13. MATERIAL ASSETS – SITE SERVICES

13.1 Introduction

This chapter of the EIAR comprises of an assessment of the likely impact of the proposed development on existing surface water, water supply, foul drainage and utility services in the vicinity of the site as well as identifying proposed mitigation measures to minimise any impacts.

The material assets considered in this chapter of the EIAR include Surface Water Drainage, Foul Drainage, Water Supply, Power, Gas and Telecommunications.

In summary, the project comprises the development of 366 no. residential units consisting of the following mix of unit types:

- 28 no. 1 bed apartments
- 118 no. 2 bed apartments
- 36 no. 3 bed duplex units
- 20 no. 2 bedroom house
- 75 no. 3 bedroom house
- 77 no. 4 bedroom house
- 12 no. 5 bedroom house

In addition, the development will also include ancillary public open space, ancillary residential parking spaces and a childcare facility with associated parking spaces.

The Capdoo Link Road which will transverse the site is listed as a "Priority Road Scheme" in the Kildare County Council Development Plan 2017 – 2023 and will be constructed as part of the development. This link road along with a roundabout/junction upgrades will facilitate the primary access points to the development. A separate independent access point is provided off a rural road north of the site.

The surface water drainage system accords with SUDs principles with the main body of the site divided into three drainage catchments with two additional catchments for the link road. Attenuation will be provided in each catchment utilising Stormtech Underground Chamber systems, with a controlled greenfield run-off rate of 2.00l/sec/ha. A surface water outfall will be constructed along the rural roads to the east of the site and will discharge to the Gollymochy Stream. This will serve the majority of the development with the link road and a small section north west of the site discharing to the public surface water network.

The majority of the foul drainage will connect to an existing foul sewer south east of the site with a small isolated section connecting north west of the site. The proposed foul drainage discharge point south east of the site is slightly elevated above the eastern side of the site. As such, a foul pumping station, rising main and associated rising main discharge (header) manhole will be required to service a large section of the development (185 out of 366 units). The north western and southern portions of the site will discharge by gravity in to the appropriate discharge manholes.

It is proposed to link the existing 400mm diameter watermains (north-west and south-east of the site) via a 200mm diameter watermain running along the proposed Capdoo Link Road. This new watermain will then service the proposed development.

13.2 Methodology

As part of assessing the likely impact of the proposed development, surface water runoff, foul drainage discharge and water usage calculations were carried out in accordance with the following guidelines:

- Greater Dublin Strategic Drainage Study (GDSDS)
- Method outlined in Irish Water's Code of Practice for Wastewater Infrastructure
- Method outlined in Irish Water's Code of Practice for Water Infrastructure

Assessment of the likely impact of the proposed development on existing material assets in the vicinity of the site included:

- Review of Irish Water utility plans (surface water drainage, foul drainage and water supply)
- Consultation with Irish Water and Kildare County Council
- Submission of a Pre-Connection Enquiry Application to Irish Water.
- Review of ESB Networks Utility Plans
- Review of Gas Networks Ireland Service Plans
- Review of Eir E-Maps
- Review of Virgin Media Maps

13.3 Receiving Environment

13.3.1 Surface Water Drainage

The site currently drains through a network of open drains located to the east of the site which ultimately discharges to the Gollymochy Stream. Surface water also drains from the site via infiltration. Varied infiltration rates were observed during Soakaway Testing carried out by IGSL in July 2017 (e.g. moderate levels of infiltration were observed where granular soils were present but very low levels of infiltration were observed where underlying clays were encountered).

Existing public surface water drains are located to the south and west of the site (refer to Irish Water's Network Plan included in Appendix 13.A). The topography of the site generally falls from west to east at gradients ranging from 1/15 to 1/100. As such, it is only possible to connect the link road and the north west section of the site to the existing surface water infrastructure with the remaining main body of the site discharging to the Gollymochy stream.

13.3.2 Foul Drainage

Existing 225mm diameter public foul sewers are located south east of the site and north west of the site which ultimately discharge to the Clane Pumping Station.

For the location of the existing foul sewer described above refer to the Topographic Survey Plans included in Appendix 13.B and Irish Water's Network Plan included in Appendix 13.A.

On the existing foul sewer south east of the site there is a manhole located near the entrance to Capdoo Avenue which is expected to provide a suitable foul drainage discharge point for the majority of the proposed development. On the existing foul sewer north west of the site there is a manhole located next to the proposed roundabout as is expected to serve the north west portion of the site.

Pre-connection enquiry feedback has been received from Irish Water.

"Based upon the details you have provided with your pre-connection enquiry and on the capacity currently available as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place and the condition listed below, your proposed connection to the Irish Water network can be facilitated"

13.3.3 Water Supply

Refer to the Irish Water's Network Plan included in Appendix 13.A for the location of the existing public watermains.

An existing 400mm diameter ductile iron watermain and a 2" diameter uPVC watermain run along the site's northern and eastern boundary. An existing 6" diameter uPVC watermain also runs along the western boundary of the site.

13.3.4 Power

An ESB Networks plan is included in Appendix 13.C showing the location of existing electrical services in the vicinity of the site.

Existing MV overhead lines traverse the site from Capdoo park (south of the site) running through the centre of the site to the northern boundary. MV overhead lines also traverse the site from Mainham Woods (north west of the site) across the site to the northeast boundary.

An existing MV/LV underground line enters the site from the back of the Mainham woods estate before rising to an overhead line which traverses the site as mentioned above.

13.3.5 Gas

Gas Networks Ireland plans are included in Appendix 13.D showing the location of gas distribution pipes in the vicinity of the site.

An existing medium pressure distribution pipeline (125mm / 4bar) is shown running around the residential development at the western and southern boundary.

13.3.6 Telecoms

Eir network plans are included in Appendix 13.E showing the location of telecommunications infrastructure in the vicinity of the site.

Telecommunications infrastructure is located along the R407 road to the west of the site, with the housing developments to the south and west the site containing numerous telecommunications cables.

13.4 Characteristics of the Proposed Development

13.4.1 Surface Water Drainage

As mentioned in section 13.3.1 above, the site currently drains through a network of open drains located to the east of the site which ultimately discharge to the Gollymochy Stream.

The surface water drainage system for the proposed development has been designed into three catchments with two additional catchments for the link road. The proposed surface water drainage network will collect surface water runoff from the site via a piped network prior to discharging off site via an attenuation tank, flow control device and separator arrangement. Attenuation volumes have been calculated based on an allowable outflow / greenfield runoff rate of 2.00 l/sec/ha.

Surface water runoff from the site's road network will be directed to the proposed pipe network via conventional road gullies while surface water runoff from driveways will be captured by permeable paving. Surface water runoff from roofs will be routed to the proposed surface water pipe network via the porous aggregates beneath permeable paved driveways (providing an additional element of attenuation).

The site's surface water management infrastructure has been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS).

Proposed surface water drains have been designed in accordance with the Greater Dublin Strategic Drainage Study (GDSDS), the Department of the Environment's Recommendations for Site Development Works for Housing Areas, the Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal" and BS EN 752: 2008 Drain and Sewer Systems Outside Buildings.

