchment Area (54)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.3	4.300
Catchment Area (55)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.2	2.879
Catchment Area (56)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.2	4.237
Catchment Area (57)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.2	4.234
Catchment Area (58)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	13.4	6.205
Catchment Area (59)	FSR: 100 years: +20 %: 15 mins: Winter	0.05	22.3	10.298
Catchment Area (60)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.4	1.119
Catchment Area (63)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.1	1.916
Catchment Area (64)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.8	2.663
Catchment Area (65)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.0	1.385
Catchment Area (66)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	7.0	3.236
Catchment Area (67)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.2	5.173

Catchment Area (68)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.1	2.828
Catchment Area (69)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.9	2.726
Catchment Area (70)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.2	1.029
Catchment Area (71)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.6	3.979
Catchment Area (72)	FSR: 100 years: +20 %: 15 mins: Winter	0.04	21.1	9.764
Catchment Area (73)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	12.1	5.584
Catchment Area (74)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.6	5.365
Catchment Area (75)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.4	3.868
Catchment Area (76)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.3	4.279
Catchment Area (77)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.4	4.333
Catchment Area (78)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	13.9	6.432
Catchment Area (79)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.1	5.137
Catchment Area (80)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.9	4.114
Catchment Area (81)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.3	2.006
Catchment Area (82)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.3	1.967
Catchment Area (83)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.092
Catchment Area (84)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.9	1.322

Catchment Area (85)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.1	3.752
Catchment Area (86)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.092
Catchment Area (87)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	14.4	6.648
Catchment Area (88)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	14.0	6.477
Porous (1)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	3.1	1.451
Catchment Area (90)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.7	3.107
Catchment Area (91)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.9	2.714
Catchment Area (92)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.0	3.689
Catchment Area (93)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.6	1.661
Catchment Area (94)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.4	4.798
Catchment Area (95)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	9.4	4.318
Porous	FSR: 100 years: +20 %: 15 mins: Winter	0.02	3.1	1.454
Catchment Area (97)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.0	4.630
Catchment Area (98)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.7	3.104
Catchment Area (99)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.4	1.095
Catchment Area (100)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.2	2.399
Catchment Area (101)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.6	2.129

Catchment Area (102)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.6	2.138
Catchment Area (103)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.5	3.446
Catchment Area (104)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.8	1.760
Catchment Area (105)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	12.8	5.926
Catchment Area (106)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.2	4.690
Catchment Area (107)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.0	3.701
Catchment Area (108)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.5	2.999
Catchment Area (109)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.4	3.871
Catchment Area (110)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.0	2.747
Catchment Area (111)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.9	5.503
Catchment Area (112)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.9	2.738
Catchment Area (113)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.1	2.828
Catchment Area (114)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	12.0	5.518
Catchment Area (115)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.0	3.671
Catchment Area (116)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.8	4.066
Catchment Area (117)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.6	4.903
Catchment Area (118)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	8.3	3.841

Catchment Area (119)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.2	4.726
Catchment Area (120)	FSR: 100 years: +20 %: 15 mins: Winter	0.04	17.4	8.019
Catchment Area (121)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.3	4.768
Catchment Area (122)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	10.8	5.005
Catchment Area (123)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.6	5.350
Catchment Area (124)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	12.5	5.779
Catchment Area (133)	FSR: 100 years: +20 %: 15 mins: Winter	0.04	18.3	8.436
Catchment Area (134)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.8	1.751
Catchment Area (135)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.8	0.810
Catchment Area (136)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.5	0.687
Catchment Area (137)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	0.8	0.372
Catchment Area (138)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.4	2.024
Catchment Area (139)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.5	0.672
Catchment Area (140)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.8	1.298
Catchment Area (141)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.4	0.654
Catchment Area (142)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	7.1	3.275
Catchment Area (143)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.6	1.218

Catchment Area (144)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.9	1.358
Catchment Area (145)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.5	5.299
Catchment Area (147)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.5	2.075
Catchment Area (148)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.8	0.822
Catchment Area (149)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.0	1.844
Catchment Area (150)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	1.3	0.612
Catchment Area (151)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.4	2.513
Catchment Area (152)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	15.0	6.903
Catchment Area (153)	FSR: 100 years: +20 %: 15 mins: Winter	0.04	21.2	9.767
Landscape 8 (1)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	1.5	0.705
Catchment Area (156)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.1	1.886
Catchment Area (157)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.2	2.843
Catchment Area (158)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.8	3.587
Catchment Area (159)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.7	3.089
Catchment Area (160)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.5	2.552
Catchment Area (161)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.0	2.297
Catchment Area (125)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.7	1.257

Catchment Area (126)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	7.6	3.515
Catchment Area (127)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	14.5	6.705
Catchment Area (128)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.4	5.248
Catchment Area (129)	FSR: 100 years: +20 %: 15 mins: Winter	0.02	11.8	5.467
Catchment Area (130)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	6.2	2.843
Catchment Area (132)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.0	1.844
Catchment Area (162)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.7	1.248
Catchment Area (96)	FSR: 100 years: +20 %: 15 mins: Winter	0.03	12.4	5.707
Catchment Area (163)	FSR: 100 years: +20 %: 15 mins: Winter	0.04	20.9	9.653
Catchment Area (45)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	4.1	1.916
Catchment Area (146)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	3.7	1.697
Catchment Area (155)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.2	1.029
Catchment Area (164)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.5	2.558
Catchment Area (165)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	5.6	2.567
Catchment Area (166)	FSR: 100 years: +20 %: 15 mins: Winter	0.01	2.5	1.170
Catchment Area (167)	FSR: 100 years: +20 %: 15 mins: Winter	0.00	2.3	1.077
Catchment Area (168)	FSR: 100 years: +20 %: 120 mins: Winter	2.42	4.1	28.290

