Appendix 16.1

ESB Networks Utility Plans

A3

open eir Civil Engineering Infrastructure Service

Scale: 1:3500	Irish National Grid Co-Ordinates Centre XY: 717066 m, 731259 m
Date 07/10/2025	Smallworld Powered by GE

THE INFORMATION GIVEN IS COMPILED FROM PASSIVE ACCESS RECORDS AND IS BELIEVED TO BE CORRECT. THERE MAY,
HOWEVER, BE DEPARTURES FROM THE COURSE[S] AND DEPTH[S] SHOWN OR INDICATED. THERE MAY ALSO BE ITEMS OF
open eir INFRASTRUCTURE OF WHICH NO RECORDS IS HELD. THE INFORMATION IS GIVEN WITHOUT PREJUDICE TO THE LEGAL RIGHTS OF open eir TO COMPENSATION SHOULD open eir INFRASTRUCTURE BE DAMAGED

ESB Networks

TITLE: 20200217-018_A3

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: 17-Feb-2020

** SCALE: 1:2000

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM

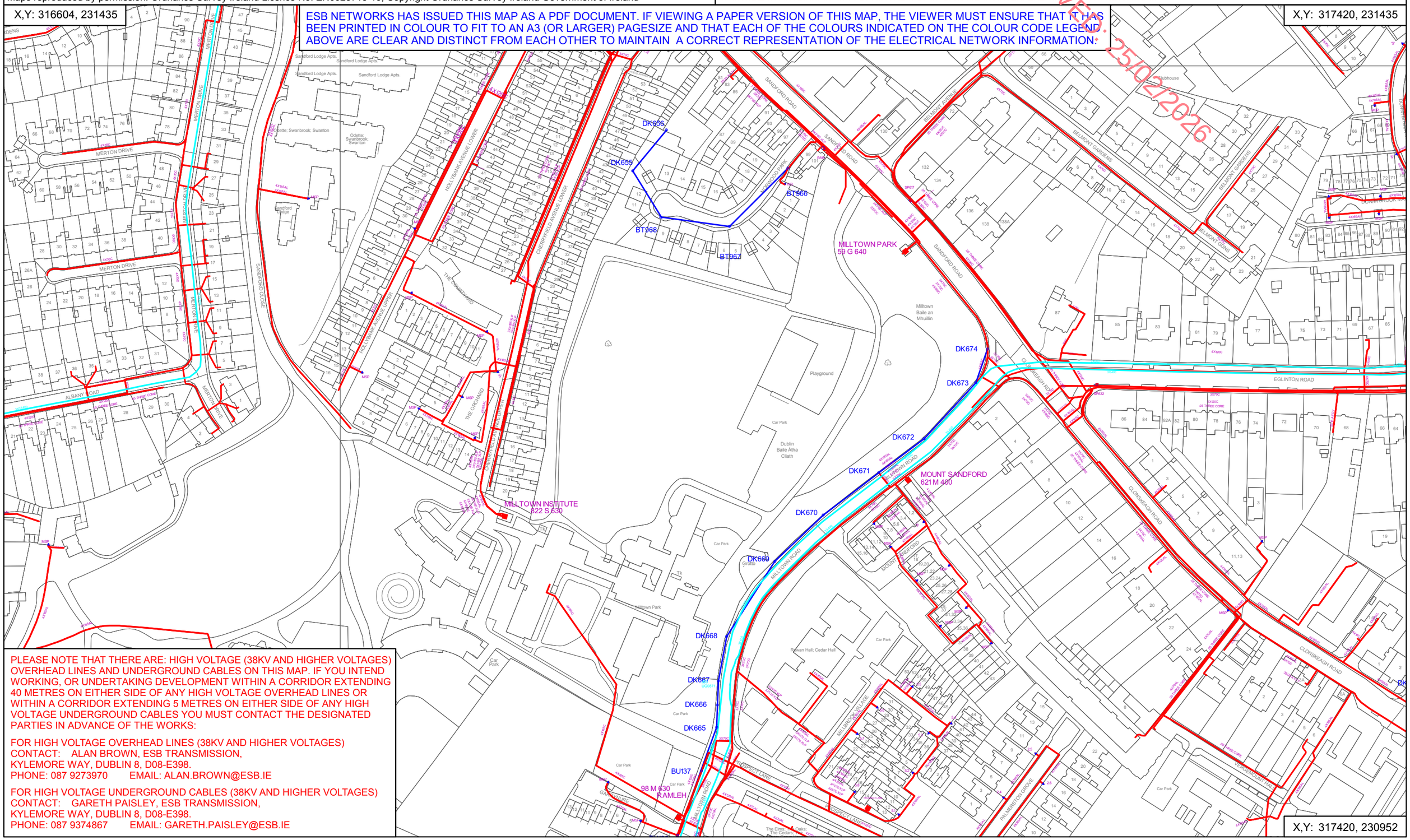
WARNING

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: 316604, 231435

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 A3 (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.

X,Y: 317420, 231435

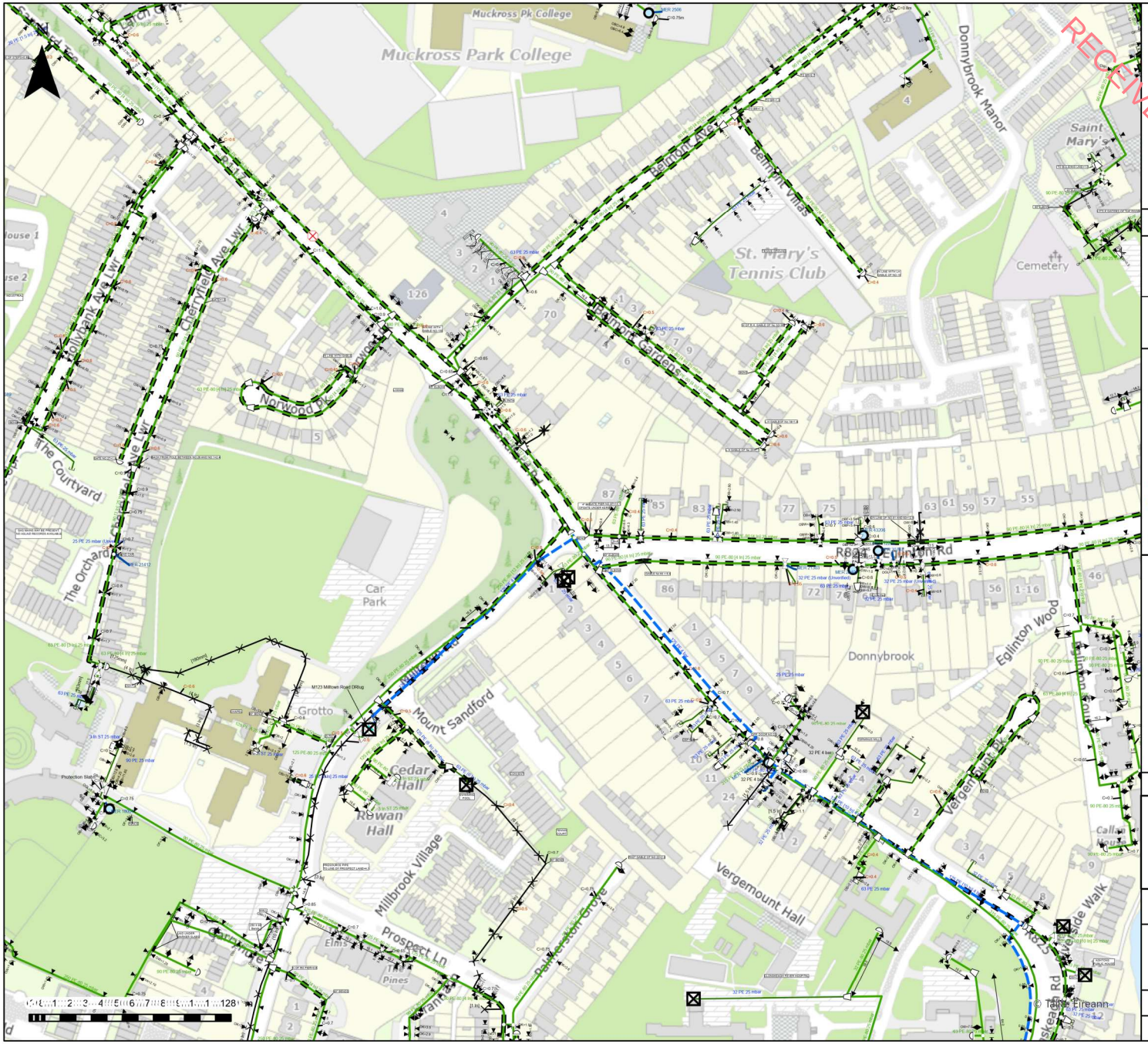


PLEASE NOTE THAT THERE ARE: HIGH VOLTAGE (38KV AND HIGHER VOLTAGES) OVERHEAD LINES AND UNDERGROUND CABLES ON THIS MAP. IF YOU INTEND WORKING, OR UNDERTAKING DEVELOPMENT WITHIN A CORRIDOR EXTENDING 40 METRES ON EITHER SIDE OF ANY HIGH VOLTAGE OVERHEAD LINES OR WITHIN A CORRIDOR EXTENDING 5 METRES ON EITHER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

FOR HIGH VOLTAGE OVERHEAD LINES (38KV AND HIGHER VOLTAGES)
CONTACT: ALAN BROWN, ESB TRANSMISSION,
KYLEMORE WAY, DUBLIN 8, D08-E398.
PHONE: 087 9273970 EMAIL: ALAN.BROWN@ESB.IE

FOR HIGH VOLTAGE UNDERGROUND CABLES (38KV AND HIGHER VOLTAGES)
CONTACT: GARETH PAISLEY, ESB TRANSMISSION,
KYLEMORE WAY, DUBLIN 8, D08-E398.
PHONE: 087 9374867 EMAIL: GARETH.PAISLEY@ESB.IE

X,Y: 317420, 230952



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 1800 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health and Safety Authority publication, 'Code of Practice For Avoiding Danger From Underground Services' which is available from the Health and Safety Authority (0818 289 389) or can be downloaded at www.hsa.ie.