13.4.2 Foul Drainage

The majority of the foul drainage will connect to an existing foul sewer south east of the site with a small isolated section connecting north west of the site. The proposed foul drainage discharge point south east of the site is slightly elevated above a large section of the site. As such, a foul pumping station, rising main and associated rising main discharge (header) manhole will be required to service this section of the

development (185 out of 366 units). The north western and southern portions of the site will discharge by gravity in to the appropriate discharge manholes.

The proposed foul drainage network comprises of a series of 225mm diameter pipes with each residential

The foul drainage network for the proposed development has been designed in accordance with the Department of the Environment's Recommendations for Site Development Works for Housing Areas, the Department of the Environment's Building Regulations "Technical Guidance Document Part H Drainage and Waste Water Disposal", BS EN 752: 2008 Drain and Sewer Systems Outside Buildings, IS EN 12056: Part 2 (2000) Gravity Drainage Systems Inside Buildings and BS 8301:1985 Building Drainage.

13.4.3 Water Supply

It is proposed to link the existing 400mm diameter watermains (north-west and south-east of the site) via a 200mm diameter watermain running along the proposed Capdoo Link Road. This new watermain will then service the proposed development.

A 150mm diameter looped water main will then be provided (generally along the site's arterial roads) with a number of 100mm diameters looped branch mains provided elsewhere.

The site is irregular in shape due to a number of plots that have been developed along its northern boundary. As a result, there is a portion of the site that is isolated from the main development (north-west corner) that requires a separate connection off the existing watermain at the northern boundary.

The proposed water main layout has been designed in accordance with Irish Water Standard Detail STD-W-02.

Sluice Valves have been arranged in accordance with Irish Water Standard Detail STD-W-02, Note 6 ("valves shall be arranged in such a manner to allow the network to be managed to ensure that no more than 40 properties lose water from a burst on the system, at any one time").

Individual houses will have their own connections (25mm O.D. PE pipe) to distribution water mains via service connections and boundary boxes.

Individual connections are to be installed in accordance with Irish Water Standard Detail STD-W-03.

13.4.4 Power

Power supply for the proposed development will be taken from the existing ESB Network.

Existing overhead power lines within the site (MV 10kV / 20 kV) will be relocated in advance of commencement of site works.

13.4.5 Gas

Gas supply for the proposed development (if required as part of the energy strategy) will be taken from the existing Gas Networks Ireland network located to the west of the site.

13.4.6 Telecoms

The existing Eir network located to the west of the site will be extended to service the proposed development.

13.5 Potential Impact of the Proposed Development

13.5.1 Construction Phase

Potential impacts that may arise during the construction phase include:

- Contamination of surface water runoff due to construction activities.
- Improper discharge of foul drainage from contractor's compound.
- Cross contamination of potable water supply to construction compound.
- Damage to existing underground and overground infrastructure.
- Relocation or diversions to existing overhead ESB lines may lead to loss of connectivity to and / or interruption of supply from the electrical grid.
- Potential loss of connection to the Gas Networks Ireland and Telecommunications infrastructure while carrying out works to provide service connections.

13.5.2 Operational Phase

Potential operational phase impacts on the water infrastructure are noted below:

- Increased impermeable surface area will reduce local ground water recharge and potentially increase surface water runoff (if not attenuated to greenfield runoff rate).
- Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along roads and in driveway areas).
- Increased discharge to foul drainage network.
- Increased potable water consumption

13.5.3 'Do Nothing' Scenario

There are no predicted impacts should the proposed development not proceed.

13.6 Ameliorative, Remedial or Reductive Measures

13.6.1 Construction Phase

A site-specific Construction & Environmental Management Plan will be developed and implemented during the construction phase. Implementation of the measures outlined in this plan will ensure that the potential impacts of the proposed development do not occur during the construction phase.

Relocation of existing overhead ESB lines will be fully coordinated with ESB Networks to ensure interruption to the existing power network is minimised (e.g. agreeing power outage to facilitate relocation of cables). Ducting and / or poles along the proposed relocated route will be constructed and ready for rerouting of cables in advance of decommissioning of existing overhead power lines.

Similarly, connections to the existing gas and telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors.

13.6.2 Operational Phase

On completion of the construction phase no further mitigation measures are proposed in relation to the electrical, gas and telecommunications infrastructure.

13.6.3 'Do Nothing' Scenario

No mitigation measures are proposed in relation the site services described in this chapter if the development does not proceed.

13.7 Predicted Impact of the Proposed Development

13.7.1 Construction Phase

Implementation of measures outlined in Section 13.6.1 will ensure that the potential impacts of the proposed development on site services do not occur during the construction phase and that any residual impacts will be short term.

13.7.2 Operational Phase

Demand from the proposed development during the operational phase is not predicted to impact on the existing power, gas and telecoms network.

As surface water drainage design will be carried out in accordance with the GDSDS and SuDS methodologies and implemented as part of a treatment train approach, there are no predicted impacts arising from the operational phase.

13.7.3 'Do Nothing' Scenario

There are no predicted impacts should the proposed development not proceed.

13.8 Monitoring

No specific monitoring is proposed in relation to electrical, gas and telecommunications infrastructure

13.9 Reinstatement

Reinstatement of any excavations, trenches etc. relating to the provision of electrical, gas and telecommunications connections is to be carried out in accordance with the relevant utility provider's requirements.

13.10 Interactions and Potential Cumulative Impacts

13.10.1 Interactions

Soils and Geology

Trench excavations to facilitate site service installation will result in exposure of subsoils to potential erosion and subsequent sediment generation. Mitigation measures are outlined in Chapter 8 Land & Soils (i.e. service trenches to be backfilled as soon as practicable to minimise potential erosion of subsoils).

13.10.2 Potential Cumulative Impacts

Should any other developments be under construction or planned in the vicinity of the site they are likely to have similar impacts during the construction phase in relation to Material Assets. Should the construction phase of any developments coincide with the development of this proposed site, potential cumulative impacts are not anticipated once similar mitigation measures are implemented.

13.11 Human Health

A risk to the human health of the installer from built services can occur as a result of any excavation work in areas where built services exist, through coming into contact with live electricity lines or damaging live gas or watermains.

From the perspective of the end user of the networks the risks to human health include:

- Gas leaks or explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland to ensure the protection of human health. Therefore, the risk of effect on human health is not considered significant.
- Loss of supply. This is a managed process that is the responsibility of the individual utility supplier and emergency plans will be in place. The effect is therefore considered brief and not significant.

With the implementation of the aforementioned mitigation measures, the impact of the proposed built services on human health is likely to be negligible.

