Appendix 12-1 Telecommunications Report

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iSM INDEPENDENT SITE MANAGEMENT

Telecommunications Report - Section 3.2 of the Building Height Guidelines (2018)

DEVELOPMENT
KILTERNAN VILLAGE LRD

12 July 2024

Prepared by
Independent Site Management Limited
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Table of Contents

DEFINITIONS

Author:	Independent Site Management Limited (hereinafter referred to as "ISM")
Mitigation Measures:	means the allowances made for the retention of important Telecommunication Channels (hereinafter referred to as "Mitigation Measures")
Planning Authority:	means Dun Laoghaire-Rathdown County Council (hereinafter referred to as the "Planning Authority")
Radio Frequency:	means a frequency or band of frequencies in the range 104 to 1011 or 1012 Hz, of the electromagnetic spectrum suitable for use in telecommunications.
Microwave Links:	means the transmission of information by electromagnetic waves with wavelengths in the microwave range (1 m - 1 mm) of the electromagnetic spectrum suitable for use in telecommunications.
Telecommunication Channels:	means Radio Frequency links & Microwave Transmission links (hereinafter referred to as "Telecommunication Channels")
Report Date:	means the date which the assessment was carried out (hereinafter referred to as "Report Date")
The Applicant:	means Liscove Limited (hereinafter referred to as the "Applicant")
The Development:	means the proposed development situated at lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18 (hereinafter referred to as the "Development")

EXECUTIVE SUMMARY

Independent Site Management ('ISM') has been engaged to provide a specific assessment that the proposal being made by Liscove Limited (the "Applicant") within its submission to Dun Laoghaire-Rathdown County Council (the 'Planning Authority'), allows for the retention of important Telecommunication Channels ("Telecommunication Channels") such as microwave links, to satisfy the criteria of Section 3.2 of the Building Height Guidelines (2018) and Appendix 5, Section 1.4.2 of the Dun Laoghaire-Rathdown County Development Plan 2022-2028.

To provide this assessment, ISM reviewed the Applicant's proposed development (the "Development"), together with their proposed allowances to retain relevant Telecommunication Channels in the context of the immediate surrounding registered and documented telecommunication sites.

Pursuant to our review, ISM can conclude based on the findings outlined herein that the proposal being made by the Applicant within its submission to the Planning Authority allows for the retention of important Telecommunication Channels, such as Microwave links, and therefore satisfies the criteria of Section 3.2 of the Building Height Guidelines (2018) and Appendix 5, Section 1.4.2 of the Dun Laoghaire-Rathdown County Development Plan 2022-2028.

ABOUT THE AUTHOR

ISM is a consultancy firm and asset management company that provides telecommunication consultancy and services to developers and property owners.

ISM works closely with all providers of wireless and fixed line telecommunication services to bridge their infrastructure requirements with that of private and public development. ISM has successfully been providing this service in Ireland for 20 years.

ISM is a multidiscipline firm proficient in the 3 main areas in the delivery of telecommunication services:

(1) Radio Frequency technology;

(2) Microwave Transmission technology; &

(3) Fixed Line fiber optic & copper technologies.

ISM has had an integral part in procuring, designing, building and subsequently managing over 300 mobile base station and/or fixed wireless sites, the vast majority of which originated in densely populated, urban environments.

ISM has designed, built and now operates 6 in-building distributed antenna systems, and 2 large area managed fibre optic networks.

DEVELOPMENT DESCRIPTION

Liscove Limited intend to apply for permission for a Large-Scale Residential Development on 2 No. sites, measuring c. 14.2 Ha., which will be separated by the future Glenamuck Distributer Link Road (GLDR). The western site principally comprises lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18, which include a derelict dwelling known as 'Rockville' and associated derelict outbuildings, Enniskerry Road, Kilternan, Dublin 18, D18 Y199 and the former Kilternan Country Market, Enniskerry Road, Kilternan, Dublin 18, D18 PK09. The western site is generally bounded by the Glenamuck Road to the north; the Sancta Maria property to the north, west and south; a recently constructed residential development named "Rockville" to the north-east; the Enniskerry Road to the south-west; dwellings to the south; and the future GLDR to the east. The eastern site is generally bound by dwellings to the south; the future GLDR to the west; and greenfield land to the north and east.

Road works are proposed to facilitate access to the development from the Enniskerry Road; to the approved Part 8 Enniskerry Road/Glenamuck Road Junction Upgrade Scheme on Glenamuck Road (DLRCC Part 8 Ref. PC/IC/01/17); and to the approved Glenamuck District Roads Scheme (GDRS) (ABP Ref. HA06D.303945) on the Glenamuck Link Distributor Road (GLDR). Drainage and potable water infrastructure is proposed to connect to services on the Glenamuck Road, Enniskerry Road and the GLDR.

At the 'Rockville access point', works are proposed to provide a multi-modal access, including a vehicular connection between the proposed development and the Rockville development (permitted under DLR Reg. Ref. D18A/0566). Surface water and foul drainage infrastructure is proposed to connect into and through the existing/permitted Rockville developments (DLR Reg. Refs. D17A/0793, D18A/0566, D20A/0015 and D23A/0580).

The development will principally consist of: the demolition of c. 740 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings (c. 573 sq m) and the former Kilternan Country Market (wooden structure) (c. 167 sq m); and the provision of a mixed-use development principally consisting of 487 No. residential units (196 No. houses, 201 No. duplex units and 90 No. apartments) and a Neighbourhood Centre. The western site will comprise 362 No. residential units and the Neighbourhood Centre, which will provide an anchor retail store (c. 1,310 sq m), retail/commercial (c. 3,284 sq m), a creche (c. 691 sq m), café (c. 326 sq m), and a

community facility (c. 332 sq m), and the eastern site will comprise 125 No. residential units. The 487 No. residential units will consist of 53 No. 1 bedroom units (35 No. apartments and 18 No. duplexes), 150 No. 2 bedroom units (38 No. houses, 16 No. apartments and 96 No. duplexes), 236 No. 3 bedroom units (110 No. houses, 39 No. apartments and 87 No. duplexes) and 48 No. 4 bedroom units (48 No. houses). The proposed development will range in height from 2 No. to 4 No. storeys (including podium/undercroft level in Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U on the eastern site).

The development also provides: a pedestrian/cycle route through the Dingle Way from Enniskerry Road to the future Glenamuck Link Distributor Road; 854 No. car parking spaces; motorcycle parking; bicycle parking; bin storage; provision of new telecommunications infrastructure at roof level of the Neighbourhood Centre; private balconies, terraces and gardens; hard and soft landscaping; sedum roofs; solar panels; boundary treatments; lighting; substations; plant; and all other associated site works above and below ground. The proposed development has a gross floor area of c. 60,504 sq m above ground, in addition to an undercroft/basement (c. 4,485 sq m) containing car parking, bike storage, bin storage and plant under Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U on the eastern site.

SITE LOCATION/LAYOUT MAP

Figure 1

TELECOMMUNICATION CHANNELS

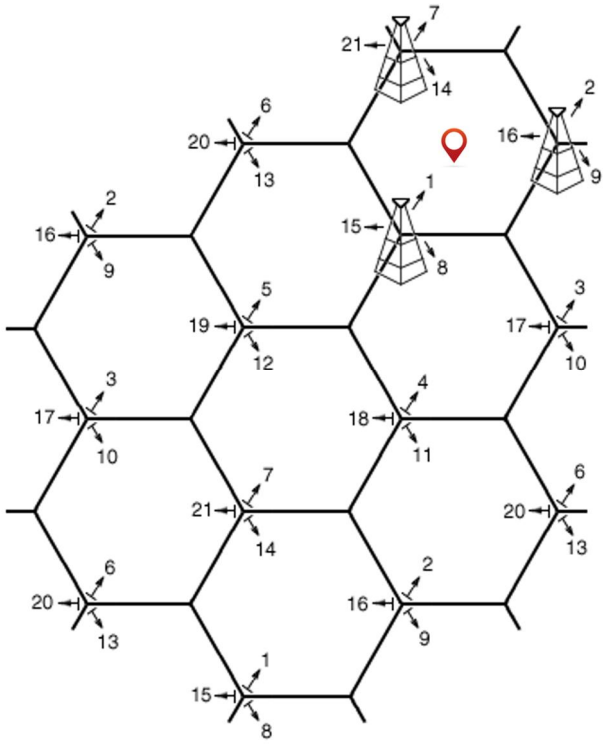
This report assesses the two wireless Telecommunication Channels or networks of Telecommunication Channels that may be affected by the height and scale of a new development, Radio Frequency links & Microwave Transmission links.

Radio Frequency links & Microwave Transmission Links are used in Ireland's mobile phone and fixed wireless networks and disseminate at an average above ground level height of 20m, making them the most relevant Telecommunication Channels to be assessed in relation to the height and scale of a new development and to that end what allowance the Applicant needs to make for their retention.

Mobile phones send and receive signals via links from nearby antenna sites or cellular towers, technically known as base stations, using Radio Frequency waves. Microwave Transmission links use microwave dishes to "transmit" from these base stations to other base stations forming a network. Radio Frequency waves operate at a lower power within lower frequencies of the radio spectrum, whereas Microwave Transmission operates at higher power within higher frequencies of the radio spectrum.

Radio Frequency waves are distributed over land areas in "cells", each served by at least one fixed-location transceiver (base station), but more normally by three cell sites or base stations. These base stations provide the cell with the network coverage, which can then be used for voice, data, and other types of content. A cell typically uses a different set of frequencies from neighbouring cells to avoid interference and provide guaranteed service quality within each cell.

When joined together, these cells provide Radio Frequency coverage over a wide geographic area (Cellular network). This enables numerous portable transceivers (e.g., mobile phones, tablets and laptops equipped with mobile broadband modems, pagers, etc.) to communicate with each other and with fixed transceivers and telephones anywhere in the network, via base stations, even if some of the transceivers are moving through more than one cell during transmission.



As demonstrated on this cell map illustrating Radio Frequency coverage, each Radio Frequency "cell" is supported by at least 3No. base stations sites. This means that should an obstacle occur between an area and a base station site, such as a new development, the affected area will be covered by other base stations from other locations.

= a given location

= base station site

Figure 2

Cellular networks offer a number of desirable features, but most notably, additional cell towers can be added indefinitely and are not limited by the horizon, therefore it can be considered **indeterminable** as to whether a new development affects the Radio Frequency coverage of a geographical area which is being served by multiple base stations, not necessarily the closest.

Conversely, Microwave Transmission links are point-to-point links, which are easily determined to be affected, or not, by the height and scale of a new development. In point-to-point wireless communications, it is important for the line of sight between two base stations to be free from any obstruction (terrain, vegetation, buildings, wind farms and a host of other obstructions). As any interference or obstruction in the line of sight can result in a loss of signal.

While installing Microwave links, it is important to keep an elliptical region between the transmitting Microwave link and the receiving Microwave link free from any obstruction for the proper functioning of the system. This 3D elliptical region between the transmit antenna and the receive antenna is called the **Fresnel Zone**. The size of the ellipse is determined by the frequency of operation and the distance between the two sites.

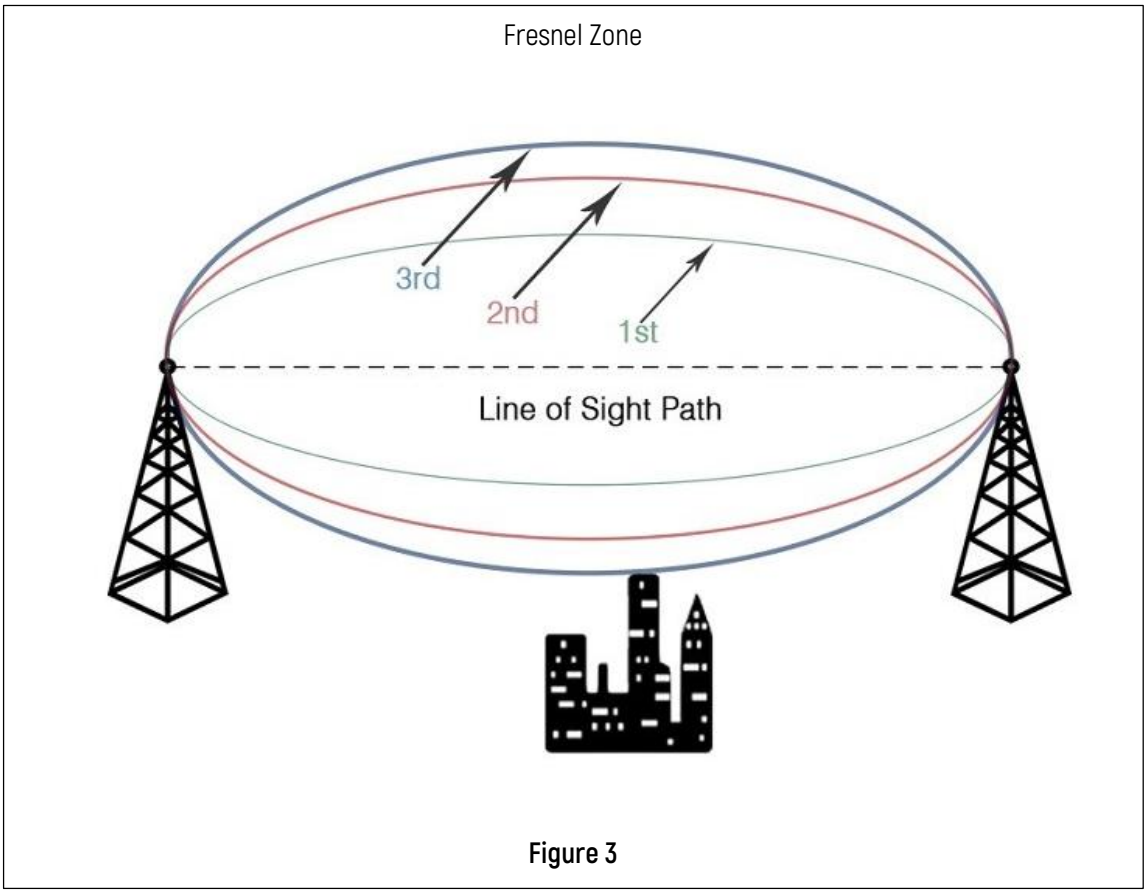


Figure 3

Essentially, if there is an obstacle in the Fresnel zone, part of the radio signal will be diffracted or bent away from the straight-line path. The practical effect is that on a point-to-point Microwave link, referred to herein, the refraction will reduce the amount of energy reaching the receiving microwave dish. The thickness or radius of the Fresnel zone depends on the frequency of the signal – the higher the frequency, the smaller the Fresnel zone. Microwave links are high frequency radio links used for point-to-point transmission.

FINDINGS

ISM's assessment did not identify any Microwave links that will require the Applicant to make specific allowances for their retention ("Mitigation Measures").

Our assessment did not identify any Radio Frequency links that will require the Applicant to make allowances for their retention.

ISM carried out a full assessment of neighbouring registered and documented telecommunication sites to assess what Microwave links would be impacted by the height and scale of the Development. Refer to Figure 5 & 6 of the appendices for full analysis. The assessment of Microwave Transmission links entailed both a visual survey of each identified neighbouring telecommunication site within a reasonable geographic proximity to the Development and a request for information from telecommunication providers where the visual survey was inconclusive.

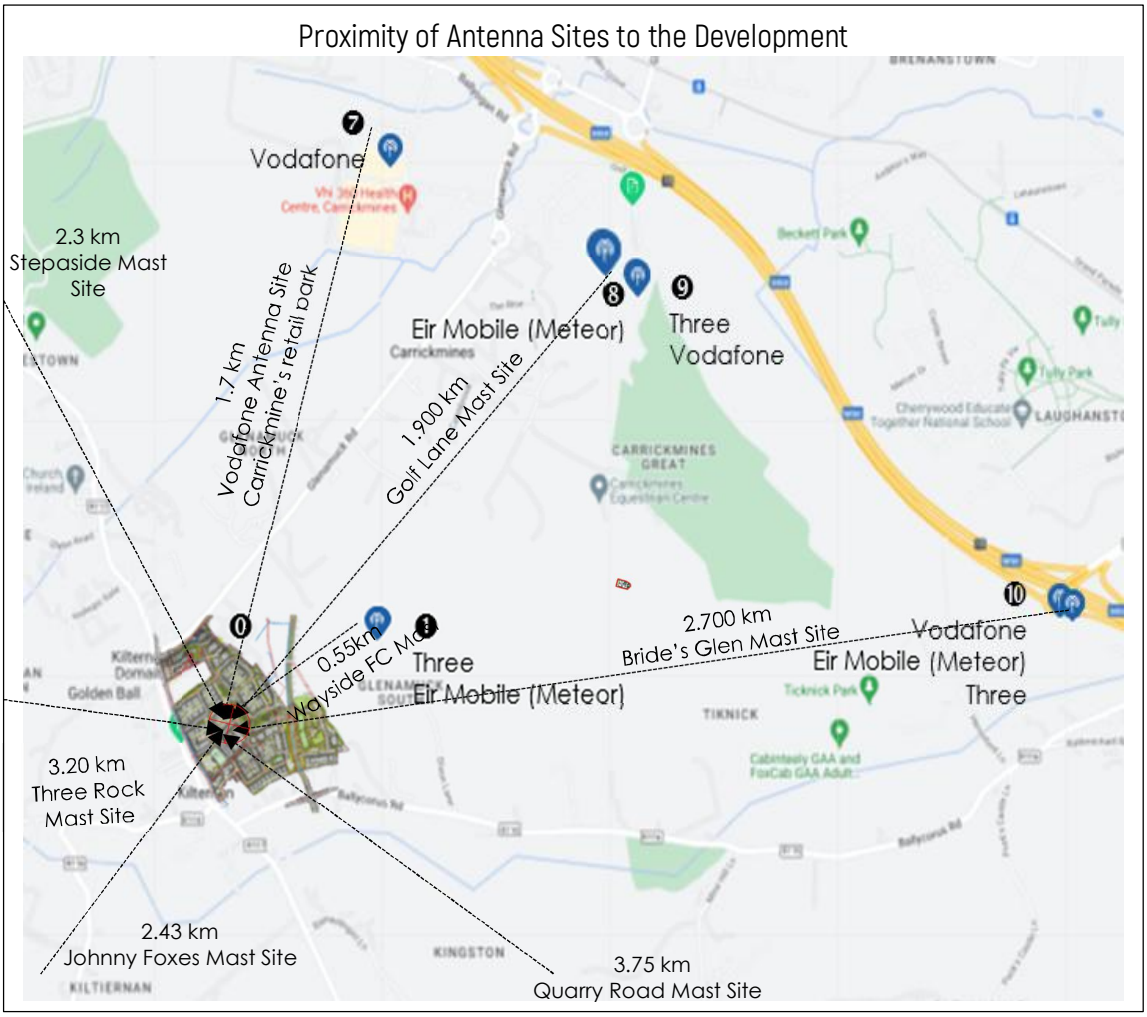
ISM carried out a full assessment of neighbouring registered and documented telecommunication sites to assess what Radio Frequency links might be impacted by the height and scale of the Development. To assess this, we carried out a drive test throughout the surrounding areas to ascertain what cells were serving the residential neighbourhoods and business districts to the north, south, east & west of the Development site. Refer to Figure 7 of the appendices for full analysis.

Our assessment identified Radio Frequency coverage for the local geographic area is served by a **distinct lack of cells** at a range of distances to the Development, which is not a typical cell pattern for urban/suburban Radio Frequency coverage where the population density is exceed more than 1,500 occupants living working and residing. The drive test data determined that most local businesses (agricultural or otherwise), residential, and the public road and amenity areas to the southeast, southwest, and west of the development site receive signal below optimal thresholds from the Radio Frequency links emanating from telecommunication antenna sites located up to 3.75km from the development site to the west by southeast, up to 3.2km to the west by northwest, and 2.7 km to the east of the development site. The mast at the Wayside FC at 0.55km to the northeast of the development site, however it only supports 2 of the 3 mobile

network operators and is only capable of supporting up to 2- 3,000 people exclusively on those 2 networks. We currently estimate it to be operating at around two thirds of its total capacity at current population levels, therefore we predict that it could only support about another 500 people maximum exclusively on those 2 networks.

By way of comparison, a typical cell pattern for urban or suburban Radio Frequency coverage, has antenna sites at distances from each other ranging from 250 to 500 metres depending on the population density. The technological prerequisite is to apply mobile cellular sites (1 per Mobile Network Operator) on a ratio of 1 site per 1,500 – 2,000 people. Combine this with the movement from low frequency (2G/3G) to higher frequencies bands (4G/5G) with the added obstacles of modern, energy saving building trends, such as insulation and triple glazing, the internal penetration of mobile signal has become significantly challenging, resulting in a potential requirement for 1 mobile cellular site per 1,500 head of population.

Proximity of Antenna Sites to the Development



Our assessment recorded an average indoor coverage signal of -99db-105-db for Three and Eir mobile networks and ≥115db for Vodafone at the current population levels. With -85db being the benchmark optimal coverage signal, with anything over -100db being considered poor too bad. Being that population density is a huge factor related to signal level and quality, it is our view that existing limited mobile signal conditions will become weaker as the area is continuously developed. This report also is not factoring in other permitted (or to be permitted) yet undeveloped schemes in the local area, however the author is aware and has reported on several such permitted (or to be permitted) yet undeveloped schemes along Glenamuck road, and Stepaside to the north by northeast of the development.

Data from recent projects of similar scale and density that have completed and reached occupational status, particularly but not limited to, those within the Dun Laoghaire-Rathdown County Council jurisdiction such as Belarmaine, Cherrywood SDZ and Clay Farm, as well as existing residents and businesses in the Murphystown area, are suffering from a lack of coverage due to the deterioration of existing cells which significantly shrink as population density increases. This can be said even by locations such as Clay Farm whereby mast sites are situated 500 - 800m away. In these aforementioned areas, data overwhelmingly demonstrates that the ability to make a voice call to emergency services from an internal location within the given development (we tested) is extremely limited if not non-existence.

It is therefore our finding that the local area is significantly underserved by telecommunication channels (mobile phone signal/voice & data services) and any increase in the population density residing in the area resulting from the proposed development will create a significant strain on existing capacity and cell size, which becomes smaller the greater number of people using or accessing it for voice and data services. We believe the findings herein support a technical justification for a new telecom site to be included in the Development strategy, thus providing for the retention of important Telecommunication Channels (Mitigation Measures).

We have set out the impact to the area within Figure 8.

MITIGATION MEASURES

To provide an adequate allowance to support the density and scale of the Development with the appropriate level of telecommunication channels (mobile phone signal /voice & data services), the Applicant is seeking planning permission to install the following:

- 9No. support poles, affixed to ballast mounts on the neighbourhood centre rising 2.8 metres above parapet level. These support poles are sufficient to each accommodate 1No. 2m 2G/3G/4G antenna & 1No. 5G antenna each.
- 3No, support poles, affixed to the rear of the ballast mounts, rising 1 .5 metres above roof level. These support poles are sufficient to accommodate 2No. Ø0.3m Microwave links each.
- Together with all associated telecommunications equipment and cabinets,
- To adequately screen the infrastructure, the support poles used for the antennae will be installed within Radio friendly GRP shrouds.

This will provide an adequate solution for the Applicant to mitigate the impact the Development will have on the existing poor mobile phone signal in the area and provide both the occupants of the Development and the local area with adequate voice and data services to meet modern demands.

Refer to Figure 9 of the appendices for full analysis and installation parameters for all the proposed replacement telecommunication infrastructure set out herein.

ISM can therefore conclude that the proposal being made by the Applicant within its submission to Dun Laoghaire-Rathdown County Council allows for the retention of important Telecommunication Channels, such as Microwave links, to satisfy both the criteria of Section 3.2 of the Building Height Guidelines (2018) and Appendix 5, Section 1.4.2 of the Dun Laoghaire-Rathdown County Development Plan 2022-2028.

