BARRETT **MAHONY**
CIVIL & STRUCTURAL
CONSULTING ENGINEERS

Infrastructure Report

Project:
Carlisle Residential Development, Kimmage Road West, Kimmage, Dublin 12

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1. INTRODUCTION

This report has been prepared as part of a planning application for a proposed residential development located in Carlisle, Kimmage, Dublin 12.

This report describes the proposed Civil engineering infrastructure for the development and how it connects to the public infrastructure serving the area.

The site is located in Kimmage, Dublin 12 and consists of approximately 1.25ha total net area which is intended for use as a residential development. The site is bounded by residential settlements to the north, east and west with the Ben Dunne gym to the southwest.

Refer Figure 1.1 for a plan view of the site.

Figure 1.1 Site Location

1.1 SITE TOPOGRAPHY

The total drainage area of the development site consists of approximately 1.25ha net area and has a natural slope to the eastern boundary. The highest elevation is 47.5m above mean sea level and drops down to 45.5m at the eastern edge. Refer to topographical survey in Appendix 4.

1.2 PROPOSED DEVELOPMENT

The proposed Large Scale Residential Development will consist of the construction of 5 no. blocks of development and will range in height up to 6 storeys. This will provide 208 no. residential units (104 no. 1 beds and 104 no. 2 beds) all of which will have associated private balconies/terraces. Car, cycle and motorbike parking will be located at undercroft and surface level. Vehicular/pedestrian/cyclist access is provided off Kimmage Road West via the existing Ben Dunne

Gym access route. All associated site development works, open spaces, landscaping, boundary treatments, plant areas, waste management areas, and services (including ESB substations) shall be provided. A full description is set out in the statutory notices included with this application.

1.3 SCOPE OF THIS REPORT

This report describes the proposed civil engineering infrastructure for the development and how it connects to the public infrastructure serving the area. In particular proposed surface water drainage, foul drainage, water supply elements and roads access are addressed.

A Site-Specific Flood Risk Assessment report has been prepared by BMCE and submitted as part of this application.

A Traffic Impact Assessment has been prepared and this is submitted as part of this application. This report should be read in conjunction with BMCE drawings submitted with the planning application.

1.4 BMCE DRAWINGS

The following drawings have been submitted as part of the planning application and should be read in conjunction with this report:

CST-BMD-00-ZZ-DR-C-1000	Site Location Map
CST-BMD-00-ZZ-DR-C-1001	Topographical Survey And Existing Buried Services
CST-BMD-00-ZZ-DR-C-1002	Proposed Foul And Surface Water Drainage Layout
CST-BMD-00-ZZ-DR-C-1003	Proposed Watermain Site Plan Layout
CST-BMD-00-ZZ-DR-C-1015	SUDS Layout
CST-BMD-00-ZZ-DR-C-1020	Foul Water Longitudinal Sections
CST-BMD-00-ZZ-DR-C-1016	Site Plan Overland Flood Route
CST-BMD-00-ZZ-DR-C-1017	Roads Layout
CST-BMD-00-ZZ-DR-C-1040	Existing Transportation Linkages
CST-BMD-00-ZZ-DR-C-1041	Walking Distance from Site to Nearest Bus Stops
CST-BMD-00-ZZ-DR-C-1050	Proposed Extent of Underground Utilities Mapping Survey
CST-BMD-00-ZZ-DR-C-1070	Construction Management Plan
CST-BMD-00-ZZ-DR-C-1080	ESB Truck Autoturn Analysis
CST-BMD-00-ZZ-DR-C-1081	Dublin Fire Brigade Appliance Autoturn Analysis
CST-BMD-00-ZZ-DR-C-1082	Refuse Bin Truck Autoturn Analysis
CST-BMD-00-ZZ-DR-C-1205	"SuDS DETAILS. TYPICAL GREEN & BLUE ROOF DETAILS."
CST-BMD-00-ZZ-DR-C-1206	Pumping Station Details

Permission was granted, under ABP 313043 on the 22/09/2022, for an SHD on the subject site comprising 208 no. apartment units in 5 no. blocks. The current proposed LRD application provides the same layout and quantum of units as this permitted development. The proposed drawings above are the same as permitted in the SHD application.

2. SURFACE WATER DRAINAGE SYSTEMS

2.1 INTRODUCTION

This chapter will follow the guidelines set out in Greater Dublin Strategic Drainage Study (GDSDS) and the CIRIA 2015 SuDS Manual. The aim of any SuDS strategy is to ensure that a new development does not negatively affect the surrounding watercourse system, existing surface water network and groundwater system. This SuDS strategy will aim to achieve this by using a variety of SuDS measures within the site. These measures include water interception, water treatment and water attenuation.

The SuDS strategy will be developed with the following steps:

- The existing run-off of the abovementioned development site will be calculated and used as the minimum benchmark for the SuDS design. Thus, the post development run-off will not exceed the pre development run-off.
- A set of SuDS measures will be chosen based on their applicability and usage for the site.
- A "Flow" model will be created to analyse the rainfall on the site and the effectiveness of the proposed SuDS measures.
- If effective, these SuDS measures will be implemented on the site.

2.2 EXISTING SURFACE WATER INFRASTRUCTURE

This site is currently greenfield. There is an existing surface water drainage system to the south of the site running along Kimmage Road West.

2.3 PROPOSED SURFACE WATER DRAINAGE SYSTEM

The subject site is currently greenfield which provides a basis for setting the limiting discharges of surface water runoff for the proposed site.
It is recommended that the proposed development use green roof (extensive sedum type) coverage to all roofs. The green roof will provide interception of rainfall, filtration through the medium, and storage within the voids facilitating evapotranspiration.
Peak run-off discharge from the proposed development will be restricted to a peak rate of 2.0 l/s/ha. An underground attenuation tank will be provided to cater for storm events up to and including the 1 in 100 year plus 20% for climate change. The tank will operate 'in-line' with the drainage system.
The surface water is proposed to outfall to the SW sewer on Kimmage Road West to the south of the site. Onsite surface parking requires the installation of an oil interceptor. Silt management will be achieved by means of silt trap manholes upstream of the attenuation tank.

2.3.1 Catchment Area

The site is considered as a single catchment area, materials in the area will consist of extensive (sedum) green roof, intensive podium, and landscaping.

2.3.2 Catchment Strategy

The catchment drains via gravity to proposed storage tanks located within the blocks. The attenuation tank is designed to cater for a 1 in 100 year storm event along with a 20% increase for climate change.

2.3.3 Estimation of greenfield runoff rate

In accordance with the IH124 method, the greenfield runoff for existing undeveloped sites measuring less than 50ha can be estimated using the following formula:

Qbar rural (in m^3 /s) = 0.00108 x (0.01 x AREA)0.89 x SAAR1.17 x SPR2.17
where:

- Qbar rural is the mean annual flood flow from a catchment.
- AREA is the area of the catchment in ha.
- SAAR is the standard average annual rainfall for the period 1981-2010 Annual Average Rainfall Grid produced by Met Éireann.
- SPR is Standard Percentage Runoff coefficient for the SOIL category.

Rainfall data for the site was sourced from an Annual Average Rainfall (AAR) Grid (1981-2010) produced by Met Éireann (Available from: http://www.met.ie/climate/products03.asp). The rainfall data for the Irish Grid Coordinates closest to the site indicates a SAAR value of 729mm is appropriate. Irish Grids reference for this site area: 285834 (Easting) and 267609 (Northing).

Therefore, $Qbar_{rural}$ for a 50ha site has been calculated as follows:

$Qbar_{rural}$ (for a50ha site) = $0.00108 \times (0.01 \times 50)^{0.89} \times 729^{1.17} \times 0.40^{2.17}$
$Qbar_{rural}$ (for a 50ha site) = 0.1784 m^3 /s
= 178.4 l/s

Interpolating linearly, this corresponds with a Qbar figure for the overall site (1.15ha) of 4.10 l/s. In accordance with GDSDS guidelines, a conservative value of 2l/s per hectare will be used.

2.4 Proposed Surface Water Management Plan

The proposed Surface Water Management Plan is in line with the key requirements of the Dublin City Council Division Planning & Development Control Section. The proposed surface water drainage system takes cognisance of the Dublin City Development Plan 2022-2028 with respect to SuDS Section 9.5.4. The proposed SuDS measures provide a minimum of two stage treatment of surface water run-off. This treatment approach is in line with the CIRIA SuDS Manual C753 and is outlined below. The measures to be incorporated into the development will include intensive and extensive green roof, permeable paving, gravel filter drains, rain gardens and infiltration systems. The full SuDS treatment train is implemented prior to discharge into the public system.

2.4.1 Proposed Surface Water Treatment Train

The proposed surface water system uses a number of SuDS components in series to provide a minimum of two-stage treatment prior to discharge into the receiving systems. A SuDS Management Train for the Development has been prepared – refer to Figure 2.1 the SuDS Management Train describes how rainfall falling on each surface is managed and treated prior discharge and clearly demonstrates a robust train of treatment, which in most cases exceeds the minimum two-stage requirement.

Rainfall run-off will be intercepted and treated at roof levels using intensive and extensive green roofs where feasible. A multidisciplinary coordinated approach has been taken with regard to assigning the appropriate areas of roof level as intensive green roof, in an effort to accommodate other elements such as plant and photovoltaic panels. Furthermore, all podium areas (both hard and soft landscaping) will be finished using an intensive green roof drainage board above the waterproofing, to ensure greater interception of rainwater and treatment through the substrate prior to entering the pipework system.

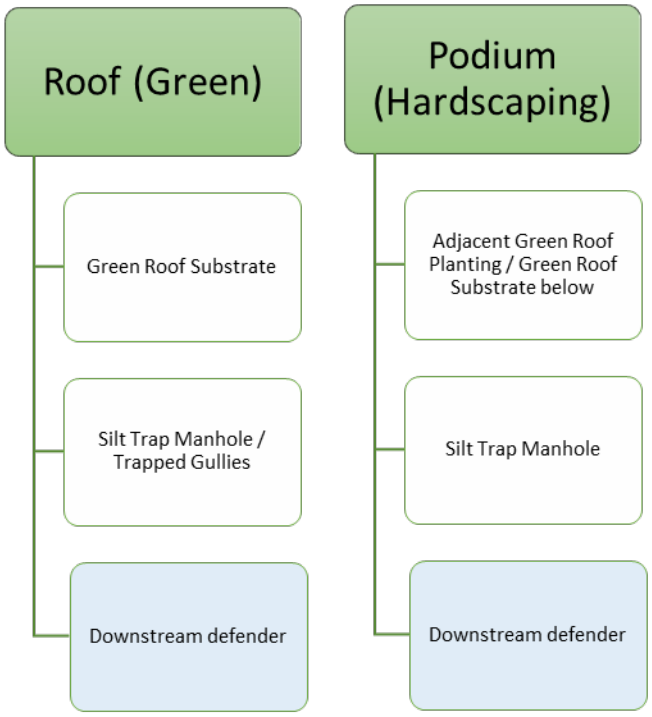


Figure 2.1 Surface Water Management Train

2.4.2 Proposed Surface Water Treatment SuDS Measures

2.4.2.1 Green Roofs – General

Green roofs are areas of living vegetation, installed on the top of buildings. They provide water quality, water quantity, amenity and provide biodiversity benefits. Green roofs also intercept rainfall at source reducing the reliance on attenuation storage structures. Refer to the Barrett Mahony SuDS detail drawings and Landscape Architects drawings for typical roof details.

2.4.2.2 Green Roof – Extensive:

Extensive roofs have low substrate depths and therefore low loadings on the building structure, they are lightweight and have a low cost to maintain. These systems cover the entire roof area with hardy, slow growing, drought resistance, low maintenance plants and vegetation, such as sedums. The planting usually matures slowly, with the long-term biodiverse benefits being the sought-after results. These roofs are typically only accessed for maintenance and are usually comprised of between 20mm – 150mm overall total depth.

Extensive green roofs have the effect of providing some initial storage of rainwater, while also reducing the rate at which rainwater from heavier rainfall events will discharge to the main attenuation tank. It can also help to filter the run-off, removing any pollutants and resulting in a higher quality of water discharging to the drainage system. A typical extensive green roof system can intercept and retain over 30 litres/m² (i.e. 30 mm) depending on the build-up. Since these roofs are exposed to the Irish climate, there is a high probability that the roof will not be completely dry, and the storage capacity will be compromised on any given rainfall event. Thus, the more conservative estimate of 10 litres/m² (12mm) interception storage will be assumed.