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Junctions Summary Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Resident Volume

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
MH20	FSR: 100 years: +20 %: 15 mins: Winter	125.266	123.841	123.962	0.121	31.0	0.137	0.000	29.8	14.205	OK
MH21	FSR: 100 years: +20 %: 15 mins: Winter	126.103	122.644	123.836	1.192	99.6	1.348	0.000	57.9	43.745	OK
MH22	FSR: 100 years: +20 %: 15 mins: Winter	124.360	122.328	123.691	1.363	93.8	1.541	0.000	90.7	61.500	Surcharged
MH24	FSR: 100 years: +20 %: 15 mins: Winter	124.350	122.281	123.600	1.319	134.3	1.492	0.000	131.3	79.911	Surcharged
MH26	FSR: 100 years: +20 %: 15 mins: Winter	123.903	122.124	123.409	1.285	200.4	1.453	0.000	196.2	113.542	Surcharged
MH19	FSR: 100 years: +20 %: 15 mins: Winter	123.746	121.946	123.191	1.245	437.8	1.781	0.000	432.6	246.177	Surcharged
MH28	FSR: 100 years: +20 %: 1440 mins: Winter	123.728	122.037	122.846	0.809	44.3	1.158	0.000	44.1	2010.443	Surcharged
MH23	FSR: 100 years: +20 %: 15 mins: Winter	124.390	123.277	123.731	0.454	23.7	0.513	0.000	18.8	10.944	Surcharged
MH25	FSR: 100 years: +20 %: 15 mins: Winter	124.748	123.698	123.785	0.087	32.3	0.098	0.000	31.8	14.829	OK
MH14	FSR: 100 years: +20 %: 960 mins: Winter	124.109	123.057	124.051	0.994	3.3	1.125	0.000	3.3	324.662	Flood Risk
MH18	FSR: 100 years: +20 %: 15 mins: Winter	124.008	122.185	123.312	1.127	171.8	1.613	0.000	144.4	97.829	Surcharged
MH16	FSR: 100 years: +20 %: 30 mins: Winter	124.300	123.211	123.419	0.208	1.4	0.235	0.000	0.2	0.352	Surcharged
MH15	FSR: 100 years: +20 %: 30 mins: Winter	124.200	122.991	123.419	0.428	3.8	0.485	0.000	6.3	7.592	Surcharged
MH12	FSR: 100 years: +20 %: 960 mins: Winter	124.559	123.222	124.052	0.830	9.5	0.939	0.000	9.4	216.249	Surcharged
MH13	FSR: 100 years: +20 %: 960 mins: Winter	124.692	123.457	124.052	0.595	3.5	0.673	0.000	3.5	80.387	Surcharged
MH7	FSR: 100 years: +20 %: 60 mins: Winter	124.851	123.321	123.346	0.025	0.0	0.029	0.000	0.1	0.064	OK
MH1	FSR: 100 years: +20 %: 15 mins: Winter	125.170	123.180	123.799	0.619	51.9	0.700	0.000	45.1	23.833	Surcharged
MH2	FSR: 100 years: +20 %: 15 mins: Winter	124.301	122.970	123.445	0.475	59.6	0.537	0.000	54.1	28.740	Surcharged
MH3	FSR: 100 years: +20 %: 60 mins: Winter	124.234	122.563	123.341	0.778	42.0	1.114	0.000	31.6	79.970	Surcharged

MH6	FSR: 100 years: +20 %: 60 mins: Winter	123.825	122.445	123.342	0.897	41.1	1.284	0.000	39.1	78.223	Surcharged
MH9	FSR: 100 years: +20 %: 60 mins: Winter	124.003	122.329	123.342	1.013	56.7	1.450	0.000	55.3	99.823	Surcharged
MH11	FSR: 100 years: +20 %: 960 mins: Winter	124.273	123.426	124.052	0.626	4.2	0.708	0.000	4.2	95.440	Flood Risk
MH8	FSR: 100 years: +20 %: 60 mins: Winter	124.115	122.925	123.345	0.420	13.4	0.475	0.000	13.0	20.657	Surcharged
MH5	FSR: 100 years: +20 %: 60 mins: Winter	124.589	122.944	123.240	0.296	3.6	0.335	0.000	2.7	8.420	Surcharged
MH4	FSR: 100 years: +20 %: 60 mins: Winter	124.410	122.749	123.241	0.492	9.6	0.556	0.000	6.0	23.436	Surcharged
MH10	FSR: 100 years: +20 %: 30 mins: Winter	124.211	123.161	123.366	0.205	22.5	0.232	0.000	22.3	20.695	Surcharged
MH17	FSR: 100 years: +20 %: 60 mins: Winter	123.997	122.244	123.340	1.096	22.4	1.568	0.000	21.3	101.818	Surcharged
MH27	FSR: 100 years: +20 %: 15 mins: Winter	124.138	123.012	123.513	0.501	40.7	0.567	0.000	34.1	18.771	Surcharged
MH30	FSR: 100 years: +20 %: 1440 mins: Winter	123.000	121.765	122.839	1.074	15.6	1.214	0.000	13.5	1737.540	Flood Risk
Outfall to Watercourse 120.35 AoD	FSR: 1 years: +0 %: 15 mins: Summer	122.178	121.448	121.488	0.040	2.8	0.000	0.000	2.8	2.065	OK
MH29	FSR: 100 years: +20 %: 1440 mins: Winter	123.857	122.657	122.846	0.189	1.3	0.213	0.000	1.3	42.902	OK