13.12 Unplanned Events

The following accidents & disasters involving built services during construction could potentially give rise to a serious incident putting people at risk:

- Excavation works coming into contact with live electricity lines
- Excavation works causing damage and leaks to gas mains

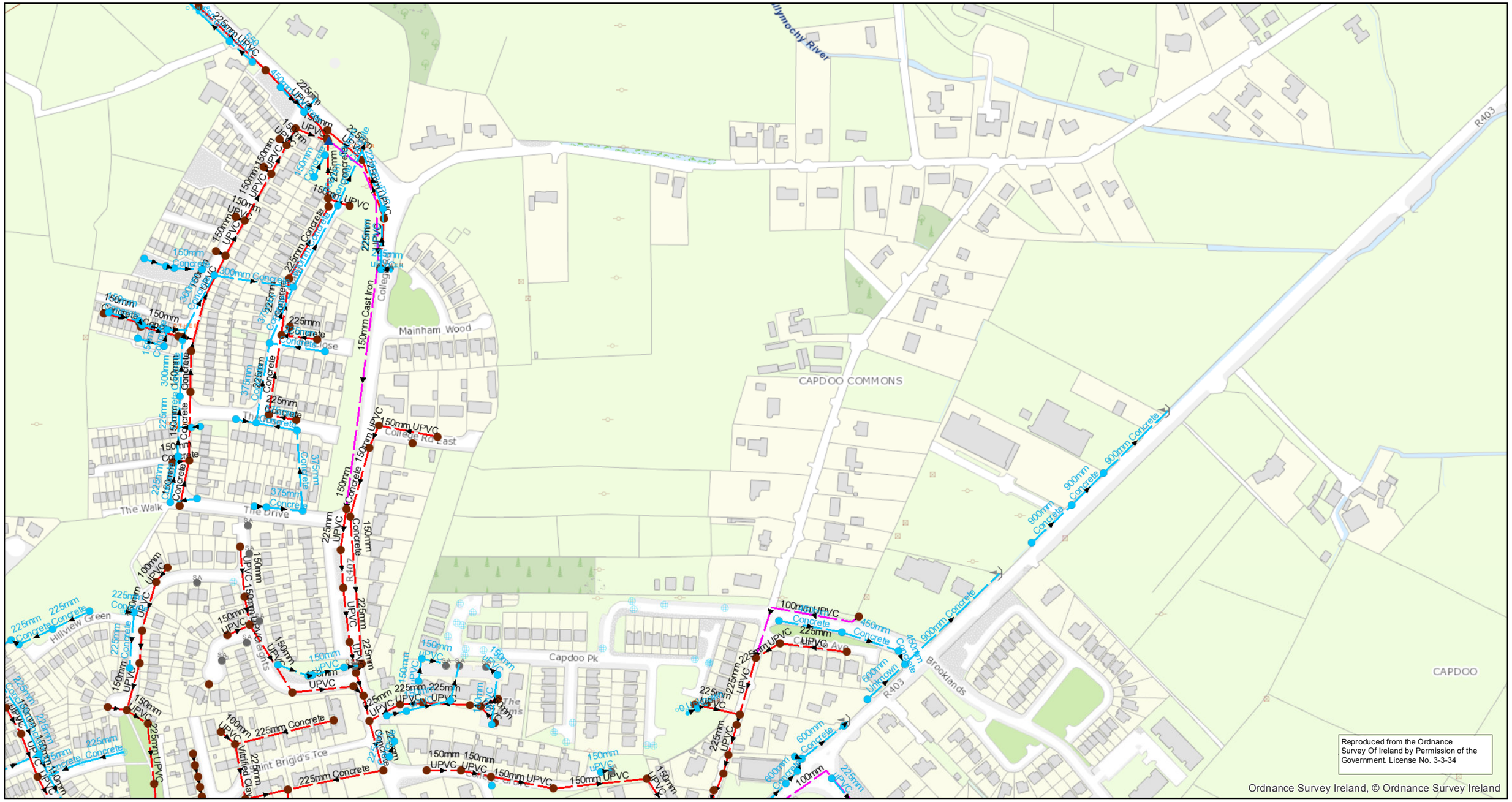
With the implementation of the aforementioned mitigation measures, the likelihood of such events occurring would be local and not significant.

The following accidents & disasters involving built services during operation could potentially give rise to a serious incident putting end users at risk:

- Gas explosions. The installation of services is tightly monitored and controlled by Gas Networks Ireland. Therefore, the residual risk is not considered significant.