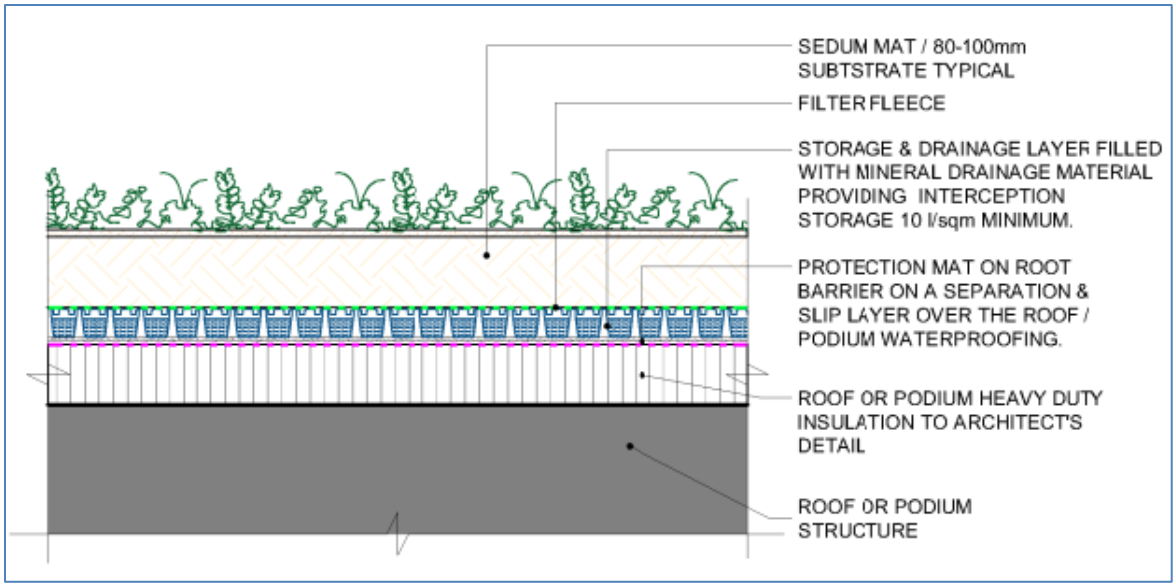


Figure 2.2 Green Roof Extensive

2.4.2.3 Green Roof – Intensive

Intensive green roofs are designed to sustain more complex landscaped environments that can provide high amenity and biodiverse benefits. They are planted with a range of plants, including grasses, shrubs, trees and may also include water features, as well as hard landscape paved areas. They are designed to be accessible and normally require regular maintenance.

Intensive paved roofs will be proposed on some of the apartment blocks roofs in the public amenity areas and in some podium areas. The use of intensive of green roofs will also allow the planting of large shrubs, small trees, and small water features within the podium area. These features improve the amenity value for the residents. The build-up selected for the Intensive Green Roof on the top of the roofs will include an interception tray to capture the first 12mm of rainfall falling on each roof, providing an intercept and retain capacity of 10 litres/m² (minimum).

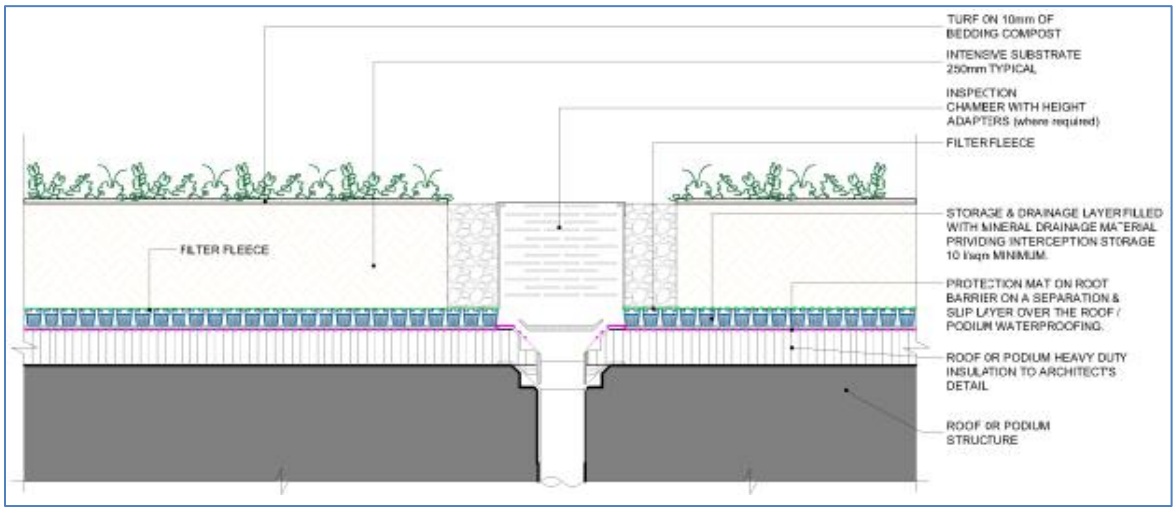
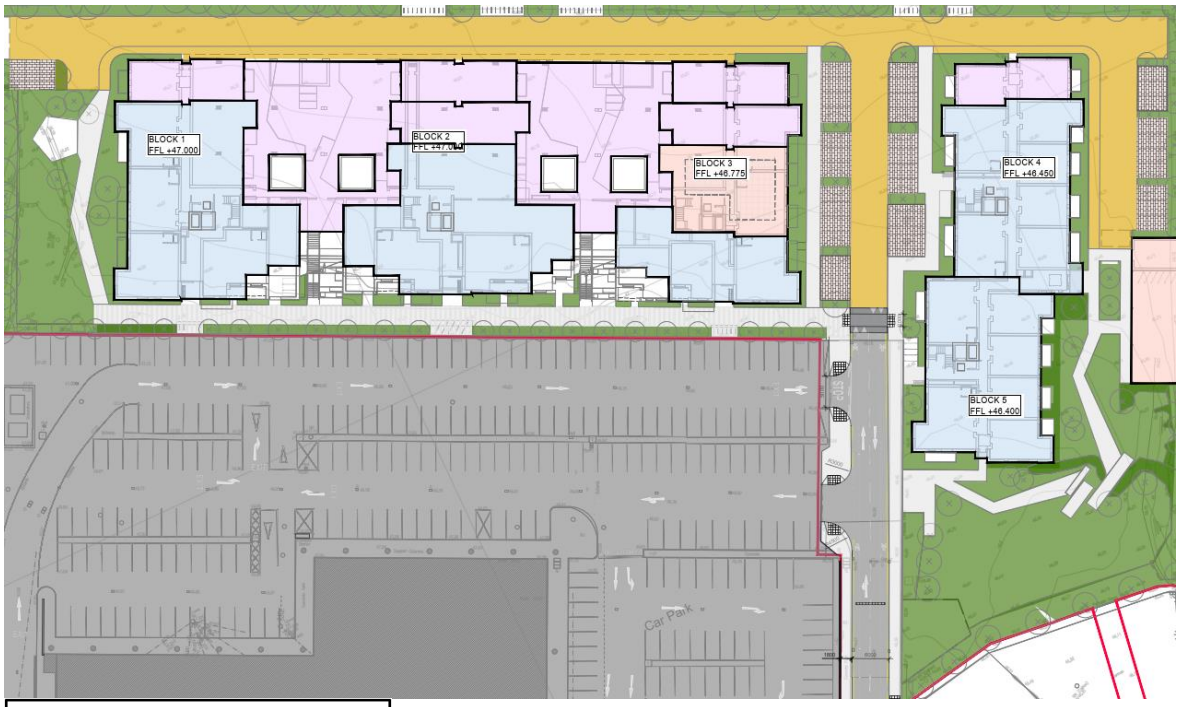


Figure 2.3 Green Roof Intensive

Green Roofs

The proposed green roofs will consist of sedum roofing on upper roof levels, and intensive build up podium. The proposed green roof coverage is summarised in Figure 2.4 below.



LEGEND			
PROPOSED BUILDING	GRASS / SOFT LANDSCAPING AT GRADE	SuDS ROOF - BLUE ROOF + EXTENSIVE SEDUM GREEN ROOF (2822 m²)
NEW ASPHALT ROAD SHARED SURFACE (1745 m²)	PERMEABLE PAVING (453 m²)	STANDARD ROOF RUN-OFF
CONCRETE (FOOTPATH / KERBS) (1050 m²)	SuDS ROOF- INTENSIVE (1812 m²)	RED LINE BOUNDARY (BOUNDARY OF SUBJECT SITE)

Figure 2.4 SuDS Layout

The green roof will provide interception of rainfall, filtration through the medium, and storage within the voids facilitating evapotranspiration. The green roofs will intercept and absorb the first 5 – 15mm of rainfall, thereby reducing the volume of run-off into the receiving systems. Rainfall run-off that is not absorbed by the green roof will filtrate through the substrate and geotextile filter fabric. A limited attenuation volume will be provided by the green roof crate layer system below the geotextile filter fabric, which will provide a time delay between the rainfall event and discharge into the system thereby reducing peak discharge rates. According to the leading green roof supplier/manufacturer Bauder, up to 40% of average annual rainfall can be absorbed and released back into the atmosphere by transpiration and evaporation.

Therefore, rainfall run-off from roof areas covered by the proposed green roofs will go through a two-stage treatment train including interception and primary treatment in line with SuDS Manual C753 Table 26.7.

The proposed development contains an extensive green roof build up in over 70% of the inaccessible roof areas (access provided for maintenance purposes only), and intensive green roof build ups in the form of soft landscaping in over 50% of the podium and accessible roof areas. This complies with the Dublin City Council Development Plan 2022-2028 Appendix 11.

Proprietary Surface Water Treatment Systems

At suitable locations, a break will be introduced in the proposed kerbs to allow run-off to infiltrate to ground and into tree pits. Where this option is not available, it is the design intent to install proprietary surface water treatment systems prior to discharge into the river. The surface water treatment systems include catchpits, oil separators and sediments remover such as a 'Downstream Defender' or similar.

2.4.2.4Permeable Paving

Permeable paving provides a surface suitable for pedestrian and/or vehicular traffic, while also allowing rainwater to infiltrate through the surface and into the underlying structural layers. The water is temporarily stored beneath the overlying surface before slowly infiltrating. Permeable paving systems are an effective way of managing surface water runoff close to its source.

The car parking spaces, podium areas and footpaths throughout the site will be made up of permeable paving. Refer to BMCE drawing C1015 for details.

By providing a raised drainage outlet above the base of the coarse graded gravel bed it is possible to achieve interception storage. Raising the invert of the drainage pipe to 100mm above the gravel bed gives 40mm interception storage @ 40% voids in the gravel.

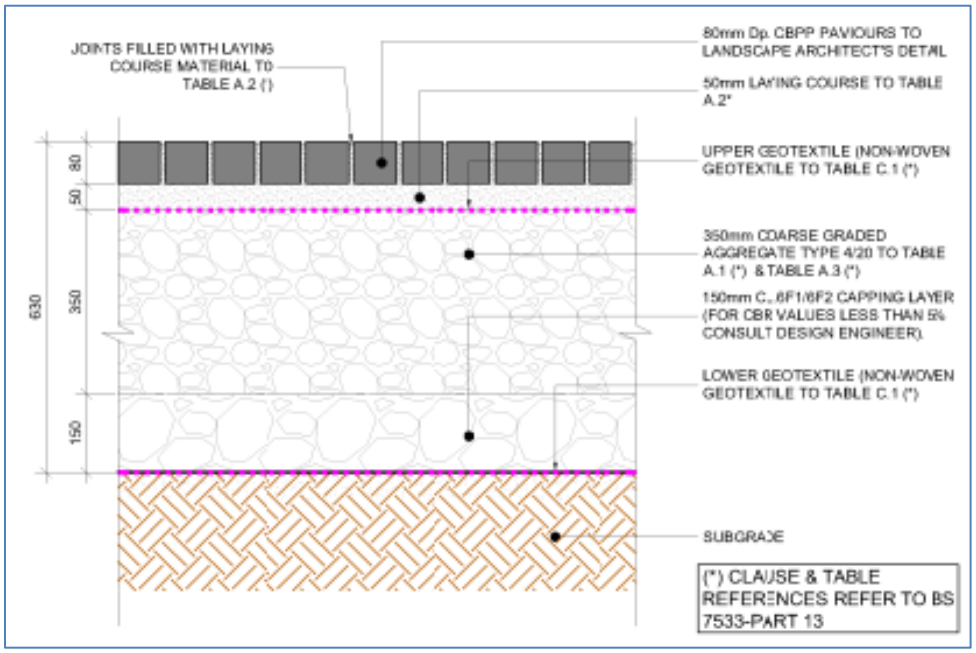


Figure 2.5 Permeable Paving Build-up

2.4.3 The Greater Dublin Strategic Drainage Study

The Greater Dublin Strategic Drainage Study (GDSDS) addresses the issue of sustainability by requiring designs to comply with a set of drainage criteria which aim to minimize the impact of urbanisation, by replicating the run-off characteristics of the greenfield site. The criteria provide a consistent approach to addressing the increase in both rate and volume of run-off, as well as ensuring the environment is protected from any pollution from roads and buildings. These drainage design criteria are as set out in Table 2.1a.

Table 2.1a GDSDS Drainage Criteria

GDSDS Criteria		Aims
Criterion 1	River Water Quality Protection	• To prevent pollution • To maintain base flows in streams • To recharge groundwater
Criterion 2	River Regime Protection	• To prevent river scour due to flash flooding
Criterion 3	Flood Risk Assessment	• To prevent site flooding for the 30yr storm and manage overland flows if site flooding occurs for the 100yr storm
Criterion 4	River Flood Protection	• To prevent river flooding

The overarching principle of SuDS design is that surface water runoff should be managed for maximum benefit. The types of benefits that can be achieved by SuDS will be dependent on the site but fit broadly into four categories – The Four Pillars of SuDS – as described in the CIRIA SuDS Manual C753 and set out in Table 2.1b;

Table 2.1b The Four Pillars of SuDS

SuDS Category	Benefit
Water Quantity	• Maintain and protect the natural water cycle • Support the management of flood risk
Water Quality	• Manage the quality of run-off to prevent pollution
Biodiversity	• To create and sustain better places for nature
Amenity	• To create and sustain better places for people

Compliance with four GDSDS criteria and the four pillars of SuDS as described in the CIRIA SuDS Manual C753, requires a robust strategy that employs at source and site wide SuDS control measures. The SuDS strategy for the development shall be developed in conjunction with the Landscape Architects, and strives to achieves the aims and benefits outlined above.