- Aurora Telecom Duct
- Aurora Telecom Sub Duct
- Aurora Telecom Inserted Gas Pipe

Aurora TELECOM

Aurora Telecom Queries - 01-8926166 (Office Hours)
Aurora_Network_Queries@gasnetworks.ie
Aurora Telecom Emergency Only 1800 427399 / 01 2030120

- 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
- Abandoned Pipe

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

** Please contact GNI on 1800-427747 for specific information

DIAL BEFORE YOU DIG 1800 427 747
In Emergency call 1800 20 50 50 Gas Networks Ireland

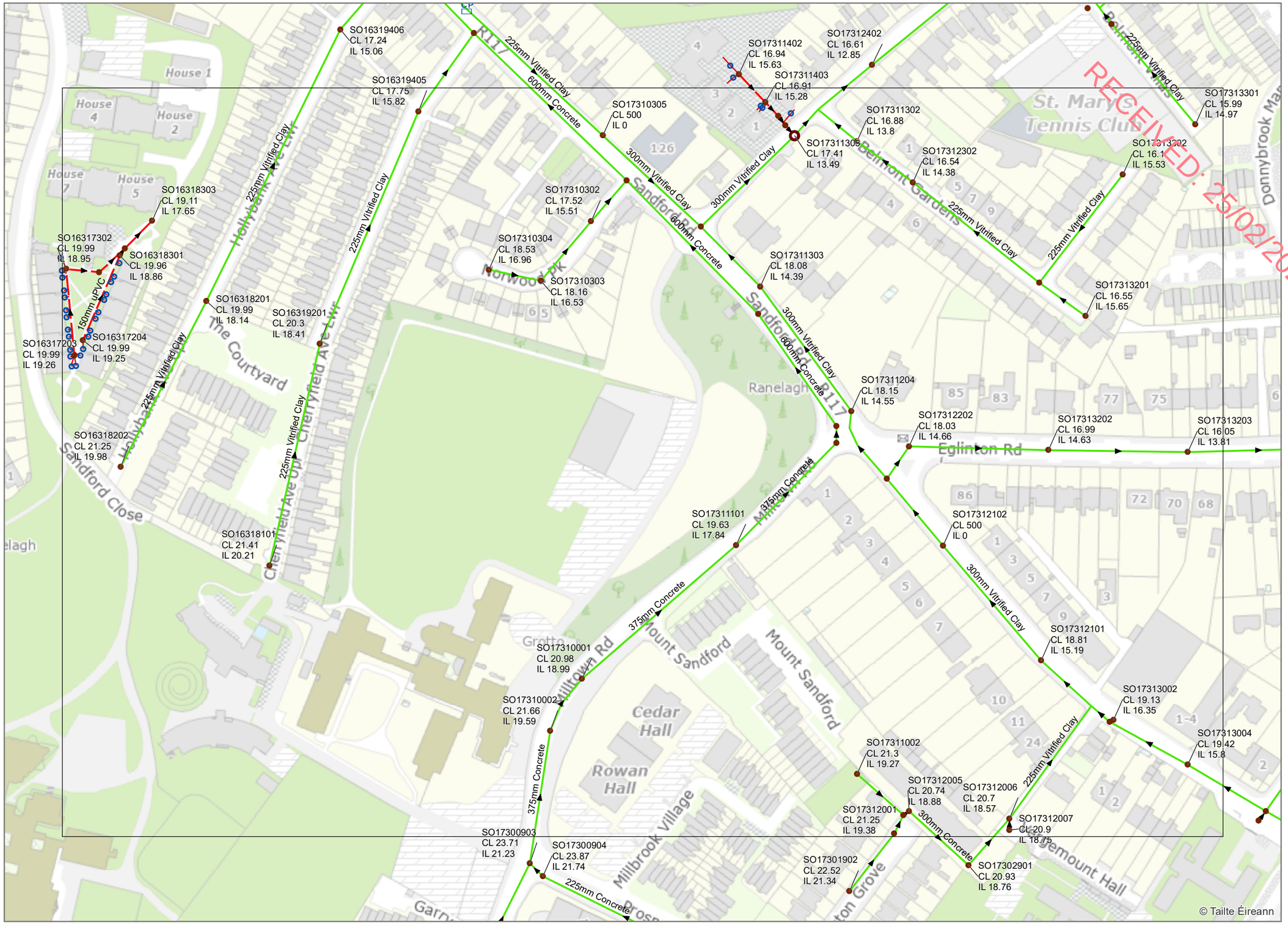
Gas Networks Ireland

GAS NETWORK INFORMATION

Description: test

Location: 717120,731265

Plot Date: 07/10/2025 12:18	Scale: 2500 @ A3
Plotted By: 1022	Ref ID: *1022_07102025121813*



Sewer Network
Sandford Road, Ranelagh, Co.Dublin

Uisce Éireann
Irish Water

Legend

- Location

Sewer Manholes
- Standard
- Backdrop

Sewer Inlets
- Catchpit
- Other; Unknown

Sewer Mains (Irish Water)
- Gravity - Combined
- Gravity - Foul

Sewer Lateral Lines
- Sewer Lateral Lines

0 15 30 60 m

Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A3:	**1:2,016**
Drawing No.:	**IW-AGG-2018-000**
Drawn By:	**Mo Ismail**
Checked By:	**<Add Name>**
Approved By:	**<Add Name>**
Drawn Date	**24/11/2025**
Checked Date:	**<dd/mm/yyyy>**
Approved Date:	**<dd/mm/yyyy>**

Uisce Éireann
Irish Water

Legend

- Location
- Sluice Valve Open
- Sluice Valve Closed

Boundary Valves
- Closed

Non Boundary Valves
- Open

Air Control Valves
- Air Control Valves

Non Boundary Meter
- Meter

Water Hydrants
- Fire Hydrant

Water Fittings
- Cap
- Other Fitting

Pressure Monitoring Point
- Pressure Monitoring Point

Water Mains(Irish Water Owned)
- Potable Water

Water Abandoned Lines
- Water Abandoned Lines

0 15 30 60 m

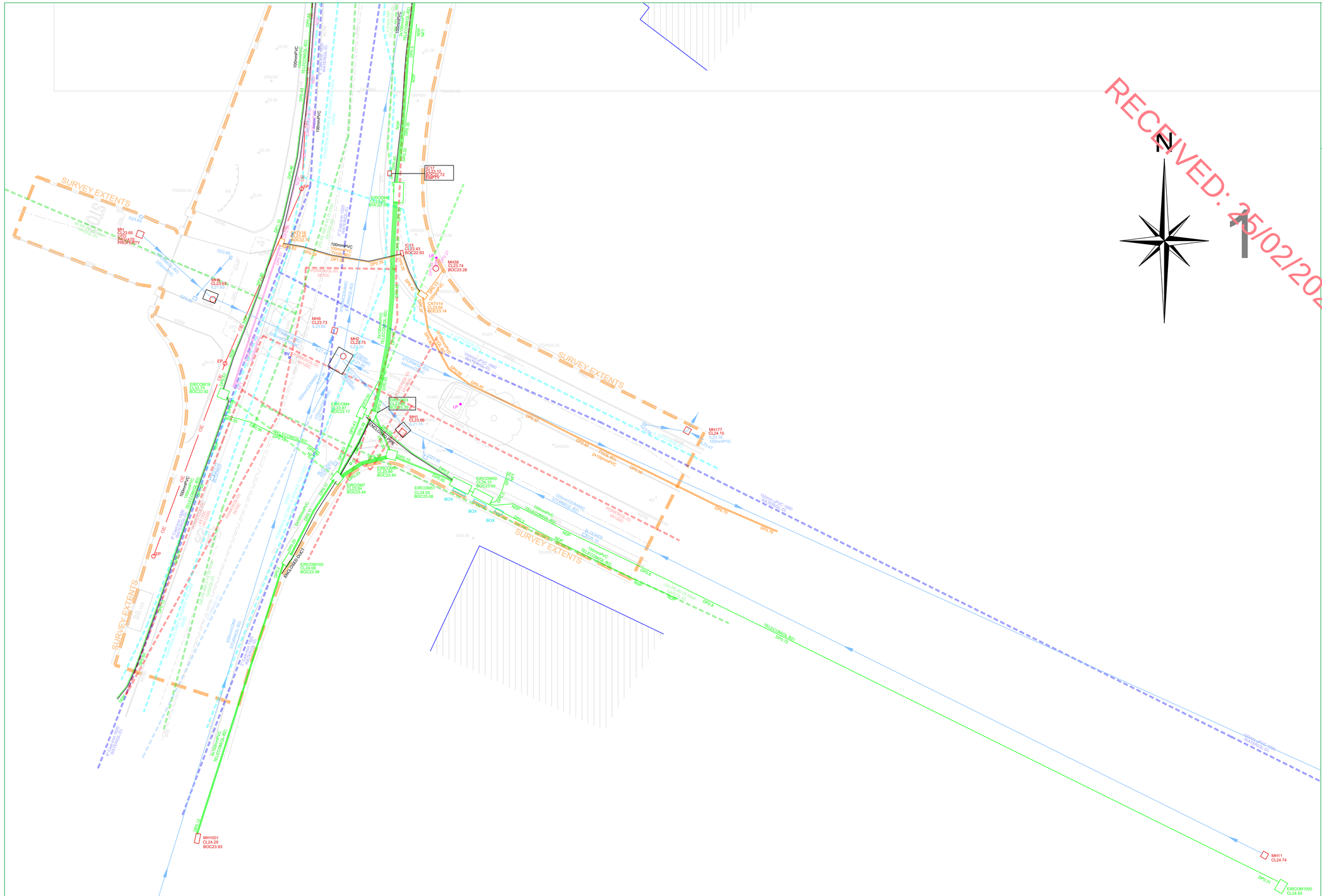
Coordinate System: TM65 Irish Grid
Projection: Transverse Mercator

Scale @ A3:	1:2,016
Drawing No.:	IW-AGG-2018-000
Drawn By:	Mo Ismail
Checked By:	<Add Name>
Approved By:	<Add Name>
Drawn Date	24/11/2025
Checked Date:	<dd/mm/yyyy>
Approved Date:	<dd/mm/yyyy>

Water Distribution
Sandford Road, Ranelagh, Co.Dublin

Appendix 16.2

GPR Utility Survey



RECEIVED: 25/02/2020

PAS 128: 2014 (Quality of Survey Level Outputs):

DESKTOP UTILITY RECORDS SEARCH	
QL-D	Drafted from utility records
SITE RECONNAISSANCE	
QL-C	Location Demonstrated by visual reference to street furniture or evidence of previous streetworks, ie - reinstatement scars
DETECTION	
QL-B4	A segment of utility suspected to exist but has not been detected by a geophysical technique
QL-B3	Horizontal location only of the utility detected by one of the geophysical techniques used
QL-B2	Horizontal and vertical location of the utility detected by one of the geophysical techniques used
QL-B1	Horizontal and vertical location of the utility detected by multiple geophysical techniques
VERIFICATION	
QL-A	Horizontal and vertical location of the top and/or bottom of the utility

Apex Surveys Ltd. Disclaimer - Utility Survey

The Survey aims to map existing utilities and sub-surface structures and provide information with respect to pipe size, material type and drainage connectivity. However utility 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.

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 100% detection rate.

Although all reasonable steps have been taken to locate all features, there is no guarantee that all utilities and underground structures will be located and shown on the drawing.

The following is a non-exhaustive list of the limitations of utility surveys:

- Depth of Utility: The depth and size of a utility affect the signal response and the degree with which a utility can be located.

  Due to attenuation of the radar signal with depth, resolution is restricted, hence making identification of utilities more difficult with increasing depth.
- Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
- Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
- Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
- Signal Jumping: Signal from surrounding services may 'jump' to a highly conductive line masking its true identity.
- Shadowing: (of deeper utilities by shallower objects) Shallow utilities will mask the existence of deeper utilities where they are in close proximity. Also, high reflective materials close to the surface i.e rebar may hide deeper anomalies.
- Surface Obstructions: The GPR system relies on a relatively flat and even surface on which to perform radar passes. If ground obstructions such as vehicles, organic material (long grass, scrub) or undulating ground surface are present then the acquired data will be of lower resolution and in some cases not viable.
- Loss of signal: It is not always possible to trace the entire length of each underground service.
- Connections between manholes: Connections between manhole chambers are assumed to be straight.
- Non-metallic objects: Nonmetallic objects are amongst the most difficult to trace therefore successful tracing of non-metallic pipes/ utilities may be limited.
- Fiber Optic Cables: Fiber optic cables may not be possible to locate except where laid with a built in tracer wire or similar conductor system.
- Defective / flooded manholes or pipework: It may not be possible to establish connections between flooded or defective manholes or pipework.
- Acute bends in pipework: It may not be possible to trace a pipe past an acute bend.

Accuracy estimates:

- Locational accuracy is determined by referring to the manufacturers guidelines for the detector used.
- In ideal conditions the spatial accuracies for the underground utilities may be +/- 5% for Radiodetection and +/- 10% of depth for the GPR to 2.5m deep. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- Plan accuracies of + or - 150mm may be achieved but this figure will depend on the depth of service below ground level. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
- DP represents distance from the surface level to the top of the service/ target
- Where technically possible, depth indications will be given. These along with plan positions 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.