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Velocity (m/s)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)
Pond 2	FSR: 100 years: +20 %: 60 mins: Winter	123.342	123.342	1.046	1.046	55.3	25.812	0.153	0.000		31.7	91.747	-0.601
Pond 1	FSR: 100 years: +20 %: 960 mins: Winter	124.052	124.052	0.941	0.941	19.3	296.605	0.000	0.000		3.3	325.496	9.314
Porous Paving	FSR: 100 years: +20 %: 960 mins: Winter	124.423	124.422	0.223	0.286	0.2	3.481	0.000	0.000		0.2	1.385	17.292
Porous Paving (5)	FSR: 100 years: +20 %: 1440 mins: Winter	124.396	124.396	0.233	0.283	0.2	4.203	0.000	0.000		0.1	1.381	15.367
Porous Paving (6)	FSR: 100 years: +20 %: 1440 mins: Winter	124.410	124.410	0.234	0.284	0.2	4.201	0.000	0.000		0.1	1.537	15.010
Porous Paving (7)	FSR: 100 years: +20 %: 1440 mins: Winter	123.958	123.958	0.220	0.284	0.1	3.446	0.000	0.000		0.1	1.737	18.114
Porous Paving (8)	FSR: 100 years: +20 %: 1440 mins: Winter	123.947	123.947	0.221	0.284	0.1	3.458	0.000	0.000		0.1	1.770	17.828
Porous Paving (9)	FSR: 100 years: +20 %: 1440 mins: Winter	124.592	124.592	0.221	0.285	0.1	3.464	0.000	0.000		0.1	1.799	17.696
Porous Paving (10)	FSR: 100 years: +20 %: 1440 mins: Winter	124.018	124.017	0.221	0.284	0.1	3.447	0.000	0.000		0.1	1.762	18.101
Porous Paving (11)	FSR: 100 years: +20 %: 1440 mins: Winter	123.750	123.750	0.237	0.286	0.4	5.457	0.000	0.000		0.7	4.845	13.980
Porous Paving (12)	FSR: 100 years: +20 %: 1440 mins: Winter	123.557	123.557	0.246	0.286	0.4	4.592	0.000	0.000		0.6	4.532	12.542
Porous Paving (16)	FSR: 100 years: +20 %: 60 mins: Winter	123.262	123.225	0.000	0.152	9.6	10.743	0.000	0.000		5.6	9.643	89.917
Porous Paving (18)	FSR: 100 years: +20 %: 1440 mins: Winter	123.509	123.509	0.247	0.287	0.7	4.616	0.000	0.000		1.0	6.467	12.073
Porous Paving (19)	FSR: 100 years: +20 %: 1440 mins: Winter	123.669	123.669	0.225	0.285	0.3	6.612	0.000	0.000		0.5	3.880	16.037

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Porous Paving (20)	FSR: 100 years: +20 %: 1440 mins: Winter	124.195	124.195	0.217	0.284	0.2	3.608	0.000	0.000		0.1	1.649	18.550
Porous Paving (1)	FSR: 100 years: +20 %: 960 mins: Winter	123.835	123.835	0.246	0.286	0.4	4.595	0.000	0.000		0.6	2.270	12.468
Porous Paving (2)	FSR: 100 years: +20 %: 960 mins: Winter	123.971	123.971	0.246	0.286	0.3	4.595	0.000	0.000		0.3	2.350	12.475
Porous Paving (3)	FSR: 100 years: +20 %: 1440 mins: Winter	124.190	124.190	0.235	0.285	0.2	5.620	0.000	0.000		0.3	2.913	14.360
Porous Paving (4)	FSR: 100 years: +20 %: 1440 mins: Winter	124.283	124.284	0.237	0.284	0.2	5.255	0.000	0.000		0.2	1.932	14.205
Porous Paving (21)	FSR: 100 years: +20 %: 1440 mins: Winter	124.637	124.637	0.225	0.285	0.4	6.615	0.000	0.000		0.5	4.109	15.996
Porous Paving (22)	FSR: 100 years: +20 %: 1440 mins: Winter	124.326	124.326	0.245	0.284	0.3	4.572	0.000	0.000		0.4	3.392	12.921
Porous Paving (23)	FSR: 100 years: +20 %: 1440 mins: Winter	125.464	125.463	0.235	0.285	0.3	5.610	0.000	0.000		0.4	4.134	14.508
Porous Paving (24)	FSR: 100 years: +20 %: 960 mins: Winter	124.841	124.842	0.238	0.286	0.6	5.476	0.000	0.000		1.0	3.884	13.683
Porous Paving (25)	FSR: 100 years: +20 %: 240 mins: Winter	124.277	124.273	0.253	0.290	1.1	4.694	0.000	0.000		1.5	2.304	10.592
Porous Paving (26)	FSR: 100 years: +20 %: 240 mins: Winter	124.446	124.441	0.251	0.294	1.8	5.694	0.000	0.000		2.6	4.177	10.240
Porous Paving (27)	FSR: 100 years: +20 %: 1440 mins: Winter	123.907	123.906	0.229	0.285	0.4	6.297	0.000	0.000		0.6	4.206	15.340
Porous Paving (28)	FSR: 100 years: +20 %: 1440 mins: Winter	123.746	123.746	0.246	0.283	0.2	4.189	0.000	0.000		0.2	1.916	12.962
Porous Paving (29)	FSR: 100 years: +20 %: 960 mins: Winter	123.683	123.684	0.221	0.285	0.2	3.460	0.000	0.000		0.1	1.278	17.791
Porous Paving (30)	FSR: 100 years: +20 %: 960 mins: Winter	123.787	123.787	0.223	0.286	0.2	3.486	0.000	0.000		0.2	1.394	17.174
Porous Paving (31)	FSR: 100 years: +20 %: 120 mins: Winter	123.660	123.636	0.280	0.296	2.7	4.977	0.000	0.000		2.1	3.521	5.202
Porous Paving (32)	FSR: 100 years: +20 %: 360 mins: Winter	123.586	123.584	0.251	0.290	1.5	4.675	0.000	0.000		1.4	3.205	10.959