2.4.3.1 Criterion 1 GDSDS – River Water Quality Protection

Run-off from natural greenfield areas contributes very little pollution and sediment to rivers and for most rainfall events direct run-off from greenfield sites to rivers does not take place as rainfall percolates into the ground. By contrast, urban run-off, when drained by pipe systems, results in run-off from virtually every rainfall event with high levels of pollution, particularly in the first phase of run-off, with little rainfall percolating to the ground. To prevent this happening, Criterion 1 requires that interception storage and/or treatment storage is provided, thereby replicating the run-off characteristics of the pre-development greenfield site.
In the context of the proposed development, it is proposed that all surface water run-off will go through a two stage treatment train via green roofs / podium build up, and 'downstream defender' prior to discharging at a controlled rate into the receiving systems.

2.4.4 Interception Storage

The GDSDS requires that Interception storage, where provided, should ensure that at a minimum the first 5mm and preferably the first 10mm of rainfall is intercepted on site and does not directly pass to the receiving watercourse.

Interception storage can be attained using SuDS features which allow the rainwater to infiltrate into the ground, evaporate into the atmosphere or transpire through vegetation. Soft landscaping

and planted areas are conservatively taken as providing natural interception storage of 15mm. Interception storage volumes for each Sub-catchment areas shown below.

2.4.4.1Interception Storage

Interception storage required m^3 = Total drained area (m^2) x minimum rainfall (mm)
Interception storage required = 11,500m^2 x 0.005m = 57.5m^3
The proposed Interception storage meets the preferred 10mm storage criteria.

Table 2.2 Interception Storage

Type of areas	Areas (m^2)	Storage (l/m^2)	Capacity (m^3)
Green roof / extensive	2822	12	33.864
Green roof / intensive	1812	12	21.744
Permeable Paving	453	45	20.385
Total	-	-	75.993

2.4.4.2 Treatment Storage

In accordance with the GDSDS, interception storage & treatment storage are interchangeable. Since full interception storage has been provided, treatment storage is not required.

2.4.1 Surface Water Attenuation Storage

The GDSDS requires that flood waters be managed within the site for a 1 in 100-year flood. The surface water from each sub-catchment will flow into an attenuation tank or detention basin, which has been designed for that drained area.

The surface water system within each catchment has been hydraulically modelled in CAUSEWAY FLOW software. Please see Appendix 3 for full breakdown of calculations.

Tank 1 = 146m^2
Tank 2 = 551m^2

2.4.2 Criterion 2 GDSDS – River Regime Protection

Regardless of the rainfall event, unchecked run-off from a developed site through traditional pipe networks will discharge into receiving waters at rates that are an order of magnitude greater than that prior to development. This can cause flash flow in the outfall river / stream that can cause scour and erosion. Attenuation storage is provided to prevent this occurring by limiting the rate of run-off to that which took place from the pre-development greenfield site.

In the context of the subject site, peak run -off discharge from the proposed development will be restricted to a peak rate of 2.47l/s with GDSDS requirements. An attenuation tank will be provided on the site for storm events up to and including the 1 in 100 year plus 20% for climate change.

Therefore, GDSDS Criterion 2 is complied with. Refer to Appendix 3 for the surface water attenuation calculation.

2.4.3 Criterion 3 GDSDS – Level of Service for the Site

The GDSDS requires that no flooding should occur on site for storms up to and including the 1 in 30 year event. The pipe network and the attenuation storage volumes should, therefore, be checked for such storms to ensure that no site flooding occurs although partial surcharging of the system is allowed as long as it does not threaten to flood.

For the 1 in 100 year event, the pipe network can fully surcharge and cause site flooding, but the top water level due to any such flooding must be at least 500mm below any vulnerable internal floor levels, and the flood waters should be contained within the site. In addition, the top water level in any attenuation device during the 100 year storm must be at least 500mm below any vulnerable internal floor levels.

Refer to Appendix 3 for the surface water attenuation calculation

2.4.4 Criterion 4 GDSDS – River Flood Protection

Criterion 4 is intended to prevent flooding of the receiving system / watercourse by either limiting the volume of run-off to the pre-development greenfield volume using 'long-term storage' (Option 1) or by limiting the rate of run-off for the 1 in 100 year storm to QBAR or 2.0l/s/ha without applying growth factors using 'extended attenuation storage' (Option 2).

Option 2 is complied with as the proposed development will limit discharge rate to 2.47l/s (QBAR) in line with GDSDS requirements.

2.5 Summary of SuDS Measures

The proposed Surface Water Management Plan for the development is in line with the key requirements of the Dublin City Council Drainage Division and the Dublin City Council Development Plan 2022-2028 with respect to Sustainable Drainage Systems.

Rainfall run-off from the proposed site development will go through at least a two-stage treatment train prior to discharge into the public system.

3. FOUL DRAINAGE SYSTEM

3.1 EXISTING FOUL DRAINAGE SYSTEM

The site is well served with foul sewers on Kimmage Road West to the south.

3.2 PROPOSED FOUL DRAINAGE SYSTEM

The proposed foul drainage system will be designed to take discharges from the new residential units. Drainage from any kitchen/canteen facilities will discharge through a grease separator designed in accordance with IS EN 1825 Part 1 and Part 2 and / or to Irish Water requirements. It is calculated that the proposed development will have a total hydraulic loading of c.93m^3 per day of foul effluent generated during the operational phase of the development. This equates to an average flow of 1.07 litres/second (over a 24-hour period) and a peak flow of 6.44 litres/second.

A breakdown of the foul loading calculations is included in Appendix 1.

A Pre-connection Enquiry application was submitted to Irish Water to confirm capacity in the receiving network and a Confirmation of Feasibility letter was received from IW, confirming that connection to foul sewers in Kimmage Road West is feasible, without upgrade. Similarly, a Statement of Design Acceptance was received from Irish Water which noted no objections to the proposals. Refer to Appendix 5 and Appendix 8.

The distance between the subject site and Kimmage Road West, and the levels of the IW foul sewerage on Kimmage Road West, are such that foul water will be collected in a gravity system within the site and directed to pumping station, from where will be pumped via a rising main to the foul sewer on Kimmage Road West

3.2.1 Residential Flow – 208 no. units

Dry Weather Flow (Daily)	= (Population)(Consumption/Capita) + (Infiltration)
Number of Residential Units	= 208
Population Estimate	= 208 x 2.7 = 561.6 persons
Consumption/Capita	= 150 litres / person / day
Infiltration	= 10%
Average Flow (DWF)	= (208 x 2.7 x 150 x 1.1) = 92,664 litres/day
	= 1.07 litres/second
Peak Flow	= (Average Flow) x (6) = 1.07 x 6
	= 6.44 litres / second

3.2.2 Foul Network Design

The proposed pipe network has been designed in accordance with the relevant requirements of the Irish Water Code of Practice for Wastewater Infrastructure.

The proposed foul drainage network comprises of a series of 150mm / 225mm diameter pipes, designed for a minimum velocity of 0.75m/s (self-cleansing) and maximum velocity of 3.0m/s. A pipe friction coefficient of 1.5mm has been assumed.

4. WATER SUPPLY

4.1 EXISTING WATERMAIN INFRASTRUCTURE

The site is served with watermains on Kimmage Road West to the south and Captain Road to the East.

4.2 PROPOSED WATERMAINS

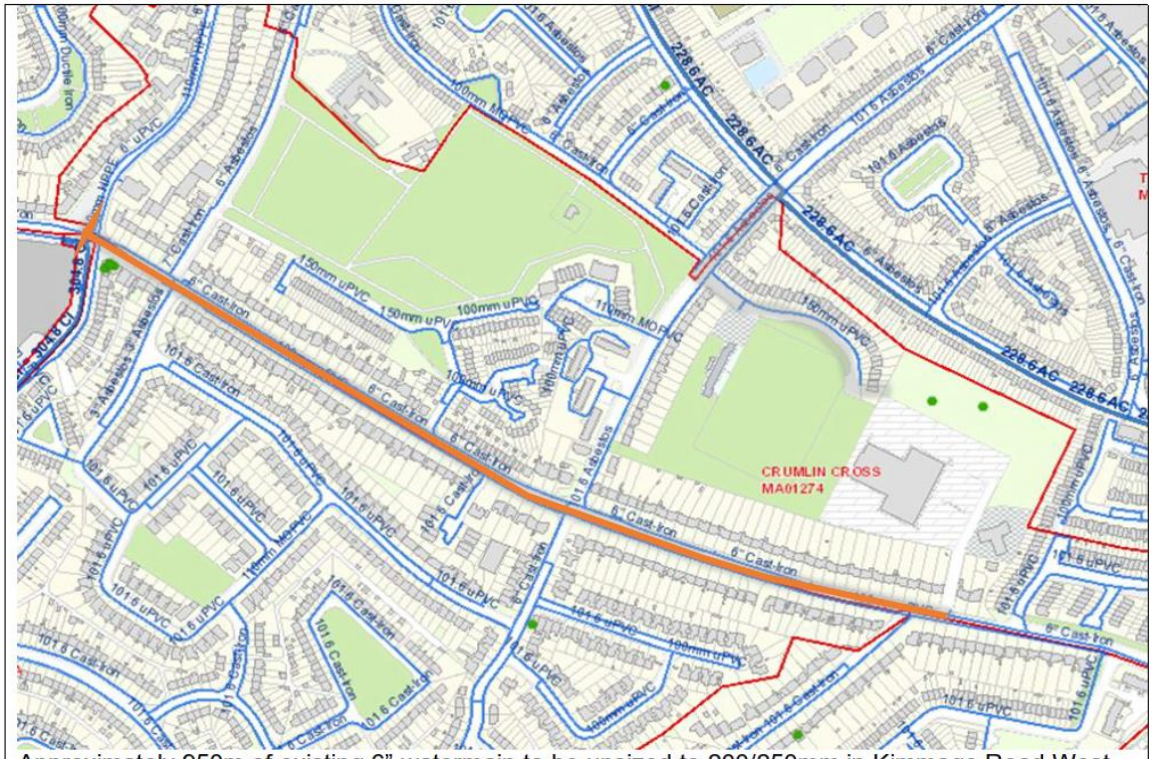
A Pre-connection Enquiry application was submitted to Irish Water to confirm capacity in the network. A Confirmation of Feasibility letter was received from IW, confirming that connection to their watermain system is feasible, with certain upgrade works. Similarly, a Statement of Design Acceptance was received from Irish Water which noted no objections to the proposals. Refer to Appendix 5 and Appendix 8.

One option has been given by Irish Water:

Connect to the watermain in Kimmage Road West, with upgrade works required to upsize the existing 6" diameter watermain to 200/250mm watermain for approximately 950m.

Refer to Figure 4.1 for Irish Water Map indicating watermain upgrade option.

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Approximately 950m of existing 6" watermain to be upsized to 200/250mm in Kimmage Road West (Orange)

Figure 4.1 – Irish Water Map indicating watermain upgrade option

Irish Water also note that the project requires the installation of approximately 180m of new watermain through third party lands (Ben Dunne Carlisle Gym access road) to Kimmage Road West.

Please refer to Architects Drawing No. 6269-P-001 'Location Map' for confirmation of the legal easement granted to the applicant over the Ben Dunne Carlisle Gym Access Road.

4.2.1 Water Demand

It is calculated that that proposed development will have a total water demand of c.84m^3 per day during the operational phase of the development. This equates to an average flow of 1.22 litres/second (over a 24-hour period) and a peak flow of 6.09 litres/second. A breakdown of the water demand calculations is included in Appendix 2.

4.2.2 Residential Demand – 208 no. units

Average Daily Demand	= (Population)(Consumption/Capita)
Number of Residential Units	= 208
Population Estimate	= 208 x 2.7 = 561.6 persons
Consumption/Capita	= 150 litres / person / day
Average Daily Demand	= 561.6 x 150
	= 84,240 litres/day
Average Day/Peak Week Demand	= (Average Daily Demand) x 1.25
	= 105,300 litres/day
	= 1.22 litres/second
Peak Demand	= (Average Day/Peak Week Demand) x 5
	= 6.09 litres/second

5. ROADS ACCESS

5.1 ACCESS ONTO KIMMAGE ROAD WEST

Proposed roads access, pedestrian and cyclist access to the site is from Kimmage Road West, via the existing access road which currently serves Ben Dunne Carlisle Gym. We confirm that the applicant can demonstrate legal permission to access the site via this existing road. Please refer to Architects Drawing No. 6269-P-001 'Location Map' for confirmation of the legal easement granted to the applicant over the Ben Dunne Carlisle Gym Access Road.

