Proposed Residential Development at Rathcoole, Co. Dublin

Stage 2 Flood Risk Assessment

South Dublin County Council

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Quality information

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1. Introduction

1.1 Project Overview

AECOM has been appointed to conduct a Stage 2 Flood Risk Assessment (FRA) for a proposed residential development at Rathcoole, Co. Dublin. This assessment is conducted on behalf of South Dublin County Council (SDCC) in support of a planning application for the development located at Rathcoole, Co. Dublin.

This FRA is in line with the requirements of "The Planning System & Flood Risk Management Guidelines of Planning Authorities" (Guidelines) as published in November 2009, and the particular requirements of a site-specific Flood Risk Assessment as outlined in Appendix A of the Technical Appendices to those Guidelines.

The assessment is supported by a review of key documents, including but not limited to:

South Dublin County Development Plan (SDCDP) 2022 – 2028;

The Planning System & Flood Risk Management Guidelines (Guidelines);

Dublin City Strategic Flood Risk Assessment (DCSFRA) 2022 – 2028;

Greater Dublin Strategic Drainage Study (GDSDS);

Building Regulations Technical Guidance Document H: 2010 – Drainage and Water;

CIRIA Document C753: 2015 – The SuDS Manual.

The overall objective of this FRA is to identify existing flood risk sources, evaluate potential flood risk, & propose mitigation measures in alignment with regulatory standards.

1.2 Site Background

1.2.1 Site Location

The proposed residential development is located at the southern side of the Beechwood Lawns housing estate, Rathcoole, Co. Dublin, and forms part of a wider land use concept masterplan proposed by SDCC. The site itself is currently a greenfield site and is bordered to the south and west by undeveloped lands, to the north by Beechwood Lawns, and to the east by residential lands. The existing site levels fall from south-west to north-east, with the average gradient across the site being approximately 1:60. For illustrations of the proposed site location, please refer to Figure 1.1, where the indicative site boundary for the proposed masterplan development is shown in red.



Figure 1.1: Proposed Site Location at Rathcoole

1.2.2 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 extents as carried out by Murphy Geospatial.

1.2.3 Ground Penetrating Radar Survey

AECOM Have 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 Mulally'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.

1.2.4 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.

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

As part of the application process, AECOM has submitted a Pre-connection Enquiry (PCE) application to Uisce Éireann to estimate the impacts that the proposed development would have on the existing water and wastewater 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.

AECOM have reviewed the existing watermain network in the area and have 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. 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.

With regard to foul water proposals, AECOM have reviewed the existing wastewater infrastructure within the vicinity of the site and have proposed to service the 4 No. proposed housing units in Development Area A by connecting to the existing 150mm diameter concrete foul sewer at Mulally's Lane. For Development Area B, it is proposed to provide foul water drainage network, to cater for the remaining 126 No. housing units proposed in this development area, by connecting to the existing 225mm diameter foul sewer at Beechwood Lawns, located immediately outside the northern boundary of the site.

At present, Uisce Éireann are yet to issue Confirmation of Feasibility (CoF) to AECOM for this development. Refer to AECOM report 60739527-ACM-XX-00-RP-CE-10-0003 for further details in relation to the foul water and watermain networks proposed as part of this development.

2. Flood Risk Management Guidelines

2.1 The Planning System and Flood Risk Management Plan

In September 2008 “The Planning System and Flood Risk Management Guidelines for Planning Authorities” (Guidelines) were published by the Department of Environment, Heritage, and Local Government in Draft format. In November 2009, the adopted version of the document was published.

The Guidelines provide guidance on flood risk and development. A precautionary approach is recommended when considering flood risk management in the planning system. The core principle of the guidelines is to adopt a risk based sequential approach to managing flood risk and to avoid development in areas that are at risk. The sequential approach is based on the identification of flood zones for river and coastal flooding.

The objective of a site-specific Flood Risk Assessment (FRA) is to assess all types of flood risk to a development. The assessment should investigate potential sources of flood risk and include for the effects of climate change. The assessment is required to examine the impact of the development and the effectiveness of flood mitigation and management procedures proposed. It should also present the residual risks that remain after those measures are put in place.

This approach is based on the identification of flood zones for river and coastal flooding. “Flood Zones” are geographical areas used to identify areas at various levels of flood risk. It should be noted that these do not consider the presence of flood defences, as the risks remain of overtopping and breach of the defences. There are three flood zones defined (refer to Figure 2.1):

Flood Zone A (high probability of flooding) is for lands where the probability of flooding is greatest (greater than 1% or 1 in 100 for river flooding and 0.5% or 1 in 200 for coastal flooding).

Flood Zone B (moderate probability of flooding) refers to lands where the probability of flooding is moderate (between 0.1% or 1 in 1,000 and 1% or 1 in 100 for river flooding and between 0.1% or 1 in 1000 and 0.5% or 1 in 200 for coastal flooding).

Flood Zone C (low probability of flooding) refers to lands where the probability of flooding is low (less than 0.1% or 1 in 1000 for both river and coastal flooding).



Figure 2.1: Indicative Flood Zone Map (Extract from the Guidelines, Figure 2.3)

Once a flood zone has been identified, the guidelines set out the different types of development appropriate to each zone. Exceptions to the restriction of development due to potential flood risks are provided for through the use of the Justification Test, where the planning need and the sustainable management of flood risk to an acceptable level must be demonstrated. This recognises that there will be a need for future development in existing towns and urban centres that lie within flood risk zones, and that the avoidance of all future development in these areas would be unsustainable.

The Guidelines set out a stage approach to assessment. The stages of assessment are:

Flood Risk Identification (Stage 1) – Identification of any issues relating to the site that will require further investigation through a Flood Risk Assessment.

Initial Flood Risk Assessment (Stage 2) – Involves establishment of the sources of flooding, the extent of the flood risk, potential impacts of the development and possible mitigation measures.

Detailed Flood Risk Assessment (Stage 3) – Assess flood risk issues in sufficient detail to provide quantitative appraisal of potential flood risk to the development, impacts on flooding elsewhere and the effectiveness of any proposed mitigation measures.

This report addresses the requirements of a Stage 2 Site Specific Flood Risk Assessment.

3. Flood Risk Identification (Stage 1)

In order to establish the potential flood risk to the development, AECOM have carried out a review of available recorded information on flooding in and around the area of our proposed site. The following sources of information were used to identify flood risk, hazards, and past flooding events:

- South Dublin County Development Plan 2022-2028,
- South Dublin Strategic Flood Risk Assessment 2022-2028,
- Historic Flood Records (OPW and OSi),
- Catchment Flood Risk Assessment & Management (CFRAM),
- Geological Ground Conditions (GSI).

3.1.1 OPW Historical Flood Records

The Office of Public Works (OPW) collates available reports of flooding from all sources (e.g., fluvial, pluvial, coastal, etc.) on a nationwide basis. The OPW's website (www.floodinfo.ie) was consulted to obtain reports of recorded flooding within and surrounding the site. Figure 3.1 is an extract from the mapping available on the OPW database website which displays all recorded historical flood events within a 2.5 km radius of the subject site.

From Figure 3.1, it is noted that the closest recorded flood event was circa 100m to the north-east of the site, with this flood occurring within the vicinity of Avoca Road in October 2011. The subject site location is indicated by the red 'X' in Figure 3.1. Refer to Appendix D for the full report.

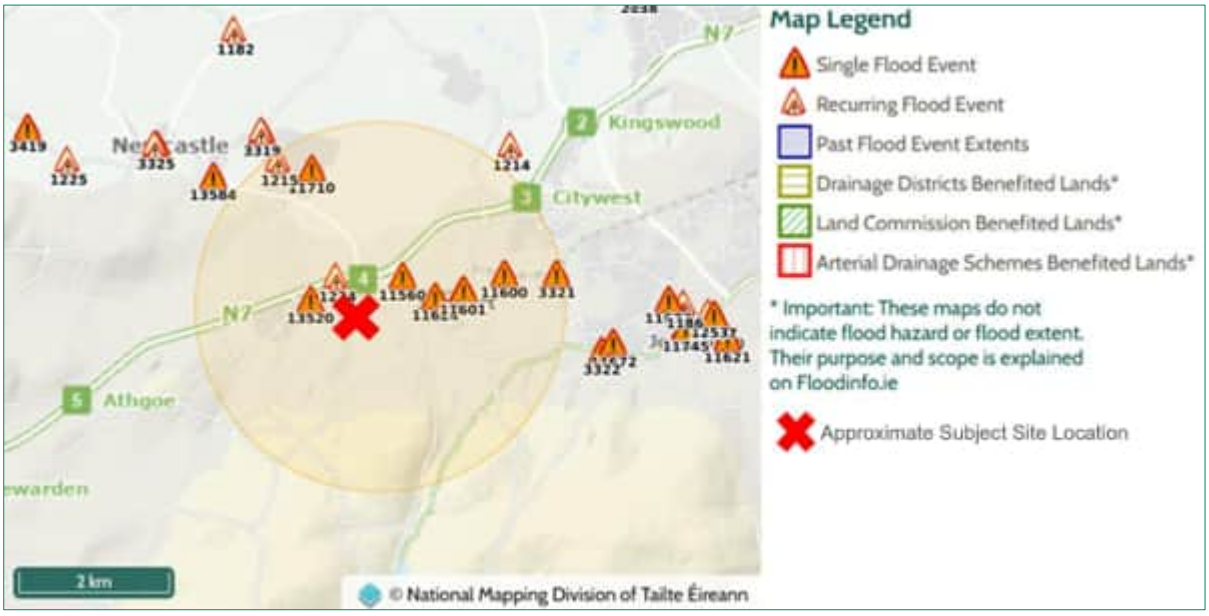


Figure 3.1: Recorded Historical Flood Events in Proximity of Subject Site (OPW Flood Maps)

3.1.2 Catchment Flood Risk Assessment & Management (CFRAM)

The Catchment Flood Risk Assessment & Management (CFRAM) Study, which was developed by the OPW in partnership with other government bodies, is a nationwide implemented program which has been carried out in partnership and collaboration with the water framework directive (WFD) which has been designed to create a series of Preliminary Flood Risk Assessments (PFRA) for the nation as a whole. The PFRA fluvial data has since been replaced by the National Indicative Fluvial Mapping (NIFM) for fluvial flood extents, however, this is only the case where CFRAM flood outlines are not provided and where the catchment is greater than 5km^2. The CFRAM program main objective is to provide guidance in the reduction and mitigation of flood risk for Irish developments which is achieved in line with the EU Flood Directive 2007.

OPW CFRAM Maps for the area were reviewed to identify whether the site is located within, adjacent to, or otherwise affected by mapped fluvial or coastal flood extents. The CFRAM mapping available provides estimated water levels for several fluvial flood events at given nodes along the following watercourses:

- Camac River, located at the east of the subject site.
- Crockshane (Slade) Stream, that runs along the southern perimeter of the site.
- The Coolmine Stream, which runs south to north throughout the subject site, prior discharging into the existing dry swales and pond serving the Rathcoole Park.

Based on these predicted water levels at nodes withing the hydraulic model, fluvial flood extents associated with the 10% AEP event, 1% AEP event (Flood Zone A), and the 0.1% AEP event (Flood Zone B) are mapped. Figure 3.2 is an extract from floodinfo.ie, which shows the extents of the identified watercourses around the immediate proximity of the site

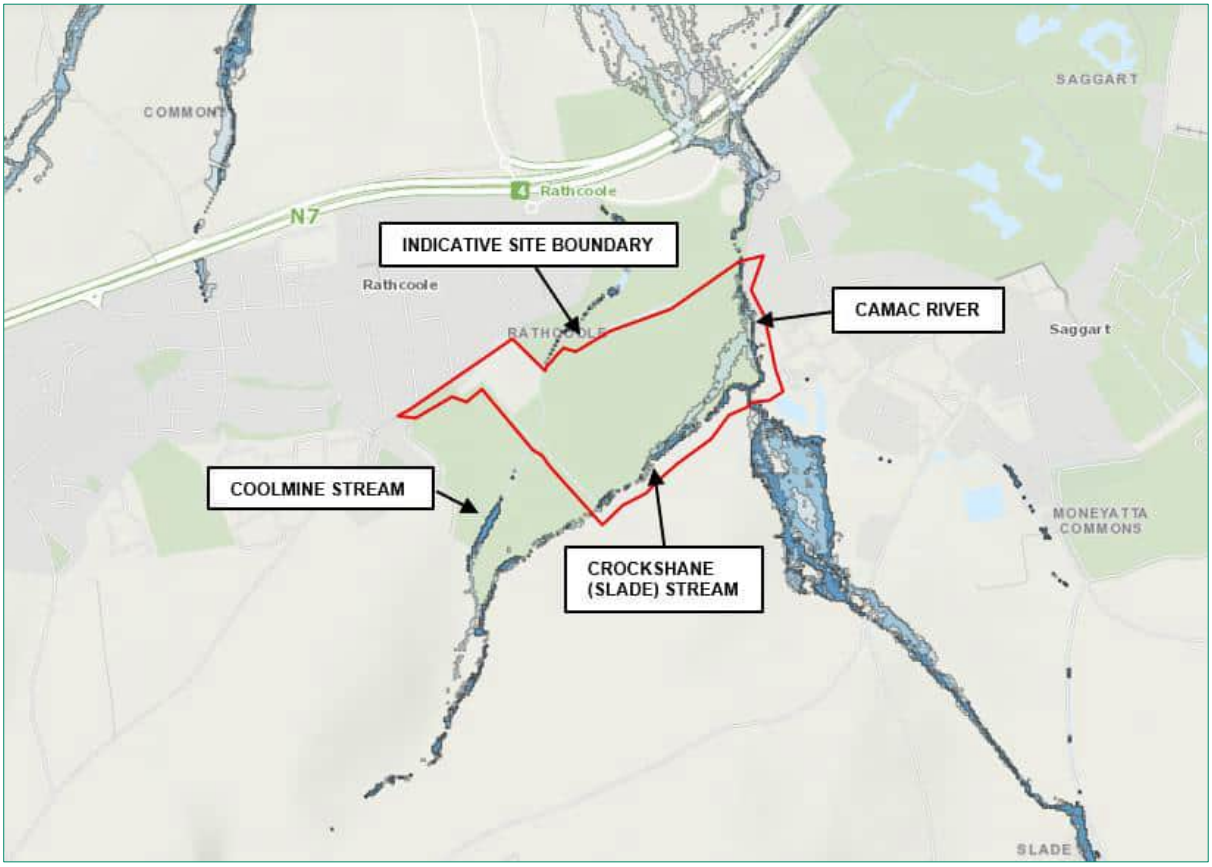


Figure 3.2: Present Day Flood Extents (floodinfo.ie)

At the current date, CFRAM flood extent maps have been published by the OPW as part of the modelling undertaken by CFRAM for the watercourses and surrounding hinterland. CFRAM mapping has been noted to cover the full extents of the subject site, with the site extents being captured within three separate CFRAM maps, with these maps being listed as:

- E09CAM_EXFCD_F1_03,
- E09CAM_EXFCD_F1_04,
- E09CAM_EXFCD_F1_05.

Upon review, the findings from these CFRAM maps are presented in Section 4.1.

3.1.3 Geological Soil Conditions

The Geological Survey of Ireland (GSI) published data has been used in this study to get an indication of the geological soil conditions, most notably, the subsoil permeability and any potential groundwater vulnerability based on GSI records. The Groundwater Vulnerability map (Groundwater Data Viewer) shows land areas where groundwater can be easily contaminated. It also shows areas where it is very well protected by the natural subsoil layers.

If geologists find features in the landscape like sinkholes or sinking streams ('karst' features), these are outlined as being extremely vulnerable. Where the water table is close to the surface in sand and gravel aquifers, groundwater vulnerability is also extremely vulnerable. Four groundwater vulnerability categories are defined by the DELF/EPA/GSI (1999), which follows the vulnerability mapping criteria as indicated in Figure 3.3.

Depth to rock	Hydrogeological Requirements for Vulnerability Categories				
	Diffuse recharge			Point Recharge	Unsaturated Zone
	high permeability (*sand/gravel*)	Moderate permeability (*sandy subsoil*)	low permeability (*clayey subsoil, clay, peat*)	(*swallow holes, losing streams*)	(*sand & gravel aquifers only*)
0–3 m	**Extreme**	**Extreme**	**Extreme**	**Extreme (30 m radius)**	**Extreme**
3–5 m	**High**	**High**	**High**	**N/A**	**High**
5–10 m	**High**	**High**	**Moderate**	**N/A**	**High**
>10 m	**High**	**Moderate**	**Low**	**N/A**	**High**

i N/A = not applicable.
ii Release point of contaminants is assumed to be 1–2 m below ground surface.
iii Permeability classifications relate to the engineering behaviour as described by BS5930.
iv Outcrop and shallow subsoil (i.e. generally <1.0 m) areas are shown as a sub-category of extreme vulnerability.