Appendix 13.A Irish Water Utility Plans

Irish Water Web Map



August 31, 2016

1:5,793

0 0.05 0.1 0.2 mi

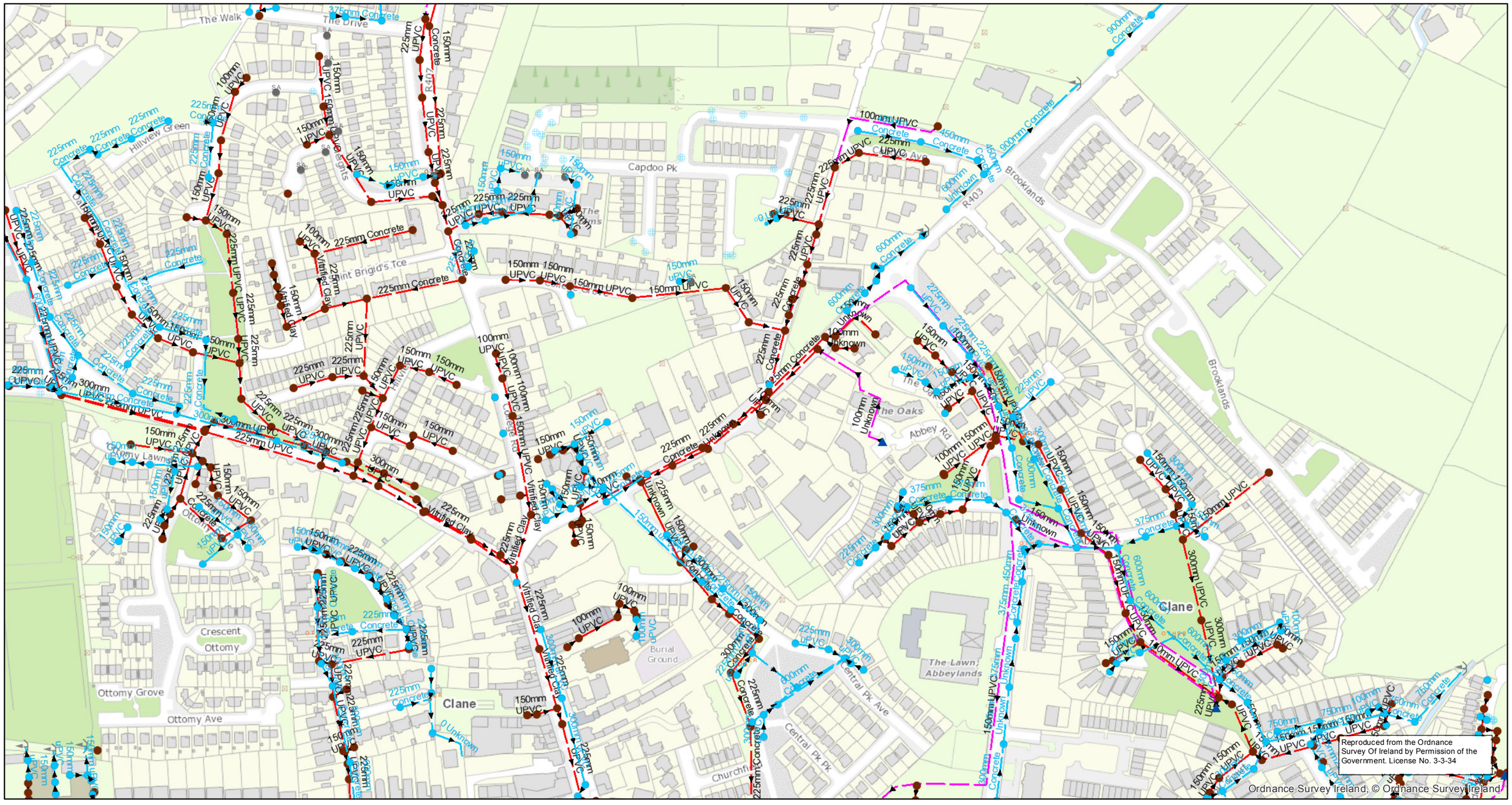
0 0.1 0.2 0.4 km

Legend

Surface	Other; Unknown	Overflow	Soakaway	Treatment plant	Catchpit	Combined	Unknown		
Surface	Gully	Soakaway	Standard Outlet	Pump station	Hatchbox	Foul	Combined		
Cascade	Standard	Other; Unknown	Other; Unknown	Catchpit	Lamphole	Overflow	Foul		
Catchpit	Other; Unknown	Storm Culverts	Rodding Eye	Gully	Standard	Unknown	Overflow		
Hatchbox	Vent/Col	Storm Clean Outs	Flushing Structure	Standard	Other; Unknown	Combined	Unknown		
Lamphole	Other; Unknown	Outfall	Other; Unknown	Other; Unknown	Vent/Col	Foul			
Standard	Outfall	Overflow	Sewer Flow Control Valves	Cascade	Other; Unknown	Overflow			

UISCE ÉIREANN : IRISH WATER

Irish Water Web Map



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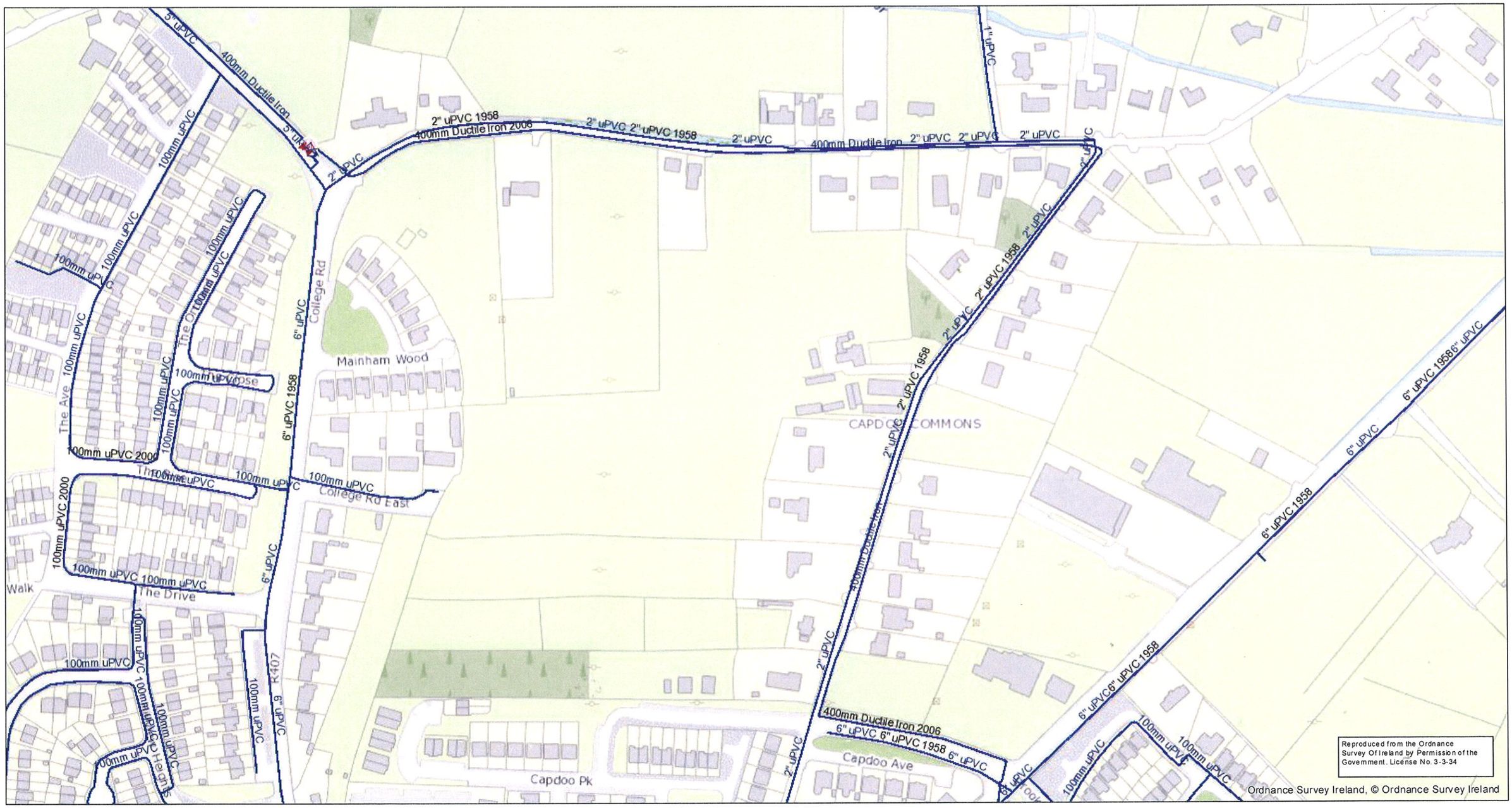
0 0.1 0.2 0.4 km

Legend

Surface	Other; Unknown	Overflow	Soakaway	Treatment plant	Catchpit	Combined	Unknown		
Surface	Gully	Soakaway	Standard Outlet	Pump station	Hatchbox	Foul	Combined		
Cascade	Standard	Other; Unknown	Other; Unknown	Catchpit	Lamphole	Overflow	Foul		
Catchpit	Other; Unknown	Storm Culverts	Rodding Eye	Gully	Standard	Unknown	Overflow		
Hatchbox	Vent/Col	Storm Clean Outs	Flushing Structure	Standard	Other; Unknown	Combined	Unknown		
Lamphole	Other; Unknown	Outfall	Other; Unknown	Other; Unknown	Vent/Col	Foul			
Standard	Outfall	Overflow	Sewer Flow Control Valves	Cascade	Other; Unknown	Overflow			