5.2 COMMENTS OF DCC TRANSPORTATION PLANNING DEPT FROM PREVIOUS SHD APPLICATION

Comments were received from DCC Transportation Planning as part of their SHD Stage 2 PAC response for the previous planning application ABP 313043 (subsequently granted) and also at the tri-partite meeting with ABP, relating to pedestrian and cyclist connectivity to the site along the existing access. These comments have been taken on board insofar as is possible and certain measures have been included. These are indicated on Drawing C1010 and C1011 and include:

- Provision of two uncontrolled pedestrian crossing points on the existing access road.
- Relocation of the existing height barrier to control access to the Carlisle Gym Carpark
- Provision of a new 1.8m footpath on the eastern side of the existing access road. This means that there is continuous footpath along both sides of the access road, from the subject site to Kimmage Road West.
- Reduced width of the dual entrance/exit arrangement of Ben Dunne Gyms from 8m to 6m which will facilitate more convenient crossing for pedestrians. Provision of two uncontrolled pedestrian crossing points across the entrance and exit aisles of the Carlisle Gym car park.
- Provision of a DMURS compliant site entrance arrangement.
- Reduced carriageway width for the majority of the access road, from 8m to 6m, and amended carriageway alignment.
- Introduction of on-carriageway 'advisory cycleways' on the existing access road, the entire way from Kimmage Road West to the entrance of the proposed development.
- Provision of a flush pedestrian crossing and indication of pedestrian priority across the access road onto Kimmage Road West, achieved by way of a change of surfacing type and colour between road carriageway and pedestrian zone.
- A full Quality Audit, including Stage 1 Road Safety Audit, has been carried out and is submitted with the application. See Section 6 below for further detail.

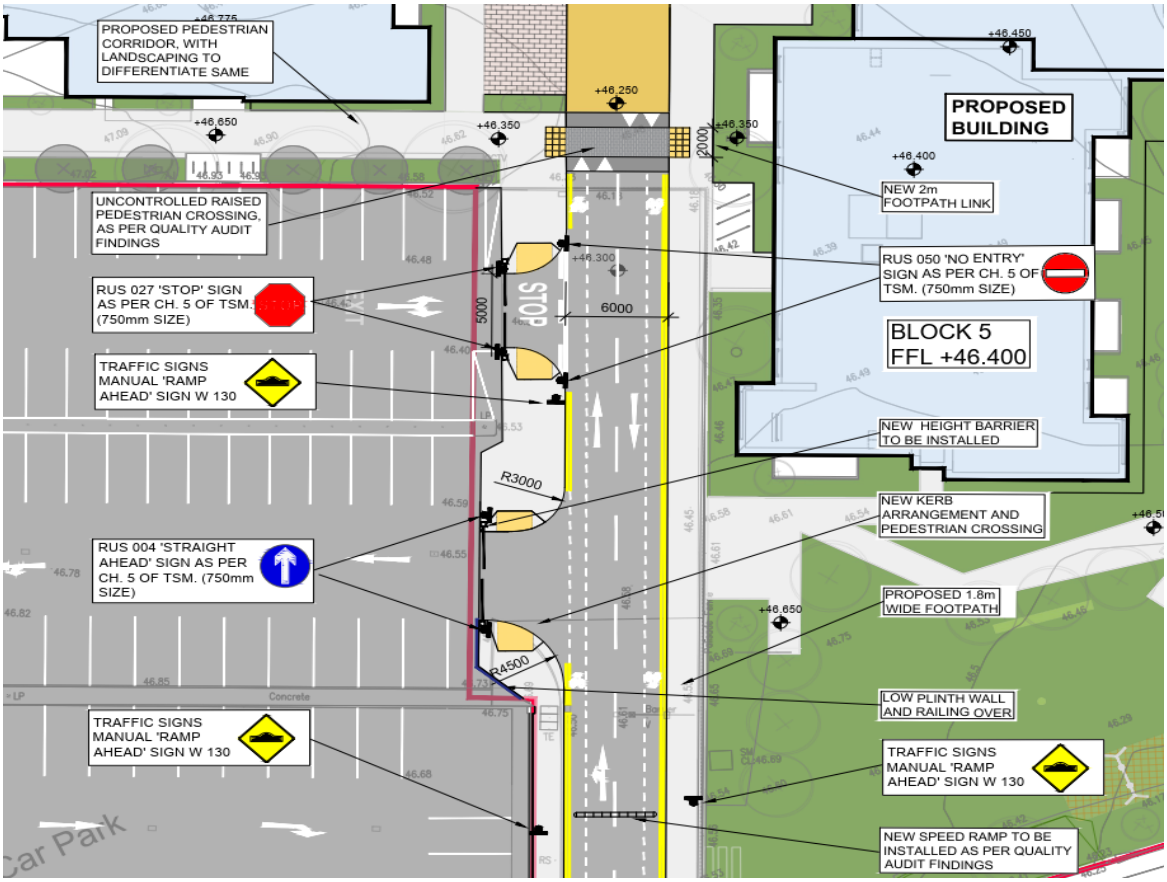


Figure 5.1 – Site Entrance Arrangement (See CST-BMD-00-ZZ-DR-C-1017 for further details)

6. QUALITY AUDIT RESPONSE

6.1 ITEM 1

Access road is noted to be relatively straight and relatively long, which will lead to high vehicle speed and as a result high injury severity if a pedestrian or cyclist is struck by an errant vehicle.

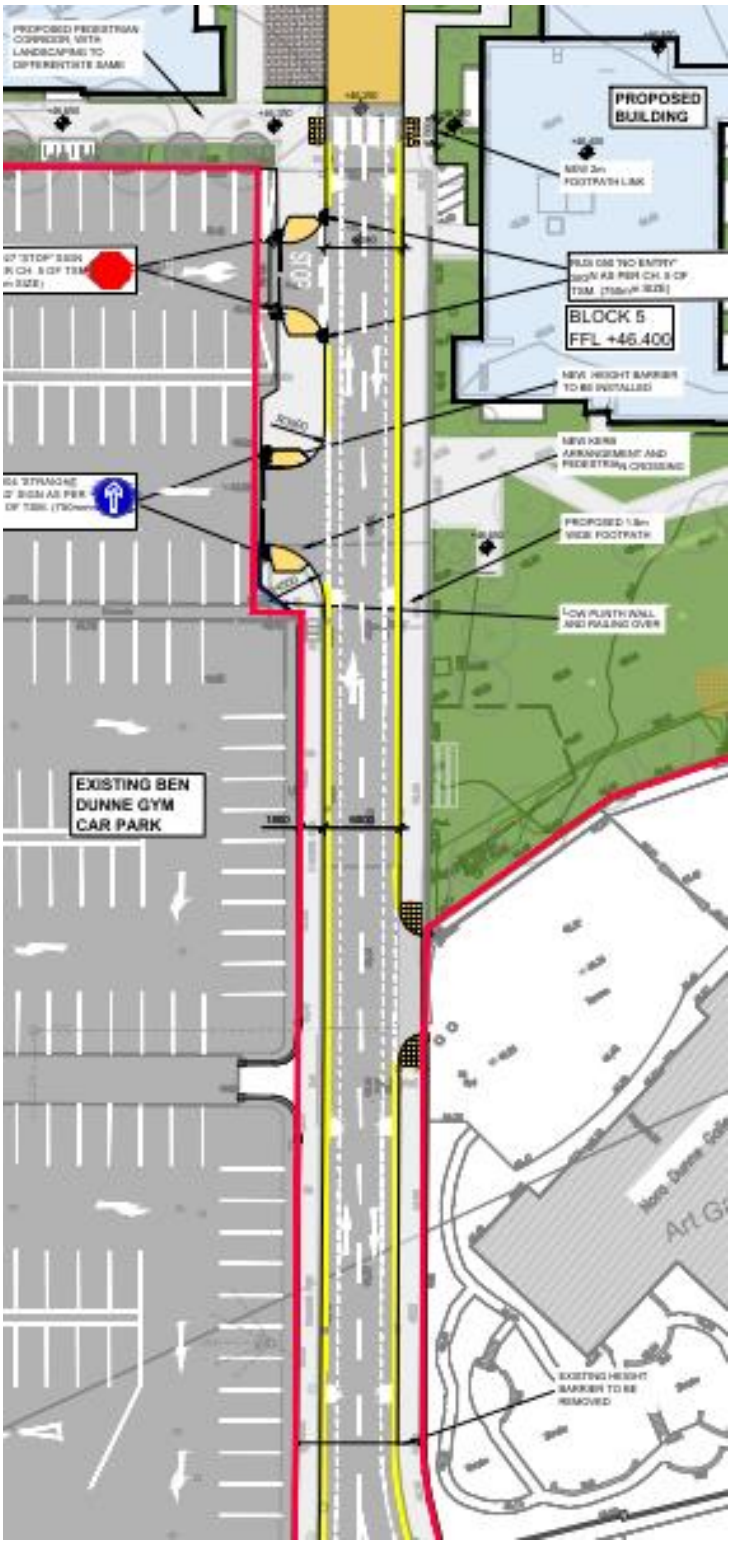


Figure 6.1 – Initial Access Road Layout showing no traffic calming measures

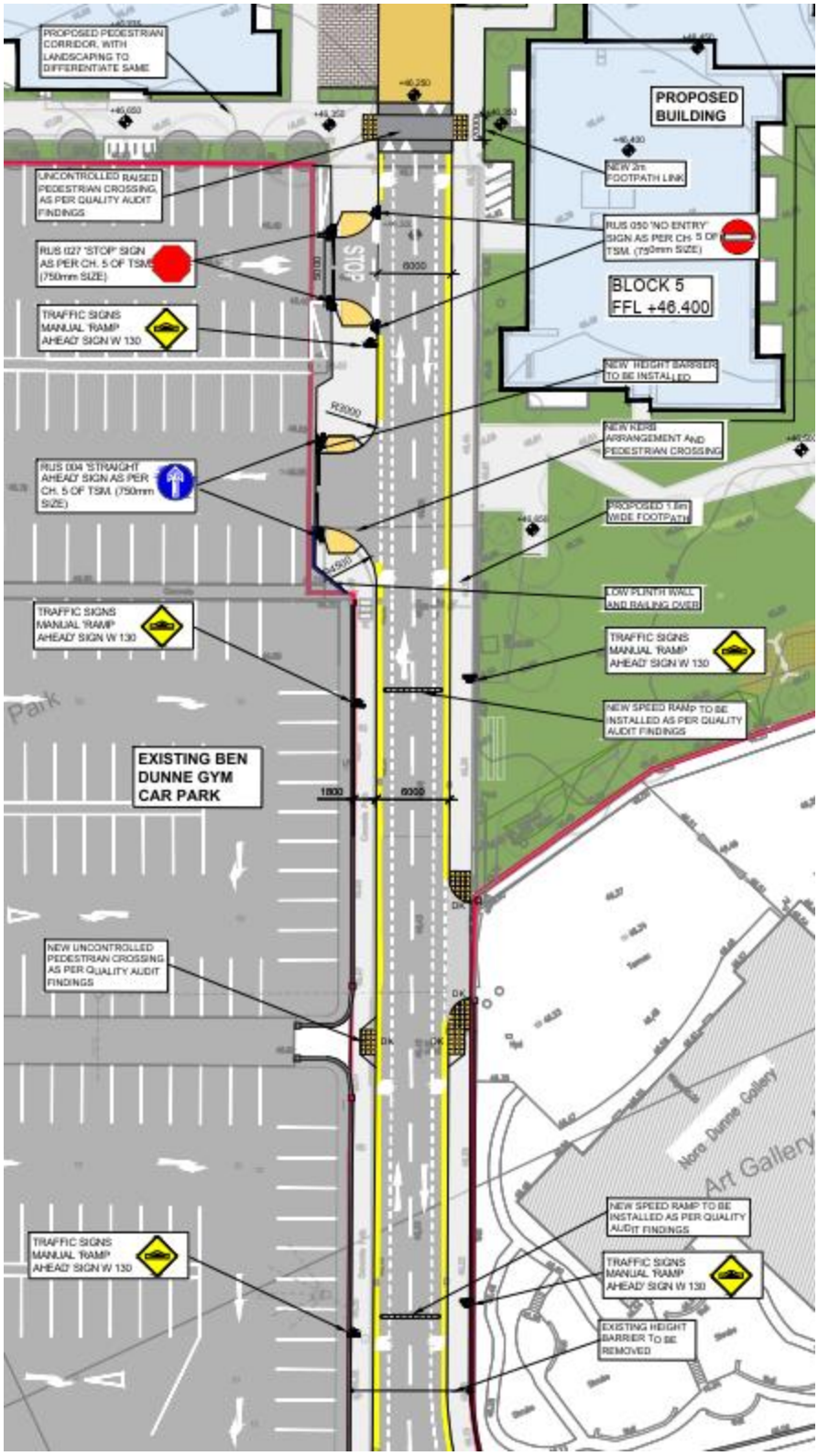


Figure 6.2 – Updated Access Road Layout with traffic calming measures

Traffic calming measures have been provided through the use of speed ramps along the access road to the site. See BMCE drawing CST-BMD00-ZZ-DR-C-1017.

6.2 ITEM 2

There will be a pedestrian desire line across the main access road to the pedestrian only access to the Ben Dunne Gym. Without the provision of dropped kerbs this could lead to trips and falls.