DISCLAIMER

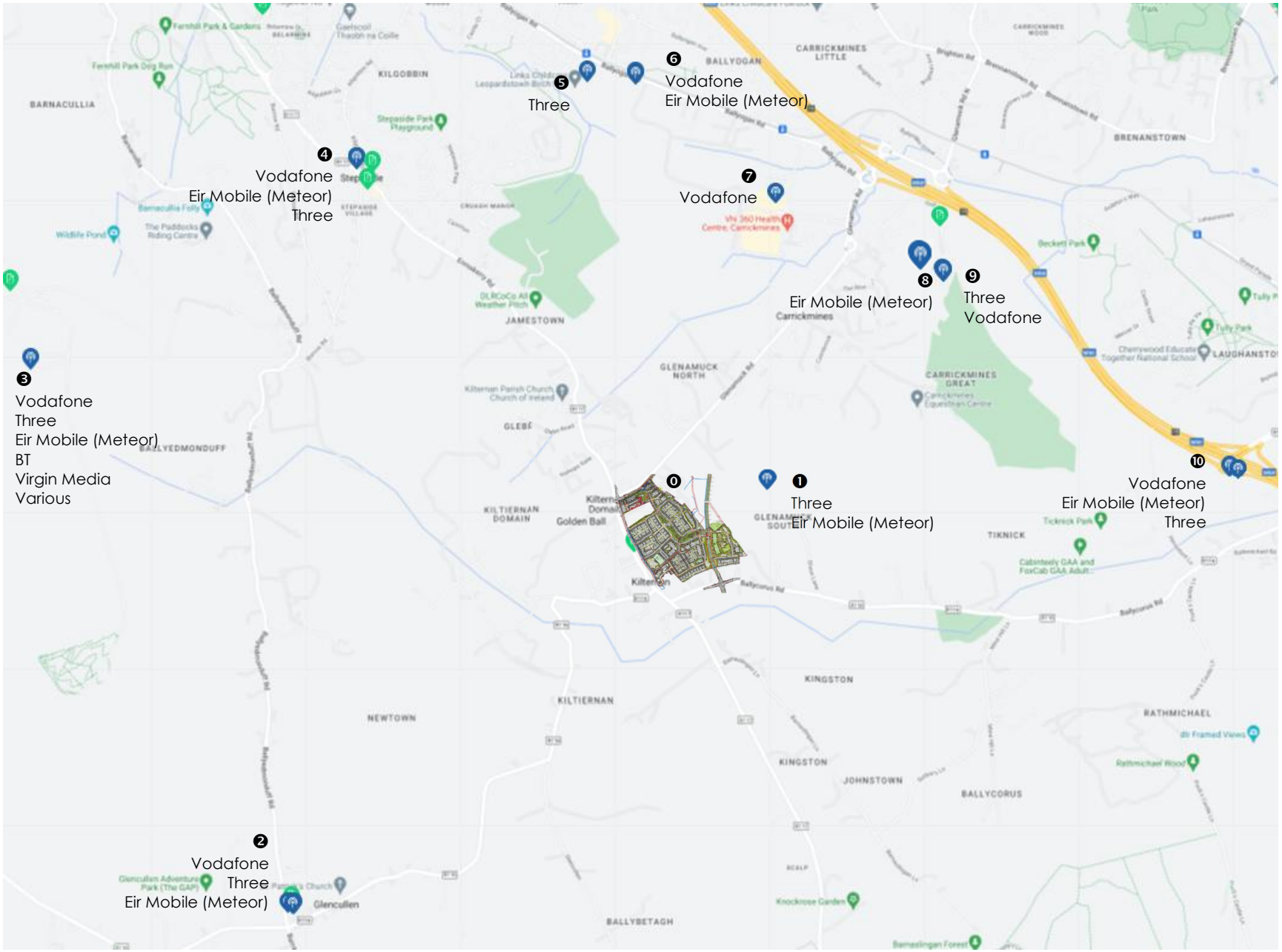
Due to the confidential nature of planning applications/submissions, ISM does not, as standard practice, contact or involve Ireland's licenced Mobile Network Operators, namely: Vodafone Ireland; Three Ireland; or Eircom Limited t/a Eir Mobile, when preparing this report. If contact is made with a Mobile Network Operator, we duly note the source information within our reports.

ISM has wholly relied upon the publicly available information provided by Commission for Communications Regulation, "ComReg", its own extensive record of wireless infrastructure, and the results of a comprehensive visual survey carried out on the Report Date notated herein. Therefore, the specific Mobile Network Operator transmitting the identified telecommunication channel is recorded on a best endeavour basis.

Lastly, please note that telecommunication networks are always evolving, and as such, these findings remain subject to change.

APPENDICES

Figure 5 Area Telecommunication Analysis Source: Comreg



Note
All Dimensions to be checked on site
No Dimensions to be scaled from this Drawing
This drawing to be read with relevant Consultant Drawings

- ❶ Proposed Development
- ❶ Wayside FC
- ❷ Johnny Foxes
- ❸ Three Rock*
- ❹ Stepaside Garda St
- ❺ Carrickmines Bird Cage
- ❻ Carrickmines ESB
- ❼ Vodafone Sales Office
- ❽ Golf Lane 1
- ❾ Golf Lane 2
- ❿ Brides Glen

*Three Rock Mountain hosts a high concentration of telecommunication channels.

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Client
Liscove Limited

Project
Kilternan Village LRD

Option	1
Report Date	05/06/24
File Name	Kilternan Village LRD

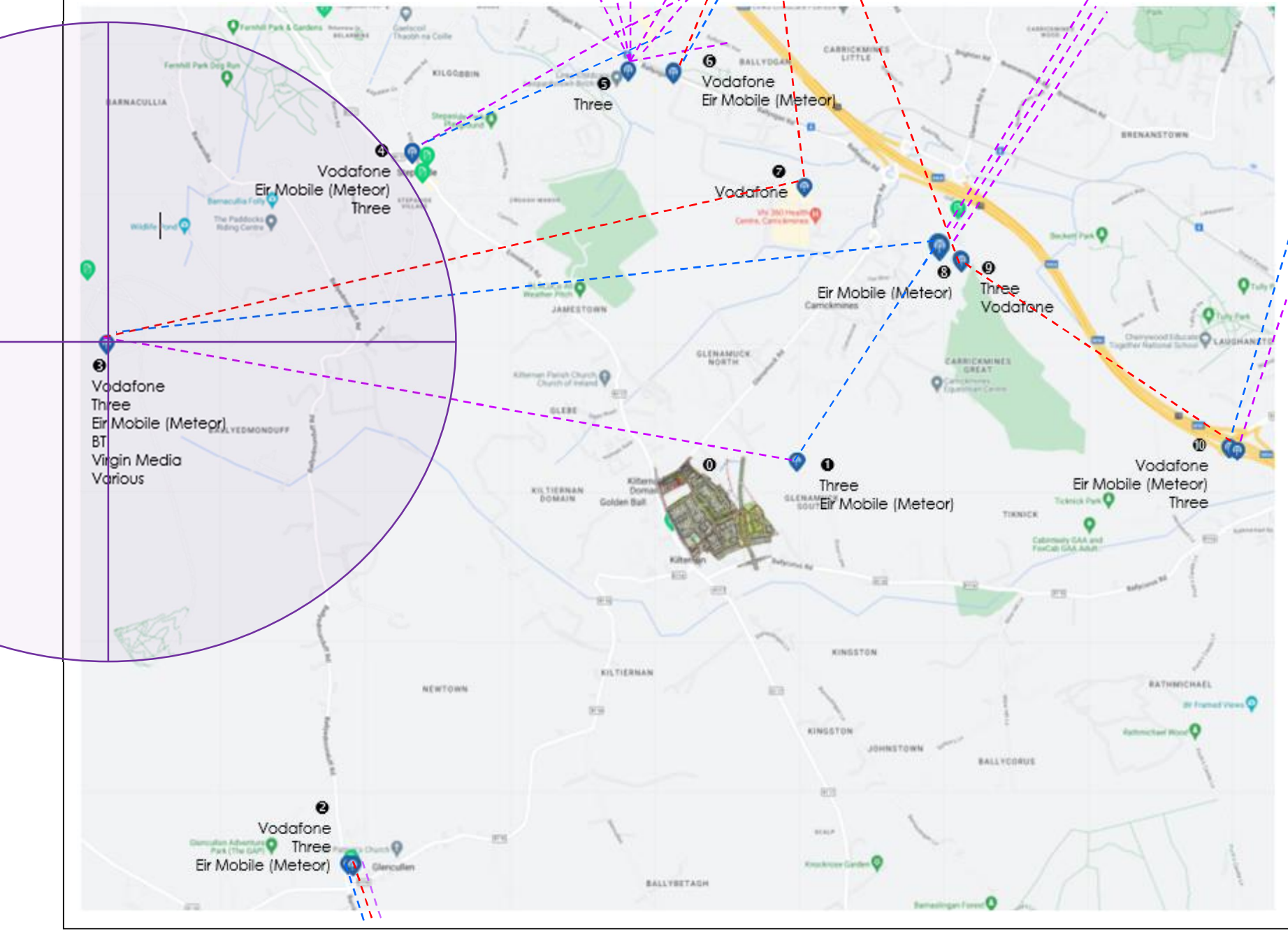
Drawing:
Area Site Analysis

Building	Drawing No.	Zone	Rev
SPN	F 0524		1

Figure 6

Microwave Link Analysis

Source: Comreg ISM Vodafone Three & Eir Mobile



Note
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This drawing to be read with relevant Consultant Drawings

---- Three Transmission Link
---- Vodafone Transmission Link
---- Eir Transmission Link

Three Rock Mountain hosts a high concentration of telecommunication channels. It is not impacted by the development because of its height which far exceeds those sought by the applicant

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Client
Liscove Limited

Project
Kilternan Village LRD

Option	1
Report Date	05/06/24
File Name	Kilternan Village LRD

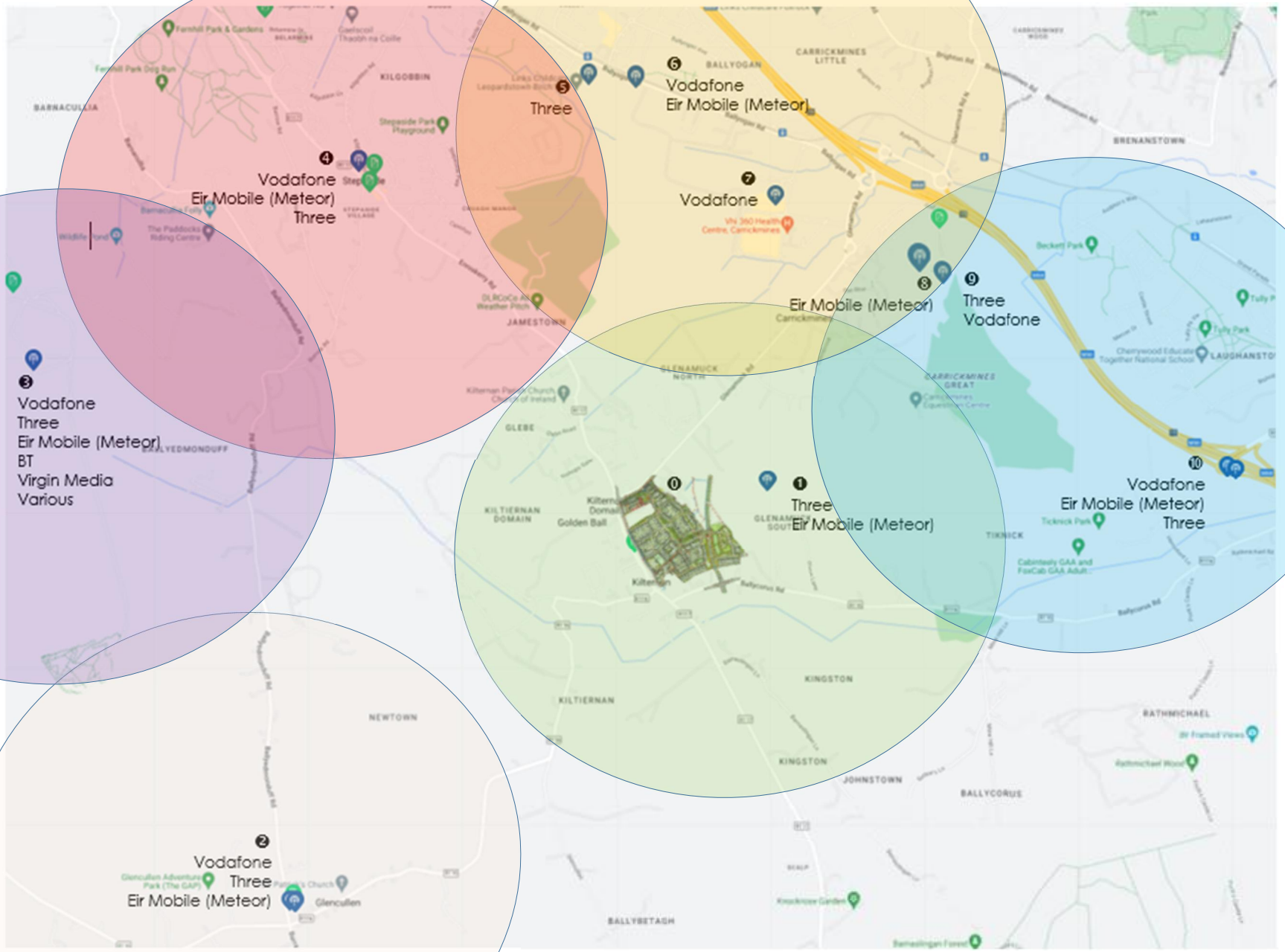
Drawing:
Link Analysis

Building	Drawing No.	Zone	Rev
SPN	F 0524		1

Figure 7

Drive Test Data

Source: Comreg, ISM



Note
All Dimensions to be checked on site
No Dimensions to be scaled from this Drawing
This drawing to be read with relevant Consultant Drawings

- Multiple Cell IDs
  - ❽ Golf Lane 1
  - ❾ Golf Lane 2
  - ❿ Brides Glen
- Multiple Cell IDs
  - ❺ Carrickmines Bird C.
  - ❻ Carrickmines ESB
  - ❼ Vodafone Sales Office
  - ❽ Golf Lane 1
- Multiple Cell IDs
  - ❶ Wayside FC
- Multiple Cell IDs
  - ❹ Stepaside Garda St
- Multiple Cell IDs
  - ❸ Three Rock*
- Multiple Cell IDs
  - ❷ Johnny Foxes

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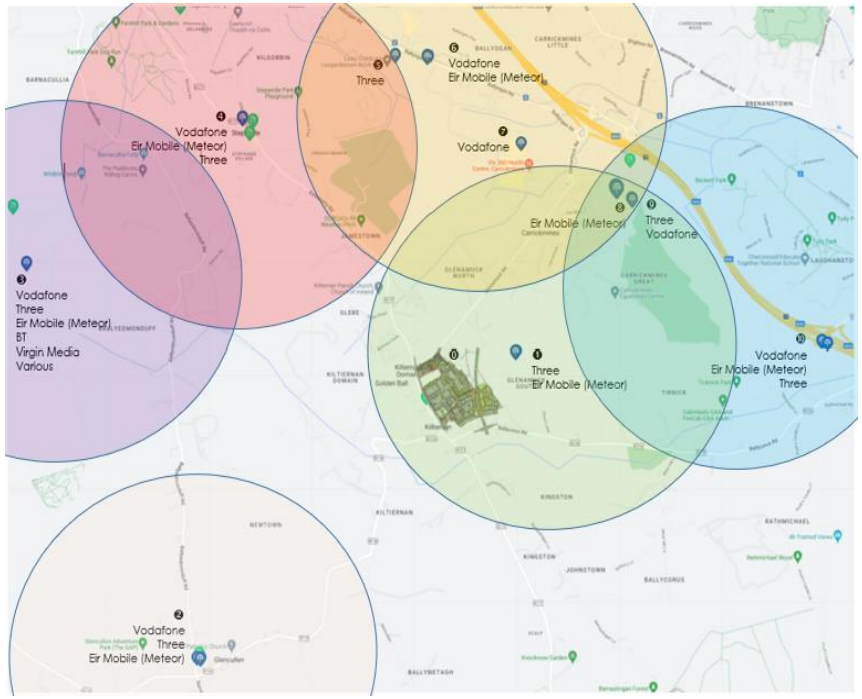
Kilternan Village LRD

Option	1
Report Date	05/06/24
File Name	Kilternan Village LRD

Drawing:
Cell Identification Analysis

Building	Drawing No.	Zone	Rev
SPN	F 0524		1

Figure 8 Cell Impact Source: Comreg ISM



Coverage Cells recorded May 2024

Coverage Cells Prediction POST Development

The increase in the population created by the population will cause the local area cells to shrink and areas both within the proposed development as well as areas outside the Development, will see a large reduction in coverage for voice and data services from all of Ireland's 3 mobile network providers

Note
All Dimensions to be checked on site
No Dimensions to be scaled from this Drawing
This drawing to be read with relevant Consultant Drawings

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Project
Kilternan Village LRD

Option	**1**
Report Date	05/06/24
File Name	Kilternan Village LRD

Drawing:
Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	F 0524		1

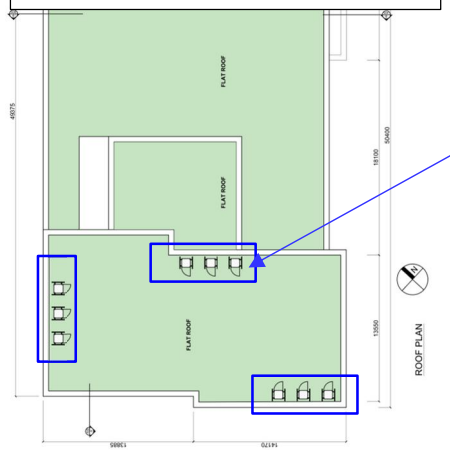
Figure 9

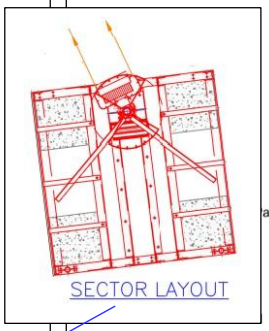
Mitigation Measure Design

Source: Comreg ISM

Location at roof level of Neigbiorehood Centre Block B for 9No. Ballast Mounts with steel poles affixing 9No. 2G/3G/4G Antennas (2mL) & 9No. 5G Antennas (0.8mL)

☐ **Locations**





Side Elevation

SIDE ELEVATION (NORTH WEST)

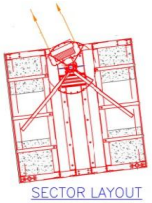
2G/3G/4G Antennas (2mL) & 5G Antennas (0.8mL) to be mounted on Proposed Ballast Support Pole within Radio Friendly GRP Shroud

Front Elevation

FRONT ELEVATION (SOUTH WEST-VILLAGE GREEN)

Note
All Dimensions to be checked on site
No Dimensions to be scaled from this Drawing
This drawing to be read with relevant Consultant Drawings

Ballast Mount / steel support poles, antennas and shroud



☐ Location of Steel support Poles on Ballast Mounts

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Client
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Project
Kilternan Village LRD

Option	**1**
Report Date	05/06/24
File Name	Kilternan Village LRD

Drawing:
Mitigation Measure

Building	Drawing No.	Zone	Rev
SPN	F 0524		1

Appendix 12-2 Uisce Éireann Confirmation of Feasibility and Statement of Design Acceptance

CONFIRMATION OF FEASIBILITY

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

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

Neil Durkan

Liscove Ltd
1st Floor, Maple House
Lower Kilmacud Road
Stillorgan
Co. Dublin
A94 E3F2

14 June 2024

Our Ref: CDS24004528 Pre-Connection Enquiry
Kilternan Village, Enniskerry Road, Kilternan, Dublin

phillip.assaf@durkan.ie
Dear Applicant/Agent,

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

Uisce Éireann has reviewed the pre-connection enquiry in relation to a Water & Wastewater connection for a Multi/Mixed Use Development of 492 unit(s) at Kilternan Village, Enniskerry Road, Kilternan, Dublin, (the **Development)**.

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

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

- There are 4 proposed connections for the Development:
  • 300mm DI in Enniskerry Road (PRV required to reduce spine pressure)
  • 250mm HDPE in Glenmamuck Road South
  • 2 connections from new 280mm OD watermain as part of DLRCC Glenamuck District Roads scheme. The private main has to be completed, connected to Uisce Éireann infrastructure and in operation, prior the connection.
- Please note that only one primary connection is allowed post completion of all phases and other connections are to be made secondary which should be closed at normal operation time. Internal main size must be designed accordingly, considering the location of primary connection.

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

- New sewer, as part of DLRCC Glenamuck District Roads scheme, has to be completed, connected to Uisce Éireann infrastructure and in operation, prior the connection.
- The Developer is responsible for all necessary consents and permissions required to connect to any private infrastructure. The status and capacity of the infrastructure requires verification, prior to submission of a connection application.

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

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

Where can you find more information?

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

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

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

Yours sincerely,

Dermot Phelan
Connections Delivery Manager

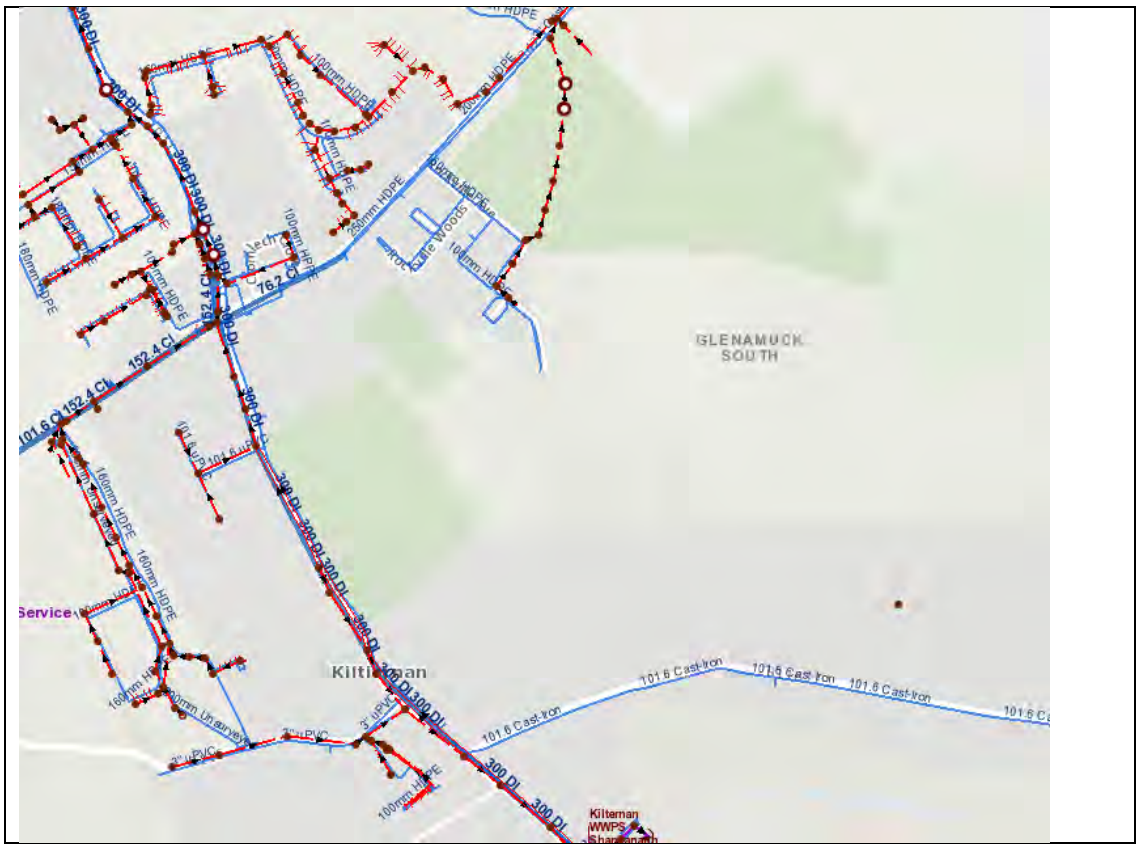
Section A - What is important to know?

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

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

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

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



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

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

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

Neil Durkan
Liscove Ltd
1st Floor, Maple House
Lower Kilmacud Road
Stillorgan
Co. Dublin
A94 E3F2

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

Uisce Éireann
PO Box 448
South City
Delivery Office
Cork City

www.water.ie

17 June 2024

Re: Design Submission for Kilternan Village, Enniskerry Road, Kilternan, Dublin (the "Development")
(the "Design Submission") / Connection Reference No: CDS24004528

Dear Neil Durkan,

Many thanks for your recent Design Submission.

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

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

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

If you have any further questions, please contact your Uisce Éireann representative:
Name: Antonio Garzón Mielgo
Email: antonio.garzonmielgo@water.ie

Yours sincerely,

Dermot Phelan
Connections Delivery Manager

Appendix A

Document Title & Revision

- 2104C-307 Foul Drainage Sheet 1
- 2104C-308 Foul Drainage Sheet 2
- 2104C-309 Foul Drainage Sheet 3
- 2104C-310 Rev A Watermain Layout Sheet 1 UE CDA
- 2104C-311 Rev A Watermain Layout Sheet 2 UE CDA
- 2104C-312 Rev A Watermain Layout Sheet 3 UE CDA
- 2104C-330 Foul Longutudinal Sections Sheet 1
- 2104C-331 Foul Longutudinal Sections Sheet 2
- 2104C-332 Foul Longutudinal Sections Sheet 3
- 2104C-333 Foul Longutudinal Sections Sheet 4
- 2104C-334 Foul Longutudinal Sections Sheet 5

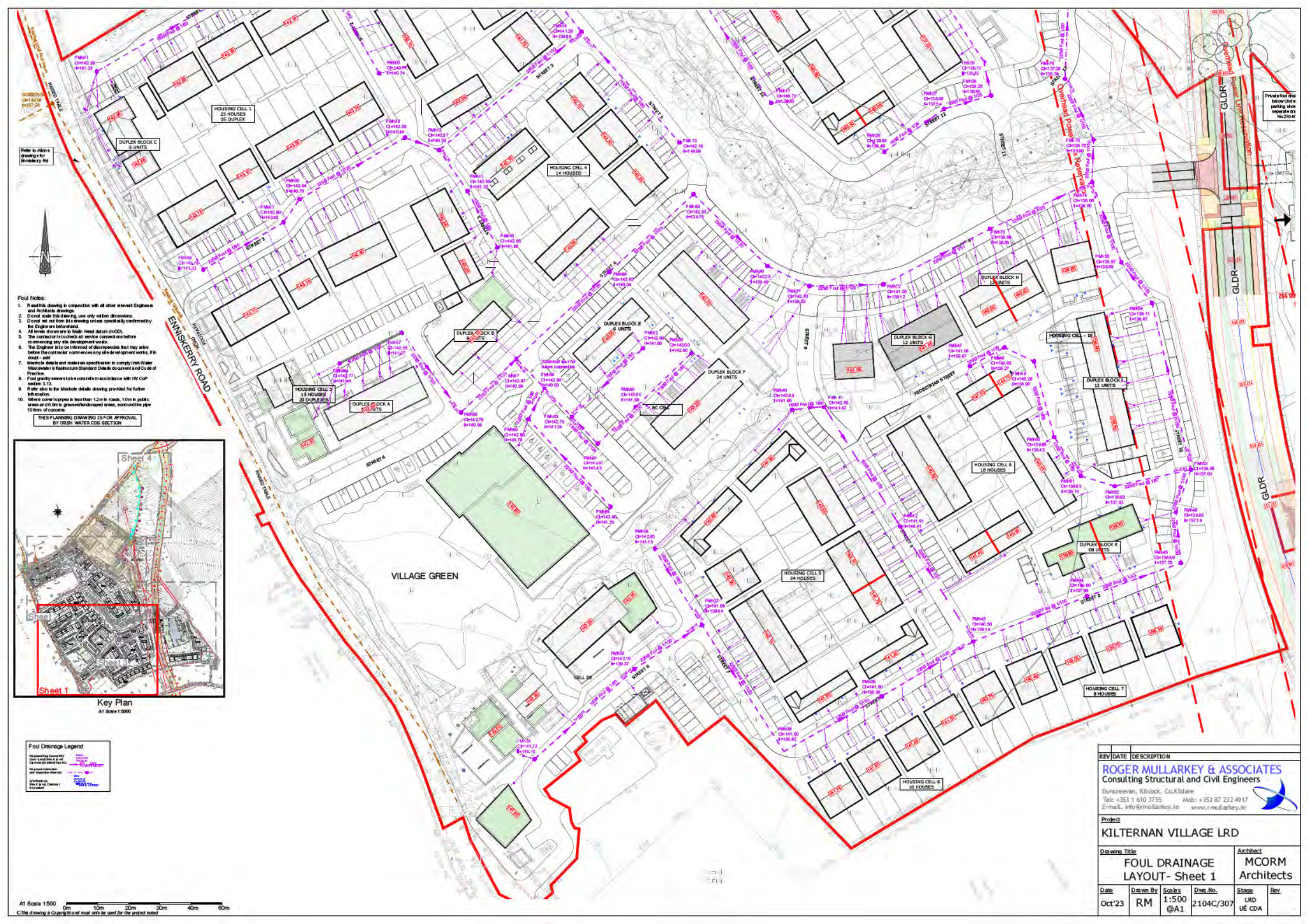
Additional Comments

The design submission will be subject to further technical review at connection application stage.