UISCE ÉIREANN : IRISH WATER

Irish Water Web Map



September 1, 2016

1:4,514

0 0.05 0.1 0.2 mi

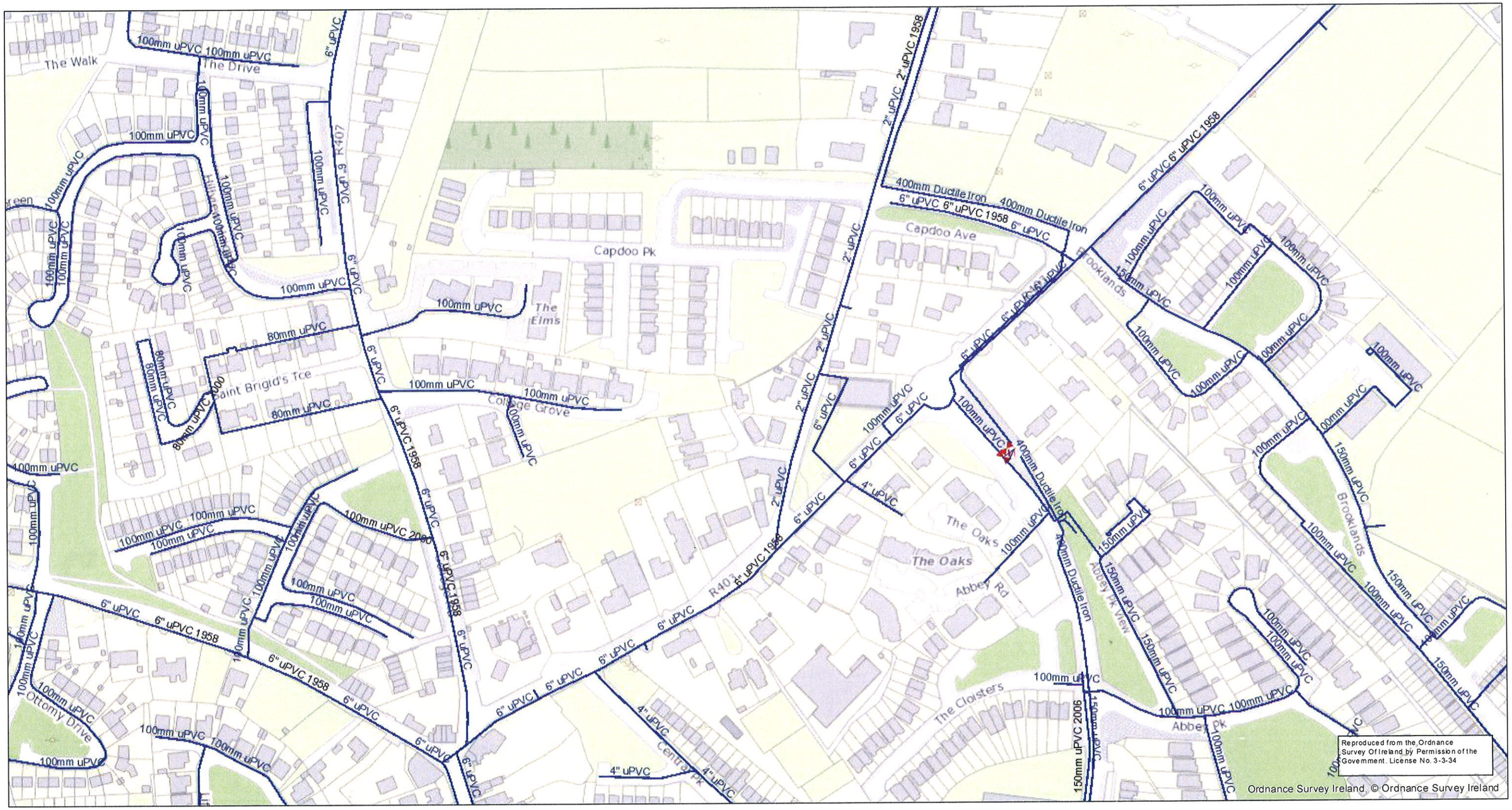
0 0.075 0.15 0.3 km

Legend

Non-return	Other	Treatment Plant	Potable Water	Water Abandoned Lines
Hydro	Open	Potable	Untreated	Water Casings
Orifice Plate	Closed	Raw Water	Potable Water
PRV	Part Closed	Pump Stations	Irish Water
PSV	District (Boundary Meter)	Untreated	Non IW