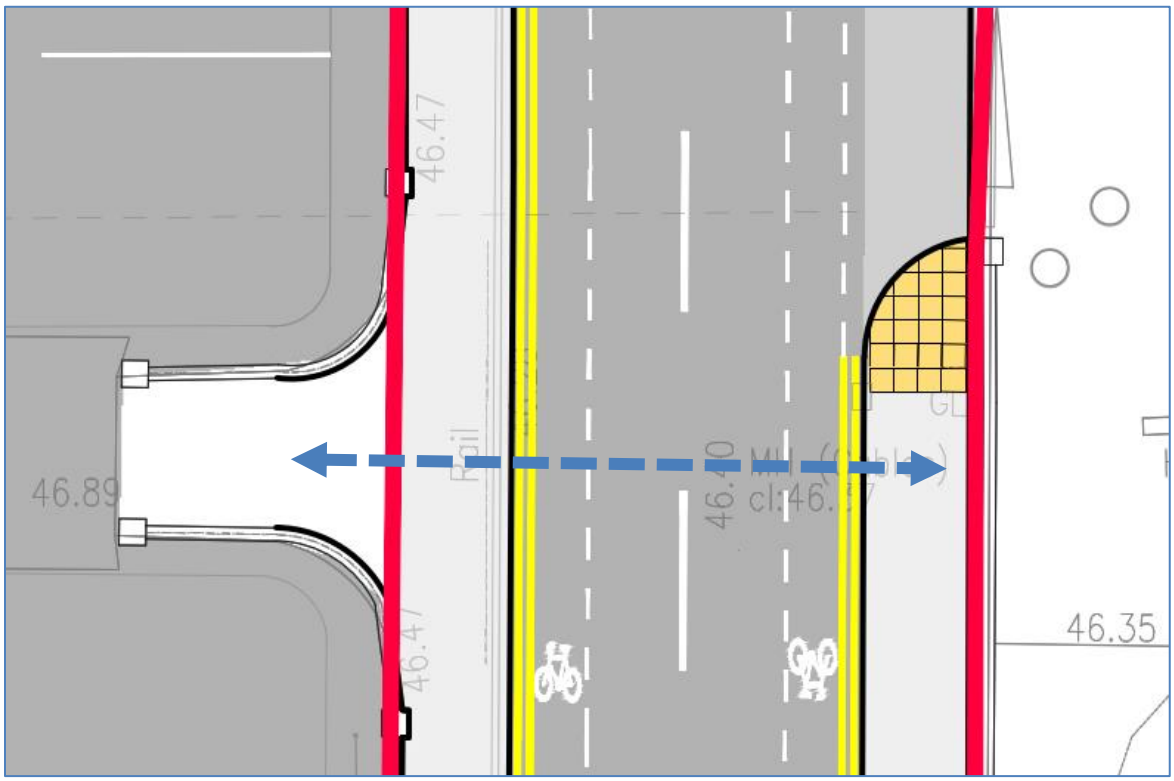


Figure 6.3 – Initial Pedestrian Desire Line to Ben Dunne Gym

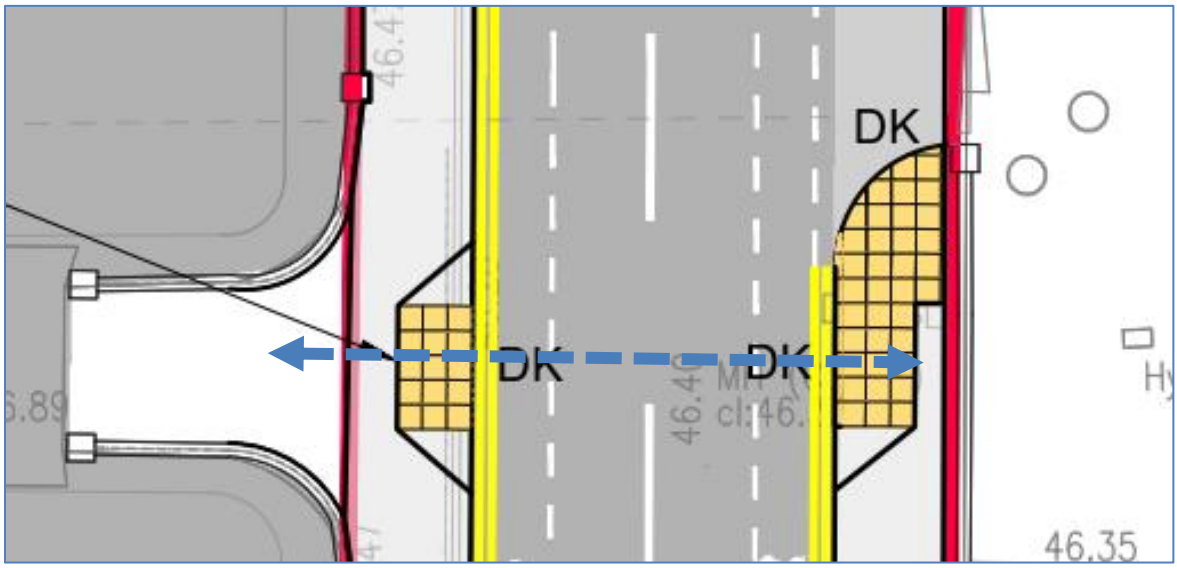


Figure 6.4 – Updated Pedestrian Desire Line to Ben Dunne Gym

Based on the recommendations, dropped kerbs and suitable tactile paving is to be provided to cater for the pedestrian desire line. See BMCE drawing CST-BMD00-ZZ-DR-C-1017.

6.3 ITEM 3

Proposed pedestrian crossing at the start of the shared use road was highlighted. The proposed zebra type black and white stripes may lead to confusion over priority, with pedestrians thinking they have priority due to the stripes while drivers may think otherwise due to the lack of flashing beacons. This confusion may lead to collision between vehicles and pedestrians.

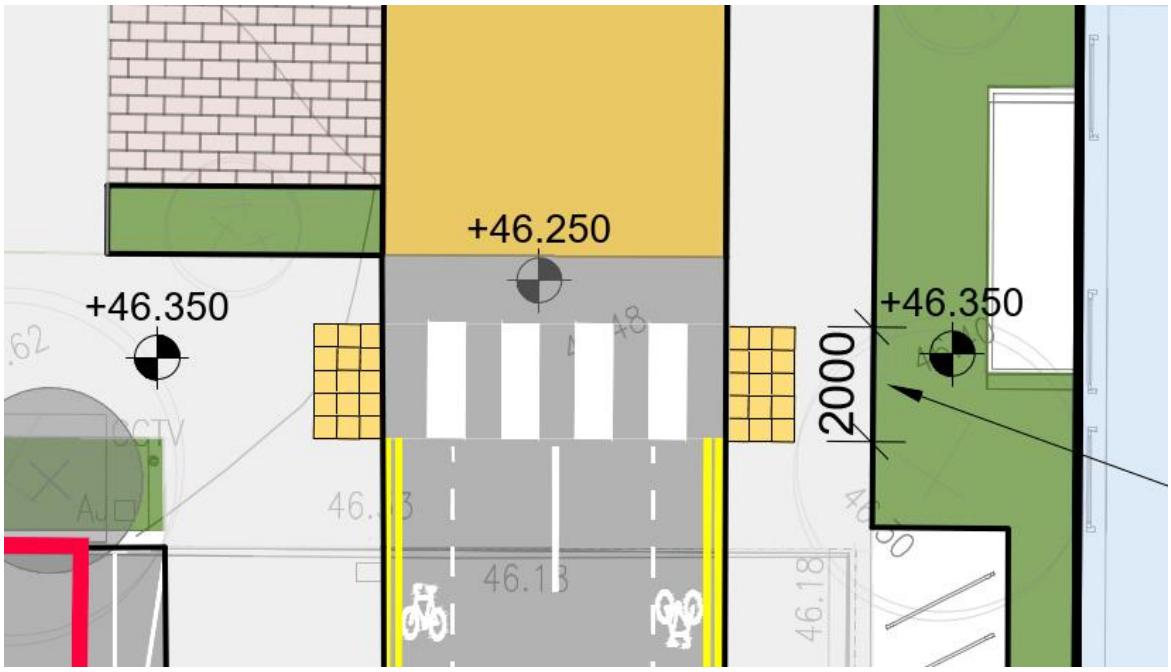


Figure 6.5 – Initial Pedestrian Crossing at start of shared road

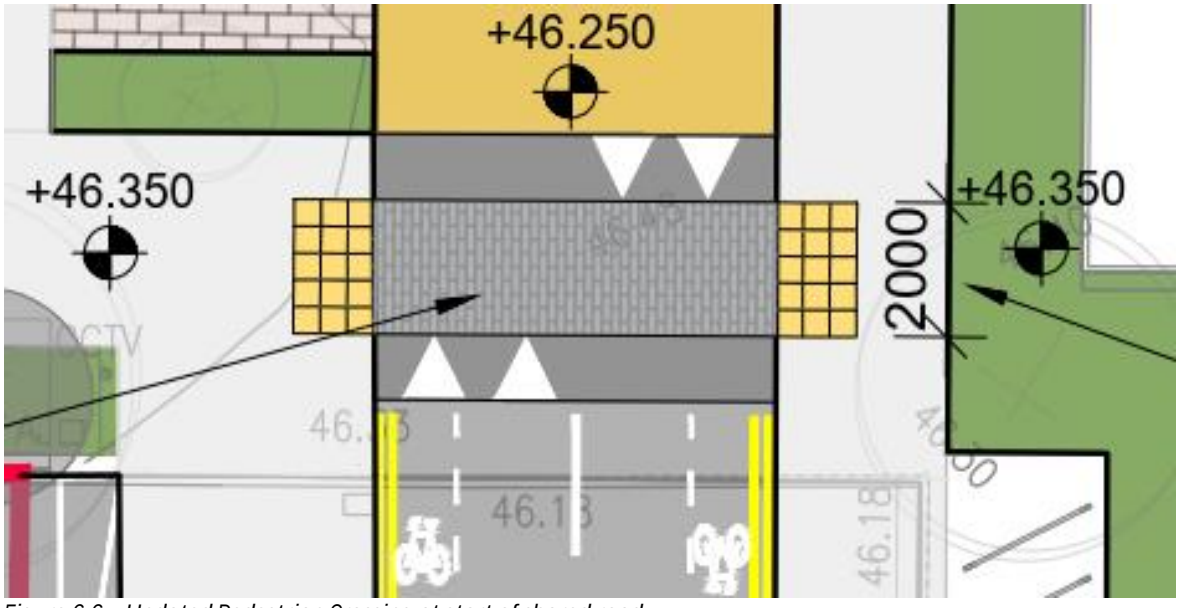


Figure 6.6 – Updated Pedestrian Crossing at start of shared road

Based on the Quality Audits recommendations the stripes have been removed and an uncontrolled pedestrian crossing is proposed. See BMCE drawing CST-BMD00-ZZ-DR-C-1017.

6.4 ITEM 4

A risk of surface water ponding was noted at the dropped kerb locations for uncontrolled pedestrian crossings if there are not adequate drainage provision upstream of each crossing. This could lead to slips and falls in wet or icy conditions.