Uisce Éireann cannot guarantee that its Network in any location will have the capacity to deliver a particular flow rate and associated residual pressure to meet the requirements of the relevant Fire Authority, see Section 1.17 of Water Code of Practice.

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

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



REV	DATE	DESCRIPTION

ROGER MULLARKEY & ASSOCIATES
Consulting Structural and Civil Engineers
Duncreevan, Kilcock, Co.Kildare
Tel: +353 1 610 3755 Mob: +353 87 232 4917
E-mail: info@rmullarkey.ie www.rmullarkey.ie

Project
KILTERNAN VILLAGE LRD

Drawing Title
FOUL DRAINAGE LAYOUT- Sheet 1

Architect
MCORM Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
Oct'23	RM	1:500 @A1	2104C/307	LRD UÉ CDA	

Foul Notes:

1. Read this drawing in conjunction with all other relevant Engineers and Architects drawings.
2. Do not scale this drawing, use only written dimensions.
3. Do not set out from this drawing unless specifically confirmed by the Engineers beforehand.
4. All levels shown are to Malin Head datum (mOD).
5. The contractor is to check all service connections before commencing any site development works.
6. The Engineer is to be informed of discrepancies that may arise before the contractor commences any site development works, if in doubt - ask!
7. Manhole details and materials specification to comply Irish Water Wastewater Infrastructure Standard Details document and Code of Practice.
8. Foul gravity sewers to be concrete in accordance with IW CoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipes is less than 1.2m in roads, 1.0m in public areas and 0.8m in grassed/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION

FOUL FROM PRIVATE DRAINAGE OF APARTMENT BLOCKS C & D ONLY INTO G.DRS SFUR AS AGREED WITH DLROC

DLROC TO EXTEND FOUL UP TO HERE @ I=152.65

GLENAMUCK ROAD

NEW Mh & CONNECTION TO EXISTING IW 300mm Ø FOUL SEWER (il TBC)

PERMITTED DEVELOPMENT UNDER Reg.Ref.D23A 0580

HOUSING CELL 17 18 DUPLEX

HOUSING CELL 14 16 DUPLEX

HOUSING CELL 14 8 HOUSES 28 DUPLEX

DUPLEX BLOCK A 12 UNITS

DUPLEX BLOCK B 12 UNITS

DUPLEX BLOCK K 32 UNITS

HOUSING CELL 12 21 HOUSES

HOUSING CELL 2 16 HOUSES

HOUSING CELL 11 22 HOUSES

HOUSING CELL 13 16 DUPLEXES

HOUSING CELL 4 14 HOUSES

FOUL FROM KILTERNAN VILLAGE TO OUTFALL INTO EXISTING MH HERE

Foul Drainage Legend

Key Plan
A1 Scale 1:5000

Sheet 1
Sheet 2
Sheet 3

A1 Scale 1:500
0m 10m 20m 30m 40m 50m

REV	DATE	DESCRIPTION

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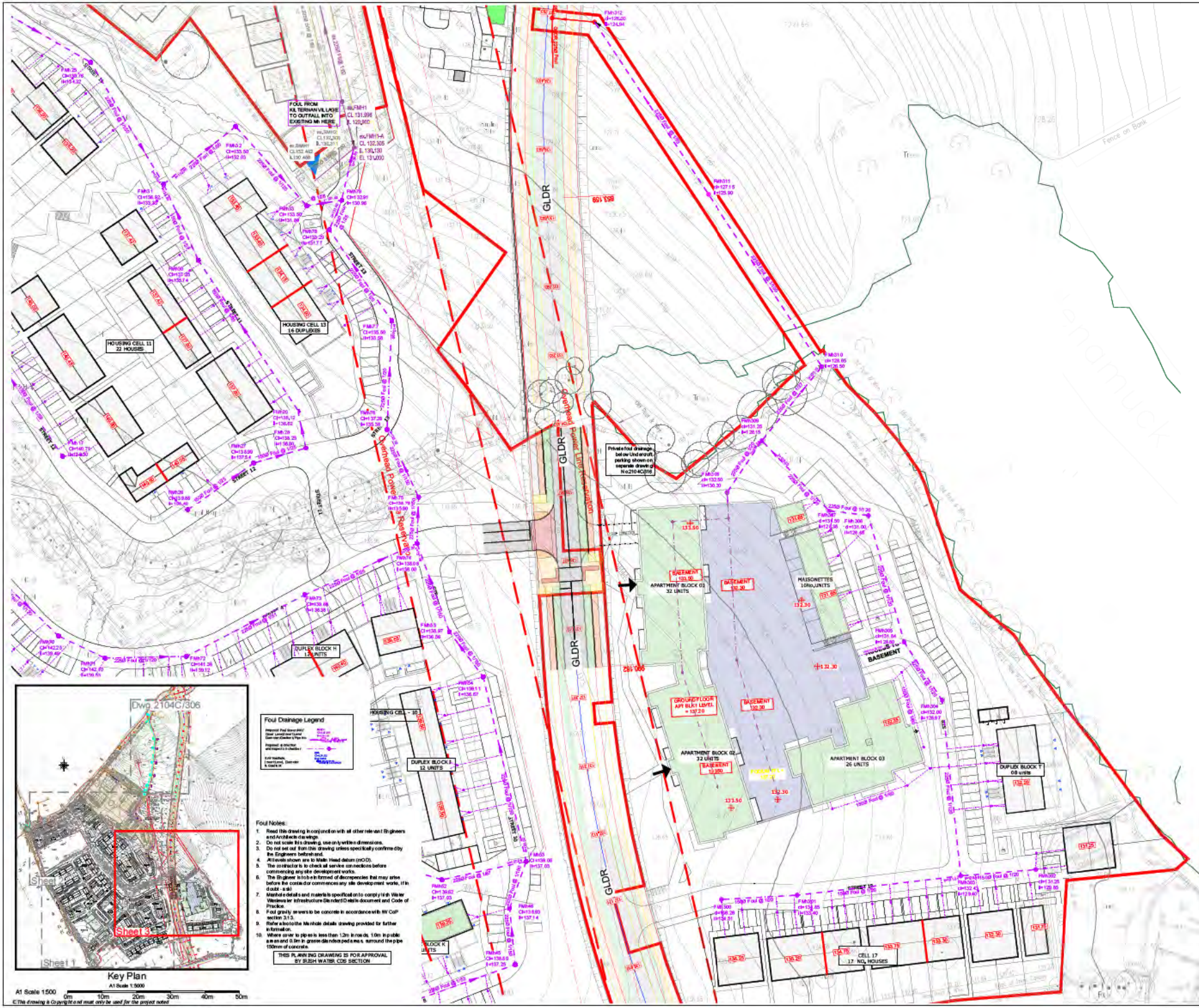
Project
KILTERNAN VILLAGE LRD

Drawing Title
FOUL DRAINAGE LAYOUT - Sheet 2

Architect
MCORM Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
Oct'23	RM	1:500 @A1	2104C/308	LRD UÉ CDA	



Key Plan

A1 Scale 1:500

0m 10m 20m 30m 40m 50m

Foul Drainage Legend

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5. The contractor is to check all service connections before commencing any site development works.
6. The Engineer is to be informed of discrepancies that may arise before the contractor commences any site development works, if in doubt - ask!
7. Manhole details and materials specified on to comply with Water Wastewater Infrastructure Standard (5 sets) a document and Code of Practice.
8. Foul gravity sewers to be concrete in accordance with IW CoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipe is less than 1.2m in roads, 1.0m in public areas and 0.9m in green/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION

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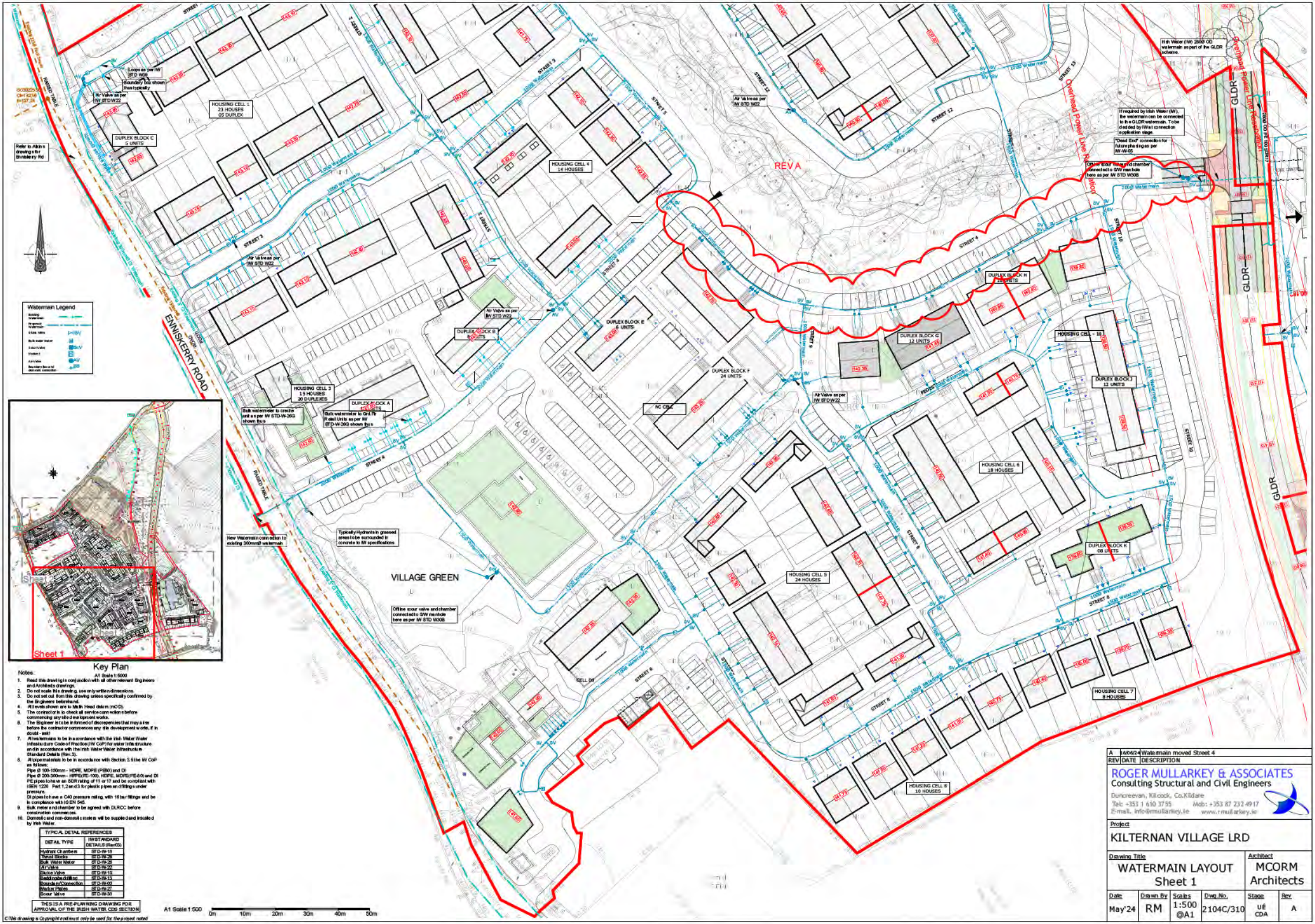
Project
KILTERNAN VILLAGE LRD

Drawing Title
FOUL DRAINAGE LAYOUT - Sheet 3

Architect
MCORM Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
Oct'23	RM	1:500 @A1	2104C/309	LRD UÉ CDA	



REV	DATE	DESCRIPTION
A	14/04/24	Watermain moved Street 4

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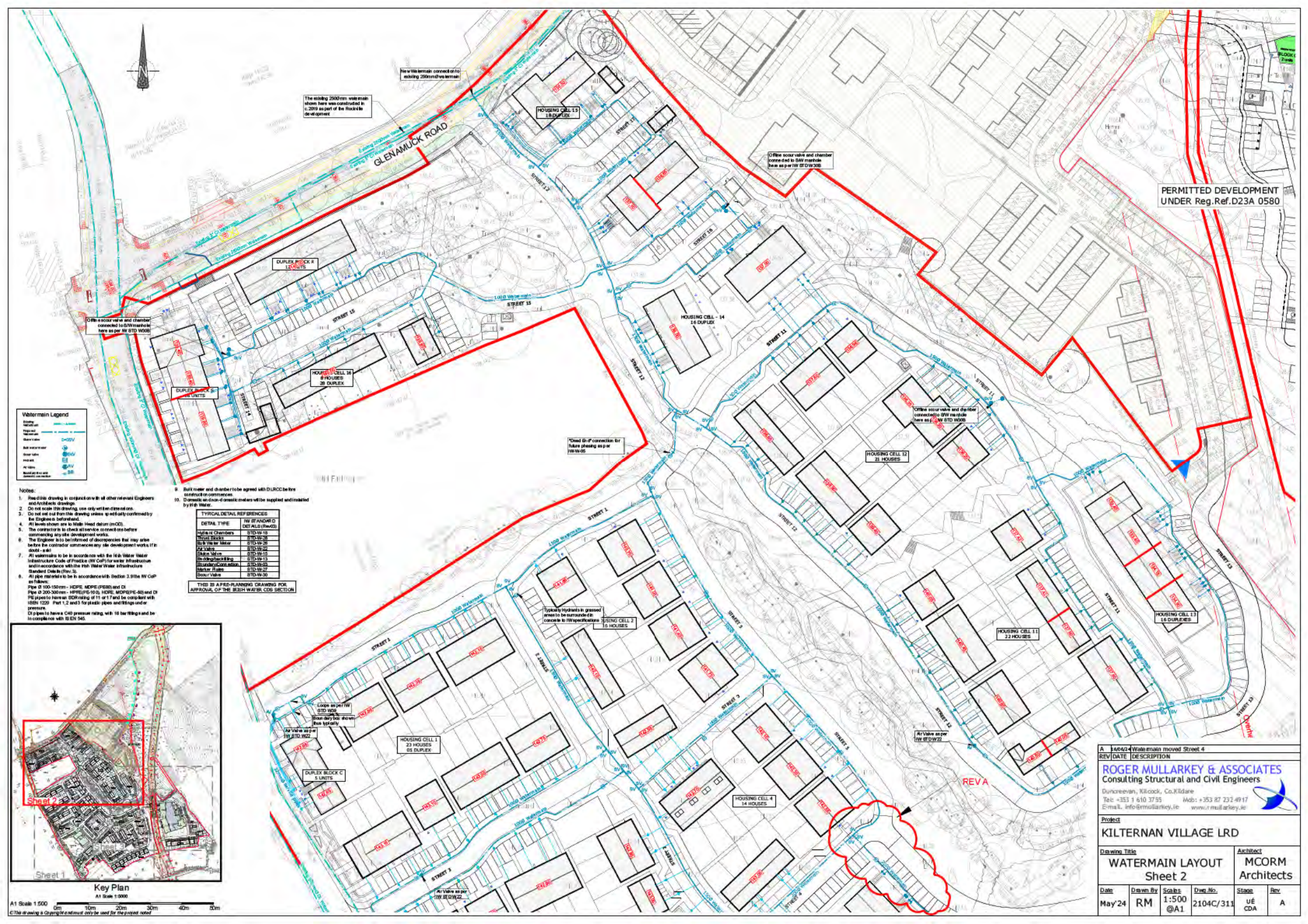
Project
KILTERNAN VILLAGE LRD

Drawing Title
WATERMAIN LAYOUT
Sheet 1

Architect
MCORM
Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
May'24	RM	1:500 @A1	2104C/310	UE CDA	A



Watermain Legend

Notes:

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5. The contractor is to check all service connections before commencing any site development works.
6. The Engineer is to be informed of discrepancies that may arise before the contractor commences any site development works if in doubt - ask!
7. All watermains to be in accordance with the Irish Water Water Infrastructure Code of Practice (IW CoP) for water infrastructure and in accordance with the Irish Water Water Infrastructure Standard Details (Rev. 3).
8. All pipe materials to be in accordance with Section 3.9 the IW CoP as follows:
   Pipe Ø 100-150 mm - HDPE, MDPE (PE80) and DI
   Pipe Ø 200-300 mm - HPPE(PE-100), HDPE, MDPE(PE-80) and DI
   PE pipes to have an SDR rating of 11 or 17 and be compliant with ISSN 1229 Part 1, 2 and 3 for plastic pipes and fittings under pressure.
   DI pipes to have a C40 pressure rating, with 16 bar fittings and be in compliance with BSEN 545.
9. Bulk meter and chamber to be agreed with DLRCC before construction commences.
10. Domestic and non-domestic meters will be supplied and installed by Irish Water.

TYPICAL DETAIL REFERENCES

DETAIL TYPE	IW STANDARD DETAILS (Rev.03)
Hydrant Chambers	STD-W-18
Thrust Blocks	STD-W-28
Bulk Water Meter	STD-W-26
Air Valve	STD-W-22
Sluice Valve	STD-W-10
Bedding/Backfilling	STD-W-13
Boundary Connection	STD-W-03
Meter Rules	STD-W-27
Scour Valve	STD-W-30

THIS IS A PRE-PLANNING DRAWING FOR APPROVAL OF THE IRISH WATER, CDS SECTION

Key Plan
A1 Scale 1:5000

A1 Scale 1:500
0m 10m 20m 30m 40m 50m

REV	DATE	DESCRIPTION
A	14/04/24	Watermain moved Street 4

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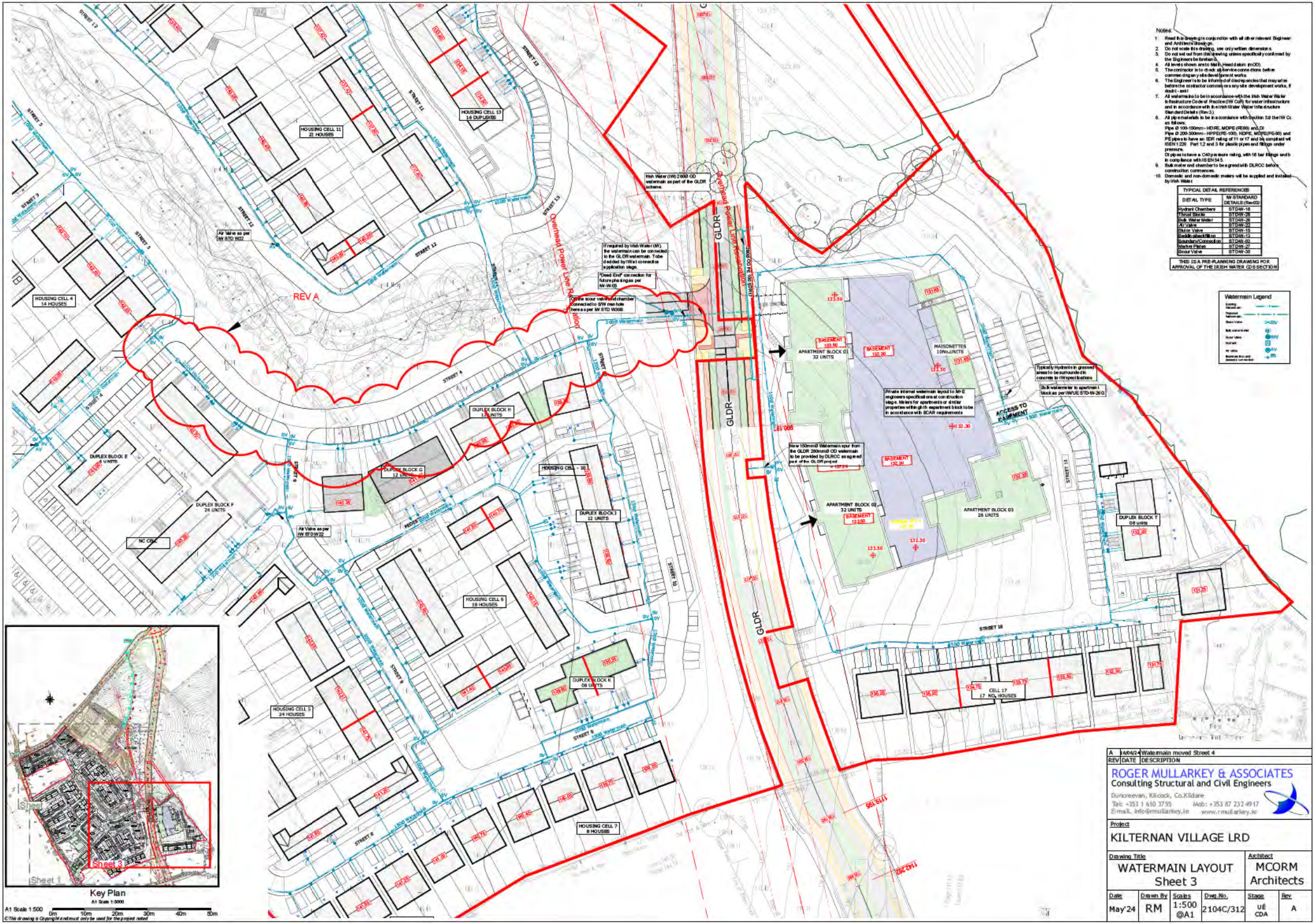
Project
KILTERNAN VILLAGE LRD

Drawing Title
WATERMAIN LAYOUT
Sheet 2

Architect
MCORM
Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
May'24	RM	1:500 @A1	2104C/311	UE CDA	A



REV	DATE	DESCRIPTION
A	14/04/24	Watermain moved Street 4

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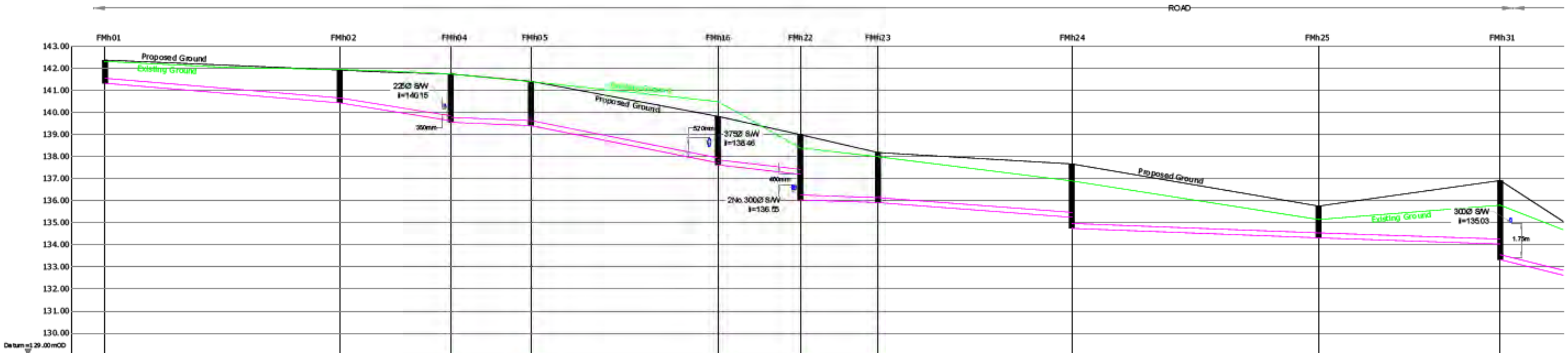
Project
KILTERNAN VILLAGE LRD