Record Drawing Information

- Services which have been untraceable are shown from records where possible or available. These lines are annotated as "Taken From Records" or "From Records".
- Existing record information showing underground services is often incomplete and with unknown accuracies therefore it should be regarded as indicative only.
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info@apexsurveys.ie
00353 1 691 0156

STREET FURNITURE :

BOLLARDS	BD •
BUS STOP	BS •
CRASH BARRIER	CB
GATE	
ELECTRICITY POLE	EP •
TELEPHONE POLE	TP •
EARTHING ROD	ER +
LAMP POST	LP •
MARKER POST	MKR +
SIGN POST	SIGN
TRAFFIC LIGHT	TL •
TELEPHONE BOX	TB
POST	POST •
POST BOX	POST BOX
ROADSIGN	RS - RS
BORE HOLE	BH +
TRIAL PIT	TPIT +

BOTTOM OF CHAMBER	BOC
CAST-IRON	C/I
CONCRETE	CONC
DIAMETER	DIA

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV •

DOWNPIPE	DP
EARTHENWARE	E/W
NO FURTHER TRACE	NFT
OFFSITE	O/S

STOPCOCK	ST •
SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT •
WATER METER	WM +

LEVELS :

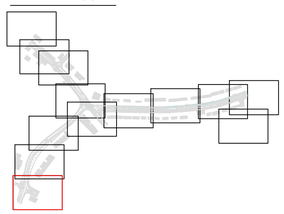
BED LEVEL	+ BED101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

START OF RUN	SOR
UNABLE TO OPEN	UTO
UNABLE TO TRACE	UTT

UNDERGROUND LEGEND :

WATER MAIN	WATER
GAS MAIN	GAS
STORM DRAIN	STORM
FOUL SEWER	FOUL
COMBINED SEWER	COMB
ELECTRIC CABLE	POWER
ELECTRIC LIGHTING	LIGHTING
EIRCOM	EIRCOM
FIBRE OPTIC CABLE	F.OPTIC
BROADBAND	BROADBAND
CABLE TV	TV
TRAFFIC AND SIGNAL CABLE	TRAFFIC
CCTV	CCTV
IRRIGATION PIPE	IRRIGATION
EMPTY DUCT	EMPTY
GPR ANOMALY	ANOMALY
UNKNOWN CABLE	CABLE
O/HEAD ELECTRICITY	OE
O/HEAD TELECOM	OT

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

D.B.F.L.

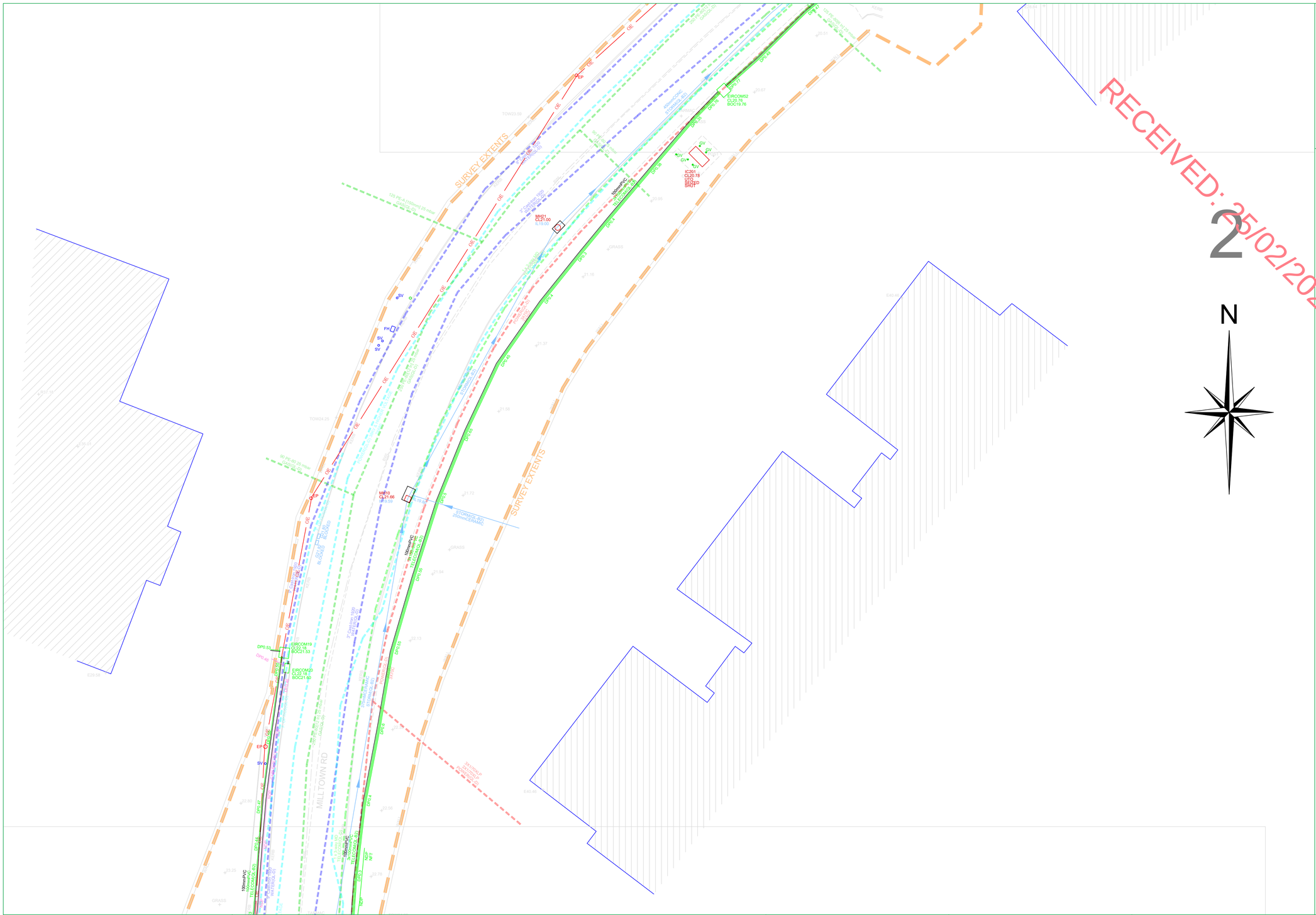
PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator		
DATUM:	Malin Head (OSGM15)		
NOTES:	Drawing Contains Scale Factor		
SCALE :	1/200 A1	DATE :	04/03/2020
DRG No:	4234	DESCRIPTION :	2D Utilities
		SURVEYED BY :	Mario Gaspar
SHEET:	1 of 10	PROCESSED BY :	Apex Surveys
		CHECKED BY :	Alan Brady

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added



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The following have been excluded from the survey:

- Location of individual service feeds to properties or buildings as access would be required into each property to apply direct connections to inlet points and this would significantly increase the scope of works, survey cost and also cause possible disruption to occupants.
- Pot ended or disconnected cables or terminated short lengths of pipe.
- Internal building services.
- Small diameter cables less than 20mm diameter or pipes less than 40mm diameter.
- Above ground services unless specifically requested.
- Lifting manholes which require longer than 10 minutes effort using standard heavy duty apparatus.

All works carried out be Apex Surveys conforms to the guidelines set out by The Survey Association (TSA) and PAS:128 Standard for utility mapping

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STREET FURNITURE :

BOLLARDS	BD •
BUS STOP	BS •
CRASH BARRIER	CB
GATE	
ELECTRICITY POLE	EP •
TELEPHONE POLE	TP •
EARTHING ROD	ER +
LAMP POST	LP •
MARKER POST	MKR +
SIGN POST	SIGN
TRAFFIC LIGHT	TL •
TELEPHONE BOX	TB
POST	POST •
POST BOX	POST BOX
ROADSIGN	RS · RS
BORE HOLE	BH +
TRIAL PIT	TPIT +

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV •

STOPCOCK	ST •
SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT •
WATER METER	WM +

LEVELS :

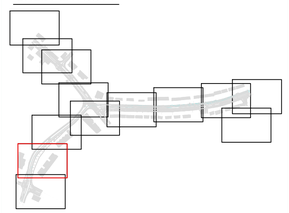
BED LEVEL	+ BED101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

BOTTOM OF CHAMBER	BOC	DOWNPIPE	DP
CAST-IRON	C/I	EARTHENWARE	E/W
CONCRETE	CONC	NO FURTHER TRACE	NFT
DIAMETER	DIA	OFFSITE	O/S
START OF RUN	SOR		
UNABLE TO OPEN	UTO		
UNABLE TO TRACE	UTT		

UNDERGROUND LEGEND :

WATER MAIN	WATER
GAS MAIN	GAS
STORM DRAIN	STORM
FOUL SEWER	FOUL
COMBINED SEWER	COMB
ELECTRIC CABLE	POWER
ELECTRIC LIGHTING	LIGHTING
EIRCOM	EIRCOM
FIBRE OPTIC CABLE	F.OPTIC
BROADBAND	BROADBAND
CABLE TV	TV
TRAFFIC AND SIGNAL CABLE	TRAFFIC
CCTV	CCTV
IRRIGATION PIPE	IRRIGATION
EMPTY DUCT	EMPTY
GPR ANOMALY	ANOMALY
UNKNOWN CABLE	CABLE
O/HEAD ELECTRICITY	OE
O/HEAD TELECOM	OT

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

Apex Surveys
Unit 78 Dunboyne Business Park
Dunboyne, Co. Meath, Ireland
www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

CLIENT:

D.B.F.L.

PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE : 1/200 A1

DATE : 04/03/2020

DRG No: 4234

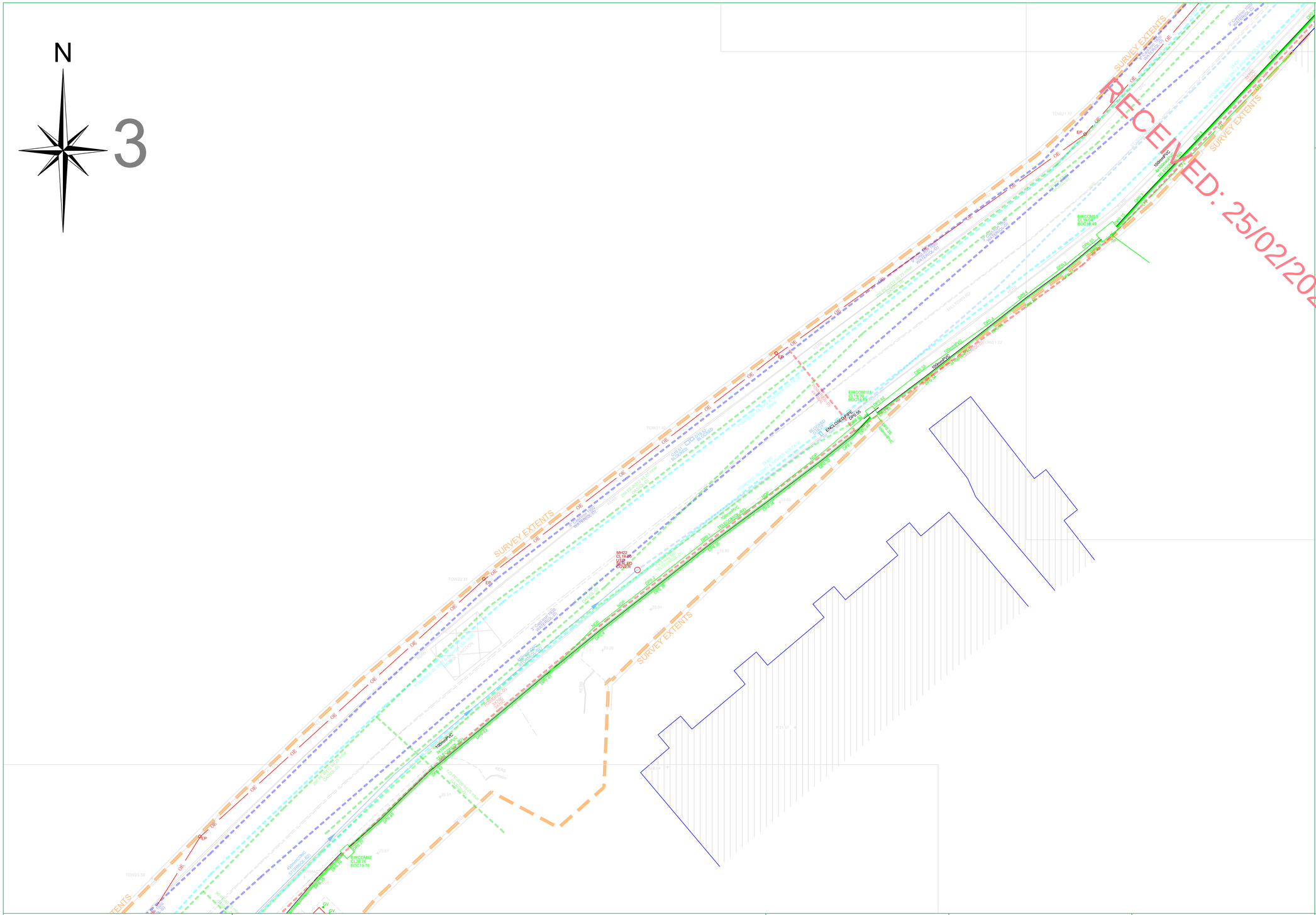
SHEET: 2 of 10

DESCRIPTION : 2D Utilities

SURVEYED BY : Mario Gaspar

PROCESSED BY : Apex Surveys

CHECKED BY : Alan Brady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SURVEY EXTENTS
RECEIVED: 25/02/2020
OE
EP
GV
TOW
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CL19.56
BOC18.49
EIRCOM83
CL19.54
BOC18.49
EIRCOM52
CL20.76
BOC19.76
ENCLOSED TYPE
CHR 19.55
MH22
CL19.66
IL17.66
OUT
MH23
CL19.80
IL17.80
OUT
100mmPVC
150mmPVC
TELEWORKS (UG)
ESB (UG)
GAS
STORM
FOUL
COMB
POWER
LIGHTING
EIRCOM
F.OPTIC
BROADBAND
TV
TRAFFIC
CCTV
IRRIGATION
EMPTY
ANOMALY
CABLE
DP1.1
DP1.2
DP1.3
DP1.4
DP1.5
DP1.6
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DP1.8
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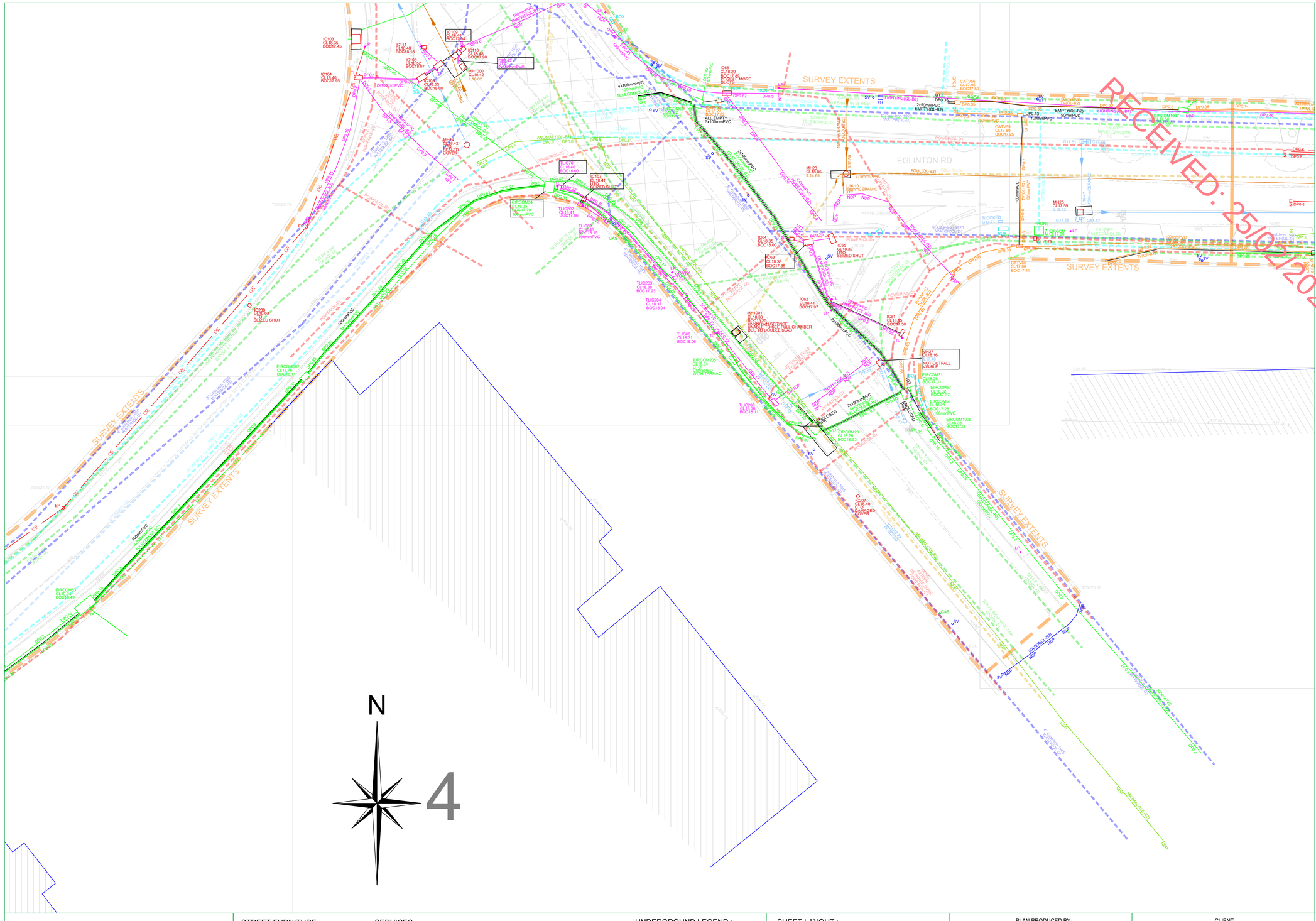

PAS 128: 2014 (Quality of Survey Level Outputs):

DESKTOP UTILITY RECORDS SEARCH	
QL-D	Drafted from utility records
SITE RECONNAISSANCE	
QL-C	Location Demonstrated by visual reference to street furniture or evidence of previous streetworks, ie - reinstatement scars
DETECTION	
QL-B4	A segment of utility suspected to exist but has not been detected by a geophysical technique
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QL-B1	Horizontal and vertical location of the utility detected by multiple geophysical techniques
VERIFICATION	
QL-A	Horizontal and vertical location of the top and/or bottom of the utility

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The Survey aims to map existing utilities and sub-surface structures and provide information with respect to pipe size, material type and drainage connectivity. However utility 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.

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 100% detection rate.

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- Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
- Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
- Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
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- Acute bends in pipework: It may not be possible to trace a pipe past an acute bend.

Accuracy estimates:

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- Plan accuracies of + or - 150mm may be achieved but this figure will depend on the depth of service below ground level. However variations within the subsurface, depth below the ground, close proximity of other services and local magnetic, atmospheric or ground conditions, bends, lateral service connections and any of the other limitations listed in this disclaimer may alter this estimated accuracy.
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APEX SURVEYS

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00353 1 691 0156

STREET FURNITURE :

BOLLARDS	BD
BUS STOP	BS
CRASH BARRIER	CB
GATE	
ELECTRICITY POLE	EP
TELEPHONE POLE	TP
EARTHING ROD	ER
LAMP POST	LP
MARKER POST	MKR
SIGN POST	SIGN
TRAFFIC LIGHT	TL
TELEPHONE BOX	TB
POST	POST
POST BOX	POST BOX
ROADSIGN	RS-RS
BORE HOLE	BH
TRIAL PIT	TPIT

BOTTOM OF CHAMBER	BOC
CAST-IRON	CI
CONCRETE	CONC
DIAMETER	DIA

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
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EIRCOM JUNCTION BOX	EIRCOM BOX
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GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV

DOWNPIPE	DP
EARTHENWARE	E/W
NO FURTHER TRACE	NFT
OFFSITE	O/S

STOPCOCK	ST
SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT
WATER METER	WM

LEVELS :

BED LEVEL	+BED101.50
FLOOR LEVEL	+FL101.50
INVERT LEVEL	+IL101.50
ROAD LEVEL	+101.50
SOFFIT LEVEL	+SL101.50
SPOT LEVEL	+101.50
TOP OF WALL LEVEL	+TOW101.50
WATER LEVEL	+WL101.50
SURVEY CONTROL STATION	

START OF RUN	SOR
UNABLE TO OPEN	UTO
UNABLE TO TRACE	UTT

UNDERGROUND LEGEND :

WATER MAIN	WATER
GAS MAIN	GAS
STORM DRAIN	STORM
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COMBINED SEWER	COMB
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ELECTRIC LIGHTING	LIGHTING
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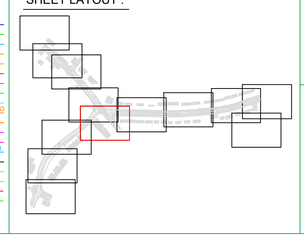
O/HEAD TELECOM	OT

SHEET LAYOUT :



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CLIENT:

D.B.F.L.

PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE : 1/200 A1

DRG No: 4234

SHEET: 4 of 10

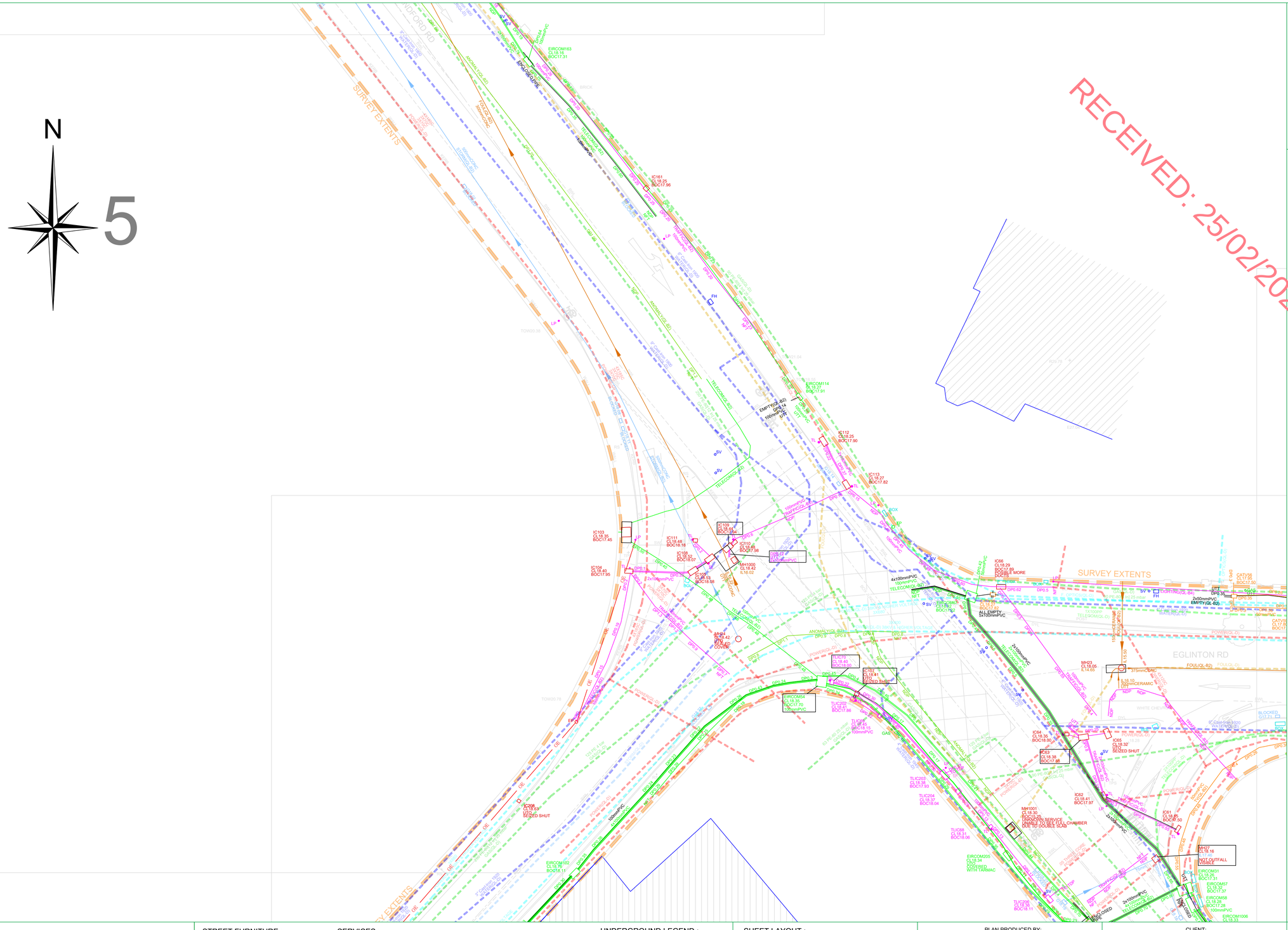
DATE : 04/03/2020

DESCRIPTION : 2D Utilities

SURVEYED BY : Mario Gaspar

PROCESSED BY : Apex Surveys

CHECKED BY : Alan Brady



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STREET FURNITURE :