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Porous Paving (33)	FSR: 100 years: +20 %: 1440 mins: Winter	123.855	123.855	0.235	0.285	0.3	5.612	0.000	0.000		0.5	3.812	14.485
Porous Paving (34)	FSR: 100 years: +20 %: 1440 mins: Winter	123.692	123.692	0.235	0.285	0.3	5.617	0.000	0.000		0.5	4.312	14.400
Pond 3	FSR: 100 years: +20 %: 30 mins: Winter	123.421	123.417	0.574	0.569	6.3	0.131	0.000	0.000		3.3	7.888	35.985
Pond 4	FSR: 100 years: +20 %: 60 mins: Winter	123.342	123.342	1.075	1.075	31.7	12.163	0.000	0.000		22.4	103.793	8.807
Swale	FSR: 1 years: +0 %: 15 mins: Summer	123.204	122.914	0.000	0.000	0.0	0.000	0.000	0.000	0.0	0.0	0.000	100.000
Swale (1)	FSR: 100 years: +20 %: 60 mins: Winter	124.735	124.214	0.472	0.654	17.4	14.178	0.000	0.000	0.3	9.7	36.904	71.754
Pond 5	FSR: 100 years: +20 %: 1440 mins: Winter	122.846	122.846	1.046	1.046	45.4	978.212	0.000	0.000		15.6	1738.147	-5.312

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Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
S25.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH20	MH21	125.266	123.962	0.198	14.203	0.6	0.35	29.8	OK
S25.001	FSR: 100 years: +20 %: 15 mins: Summer	Pipe	MH21	MH22	126.103	123.769	0.300	38.752	1.0	0.6	71.8	OK
S25.002	FSR: 100 years: +20 %: 15 mins: Summer	Pipe	MH22	MH24	124.360	123.614	0.300	54.473	1.4	1.15	97.3	Surcharged
S25.003	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH24	MH26	124.350	123.600	0.375	79.911	1.2	0.64	131.3	Surcharged
S25.004	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH26	MH19	123.903	123.409	0.375	113.542	1.8	0.65	196.2	Surcharged
S1.009	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH19	MH28	123.746	123.191	0.450	246.177	2.7	2.61	432.6	Surcharged
S29.001	FSR: 100 years: +20 %: 15 mins: Summer	Pipe	MH23	MH22	124.390	123.665	0.225	9.752	0.5	0.17	20.6	Surcharged
S32.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH25	MH24	124.748	123.785	0.225	14.829	0.8	0.32	31.8	OK
S16.003	FSR: 100 years: +20 %: 120 mins: Winter	Pipe	MH14	MH15	124.109	123.848	0.225	36.442	0.6	0.09	3.7	Flood Risk
S1.008	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH18	MH19	124.008	123.312	0.450	90.880	0.9	0.62	144.4	Surcharged
S21.000	FSR: 100 years: +20 %: 120 mins: Summer	Pipe	MH16	MH15	124.300	123.269	0.150	0.000	0.0	0.02	0.4	OK
S16.004	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	MH15	Pond 3	124.200	123.098	0.189	457.970	0.3	0.16	10.0	OK
S16.005	FSR: 100 years: +20 %: 240 mins: Winter	Pipe	Pond 3	Pond 4	123.582	123.225	0.150	60.248	0.8	0.24	4.6	Surcharged
S7.001	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	MH7	MH8	124.851	123.333	0.017	2.929	0.2	0.01	0.2	OK

S1.005	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	Pond 2	Pond 4	123.338	123.342	0.375	79.596	0.5	0.31	31.7	Flood
S16.001	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH12	Pond 1	124.559	123.523	0.300	49.847	1.6	1.18	97.9	Surcharged
S1.006	FSR: 100 years: +20 %: 240 mins: Summer	Pipe	Pond 4	MH17	123.607	123.107	0.375	233.863	0.2	0.25	25.9	Surcharged
S1.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH1	MH2	125.170	123.799	0.225	23.833	1.1	1.23	45.1	Surcharged
S1.001	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH2	MH3	124.301	123.445	0.225	28.740	1.4	1.48	54.1	Surcharged
S1.002	FSR: 100 years: +20 %: 15 mins: Summer	Pipe	MH3	MH6	124.234	123.099	0.450	26.869	0.6	0.35	53.4	Surcharged
S1.003	FSR: 100 years: +20 %: 30 mins: Winter	Pipe	MH6	MH9	123.825	123.331	0.450	45.776	0.6	0.32	48.6	Surcharged
S16.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH11	MH12	124.273	123.750	0.225	22.538	1.2	1.24	47.7	Surcharged
S7.002	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH8	MH6	124.115	123.181	0.225	10.659	0.9	0.44	24.6	Surcharged
S4.000	FSR: 100 years: +20 %: 30 mins: Winter	Pipe	Porous Paving (16)	MH4	123.672	123.097	0.100	0.000	0.4	0.39	3.2	OK
S5.001	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	MH5	MH4	124.589	123.240	0.225	0.000	0.2	0.06	2.7	Surcharged
S2.000 (1)	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	MH4	MH3	124.410	123.241	0.300	0.000	0.1	0.1	6.1	Surcharged
S6.000	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	Porous Paving (16)	MH4	123.672	123.104	0.100	0.000	0.2	0.2	1.4	OK
S1.007	FSR: 100 years: +20 %: 240 mins: Winter	Pipe	MH17	MH18	123.997	123.118	0.375	247.190	0.5	0.37	38.1	Surcharged
S35.001	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH27	MH26	124.138	123.513	0.225	18.771	0.9	0.29	34.1	Surcharged
S17.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH13	MH12	124.692	123.701	0.225	19.374	0.9	0.81	36.0	Surcharged
S16.002	FSR: 1 years: +0 %: 60 mins: Summer	Pipe	Pond 1	MH14	124.111	123.308	0.225	14.980	0.3	0.16	6.7	OK