(amended from Deakin and Daly (1999) and DELG/EPA/GSI (1999))

Figure 3.3: Vulnerability Mapping Criteria (adapted from DELG/EPA/GSI, 1999)

This site is located within a high vulnerability classification as shown in Figure 3.4, which indicates a high vulnerability to groundwater contamination. It is noted that all GIS data is indicative only, and that further ground investigations should be undertaken to clarify the existing conditions.



Figure 3.4: Groundwater Vulnerability Mapping (GSI)

Groundwater flooding can occur during lengthy periods of heavy rainfall, typically during later winter/early spring when the groundwater table is already high. If the groundwater level rises above surface level, it can pond at local points and cause periods of flooding.

Of note, subsoil permeability is useful in determining the filtration characteristics of the soil. AECOM have reviewed the mapping for the subsoil permeability within the site. Figure 3.5 is an extract from the GSI mapping, which shows the site to have moderate permeability across the full extent of the subject site, as well as the immediate surrounding area.



Figure 3.5: Groundwater Subsoil Permeability (GSI)

3.2 South Dublin County Development Plan 2022 - 2028

In preparing this Flood Risk Assessment, AECOM have taken cognisance of the South Dublin County Development Plan 2022-2028 (SDCDP). The SDCDP was adopted by SDCC on the 22nd June 2022, before coming into effect on the 3rd August 2022. As part of the SDCDP, a detailed Strategic Flood Risk Assessment (SFRA) is included, which covers the full extents of the SDCC jurisdiction. Within this SFRA, 26 separate flood zone maps are included, which detail the extents of the jurisdiction that lie within Flood Zone A and Flood Zone B.

Refer to Figure 3.6 for an extract of flood zone map 14 from the SFRA, which illustrates portions of the site lying within both Flood Zone A and Flood Zone B. A series of riparian corridors are also shown to be running through the site.

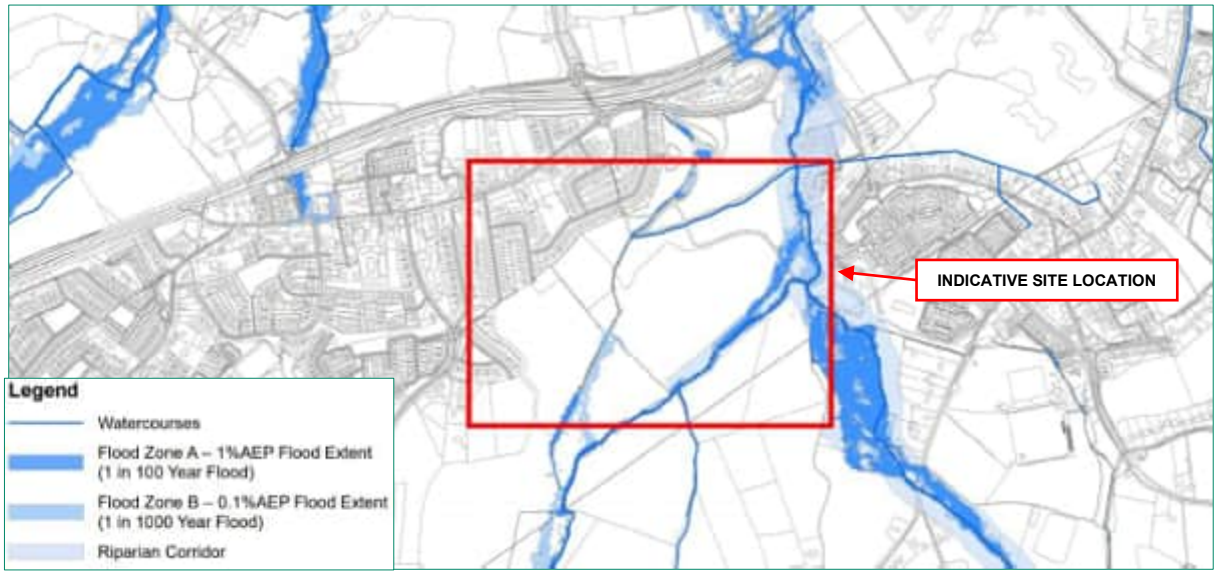


Figure 3.6: Extract from Flood Zone Map 14 of SFRA (SDCC)

3.3 Flood Risk Identification Report 2019

A Flood Risk Investigation Report (FRI) was carried out in January 2019, to address the suitability for the residential development on the Rathcoole lands. This would allow for areas to be defined that are subject to flood risk and thus identify how the risks will be mitigated and managed.

It is noted that the subject site extents considered as part of the FRI vary in comparison to the current proposed site extents. Refer to Figure 3.7 for the subject site extents considered as part of the FRI.



Figure 3.7: Extract from the FRI 2019 Overlaid with Indicative Site Boundary

The FRI lists the sources of flood data that were retrieved to prepare the report, with these sources including eastern CFRAM flood mapping, OPW PFRA flood maps and historical flood records. Despite no eastern CFRAM maps being shown in the FRI, a schematic flood map was produced, which provides a diagrammatic illustration of the flooding extents (based on the 2019 flood extents). Refer to Figure 3.8 for the schematic flood map.

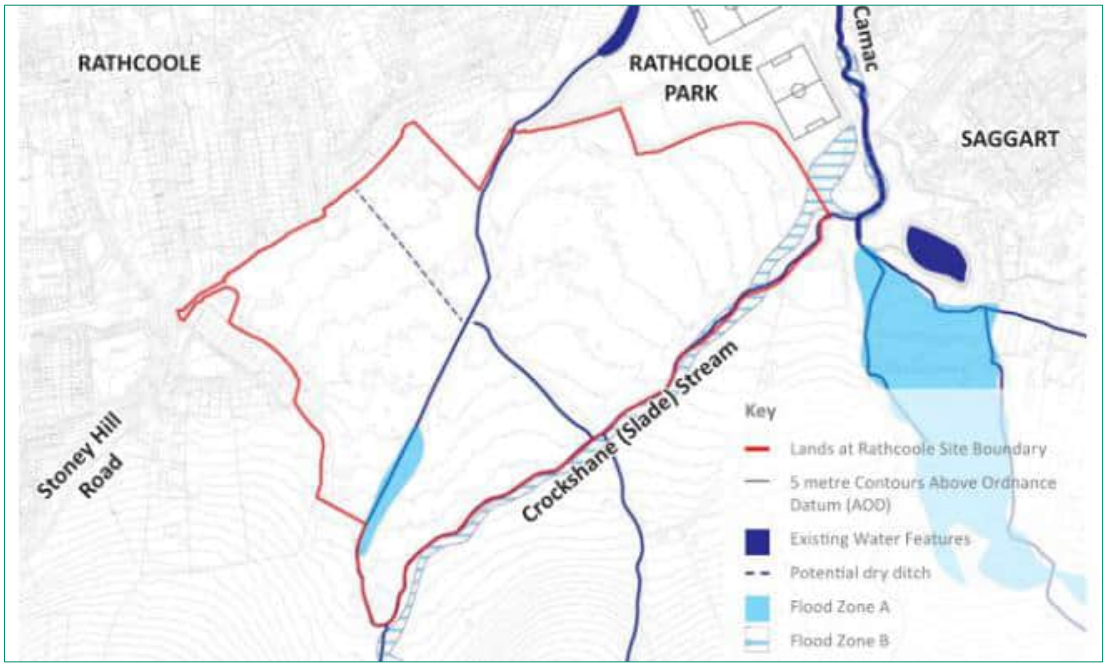


Figure 3.8: Flooding Extents within Vicinity of Site (FRI 2019)

4. Initial Flood Risk Assessment (Stage 2)

The purpose of the Initial Flood Risk Assessment (Stage 2) is to evaluate the potential flood risk affecting the proposed development based on the information sources identified during Stage 1. The assessment considers flood risk from all relevant sources and determines the implications of this risk for the proposed development.

4.1 CFRAM Mapping

The OPW Catchment Flood Risk Assessment and Management (CFRAM) Programme flood mapping was reviewed to assess the potential flood risk affecting the proposed development site. The CFRAM mapping provides predictive flood extents based on detailed hydraulic modelling and represents the primary source of information for assessing fluvial flood risk. There are three CFRAM maps published which cover the site and its immediate surroundings. These maps identify a number of model nodes located along the Crockshane (Slade) Stream, Coolmine Stream and River Camac, for which predicted water levels are provided for a range of Annual Exceedance Probability (AEP) events.

4.1.1 CFRAM Map E09CAM_EXFCD_F1_03

This map covers the south-eastern part of the subject site, where 2 No. nodes provide estimated flood water levels during the 1% AEP and 0.1% AEP fluvial flood events. The identified nodes are:

- 09RATH00036 – Crockshane (Slade) Stream Location,
- 09RATH00002! – Crockshane (Slade) Stream Location.

The locations of these nodes are illustrated in Figure 4.1 Review of the flood extent mapping indicates that minor areas adjacent to the Crockshane/Slade Stream are shown to be at risk of flooding during the 0.1% AEP event. The mapped flooding is generally confirned to the immediate vicinity of the watercourse and does not extend significantly within the riparian corridor. Refer to Appendix E for full map.

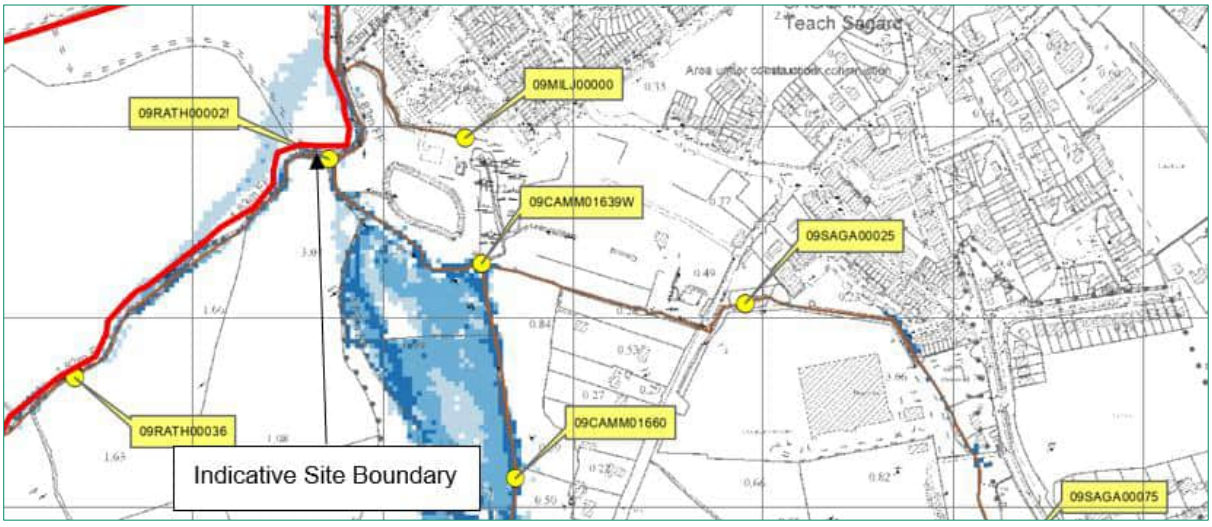


Figure 4.1: Extract from CFRAM Map E09CAM_EXFCD_F1_03

Table 4.1 includes the fluvial flood water levels for various Annual Exceedance Probabilities (AEP) at these 2 No. nodes located along the Crockshane (Slade) Stream.

Table 4.1: CFRAM Map E09CAM_EXFCD_F1_03 Predicted Water Levels

Node Label	Water Level (OD) 1%AEP	Water Level (OD) 0.1%AEP
09RATH00036	125.86	126.09
09RATH00002!	118.29	118.39

4.1.2 CFRAM Map E09CAM_EXFCD_F1_04

This map covers the western perimeter of the subject site, where 4 No. nodes have been identified with estimated water levels. The identified nodes are:

- 09FITZ00086 – Coolmine Stream Location,
- 09FITZ00078I – Coolmine Stream Location,
- 09FITZ00136 – Coolmine Stream Location,
- 09RATH00082 – Crockshane (Slade) Stream Location.

The locations of these nodes are illustrated in Figure 4.2 All other nodes shown on this map are downstream of the subject site and are therefore not relevant to this assessment. No mapped flood extents are idnetified within the proposed development area. A small area of flooding is shown upstream of the site; no overland flow routes have been identified that would indicate a flooding pathway towards the proposed development. Refer to Appendix E for full map and details.

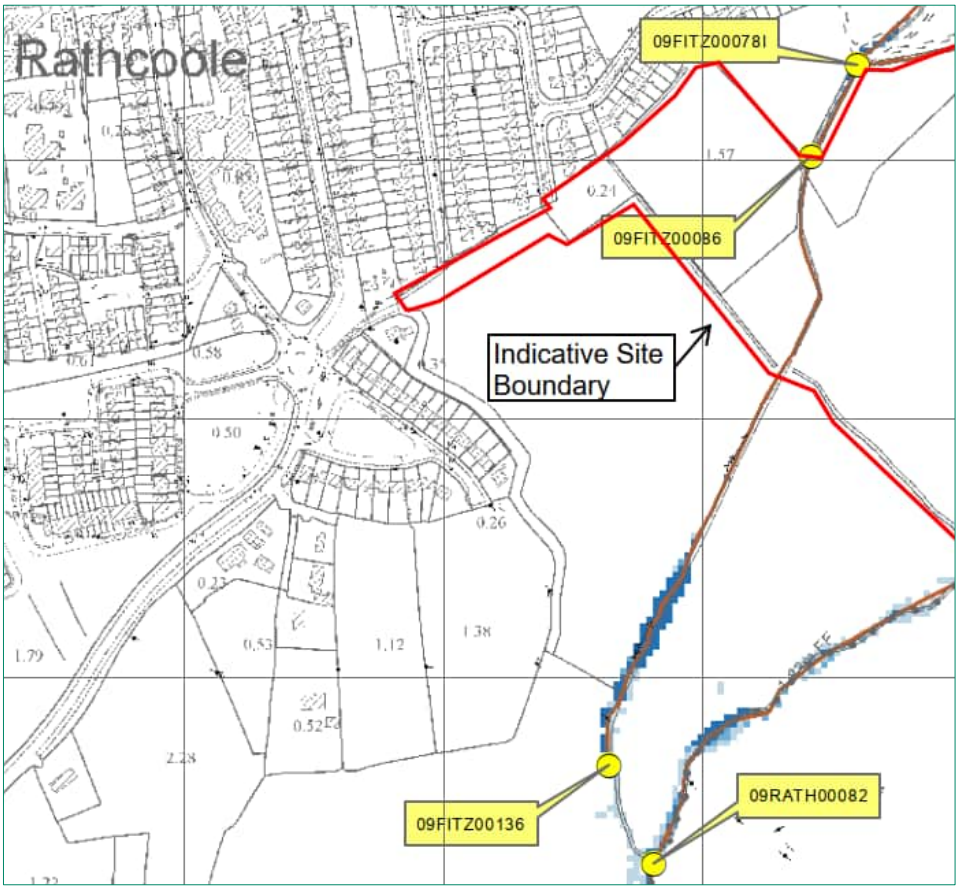


Figure 4.2: Extract from CFRAM Map E09CAM_EXFCD_F1_04

Table 4.2 includes the fluvial flood water levels for various Annual Exceedance Probabilities (AEP) at these 4 No. nodes located along the Coolmine and Crockshane (Slade) Streams. The proposed levels at the access to the site is approximately 122m AOD Malin. FFLs in the main section of the site range between 124-125.75m AOD Malin.

Table 4.2: CFRAM Map E09CAM_EXFCD_F1_04 Predicted Water Levels

Node Label	Water Level (OD) 1%AEP	Water Level (OD) 0.1%AEP
09FITZ00086	121.89	121.97
09FITZ00078I	121.62	121.82

4.1.3 CFRAM Map E09CAM_EXFCD_F1_05

This map covers the northern perimeter of the subject site, where 1 No. node provides estimated water levels. This identified node is listed as 09LINK00034, with the location of this node being illustrated in Figure 4.3. All other nodes shown on this map are downstream of the subject site and are therefore not relevant to this assessment.

Refer to Appendix E for full map and details. Review of the associated flood mapping indicates that any mapped flood extents remain confined to the vicinity of the adjacent watercourse and do not present a significant flood risk constraint within the northern portion of the site.