BOLLARDS	BD •
BUS STOP	BS •
CRASH BARRIER	CB
GATE	
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TELEPHONE POLE	TP •
EARTHING ROD	ER +
LAMP POST	LP •
MARKER POST	LINER +
SIGN POST	SIGN
TRAFFIC LIGHT	TL •
TELEPHONE BOX	TB
POST	POST •
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ROADSIGN	RS - RS
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WATER LEVEL	+WL101.50
SURVEY CONTROL STATION	

BOTTOM OF CHAMBER	BOC
CAST-IRON	C/I
CONCRETE	CONC
DIAMETER	DIA
DOWNPIPE	DP
EARTHENWARE	E/W
NO FURTHER TRACE	NFT
OFFSITE	O/S
START OF RUN	SOR
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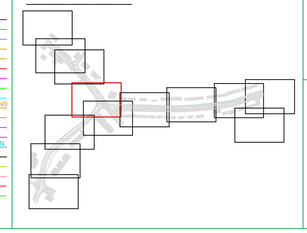

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NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE : 1/200 A1

DATE : 04/03/2020

DRG No: 4234

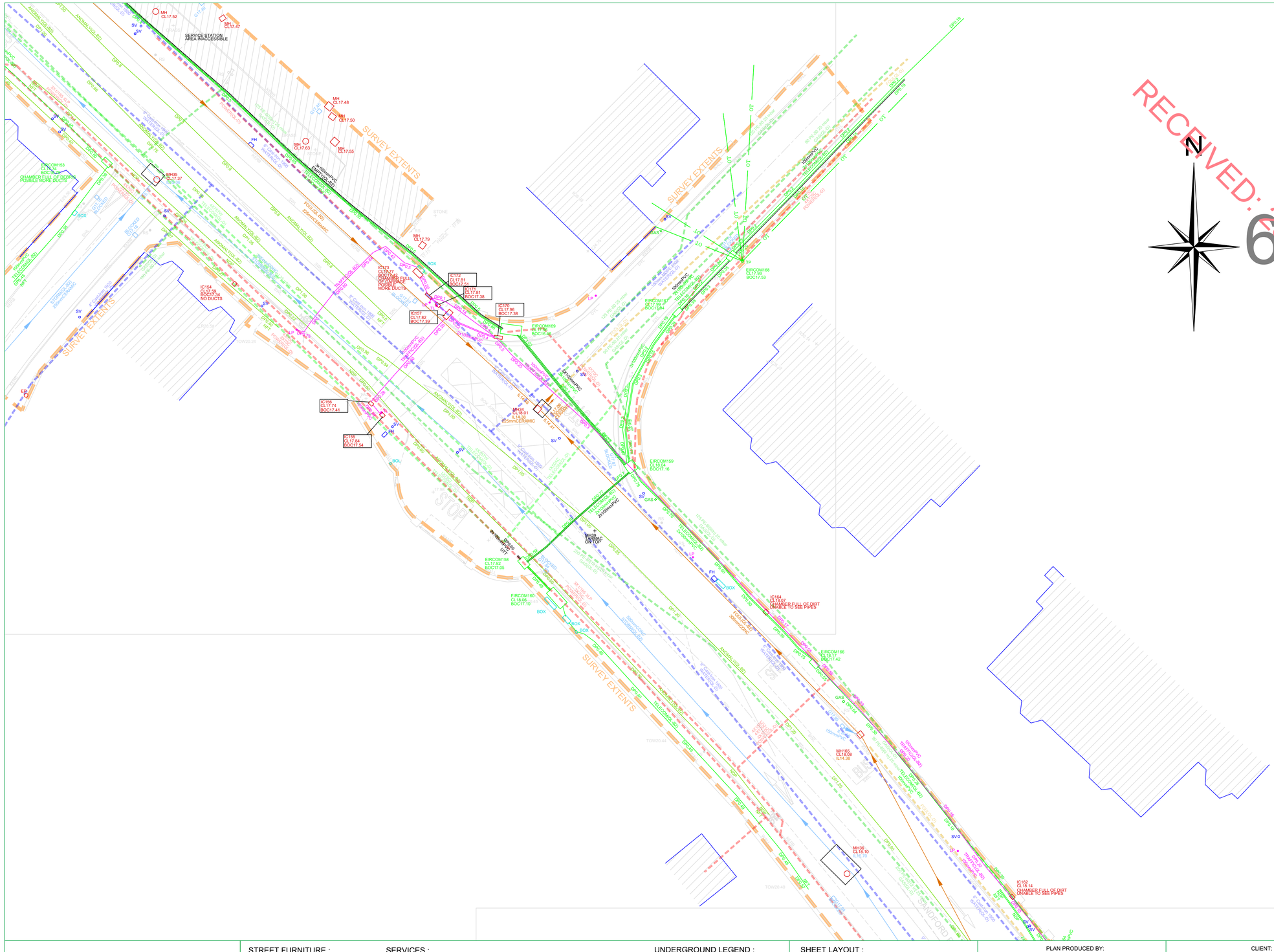
SHEET: 5 of 10

DESCRIPTION : 2D Utilities

SURVEYED BY : Mario Gaspar

PROCESSED BY : Apex Surveys

CHECKED BY : Alan Brady



RECEIVED: 25/02/2020

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APEX SURVEYS

www.apexsurveys.ie
info@apexsurveys.ie
00353 1 691 0156

STREET FURNITURE :

BOLLARDS	BD
BUS STOP	BS
CRASH BARRIER	CB
GATE	
ELECTRICITY POLE	EP
TELEPHONE POLE	TP
EARTHING ROD	ER
LAMP POST	LP
MARKER POST	MKR
SIGN POST	SIGN
TRAFFIC LIGHT	TL
TELEPHONE BOX	TB
POST	POST
POST BOX	POST BOX
ROADSIGN	RS - RS
BORE HOLE	BH
TRIAL PIT	TPIT

BOTTOM OF CHAMBER	BOC
CAST-IRON	C/I
CONCRETE	CONC
DIAMETER	DIA

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
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GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV

DOWNPIPE	DP
EARTHENWARE	E/W
NO FURTHER TRACE	NFT
OFFSITE	O/S

STOPCOCK	ST
SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT
WATER METER	WM

LEVELS :

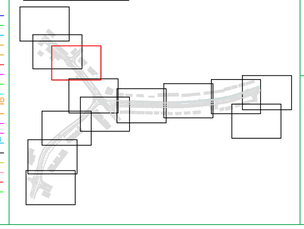
BED LEVEL	+ BED101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

START OF RUN	SOR
UNABLE TO OPEN	UTO
UNABLE TO TRACE	UTT

UNDERGROUND LEGEND :

WATER MAIN	WATER
GAS MAIN	GAS
STORM DRAIN	STORM
FOUL SEWER	FOUL
COMBINED SEWER	COMB
ELECTRIC CABLE	POWER
ELECTRIC LIGHTING	LIGHTING
EIRCOM	EIRCOM
FIBRE OPTIC CABLE	F.OPTIC
BROADBAND	BROADBAND
CABLE TV	TV
TRAFFIC AND SIGNAL CABLE	TRAFFIC
CCTV	CCTV
IRRIGATION PIPE	IRRIGATION
EMPTY DUCT	EMPTY
GPR ANOMALY	ANOMALY
UNKNOWN CABLE	CABLE
O/HEAD ELECTRICITY	OE
O/HEAD TELECOM	OT

SHEET LAYOUT :



PLAN PRODUCED BY:

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CONTACT INFORMATION:

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00353 1 691 0156

CLIENT:

D.B.F.L.

PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE : 1/200 A1

DATE : 04/03/2020

DRG No: 4234

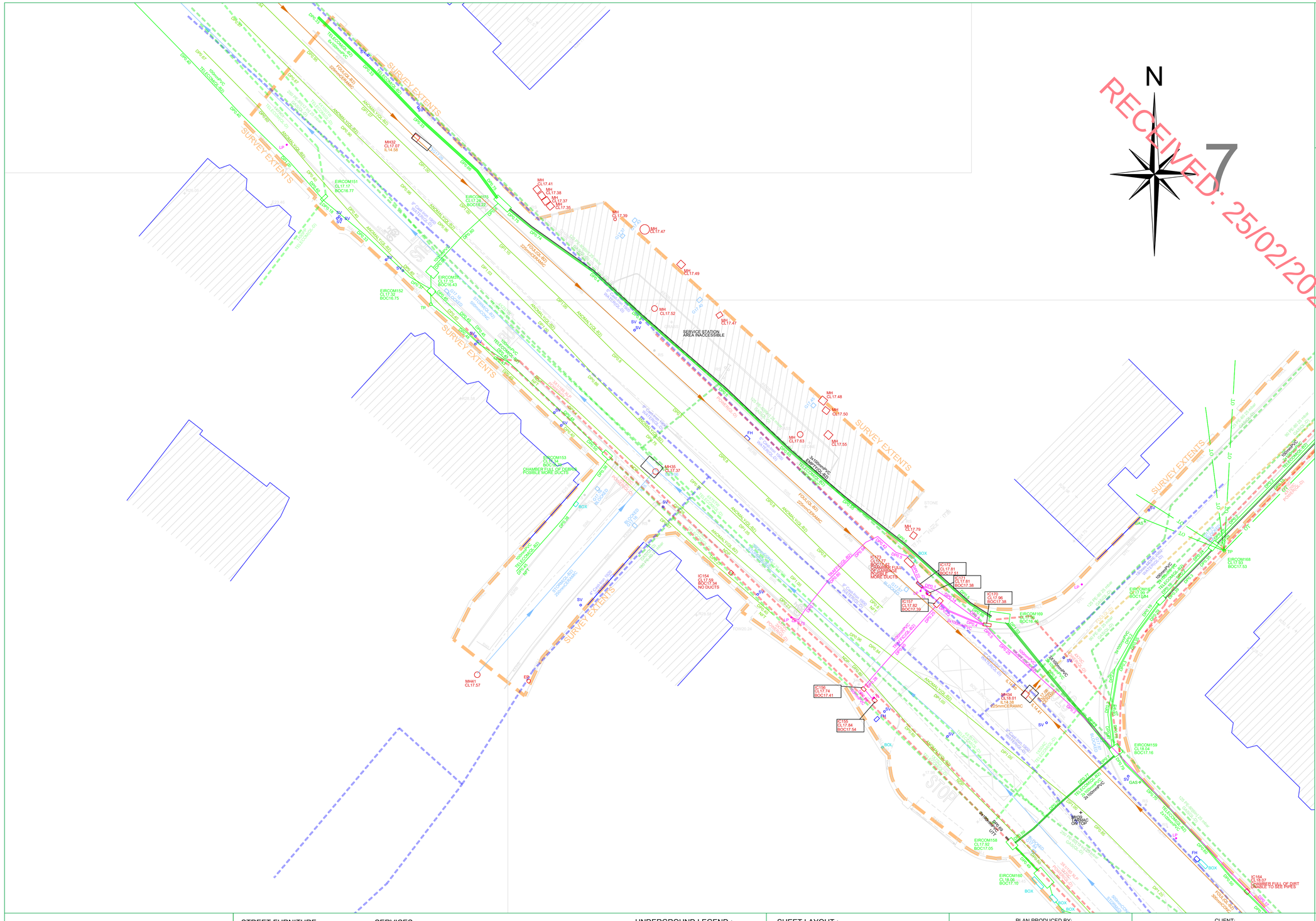
SHEET: 6 of 10

DESCRIPTION : 2D Utilities

SURVEYED BY : Mario Gaspar

PROCESSED BY : Apex Surveys

CHECKED BY : Alan Brady



PAS 128: 2014 (Quality of Survey Level Outputs):