Drawing Title
WATERMAIN LAYOUT
Sheet 3

Architect
MCORM
Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
May'24	RM	1:500 @A1	2104C/312	UE CDA	A



	FMh01	FMh02	FMh04	FMh05	FMh16	FMh22	FMh23	FMh24	FMh25	FMh31
Existing Levels	142.32	141.95	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	136.90	135.15	135.80
Proposed Cover Levels	142.38	141.93	141.75	141.42	139.83	139.00	138.19	137.75	135.76	136.92
Proposed Invert Levels	141.33	140.44	139.63 / 139.55	139.41	137.72 / 137.63	137.20 / 136.04	135.92	135.25 / 134.79	134.32	134.04 / 133.33
Pipe Length	53.3	25.2m	17.8m	42.4m	24.4m	17.6m	44.1m	56.6m	41.3	26.4
Pipe Size & Gradient	150Ø @ 1/60	150Ø @ 1/31	225Ø @ 1/20	225Ø @ 1/25	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/66	225Ø @ 1/121	225Ø @ 1/150	225Ø @

Foul Longitudinal Section
FMh1 to FMh31
Vertical Scale 1:100
Horizontal Scale 1:500

Foul Notes:

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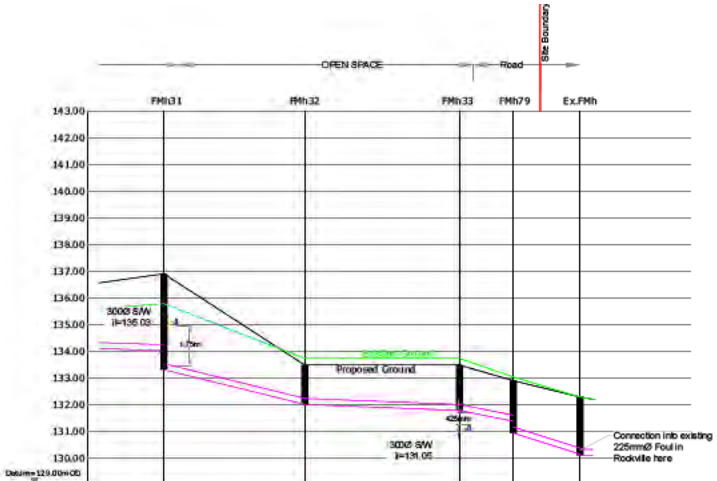
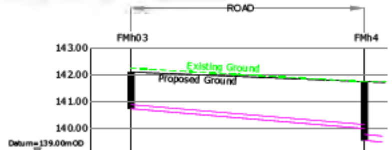
6. The Engineer is to be informed of discrepencies that may arise before the contractor commences any site development works. If in doubt - ask!
7. Manhole details and materials specification to comply Irish Water Waste water Infrastructure Standard Details document and Code of Practice.
8. Foul gravity sewers to be concrete in accordance with IWCoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipes is less than 1.2m in roads, 1.0m in public areas and 0.9m in grassed/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION



	FMh31	FMh32	FMh33	FMh79	Ex.FMh
Existing Levels	[illegible]	133.73	133.73	133.06	132.31
Proposed Cover Levels	136.92	133.50	133.50	132.91	132.31
Proposed Invert Levels	134.04 / 133.33	132.03	131.80	131.40 / 130.96	130.17 / 130.13
Pipe Length	28.4m	29.0m	10.0m	12.5m	
Pipe Size & Gradient	225Ø @ 1/20	225Ø @ 1/120	225Ø @ 1/26	225Ø @ 1/150	

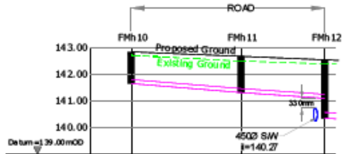
Foul Longitudinal Section
FMh31 to Outfall
Vertical Scale 1:100
Horizontal Scale 1:500



	FMh03	FMh4
Existing Levels	142.25	141.75
Proposed Cover Levels	142.11	141.75
Proposed Invert Levels	140.74	140.00 / 139.55
Pipe Length	43.7m	
Pipe Size & Gradient	150Ø @ 1/60	

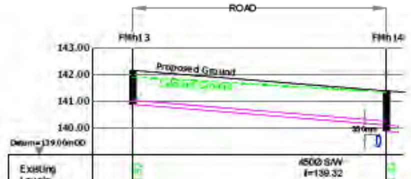
Foul Longitudinal Section
FMh03 to FMh04
Vertical Scale 1:100
Horizontal Scale 1:500

REFER TO Dwg.No.2104C/307-309 FOR PLAN ALIGNMENT OF FOUL SEWER SHOWN ON THIS DRAWING



	FMh10	FMh11	FMh12
Existing Levels	142.72	142.50	142.40
Proposed Cover Levels	142.85	142.68	142.57
Proposed Invert Levels	141.66	141.32	141.05 / 140.35
Pipe Length	20.5m	15.6m	
Pipe Size & Gradient	150Ø @ 1/60	150Ø @ 1/60	

Foul Longitudinal Section
FMh10 to FMh12
Vertical Scale 1:100
Horizontal Scale 1:500



	FMh13	FMh14
Existing Levels	[illegible]	[illegible]
Proposed Cover Levels	142.16	141.39
Proposed Invert Levels	140.89	140.11 / 139.89
Pipe Length	47.5m	
Pipe Size & Gradient	150Ø @ 1/60	

Foul Longitudinal Section
FMh13 to FMh14
Vertical Scale 1:100
Horizontal Scale 1:500

REV	DATE	DESCRIPTION

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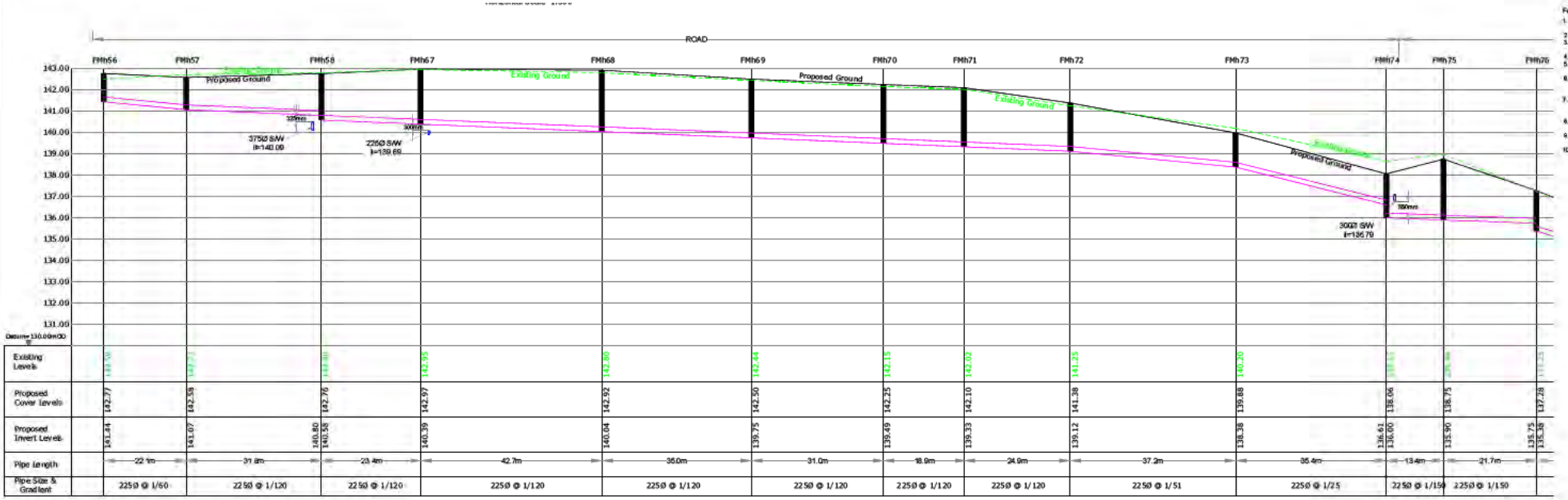
Dunderrow, Kilcock, Co.Kildare
Tel: +353 1 610 3755 Mob: +353 87 252 49 17
E-mail: info@mullarkey.ie www.rmullarkey.ie

Project
KILTERNAN VILLAGE LRD

Drawing Title
FOUL LONGITUDINAL SECTIONS- Sheet 1

Architect
MCORM Architects

Date	Drawn By	Scales	Dwg.No.	Stage	Rev
May'24	RM	As Shown @A1	2104C/330	LRD UÉ CDA	



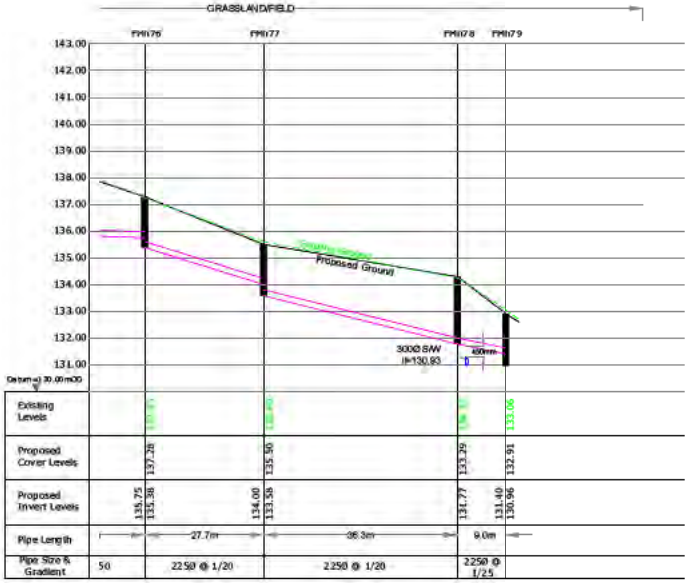
Foul Notes:

1. Read this drawing in conjunction with all other relevant Engineers and Architects drawings.
2. Do not scale this drawing, use only written dimensions.
3. Do not set out from this drawing unless specifically confirmed by the Engineer beforehand.
4. All levels shown are in Malin Head datum (mOD).
5. The Contractor is to check all service connections before commencing any site development works.
6. The Engineer is to be informed of discrepancies that may arise before the contractor commences any site development works. If in doubt - ask!
7. Maintain detail and materials specification to comply Irish Water Wastewater Infrastructure Standard Details document and Code of Practice.
8. Foul gravity sewers to be concrete in accordance with IWCoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipes is less than 1.2m in roads, 1.0m in public areas and 0.8m in grassed/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION

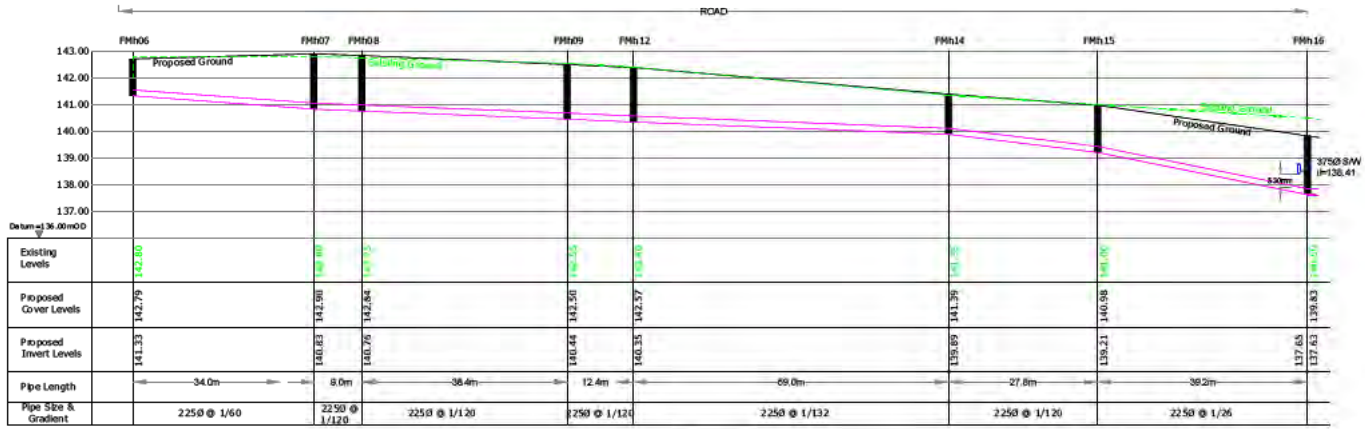
Foul Longitudinal Section
FMh56 to FMh76

Vertical Scale 1:100
Horizontal Scale 1:500



Foul Longitudinal Section
FMh76 to FMh79

Vertical Scale 1:100
Horizontal Scale 1:500



Foul Longitudinal Section
FMh06 to FMh16

Vertical Scale 1:100
Horizontal Scale 1:500

REFER TO Dwg.No.2104C/307-309 FOR PLAN ALIGNMENT OF FOUL SEWER SHOWN ON THIS DRAWING

A1 Scale 1:500 0m 10m 20m 30m 40m 50m

REV	DATE	DESCRIPTION

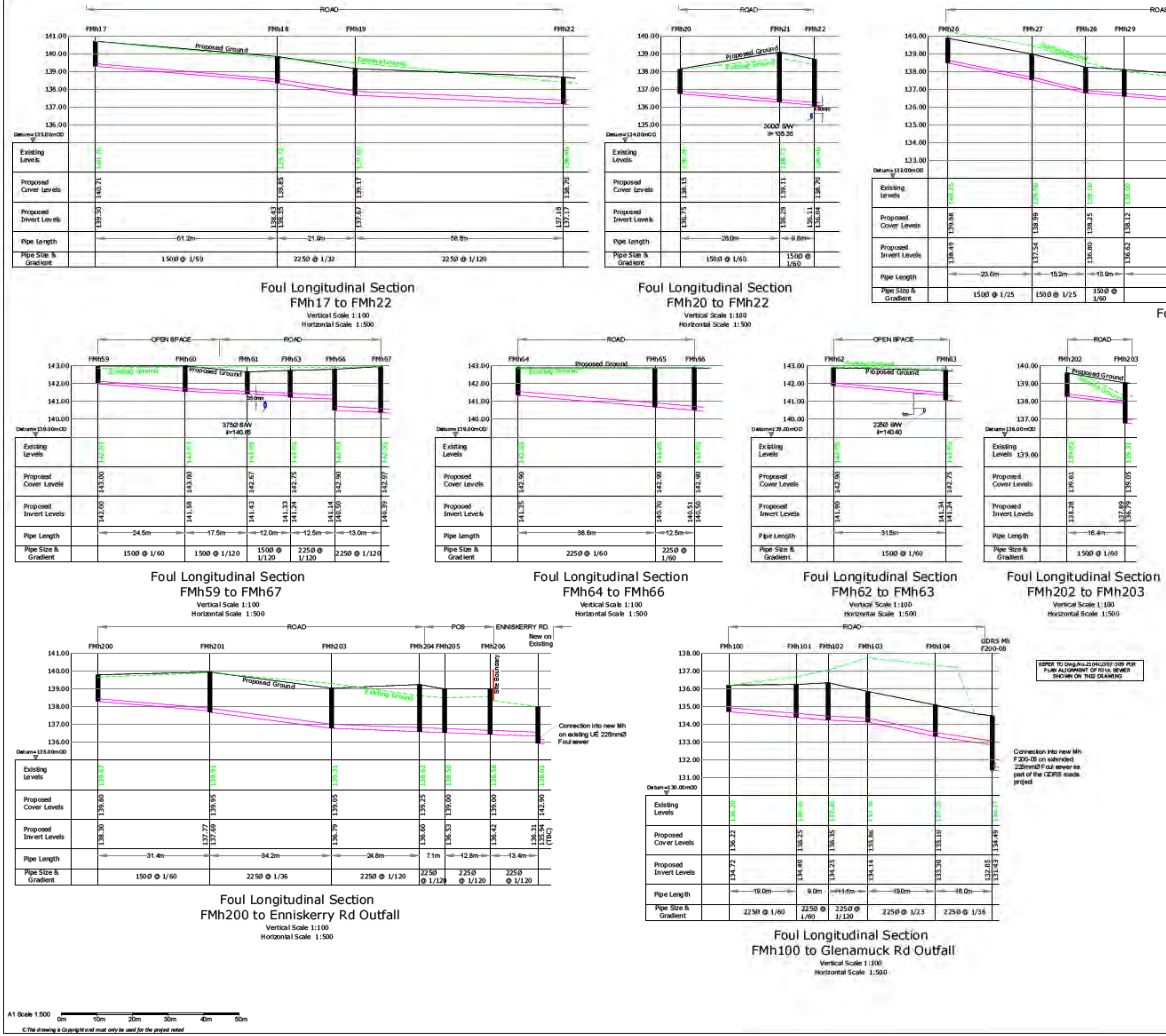
ROGER MULLARKEY & ASSOCIATES
Consulting Structural and Civil Engineers
Dunderven, Kilrock, Co.Kildare
Tel: +353 1 410 3755 Mob: +353 87 232 9817
E-mail: info@rmullarkey.ie www.rmullarkey.ie

Project
KILTERNAN VILLAGE LRD

Drawing Title
FOUL LONGITUDINAL SECTIONS- Sheet 2

Architect
MCORM Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
May'24	RM	As Shown @A1	2104C/331	LRD UE CDA	



REFER TO Dwg.No.2104C/207-209 FOR PLAN ALIGNMENT OF FOUL SEWER SHOWN ON THIS DRAWING

Foul Notes:

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8. Foul gravity sewers to be concrete in accordance with IWCoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipe is less than 1.2m to roads, 1.0m in public areas and 0.9m in grassed/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION

REV	DATE	DESCRIPTION

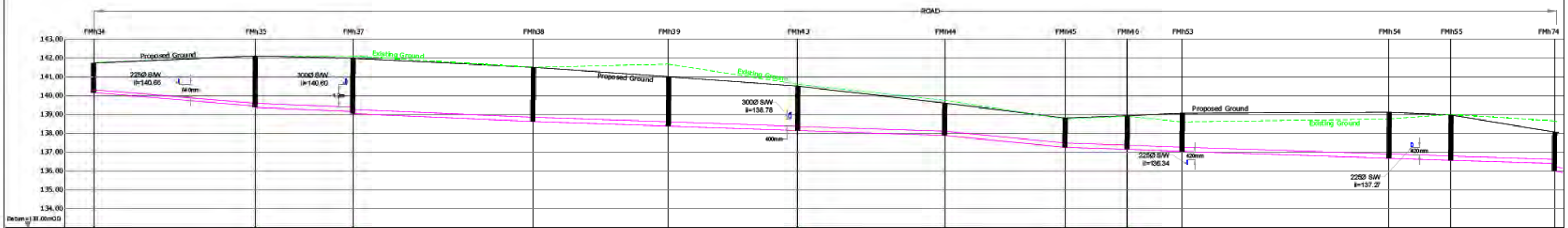
ROGER MULLARKEY & ASSOCIATES
Consulting Structural and Civil Engineers

Project: KILTERNAN VILLAGE LRD

Drawing Title: FOUL LONGITUDINAL SECTIONS- Sheet 3

Architect: MCORM Architects

Date	Drawn By	Scales	Dwg No.	Stage	Rev
May'24	RM	As Shown @A1	2104C/332	LRD UÉ CDA	



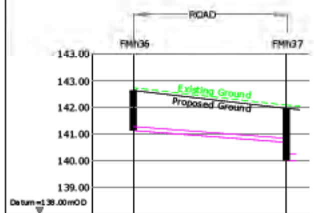
Datum=133.00mOD	FMh34	FMh35	FMh37	FMh38	FMh39	FMh43	FMh44	FMh45	FMh46	FMh53	FMh54	FMh55	FMh74
Existing Levels	[illegible]	[illegible]	[illegible]	141.50	141.67	[illegible]	[illegible]	[illegible]	[illegible]	138.60	138.75	139.00	138.65
Proposed Cover Levels	141.72	142.10	141.98	141.50	141.00	140.50	139.60	138.80	138.93	139.06	139.11	138.97	138.06
Proposed Invert Levels	140.16	139.44 / 139.37	139.15 / 139.04	138.62	138.38	138.14	137.88	137.25	137.14	137.03	136.67	136.56	136.39 / 136.00

	FMh34–FMh35	FMh35–FMh37	FMh37–FMh38	FMh38–FMh39	FMh39–FMh43	FMh43–FMh44	FMh44–FMh45	FMh45–FMh46	FMh46–FMh53	FMh53–FMh54	FMh54–FMh55	FMh55–FMh74
Pipe Length	31.4m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m	34.2m
Pipe Size & Gradient	150Ø @ 1/60	225Ø @ 1/120	225Ø @ 1/120	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/53	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/150	225Ø @ 1/150

Foul Longitudinal Section FMh35 to FMh74

Vertical Scale 1:100
Horizontal Scale 1:500

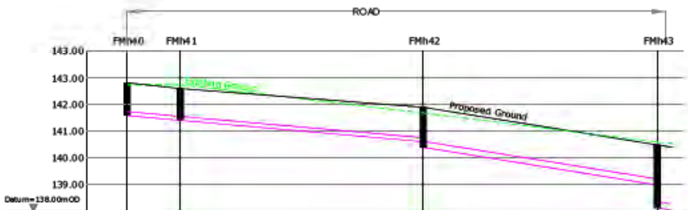
REFER TO Dwg.No.2104C/307-309 FOR PLAN ALIGNMENT OF FOUL SEWER SHOWN ON THIS DRAWING



Datum=138.00mOD	FMh36	FMh37
Existing Levels	141.75	142.10
Proposed Cover Levels	142.65	141.98
Proposed Invert Levels	141.15	140.71 / 139.04
Pipe Length	28.8m	
Pipe Size & Gradient	150Ø @ 1/60	

Foul Longitudinal Section FMh36 to FMh37

Vertical Scale 1:100
Horizontal Scale 1:500

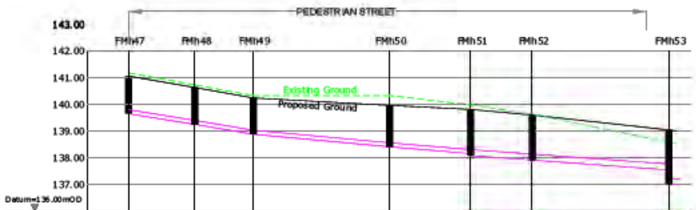


Datum=138.00mOD	FMh40	FMh41	FMh42	FMh43
Existing Levels	142.79	[illegible]	[illegible]	[illegible]
Proposed Cover Levels	142.85	142.68	141.91	140.50
Proposed Invert Levels	141.60	141.42	140.62 / 140.41	139.00 / 138.14

	FMh40–FMh41	FMh41–FMh42	FMh42–FMh43
Pipe Length	10.0m	45.8m	43.8m
Pipe Size & Gradient	150Ø @ 1/60	150Ø @ 1/57	225Ø @ 1/31

Foul Longitudinal Section FMh40 to FMh43

Vertical Scale 1:100
Horizontal Scale 1:500



Datum=136.00mOD	FMh47	FMh48	FMh49	FMh50	FMh51	FMh52	FMh53
Existing Levels	141.20	140.75	140.35	140.35	[illegible]	[illegible]	[illegible]
Proposed Cover Levels	141.08	140.65	140.26	139.98	139.83	139.62	139.06
Proposed Invert Levels	139.67	139.27	138.90	138.43	138.10	139.93	137.56 / 137.03

	FMh47–FMh48	FMh48–FMh49	FMh49–FMh50	FMh50–FMh51	FMh51–FMh52	FMh52–FMh53
Pipe Length	12.4m	10.9m	25.5m	15.3m	11.5m	25.6m
Pipe Size & Gradient	150Ø @ 1/60	150Ø @ 1/60	150Ø @ 1/58	150Ø @ 1/60	225Ø @ 1/64	150Ø @ 1/60

Foul Longitudinal Section FMh47 to FMh53

Vertical Scale 1:100
Horizontal Scale 1:500

Foul Notes:

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8. Foul gravity sewers to be concrete in accordance with IWCoP section 3.13.
9. Refer also to the Manhole details drawing provided for further information.
10. Where cover to pipes is less than 1.2m in roads, 1.0m in public areas and 0.9m in grassed/landscaped areas, surround the pipe 150mm of concrete.