UISCE ÉIREANN : IRISH WATER

Irish Water Web Map



September 1, 2016

1:4,514

0 0.05 0.1 0.2 mi

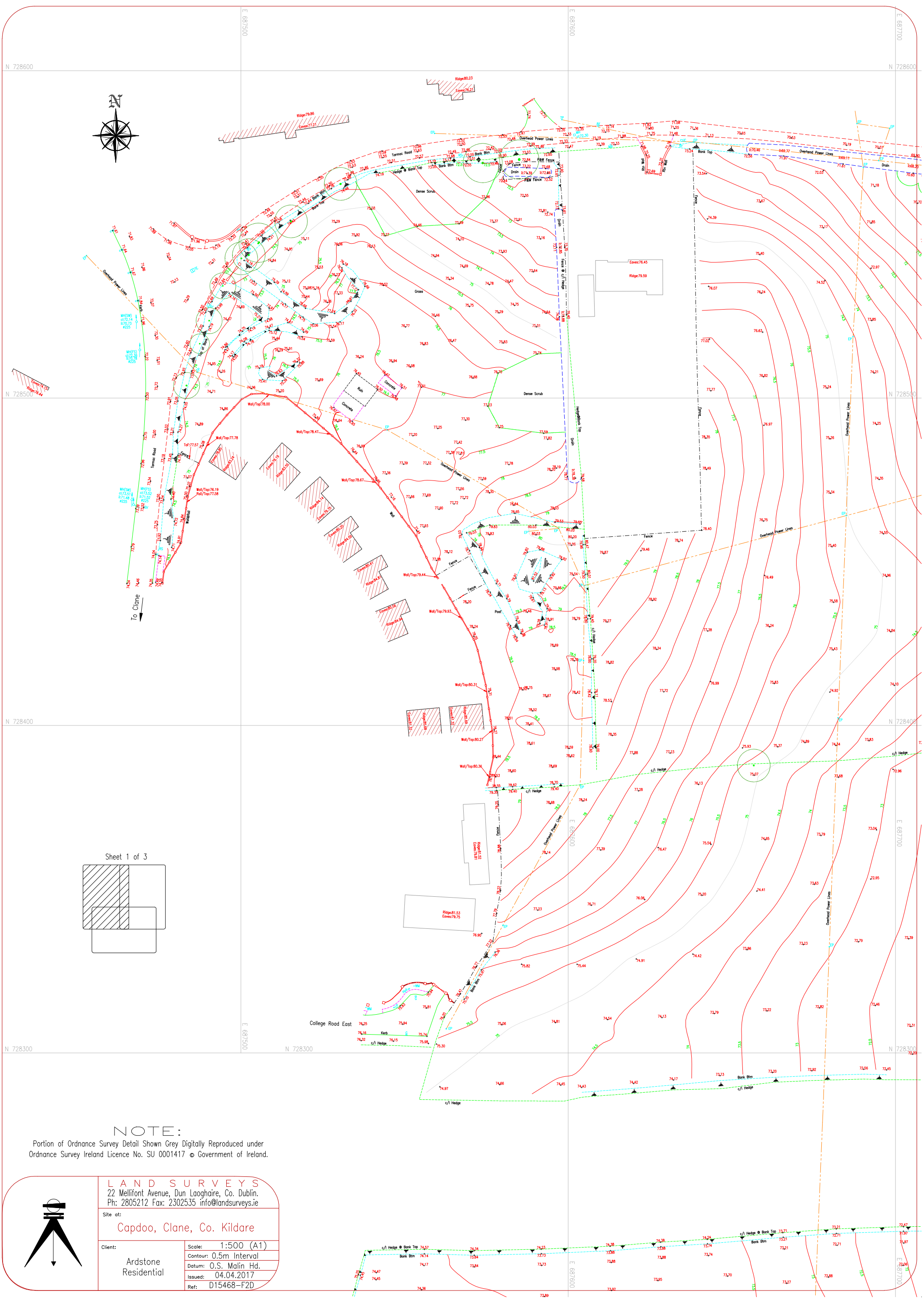
0 0.075 0.15 0.3 km

Legend

Non-return	Other	Treatment Plant	Potable Water	Water Abandoned Lines
Hydro	Open	Potable	Untreated	Water Casings
Orifice Plate	Closed	Raw Water	Potable Water	
PRV	Part Closed	Pump Stations	Irish Water	
PSV	District (Boundary Meter)	Untreated	Non IW	

UISCE ÉIREANN : IRISH WATER

Appendix 13.B Topographical Survey



Sheet 1 of 3

NOTE:

Portion of Ordnance Survey Detail Shown Grey Digitally Reproduced under Ordnance Survey Ireland Licence No. SU 0001417 © Government of Ireland.

LAND SURVEYS
22 Mellifont Avenue, Dun Laoghaire, Co. Dublin.
Ph: 2805212 Fax: 2302535 info@landsurveys.ie

Site at:

Capdoo, Clane, Co. Kildare

Client:

Ardstone Residential

Scale:	1:500 (A1)
Contour:	0.5m Interval
Datum:	O.S. Malin Hd.
Issued:	04.04.2017
Ref:	D15468-F2D

NOTE:

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E 687700 E 687800 E 687900

N 728600 N 728500 N 728400 N 728300

N

Sheet 2 of 3

LAND SURVEYS
22 Mellifont Avenue, Dun Laoghaire, Co. Dublin.
Ph: 2805212 Fax: 2302535 info@landsurveys.ie

Site at:
Capdoo, Clane, Co. Kildare

Client:
Ardstone Residential

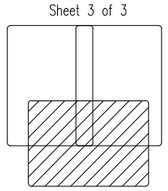
Scale:	1:500 (A1)
Contour:	0.5m Interval
Datum:	O.S. Malin Hd.
Issued:	04.04.2017
Ref:	D15468-F2D

College Road East

To Clane

N

Sheet 3 of 3



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Client:

Ardstone Residential

Scale:	1:500 (A1)
Contour:	0.5m Interval
Datum:	O.S. Malin Hd.
Issued:	04.04.2017
Ref:	D15468-F2D

Appendix 13.C ESB Network Plan

ESB Networks

TITLE:

20180222-014_A0

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 22-Feb-2018

** SCALE: 1:1500

** SCALE WHEN PRINTED ON AN A0 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS, BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING:
(A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES;
(C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

X,Y: 286938, 228745

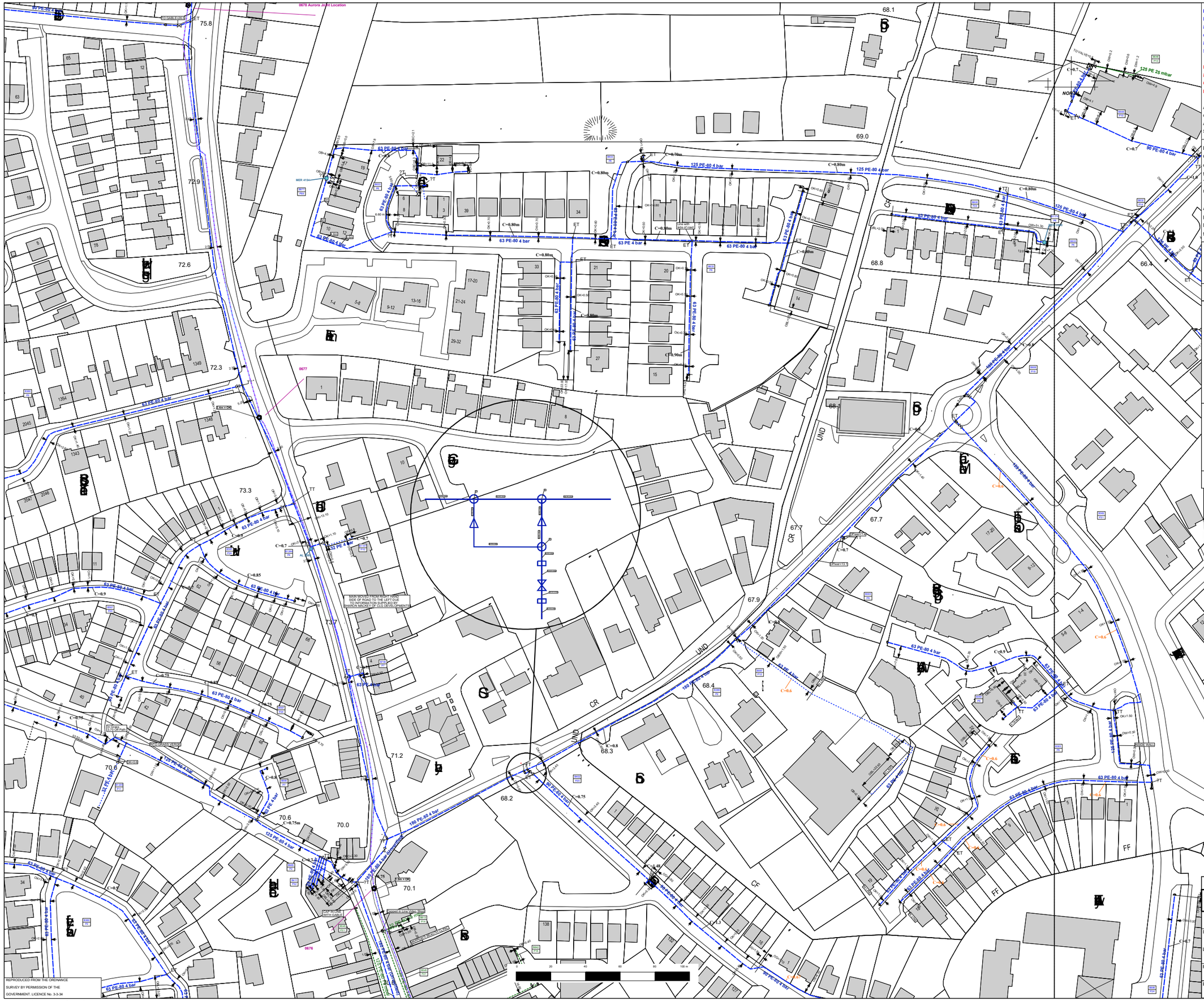
X,Y: 288678, 228745

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A0 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

PLEASE NOTE THAT THERE ARE: HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE UNDERGROUND CABLES YOU MUST CONTACT THE DESIGNATED PARTIES (PLEASE SEE ENCLOSED SHEET) IN ADVANCE OF THE WORKS