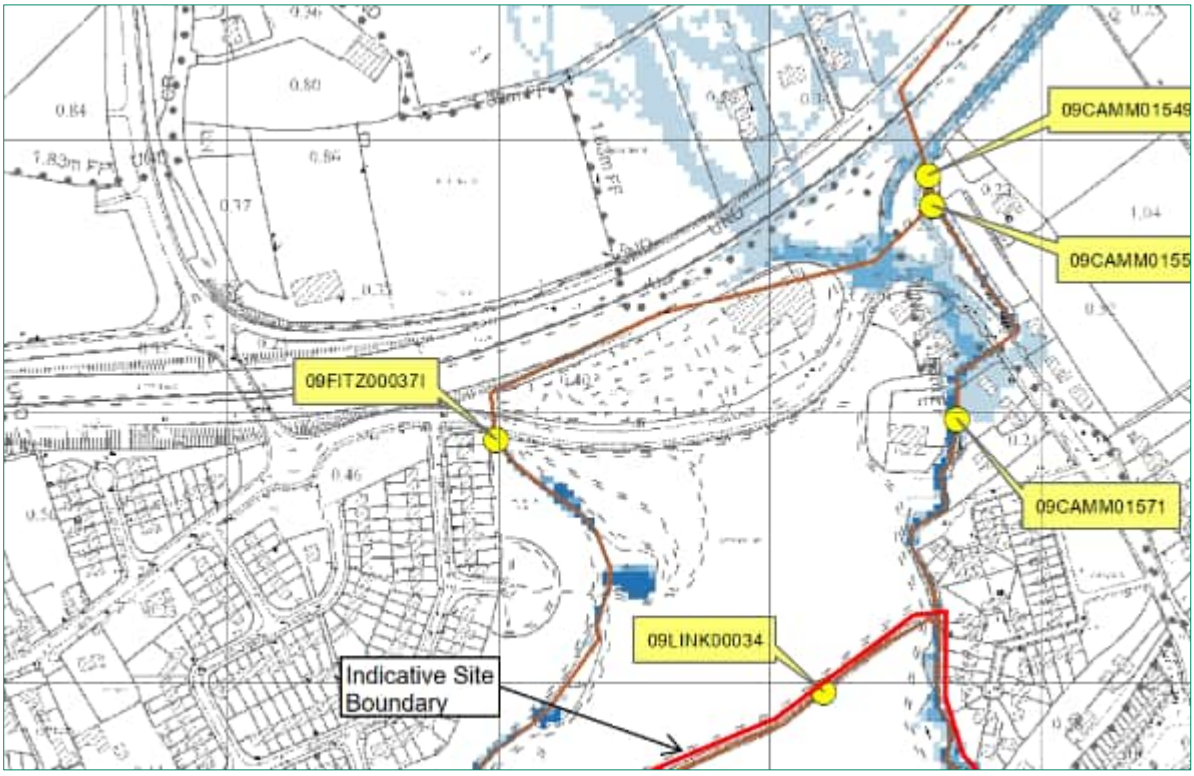


Figure 4.3: Extract from CFRAM Map E09CAM_EXFCD_F1_05

Table 4.3 includes the fluvial flood water levels for various Annual Exceedance Probabilities (AEP) at this node.

Table 4.3: CFRAM Map E09CAM_EXFCD_F1_05 Predicted Water Levels

Node Label	Water Level (OD) 1%AEP	Water Level (OD) 0.1%AEP
09LINK00034	114.97	115.12

4.1.4 Summary of CFRAM Flood Extents

Review of the CFRAM mapping indicates that fluvial flood risk is generally associated with the Crockshane (Slade) Stream and the Coolmine Stream, with mapped flood extents largely remaining within the immediate vicinity of the watercourses. Limited flooding is identified adjacent to the Crockshane (Slade) Stream during the 0.1% AEP event; however, this area is located within the proposed riparian corridor where no development is proposed.

No significant fluvial flood extents have been identified within the proposed development footprint. Based on the available CFRAM information, fluvial flood risk is considered to be limited and can be appropriately managed through the retention of the proposed riparian setbacks and consideration of flood risk during the detailed design stage.

4.2 Pluvial Flood Risk Mapping

Pluvial flooding occurs when the intensity of rainfall exceeds the capacity of the ground and drainage systems to accommodate runoff, resulting in localised ponding and overland flow.

The available pluvial flood risk mapping was reviewed to assess the potential for surface water flooding affecting the proposed development site. While the CFRAM Study did not include detailed pluvial flood mapping for this area, the South Dublin County Council Strategic Flood Risk Assessment (SFRA) includes indicative pluvial flood risk mapping.

Review of the SFRA pluvial flood mapping indicates that the subject site is not located within an area identified as being susceptible to pluvial flooding. No significant overland flow routes or areas of ponding are shown within the site boundary.

Based on the available mapping, the proposed development is not considered to be at significant risk of pluvial flooding. An extract of the SFRA pluvial flood risk mapping is provided in Figure 4.4.

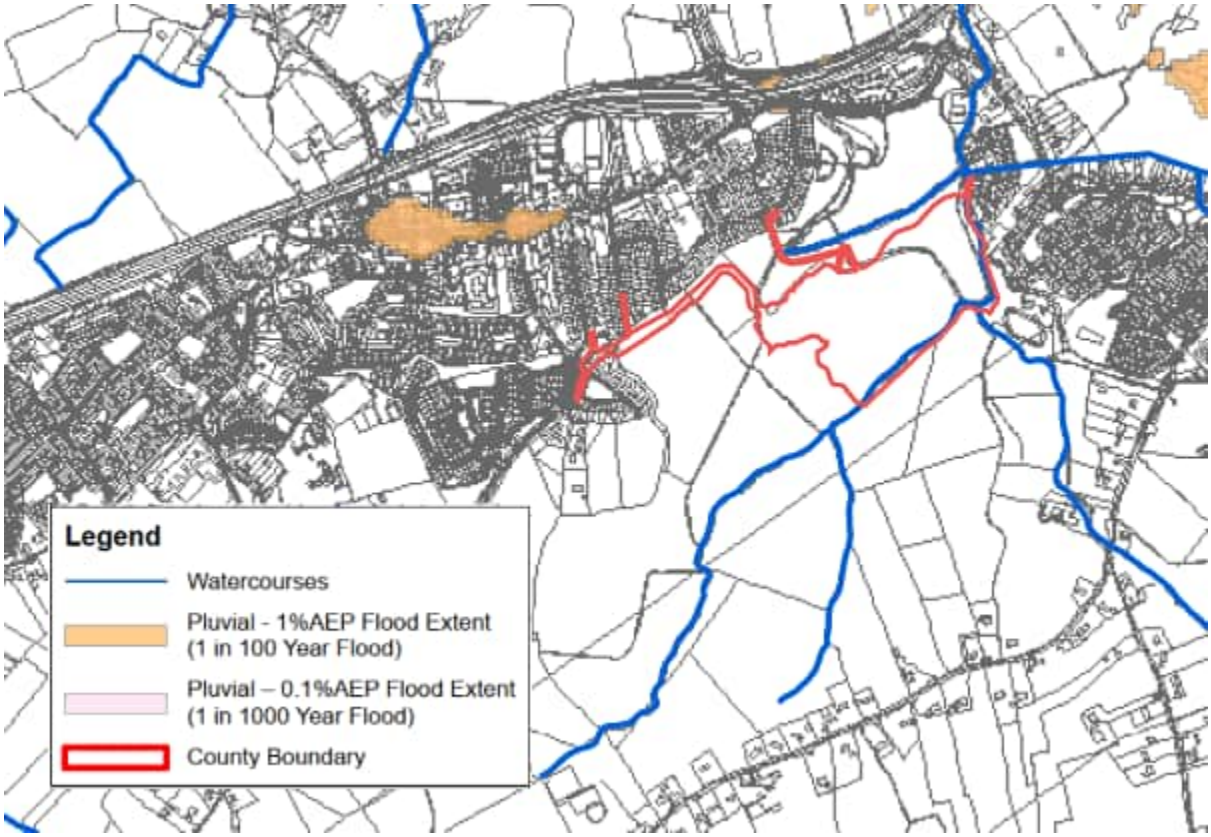


Figure 4.4: SDCC SFRA Pluvial Flood Extents

4.3 Groundwater Flood Risk

Groundwater flooding occurs when groundwater levels rise above ground level as a result of prolonged rainfall, elevated groundwater conditions or interactions between surface water and groundwater systems. Groundwater flooding can manifest as groundwater emergence at the surface, flooding of excavations and basements, or sustained waterlogged ground conditions.

The potential for groundwater flooding affecting the proposed development site was assessed through a review of the available groundwater flood risk mapping published by the Geological Survey Ireland (GSI).

The GSI Groundwater Flooding Data Viewer indicates that the site is located within an area classified as having a low groundwater flooding susceptibility. No recorded groundwater flood events have been identified within the site

boundary, and there is no evidence to suggest that groundwater flooding represents a significant constraint to the proposed development.

Based on the available information, the risk of groundwater flooding affecting the proposed development is considered to be low.



Figure 4.5: Groundwater Flood Risk Mapping Extract

4.4 Assessment of Flood Risk

The available flood risk information reviewed as part of this assessment has been considered to determine the potential sources of flooding affecting the proposed development site. The assessment has considered flood risk from coastal, fluvial, pluvial and groundwater sources.

- **Coastal/Tidal**

  Coastal flooding occurs when elevated sea levels, storm surges or wave action result in seawater inundating normally dry land. While the proposed development site is located approximately 17.7 km from the Irish Sea, site ground levels are significantly higher than predicted coastal flood levels. Therefore, the site is not considered to be at risk from coastal flooding.

- **Fluvial**

  Fluvial flooding occurs when flows within a watercourse exceed the capacity of the channel, resulting in floodwaters extending onto adjacent land.

  Review of the available CFRAM mapping confirms that fluvial flood risk is associated with the Crockshane (Slade) Stream and Coolmine Stream, located along the southern and western boundaries of the site respectively. Areas of mapped flooding are generally confined to the vicinity of these watercourses, with limited encroachment into the site adjacent to the Crockshane (Slade) Stream.

The area of mapped flooding extending into the site is located within the proposed riparian corridor where no development is proposed. Therefore, while fluvial flood risk is present within portions of the site, it does not represent a significant constraint to the proposed development.

Based on the available flood mapping and the proposed site layout, the risk of fluvial flooding affecting the proposed development is considered low.

- **Pluvial**

  Pluvial flooding occurs when rainfall intensity exceeds the capacity of the ground and drainage network to accommodate runoff, resulting in localised ponding and overland flow.

  Review of the available pluvial flood risk mapping indicates that the site is not located within an area identified as being susceptible to significant pluvial flooding. Notwithstanding this, the proposed development will incorporate a comprehensive surface water drainage strategy in accordance with the Greater Dublin Strategic Drainage Study (GDSDS) and the Greater Dublin Regional Code of Practice for Drainage Works.

  The proposed drainage design will utilise Sustainable Drainage Systems (SuDS) measures to manage runoff rates and volumes, providing attenuation for the 1 in 100-year rainfall event plus an allowance for climate change. Subject to the implementation of the proposed drainage strategy, the risk of pluvial flooding is considered low.

- **Groundwater**

  Groundwater flooding can occur following prolonged periods of rainfall when groundwater levels rise above ground level and emerge at the surface.

  A review of the available groundwater flood risk information indicates that the site is located within an area of low groundwater flood susceptibility. No evidence of historical groundwater flooding has been identified within the site.

  While the site is located within an area classified as having a high groundwater vulnerability for groundwater protection purposes, this classification relates to the potential susceptibility of groundwater to contamination and should not be confused with groundwater flood risk.

  Based on the available information, the risk of groundwater flooding affecting the proposed development is considered low.

4.5 Summary

Based on the available flood risk information, the principal flood risk affecting the site is fluvial flooding associated with the Crockshane (Slade) Stream and Coolmine Stream. However, the identified flood extents are generally confined to the watercourse corridors and areas where development is not proposed. The risks associated with coastal, pluvial and groundwater flooding are considered low.

4.6 Climate Change

The OPW Flood Risk Management Climate Change Sectoral Adaptation Plan identifies a number of future trends that are likely to influence flood risk in Ireland, including increases in rainfall intensity, more frequent extreme weather events, wetter winters and increased runoff rates from developed and undeveloped catchments.

As part of the CFRAM Programme, the OPW developed future flood risk scenarios to assess the potential effects of climate change on flood extents. These comprise the Mid-Range Future Scenario (MRFS), representing projected average future conditions, and the High-End Future Scenario (HEFS), representing the upper range of future climate projections.

For this site, the principal climate change consideration relates to potential increases in fluvial flood extents associated with the Crockshane (Slade) Stream and the Coolmine Stream, together with the potential for increased surface water runoff during extreme rainfall events.

Review of the available flood risk information indicates that flood risk within the site is largely associated with the watercourse corridors and adjacent floodplain areas. The proposed development has been designed to maintain appropriate setbacks from the identified watercourses and avoid areas of mapped flood risk. In addition, the proposed surface water drainage system will incorporate Sustainable Drainage Systems (SuDS) measures to manage runoff generated by the development in accordance with current best practice.

Accordingly, it is considered that the proposed development can be accommodated without resulting in an unacceptable increase in flood risk arising from climate change and will not adversely impact flood risk elsewhere within the catchment.

The climate change allowances for the mid-range (MRFS) and for the high-end (HEFS) future scenarios are presented in Table 4.4

Table 4.4: Allowances in Flood Parameters for Mid-Range and High-End Future Scenarios (Table 2.3 of SDCC SFRA)

Parameter	MRFS	HEFS
Extreme Rainfall Depths	+ 20%	+ 30%
Peak Flood Flows	+ 20%	+ 30%
Mean Sea Level Rise	+ 500mm	+ 1,000mm
Land Movement	- 0.5mm/year[1]	- 0.5mm/year[1]
Urbanisation	No General Allowance (Review on Case-by-Case Basis)	No General Allowance (Review on Case-by-Case Basis)
Forestation	- 1/6 Tp[2]	- 1/3 Tp[2] + 10% SPR[3]

Note 1: Applicable to the southern part of the country only (Dublin – Galway and south of this).

Note 2: Reduction in the time to peak (Tp) to allow for potential accelerated runoff that may arise as a result of drainage of afforested land.

Note 3: Add 10% to the Standard Percentage Runoff (SPR) rate. This allows for temporary increased runoff rates that may arise following felling of forestry.

As part of the South Dublin County Council SFRA, a hydromorphological assessment was undertaken for the principal watercourses within the County to inform delineation of floodplain boundaries and the identification of riparian corridor zones.

The SFRA also considered the potential effects of climate change on flood risk and includes Future Scenario flood mapping incorporating a 30% climate change allowance. A review of this mapping indicates that future flood extents remain primarily associated with the Crockshane (Slade) Stream and Coolmine Stream. The implications of these flood extents have informed the proposed site layout, including the retention of appropriate setbacks and riparian corridors adjacent to the watercourses.

The SFRA Future Scenario flood mapping is presented in Figure 4.6, with the corresponding Flood Zone mapping included in Appendix C.