DESKTOP UTILITY RECORDS SEARCH	
QL-D	Drafted from utility records
SITE RECONNAISSANCE	
QL-C	Location Demonstrated by visual reference to street furniture or evidence of previous streetworks, ie - reinstatement scars
DETECTION	
QL-B4	A segment of utility suspected to exist but has not been detected by a geophysical technique
QL-B3	Horizontal location only of the utility detected by one of the geophysical techniques used
QL-B2	Horizontal and vertical location of the utility detected by one of the geophysical techniques used
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VERIFICATION	
QL-A	Horizontal and vertical location of the top and/or bottom of the utility

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The Survey aims to map existing utilities and sub-surface structures and provide information with respect to pipe size, material type and drainage connectivity. However utility 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.

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 100% detection rate.

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The following is a non-exhaustive list of the limitations of utility surveys:

- Depth of Utility: The depth and size of a utility affect the signal response and the degree with which a utility can be located.
  Due to attenuation of the radar signal with depth, resolution is restricted, hence making identification of utilities more difficult with increasing depth.
- Size of Utility: The smaller the diameter of a utility the more difficult it is to locate. This difficulty increases with depth.
- Ground Conditions: The depth penetration and quality of the data depends on the ground conditions of the site. GPR Surveying works best within high resistivity material. Clay overburden can impair GPR Surveying. Poor data may be a result of areas with high conductivity.
- Utility Congestion: Where different utilities converge together into a service corridor or cross paths it becomes difficult to isolate a specific utility and to map its route. The reflected signal will display a single response to multiple utilities. Therefore multiple utilities may appear to be a single utility. Where similar services run on close proximity, separation may be impossible.
- Signal Jumping: Signal from surrounding services may 'jump' to a highly conductive line masking its true identity.
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POST	POST
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SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TLIC
VENT	VENT
WATER METER	WM

START OF RUN	SOR
UNABLE TO OPEN	UTO
UNABLE TO TRACE	UTT

LEVELS :

BED LEVEL	+BED101.50
FLOOR LEVEL	+FL101.50
INVERT LEVEL	+IL101.50
ROAD LEVEL	+101.50
SOFFIT LEVEL	+SL101.50
SPOT LEVEL	+101.50
TOP OF WALL LEVEL	+TOW101.50
WATER LEVEL	+WL101.50
SURVEY CONTROL STATION	

UNDERGROUND LEGEND :

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STORM DRAIN	STORM
FOUL SEWER	FOUL
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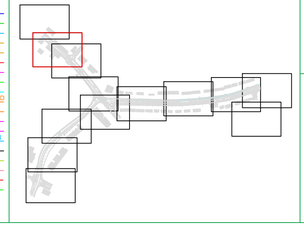
SHEET LAYOUT :



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PROJECT:

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GRID SYSTEM:	Irish Transverse Mercator
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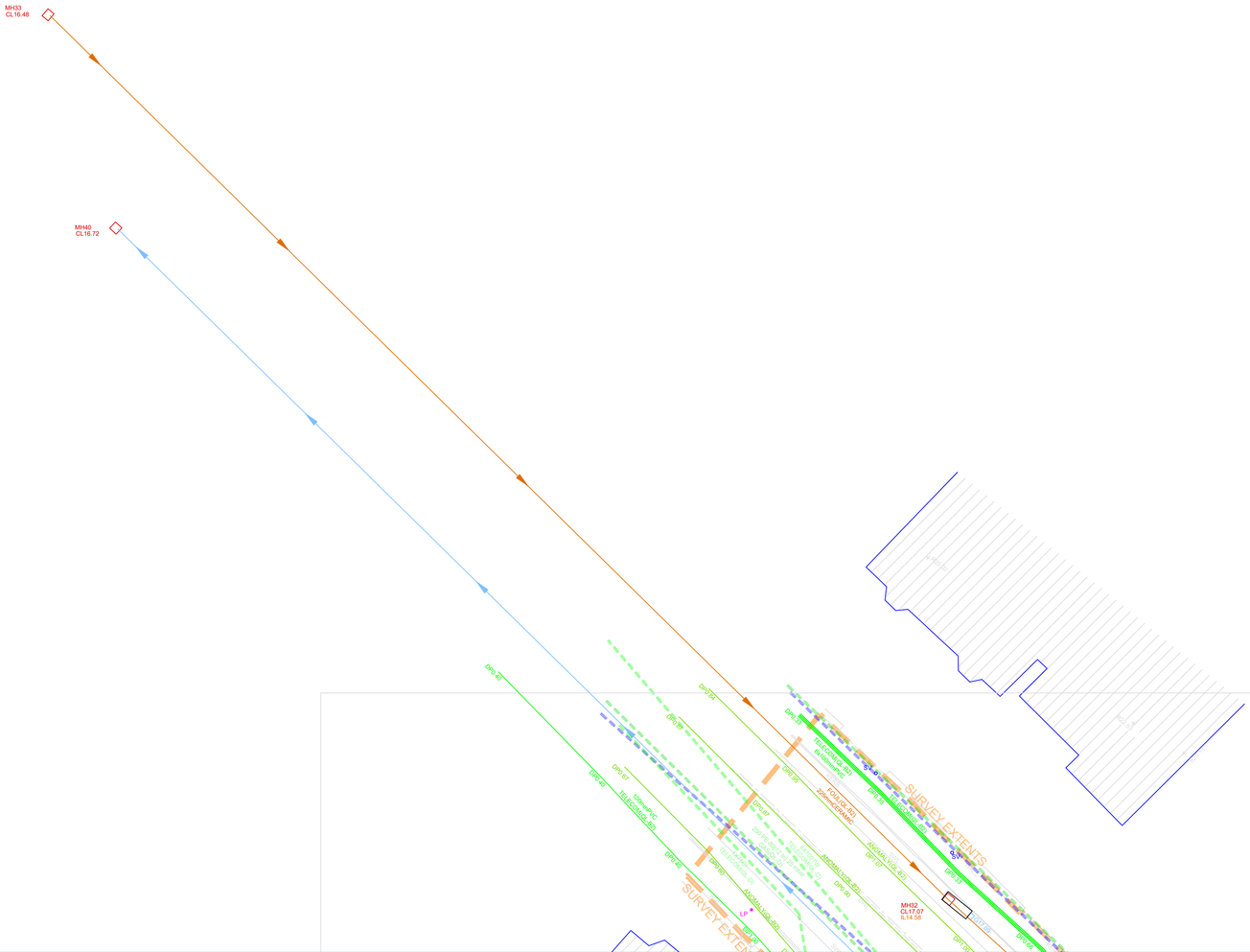
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE :	1/200 A1
DRG No:	4234
SHEET:	7 of 10
DATE :	04/03/2020
DESCRIPTION :	2D Utilities
SURVEYED BY :	Mario Gaspar
PROCESSED BY :	Apex Surveys
CHECKED BY :	Alan Brady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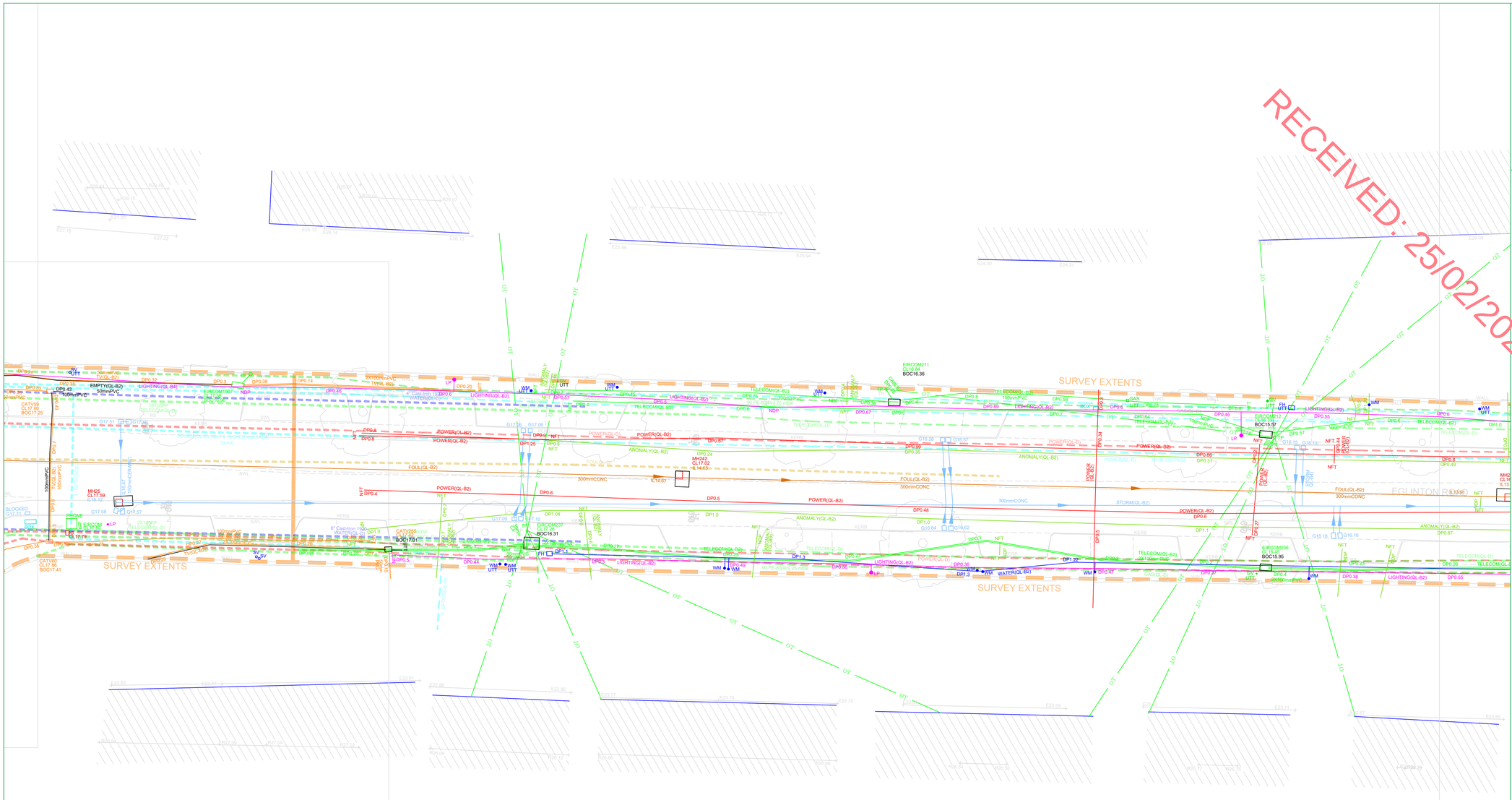
MH40
CL16.72
MH32
CL17.07
IL14.58
SURVEY EXTENTS
SURVEY EXTENTS
TELECOMS (U/G)
ANOMALY (U/G)
FOUL (U/G)
ELECTRIC (U/G)
WATER (U/G)
GAS (U/G)
DRAIN (U/G)
STORM (U/G)
Boundary
Boundary
Boundary