S1.012	FSR: 30 years: +0 %: 960 mins: Winter	Pipe	MH30	Outfall to Watercourse 120.35 AoD	123.000	122.476	0.091	1018.996	0.9	0.34	13.5	Surcharged
S1.004	FSR: 100 years: +20 %: 30 mins: Winter	Pipe	MH9	Pond 2	124.003	123.332	0.450	59.869	0.6	0.45	68.0	Surcharged
S26.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (23)	MH21	125.639	125.439	0.150	2.659	0.0	0	0.2	OK
S27.000	FSR: 100 years: +20 %: 960 mins: Winter	Pipe	Porous Paving (24)	MH21	125.014	124.817	0.150	2.205	0.0	0	0.2	OK
S33.000	FSR: 100 years: +20 %: 360 mins: Winter	Pipe	Porous Paving (25)	MH24	124.433	124.255	0.150	2.989	0.0	0.01	0.7	OK
S34.000	FSR: 100 years: +20 %: 240 mins: Winter	Pipe	Porous Paving (26)	MH24	124.605	124.419	0.150	2.984	0.1	0.02	1.0	OK
S28.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (21)	MH21	124.822	124.607	0.225	1.665	0.0	0	0.1	OK
S31.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (22)	MH22	124.492	124.306	0.150	1.804	0.0	0	0.1	OK
S29.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (4)	MH23	124.456	124.260	0.010	2.158	0.3	0	0.1	OK
S30.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (3)	MH23	124.365	124.165	0.011	2.537	0.3	0	0.2	OK
S35.000	FSR: 100 years: +20 %: 960 mins: Winter	Pipe	Porous Paving (2)	MH27	124.135	123.951	0.015	2.840	0.3	0	0.3	OK
S36.000	FSR: 100 years: +20 %: 960 mins: Winter	Pipe	Porous Paving (1)	MH27	123.999	123.815	0.015	2.156	0.3	0	0.2	OK
S37.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (27)	MH26	124.087	123.878	0.150	1.961	0.0	0	0.1	OK
S38.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (28)	MH26	123.910	123.728	0.150	1.697	0.0	0	0.1	OK
S39.000	FSR: 100 years: +20 %: 960 mins: Winter	Pipe	Porous Paving (29)	MH19	123.873	123.652	0.150	1.184	0.0	0	0.1	OK
S40.000	FSR: 100 years: +20 %: 960 mins: Winter	Pipe	Porous Paving (30)	MH19	123.974	123.756	0.150	1.173	0.0	0	0.1	OK
S42.000	FSR: 100 years: +20 %: 120 mins: Winter	Pipe	Porous Paving (31)	MH28	123.790	123.628	0.053	3.478	2.2	0.03	2.1	Surcharged

S41.000	FSR: 100 years: +20 %: 360 mins: Winter	Pipe	Porous Paving (32)	MH19	123.744	123.565	0.150	2.409	0.0	0.01	0.6	OK
S23.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (33)	MH18	124.030	123.830	0.150	2.140	0.0	0	0.1	OK
S24.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (34)	MH18	123.867	123.667	0.150	2.159	0.0	0	0.1	OK
S13.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (19)	MH9	123.854	123.639	0.150	1.750	0.0	0	0.1	Surcharged
S14.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (18)	MH9	123.672	123.489	0.150	2.059	0.0	0	0.1	OK
S9.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (7)	MH8	124.148	123.926	0.014	1.732	0.1	0	0.1	OK
S7.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (5)	MH7	124.573	124.371	0.007	1.357	0.3	0	0.1	OK
S8.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (6)	MH7	124.586	124.385	0.008	1.575	0.5	0	0.1	OK
S2.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (9)	MH2	124.781	124.560	0.027	1.763	0.1	0	0.1	OK
S3.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (10)	MH2	124.207	123.986	0.026	1.761	0.1	0	0.1	OK
S11.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (11)	MH6	123.923	123.726	0.150	1.417	0.0	0	0.1	OK
S12.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (12)	MH6	123.722	123.537	0.150	1.977	0.0	0	0.1	OK
S5.000	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	Porous Paving (16)	MH5	123.672	123.104	0.100	0.000	0.4	0.58	2.5	OK
S10.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (8)	MH8	124.136	123.915	0.014	1.763	0.1	0	0.1	OK
S18.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving	MH12	124.610	124.391	0.150	1.752	0.0	0	0.1	OK
S19.000	FSR: 100 years: +20 %: 1440 mins: Winter	Pipe	Porous Paving (20)	MH12	124.388	124.162	0.150	1.581	0.0	0	0.1	OK
S15.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH10	MH9	124.211	123.265	0.150	15.181	1.8	0.77	31.8	OK