THIS PLANNING DRAWING IS FOR APPROVAL BY IRISH WATER CDS SECTION

A1 Scale 1:500 0m 10m 20m 30m 40m 50m

REV	DATE	DESCRIPTION

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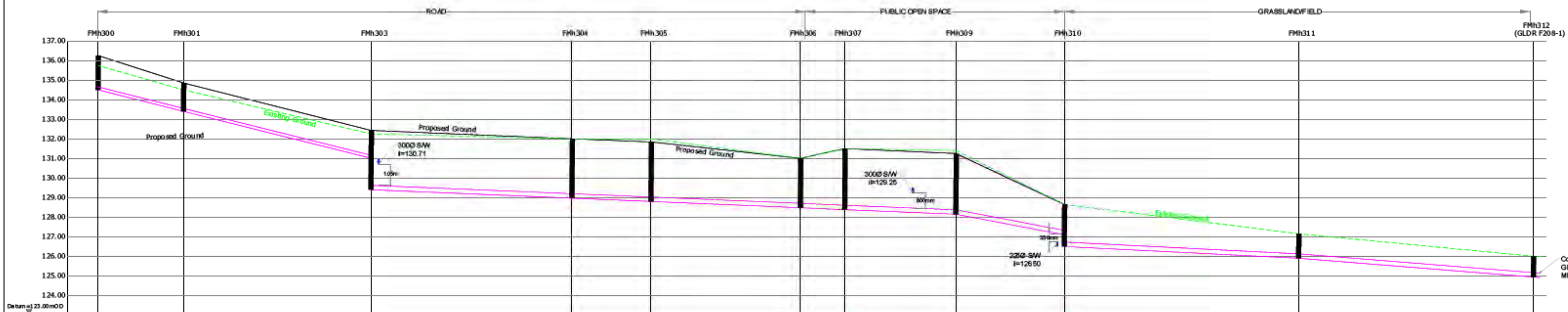
Dunshaughlin, Kilcock, Co.Kildare
Tel: +353 1 610 3755 Mob: +353 87 252 4817
Email: info@mullarkey.ie www.rmullarkey.ie

Project: KILTERNAN VILLAGE LRD

Drawing Title: FOUL LONGITUDINAL SECTIONS- Sheet 4

Architect: MCORM Architects

Date	Drawn By	Scales	Dwg.No.	Stage	Rev
May'24	RM	As Shown @A1	2104C/333	LRD UÉ CDA	



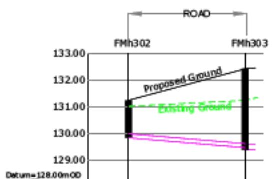
	FMh300	FMh301	FMh303	FMh304	FMh305	FMh306	FMh307	FMh309	FMh310	FMh311	FMh312
Existing Levels	135.75	134.50	132.25	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	127.15	126.00
Proposed Cover Levels	136.26	134.85	132.43	132.00	131.84	131.00	131.50	131.25	128.65	127.15	126.00
Proposed Invert Levels	134.51	133.40	131.01 / 129.40	128.97	128.80	128.48	128.38	128.15	127.10 / 126.50	125.90	124.94

Pipe	Pipe Length	Pipe Size & Gradient
FMh300–FMh301	22.0m	150Ø @ 1/20
FMh301–FMh303	47.9m	150Ø @ 1/20
FMh303–FMh304	51.4m	225Ø @ 1/120
FMh304–FMh305	20.2m	225Ø @ 1/120
FMh305–FMh306	38.2m	225Ø @ 1/120
FMh306–FMh307	11.4m	225Ø @ 1/120
FMh307–FMh309	28.4m	225Ø @ 1/120
FMh309–FMh310	27.7m	225Ø @ 1/27
FMh310–FMh311	60.0m	225Ø @ 1/100
FMh311–FMh312	60.0m	225Ø @ 1/63

Foul Longitudinal Section FMh300 to GLDR Outfall

Vertical Scale 1:100
Horizontal Scale 1:500

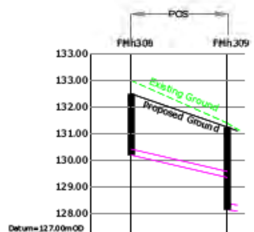
REFER TO Dwg.No.2104C/309 FOR PLAN ALIGNMENT OF FOUL SEWER SHOWN ON THIS DRAWING



	FMh302	FMh303
Existing Levels	131.03	132.25
Proposed Cover Levels	131.25	132.43
Proposed Invert Levels	129.85	129.48 / 129.40
Pipe Length	21.9m	
Pipe Size & Gradient	150Ø @ 1/20	

Foul Longitudinal Section FMh302 to FMh303

Vertical Scale 1:100
Horizontal Scale 1:500



	FMh308	FMh309
Existing Levels	133.00	131.40
Proposed Cover Levels	132.50	131.25
Proposed Invert Levels	130.20	129.36 / 128.15
Pipe Length	18.0m	
Pipe Size & Gradient	225Ø @ 1/20	

Foul Longitudinal Section FMh308 to FMh309

Vertical Scale 1:100
Horizontal Scale 1:500

Foul Notes:

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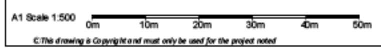
A1 Scale 1:500


REV	DATE	DESCRIPTION

ROGER MULLARKEY & ASSOCIATES
Consulting Structural and Civil Engineers

Project: KILTERNAN VILLAGE LRD

Drawing Title: FOUL LONGITUDINAL SECTIONS- Sheet 5

Architect: MCORM Architects

Date	Drawn By	Scales	Dwg.No.	Stage	Rev
May'24	RM	As Shown @A1	2104C/334	LRD UÉ CDA	

Appendix 12-3 Resource Waste Management Plan

(See Appendix 6-2)

Appendix 12-4 Energy Statement

See Appendix 8-5

Appendix 12-5 Operational Waste Management Plan

Enviroguide CONSULTING

enviroguide.ie

OPERATIONAL WASTE MANAGEMENT PLAN

PRESENTED TO

Liscove Limited
Large-Scale Residential Development at Kilternan, Dublin 18

DATE

July 24

Environmental Consultancy Services

Document Control Sheet

Client	Liscove Limited
Project Title	Large-Scale Residential Development on Lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18
Document Title	Operational Waste Management Plan

Rev.	Status	Author(s)	Reviewed by	Approved by	Issue Date
00	Draft for Internal Review	Paul Nolan *Environmental Consultant*	Charlotte Lawler-Greene *Principal Consultant*	Charlotte Lawler-Greene *Principal Consultant*	05.07.2024
01	Draft for Client Review	Paul Nolan *Environmental Consultant*	Aoife Gillen *Principal Consultant*	Aoife Gillen *Principal Consultant*	08.07.2024
02	Final for Client Issue	Paul Nolan *Environmental Consultant*	Aoife Gillen *Principal Consultant*	Aoife Gillen *Principal Consultant*	16.07.2024

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The information contained in this Report is based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate. Information obtained by Enviroguide has not been independently verified by Enviroguide, unless otherwise stated in the Report.

The methodology adopted and the sources of information used by Enviroguide in providing its services are outlined in this Report.

The work described in this Report is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances.

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Unless otherwise stated in this Report, the assessments made assume that the site and facilities will continue to be used for their current or stated proposed purpose without significant changes.

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If the scope of work includes subsurface investigation such as boreholes, trial pits and laboratory testing of samples collected from the subsurface or other areas of the site, and environmental or engineering interpretation of such information, attention is drawn to the fact that special risks occur whenever engineering, environmental and related disciplines are applied to identify subsurface conditions. Even a comprehensive sampling and testing programme implemented in accordance with best practice and a professional standard of care may fail to detect certain conditions. Laboratory testing results are not independently verified by Enviroguide and have been assumed to be accurate. The environmental, ecological, geological, geotechnical, geochemical and hydrogeological conditions that Enviroguide interprets to exist between sampling points may differ from those that actually exist. Passage of time, natural occurrences and activities on and/or near the site may substantially alter encountered conditions.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

Enviroguide Consulting has produced this Operational Waste Management Plan (OWMP) at the request of Liscove Limited for a Large-Scale Residential Development (LRD) located on lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18.

The Proposed Development consists of a mix of apartments, houses, duplexes, Commercial/retail/Community facilities, and a crèche facility. A full project description is included in Section 3 of this report.

The OWMP has been prepared to ensure that the management of waste during the operational phase of the Proposed Development is undertaken in accordance with current legal and industry standards including the 'Waste Management Act 1996, as amended', and associated Regulations including, 'Protection of the Environment Act 2003 as amended', 'Litter Pollution Act 1997 as amended', the 'National Waste Management Plan for a Circular Economy 2024-2030' and 'Dún Laoghaire-Rathdown County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws, 2019' (hereinafter referred to as 'the bye-laws').

The plan will be subject to review if a planning permission is granted and any material-changes in the proposed operational strategy will be subject to agreement with Dun Laoghaire-Rathdown County Council at project construction and operational stages.

This OWMP aims to provide a detailed plan for the storage, handling, collection, and transport of the wastes generated at the development in a manner that does not present a risk to human health or the environment, or a risk of common waste related nuisance such as litter or odour.

The OWMP is designed to ensure that waste arising from the operational phase of the project is managed to incentivise waste prevention and to encourage the segregation of waste so that it can be managed in accordance with the Waste Hierarchy. Diversion of waste from landfill and waste prevention will be the overarching philosophy adopted. The plan estimates the type and quantity of waste to be generated from the Proposed Development during the operational phase and provides a strategy for managing the different waste streams.

This OWMP considers the requirements of national and regional waste policy, legislation, and other local authority guidelines. In addition, it takes account of the following guidance:

- *"Sustainable Urban Housing: Design Standards for New Apartments", July 2023* and
- *BS 5906:2005 Waste management in buildings — Code of practice*

2 OVERVIEW OF WASTE MANAGEMENT IN IRELAND

Operational Waste Management Plans are prepared to support planning applications in Ireland. The purpose of this Operational Waste Management Plan is to detail and plan how waste generated during the operational phase of the Proposed Development will be managed. This will include requirements for waste storage provisions, access to authorised waste collection and proximity to additional recycling facilities.

The Proposed Development is located in the Dun Laoghaire-Rathdown County Council (DLRCC) planning district. In preparing this document, consideration has been given to the requirements of the DLRCC Environment Department, national and regional waste policy, legislation, and other Local Authority Guidelines.

2.1 European and Irish Legal Context

Waste Legislation in Europe and the Republic of Ireland (hereinafter referred to as “Ireland”) is extensive and often complex.

The Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste) is a core component of waste regulations across Europe. The Waste Framework Directive (which was transposed into Irish law in 2011) ‘S.I. No. 126/2011 - European Communities (Waste Directive) Regulations 2011’, encourages the prevention, recycling, and processing of waste. The Waste Framework legislation establishes the legal structure for the prevention and management of waste in Ireland. It sets out a Waste Hierarchy which priorities waste prevention, preparation for re-use, recycling, and energy recovery. Waste disposal is the last resort and least favourable option. The Directive requires Member States to adopt waste management plans and waste prevention programmes. It also governs the reporting on waste generation, waste treatment, and capacity and sets down mandatory targets for waste diversion, collection, and treatment.

The new WFD (Directive (EU) 2018/851 of the European Parliament, amending Directive 2008/98/EC on waste) was approved by the EU in July 2018, and was transposed into Irish Law in July 2020. The new WFD forms part of the circular Economy Package adopted by the EU; it requires EU Member States to improve their waste management systems, to improve the efficiency of resource use, and to ensure that waste is valued as a resource.

In Ireland, the primary platform for waste legislation is the ‘Waste Management Act 1996, as amended’, and the ‘Protection of the Environment Act 2003, as amended’. ‘The Waste Management Act, as amended’, has been brought into effect by making a series of subordinate regulations, covering a range of specific ‘priority’ waste types such as food waste, waste electrical and electronic equipment, batteries etc. The Act has been further amended by enacting regulations, mainly the Waste Directive Regulations which addresses new EU environmental initiatives and strengthen areas where problems have arisen.

One of the guiding principles of European waste legislation, which has in turn been incorporated into the ‘Waste Management Act, as amended’, and subsequent Irish legislation, is the principle of “Duty of Care”. This implies that the waste producer is responsible for waste from the time it is generated until its legal disposal (including its method of disposal).

As it is not practical in most cases for the waste producer to physically transfer all waste from where it is produced to the final waste treatment destination, waste contractors will be employed to physically transport waste to the final waste destination. It is therefore imperative that residential development management companies undertake on-site management of waste in accordance with all legal requirements and employ appropriately authorised waste contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport, and reuse/recover/recycle/dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

Each appointed Waste Contractor must hold a valid waste collection permit to transport waste which is issued by the National Waste Collection Permit Office (NWCPO). Waste treatment facilities must also be appropriately permitted (Waste Facility Permit or Certificate of Registration) or licensed by the Local Authority or Environmental Protection Agency to accept the waste. The Management Company appointed will be responsible for ensuring that all Waste Contractors hold the appropriate authorisations.

2.2 Waste Policy in Ireland

In addition to waste regulations, Ireland has adopted waste management policies. Waste management policy is adopted by the government and is detailed in a set of policy documents which have been produced since 1998:

- Waste Management: Changing Our Ways (1998)
- Preventing and Recycling Waste: Delivering Change (2002)
- Taking Stock & Moving Forward (2004)
- National Strategy on Biodegradable Waste Management (2006)
- A Resource Opportunity – Waste Management Policy in Ireland (2012)
- A Waste Action Plan for a Circular Economy (2020)

'A Waste Action Plan for a Circular Economy: Ireland's National Waste Policy 2020-2025' was published by the Department of Communications, Climate Action and Environment in September 2020. This policy sets out a number of important policy actions with the aim of transforming the current economic and waste system from linear to circular. These include the following actions:

- A shift towards a policy framework which rewards circularity and moves away from the waste of resources.
- Increased accountability of products that producers place on the market through levies on non-recyclable waste and the overuse of packaging.
- Targets for recycling (65% by 2035), food waste (reduced by 50% by 2030) and waste to landfill (no more than 10% by 2035).
- To support households, awareness and education measures will be strengthened; the waste collection industry will be encouraged to play a role in such measures.
- All Regional Waste Management Plans will be replaced with a National Waste Management Plan for a Circular Economy.
- A standardising of the colour coding of bins (Mixed Municipal Waste (MMW) / General Waste to be designated as a 'recovery' bin: colour black; Dry Mixed Recyclables (DMR)

bin: colour green; Glass bin: colour blue, Organic (food) Waste bin to be designated as ‘organic waste recycling bin’: colour brown).

2.3 National Waste Management Plan & Local Bye-laws

The National Waste Management Plan for a Circular Economy 2024 -2030 sets out the framework for the prevention and management of waste across Ireland. This document is a statutory document underpinned by national and EU waste legislation.

The strategic vision of the Plan is to rethink the approach to managing waste, and to move towards a 'circular economy' approach where resources are reused or recycled as much as possible and the overall generation of waste is minimised.

In order to achieve this vision, the Plan has set out a number of specific and measurable performance targets:

- Achieve a recycling rate of 55% by 2025, 60% by 2030 and 65% by 2035
- Mitigate total waste growth to 0% growth per person over the life of the Plan (baseline for total waste generated per person per year is 2.7 tonnes based on NWCPO data).
- 6% aggregate reduction in all residual municipal waste by 2030 (including commercial and household) (Baseline 0.37 tonnes rMSW per person).
- Reduce contamination in municipal bins. This is measured as ‘material compliance’ which is the fraction of appropriate material placed in each of the residual, recyclable or food waste recycling bins.
    - A material compliance target of 90% in the dry recycling bin as a minimum standard.
    - A target of 10% per annum increase in material compliance in the residual bin is applied in this Plan. This represents a potential 90% material compliance rate by the end of 2030.

The relevant Priority Actions identified by the Plan in regard to the management of Municipal Household Waste are as follows:

- *“Maximise households on kerbside systems, standardise the identification of bins and promote items accepted for recycling using visual representation.”*
- *“Identify appropriate segregated waste collection systems for apartments and mixed-use developments and support the waste industry in the implementation of these systems.”*

The Dun Laoghaire-Rathdown County Council Storage, Presentation and Collection of Household and Commercial Waste Bye-Laws 2019 (hereinafter referred to as ‘the bye-laws’) place some additional obligations in how waste is stored and managed at the development. The bye-laws state that “A management company of an apartment complex shall ensure that

adequate numbers of waste containers are available for use by holders of waste in such complex for residual waste, dry recyclable waste and biological waste (where a collection service for such waste fraction is provided)." The number of bins to be provided at this development are further detailed in Section 4.3 of this report.

The bye-laws state the waste is to be separated at source. Any such separated recyclable waste shall not be deposited into a container designated for residual household kerbside waste and no such residual waste shall be deposited into a container designated for recyclable household kerbside waste. Food waste arising must also be separated at source.

Section 8(h) of the bye-laws state "A management company of an apartment complex shall ensure that adequate access and egress is available for refuse freighters collecting waste from such a complex" for the collection of waste. This requirement has been taken into account when designing the development. Sufficient access and egress for waste collection vehicles will be provided.

This OWMP also takes into account the objectives of Chapter 10 of the Dún Laoghaire-Rathdown County Development Plan 2022 – 2028:

Policy Objective EI11: Resource Management "It is a Policy Objective to implement the Eastern-Midlands Region Waste Management Plan 2015-2021 and subsequent plans, in supporting the transition from a waste management economy towards a circular economy, to enhance employment and increase the value recovery and recirculation of resources. Underpinning this objective is the requirement to conform to the European Union and National Waste Management Hierarchy of the most favoured options for waste as illustrated below subject to economic and technical feasibility and Environmental Assessment. (Consistent with RPO 10.25 of the RSES)."

Policy Objective EI12: Waste Management Infrastructure, Prevention, Reduction, Reuse and Recycling (Circular Economy approach) "To ensure new developments are designed and constructed in line with the Council's Guidelines for Waste Storage Facilities"

Dún Laoghaire-Rathdown County Council released a Guidance Note in February 2020, "Guidance Notes for Waste Management in Residential and Commercial Developments". This document sets out requirements for Common Waste Storage Areas design, Waste related requirements within Residential Units, Initial Waste Management, and Waste Collection systems. This document has been consulted in the formulation of the Operational Waste management Plan.

3 DESCRIPTION OF THE PROJECT

3.1 Description of the Development

The development site is located on lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18.

The Proposed Development is for the construction of a Large-Scale Residential Development on 2 No. sites, measuring c. 14.2 Ha., which will be separated by the future Glenamuck Distributer Link Road (GLDR). The western site principally comprises lands at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18, which include a derelict dwelling known as 'Rockville' and associated derelict outbuildings, Enniskerry Road, Kilternan, Dublin 18, D18 Y199 and the former Kilternan Country Market, Enniskerry Road, Kilternan, Dublin 18, D18 PK09. The western site is generally bounded by the Glenamuck Road to the north; the Sancta Maria property to the north, west and south; a recently constructed residential development named "Rockville" to the north-east; the Enniskerry Road to the south-west; dwellings to the south; and the future GLDR to the east. The eastern site is generally bound by dwellings to the south; the future GLDR to the west; and greenfield land to the north and east.

Road works are proposed to facilitate access to the development from the Enniskerry Road; to the approved Part 8 Enniskerry Road/Glenamuck Road Junction Upgrade Scheme on Glenamuck Road (DLRCC Part 8 Ref. PC/IC/01/17); and to the approved Glenamuck District Roads Scheme (GDRS) (ABP Ref. HA06D.303945) on the Glenamuck Link Distributor Road (GLDR). Drainage and potable water infrastructure is proposed to connect to services on the Glenamuck Road, Enniskerry Road and the GLDR.

At the 'Rockville access point', works are proposed to provide a multi-modal access, including a vehicular connection between the proposed development and the Rockville development (permitted under DLR Reg. Ref. D18A/0566). The new access will require the removal of the existing as-built hammerhead turning area at Rockville to create this new connection. The residual hammerhead area will be landscaped to tie into the adjoining landscape strategy. The above works are inclusive of all necessary tie-in works such as new kerbs, drainage details, road marking, signage, and public lighting.

The development will principally consist of: the demolition of c. 740 sq m of existing structures on site comprising a derelict dwelling known as 'Rockville' and associated derelict outbuildings (c. 573 sq m) and the former Kilternan Country Market (wooden structure) (c. 167 sq m); and the provision of a mixed-use development principally consisting of 487 No. residential units (196 No. houses, 201 No. duplex units and 90 No. apartments) and a Neighbourhood Centre. The western site will comprise 362 No. residential units and the Neighbourhood Centre, which will provide an anchor retail store (c. 1,310 sq m), retail/commercial (c. 3,284 sq m), a restaurant (c. 182 sq m), a creche (c. 691 sq m), café (c. 326 sq m), and a community facility (c. 332 sq m), and the eastern site will comprise 125 No. residential units. The 487 No. residential units will consist of 53 No. 1 bedroom units (35 No. apartments and 18 No. duplexes), 150 No. 2 bedroom units (38 No. houses, 16 No. apartments and 96 No. duplexes), 236 No. 3 bedroom units (110 No. houses, 39 No. apartments and 87 No. duplexes) and 48 No. 4 bedroom units (48 No. houses). The proposed development will range in height from 2

No. to 4 No. storeys (including podium/undercroft level in Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U on the eastern site).

The development also provides: a pedestrian/cycle route through the Dingle Way from Enniskerry Road to the future Glenamuck Link Distributor Road; 854 No. car parking spaces (125 No. in the undercroft of Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U and 729 No. at surface level) including 28 No. mobility impaired spaces, 87 No. electric vehicle spaces, 2 No. car share spaces, and 4 No. drop-off spaces/loading bays; motorcycle parking; bicycle parking; bin storage; provision of new telecommunications infrastructure at roof level of the Neighbourhood Centre including shrouds, antennas and microwave link dishes (18 No. antennas, all enclosed in 9 No. shrouds and 6 No. transmission dishes, together with all associated equipment); private balconies, terraces and gardens; hard and soft landscaping; sedum roofs; solar panels; boundary treatments; lighting; substations; plant; and all other associated site works above and below ground. The proposed development has a gross floor area of c. 60,504 sq m above ground, in addition to an undercroft/basement (c. 4,485 sq m) containing car parking, bike storage, bin storage and plant under Apartment Blocks 1, 2 and 3 and Duplex Blocks T and U on the eastern site.

The Operational Waste Management Plan addresses waste management for the development once it is operational i.e., post the construction phase.

3.2 Proximity of the Development to Recycling Facilities

The development site is located at Wayside, Enniskerry Road and Glenamuck Road, Kilternan, Dublin 18. Figure 3-1 presents the proximity of the development site to local bring bank facilities. There is a large civic amenity centre in Carrickmines servicing the Kilternan area, with numerous bring banks throughout the region for glass bottle collection.

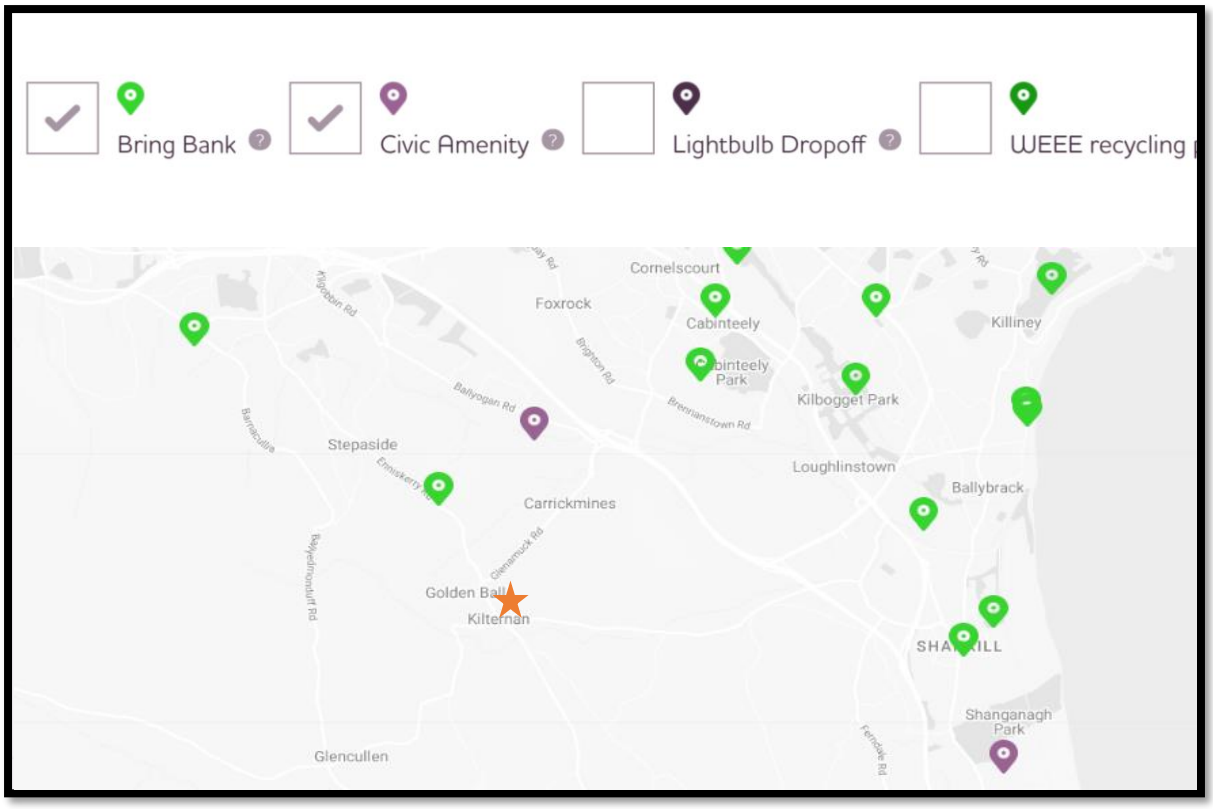

Figure 3-1 Bring Banks and Civic Amenity Recycling Centre Located in proximity to the Proposed Development (Source: Repak), site location identified with an orange star.

4 WASTE GENERATION AND STORAGE

4.1 List of Waste Codes

Correct classification of waste is the foundation for ensuring that the collection, transportation, storage, and treatment of waste is carried out in a manner that provides protection for the environment and human health and in compliance with legal requirements. In 1994, the '*European Waste Catalogue'* was published by the European Commission. In 2002, the EPA published a document titled the '*European Waste Catalogue and Hazardous Waste List*'. This document has been replaced by the EPA '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous'* which became valid from the 1st of July 2018.

The waste classification system applies across the EU and is the basis for all national and international waste reporting obligations such as those associated with waste collection permits, certificates of registration, waste facility permits and EPA Waste and IED licences and EPA National Waste Database.

The EPA document '*Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018)* consolidates the legislation and allows the generators of waste to classify the waste as hazardous or non-hazardous and in the process to assign the correct List of Waste entry.