X,Y: 288678, 227590

Appendix 13.D Gas Network Ireland Network Maps



Important Safety Notice:
Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice:
Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- C=? Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification **
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

** Please contact GNI on 1850-427747 for specific information.

Design Department - DUBLIN

Gas Networks Ireland

GAS NETWORK INFORMATION

Issue: DBFL	
Location: Capdoo (Clane, County Kildare)	
Plot Date: 21/02/2018	Contact: SB
Plotted by: WW	Scale: 1:1000

Important Safety Notice:
Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

Legal Notice:
Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

C=?	Cover (depth in meters)		Pressure Monitor
CP	CP Test Point		Protection (Sleeve)
	End Cap		Protection (Slabbing)
	Hot Tap		Reducer
	Installation		Service Terminator
	Valve		Tee
	Mains Verification **		Transition

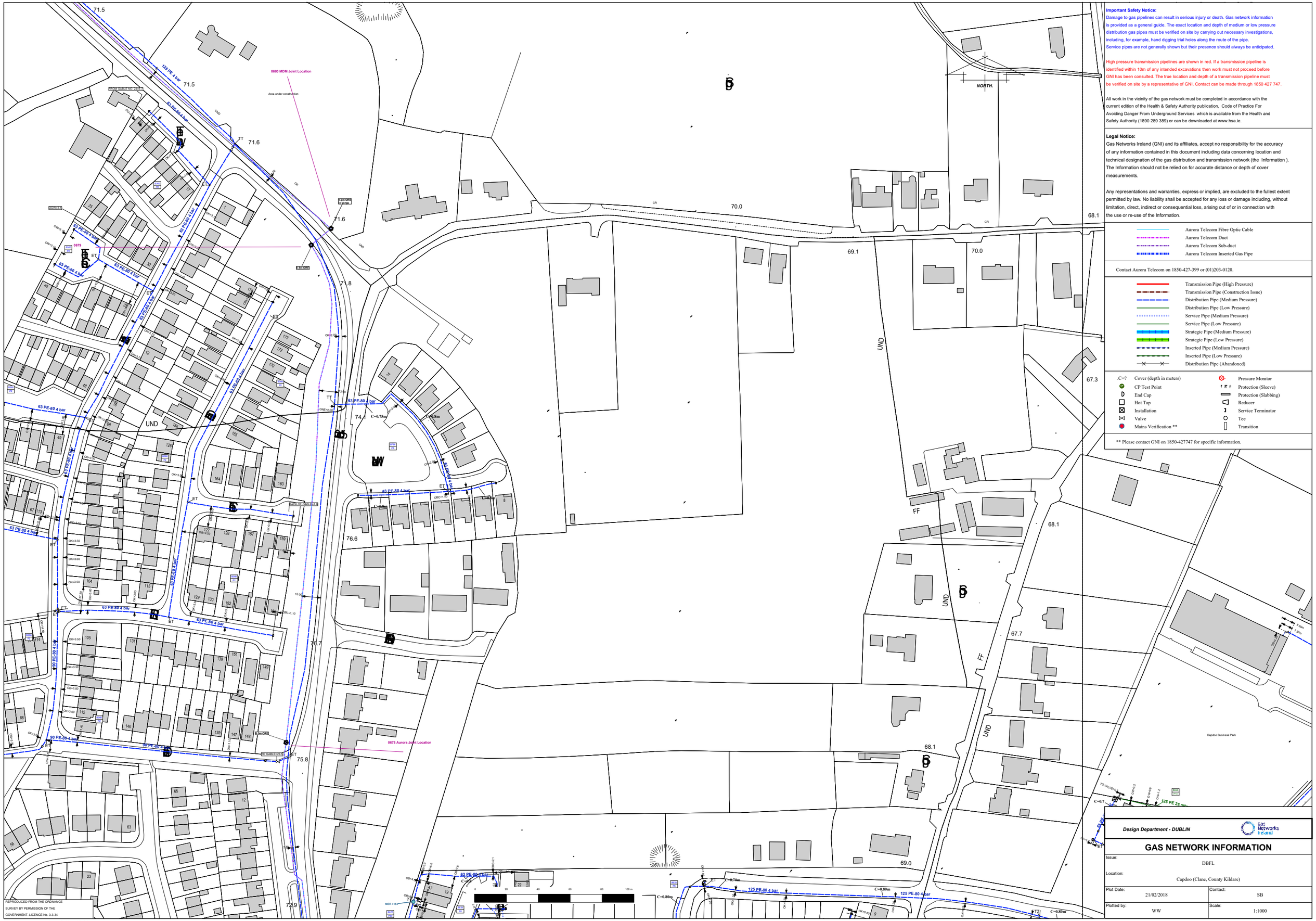
** Please contact GNI on 1850-427747 for specific information.

Design Department - DUBLIN

Gas Networks Ireland

GAS NETWORK INFORMATION

Issue: DBFL	
Location: Capdoo (Clane, County Kildare)	
Plot Date: 21/02/2018	Contact: SB
Plotted by: WW	Scale: 1:1000



Important Safety Notice:
Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe.
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- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

- C=? Cover (depth in meters)
- CP Test Point
- End Cap
- Hot Tap
- Installation
- Valve
- Mains Verification **
- Pressure Monitor
- Protection (Sleeve)
- Protection (Slabbing)
- Reducer
- Service Terminator
- Tee
- Transition

** Please contact GNI on 1850-427747 for specific information.

Design Department - DUBLIN

Gas Networks Ireland

GAS NETWORK INFORMATION

Issue: DBFL	
Location: Capdoo (Clane, County Kildare)	
Plot Date: 21/02/2018	Contact: SB
Plotted by: WW	Scale: 1:1000