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GATE	GATE
ELECTRICITY POLE	EP •
TELEPHONE POLE	TP •
EARTHING ROD	ER +
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MARKER POST	MKR +
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DOWNPIPE	DP
EARTHENWARE	E/W
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OFFSITE	O/S

START OF RUN	SOR
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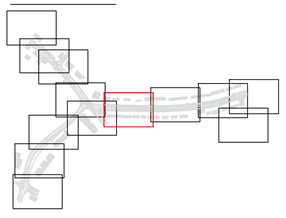

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SCALE :	1/200 A1	DATE :	04/03/2020
DRG No:	4234	DESCRIPTION :	2D Utilities
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SHEET:	9 of 10	PROCESSED BY :	Apex Surveys
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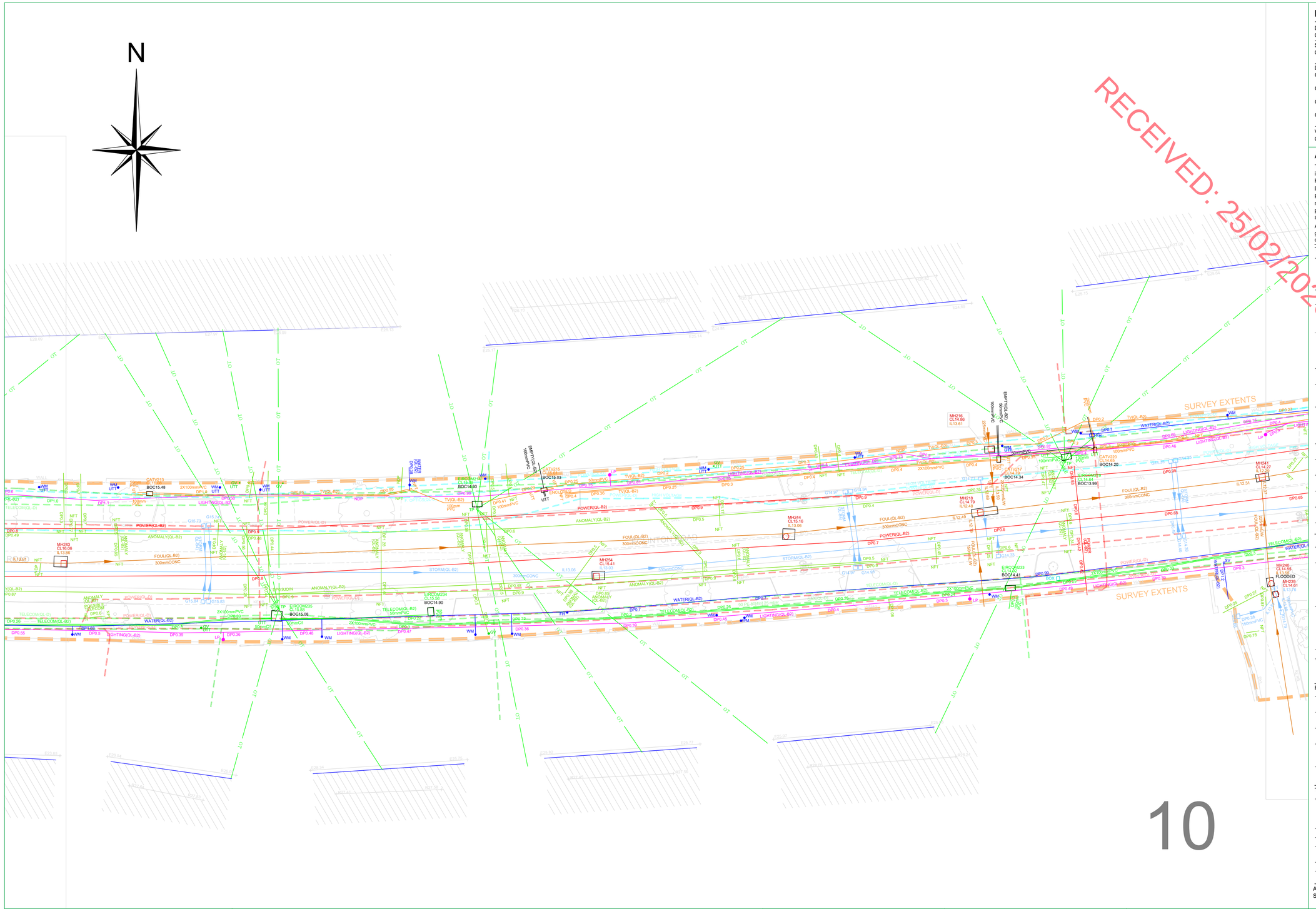

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VERIFICATION	
QL-A	Horizontal and vertical location of the top and/or bottom of the utility

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TELEPHONE POLE	TP
EARTHING ROD	ER +
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MARKER POST	MKR +
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START OF RUN	SOR
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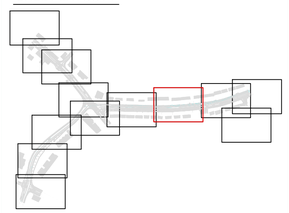

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D.B.F.L.

PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator	
DATUM:	Malin Head (OSGM15)	
NOTES:	Drawing Contains Scale Factor	

REVISIONS:

No.	Date	Description
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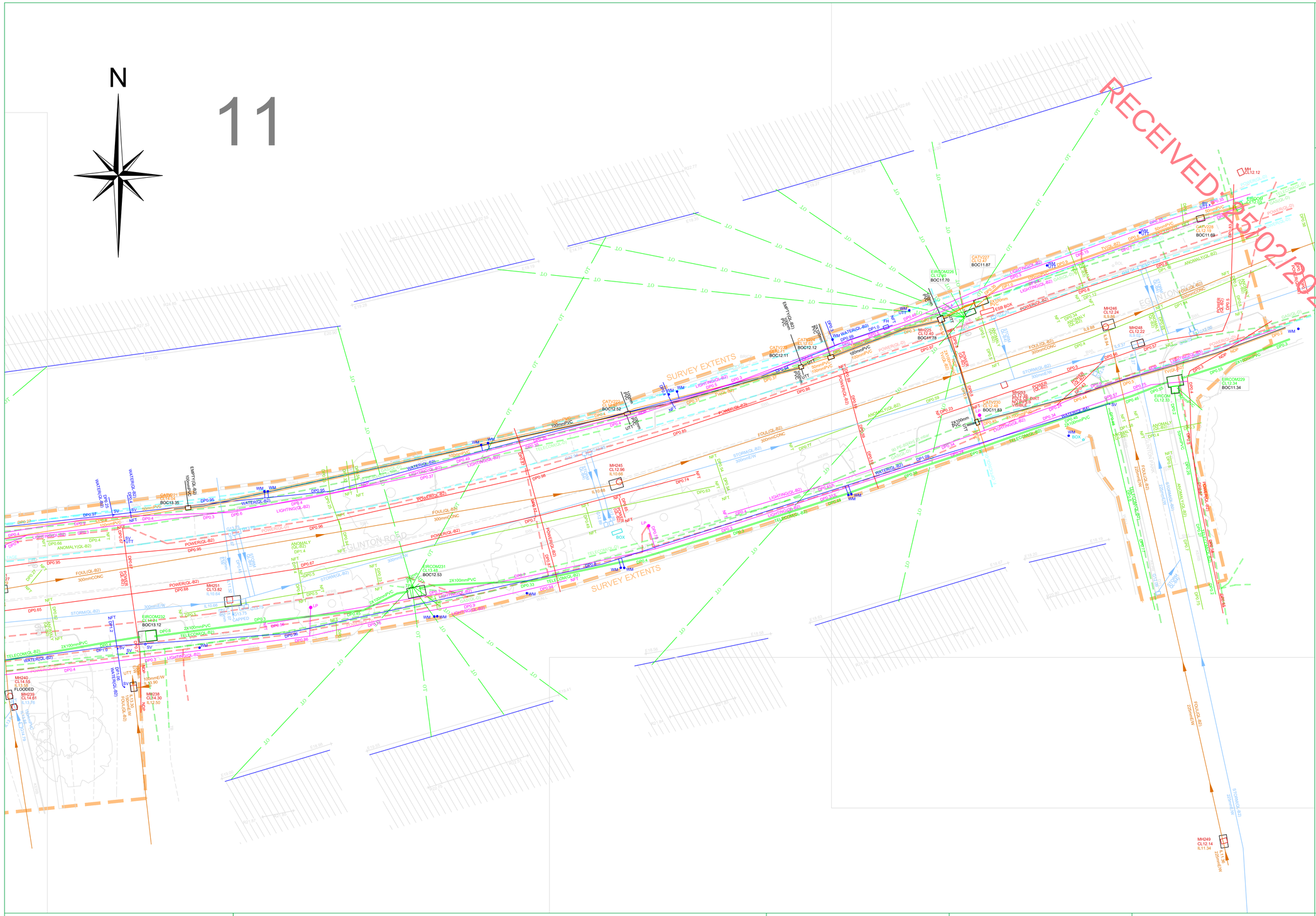
002	06/11/20	Additional Information Added

SCALE :	1/200 A1	DATE :	04/03/2020
DRG No:	4234	DESCRIPTION :	2D Utilities
		SURVEYED BY :	Mario Gaspar
SHEET:	10 of 10	PROCESSED BY :	Apex Surveys
		CHECKED BY :	Alan Brady



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CONCRETE	CONC	NO FURTHER TRACE	NFT
DIAMETER	DIA	OFFSITE	O/S
START OF RUN	SOR		
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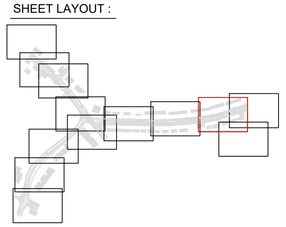

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GRID SYSTEM:	Irish Transverse Mercator
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NOTES:	Drawing Contains Scale Factor