Under the classification system, different types of wastes are fully defined by a code. The List of Waste (LoW) code (previously referred to as European Waste Code or EWC) for typical waste materials expected to be generated during the operation of the Proposed Development are provided in Table 4-1.

Table 4-1 Expected Waste Types and List of Waste Codes

Waste Description	List of Waste Code
Mixed Municipal Waste	20 03 01
Dry Mixed Recyclables	20 03 01
Biodegradable Kitchen Waste	20 01 08
Glass	20 01 02
Bulky wastes	20 03 07
Waste electrical and electronic equipment*	20 01 35* 21 01 36
Batteries and accumulators*	20 01 33* 20 01 34
Textiles	20 01 11
Fluorescent tubes and other mercury containing waste*	20 01 21
Chemicals (solvents, pesticides, paints & adhesives, detergents, etc.)*	20 01 13/19/27-28/29-30

Plastic	20 01 39
Metals	20 01 40
Paper and Cardboard	20 01 01

**Individual waste type may contain hazardous materials*

4.2 Residential

4.2.1 Waste Types Arising

The predicted waste types that will be generated at the Proposed Developments residential units include the following:

i. Mixed Municipal Waste (MMW) / General Waste;
ii. Dry Mixed Recyclables (DMR) - including cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
iii. Organic (food) Waste; and
iv. Glass.

In addition to the typical waste materials that will be generated daily, there will be some additional waste types generated in small quantities that will need to be managed separately including:

- Bulky wastes – including furniture, carpets, mattresses;
- Waste electrical and electronic equipment (WEEE);
- Batteries;
- Textiles – clothes or soft furnishings;
- Light bulbs or fluorescent tubes;
- Chemicals – old medicines, paints, detergents; and
- Waste oil - cooking oil.

4.2.2 Waste Storage Capacity Requirements

4.2.2.1 Houses

The following housing types and numbers will be provided the development:

Table 4-2 No. of Houses and types

House Type	Description	No. Beds	Access	No.
A1	Semi Detached	4	Ground Floor	15
A2	Semi Detached, Side entry	4	Ground Floor	5
A3	Detached	4	Ground Floor	1
C1	Semi Detached/Terrace	3	Ground Floor	52
C2	Mid Terrace	3	Ground Floor	42
C3	Semi Detached/Terrace, side entry	3	Ground Floor	8

C4	Terrace, side entry	4	Ground Floor	2
D1	Semi Detached	4	Ground Floor	5
D2	Semi Detached	3	Ground Floor	5
E	Semi Detached	4	Ground Floor	15
E1	Semi Detached	4	Ground Floor	1
F	Semi Detached, Side entry	4	Ground Floor	3
F1	Semi Detached	4	Ground Floor	1
H2	Terrace	2	Ground Floor	25
H3	Terrace, side entry	2	Ground Floor	13
J	Semi Detached/Terrace	3	Ground Floor	3

The number of bedrooms is required to complete the calculations of waste volumes generated as per the *BS 5906:2005 Waste management in buildings — Code of practice.* The calculation for typical weekly waste arisings and subsequent storage requirements for domestic dwellings is as follows:

number of dwellings × {(volume arising per bedroom [70 L] × average number of bedrooms) + 30}[a]

[a] *Based on average household occupancy.*

Table 4-3 below includes the calculations of waste arising using the formula provided in the *BS 5906:2005 Waste management in buildings — Code of practice.* Table 4-3 details the number of dwellings for each accommodation type. The volume arising per bedroom is assumed to be 70 litres (L) as per the calculation formula provided. An additional 30L is added onto every dwelling for each calculation. It is expected that this additional volume is to allow for sufficient storage capacity in periods of seasonal variations resulting in high waste generation. The total volume of waste generated weekly from the houses is 47,770L per week, or an average of 240L per house per week.

Table 4-3 Estimated Waste Volumes for Houses

House Type	No. of dwellings	Volume waste generated per Bedroom (70L)	No. of Bedrooms	Additional 30L	Total Litres All Units	Total Litres Per Unit per week
2 Bed House	38	70	2	30	**6,460**	**170**
3 Bed House	110	70	3	30	**26,400**	**240**
4 Bed House	48	70	4	30	**14,880**	**310**
Total dwellings	**196**			**Total litres**	**47,770**	**240**

4.2.2.2 Apartments and Duplexes

For the apartment and duplex buildings, it is necessary to calculate the required bin storage capacity based on the number of units and the number of bedrooms in each unit. The capacity requirements have been based on a worst-case scenario of full occupancy and collections of

bins every week. It should be noted that this leaves scope for increased frequency of collections should this ever be required.

Table 4-4 Description and Number of Apartments and Duplexes

	1 BED	2 BED	3 BED	Total
Duplex Block A	0	8	4	12
Duplex Block B	3	1	4	8
Duplex Block C	0	3	2	5
Duplex Block D	0	2	4	6
Duplex Block E	3	0	3	6
Duplex Block F	1	12	11	24
Duplex Block G	0	6	6	12
Duplex Block H	0	6	6	12
Duplex Block J	0	6	6	12
Duplex Block K	0	4	4	8
Duplex Block L	0	8	8	16
Duplex Block M & N	0	8	8	16
Duplex Block P	0	5	5	10
Duplex Block Q	0	4	4	8
Duplex Block R	0	6	6	12
Duplex Block S	6	8	2	16
Duplex Block T	0	4	4	8
Apartment Blocks 1,2,3 & Duplex Block U	40	21	39	100
Total	**53**	**112**	**126**	**291**

The British Standard BS5906:2005 *Waste management in buildings — Code of practice* provides guidance in respect of waste generation for domestic and commercial premises to calculate the storage, containment, and equipment requirements for effective waste management. Calculations provided in this British Standard document have been used to calculate the waste storage capacity requirements for the apartments and duplexes in this Proposed Development. Table 4-4 details the Schedule of Accommodation for apartments and duplexes.

The number of bedrooms is required to complete the calculations of waste volumes generated as per the *BS 5906:2005 Waste management in buildings — Code of practice.*

The calculation for typical weekly waste arisings and subsequent storage requirements for domestic dwellings is as follows:

number of dwellings × {(volume arising per bedroom [70 L] × average number of bedrooms) + 30}[a]

[a] *Based on average household occupancy.*

Table 4-5 below includes the calculations of waste arising using the formula provided in the *BS 5906:2005 Waste management in buildings — Code of practice.* Table 4-5 details the number of bins required to service the volume of waste arisings. The volume arising per

bedroom is assumed to be 70 litres (L) as per the calculation formula provided. An additional 30L is added onto every dwelling for each calculation. It is expected that this additional volume is to allow for sufficient storage capacity in periods of seasonal variations resulting in high waste generation.

Table 4-5 Estimated Waste Volumes for Apartments and Duplexes

Block A					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**8**	**70**	2	**30**	**1,360**
3 Bed	**4**	**70**	3	**30**	**960**
	12		**Total Litres**		**2,320**
Block B					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**3**	**70**	1	**30**	**300**
2 Bed	**1**	**70**	2	**30**	**170**
3 Bed	**4**	**70**	3	**30**	**960**
	8		**Total Litres**		**1,430**
Block C					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**3**	**70**	2	**30**	**510**
3 Bed	**2**	**70**	3	**30**	**480**
	5		**Total Litres**		**990**
Block D					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**2**	**70**	2	**30**	**340**
3 Bed	**4**	**70**	3	**30**	**960**
	6		**Total Litres**		**1,300**
Block E					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**3**	**70**	1	**30**	**300**
2 Bed	**0**	**70**	2	**30**	**0**
3 Bed	**3**	**70**	3	**30**	**720**
	6		**Total Litres**		**1,020**

Block F					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**1**	**70**	1	**30**	**100**
2 Bed	**12**	**70**	2	**30**	**2,040**
3 Bed	**11**	**70**	3	**30**	**2,640**
	24		**Total Litres**		**4,780**
Block G					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**6**	**70**	2	**30**	**1,020**
3 Bed	**6**	**70**	3	**30**	**1,440**
	12		**Total Litres**		**2,460**
Block H					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**6**	**70**	2	**30**	**1,020**
3 Bed	**6**	**70**	3	**30**	**1,440**
	12		**Total Litres**		**2,460**
Block J					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**6**	**70**	2	**30**	**1,020**
3 Bed	**6**	**70**	3	**30**	**1,440**
	12		**Total Litres**		**2,460**
Block K					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**4**	**70**	2	**30**	**680**
3 Bed	**4**	**70**	3	**30**	**960**
	8		**Total Litres**		**1,640**
Block L					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**8**	**70**	2	**30**	**1,360**
3 Bed	**8**	**70**	3	**30**	**1,920**
	16		**Total Litres**		**3,280**

Block M & N					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**8**	**70**	2	**30**	**1,360**
3 Bed	**8**	**70**	3	**30**	**1,920**
	16		**Total Litres**		**3,280**

Block P					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**5**	**70**	2	**30**	**850**
3 Bed	**5**	**70**	3	**30**	**1,200**
	10		**Total Litres**		**2,050**

Block Q					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**4**	**70**	2	**30**	**680**
3 Bed	**4**	**70**	3	**30**	**960**
	8		**Total Litres**		**1,640**

Block R					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**6**	**70**	2	**30**	**1,020**
3 Bed	**6**	**70**	3	**30**	**1,440**
	12		**Total Litres**		**2,460**

Block S					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**6**	**70**	1	**30**	**600**
2 Bed	**8**	**70**	2	**30**	**1,360**
3 Bed	**2**	**70**	3	**30**	**480**
	16		**Total Litres**		**2,440**

Block T					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**0**	**70**	1	**30**	**0**
2 Bed	**4**	**70**	2	**30**	**680**
3 Bed	**4**	**70**	3	**30**	**960**
	8		**Total Litres**		**1,640**

Apartment Blocks 1,2,3 & Duplex Block U					
Type	**No. of dwellings**	**Volume per Bedroom (70L)**	**No. of Bedrooms**	**Additional 30L**	**Total Litres /Unit/Week**
1 Bed	**40**	**70**	1	**30**	**4,000**
2 Bed	**21**	**70**	2	**30**	**3,570**
3 Bed	**39**	**70**	3	**30**	**9,360**
	100		**Total Litres**		**16,930**
Total Weekly waste arising, (Apartments and Duplex's) in Litres					**54,580**

The calculations completed in Table 4-5 conclude that the typical weekly waste arising is 54,580L.

Based on weekly waste collections, there would therefore be a requirement to accommodate storage for a volume of 54,580L, or the equivalent of 50 no. 1,110L wheeled bins.

Based on weekly waste collections, it is anticipated that 32 no.1,100L bins, 27 no. 660L bins, 20 no. 240L bins and 26 no. 140L bins (or equivalent) will be required in the waste storage areas as detailed in Table 4-6 below (15 no. 1,100L bins and 9 no. 660L bins for Mixed Municipal Waste (MMW), 17 no. 1,100L bins and 18 no. 660L bins for Dry Mixed Recyclables (DMR), 10 no. 140L bins and 15 no. 240L bins for Organic (food) Waste, and 16 no. 140L bins and 5 no. 240L bins for Glass). The percentage of recyclable and non-recyclable wastes are set out in Table 4-7.

Table 4-6 Breakdown of Bin Numbers & Capacity for Weekly Collections (Apartments and Duplexes)

No. of Bins	Size of Bins	Total Litre Capacity	Waste Type
16	140	2,240	Glass
5	240	1,200	Glass
10	140	1,400	Organic (food) Waste
15	240	3,600	Organic (food) Waste
18	660	11,880	Dry Mixed Recyclables (DMR)
17	1,100	18,700	Dry Mixed Recyclables (DMR)
9	660	5,940	Mixed Municipal Waste (MMW)
15	1,100	16,500	Mixed Municipal Waste (MMW)
TOTAL		**61,460**	

Table 4-7 Breakdown of Waste Storage Capacity into Recyclable and Non-Recyclable (Apartments and Duplexes)

		Waste Types to be Generated								Total Storage Volume Required per WSA
		Glass		Organic (food) Waste		Dry Mixed Recyclables (DMR)		Mixed Municipal Waste (MMW)		
WSA ID	Total No. of Units	Bin Capacity (l)	No. bins required	Bin Capacity (l)	No. bins required	Bin Capacity (l)	No. bins required	Bin Capacity (l)	No. bins required	
Apartment Blocks 1,2,3 & Duplex Block U	100	240	4	240	6	1,100	8	1,100	6	17,800
Duplex Block T	8	140	1	140	1	1,100	1	660	1	2,040
Duplex Block G	12	140	1	240	1	660	2	1,100	1	2,800
Duplex Block H	12	140	1	240	1	660	2	1,100	1	2,800
Duplex Block J	12	140	1	240	1	660	2	1,100	1	2,800
Duplex Block K	8	140	1	140	1	1,100	1	660	1	2,040
Duplex Block E	6	140	1	140	1	660	1	660	1	1,600
Duplex Block F	24	240	1	240	2	1,100	2	1,100	2	5,120
Duplex Block A	12	140	1	140	2	660	2	660	1	2,400
Duplex Block B	8	140	1	140	1	660	1	660	1	1,600
Duplex Block C	5	140	1	140	1	660	1	660	1	1,600
Duplex Block D - Mixed use Block	6	140	1	140	1	660	1	660	1	1,600
Duplex Block L	16	140	1	240	1	1,100	2	1,100	1	3,680
Duplex Blocks M & N	16	140	1	240	1	1,100	2	1,100	1	3,680
Duplex Block P	10	140	1	140	1	660	2	660	1	2,260
Duplex Block Q	8	140	1	140	1	1,100	1	660	1	2,040
Duplex Block R	12	140	1	240	1	660	2	1,100	1	2,800
Duplex Block S	16	140	1	240	1	660	2	1,100	1	2,800
		3,440		**5,000**		**30,580**		**22,440**		**61,460**
% Of waste type		**5.6%**		**8.1%**		**49.8%**		**36.5%**		**100.00%**
		63%						37%		

The total capacity of the number of bins actually provided is 61,460L (or the equivalent of just under 56 no. 1100L wheeled bins) which exceeds the required capacity for weekly collections.

On this basis, the bin storage capacity comfortably allows for weekly collections which is more efficient, leaving adequate contingency to increase collection frequency should that be required during unusually high-volume periods such as Christmas.

4.2.3 Waste Storage Arrangements

4.2.3.1 Houses

All houses are provided with rear gardens. All houses have space within the curtilage of the dwelling to facilitate a three-bin system for the collection in standard 240 litre wheelie bins for Mixed Municipal Waste (MMW) / General Waste, Dry Mixed Recyclables (DMR) and 120 litre wheelie bins for Organic (food) Waste. The bins provided will be typical of the widely rolled out “three bin system” which is provided as standard by the waste management contractor, conforming to the requirements for residents to source segregate organic and recyclable waste from the non-recyclable waste stream.

It is concluded that adequate capacity is provided for the estimated volume of waste arising at each dwelling (as detailed in Table 4-3), through the provision of ample storage space for a three wheelie bin collection system of approximately 600 litre capacity with space for larger bins if required, based on fortnightly collections, and taking into account that glass bottles generated will be recycled by the occupants at nearby bring bank facilities.

4.2.3.2 Apartments and Duplexes

A number of dedicated, shared Waste Storage Areas are provided within the communal amenity spaces to serve the apartment and duplex units. These Waste Storage Areas are centrally located to ensure security and ease of access for residents throughout the development.

Residents will be required to segregate waste into the following waste categories:

- Mixed Municipal Waste (MMW) / General Waste;
- Dry Mixed Recyclables (DMR) - includes cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
- Organic (food) Waste; and
- Glass.

The layout and design of the apartments and duplexes will ensure that there is adequate provision for the temporary storage of segregated materials prior to deposition in communal Waste Storage Areas. Adequate space is allocated in the kitchen area to accommodate a three-compartment bin for waste segregation at source. In-sink macerators will not be provided in the apartments and duplexes.

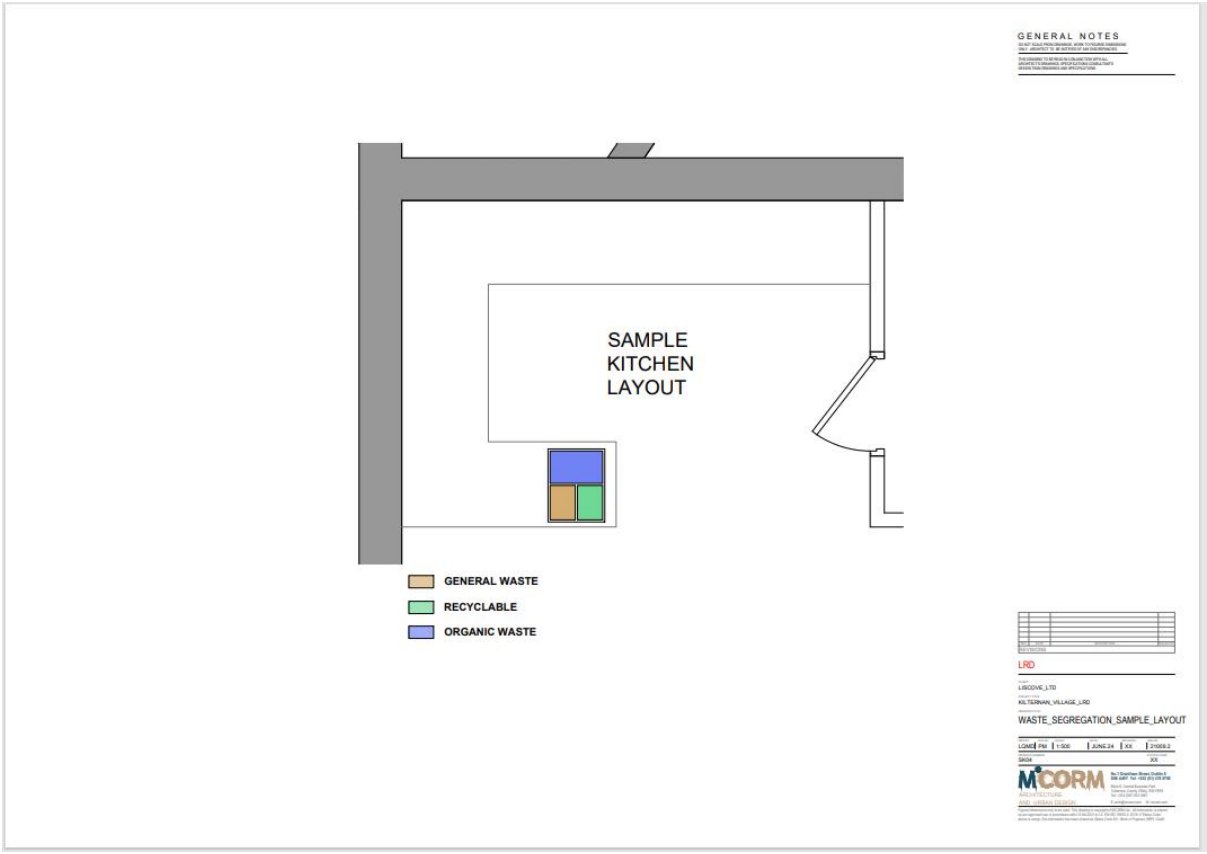

Figure 4-1 Bin Allocation in Kitchen

The Management Company will be responsible for the provision of a leaflet to all new tenants encouraging good waste segregation and pictorial information detailing the waste streams that can be placed in each bin. In addition to this, clauses that support waste segregation targets will be included in relevant legal documentation e.g., tenancy agreements where possible.

A number of Waste Storage Areas have been allocated for the apartment and duplex residents at ground level. It will be the responsibility of the residents to bring their segregated waste to Waste Storage Areas and place into the appropriately labelled bins. Each bin will be clearly labelled to identify what wastes can and cannot be placed in the bin and labels will be pictorial. The route to the Waste Storage Areas, and the area itself, will be wheelchair accessible, adequately lit, and appropriately ventilated.

Residents will have secure access to the Waste Storage Areas (pin code or fob key). This will prevent unauthorised access to waste bins by the general public.

Any additional household wastes such as bulky waste, WEEE, batteries, textiles etc. must be brought by the apartment residents to a local recycling facility.

Access to a Waste Collection Service will be provided upon the first occupancy, irrespective of the occupancy levels of the new units.

4.3 Commercial

4.3.1 Waste Types Arising

The commercial facilities will generate similar waste types to residential waste types;

i. Mixed Municipal Waste (MMW) / General Waste;
ii. Dry Mixed Recyclables (DMR) - includes cardboard, plastic packaging, aluminium cans, tins, paper, and Tetra Pak cartons;
iii. Organic (food) Waste

In addition to the typical waste materials that will be generated on a daily basis, there will be some additional waste types generated in small quantities that will need to be managed separately including:

- 'Office' type wastes such as paper and printer ink;
- Waste electrical and electronic equipment (WEEE);
- Batteries;
- Glass; and
- Light bulbs or fluorescent tubes.

4.3.2 Waste Storage Capacity Requirements

For the commercial units, it is necessary to calculate the required bin storage capacity based on the floor area of the units.

4.3.2.1 Neighbourhood Centre Block

It is estimated, based on the floor area of the facility, that there will be a requirement for 10 no. 1100 Litre bin for Dry Mixed Recyclables (DMR), 6 no. 1100 Litre bin for Mixed Municipal Waste (MMW) / General Waste, 6 no. 240 litre bins for Organic (food) Waste, and 3 no. 240 litre bins for Glass.

4.3.2.2 Creche

The crèche will generate similar waste types to the domestic dwellings. It is estimated, based on the floor area of the facility, that there will be a requirement for 3 no. 1100 Litre bin for Dry Mixed Recyclables (DMR), 3 no. 1100 Litre bin for Mixed Municipal Waste (MMW), 1 no. 140 litre bin for Organic (food) Waste, and 1 no. 140 litre bin for Glass if required. Ample space is provided in the shared Waste Storage Area to accommodate these receptacles. The crèche may also generate some office type waste, it will be incumbent on the occupier to arrange collection of materials such as ink cartridges.

4.3.2.3 Café

It is estimated, based on the floor area of the café, that there will be a requirement for 2 no. 660 Litre bin for Dry Mixed Recyclables (DMR), 2 no. 660 Litre bin for Mixed Municipal Waste (MMW) / General Waste, 2 no. 140 litre bins for Organic (food) Waste, and 2 no. 140 litre bins for Glass.

4.3.2.4 Commercial, Community and Food and Beverage

There is a requirement for Commercial, Community and Food and Beverage waste storage within Blocks A and D.

Commercial and food and beverage waste stored in Block A

It is estimated, based on the floor area of the facility, that there will be a requirement for 3 no. 1100 Litre bin for Dry Mixed Recyclables (DMR), 3 no. 1100 Litre bin for Mixed Municipal Waste (MMW) / General Waste, 2 no. 140 litre bins for Organic (food) Waste, and 1 no. 140 litre bins Glass.

Commercial and community waste stored in Block D

It is estimated, based on the floor area of the facility, that there will be a requirement for 2 no. 1100 Litre bin for Dry Mixed Recyclables (DMR), 2 no. 1100 Litre bin for Mixed Municipal Waste (MMW) / General Waste, 3 no. 140 litre bins for Organic (food) Waste, and 2 no. 140 litre bins Glass.

Ample space is provided in the shared Waste Storage Areas to accommodate these receptacles. The commercial and community units may also generate some office type waste, it will be incumbent on the occupier to arrange collection of materials such as ink cartridges.

Table 4-8 below details the number of bins required to service the volume of waste arising.

Table 4-8 Bins Required for Waste Volumes at Commercial Units

			Organic (food) Waste	Organic (food) Waste	Glass	Glass	Dry Mixed Recyclables (DMR)	Dry Mixed Recyclables (DMR)	Mixed Municipal Waste (MMW)	Mixed Municipal Waste (MMW)
Bin Size	**Description**	**m2**	**140 (L)**	**240 (L)**	**140 (L)**	**240 (L)**	**1,100 (L)**	**660 (L)**	**1,100 (L)**	**660 (L)**
Commercial Unit	Neighbourhood Centre Block	3,901	0	6	0	3	10	0	6	0
	Commercial (Block A)	706	2	0	1	0	3	0	3	0
	Commercial (Block D)	501	3	0	2	0	2	0	2	0
	Café	326	2	0	2	0	0	2	0	2
	Creche	691	1	0	1	0	3	0	3	0
	Total	**6,125**								

Ample space is provided in the secure Commercial Waste Storage Area to accommodate these receptacles. The Commercial Waste Storage Area will only be accessible to the commercial unit staff members and will not be accessible to residents or members of the public. The commercial units are expected to generate similar waste types to the domestic dwellings as well as volumes of packaging waste. It will be incumbent on the occupier to arrange collection of materials such as ink cartridges.