Appendix 13.E Eir Network Plans

A3

PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

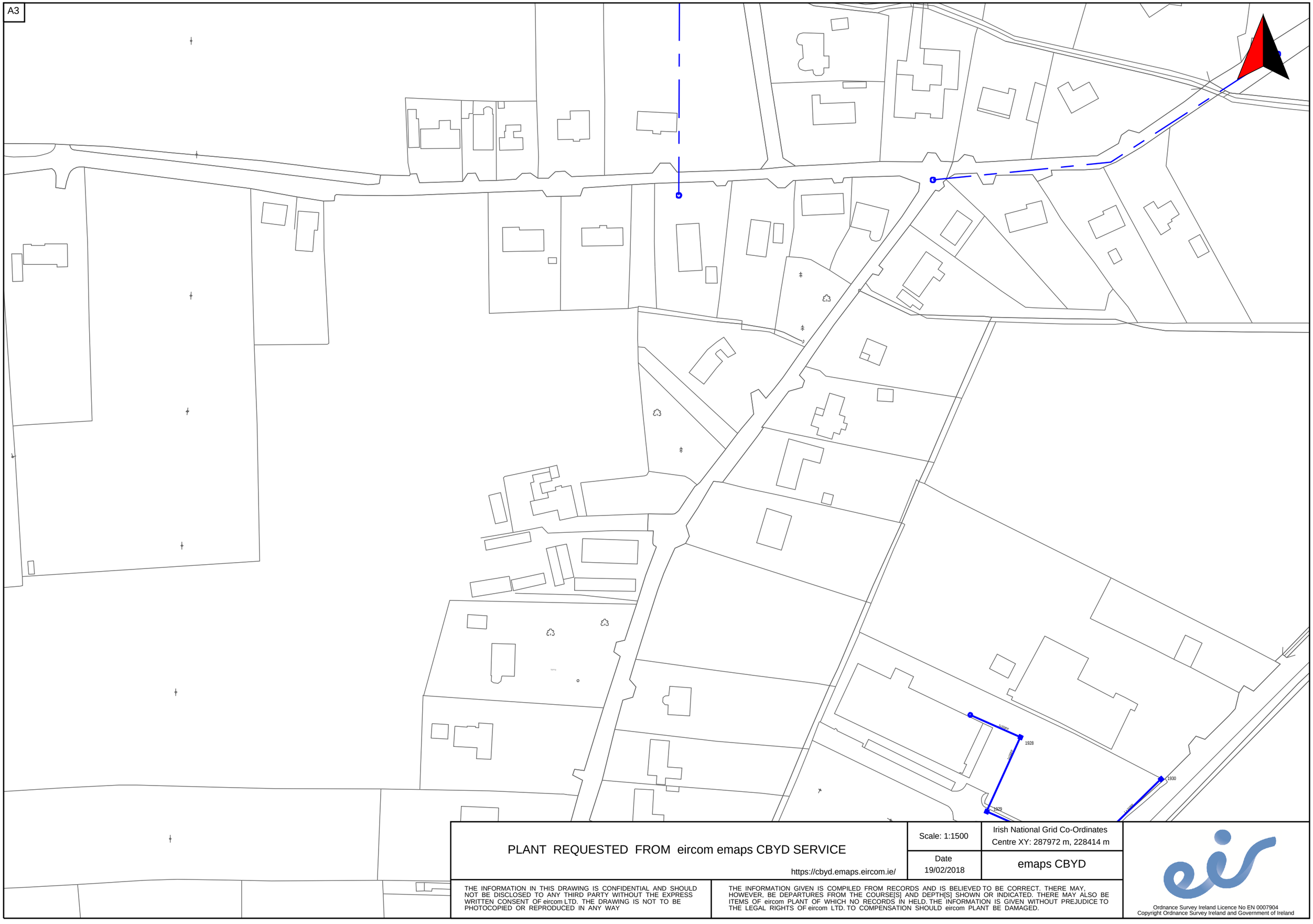
Scale: 1:1250

Irish National Grid Co-Ordinates
Centre XY: 288067 m, 228499 m

Date
19/02/2018

emaps CBYD

A3



PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

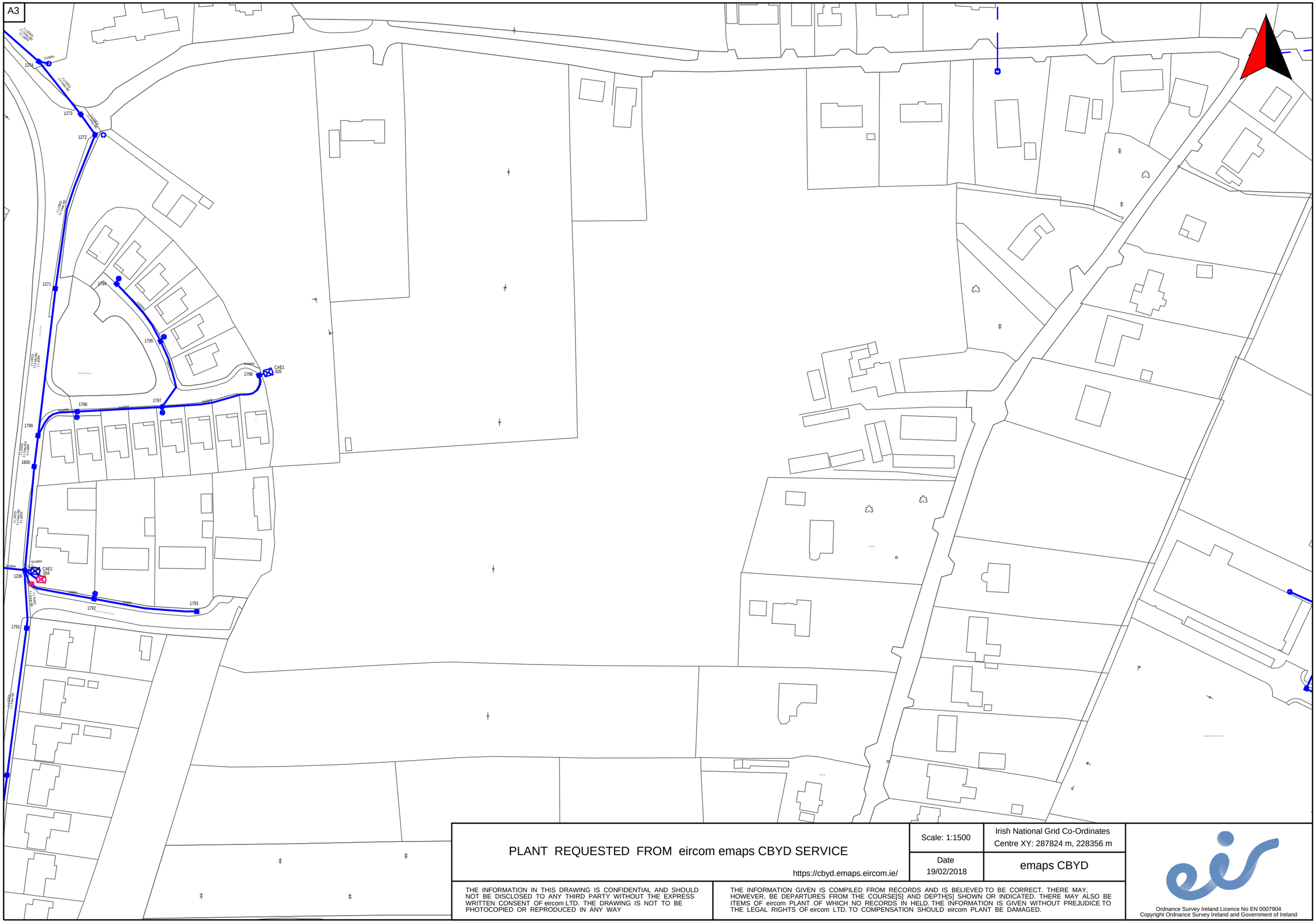
Scale: 1:1500

Irish National Grid Co-Ordinates
Centre XY: 287972 m, 228414 m

Date
19/02/2018

emaps CBYD

A3



PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

Scale: 1:1500	Irish National Grid Co-Ordinates Centre XY: 287824 m, 228356 m
Date 19/02/2018	emaps CBYD

A3

PLANT REQUESTED FROM eircom emaps CBYD SERVICE

https://cbyd.emaps.eircom.ie/

Scale: 1:1500

Date 19/02/2018

Irish National Grid Co-Ordinates
Centre XY: 287722 m, 228200 m

emaps CBYD