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SCALE :	1/200 A1
DRG No:	4234
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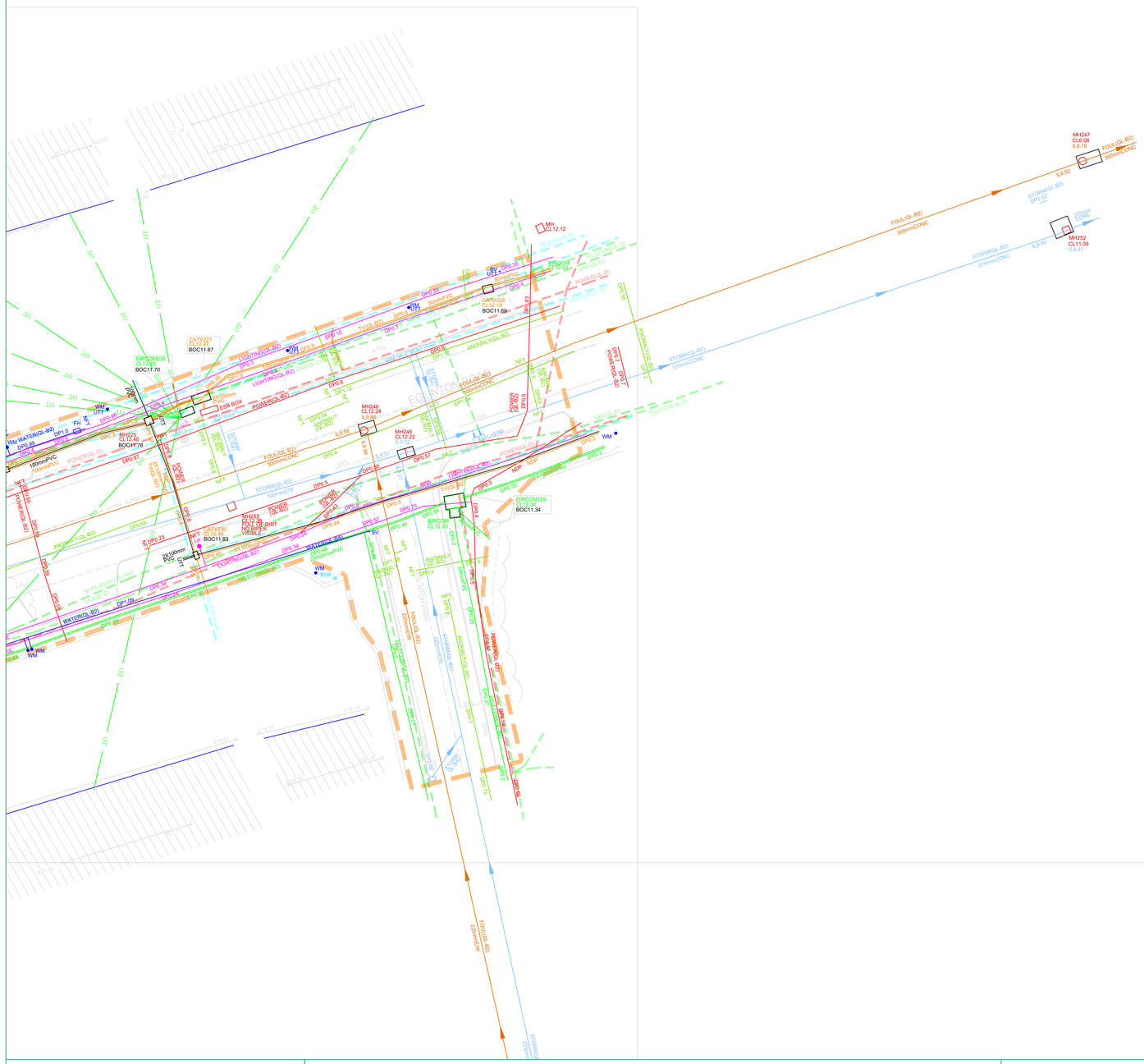
EGERTON
MH
CL12.12
MH247
CL8.08
IL8.79
FOUL (QL-B2)
300mmCONC
IL8.82
STORM(QL-B2)
DP2.52
MH252
CL11.09
IL8.47
STORM(QL-B2)
375mmCONC
IL8.69
FOUL(QL-B2)
300mmCONC
MH246
IL8.66
MH248
CL12.22
MH225
CL12.40
BOC#178
ESB BOX
CATV227
CL12.19
BOC11.87
EIRCOM226
CL12.06
BOC11.70
CATV228
CL12.19
BOC11.69
EIRCOM
CL12.04
CATV230
CL12.18
BOC11.83
EIRCOM229
CL12.14
BOC11.34
MH983
CL12.28
INVERT LEVEL
VISIBLE
2X100mm
PVC
STORM(QL-B2)
300mmCONC
FOUL(QL-B2)
300mmCONC
STORM(QL-B2)
375mmCONC
FOUL(QL-B2)
225mmCONC
STORM(QL-B2)
225mmCONC
WATER(QL-B2)
100mmPVC
WATER(QL-B2)
150mmPVC
WATER(QL-B2)
4X100mmPVC
WATER(QL-B2)
2X100mmPVC
ANOMALY(QL-B2)
ANOMALY
(QL-B2)
POWER(QL-B2)
POWER
(QL-B2)
TELECOM(QL-D)
GAS(QL-B2)
LIGHTING(QL-B2)
TV(QL-B2)
EIRCOM
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OT
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ST
BV
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DP0.9
DP0.8
DP0.7
DP0.6
DP0.5
DP0.4
DP0.3
DP0.2
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DP1.6
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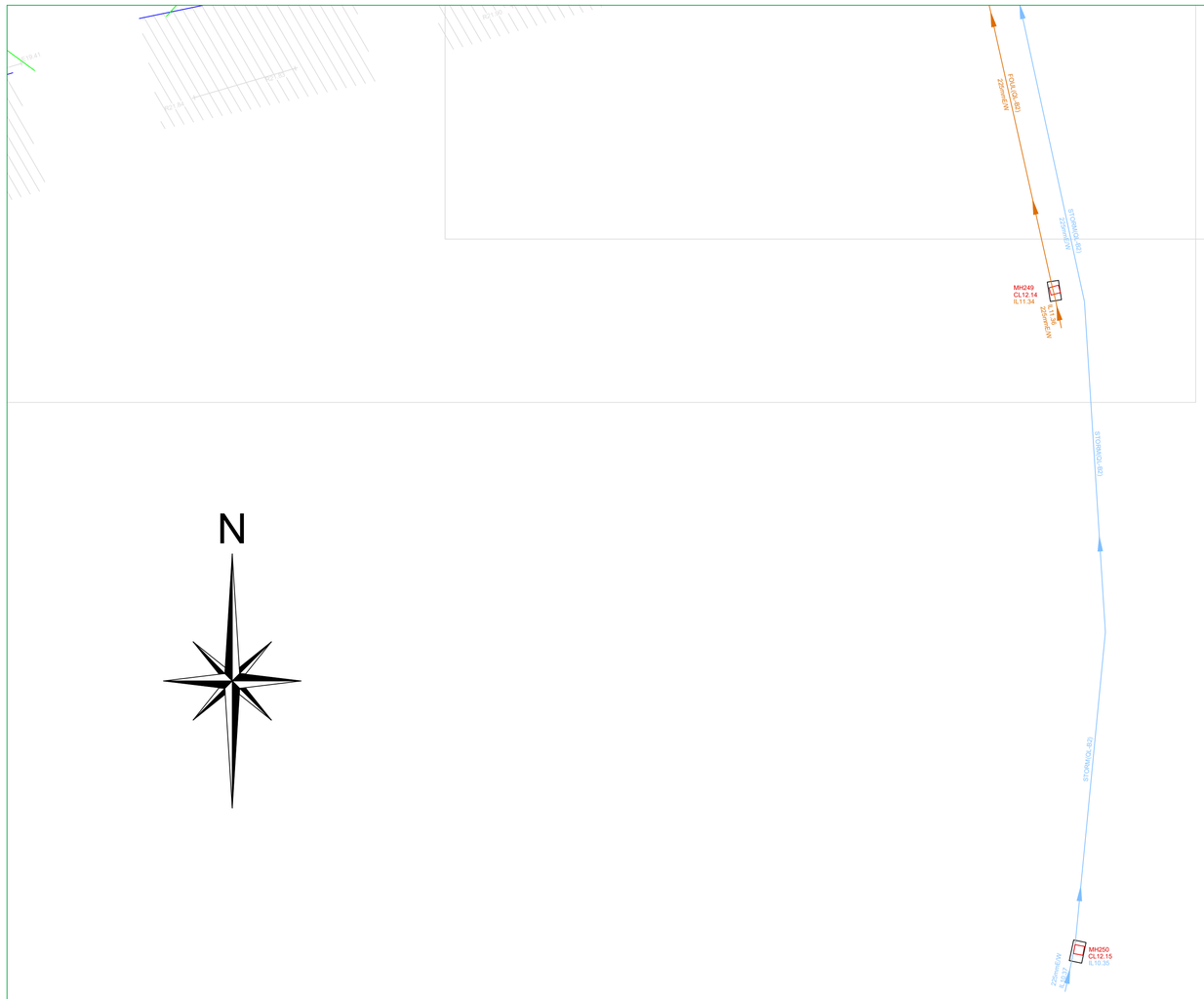
DP4.9



13

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APEX SURVEYS

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STREET FURNITURE :

BOLLARDS	BD •
BUS STOP	BS •
CRASH BARRIER	CB
GATE	
ELECTRICITY POLE	EP •
TELEPHONE POLE	TP •
EARTHING ROD	ER •
LAMP POST	LP •
MARKER POST	MKR •
SIGN POST	SIGN
TRAFFIC LIGHT	TL •
TELEPHONE BOX	TB
POST	POST •
POST BOX	POST BOX
ROADSIGN	RS • RS
BORE HOLE	BH ⊕
TRIAL PIT	TPIT +

BOTTOM OF CHAMBER	BOC
CAST-IRON	C/I
CONCRETE	CONC
DIAMETER	DIA

SERVICES :

AIR VALVE	AV
ARMSTRONG JUNCTION	AJ
CABLE TV IC	CATV
COVER LEVEL	CL
EIRCOM COVER	EIRCOM
EIRCOM JUNCTION BOX	EIRCOM BOX
ELECTRICAL CABLE PIT	ECP
ESAT COVER	ESAT
ESB COVER	ESB
ESB JUNCTION BOX	ESB BOX
FIRE HYDRANT	FH
GAS VALVE	GV
GULLY	G
INSPECTION COVER	IC
MANHOLE	MH
SEPTIC TANK	SEPTIC
SLUICE VALVE	SV •

DOWNPIPE	DP
EARTHENWARE	E/W
NO FURTHER TRACE	NFT
OFFSITE	O/S

STOPCOCK	ST •
SERVICE BOX (UNKNOWN)	BOX
TRAFFIC COVER	TL/C
VENT	VENT •
WATER METER	WM +

LEVELS :

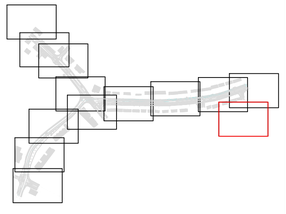
BED LEVEL	+ BED101.50
FLOOR LEVEL	+ FL101.50
INVERT LEVEL	+ IL101.50
ROAD LEVEL	+ 101.50
SOFFIT LEVEL	+ SL101.50
SPOT LEVEL	+ 101.50
TOP OF WALL LEVEL	+ TOW101.50
WATER LEVEL	+ WL101.50
SURVEY CONTROL STATION	

START OF RUN	SOR
UNABLE TO OPEN	UTO
UNABLE TO TRACE	UTT

UNDERGROUND LEGEND :

WATER MAIN	WATER
GAS MAIN	GAS
STORM DRAIN	STORM
FOUL SEWER	FOUL
COMBINED SEWER	COMB
ELECTRIC CABLE	POWER
ELECTRIC LIGHTING	LIGHTING
EIRCOM	EIRCOM
FIBRE OPTIC CABLE	F.OPTIC
BROADBAND	BROADBAND
CABLE TV	TV
TRAFFIC AND SIGNAL CABLE	TRAFFIC
CCTV	CCTV
IRRIGATION PIPE	IRRIGATION
EMPTY DUCT	EMPTY
GPR ANOMALY	ANOMALY
UNKNOWN CABLE	CABLE
O/HEAD ELECTRICITY	OE
O/HEAD TELECOM	OT

SHEET LAYOUT :



PLAN PRODUCED BY:

APEX SURVEYS

CONTACT INFORMATION:

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00353 1 691 0156

CLIENT:

D.B.F.L.

PROJECT:

Sandford Park, Miltown

GRID SYSTEM:	Irish Transverse Mercator
DATUM:	Malin Head (OSGM15)
NOTES:	Drawing Contains Scale Factor

REVISIONS:

No.	Date	Description
001	04/03/20	Original Drawing
002	06/11/20	Additional Information Added

SCALE : 1/200 A1

DRG No: 4234

SHEET: 13 of 10

DATE : 04/03/2020

DESCRIPTION : 2D Utilities

SURVEYED BY : Mario Gaspar

PROCESSED BY : Apex Surveys

CHECKED BY : Alan Brady