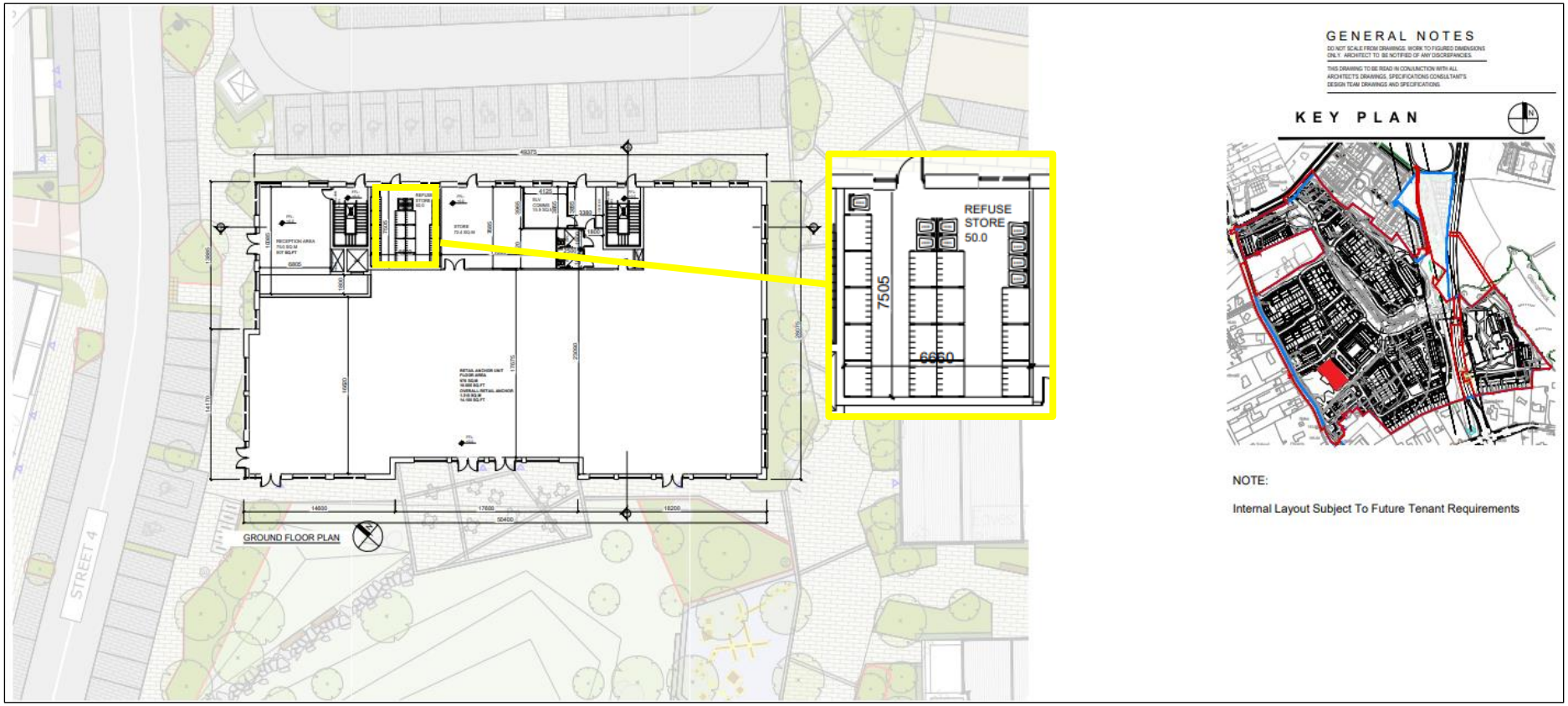

Figure 4-2 Layout of Neighbourhood Centre Block Internal Waste Storage Area

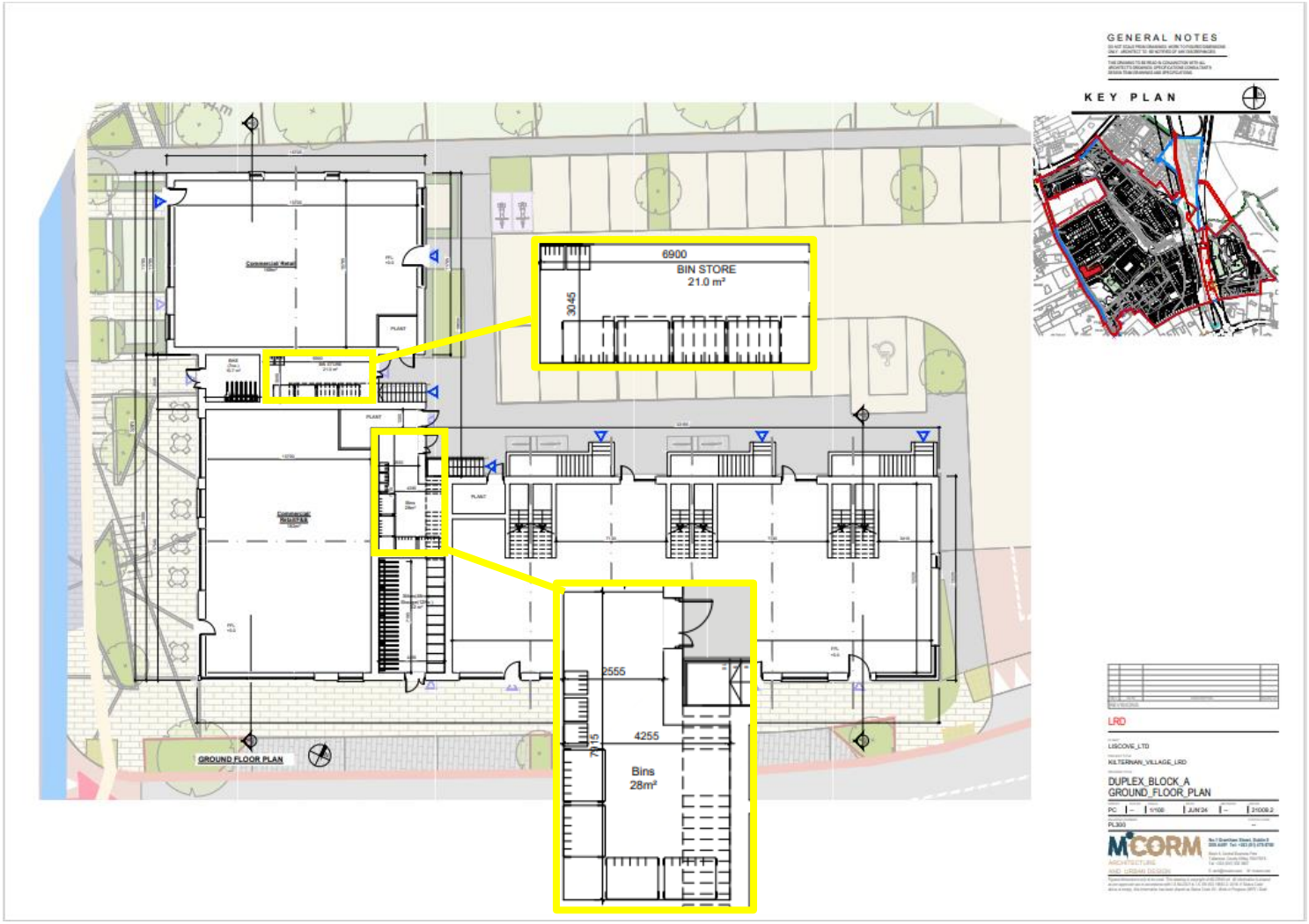

Figure 4-3 Layout of Commercial and Residential Block A Shared Waste Storage Areas

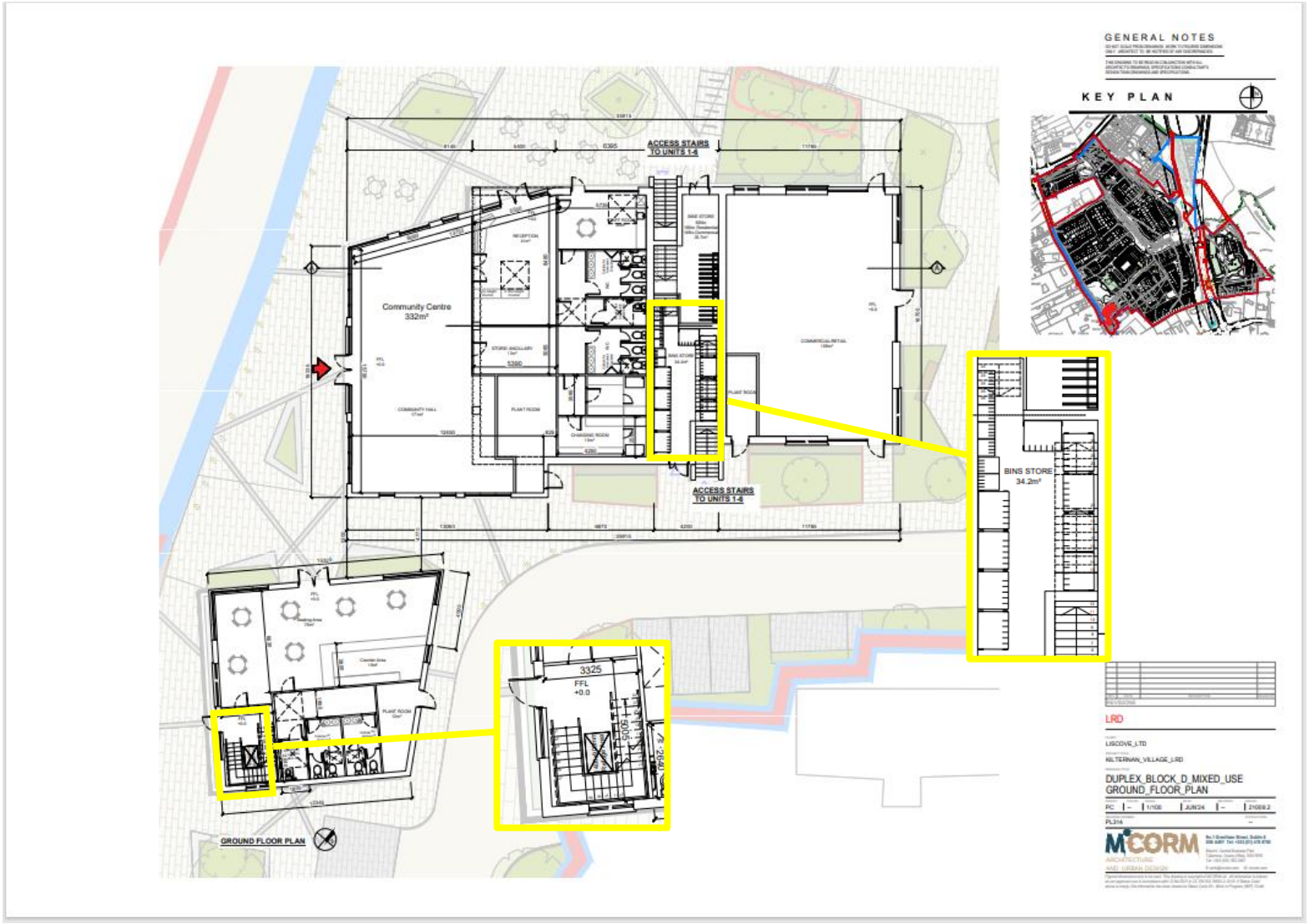

Figure 4-4 Layout of Commercial and Residential Block D Shared Waste Storage Area

4.4 Shared Waste Storage Areas

The Department of Housing, Planning and Local Government published guidelines in July 2023– "*Sustainable Urban Housing: Design Standards for New Apartments*". These Guidelines detail the provisions that need to be made for the storage and collection of waste materials in apartment schemes. These guidelines have been considered when preparing the design of the Waste Storage Areas.

The Waste Storage Areas for this residential development are strategically located and will have the following provisions as minimum:

i. **Access:** The Waste Storage Area will be accessible for the mobility impaired.
ii. **Lighting:** The Waste Storage Area will have adequate lighting. This is to ensure that waste will not be tipped in dimly lit areas and that the areas do not pose as a safety risk.
iii. **Spillage & drainage:** A non-slip surface will be provided to prevent slips or falls, and the Waste Storage Area will have adequate drainage which will be directed to foul sewer.
iv. **Security:** The Waste Storage Area will have restricted access and will be accessible by tenants and residents only. This is to prevent unauthorised access to the bins by the general public.
v. **Screening:** The Waste Storage Area will be appropriately screened to ensure it is not visible to the general public.
vi. **Ventilation:** A natural vent will be provided. All vents will be ducted to an external opening so that the Waste Storage Area will not cause an odour nuisance, taking into account the avoidance of nuisance for habitable rooms nearby.
vii. **Signage:** Pictorial signage will be provided to show residents and tenants what wastes can and cannot be placed in each bin. All signage will be provided by the management company appointed.
viii. **Environmental nuisance:** The Waste Storage Area will be in an enclosed area to avoid environmental nuisances such as litter. Regular waste collections will be required from the waste collection providers to prevent any other environmental nuisances such as odour or vermin. The management company appointed will be required to ensure there is adequate vermin control in place.
ix. **Vehicular Access:** The development has been designed to ensure that waste collection vehicles can safely access the development to collect the bins. Vehicular access for waste collection is included in the traffic management plan for the development.

Duplexes and apartments are provided with shared Waste Storage Areas containing a four-bin wheelie bin system (See Figure 4-5 for Location). Figures 4-6 to 4-9 details the internal layout of the shared Waste Storage Areas.

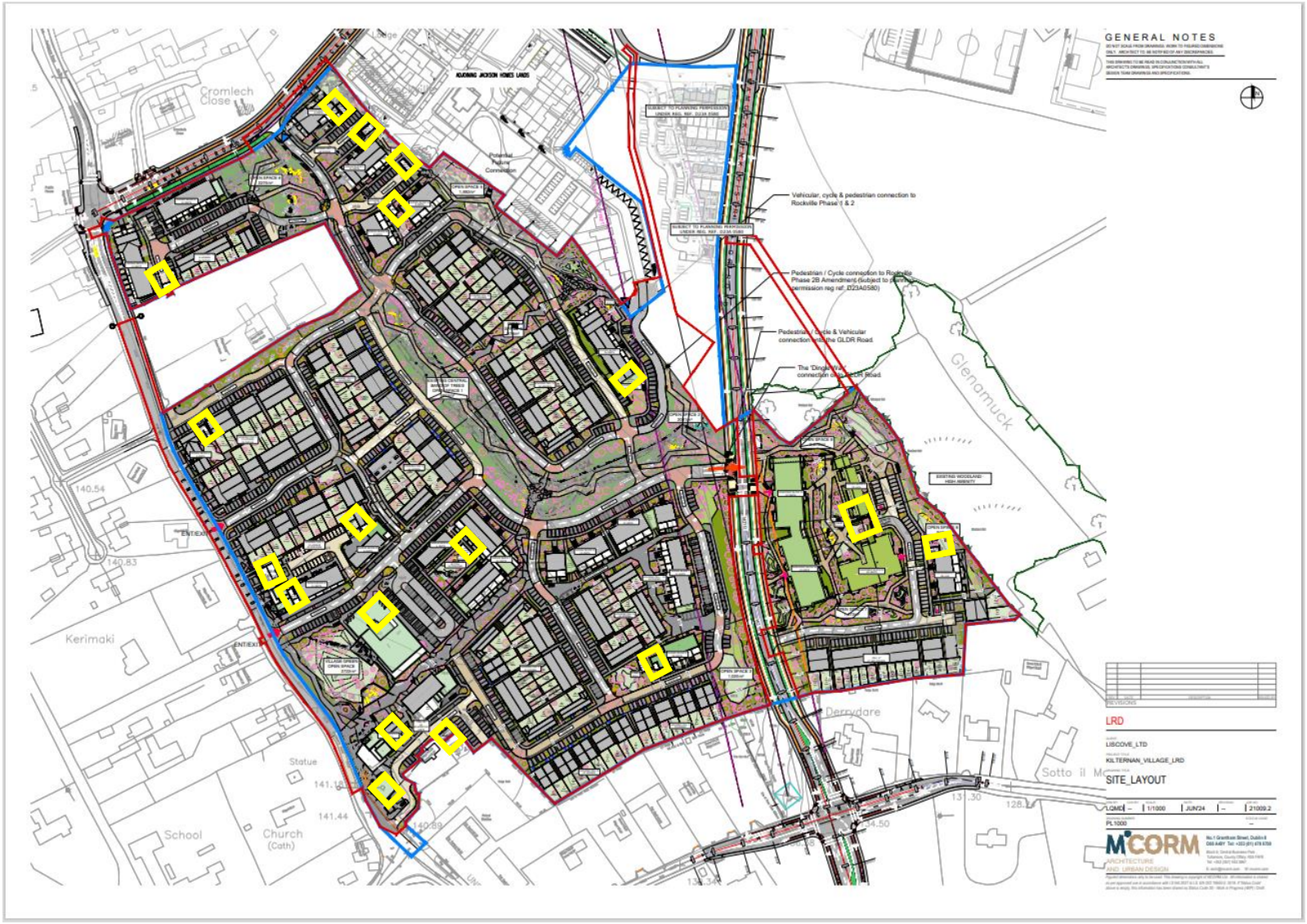

Figure 4-5 Location of the Shared Waste Storage Areas (yellow)