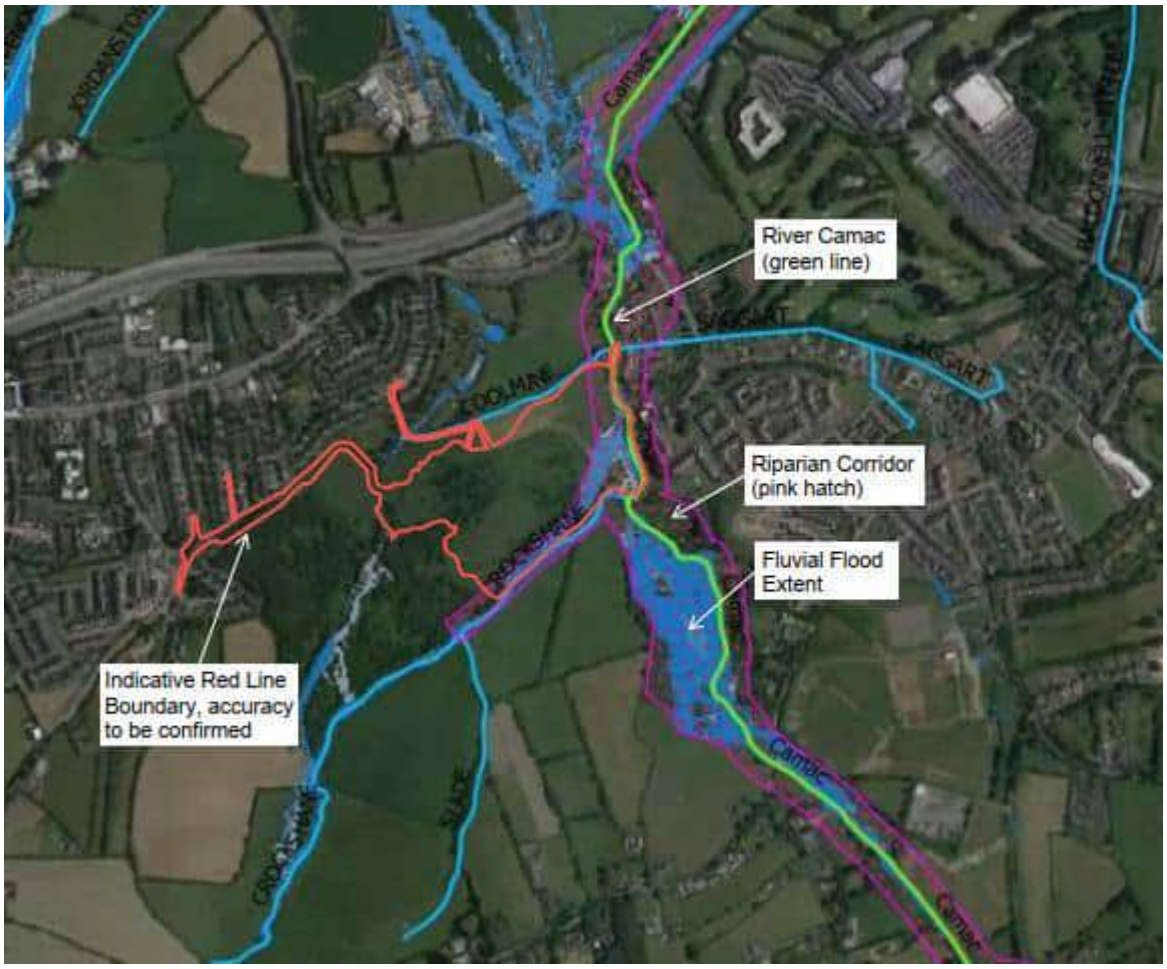


Figure 4.6: Flooding Extents for High-End Scenario (SDCC SFRA)

5. Sequential Approach & Justification Test

Chapter three of the Planning System and Flood Risk Management Guidelines (DEHLG/ OPW, 2009) describes the key principles of a risk based Sequential Approach to manage flood risk. The Sequential Approach is aimed at directing development toward land that is at low risk of flooding. Figure 4.7 is extracted from the Guidelines, and illustrates the sequence in which a site must be assessed from a flood risk standpoint. Specifically, the order in which planning authority must be satisfied from a flood risk perspective is to *Avoid* (locate in an area that is not flood prone), then *Substitute* (if in a flood prone zone, then substitute the type of development), *Justify* (if substitution does not reduce flood risk sufficiently, then preform Justification Test) and *Mitigate*. This section discusses the Sequential Approach in the Guidelines with regards to the proposed development.

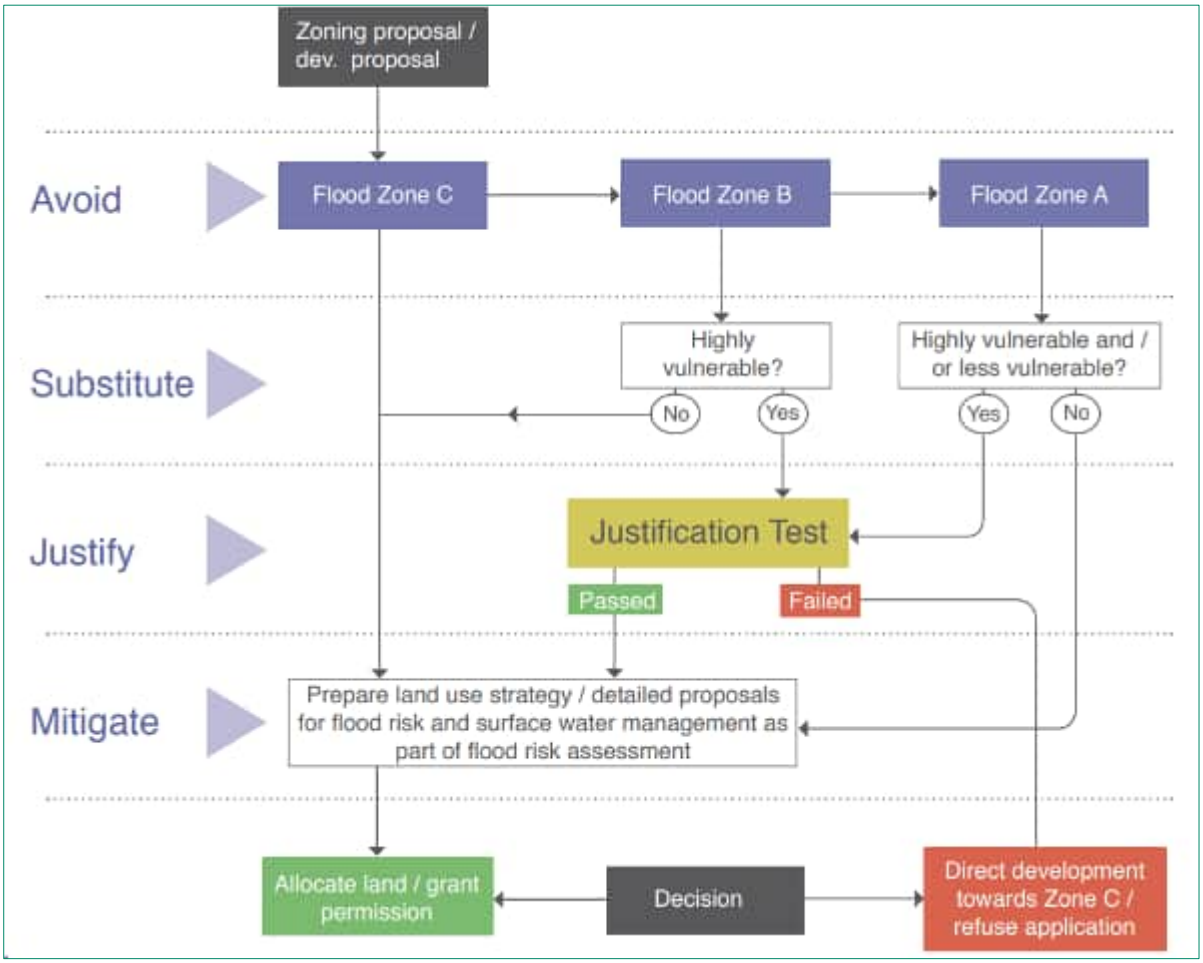


Figure 4.7: Sequential Approach Mechanism (gov.ie)

5.1 Sequential Approach

As illustrated in Figure 4.7, the first step in the Sequential Approach is to avoid development in flood risk areas where possible. Flood Zones associated with river and coastal flooding are identified as Flood Zones A, B and C as mentioned in Section 2 of this report. The planning implications for each of the flood zones which is found in Section 3.5 of the Planning System and Flood Risk Management Guidelines includes:

Zone A - High probability of flooding. *Most types of development would be considered inappropriate in this zone. Development in this zone should be avoided and/or only considered in exceptional circumstances, such as in city and town centres, or in the case of essential infrastructure that cannot be located elsewhere, and where the Justification Test has been applied. Only water-compatible development, such as docks and marinas, dockside activities that require a waterside location, amenity open space, outdoor sports and recreation, would be considered appropriate in this zone.*

Zone B - Moderate probability of flooding. *Highly vulnerable development, such as hospitals, residential care homes, Garda, fire and ambulance stations, dwelling houses and primary strategic transport and utilities*

infrastructure, would generally be considered inappropriate in this zone, unless the requirements of the Justification Test can be met. Less vulnerable development, such as retail, commercial and industrial uses, sites used for short-let for caravans and camping and secondary strategic transport and utilities infrastructure, and water-compatible development might be considered appropriate in this zone. In general however, less vulnerable development should only be considered in this zone if adequate lands or sites are not available in Zone C and subject to a flood risk assessment to the appropriate level of detail to demonstrate that flood risk to and from the development can or will adequately be managed.

Zone C - Low probability of flooding. *Development in this zone is appropriate from a flood risk perspective (subject to assessment of flood hazard from sources other than rivers and the coast) but would need to meet the normal range of other proper planning and sustainable development considerations.*

Review of the available flood mapping indicates that a small area within the site boundary is located within Flood Zone A. This area is confined to the proposed riparian corridor where no built development is proposed. Notwithstanding this, a conservative approach has been adopted and the proposed development has been assessed against the requirements of the Justification Test.

5.2 Vulnerability

Figure 4.8, taken from Section 3.5 of the Planning System and Flood Risk Management Guidelines, describes the vulnerability of developments relative to the identified Flood Zones and when the requirements of the Justification Test must be satisfied.

	Flood Zone A	Flood Zone B	Flood Zone C
Highly vulnerable development (including essential infrastructure)	Justification Test	Justification Test	Appropriate
Less vulnerable development	Justification Test	Appropriate	Appropriate
Water-compatible development	Appropriate	Appropriate	Appropriate

Figure 4.8: Vulnerability Matrix (gov.ie)

Figure 4.9 provides a classification of vulnerability of different types of developments, which outlines those that are required to carry out the Justification Test found in Section 3.5 of the Planning System and Flood Risk Management Guidelines. Developments that do not meet the criteria of the Justification Test, or 'inappropriate developments' should not be considered.

Vulnerability class	Land uses and types of development which include*:
Highly vulnerable development (including essential infrastructure)	Garda, ambulance and fire stations and command centres required to be operational during flooding; Hospitals; Emergency access and egress points; Schools; Dwelling houses, student halls of residence and hostels; Residential institutions such as residential care homes, children's homes and social services homes; Caravans and mobile home parks; Dwelling houses designed, constructed or adapted for the elderly or, other people with impaired mobility; and Essential infrastructure, such as primary transport and utilities distribution, including electricity generating power stations and sub-stations, water and sewage treatment, and potential significant sources of pollution (SEVESO sites, IPPC sites, etc.) in the event of flooding.
Less vulnerable development	Buildings used for: retail, leisure, warehousing, commercial, industrial and non-residential institutions; Land and buildings used for holiday or short-let caravans and camping, subject to specific warning and evacuation plans; Land and buildings used for agriculture and forestry; Waste treatment (except landfill and hazardous waste); Mineral working and processing; and Local transport infrastructure.
Water-compatible development	Flood control infrastructure; Docks, marinas and wharves; Navigation facilities; Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location; Water-based recreation and tourism (excluding sleeping accommodation); Lifeguard and coastguard stations; Amenity open space, outdoor sports and recreation and essential facilities such as changing rooms; and Essential ancillary sleeping or residential accommodation for staff required by uses in this category (subject to a specific warning and evacuation plan).
*Uses not listed here should be considered on their own merits	

Figure 4.9: Vulnerability Classification (gov.ie)

The proposed land use for the development is classified as Objective Res-N, which includes “New Residential” (RES-N), “Rural Amenity” (RU), and “Open Space” (OS), as indicated in Section 1.3 herein. Therefore, the development is classified as “Highly Vulnerable” for the subject site.

The proposed development comprises residential development together with associated open space, access roads and ancillary infrastructure. In accordance with the Planning System and Flood Risk Management Guidelines, residential development is classified as Highly Vulnerable Development.

While the proposed residential development is located outside the identified flood extents, a small area of Flood Zone A is present within the overall site boundary. Accordingly, a conservative approach has been adopted and the requirements of the Justification Test have been considered.

5.3 Justification Test

As outlined in Section 3.7 of the Planning System and Flood Risk Management Guidelines, The Justification Test is designed to “rigorously assess the appropriateness, or otherwise, of particular developments that, for the reasons outlined above, are being considered in areas of moderate or high flood risk”. It recognises that existing urban structures continue to see urban growth and established cities and urban centres, which will continue to be at risk of flooding, will change over time. The Justification Test for development management is used during the planning application stage and must satisfy the following criteria before planning authorities can consider an application for a proposed development (refer to Figure 4.10).

Box 5.1 Justification Test for development management (to be submitted by the applicant)

When considering proposals for development, which may be vulnerable to flooding, and that would generally be inappropriate as set out in Table 3.2, the following criteria must be satisfied:

1. The subject lands have been zoned or otherwise designated for the particular use or form of development in an operative development plan, which has been adopted or varied taking account of these Guidelines.
2. The proposal has been subject to an appropriate flood risk assessment that demonstrates:
   - (i) The development proposed will not increase flood risk elsewhere and, if practicable, will reduce overall flood risk;
   - (ii) The development proposal includes measures to minimise flood risk to people, property, the economy and the environment as far as reasonably possible;
   - (iii) The development proposed includes measures to ensure that residual risks to the area and/or development can be managed to an acceptable level as regards the adequacy of existing flood protection measures or the design, implementation and funding of any future flood risk management measures and provisions for emergency services access; and
   - (iv) The development proposed addresses the above in a manner that is also compatible with the achievement of wider planning objectives in relation to development of good urban design and vibrant and active streetscapes.

The acceptability or otherwise of levels of residual risk should be made with consideration of the type and foreseen use of the development and the local development context.

Note: See section 5.27 in relation to major development on zoned lands where sequential approach has not been applied in the operative development plan.

Refer to section 5.28 in relation to minor and infill developments.

Figure 4.10: Justification Test for Development Management (gov.ie)

Justification Test – Part 1

The proposed development is located within lands zoned Res-N under the South Dublin County Development Plan, the objective of which is to provide for new residential communities in accordance with approved area plans. The proposed development comprises residential development, associated open space, access roads and supporting infrastructure, all of which are consistent with the zoning objectives for the site.

Accordingly, the proposed development is consistent with the proper planning and sustainable development of the area and satisfies the requirements of Part 1 of the Justification Test.

Justification Test – Part 2 (i)

Part 2(i) of the Justification Test requires that the proposed development will not result in increased flood risk elsewhere.

Review of the available flood mapping indicates that the small area identified as being at risk of flooding is confined to the riparian corridor adjacent to the Crockshane (Slade) Stream, where no built development is proposed. Consequently, there will be no loss of floodplain storage and no displacement of flood waters.

In addition, surface water runoff arising from the proposed development will be attenuated within the site and discharged at greenfield runoff rates. Accordingly, the proposed development will not increase flood risk elsewhere and satisfies the requirements of Part 2(i) of the Justification Test.

Justification Test – Part 2 (ii)

Part 2(ii) of the Justification Test requires that the proposed development include measures to minimise and manage flood risk to people, property, infrastructure and the environment.

The proposed residential development areas, access roads and associated infrastructure are located outside the identified flood extents. The areas identified as being at risk of flooding have been retained as open space and riparian corridor areas.

Furthermore, the proposed development incorporates a Sustainable Drainage System (SuDS) strategy to manage surface water runoff and reduce flood risk. Consequently, the proposed development includes appropriate measures to minimise flood risk and satisfies the requirements of Part 2(ii) of the Justification Test.

Justification Test – Part 2 (iii)

Part 2(iii) of the Justification Test requires consideration of residual flood risks and future flood risk management requirements.

The proposed development has been designed such that areas identified as being at risk of flooding are excluded from the development footprint and retained as riparian corridor and open space areas. In addition, the proposed surface water drainage system has been designed to accommodate extreme rainfall events and incorporates an allowance for future climate change.

Accordingly, the proposed development has appropriate regard for residual flood risk and future flood risk management and satisfies the requirements of Part 2(iii) of the Justification Test.

Justification Test – Part 2 (iv)

Part 2(iv) of the Justification Test requires that the proposed development is compatible with wider planning objectives relating to proper planning, sustainable development and good urban design.

The proposed development will provide new residential accommodation in accordance with the zoning objectives for the site and includes substantial open space provision and riparian corridor enhancements. The development integrates with the surrounding residential context and supports the planned growth of the area.

Accordingly, the proposed development is considered compatible with wider planning objectives and satisfies the requirements of Part 2(iv) of the Justification Test.

6. Flood Risk Assessment & Conclusion

This Stage 2 Flood Risk Assessment has been undertaken to assess the potential flood risk affecting the proposed development in accordance with *The Planning System and Flood Risk Management Guidelines for Planning Authorities*.