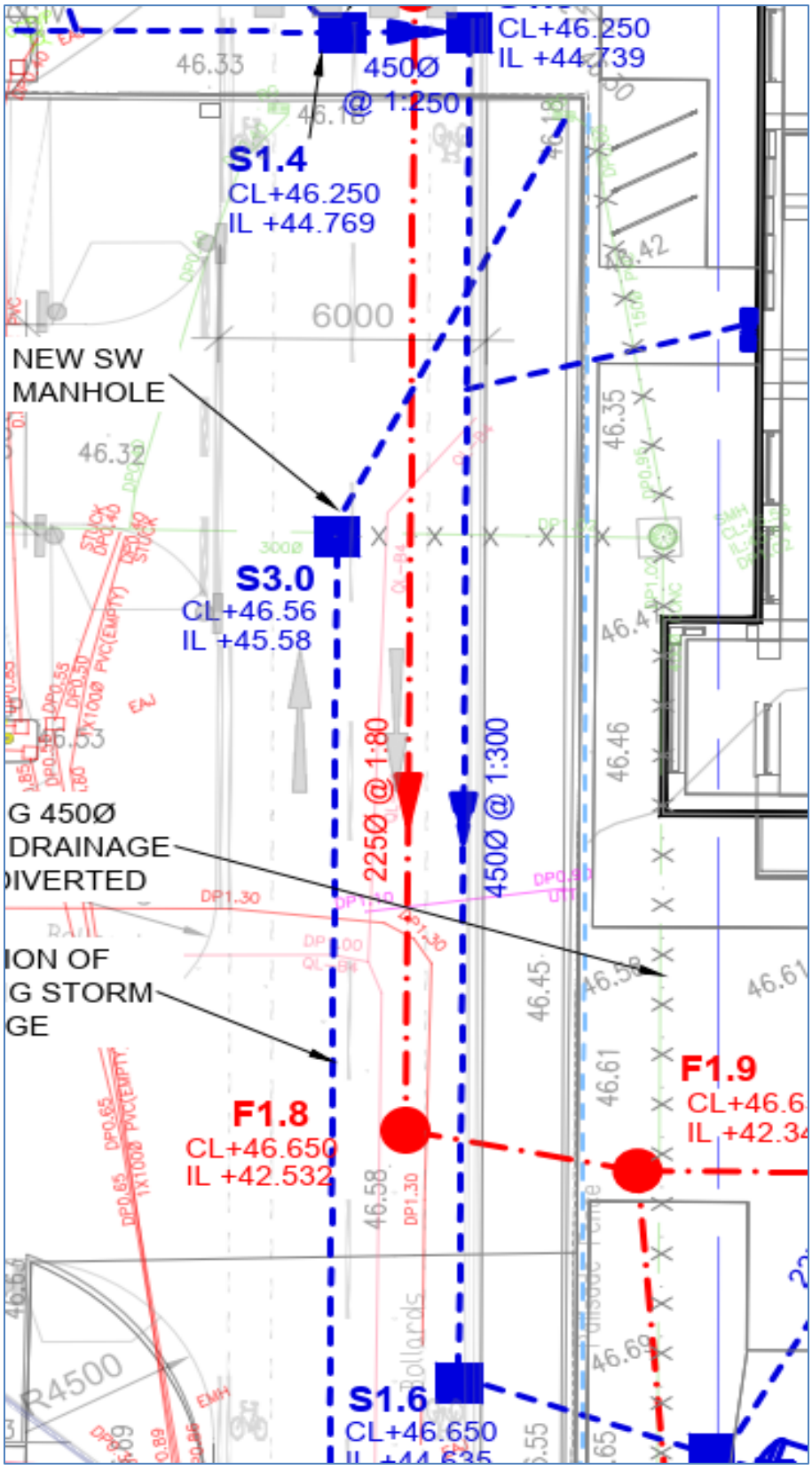


Figure 6.7 – Initial Surface Water Layout

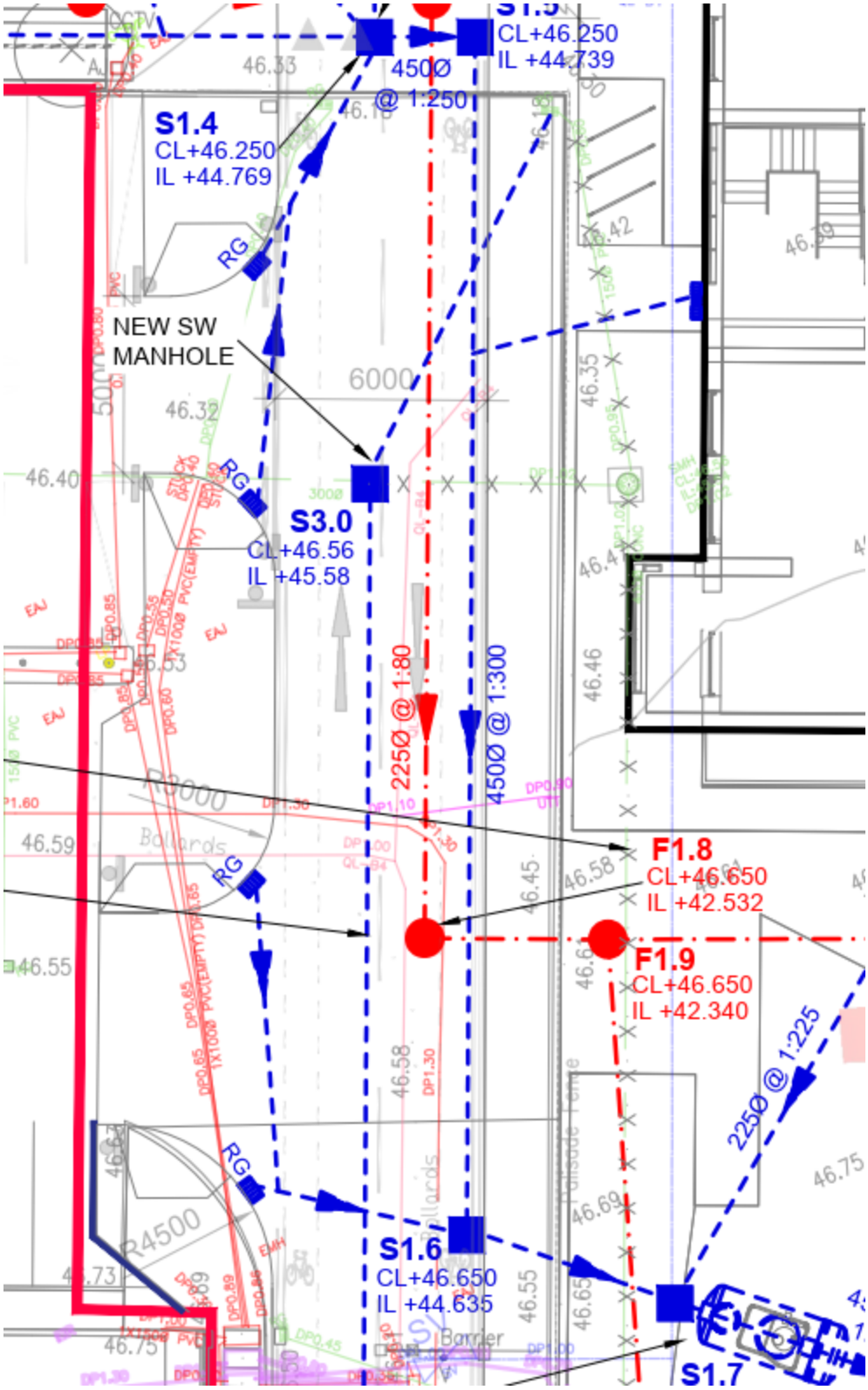


Figure 6.8 – Updated Surface Water Layout with gullies

Gullies have now been proposed immediately upstream of all dropped kerbs to prevent this issue. See BMCE drawing CST-BMD-00-ZZ-DR-C-1002.

7. RESPONSE TO AN BORD PLEANALA OPINION DURING PREVIOUS SHD APPLICATION (ABP 313043)

7.1 ITEM 6

As demonstrated by the correspondence in Appendix 7 the proposed layout was discussed in detail with Dublin City Council during the previous planning application ABP 313043 (subsequently granted), addressing each item raised in their response to the ABP Tri-partite request. All issues raised have now been fully addressed and incorporated within the planning application. Dublin City Council are in agreement with the layout and design of this development.

The design and layout of the existing access road has been amended and assessed against DMURS and also an independent Quality Audit has been carried out. Both the DMURS Statement and the Quality Audit confirm that pedestrian and cycle movements can be safely accommodated both within the proposed development and along the existing road which incorporates amendments to ensure safety of all users.

BMCE drawing no. CST-BMD-00-ZZ-DR-C-1017 clearly indicates all improvements to the existing access road. Letters of consent are also included with this application.

See Appendix 7 for responses to issues raised in the report of the Dublin City Council Transport Planning Division, dated 9th November 2021.

7.2 ITEM 7

A full Quality Audit, including Stage 1 Road Safety Audit, has been carried out by Bruton Consulting Engineering and is submitted with this application. In addition, see Section 6 above for further details.

7.3 ITEM 8

A preliminary Construction Management Plan is submitted with this application.

7.4 ITEM 9

Details and specification of proposed cycle parking provision is provided in the Parking Report / Residential Travel Plan submitted with this application.

8. TRAFFIC & TRANSPORTATION ASSESSMENT

Refer to separate report outlining the traffic and transportation assessment submitted with this planning application. The TIA concludes as follows:

- While there is limited cycle accessibility at present close to the site, future proposals as stated within the GDA Cycle Network Plan will improve accessibility levels.
- The site is well served by public transport, with regular bus services and located very close to the location of the proposed development.
- Future proposals as stated within the Bus Connects Report will further improve public transport connectivity to the city centre and north / south suburbs.
- The network analysis within the TIA indicates that, for the 2 No. existing critical junctions in the vicinity of the proposed development, 1 No. presently works within capacity, and 1 No. operating at / over-capacity, with the proposed development having a very limited impact on existing congestion levels.

- The report demonstrates that the development access junction at present works within capacity and the detailed analysis within this report demonstrates that it will continue to do so with the proposed development in place, with moderate levels of queuing and delays.

Please also refer to the Construction Traffic Management Plan included in this application.

9. FLOOD RISK ASSESSMENT

Refer to the BMCE Site Specific Flood Risk Assessment submitted as part of this planning application. This SSFRA was carried out in accordance with the DEHLG guidelines for Planning 2009 and The Planning and Development Act 2000. The SSFRA concludes as follows:

- Based on available and recorded information, the site has not been subject to flooding in recent history.
- The risk of tidal flooding is considered very low as the subject site lies outside the 0.1% AEP.
- The risk of fluvial flooding in the area is considered low as the proposed site lies outside the 1% AEP.
- The risk of flooding due to ground water ingress to the proposed development is considered low.
- The risk of pluvial flooding is considered low, due to the site location and proposed measures for the development.
- Based on the flood risk identification in Stage 1, the proposed development falls in Flood Zone C. Therefore, the proposed development is deemed 'Appropriate' in accordance with the guidelines of the OPW's publication.

10. MOBILITY MANAGEMENT MEASURES

10.1 PARKING REPORT AND RESIDENTIAL TRAVEL PLAN

Refer to the BMCE Site Specific Parking Report and Residential Travel Plan submitted as part of this planning application.

External
Car Standard spaces – 32No.
Car Accessible spaces - 2No.

Undercroft
Car Standard spaces– 12No.
EV Charging spaces– 50No.
Car Accessible spaces– 4No.

Percentage Car Spaces which are fully EV equipped – 50% (50No.)

Total Car Spaces 100No.

Undercroft
Motorcycle Parking – 6 (6%)

Resident Standard Bicycle – 336No.
Resident Cargo Bicycle – 16No.

Visitor Standard Bicycle – 120No.
Visitor Cargo Bicycle – 12No.
Total Bicycle – 484No.

10.2 Proactive Management Of Proposed Car Parking

Refer to the site specific 'Car Park Management Strategy' document submitted with this application. The CPMS focuses on proposed measures to efficiently manage the proposed physical parking infrastructure and has 6 key objectives:

- OBJECTIVE 1 - Provide safe, clean, well-lit and well maintained car parking facilities for the residents of (and visitors to) the proposed Carlisle Residential development.
- OBJECTIVE 2 - Utilize existing car parking facilities in the most efficient way possible, to get best use of the parking resources on a 24/7 basis, to the benefit of the maximum number of residents. Reduce the inefficient use of spaces and reduce 'vacant time' for car spaces.
- OBJECTIVE 3 - Mitigate the risk of illegal parking within the development.
- OBJECTIVE 4 - On an ongoing basis, investigate and assess the use of established and new technology to aid in the efficient management of the available car parking resources.
- OBJECTIVE 5 - Liaise with the Management Companies and Managing Agents within the wider Kimmage district regarding car parking matters, including common goals and new initiatives, potential operation and maintenance cost efficiencies, identification and availability of under-utilised car parking resources in the area, security matters.
- OBJECTIVE 6 - Ensure that the Management Company rules have a dedicated section relating to the use of car parking spaces and bicycle parking spaces, and that same is consistent with the strategies set out herein.

10.3 Car Share Facility

The Department of Housing & Planning Design Standards for New Apartments - Guidelines for Planning Authorities 2018 outlines that: *"For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles."*

As part of the overall transportation assessment for the site, we have contacted YUKO and they have indicated their willingness to place 2No car share vehicles at the subject development. Refer to the letter of support from YUKO Car Share (Toyota) in respect of the proposed development, which is included in Appendix 6 of this report

Toyota state that research has indicated that each Yuko self-charging hybrid vehicle has the potential to replace the journeys of up to 20-30 private cars (based on Boston Consulting report 2017).

Appendix 1

Foul Load Calculation

BARRETT MAHONY
CONSULTING ENGINEERS
CIVIL & STRUCTURAL

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Sandwith House,
52-54 Lower Sandwith Street,
Dublin 2, D02 WR26, Ireland

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www.bmce.ie

PROJECT TITLE:	CARLISLE SITE, KIMMAGE	BY:	K.B
CALCULATION:	FOUL WATER FLOW	PAGE:	1
APPENDIX:	A	DATE:	01/02/2022

	SUMMARY:	Total Peak Flow	Total Average Flow
A:	Residential	6.435 l/s	1.073 l/s
		6.435 l/s	**1.073 l/s**

A: RESIDENTIAL - 208 UNITS

The foul effluent from the proposed dwellings is calculated as per the Irish Water Code of Practice for Wastewater Infrastructure (July 2020 (rev. 2)) assuming dry weather flow of 150 l/head/day plus a 10% infiltration rate and using the Irish Water assumed average occupancy of 2.7 persons/unit.

No. of Units = 208

No. of Occupants = 208 x 2.7 = 561.6

Daily Flow = No. of Occupants x Dry Weather Flow

Daily Flow = 561.6 x 150 x 1.1 = 92,664 l/day

$$\text{Average Flow} = \frac{\text{Daily Flow}}{\text{Flow Duration}} = \frac{92{,}664 \text{ l/day}}{24 \times 60 \times 60} = \mathbf{1.073\ l/s}$$

Peak Flow = Average Flow x 6

Peak Flow = 1.073 l/s x 6 = **6.435 l/s**

Appendix 2

Water Demand Calculation

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PROJECT TITLE:	CARLISLE SITE, KIMMAGE	BY:	K.B
CALCULATION:	WATER DEMAND	PAGE:	1
APPENDIX:	B	DATE:	01/02/2022

SUMMARY:		Total Peak Demand	Total Average Demand
A:	Residential	6.094 l/s	1.219 l/s
		6.094 l/s	**1.219 l/s**

A: **RESIDENTIAL - 208 UNITS**

The water demand for the proposed development has been calculated using the guidelines given in the Irish Water Code of Practice for Water Infrastructure July 2020 Rev 2) Section 3.7.2 assuming a per-capita consumption of 150 l/head/day and using the Irish Water assumed average occupancy of 2.7 persons/unit. The average day/peak week demand is taken as 1.25 times the average daily domestic demand. The peak demand factor is taken as 5 times the average day/peak week demand.