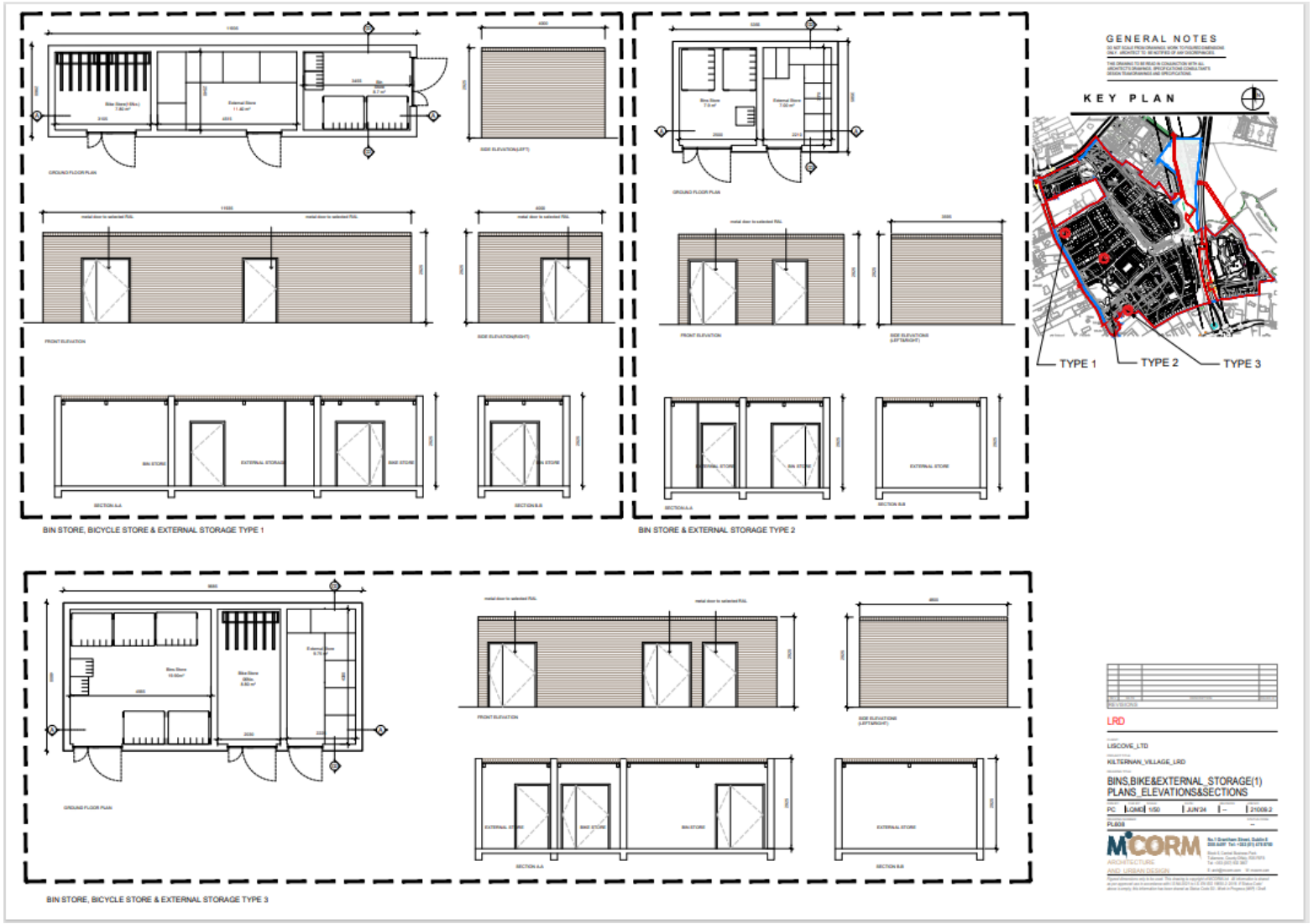

Figure 4-6 Internal Layout of Waste Storage Area Types 1, 2 and 3

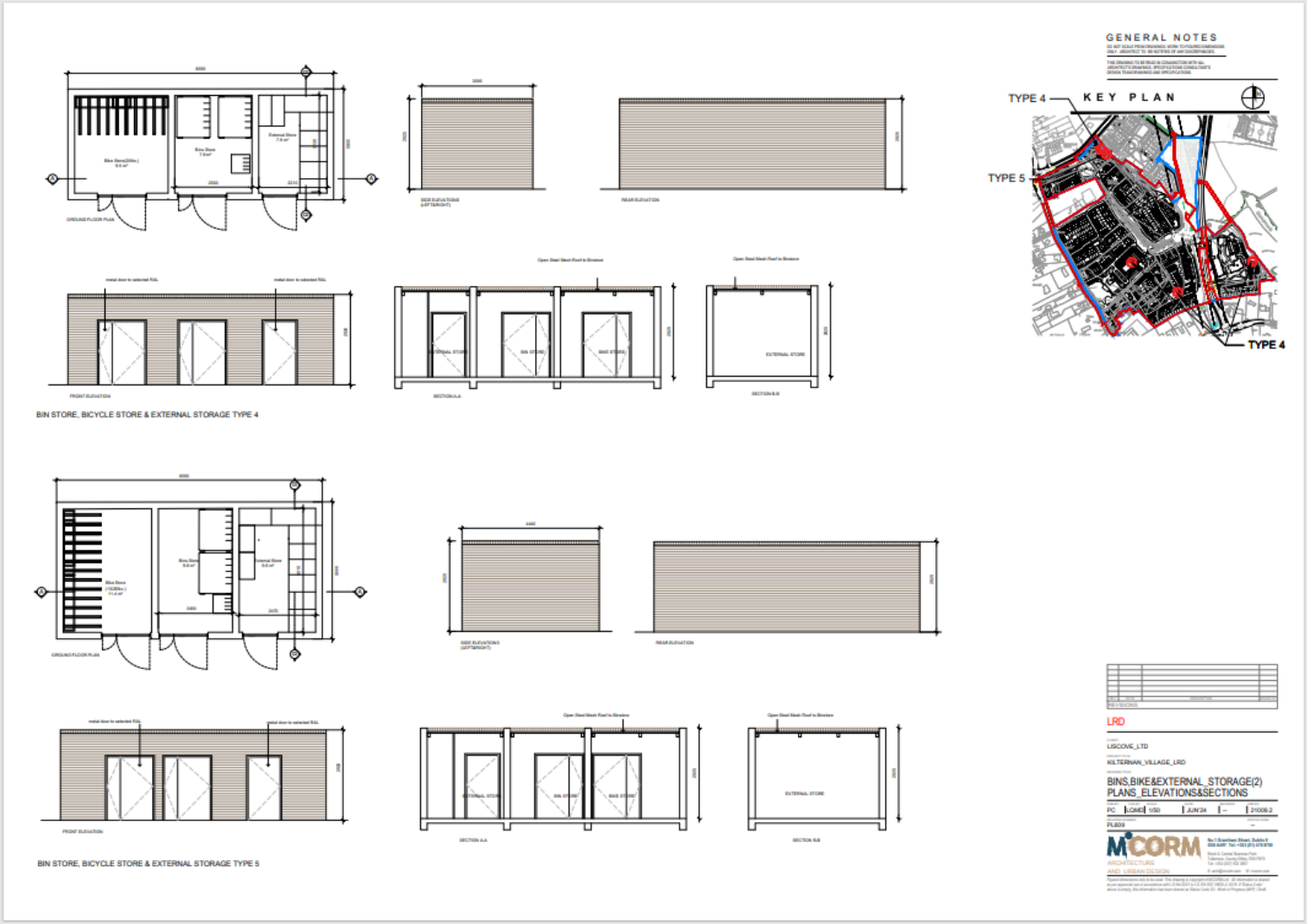

Figure 4-7 Internal Layout of Waste Storage Area Types 4 and 5

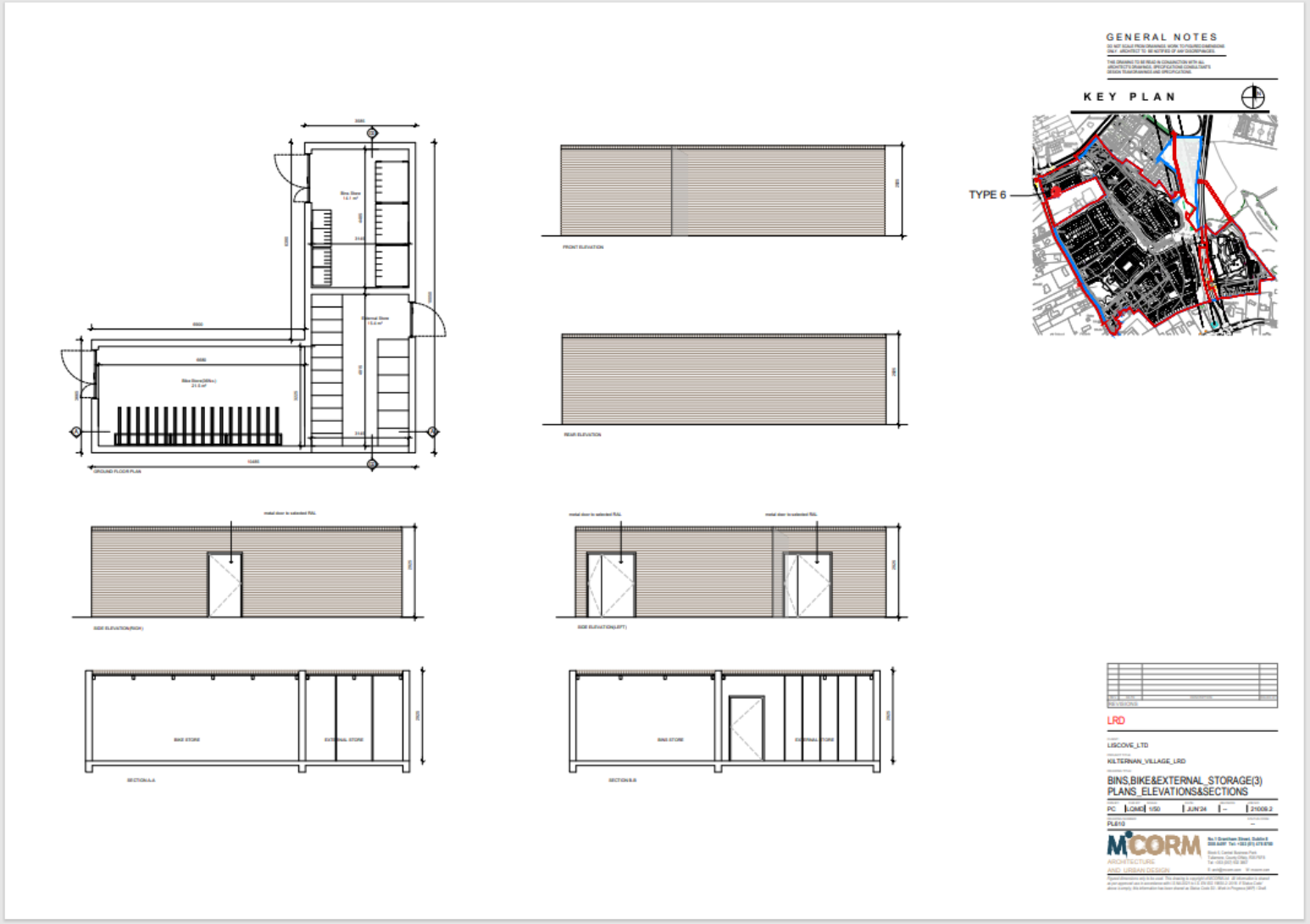

Figure 4-8 Internal Layout of Waste Storage Area Type 6

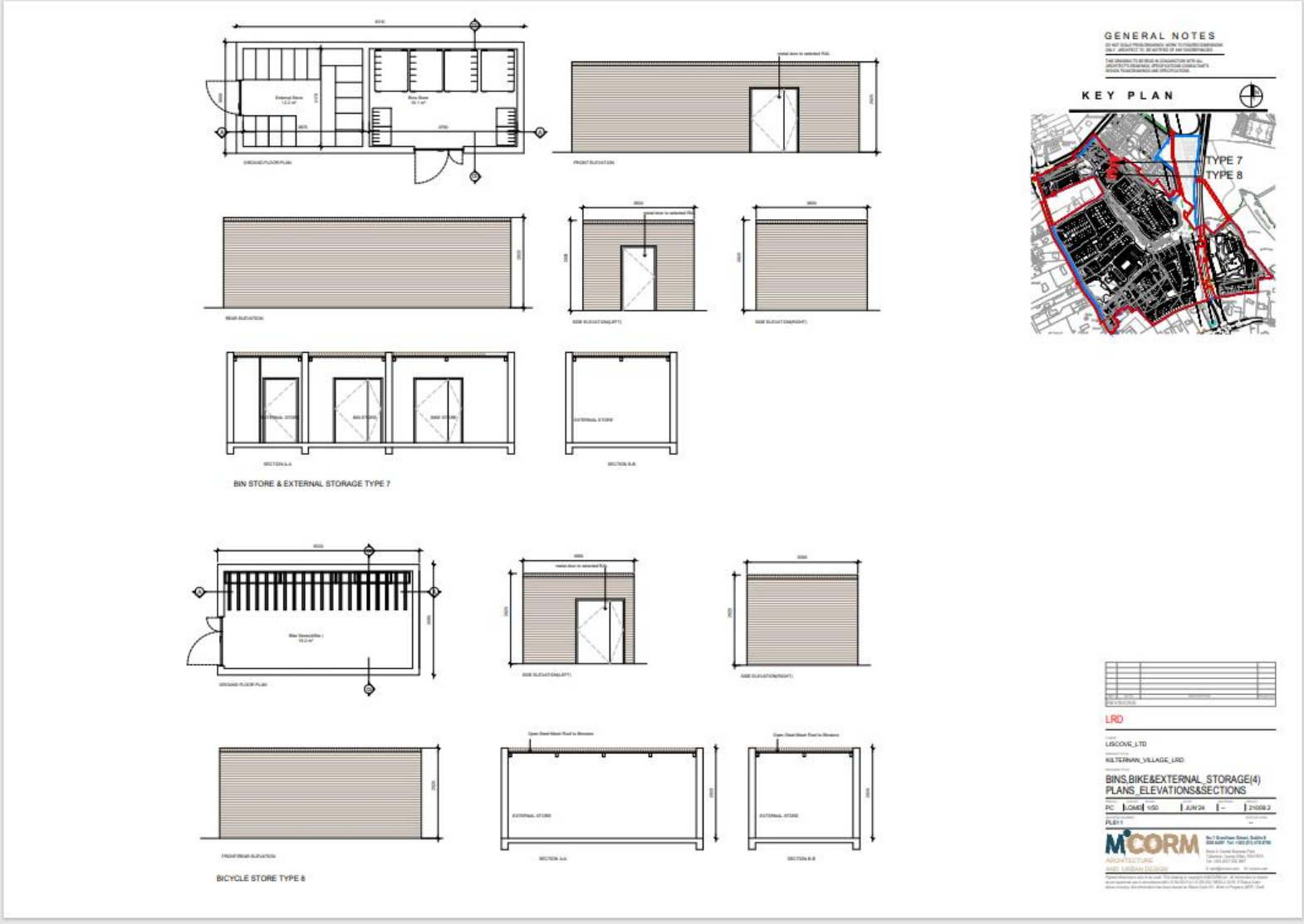

Figure 4-9 Internal Layout of Waste Storage Area Type 7 and 8

4.5 Other Waste Materials

Other waste materials such as bulky waste, textiles, printer toner/cartridges, WEEE and batteries and other household hazardous wastes may be generated infrequently by the occupants of the residential units. Residents will be required to suitably store these wastes within their own dwellings and dispose of them appropriately at bring centres or civic amenity facilities. Details of nearby recycling centres and bring banks is available on the Repak.ie website. All occupants will be supplied with information by the management company on the location of recycling facilities in the area.

4.6 Recycling Rates & Targets

The Waste Storage Areas will be provided with receptacles and signage to promote a rate of 30% of the overall waste collected to be Mixed Municipal Waste (MMW) / General Waste and 70% of waste collected recyclable waste streams which will include Dry Mixed Recyclables (DMR) (packaging, papers, cardboards, plastics, aluminium, metals, and tin) and Organic (food) Waste.

All of the Mixed Municipal Waste (MMW) collected will be transported for further recovery. All MMW will be consigned to a recovery facility where it will undergo mechanical waste recovery, or it will be consigned to a facility for energy recovery. No MMW will be transported directly to landfill.

On review of bin usage by the appointed Management Company, MMW bins may be replaced with additional Organic (food) Waste or Dry Mixed Recyclables (DMR) bins to further increase waste segregation at source.

The ratio of bins detailed in this OWMP is in line with the European Commission's proposal to introduce 70% plus re-use and recycling targets for Mixed Municipal Waste (MMW) by 2030. This waste collection proposal also provides a waste management solution that has sufficient flexibility to support future targets and legislative requirements.

4.7 Bin Weight Limits & Dimensions

The DLRCC bye-laws state that Waste presented for collection by a holder shall not be overloaded.

Due to the capacity of bins being provided, bins will not be overloaded and will comply with the Bye-laws.

For the shared Waste Storage Areas, it is intended to use 660L bins of 1340mm x 1200mm x 700mm and 1,100L bins of approximately 1300mm x 1000mm x 1300mm with a load capacity of no more than 240kg which will comply with IS EN 840 1997 for Dry Mixed Recyclables (DMR) and Mixed Municipal Waste (MMW), 240L bins of 1100mm x 740mm x 660mm and 140L bins of 1060mm x 480mm x 550mm will be used for Organic (food) Waste and Glass. All houses will be provided with standard sized, compliant wheelie bins from their bin provider.

All bins will be color-coded and labelled to avoid cross-contamination, green bin for Dry Mixed Recyclables (DMR), brown bin for Organic (food) Waste, black bin for Mixed Municipal Waste

(MMW) / General Waste, and blue bins for Glass (in accordance with the Waste Action Plan for Circular Economy). Use of and access to the Waste Storage Areas will be restricted to residents and waste contractors only. The Waste Storage Areas will not be visible to the public and will conform to the requirements of *BS 5906: 2005 – Waste Management in Buildings – Code of Practice*.

It is envisaged that residents of the apartments and duplexes will be subjected to a service management company service charge where waste management will be included in the fee.

5 WASTE COLLECTION

All collections must take place in compliance with conditions of the Waste Contractor's Waste Collection Permit for the region and in line with the Local Authority bye-laws and the Waste Management (Waste Collection Permit) Regulations 2007 as amended. All residents are obliged by law to avail of the waste management service and must comply with local bye-laws and Statutory Instruments in relation to the presentation of waste for collection. Waste collections for a four-bin system service will be available from the time of first occupancy (i.e. even if all dwellings are not occupied).

A waste collection service will be available to all occupants from first occupancy, irrespective of whether all units have been filled or not.

In all cases, waste collection vehicles will service the bins and the empty bins will be returned to the Waste Storage Areas. Bins will never be left outside the curtilage of the development. Access and egress of the waste collection vehicles will be in accordance with the Traffic Management Plan for the facility which has ensured the design allows for free-flowing movement of refuse collection vehicles throughout the development. BS 5906: 2005 – Waste Management in Buildings – Code of Practice has been taken into consideration when detailing vehicular access and egress to the development for the purposes of waste collection. See figure 5-1 for Swept Path Analysis.

Records of the collections from the apartments and duplexes will be maintained by the management company for the development including reports from the facilities to which the waste is taken. Residents of individual dwellings will be responsible for maintaining their own waste collection records.

All bins in the shared Waste Storage Areas will be accessible for collection by the waste management contractor. It will be the responsibility of the management company to ensure that bins are accessible for collection from the Waste Storage Areas by the waste management operatives and to assist on collection day to wheel out and replace bins during collection where required.

The staff of the Commercial facilities will be responsible for arranging their own waste collection. It is the responsibility of the Commercial facilities staff to ensure that their bins are available for collection by the waste management operatives and to that they are returned to the Waste Storage Areas following collection.

Occupants of residential houses will be responsible for placing their own bins at the kerb for collection, and for the return of those bins to the storage areas within the curtilage of their dwelling in compliance with the DLRCC Bye Laws require that bins must not be presented before 6pm the previous night nor left out post collection beyond 9am the day following the day of collection.

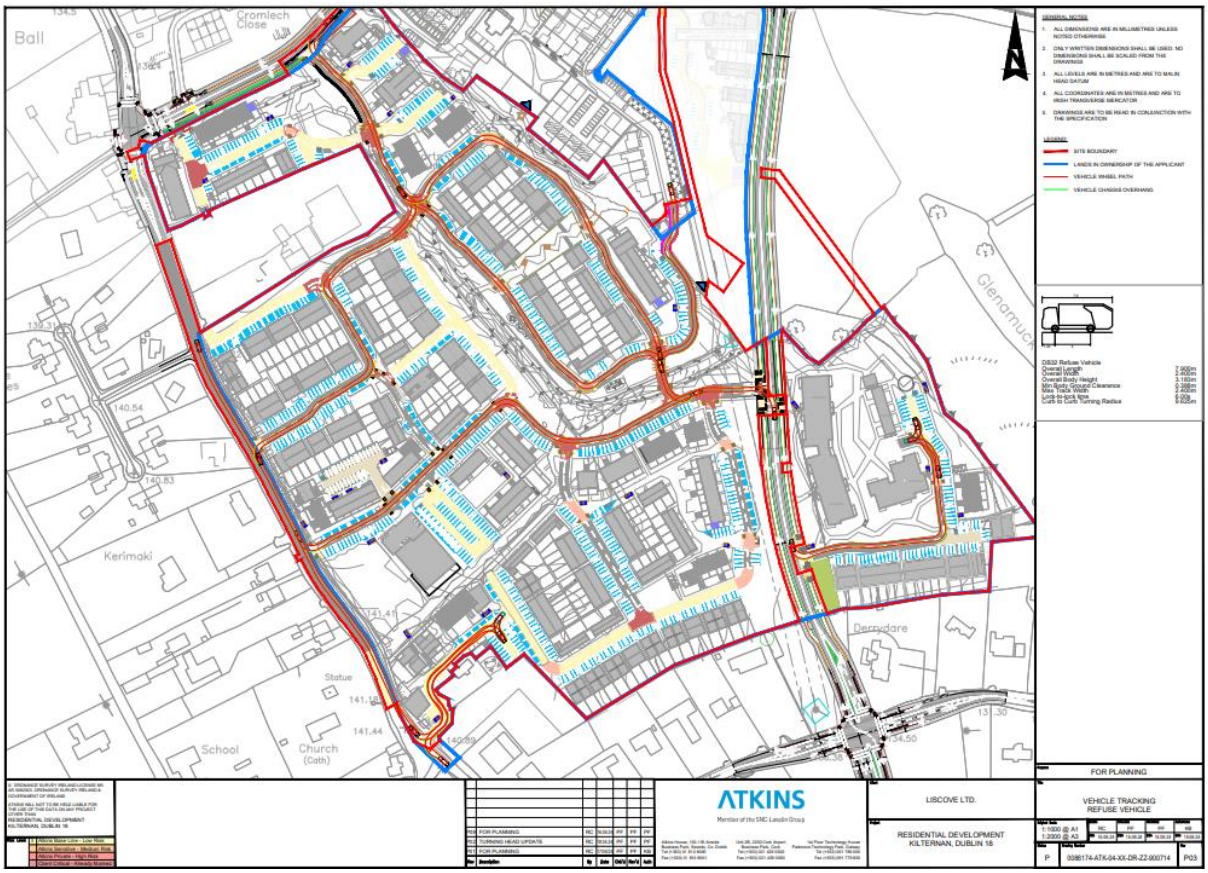

Figure 5-1 Swept Path Analysis

6 MANAGEMENT SYSTEM

6.1 Information and Communication

Written information will be provided by the appointed management company, to each tenant or other occupier about the arrangements for waste separation, segregation, storage, and presentation prior to collection. The information pack will also contain information about nearby recycling facilities. This information will also be included in information booklets provided to new occupants of properties on the development.

It shall be a condition of contract with the appointed management company to ensure that all residents will be provided with an information pack from the waste collection provider. This information pack will detail the waste streams that can and cannot be placed in the bins provided in the waste compound so that waste segregation is actively encouraged and the specific dates on which the bins will be collected are clearly identified.

A clause will be included in the contract with the waste collection provider to provide this information pack to new residents.

6.2 Waste Management Contracts

It will be a condition of any management contract at the development that adequate budgets are in place for the provision of all required waste management services including a four-bin system for the collection of separate Organic (food) Waste, Dry Mixed Recyclables (DMR), Mixed Municipal Waste (MMW) / General Waste and Glass from the apartments and duplexes.

In addition to the requirements set out in Section 6.1 Information and Communication, the Management Company appointed will be required to continually monitor the performance of the waste management system. This will include routine visual checks of the Waste Storage Areas to ensure that all bins collected are returned to the Waste Storage Areas and to ensure this area is maintained so as not to cause any environmental nuisance to residents. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified.

Provision for bin cleaning will be included in the contract with the waste management contractor appointed to ensure the provision of bin cleaning services or replacement of clean bins by the waste contractor.

The Management Company will review all annual waste reports from the Waste Collection Company appointed to ensure that the waste collected is in line with the European recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all residents which will include information on what materials can be recycled and the waste streams that can be placed in bins. Residents will also be reminded of legal obligations where applicable. Further communication strategy to engage tenants and owner occupiers in good waste management practices will be adopted if deemed necessary.

Contingency policies will be in place to ensure continuity of service.

7 CONCLUSIONS

By implementing design and actions outlined in this OWMP, a high level of recycling, reuse and recovery will be achieved at the development in line with European targets. Dry Mixed Recyclables (DMR) and Organic (food) Waste will be segregated at source to reduce the quantity of residual waste materials requiring off-site recovery or disposal.

The source segregation of waste types as detailed in this report will help to achieve the targets set out in the *National Waste Management Plan for a Circular Economy 2024-2030*.

The design of the Waste Storage Areas will meet the requirements as detailed in the "*Sustainable Urban Housing: Design Standards for New Apartments",* July 2023.

8 REFERENCES

Dún Laoghaire-Rathdown County Council (Segregation, Storage and Presentation of Household and Commercial Waste) Bye-laws, 2019.

Dún Laoghaire-Rathdown County Development Plan 2022 – 2028.

National Waste Management Plan for a Circular Economy 2024-2030.

Waste Management Acts 1996, as amended.

Protection of the Environment Act 2003 as amended.

Litter Pollution Act 1997 as amended.

Guidance Notes for Waste Management in Residential and Commercial Developments, Dun Laoghaire-Rathdown County Council, February 2020.

Waste Framework Directive (Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste).

European Communities (Waste Directive) Regulations 2011, S.I. No. 126/2011.

Waste Management (Collection Permit) Regulations 2007 (S.I. No. 820 of 2007) as amended.

Waste Management: Changing Our Ways, The Department of the Environment and Local Government, 1998.

Preventing and Recycling Waste: Delivering Change, The Department of the Environment and Local Government, 2002.

Taking Stock & Moving Forward, The Department of the Environment and Local Government, 2004.

National Strategy on Biodegradable Waste Management, Department Environment, Heritage and Local Government, 2006.

A Resource Opportunity – Waste Management Policy in Ireland, Department of the Environment, Community and Local Government, 2012.

Waste Action Plan for a Circular Economy - Ireland's National Waste Policy 2020-2025, Department of the Environment, Climate and Communications, 2020.

European Waste Catalogue, European Commission, 2002.

Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous, Environment Protection Agency, 2018.

Sustainable Urban Housing: Design Standards for New Apartments, Department of Housing, Planning and Local Government, July 2023.

Waste Management in Buildings – Code of Practice, British Standard, BS 5906:2005, 2005.

Mobile Waste and Recycling Containers Part 1: Containers with 2 wheels with a capacity up to 400 l for comb lifting devices — Dimensions and design, British Standard, BS EN 840-1:2012, 2012.

Mobile waste containers. Containers with four wheels with a capacity from 750 l to 1700 l with flat lid(s), for wide trunnion or BG-and/or wide comb lifting devices. Dimensions and design, British Standard, BS EN 840-4:1997, 1997.

Municipal Waste Statistics for Ireland, EPA Waste Data Release, September 25th, 2020.

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Environmental Consultancy Services

Appendix 12-6 Stage 2 DLRCC Opinion Response

Appendix 12.22

Stage 2 DLRCC Opinion Response

	LRD Notice of Response Ref PAC/LRD2/006/23	
No	**DLR Municipal Services Opinion**	**Response**
8	Design of the proposed surface water management system including attenuation features and cross sections of all SuDS features proposed on site in the context of surface water management on the site, discharge rates equal to greenfield sites, integration of appropriate phased works.	The S/W management system are outlined in detail in the main Engineering Infrastructure Report and Stormwater Impact Assessment ("the *Report*"). Refer to that report for details of all related issues.
10	A letter from Irish Water confirming that there is sufficient capacity in the public infrastructure to facilitate a connection for the proposed development obtained no more than 6 months before the date of lodgement of the LRD Application.	A letter from Uisce Éireann (formerly Irish Water) confirming capacity in the infrastructure is included in Appendix 12.16 of the *Report*.
13a	As standard, the applicant is requested to ensure that all surface water design proposals are in accordance with the requirements of Appendix 7: Sustainable Drainage System Measures of the County Development Plan 2022-2028.	Compliance with Appendix 7 of the CDP is demonstrated in detail the *Report*
13b	As standard, the applicant is requested to ensure that the proposed surface water design is in accordance with County Development Plan 2022-2028 Section 10.2.2.6 Policy Objective EI4: Sustainable Drainage Systems, such that the proposal meets the requirements of the Greater Dublin Strategic Drainage Study (GDSDS) policies in relation to Sustainable Drainage Systems (SuDS). The design must incorporate SuDS measures appropriate to the scale of the proposed development such as green roofs, bioretention areas, permeable paving, rainwater harvesting, swales, etc. that minimise flows to the public drainage system and maximises local infiltration potential.	A full SuDS treatment train approach has been implemented in the design and is detailed in Chapter 7 of the *Report*.
13c	The applicant has provided hydraulic simulation results for a limited number of rainfall duration. Hydraulic simulation results are required for each standard rainfall return event from the 15 minute to 10800 minute event in order to demonstrate the performance of the proposed surface water drainage network for all rainfall events. The applicant is requested to provided updated hydraulic modelling results including each rainfall return event.	All hydraulic simulations between the 15min to 10800 minute events are provided. refer to Appendix 12.1 of the *Report*.
13d	In point 7.1.10 the applicant has indicated that extensive roofs are to be provided on all flat roofs within the site. The applicant has indicated that a minimum of 50% green roof is required for extensive roofs. Appendix 7.2 of the DLRCC CDP sets out a requirement for 70% green roof when an extensive roof is to be provided, with 50% required if intensive. The applicant is requested to ensure that the proposed development meets the requirements of Appendix 7.2: Green Roof Policy of the County Development Plan 2022-2028, such that all developments with a total roof area greater than 300 square metres include a green roof (note that the percentage coverage required depends on the type of green roof proposed). The applicant is requested to demonstrate by calculation and by representation on a drawing that the proposed green roof extents are in accordance with the Council's Green Roof policy. A detailed cross section of the proposed build-up of the green roof should be	70% minimum area of Green roof has been complied with and is summarised as been in compliance with DLRCC CDP in Chapter 7 of the *Report* and details are shown on Dwg.No.2104C/216 and Dwg.No.'s 2104C/303-305.

	provided, including dimensions. The applicant should demonstrate that the green roof is designed in accordance with BS EN 12056-3:2000 and The SUDS Manual (CIRIA C753).	
13e	The applicant has indicated that partial elements of the drainage network will be located outside of the area to be taken in charge. The applicant is requested to reconsider the element of lands to be taken in charge or alternatively commit to providing a wayleave agreement for these lands. The wayleave agreement should be in favour of Dun Laoghaire-Rathdown County Council for the sections of proposed public surface water infrastructure that are to be located in lands not to be taken in charge. Such a wayleave agreement shall be accompanied by dimensioned drawings showing the locations of all surface water drainage elements in relation to adjoining property boundaries. The wayleave shall be agreed and in place prior to the taking-in-charge of the development.	The Applicant has confirmed they have the ability to deliver the services and ancillary works required to implement the designed scheme in full. There are developer legal agreements in place with 3rd party landowners effected by drainage pipeline routes outside of the Applicants ownership and legal confirmation of same are included in Appendix 12.21 of the *Report*
13f	As standard, the applicant is requested to ensure that a penstock is provided in the flow control device chamber and that the flow control device provided does not have a bypass door. The applicant shall also ensure a silt trap is being provided in the flow control device chamber.	Noted and detailed on Dwg.2104C/317
13g	As standard, the applicant is requested to ensure that any changes to parking and hardstanding areas shall be constructed in accordance with the recommendations of the Greater Dublin Strategic Drainage Study for sustainable urban drainage systems (SuDS) i.e. permeable surfacing, and in accordance with Section 12.4.8.3 Driveways/Hardstanding Areas of the County Development Plan 2022-2028. Appropriate measures shall be included to prevent runoff from driveways entering onto the public realm as required. Where unbound material is proposed for driveway, parking or hardstanding areas, it shall be contained in such a way to ensure that it does not transfer on to the public road or footpath on road safety grounds.	All parking areas are of permeable paving surfacing as detailed in the *Report* and shown on Dwg.No.'s 2104C/303-305 and 318.
13h	As standard, the applicant is requested to submit supporting standard details, including cross-sections and long-sections, and commentary that demonstrates that all proposed SuDS measures have been designed in accordance with the recommendations of CIRIA C753 (The SuDS manual).	All SuDS measures are detailed on Dwg.No.'s 2104C/314 & 316 & 317 and design examples included in the Appendix 12.2 of the *Report*.
13i	As standard, the applicant is requested to submit long-sections of the surface water drainage system, clearly labelling cover levels, invert levels, pipe gradients and pipe diameters.	Long sections are included with the Stage 3 submission. refer to Dwg.No.'s 2104C/323-328
13j	As standard, the applicant is requested to include in the final submission, the fully dimensioned plans and sections of the attenuation storage system. All relevant inlet and outlet levels, dimensioned clearances between other utilities, and actual depths of cover to the tank shall be provided. The applicant shall include confirmation from the chosen manufacturer of the storage system that the specific model chosen, with the depth of cover being provided, has the required load bearing capacity to support the loading that may imposed upon it.	Dimensioned drawings of the attenuation systems are shown on Dwg.2104C/320 & 321 and calculation and manufacturers details are included in the Appendix 12.3 of the report, including the tank system suppliers letter confirming the loading capacity.