Based on the review of the available flood risk information, the following conclusions have been reached:

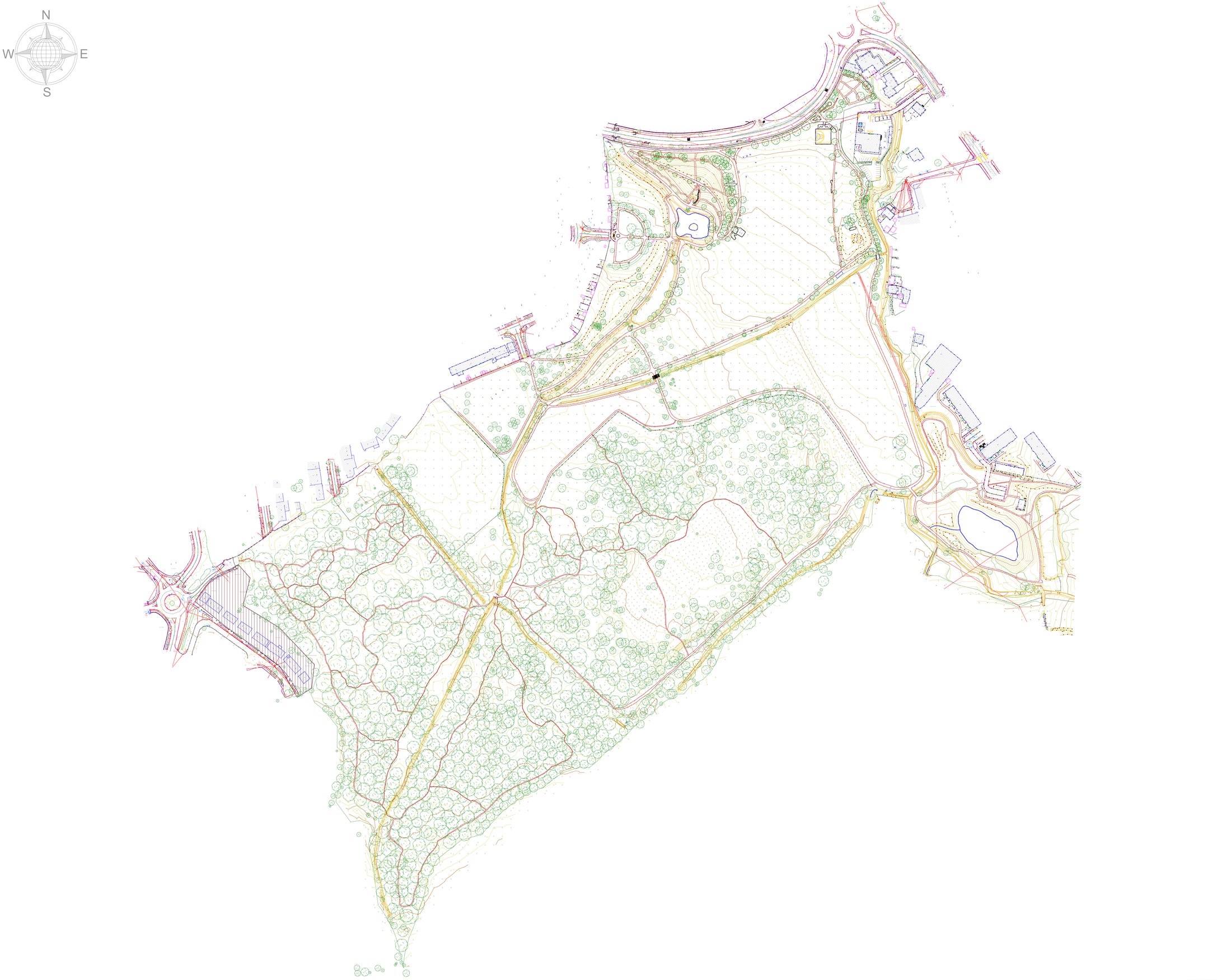
- No risk of coastal flooding has been identified due to the site's distance from the coast and its elevated ground levels relative to predicted coastal flood levels.
- Fluvial flood risk is associated with the Crockshane (Slade) Stream and Coolmine Stream located adjacent to the site. CFRAM mapping indicates that a small area within the site boundary is located within Flood Zone A; however, this area is confined to the proposed riparian corridor where no built development is proposed.
- No significant pluvial flood risk has been identified within the site based on the available flood mapping.
- The risk of groundwater flooding is considered to be low based on a review of the available geological and hydrogeological information.
- The principal source of flood risk affecting the site is fluvial flooding associated with the adjacent watercourses.

As a precautionary measure, the proposed development has been assessed against the requirements of the Justification Test. The assessment confirms that:

- The proposed development is consistent with the zoning objectives of the South Dublin County Development Plan.
- Areas identified as being at risk of flooding have been excluded from the development footprint and retained as riparian corridor and open space areas.
- The proposed development will not result in a loss of floodplain storage or an increase in flood risk elsewhere.
- Surface water runoff generated by the development will be managed through a Sustainable Drainage System (SuDS) strategy and attenuated to the required greenfield runoff rate.
- The proposed development has been designed to manage residual flood risk and future climate change impacts.
- The proposed development is compatible with wider planning objectives relating to sustainable development and good urban design.

Based on the assessment undertaken, it is concluded that the proposed development can be accommodated on the site without resulting in an unacceptable flood risk to people, property, infrastructure or the environment and will not increase flood risk elsewhere. Accordingly, the proposed development is considered to comply with the requirements of *The Planning System and Flood Risk Management Guidelines for Planning Authorities*.

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

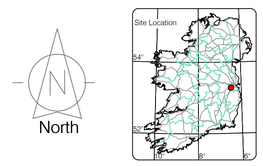
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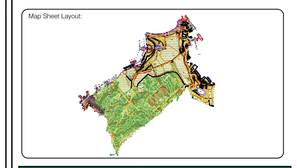
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The Company shall not be liable for any inaccuracy of the data provided beyond the specified scale or accuracy, or for any matters resulting from their use for purposes other than that stated in the Contract. No liability shall attach to the Surveyor 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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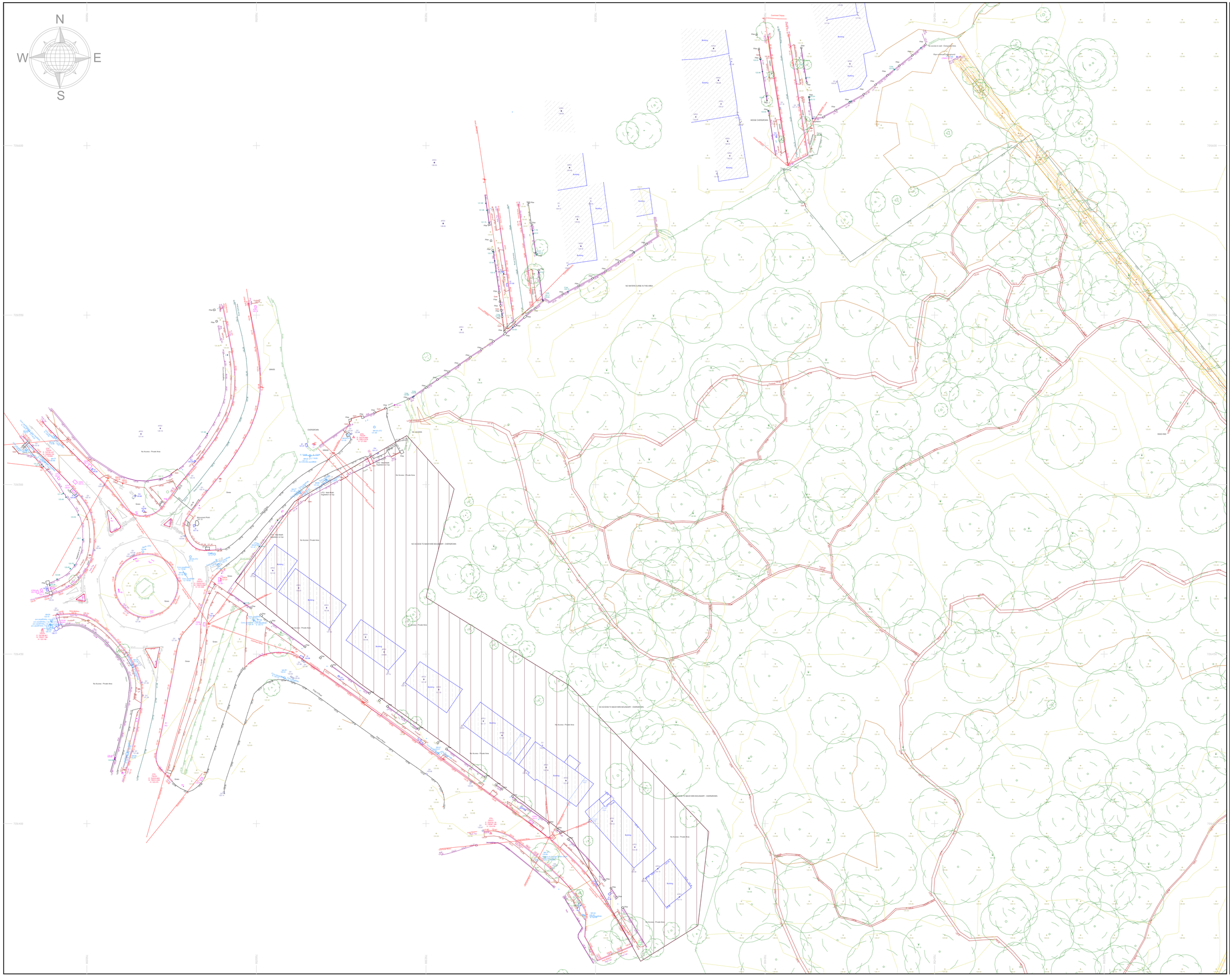
Ireland Head Office

Global House Business Campus
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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	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

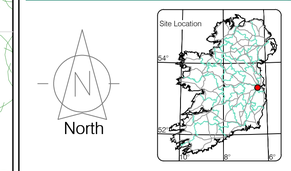
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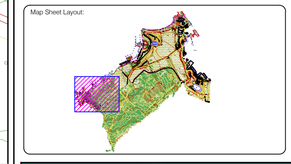
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Site Location



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

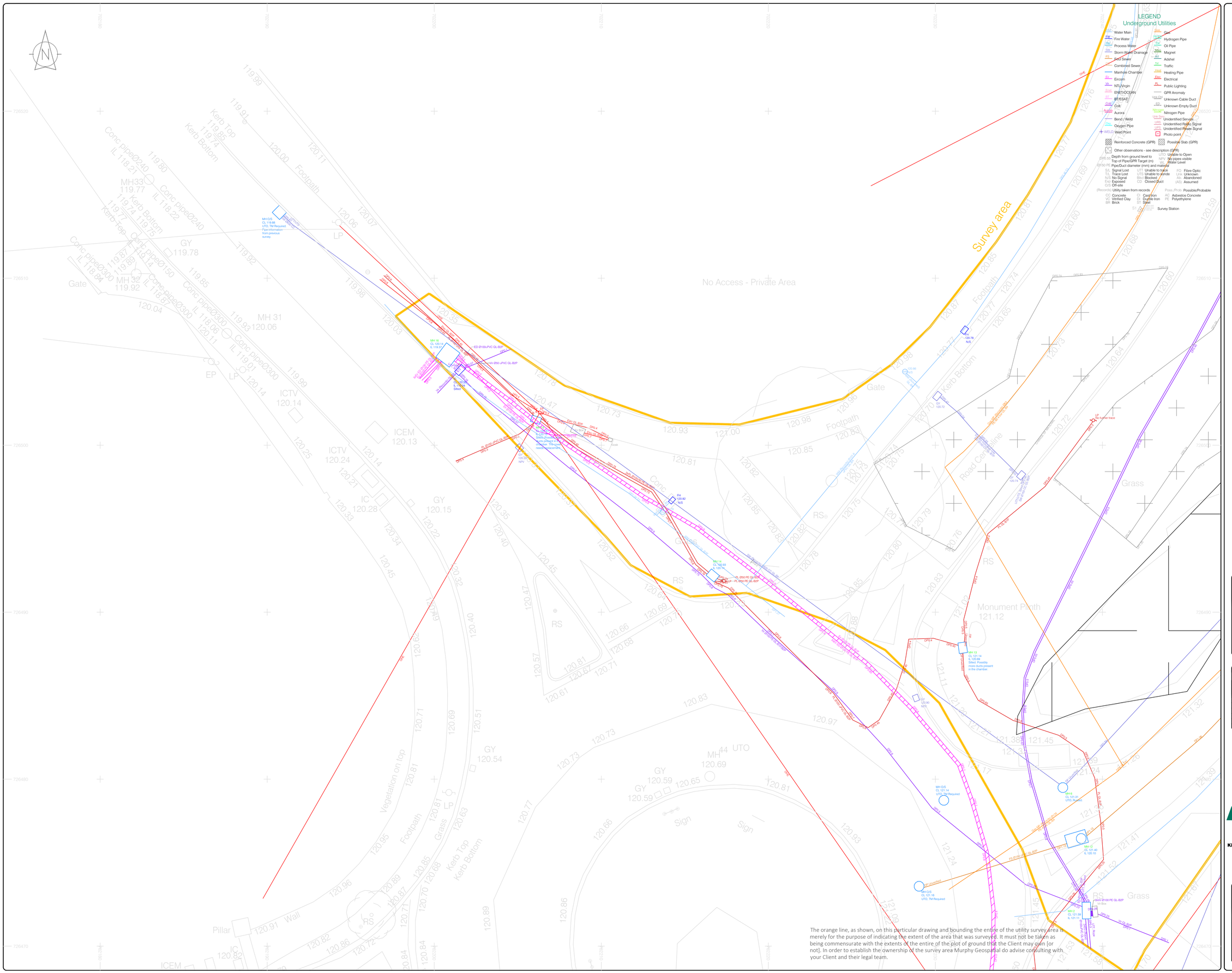
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Offices in London, Birmingham, Manchester, Glasgow, Dublin, Cork, Kildare, Cologne, Barcelona, Genoa

Client	Metropolitan Workshop
Project	Rathcoole Housing - Topo
Description	Topographical Survey
Survey Grid	ITM15
Survey Datum	Malin Head
RICS Band	Band E
Presentation Scale	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.

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 detective 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).

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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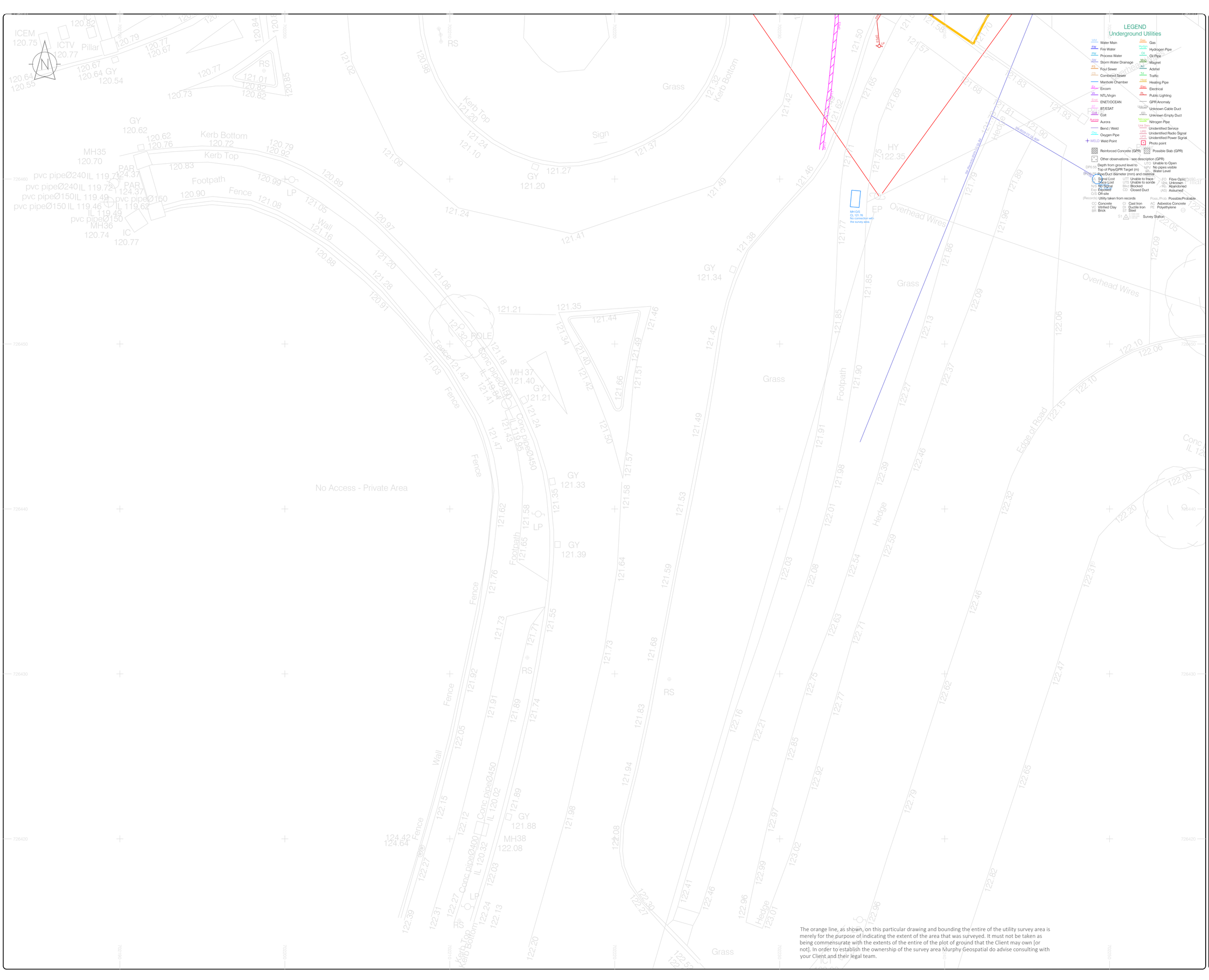
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Fax: (+353) 045 484004
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Client :	Metropolitan Workshop
Project :	2430 Rathcoole Housing
Date :	08.10.2025
Scale :	1:100@A1
Description :	Utility survey Sheets 1 of 9
Drawing Number :	MGS65356_U