No. of Units = 208

No. of Occupants = 208 x 2.7 = 561.6

Avg. Daily Demand = No. of Occupants x Allowance per head

Avg. Daily Demand = 561.6 x 150 = 84,240 l/day

$$\text{Average Flow} = \frac{\text{Daily Flow}}{\text{Flow Duration}} \times 1.25 = \frac{84{,}240 \text{ l/day}}{24 \times 60 \times 60} \times 1.25 = \mathbf{1.219\ l/s}$$

Peak Demand = Average Flow x 5

Peak Demand = 1.219 l/s x 5 = **6.094 l/s**

Appendix 3

Surface Water Attenuation Calculation

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.276	Preferred Cover Depth (m)	1.200
CV	1.000	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)
S1.0	0.027	4.00	46.500	1200	712974.888	730772.606	0.700
S1.1	0.034	4.00	46.950	1200	712956.049	730732.840	1.370
S1.2	0.022	4.00	46.925	1200	712998.111	730712.901	1.653
S1.3	0.027	4.00	46.650	1200	713037.326	730694.429	1.551
S2.0.1	0.060	4.00	46.950	1200	712992.063	730744.794	1.200
S2.0	0.054	4.00	46.350	1200	713000.638	730762.932	0.700
S2.1.1	0.039	4.00	46.950	1200	713005.168	730738.555	1.200
S2.1	0.020	4.00	46.325	1200	713013.747	730756.701	0.823
S2.2.1	0.057	4.00	46.950	1200	713023.787	730729.808	1.200
S2.2	0.020	4.00	46.300	1350	713032.379	730747.982	0.942
S2.3.1	0.028	4.00	46.840	1200	713038.127	730722.786	1.200
S2.3	0.000		46.250	1350	713046.871	730741.295	0.965
S2.4.1	0.044	4.00	46.725	1200	713052.705	730716.223	1.200
S2.4	0.097	4.00	46.225	1350	713061.358	730734.560	1.053
S2.5.1	0.075	4.00	46.150	1200	713128.196	730703.493	0.650
S2.5	0.056	4.00	46.170	1350	713098.100	730717.451	1.133
S1.4A	0.071	4.00	46.300	1350	713087.934	730695.975	1.342
S1.4	0.133	4.00	46.250	1350	713078.083	730675.168	1.481
S1.5	0.026	4.00	46.650	1350	713066.703	730639.883	2.005
TANK	0.000	4.00	46.450		713083.105	730631.941	1.866
S1.6	0.020	4.00	46.350	1200	713085.103	730624.427	1.792
EX.S	0.000	4.00	45.250	1200	713095.251	730601.170	0.777

Links (Results)

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	0.921	36.6	4.9	0.475	1.145	0.027	0.0	55	0.641
1.001	0.921	36.6	11.0	1.145	1.353	0.061	0.0	85	0.809
1.002	0.990	70.0	15.0	1.353	1.251	0.083	0.0	94	0.793
1.003	0.990	70.0	19.9	1.251	1.031	0.110	0.0	109	0.856
3.006	0.921	36.6	10.8	0.975	0.475	0.060	0.0	84	0.805
3.005	0.921	36.6	20.6	0.475	0.523	0.114	0.0	121	0.947
8.000	1.192	47.4	7.0	0.975	0.517	0.039	0.0	58	0.860
3.004	0.902	63.8	31.3	0.523	0.567	0.173	0.0	148	0.897
7.000	1.307	52.0	10.3	0.975	0.526	0.057	0.0	68	1.026
3.003	1.041	114.9	45.2	0.567	0.570	0.250	0.0	163	0.980
6.000	1.307	52.0	5.1	0.975	0.590	0.028	0.0	47	0.833
3.002	1.041	114.9	50.2	0.590	0.618	0.278	0.0	173	1.007
5.000	1.307	52.0	8.0	0.975	0.678	0.044	0.0	59	0.952

Links (Results)

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
3.001	1.041	114.9	75.7	0.678	0.758	0.419	0.0	222	1.108
3.000	0.867	34.5	13.6	0.425	0.592	0.075	0.0	98	0.817
4.001	1.041	114.9	99.4	0.758	0.967	0.550	0.0	271	1.166
4.000	1.041	114.9	112.2	0.967	0.994	0.621	0.0	301	1.179
1.004	1.168	185.8	156.1	1.031	1.555	0.864	0.0	318	1.303
1.005	1.168	185.8	160.8	1.555	1.416	0.890	0.0	325	1.308
1.006	0.750	29.8	160.8	1.641	1.567	0.890	0.0	225	0.763
1.007	0.750	29.8	164.4	1.567	0.552	0.910	0.0	225	0.763
overflow				0.150					

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	17.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.276	Check Discharge Rate(s)	x
Summer CV	1.000	Check Discharge Volume	x
Analysis Speed	Detailed		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	20	0	0
30	20	0	0
100	20	0	0

Node TANK Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	44.584	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Node S2.0.1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	45.750	Diameter (m)	0.060		

Node S2.1.1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	45.750	Diameter (m)	0.060		

Node S2.2.1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	45.750	Diameter (m)	0.060		

Node S2.3.1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	45.640	Diameter (m)	0.060		

Node S2.4.1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.100	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	45.525	Diameter (m)	0.060		

Node TANK Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.584
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	420.0	0.0	1.200	420.0	0.0	1.201	0.0	0.0

Node S2.0.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.750
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	570

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	692.0	0.0	0.065	692.0	0.0	0.066	0.0	0.0

Node S2.1.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.750
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	692.0	0.0	0.065	692.0	0.0	0.066	0.0	0.0

Node S2.2.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.750
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	692.0	0.0	0.065	692.0	0.0	0.066	0.0	0.0

Node S2.3.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.640
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	692.0	0.0	0.065	692.0	0.0	0.066	0.0	0.0

Node S2.4.1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	45.525
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	692.0	0.0	0.065	692.0	0.0	0.066	0.0	0.0

Node S1.4 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	44.769
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	

Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)	Depth (m)	Area (m²)	Inf Area (m²)
0.000	230.0	0.0	0.800	230.0	0.0	0.801	0.0	0.0

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
1 year +20% CC 15 minute summer	109.542	30.997
1 year +20% CC 30 minute summer	75.218	21.284
1 year +20% CC 60 minute summer	53.572	14.158
1 year +20% CC 120 minute summer	35.040	9.260
1 year +20% CC 180 minute summer	27.964	7.196
1 year +20% CC 240 minute summer	22.752	6.013
1 year +20% CC 360 minute summer	18.104	4.659
1 year +20% CC 480 minute summer	14.694	3.883
1 year +20% CC 600 minute summer	12.329	3.372
1 year +20% CC 720 minute summer	11.284	3.024
1 year +20% CC 960 minute summer	9.552	2.515
1 year +20% CC 1440 minute summer	7.240	1.940
1 year +20% CC 2160 minute summer	5.412	1.496
1 year +20% CC 2880 minute summer	4.642	1.244
1 year +20% CC 4320 minute summer	3.674	0.961
1 year +20% CC 5760 minute summer	3.114	0.797
1 year +20% CC 7200 minute summer	2.704	0.690
1 year +20% CC 8640 minute summer	2.403	0.613
1 year +20% CC 10080 minute summer	2.175	0.555
30 year +20% CC 15 minute summer	243.458	68.890
30 year +20% CC 30 minute summer	167.119	47.289
30 year +20% CC 60 minute summer	116.572	30.807
30 year +20% CC 120 minute summer	74.169	19.601
30 year +20% CC 180 minute summer	58.060	14.941
30 year +20% CC 240 minute summer	46.537	12.298

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
30 year +20% CC 360 minute summer	36.253	9.329
30 year +20% CC 480 minute summer	28.985	7.660
30 year +20% CC 600 minute summer	24.022	6.571
30 year +20% CC 720 minute summer	21.624	5.795
30 year +20% CC 960 minute summer	18.048	4.752
30 year +20% CC 1440 minute summer	13.404	3.592
30 year +20% CC 2160 minute summer	9.818	2.713
30 year +20% CC 2880 minute summer	8.291	2.222
30 year +20% CC 4320 minute summer	6.408	1.675
30 year +20% CC 5760 minute summer	5.354	1.371
30 year +20% CC 7200 minute summer	4.597	1.173
30 year +20% CC 8640 minute summer	4.047	1.032
30 year +20% CC 10080 minute summer	3.633	0.927
100 year +20% CC 15 minute summer	315.942	89.401
100 year +20% CC 30 minute summer	218.212	61.746
100 year +20% CC 60 minute summer	151.342	39.995
100 year +20% CC 120 minute summer	95.471	25.230
100 year +20% CC 180 minute summer	74.276	19.114
100 year +20% CC 240 minute summer	59.255	15.659
100 year +20% CC 360 minute summer	45.839	11.796
100 year +20% CC 480 minute summer	36.460	9.635
100 year +20% CC 600 minute summer	30.093	8.231
100 year +20% CC 720 minute summer	26.996	7.235
100 year +20% CC 960 minute summer	22.411	5.901
100 year +20% CC 1440 minute summer	16.519	4.427
100 year +20% CC 2160 minute summer	12.007	3.318
100 year +20% CC 2880 minute summer	10.080	2.701
100 year +20% CC 4320 minute summer	7.723	2.019
100 year +20% CC 5760 minute summer	6.411	1.641
100 year +20% CC 7200 minute summer	5.477	1.397
100 year +20% CC 8640 minute summer	4.801	1.225
100 year +20% CC 10080 minute summer	4.295	1.096

Results for 1 year +20% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	45.857	0.057	5.4	0.1089	0.0000	OK
15 minute summer	S1.1	11	45.665	0.085	12.1	0.1388	0.0000	OK
15 minute summer	S1.2	11	45.365	0.093	14.6	0.1306	0.0000	OK
15 minute summer	S1.3	11	45.204	0.105	19.3	0.1560	0.0000	OK
2880 minute summer	S2.0.1	1740	45.776	0.026	0.8	16.9939	0.0000	OK
15 minute summer	S2.0	10	45.737	0.087	10.7	0.2322	0.0000	OK
2160 minute summer	S2.1.1	1380	45.770	0.020	0.6	13.0093	0.0000	OK
15 minute summer	S2.1	10	45.603	0.101	14.7	0.1627	0.0000	OK
2160 minute summer	S2.2.1	1320	45.775	0.025	0.9	16.7542	0.0000	OK
15 minute summer	S2.2	10	45.463	0.105	18.5	0.1949	0.0000	OK
1440 minute summer	S2.3.1	930	45.654	0.014	0.6	9.3482	0.0000	OK
15 minute summer	S2.3	11	45.390	0.105	18.0	0.1505	0.0000	OK
2880 minute summer	S2.4.1	1740	45.546	0.021	0.6	13.9525	0.0000	OK
15 minute summer	S2.4	11	45.312	0.140	36.3	0.4578	0.0000	OK
15 minute summer	S2.5.1	10	45.605	0.105	14.9	0.3599	0.0000	OK
15 minute summer	S2.5	11	45.248	0.211	60.0	0.5096	0.0000	OK
15 minute summer	S1.4A	11	45.181	0.223	70.9	0.5559	0.0000	OK
4320 minute summer	S1.4	3180	45.095	0.326	7.6	72.2339	0.0000	OK
4320 minute summer	S1.5	3180	45.095	0.450	5.8	0.7606	0.0000	OK
4320 minute summer	TANK	3180	45.095	0.511	5.7	203.7952	0.0000	SURCHARGED
15 minute summer	S1.6	10	44.613	0.055	4.0	0.0743	0.0000	OK
15 minute summer	EX.S	10	44.522	0.049	3.7	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.000	S1.1	5.3	0.512	0.144	0.4679	
15 minute summer	S1.1	1.001	S1.2	11.0	0.807	0.300	0.6333	
15 minute summer	S1.2	1.002	S1.3	14.9	0.732	0.213	0.8845	
15 minute summer	S1.3	1.003	S1.4	18.0	0.839	0.257	0.9661	
2880 minute summer	S2.0.1	Orifice	S2.0	0.4				
15 minute summer	S2.0	3.005	S2.1	10.7	0.784	0.292	0.1979	
2160 minute summer	S2.1.1	Orifice	S2.1	0.2				
15 minute summer	S2.1	3.004	S2.2	14.5	0.748	0.227	0.3984	
2160 minute summer	S2.2.1	Orifice	S2.2	0.4				
15 minute summer	S2.2	3.003	S2.3	18.0	0.770	0.157	0.3766	
1440 minute summer	S2.3.1	Orifice	S2.3	0.1				
15 minute summer	S2.3	3.002	S2.4	18.3	0.771	0.160	0.3803	
2880 minute summer	S2.4.1	Orifice	S2.4	0.3				
15 minute summer	S2.4	3.001	S2.5	35.2	0.708	0.306	2.0487	
15 minute summer	S2.5.1	3.000	S2.5	14.4	0.828	0.418	0.5778	
15 minute summer	S2.5	4.001	S1.4A	59.2	0.896	0.515	1.5690	
15 minute summer	S1.4A	4.000	S1.4	70.8	1.124	0.616	1.4493	
4320 minute summer	S1.4	1.004	S1.5	5.6	0.412	0.030	5.2133	
4320 minute summer	S1.5	1.005	TANK	5.7	0.426	0.031	2.8864	
4320 minute summer	TANK	Hydro-Brake®	S1.6	1.8				
15 minute summer	S1.6	1.007	EX.S	3.7	0.536	0.124	0.1756	20.7