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

S1.011	FSR: 30 years: +0 %: 960 mins: Winter	Pipe	Pond 5	MH30	123.000	122.480	0.225	1019.707	0.4	0.45	16.5	Surcharged
S22.000	FSR: 100 years: +20 %: 30 mins: Winter	No Delay	Pond 2	Pond 4		123.332	0.032	7.778	0.0		12.3	
S44.000	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Swale	Pond 5	123.804	122.914	0.041	0.000	0.0	0	0.0	OK
S1.010	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH28	Pond 5	123.728	122.827	0.450	248.748	2.7	2.35	436.5	Surcharged
S20.000	FSR: 100 years: +20 %: 60 mins: Winter	Pipe	Swale (1)	Pond 1	124.963	124.058	0.100	36.904	1.2	1.44	9.7	OK
S43.000	FSR: 100 years: +20 %: 15 mins: Winter	Pipe	MH29	Pond 5	123.857	122.711	0.147	9.180	1.8	0.13	19.7	OK

Project: Rathcoole	Date: 22/06/2026		
	Designed by: LB	Checked by:	Approved By:
Report Details: Type: Phase Management Storm Phase: Development B	Company Address: 2nd Floor 177 Bothwell Street, Glasgow G2 7EQ		

Development B
FSR: 100 years: Increase Rainfall (%): +20: 30 mins: Winter

Simulation Health - The results show convergence was difficult for the analysis, please review the design.

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Outfall to Watercourse 120.35 AoD			13.4	29.800
TOTAL	708.0	658.330	26.1	45.416

Appendix G – PCE and CoF Correspondence

CONFIRMATION OF FEASIBILITY

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

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

Sean Ginty

AECOM
4th Floor
One Burlington Plaza
Dublin 4
D04RH96

5 August 2026

Our Ref: CDS26006156 Pre-Connection Enquiry
Site At, Rathcoole, Dublin

Dear Applicant/Agent,

We have completed the review of the Pre-Connection Enquiry.

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Housing Development of 130 unit(s) at Site At, Rathcoole, Dublin, (the **Development)**.

Based upon the details provided we can advise the following regarding connecting to the networks;

- **Water Connection** - Feasible without infrastructure upgrade by Uisce Éireann

- The Development can be supplied from the existing 4'' main.



Stiúrthóirí / Directors: Jerry Grant (Cathaoirleach / Chairperson), Niall Gleeson (POF / CEO), Douglas Millican, Michael Nolan, Patricia King, Eileen Maher, Cathy Mannion, Michael Walsh, Rena O'Sullivan and Orlagh Nevin.
Oifig Chláraithe / Registered Office: Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, D01 NP86 / Colvill House, 24-26 Talbot Street, Dublin, Ireland D01NP86
Is cuideachta ghníomhaíochta ainmnithe atá faoi theorainn scaireanna é Uisce Éireann / Uisce Éireann is a designated activity company, limited by shares.
Cláraithe in Éirinn Uimh.: 530363 / Registered in Ireland No.: 530363

- Please note that Uisce Éireann cannot guarantee a flow rate to meet fire flow requirements. In order to guarantee a flow to meet the Fire Authority requirements, the Developer must provide adequate fire storage capacity within the Development.
- As per Uisce Éireann GIS records (please see Section B of this letter), Uisce Éireann assets are present on the site. The Developer must demonstrate that proposed structures and works will not inhibit access for maintenance or endanger structural or functional integrity of the assets during and after the works. Drawings (showing clearance distances, changing to ground levels) and Method Statements should be included in the Detailed Design of the Development. A wayleave in favour of Uisce Éireann will be required over the assets that are not located within the Public Space. For design submissions and queries related to diversion/build near or over, please contact UÉ Diversion Team via email address diversions@water.ie

- **Wastewater Connection** - Feasible Subject to upgrades and following conditions:

- Approx. 200m network extension is required to connect the Development site to the 375 mm ID sewer on Mill Road. The extension line crosses private land and permission from the owner must be obtained. The Developer will fund the extension works and the fee will be calculated at a connection application stage.
- There are water supply trunk mains within site boundaries. Internal wastewater and water network design must be approved by Uisce Éireann prior planning application for the Development. Please note the design must be in accordance with Uisce Éireann Code of Practice and Standard Details. Drawings (showing clearance distances, changing to ground levels) and Method Statements for the proposed wastewater sewer crossing the existing trunk mains, must be submitted to diversions@water.ie for approval.
- 

This letter does not constitute an offer, in whole or in part, to provide a connection to any Uisce Éireann infrastructure. Before the Development can be connected to our network(s) you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.

As the network capacity changes constantly, this review is only valid at the time of its completion. As soon as planning permission has been granted for the Development, a completed connection application should be submitted. The connection application is available at www.water.ie/connections/get-connected/

Where can you find more information?

- **Section A -** What is important to know?
- **Section B -** Details of Uisce Éireann's Network(s)

This letter is issued to provide information about the current feasibility of the proposed connection(s) to Uisce Éireann's network(s). This is not a connection offer and capacity in Uisce Éireann's network(s) may only be secured by entering into a connection agreement with Uisce Éireann.

For any further information, visit **www.water.ie/connections**, **email newconnections@water.ie** or contact 1800 278 278**.**

Yours sincerely,



Dermot Phelan
Connections and Developer Services

Section A - What is important to know?