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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

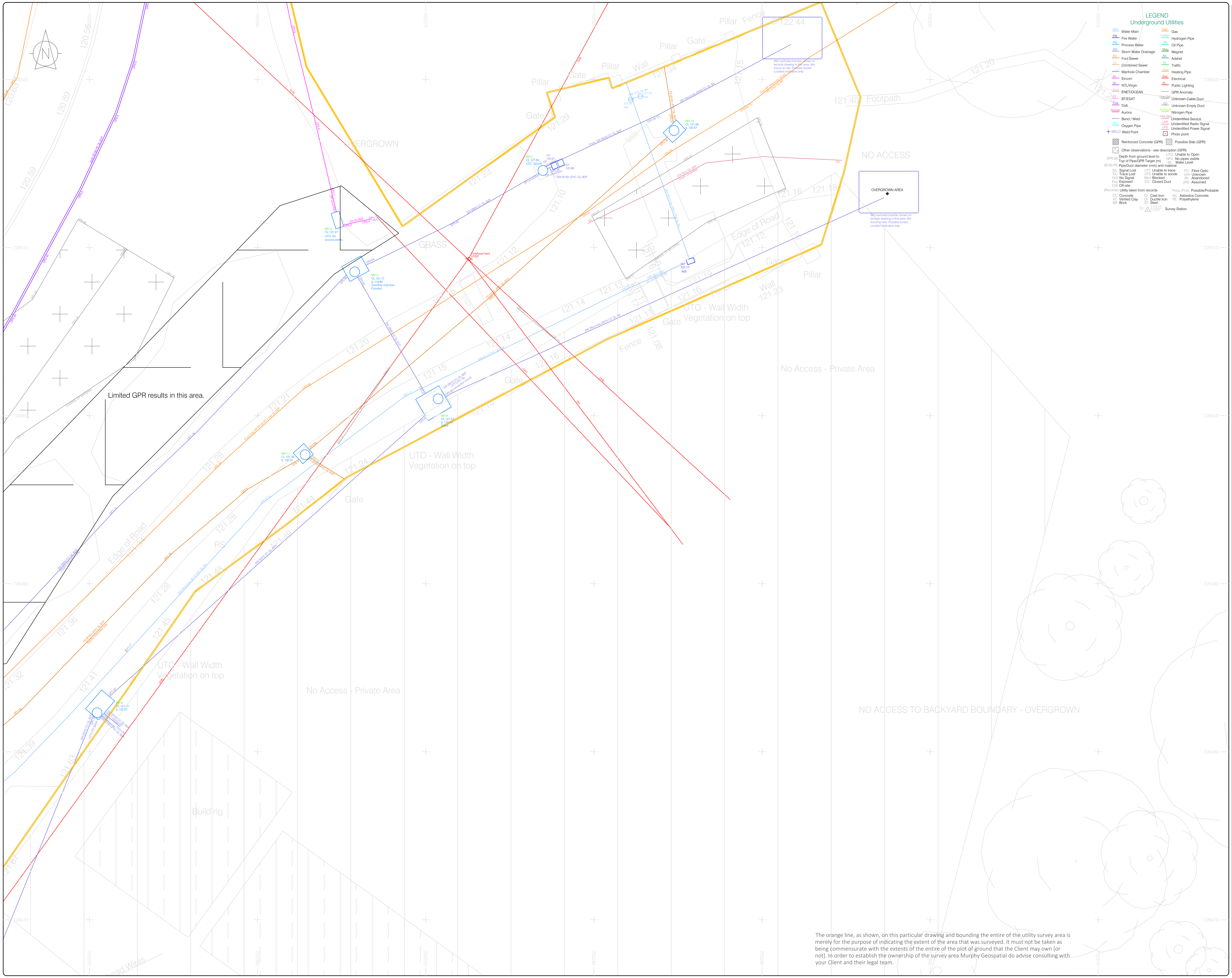
No.	Date	Description
0	08.10.25	First Drawing

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EUROPEAN GPR ASSOCIATION

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Head Office
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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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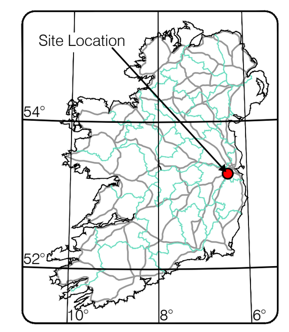
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North



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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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 3 of 9

Drawing Number : MGS65356_U

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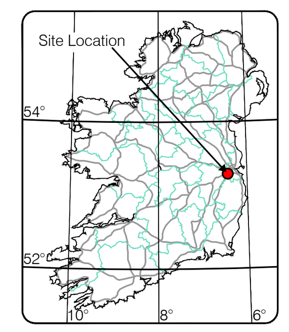
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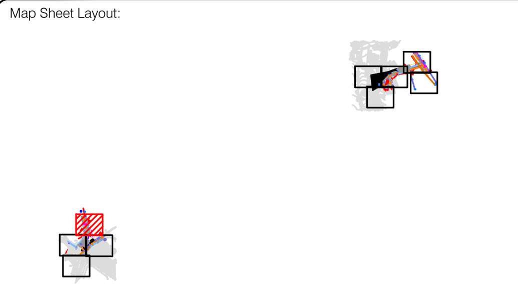
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North



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

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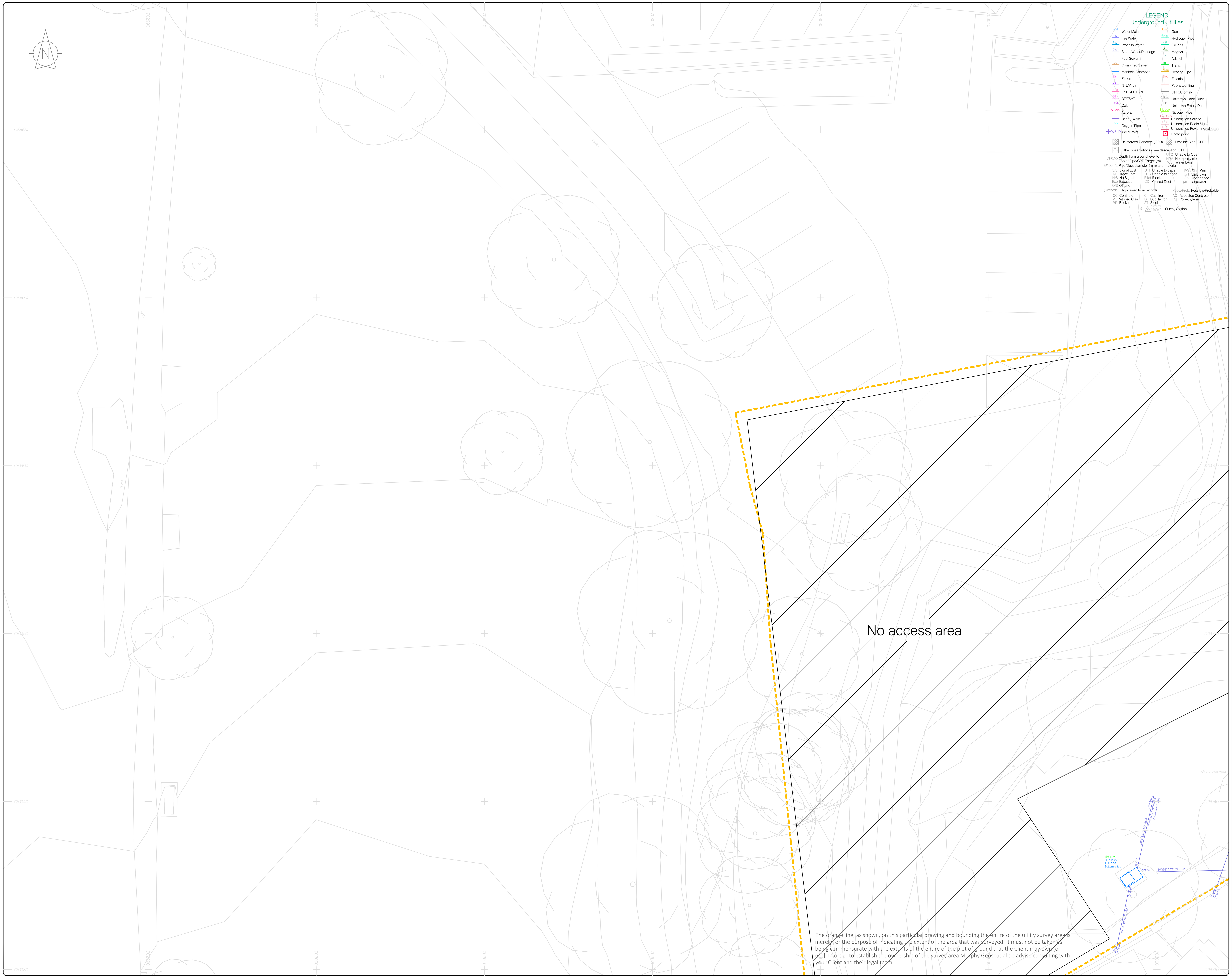
Topographic surveys, Measured Building Surveys, Setting-Out, As-Built Surveys, Hydrographic Surveys, Legal Mapping, Pipeline Surveys, Services Location, Ground Penetrating Radar, Laser Scanning, Rectified Photography

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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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North

Site Location

Map Sheet Layout:

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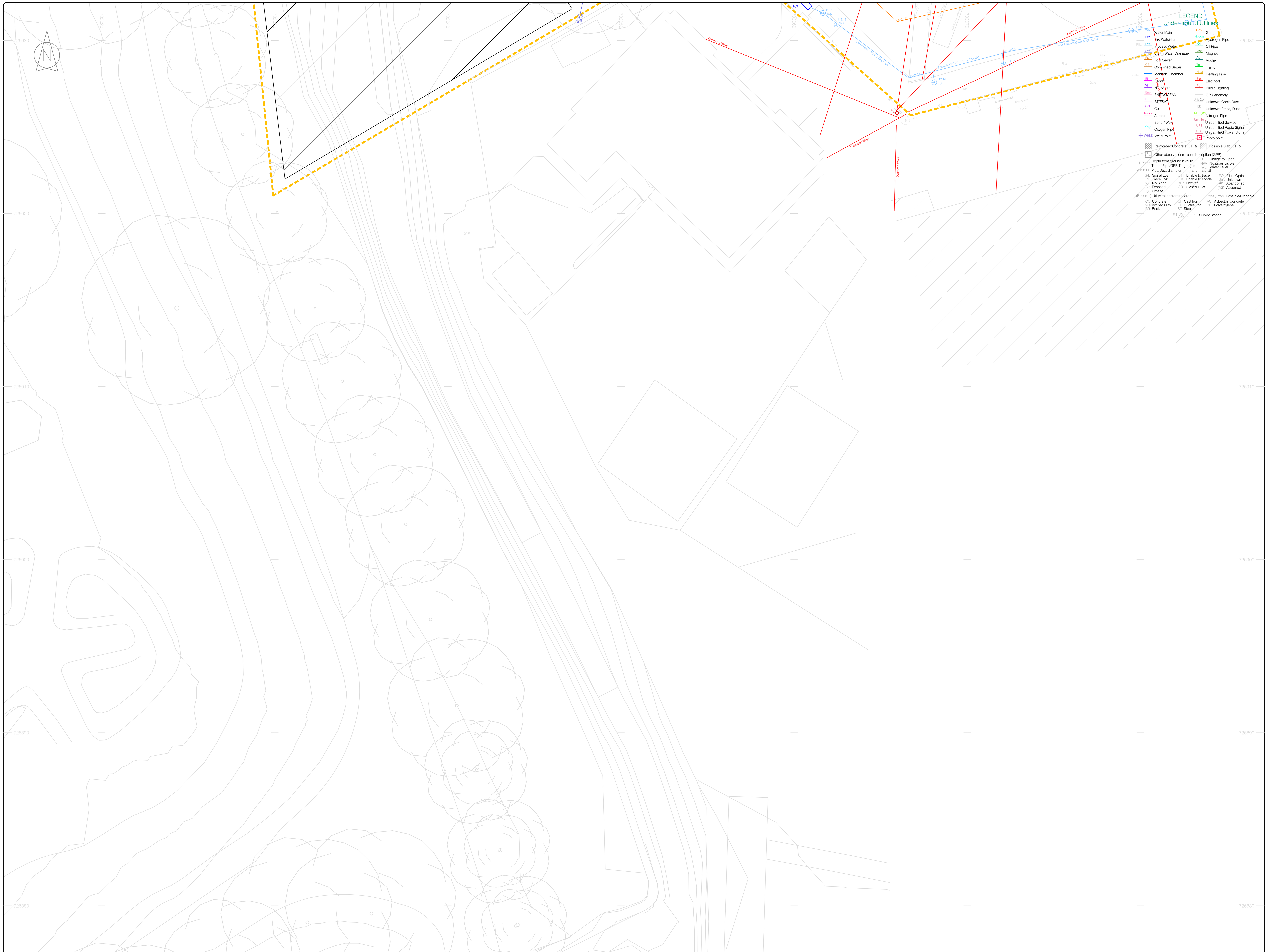
Project : 2430 Rathcoole Housing

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

Description : Utility survey Sheets 5 of 9

Drawing Number : MGS65356_U

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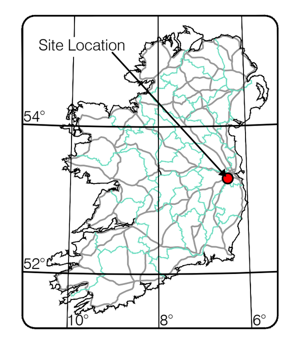
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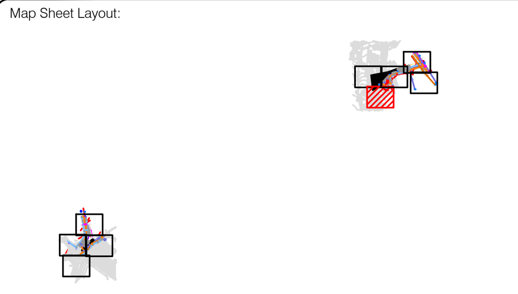
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Drawn by : CM/AB	Date: 07.10.25	Grid System:
Checked by : DS	Date: 08.10.25	Irish National Grid ☐ ITM ☒

Revisions

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THE SURVEY ASSOCIATION FULL MEMBER

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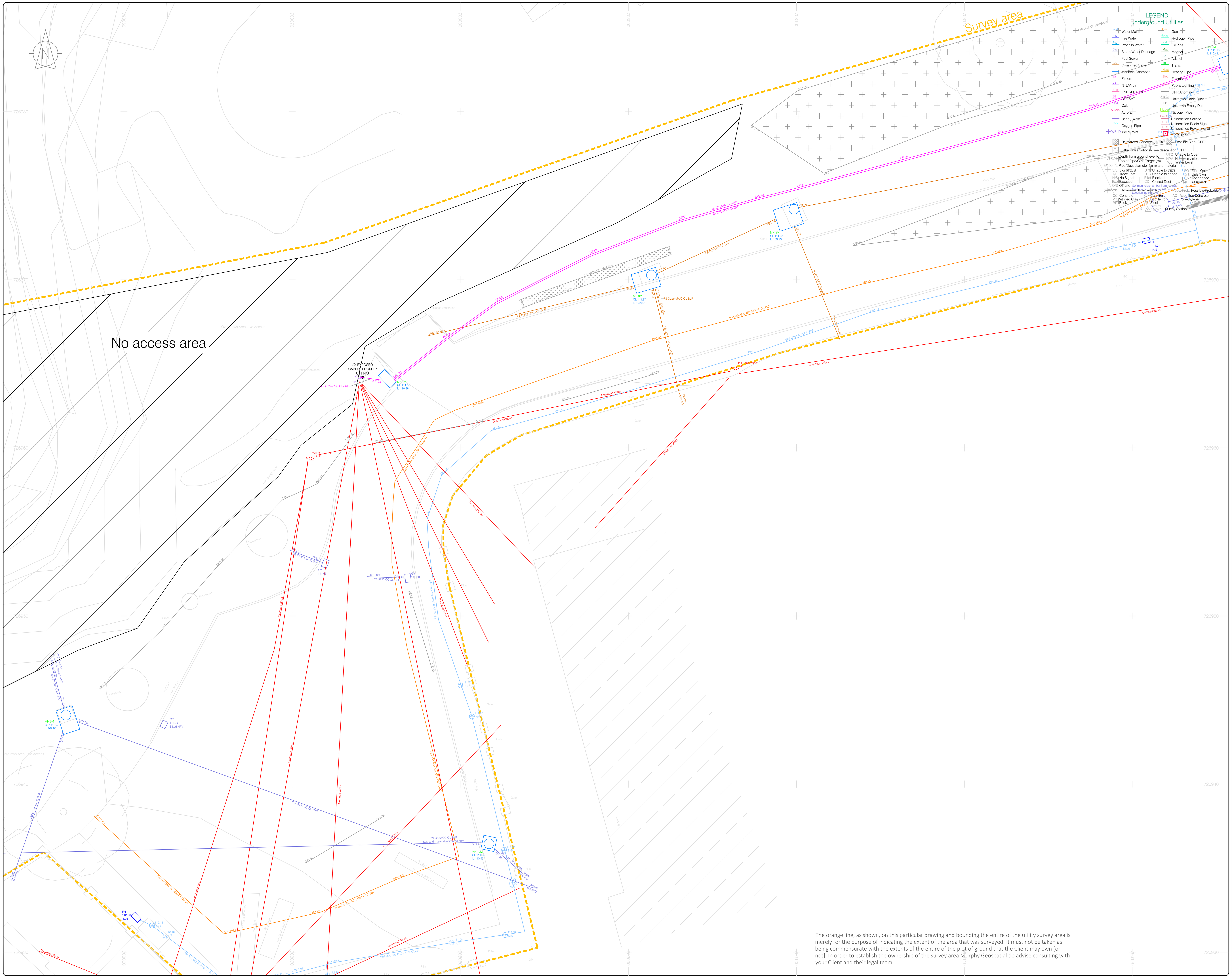
Project : 2430 Rathcoole Housing

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

Description : Utility survey Sheets 6 of 9

Drawing Number : MGS65356_U

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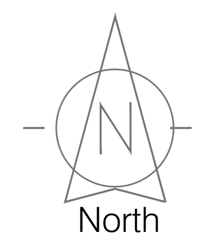
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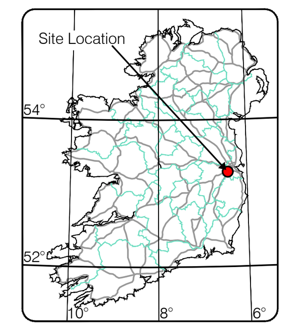
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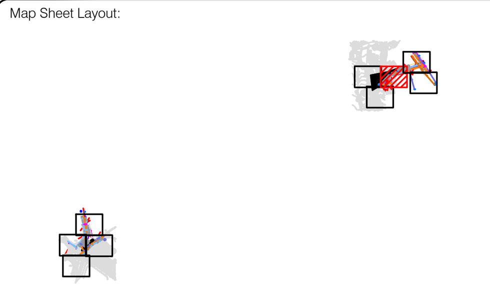
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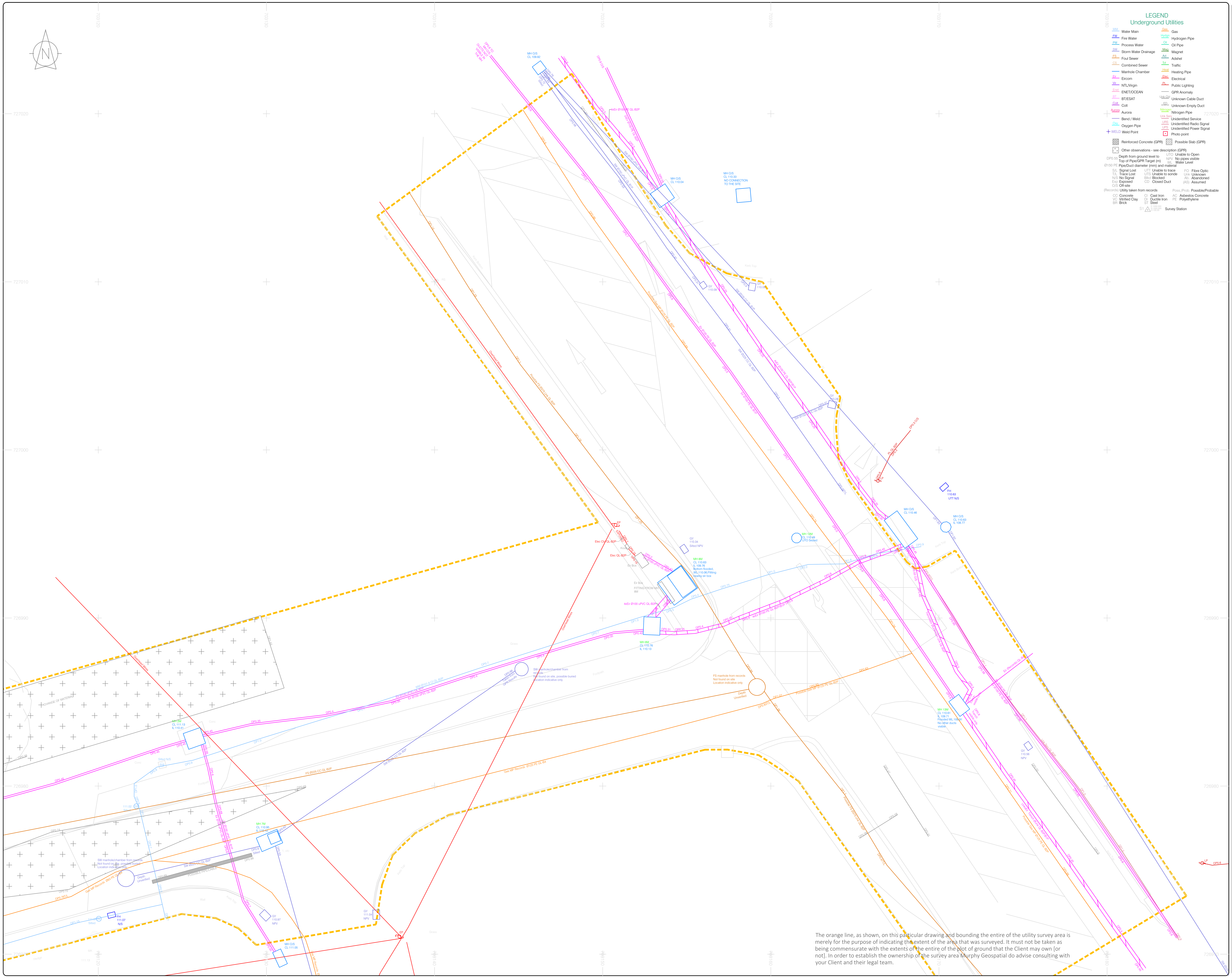
Project : 2430 Rathcoole Housing

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

Description : Utility survey Sheets 7 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)
UTO Unable to Open
NPV No pipes visible
WL Water Level
Ø150 PE Pipe/Duct diameter (mm) and material

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		

S1 E:1000.000 N:1000.000 H:100.00 Survey Station

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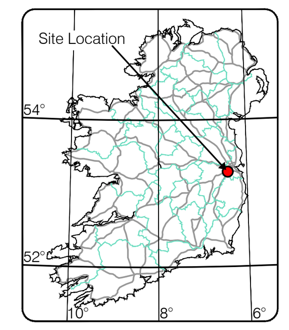
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- GPR surveying operates best within high resistivity material. Clay overburden can impair GPR surveying.
- Due to the attenuation of the radar signal with depth, resolution is restricted, hence making identification of anomalies difficult with increasing 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;

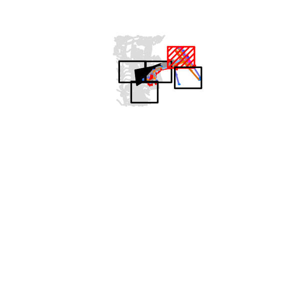
- All private service connections, (including water or gas fittings where no through flow of applied signal is possible.
- Pot ended or disconnected cables or terminated short lengths of pipe.
- Internal building services
- Fibre optic cables (except where laid with a standard communications cable or 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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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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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 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.

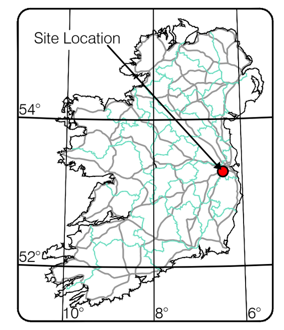
- Locational accuracy is determined by referring to the manufacturers guidelines for the detectors used.
- Existing record information showing underground services is often incomplete and unknown accuracy; therefore it should be regarded only as an indication.
- In ideal conditions these spatial accuracies 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.
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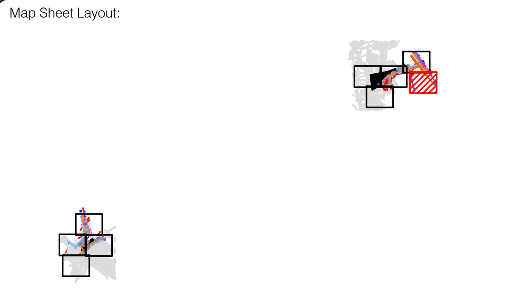
- All private service connections, (including water or gas fittings where no through flow of applied signal is possible.
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Map Sheet Layout:



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
0	08.10.25	First Drawing

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EUROPEAN GPR ASSOCIATION
RICS the mark of property professionalism worldwide

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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 – SFRA Flood Zone Mapping

N

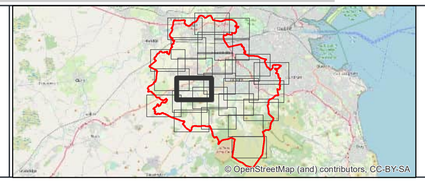
Legend

- Watercourses
- Flood Zone A – 1%AEP Flood Extent (1 in 100 Year Flood)
- Flood Zone B – 0.1%AEP Flood Extent (1 in 1000 Year Flood)
- Riparian Corridor
- County Boundary

0 100 200 400 600 800 1,000 m

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Comhairle Contae Átha Cliath Theas
South Dublin County Council



No.	Revision	Date	By	Chk'd	App'd
P01	Final Issue	26/07/2022	LA	WV	JPR

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Consulting Engineers
Civil - Structural - Transportation - Environmental
Arena House,
Arena Road,
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t +353 (0) 1 294 0800
www.rod.ie

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

Project Stage	FINAL
Project Title	SDCC County Devlopment Plan Stategic Flood Risk Assessment
Drawing Title	SFRA Flood Zone Mapping Sheet 14 of 26

Drawing Number	Project	Originator	Volume	Location	Type	Role	Number
	SDSFRA	ROD	EWE	SW_AE	DR	ENV	40014

Scale (A1)	Date:	Job No:	Rev:
1:6,000	April 2021	20.126	P01

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DO NOT SCALE USE FIGURED DIMENSIONS ONLY

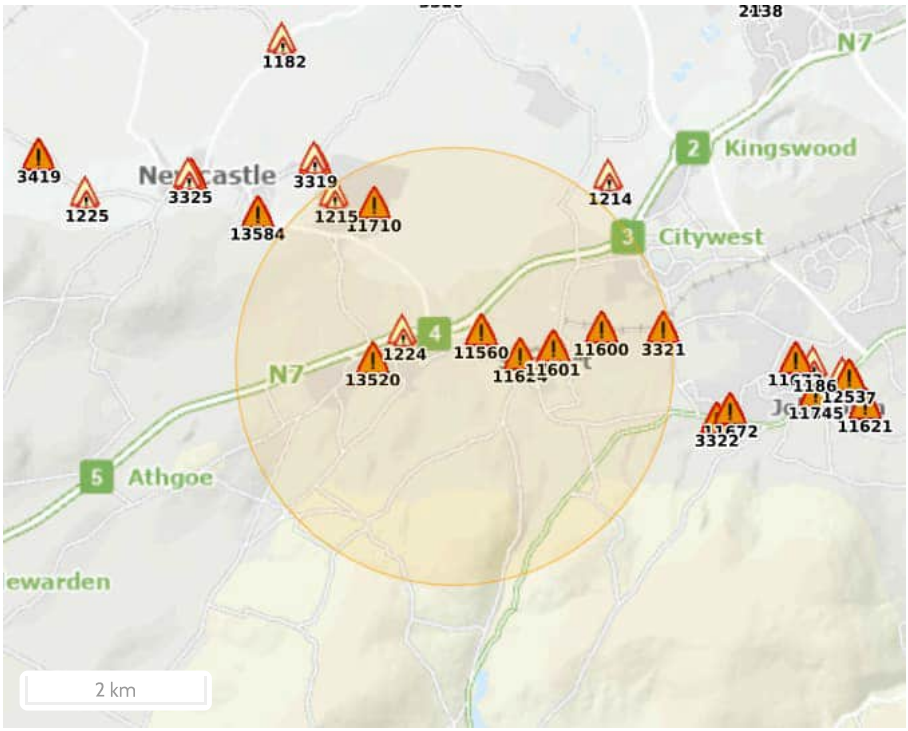
Appendix D – OPW Past Flood Events Summary Report

Past Flood Event Local Area Summary Report

Report Produced: **3/6/2025 15:14**

This Past Flood Event Summary Report summarises all past flood events within 2.5 kilometres of the map centre.

This report has been downloaded from www.floodinfo.ie (the "**Website**"). The users should take account of the restrictions and limitations relating to the content and use of the Website that are explained in the Terms and Conditions. It is a condition of use of the Website that you agree to be bound by the disclaimer and other terms and conditions set out on the Website and to the privacy policy on the Website.