What is important to know?	Why is this important?
Do you need a contract to connect?	• Yes, a contract is required to connect. This letter does not constitute a contract or an offer in whole or in part to provide a connection to Uisce Éireann's network(s). • Before the Development can connect to Uisce Éireann's network(s), you must submit a connection application and be granted and sign a connection agreement with Uisce Éireann.
When should I submit a Connection Application?	• A connection application should only be submitted after planning permission has been granted.
Where can I find information on connection charges?	• Uisce Éireann connection charges can be found at: https://www.water.ie/connections/information/charges/
Who will carry out the connection work?	• All works to Uisce Éireann's network(s), including works in the public space, must be carried out by Uisce Éireann*. *Where a Developer has been granted specific permission and has been issued a connection offer for Self-Lay in the Public Road/Area, they may complete the relevant connection works
Fire flow Requirements	• The Confirmation of Feasibility does not extend to fire flow requirements for the Development. Fire flow requirements are a matter for the Developer to determine. • **What to do?** - Contact the relevant Local Fire Authority
Plan for disposal of storm water	• The Confirmation of Feasibility does not extend to the management or disposal of storm water or ground waters. • **What to do?** - Contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges.
Where do I find details of Uisce Éireann's network(s)?	• Requests for maps showing Uisce Éireann's network(s) can be submitted to: datarequests@water.ie

What are the design requirements for the connection(s)?	• The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this Development shall comply with ***the Uisce Éireann Connections and Developer Services Standard Details and Codes of Practice,*** available at www.water.ie/connections
Trade Effluent Licensing	• Any person discharging trade effluent** to a sewer, must have a Trade Effluent Licence issued pursuant to section 16 of the Local Government (Water Pollution) Act, 1977 (as amended). • More information and an application form for a Trade Effluent License can be found at the following link: https://www.water.ie/business/trade-effluent/about/ **trade effluent is defined in the Local Government (Water Pollution) Act, 1977 (as amended)

Section B – Details of Uisce Éireann's Network(s)

The map included below outlines the current Uisce Éireann infrastructure adjacent the Development: To access Uisce Éireann Maps email datarequests@water.ie



Reproduced from the Ordnance Survey of Ireland by Permission of the Government. License No. 3-3-34

Note: The information provided on the included maps as to the position of Uisce Éireann's underground network(s) is provided as a general guide only. The information is based on the best available information provided by each Local Authority in Ireland to Uisce Éireann.

Whilst every care has been taken in respect of the information on Uisce Éireann's network(s), Uisce Éireann assumes no responsibility for and gives no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided, nor does it accept any liability whatsoever arising from or out of any errors or omissions. This information should not be solely relied upon in the event of excavations or any other works being carried out in the vicinity of Uisce Éireann's underground network(s). The onus is on the parties carrying out excavations or any other works to ensure the exact location of Uisce Éireann's underground network(s) 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.

Outlook

RE: CDS26006156 Site At, Rathcoole, Dublin EMAIL:0161249

From Ginty, Sean <sean.ginty@aecom.com>

Date Mon 8/10/2026 4:49 PM

To Fergal Broderick <fbroderick@water.ie>; Marina Zivanovic Byrne <mzbyrne@water.ie>; alicia.quijada@water.ie <alicia.quijada@water.ie>

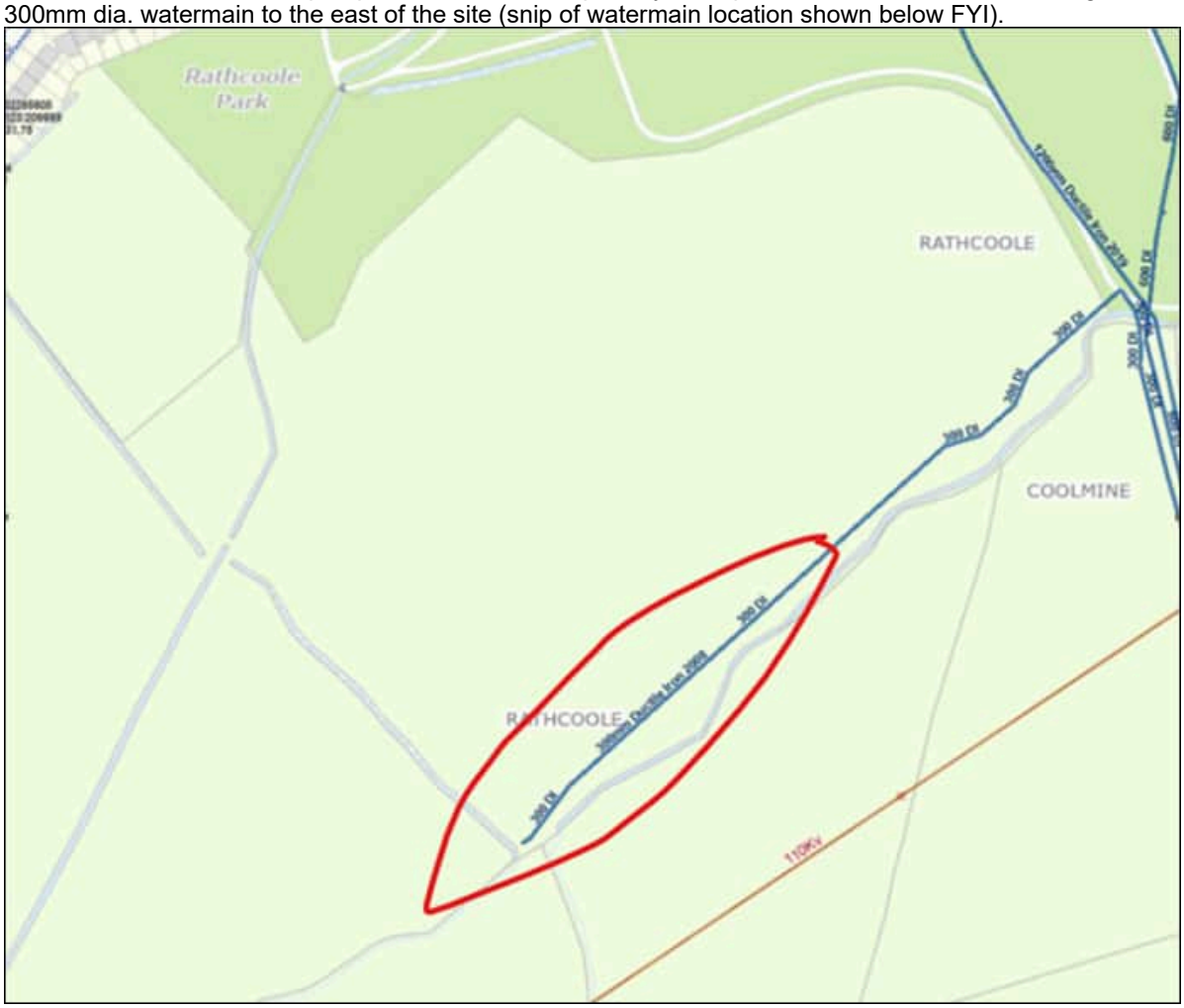
Cc newconnections <newconnections@water.ie>; Shaughnessy, Laura <Laura.Shaughnessy@aecom.com>; Mulligan, Karl <Karl.Mulligan@aecom.com>