Map Legend

- Single Flood Event
- Recurring Flood Event
- Past Flood Event Extents
- Drainage Districts Benefited Lands*
- Land Commission Benefited Lands*
- Arterial Drainage Schemes Benefited Lands*

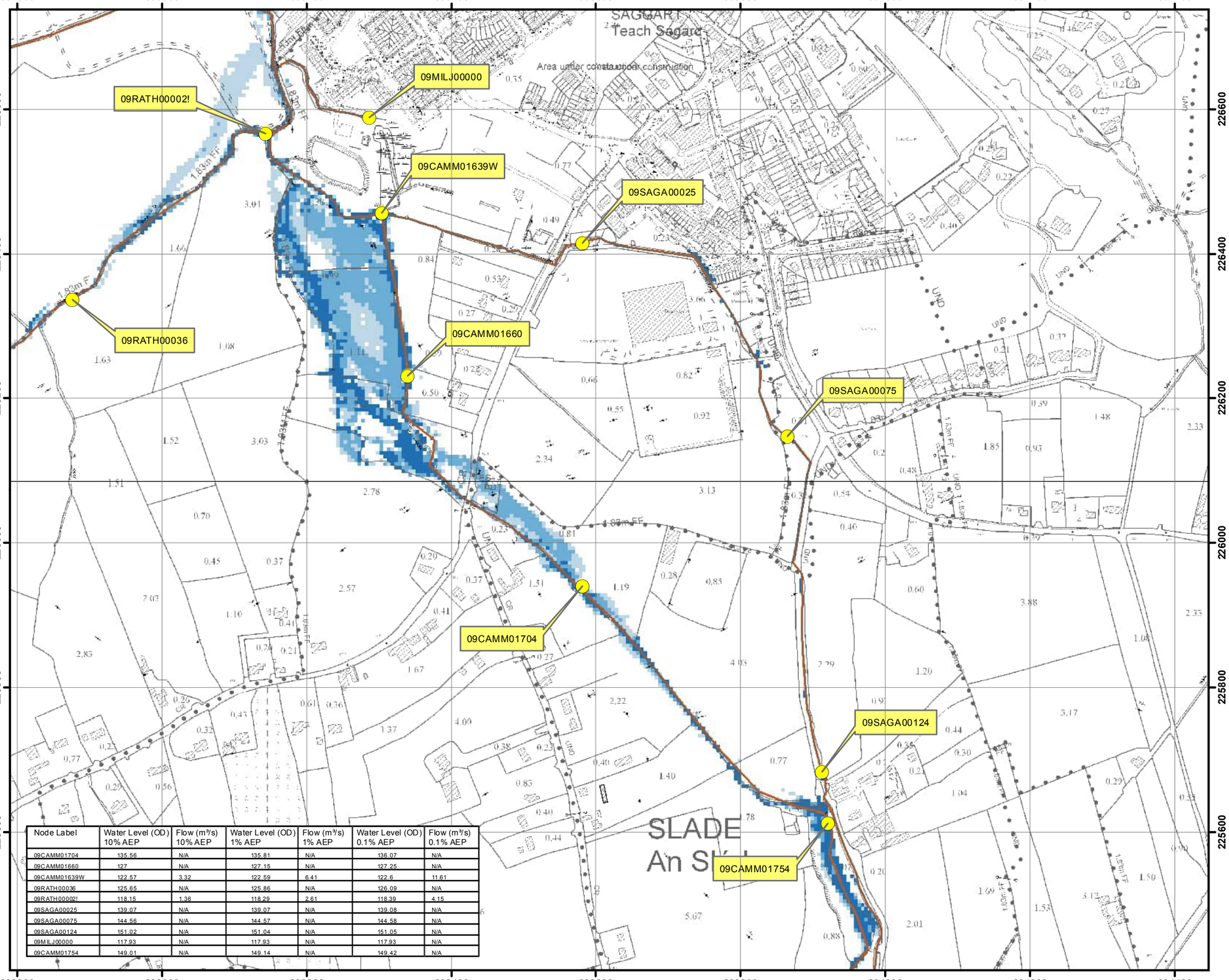
* Important: These maps do not indicate flood hazard or flood extent. Their purpose and scope is explained on Floodinfo.ie

10 Results

	Name (Flood_ID)	Start Date	Event Location
1.	Fortunestown Lane Nov 2000 (ID-3321)	06/11/2000	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
2.	Newcastle Greenoge Recurring (ID-1215)	n/a	Approximate Point
	Additional Information: Reports (2) Press Archive (0)		
3.	Rathcoole Bridge recurring (ID-1224)	n/a	Approximate Point
	Additional Information: Reports (2) Press Archive (4)		
4.	Flooding at Avoca Road, Saggart on 24th Oct 2011 (ID-11560)	23/10/2011	Exact Point
	Additional Information: Reports (1) Press Archive (0)		
5.	Flooding at Fortunestown Lane, Citywest, Co. Dublin on 24th Oct 2011 (ID-11600)	23/10/2011	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		
6.	Flooding at Garter Lane, Saggart, Co. Dublin on 24th Oct 2011 (ID-11601)	23/10/2011	Approximate Point
	Additional Information: Reports (1) Press Archive (0)		

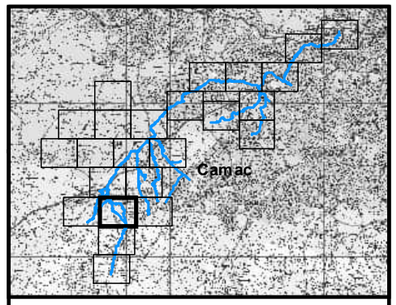
	Name (Flood_ID)	Start Date	Event Location
7.	Flooding at Mill Road, Saggart, Co. Dublin on 24th Oct 2011 (ID-11624) **Additional Information:** Reports (1) Press Archive (0)	23/10/2011	Approximate Point
8.	Flooding at Greenogue Business Park, Rathcoole, Co. Dublin on 24th Oct 2011 (ID-11710) **Additional Information:** Reports (1) Press Archive (0)	23/10/2011	Exact Point
9.	Flooding at Rathcoole on 07/03/2016 (ID-13520) **Additional Information:** Reports (0) Press Archive (0)	07/03/2016	Approximate Point
10.	Flooding at Saggart on 07/03/2016 (ID-13521) **Additional Information:** Reports (0) Press Archive (0)	07/03/2016	Approximate Point

Appendix E – CFRAM Predictive Flood Risk Mapping



Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09CAMM01704	135.56	N/A	135.81	N/A	136.07	N/A
09CAMM01660	127	N/A	127.15	N/A	127.25	N/A
09CAMM01639W	122.57	3.32	122.59	6.41	122.6	11.61
09RATH00036	125.65	N/A	125.86	N/A	126.09	N/A
09RATH00002!	118.15	1.36	118.29	2.61	118.39	4.15
09SAGA00025	139.07	N/A	139.07	N/A	139.08	N/A
09SAGA00075	144.56	N/A	144.57	N/A	144.58	N/A
09SAGA00124	151.02	N/A	151.04	N/A	151.05	N/A
09MILJ00000	117.93	N/A	117.93	N/A	117.93	N/A
09CAMM01754	149.01	N/A	149.14	N/A	149.42	N/A

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IMPORTANT USER NOTE:
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Legend

- 10% Fluvial AEP Event
- 1% Fluvial AEP Event
- 0.1% Fluvial AEP Event
- Modelled River Centreline
- AFA Extents
- Embankment
- Wall
- Defended Area
- 1% AEP Standard of Protection of Flood Defence
- 1% AEP (Walls / Embankments)
- Node Point
- Node ID Node Label

FINAL

REV:	NOTE:	DATE:
01	SOP label updated (Pg 21) Removal of Def. Area (Pg 21)	13/11/2017

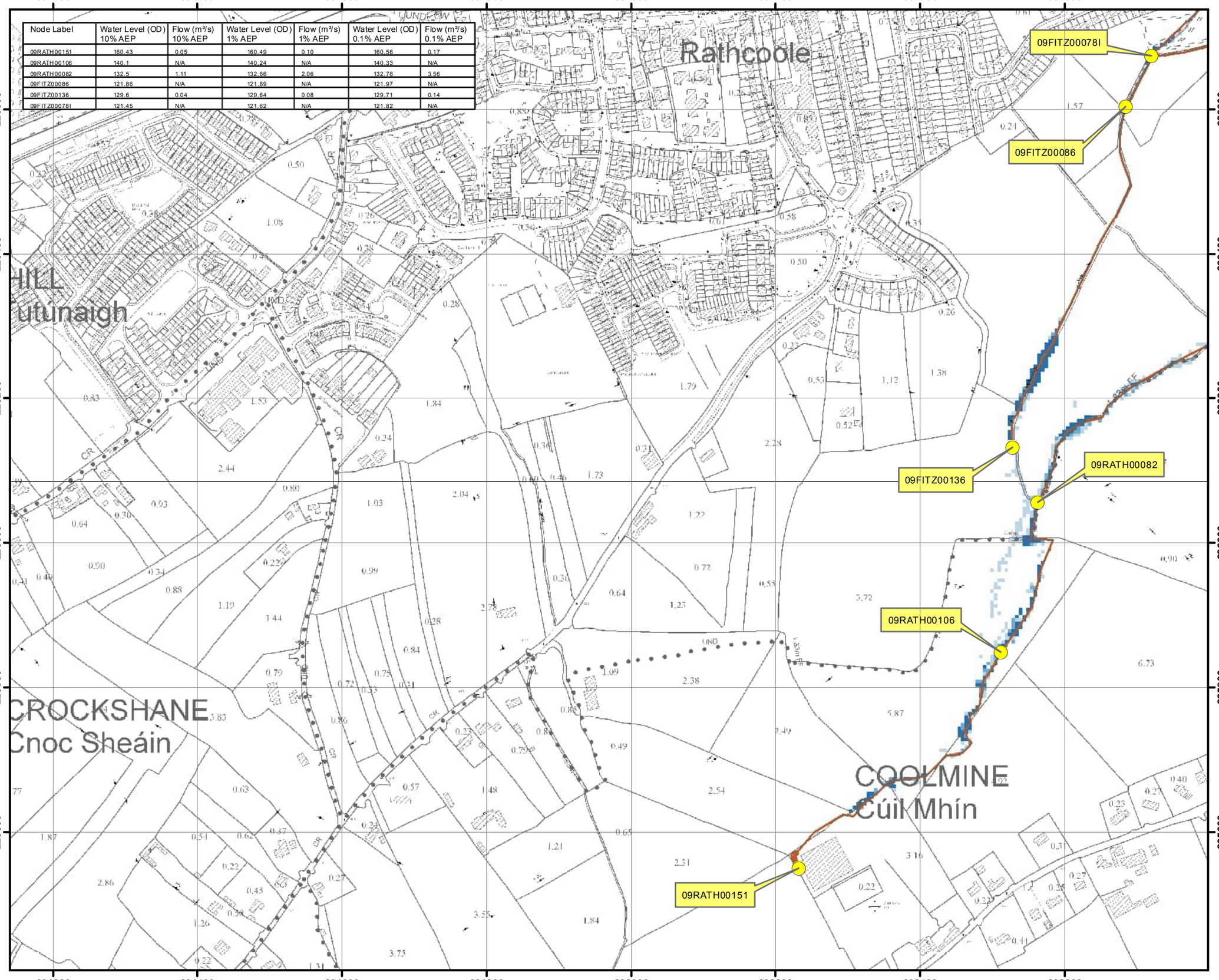
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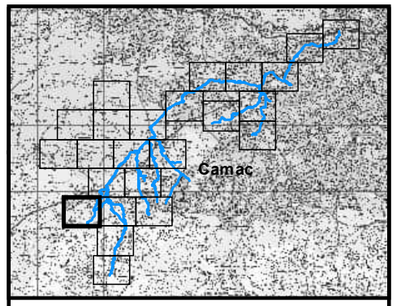
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BT12 6RZ
T +44(0) 28 90 667914
F +44(0) 28 90 668286
W www.rpsgroup.com
E ireland@rpsgroup.com

Map:
Camac Fluvial Flood Extents

Map Type:	EXTENT
Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.McG. Date : 13 November 2017
Checked By :	A.S. Date : 13 November 2017
Approved By :	S.P. Date : 13 November 2017
Drawing No. :	E09CAM_EXFCD_F1_03
Map Series :	Page 3 of 24
Drawing Scale :	1:5,000 @A3

Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
09RATH00151	160.43	0.05	160.49	0.10	160.56	0.17
09RATH00106	140.1	N/A	140.24	N/A	140.33	N/A
09RATH00082	132.5	1.11	132.66	2.06	132.78	3.56
09FITZ00086	121.86	N/A	121.89	N/A	121.97	N/A
09FITZ00136	129.6	0.04	129.64	0.08	129.71	0.14
09FITZ00078I	121.45	N/A	121.62	N/A	121.82	N/A





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- 0.1% Fluvial AEP Event
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- 1% AEP — (Walls / Embankments)
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- Node ID — Node Label

FINAL

REV:	NOTE:	DATE:
01	SOP label updated (Pg 21) Removal of Def. Area (Pg 21)	13/11/2017

EASTERN CFRAM STUDY

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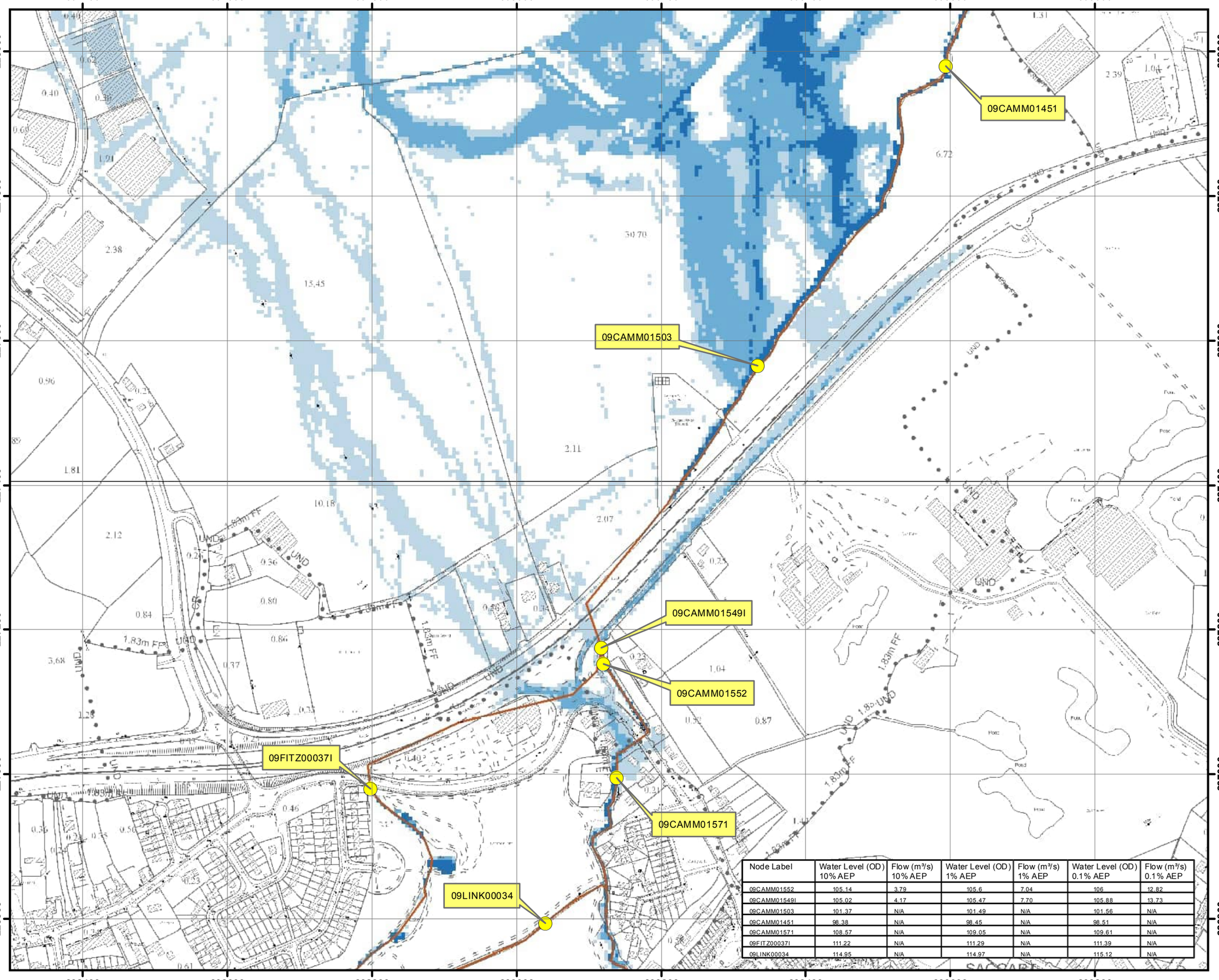
Elmwood House
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W www.rpsgroup.com
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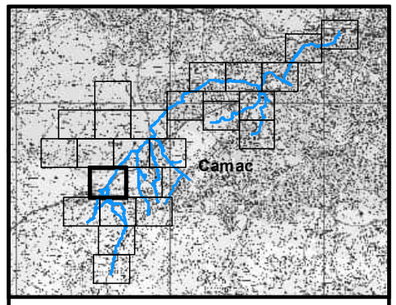
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Source:	FLUVIAL
Map Area:	HPW
Scenario:	CURRENT
Drawn By :	C.McG. Date : 13 November 2017
Checked By :	A.S. Date : 13 November 2017
Approved By :	S.P. Date : 13 November 2017
Drawing No. :	E09CAM_EXFCD_F1_04
Map Series :	Page 4 of 24
Drawing Scale :	1:5,000 @A3

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Node Label	Water Level (OD) 10% AEP	Flow (m³/s) 10% AEP	Water Level (OD) 1% AEP	Flow (m³/s) 1% AEP	Water Level (OD) 0.1% AEP	Flow (m³/s) 0.1% AEP
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09CAMM01549I	105.02	4.17	105.47	7.70	105.88	13.73
09CAMM01503	101.37	N/A	101.49	N/A	101.56	N/A
09CAMM01451	98.38	N/A	98.45	N/A	98.51	N/A
09CAMM01571	108.57	N/A	109.05	N/A	109.61	N/A
09FITZ00037I	111.22	N/A	111.29	N/A	111.39	N/A
09LINK00034	114.95	N/A	114.97	N/A	115.12	N/A

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FINAL

REV:	NOTE:	DATE:
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Approved By :	S.P. Date : 13 November 2017
Drawing No. :	E09CAM_EXFCD_F1_05
Map Series :	Page 5 of 24
Drawing Scale :	1:5,000 @A3