4 attachments (26 MB)

CDS26006156 COF.pdf; 2430-MET-BZ-00-DR-A-111200.pdf; 2430-MET-ZZ-00-DR-A-101100.pdf; RE: Updated PCE | Site at, Rathcoole, Dublin.eml;

Hi Fergal et al,
In relation to the proposed Pre-Connection Enquiry (CDS26006156) for the proposed development in Rathcoole, we have recently received a Confirmation of Feasibility for the application, see attached FYI.

You may recall that, during a call between yourself (and your UÉ colleagues) and AECOM on the 8th October last year, we discussed 3 no. potential outfall routes for the foul water network. During the call, UÉ advised that the most feasible/preferred option would be to outfall to the existing foul water network at Beechwood Lawns via a pumped solution, which was reflected on our drainage proposals submitted as part of the PCE. I have attached herein the PCE lodgement email issued by myself to Marina last month, which includes the relevant attachments (proposed drainage layouts etc).
In the attached CoF, I note that UÉ is outlining an alternate foul outfall route, which requires a circa 200m extension to the east before connecting to the existing 375mm sewer at Mill Road. As this request is contrary to what was advised by UÉ last October, could you please update us here on what might have changed during this interim period (i.e. from last October to now), and why UÉ have reverted to the preference of outfalling towards Mill Road?
As a side note, please also note that the proposed pump station location for the development will actually be per the attached PDF mark-ups (2430-MET-ZZ-00-DR-A-101100 & 2430-MET-ZZ-00-DR-A-101200), following minor layout updates following lodgment of the PCE. Please advise if you have any comments in relation to the pump station location, especially in respect of its distance to the existing 300mm dia. watermain to the east of the site (snip of watermain location shown below FYI).



Kind regards,
Sean Ginty MEng BEng MIEI
Senior Civil Engineer,
Civil, Buildings & Places, Ireland
M +353 (0)86 164 7509
sean.ginty@aecom.com

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T +353-1-696-6220
aecom.com

Delivering a better world

LinkedIn | Twitter | Facebook | Instagram

From: newconnections <newconnections@water.ie>
Sent: Wednesday 5 August 2026 11:47
To: Ginty, Sean <sean.ginty@aecom.com>
Cc: Therese Pender <tpender@sdublincoco.ie>
Subject: CDS26006156 Site At, Rathcoole, Dublin EMAIL:0161249

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This message came from outside your organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Report Suspicious

Subject: Pre-Connection Enquiry – CDS26006156 Site At, Rathcoole, Dublin

With regard to the pre-connection enquiry submitted for the above named address, please find Confirmation of Feasibility letter attached.

If you have any queries please feel free to contact the Connections and Developer Services Design Engineer (see contact details in the attached letter).

Regards,

Connections and Developer Services

Uisce Éireann
Teach Colvill, 24-26 Sráid Thalbóid, Baile Átha Cliath 1, Éire
Irish Water
Colvill House, 24-26 Talbot Street, Dublin 1, Ireland

Please do not respond to this email.

Is don duine amháin nó don eintiteas amháin ainmnithe ar an seoladh an fhaisnéis agus d'fhéadfadh ábhar faoi rún, faoi phribhléid nó ábhar atá íogair ó thaobh na tráchtála de a bheith mar chuid den fhaisnéis. Tá toirmeasc ar aon daoine nó aon eititis; nach dóibh siúd an fhaisnéis- aon athbhreithniú a dhéanamh, aon atarchur a dhéanamh nó aon athdháileadh a dhéanamh, nó aon úsáid eile a bhaint as an bhfaisnéis, nó aon ghníomh a bhraithfeadh ar an bhfaisnéis seo a dhéanamh agus d'fhéadfaí an dlí a shárú dá ndéanfaí sin. Séanann Uisce Éireann dliteanas as aon ghníomh agus as aon iarmhairt bunaithe ar úsáid neamhúdaraithe na faisnéise seo. Séanann Uisce Éireann