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	45.887	0.087	11.9	0.1654	0.0000	OK
15 minute summer	S1.1	11	45.719	0.139	26.8	0.2263	0.0000	OK
5760 minute summer	S1.2	4500	45.613	0.341	1.2	0.4768	0.0000	SURCHARGED
5760 minute summer	S1.3	4500	45.613	0.514	1.6	0.7606	0.0000	SURCHARGED
960 minute summer	S2.0.1	630	45.794	0.044	3.0	29.0732	0.0000	OK
15 minute summer	S2.0	10	45.789	0.139	23.9	0.3715	0.0000	OK
1440 minute summer	S2.1.1	900	45.781	0.031	1.5	20.1127	0.0000	OK
15 minute summer	S2.1	10	45.659	0.157	32.1	0.2533	0.0000	OK
1440 minute summer	S2.2.1	900	45.792	0.042	2.1	28.0213	0.0000	OK
5760 minute summer	S2.2	4500	45.613	0.255	2.7	0.4739	0.0000	OK
2160 minute summer	S2.3.1	1380	45.664	0.024	0.8	15.8263	0.0000	OK
5760 minute summer	S2.3	4500	45.613	0.328	3.0	0.4699	0.0000	OK
5760 minute summer	S2.4.1	4500	45.614	0.089	1.1	43.2247	0.0000	OK
5760 minute summer	S2.4	4500	45.613	0.441	4.7	1.4449	0.0000	SURCHARGED
15 minute summer	S2.5.1	10	45.681	0.181	33.1	0.6226	0.0000	OK
5760 minute summer	S2.5	4500	45.613	0.576	6.6	1.3947	0.0000	SURCHARGED
5760 minute summer	S1.4A	4500	45.613	0.655	7.5	1.6317	0.0000	SURCHARGED
5760 minute summer	S1.4	4500	45.613	0.844	10.8	177.6338	0.0000	SURCHARGED
5760 minute summer	S1.5	4500	45.613	0.968	7.7	1.6374	0.0000	SURCHARGED
5760 minute summer	TANK	4500	45.613	1.029	7.6	410.6787	0.0000	SURCHARGED
15 minute summer	S1.6	10	44.640	0.082	8.8	0.1113	0.0000	OK
15 minute summer	EX.S	10	44.546	0.073	8.1	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.000	S1.1	11.8	0.617	0.322	0.8730	
15 minute summer	S1.1	1.001	S1.2	24.9	1.000	0.681	1.1607	
5760 minute summer	S1.2	1.002	S1.3	1.2	0.343	0.017	3.0525	
5760 minute summer	S1.3	1.003	S1.4	1.6	0.385	0.023	3.1744	
960 minute summer	S2.0.1	Orifice	S2.0	0.8				
15 minute summer	S2.0	3.005	S2.1	23.2	0.953	0.635	0.3541	
1440 minute summer	S2.1.1	Orifice	S2.1	0.5				
15 minute summer	S2.1	3.004	S2.2	32.0	0.932	0.501	0.7055	
1440 minute summer	S2.2.1	Orifice	S2.2	0.8				
5760 minute summer	S2.2	3.003	S2.3	2.7	0.461	0.024	1.4116	
2160 minute summer	S2.3.1	Orifice	S2.3	0.3				
5760 minute summer	S2.3	3.002	S2.4	3.0	0.472	0.026	1.6985	
5760 minute summer	S2.4.1	Orifice	S2.4	0.5				
5760 minute summer	S2.4	3.001	S2.5	4.7	0.441	0.041	4.4703	
15 minute summer	S2.5.1	3.000	S2.5	32.1	1.026	0.929	1.0344	
5760 minute summer	S2.5	4.001	S1.4A	6.4	0.508	0.056	2.6208	
5760 minute summer	S1.4A	4.000	S1.4	7.3	0.549	0.064	2.5391	
5760 minute summer	S1.4	1.004	S1.5	7.3	0.374	0.039	5.8743	
5760 minute summer	S1.5	1.005	TANK	7.6	0.474	0.041	2.8875	
5760 minute summer	TANK	Hydro-Brake®	S1.6	1.9				
15 minute summer	S1.6	1.007	EX.S	8.1	0.666	0.271	0.3078	28.3

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.80%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	S1.0	10	45.901	0.101	15.5	0.1916	0.0000	OK
4320 minute summer	S1.1	3720	45.803	0.223	1.3	0.3632	0.0000	OK
4320 minute summer	S1.2	3720	45.803	0.531	1.8	0.7421	0.0000	SURCHARGED
4320 minute summer	S1.3	3720	45.803	0.704	2.4	1.0416	0.0000	SURCHARGED
1440 minute summer	S2.0.1	900	45.803	0.053	2.8	35.2216	0.0000	OK
15 minute summer	S2.0	10	45.814	0.164	31.0	0.4390	0.0000	OK
4320 minute summer	S2.1.1	3720	45.803	0.053	0.8	35.1675	0.0000	OK
4320 minute summer	S2.1	3720	45.803	0.301	2.7	0.4872	0.0000	SURCHARGED
4320 minute summer	S2.2.1	3720	45.803	0.053	1.2	35.1820	0.0000	OK
4320 minute summer	S2.2	3720	45.803	0.445	3.8	0.8264	0.0000	SURCHARGED
4320 minute summer	S2.3.1	3720	45.803	0.163	2.1	43.3209	0.0000	OK
4320 minute summer	S2.3	3720	45.803	0.518	4.1	0.7416	0.0000	SURCHARGED
4320 minute summer	S2.4.1	3720	45.803	0.278	2.5	43.5787	0.0000	SURCHARGED
4320 minute summer	S2.4	3720	45.803	0.631	6.7	2.0668	0.0000	SURCHARGED
15 minute summer	S2.5.1	11	45.808	0.308	43.0	1.0595	0.0000	SURCHARGED
4320 minute summer	S2.5	3720	45.803	0.766	9.2	1.8543	0.0000	SURCHARGED
4320 minute summer	S1.4A	3720	45.803	0.845	10.4	2.1047	0.0000	SURCHARGED
4320 minute summer	S1.4	3720	45.803	1.034	15.2	178.2467	0.0000	SURCHARGED
4320 minute summer	S1.5	3720	45.803	1.158	10.7	1.9585	0.0000	SURCHARGED
4320 minute summer	TANK	3720	45.803	1.219	10.6	478.9995	0.0000	SURCHARGED
15 minute summer	S1.6	10	44.653	0.095	11.5	0.1292	0.0000	OK
15 minute summer	EX.S	10	44.557	0.084	10.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute summer	S1.0	1.000	S1.1	15.4	0.652	0.420	1.0784	
4320 minute summer	S1.1	1.001	S1.2	1.3	0.439	0.036	1.8500	
4320 minute summer	S1.2	1.002	S1.3	1.8	0.377	0.026	3.0525	
4320 minute summer	S1.3	1.003	S1.4	2.1	0.399	0.030	3.1744	
1440 minute summer	S2.0.1	Orifice	S2.0	1.1				
15 minute summer	S2.0	3.005	S2.1	29.6	1.022	0.809	0.4521	
4320 minute summer	S2.1.1	Orifice	S2.1	0.6				
4320 minute summer	S2.1	3.004	S2.2	2.7	0.473	0.042	1.4482	
4320 minute summer	S2.2.1	Orifice	S2.2	0.8				
4320 minute summer	S2.2	3.003	S2.3	3.8	0.506	0.033	1.7603	
4320 minute summer	S2.3.1	Orifice	S2.3	0.4				
4320 minute summer	S2.3	3.002	S2.4	4.1	0.506	0.035	1.7621	
4320 minute summer	S2.4.1	Orifice	S2.4	0.6				
4320 minute summer	S2.4	3.001	S2.5	6.4	0.457	0.055	4.4703	
15 minute summer	S2.5.1	3.000	S2.5	37.9	1.036	1.100	1.3194	
4320 minute summer	S2.5	4.001	S1.4A	8.9	0.529	0.077	2.6208	
4320 minute summer	S1.4A	4.000	S1.4	10.2	0.557	0.089	2.5391	
4320 minute summer	S1.4	1.004	S1.5	10.1	0.391	0.054	5.8743	
4320 minute summer	S1.5	1.005	TANK	10.6	0.539	0.057	2.8875	
4320 minute summer	TANK	Hydro-Brake®	S1.6	2.0				
15 minute summer	S1.6	1.007	EX.S	10.6	0.718	0.356	0.3749	29.7

Appendix 4

Topographical Survey

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

Carlisle Health And Fitness Club

N730600

NO ENTRY

EXIT

EXIT PARKING

House

House

SWAN NECK UNABLE TO SONDE

6 CAST IRON 1945

6 CAST IRON 1920

100mm uPVC 2002

SERVICES LEGEND

- UNDERGROUND ELECTRICITY LINE
- ELECTRICAL M/HOLE
- OVERHEAD LINE WITH POLE
- OVERHEAD ELECTRIC
- UNDERGROUND HV ELECTRICITY LINE
- 6m HIGH STREET LIGHT
- MINI PILLAR
- EIR
- EIR CHAMBER
- OVERHEAD LINE WITH POLE
- ENET
- ENET CHAMBER
- COMMS
- COMMS CHAMBER
- VIRGIN
- VIRGIN CHAMBER
- FIBRE
- FIBRE CHAMBER
- AURORA TELECOM
- AURORA TELECOM CHAMBER
- CATV
- CATV CHAMBER
- BT
- BT CHAMBER
- ESAT
- ESAT CHAMBER
- SIRO FIBRE
- SIRO CHAMBER
- UNIDENTIFIED SERVICE
- UNIDENTIFIED CHAMBER
- EARTH LINE AND RODS
- TRAFFIC SENSORS
- CCTV POLE
- UTILITIES CABNET
- FOUL DRAINAGE
- FOUL MANHOLE
- STORM DRAINAGE
- STORM DRAINAGE MANHOLE
- COMBINED DRAINAGE
- COMBINED DRAINAGE MANHOLE
- PRODUCT DRAINAGE
- PRODUCT DRAINAGE MANHOLE
- CHEMICAL LINE
- CHEMICAL MANHOLE
- ROAD GULLY
- GULLY TRAP
- WATER MAIN
- SLUICE VALVE
- FIRE HYDRANT
- WATER METER
- SCOUR VALVE
- PRESSURE RELEASE VALVE
- AIR VALVE
- NON-RETURN VALVE
- FUEL LINE/TANK
- GAS LINE
- GAS HIGH PRESSURE LINE
- GROUND LEVEL (metres - os datum)
- COVER LEVEL (metres - os datum)
- INVERT LEVEL (metres - os datum)
- DEPTH TO TOP OF SERVICE DUCT OR CABLE

DP ON MANHOLES = INVERT LEVEL OF CHAMBER

DP ON DRAINAGE = INVERT LEVEL OF PIPE

- UNABLE TO OPEN
- OUTSIDE SURVEY AREA
- UNABLE TO TRACE
- SURVEYED AREA

TOPOGRAPHICAL SURVEY AND EXISTING BURIED SERVICES

SCALE @ A0: 1:250
SCALE @ A2: 1:500

ISSUE	DATE	DESCRIPTION	BY
PL4	25.02.22	ISSUED FOR PLANNING	MR
PL3	04.02.22	ISSUED FOR PLANNING	MR
PL2	13.10.21	ISSUED FOR PLANNING	MR
PL1	08.10.21	ISSUED FOR PLANNING	MR
P1	30.06.21	IW PCE ISSUED	SM

Project Engineer: MH | Project Director: CK

BM STAGE: **PLANNING**

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CLIENT: **1 TERENURE LAND LTD.**

PROJECT TITLE: **CARLISLE SITE KIMMAGE, RESIDENTIAL DEVELOPMENT**

BM PROJECT No.: **21.221**

MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: **TOPOGRAPHICAL SURVEY AND EXISTING BURIED SERVICES**

DWG | DRAWING REFERENCE: **CST-BMD-00-ZZ-DR-C-1001** | STATUS: **PL** | REVISION: **4**

Appendix 5

Irish Water – Confirmation of Feasibility

Michael Hughes

Sandwith Hse
52-54 LWR Sandwith Street
Dublin 2
Dublin
D02WR26

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

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

24 September 2021

Re: CDS21004635 pre-connection enquiry - Subject to contract | Contract denied

Connection for Housing Development of 240 unit(s) at Carlisle Site, Kimmage Road West, Dublin

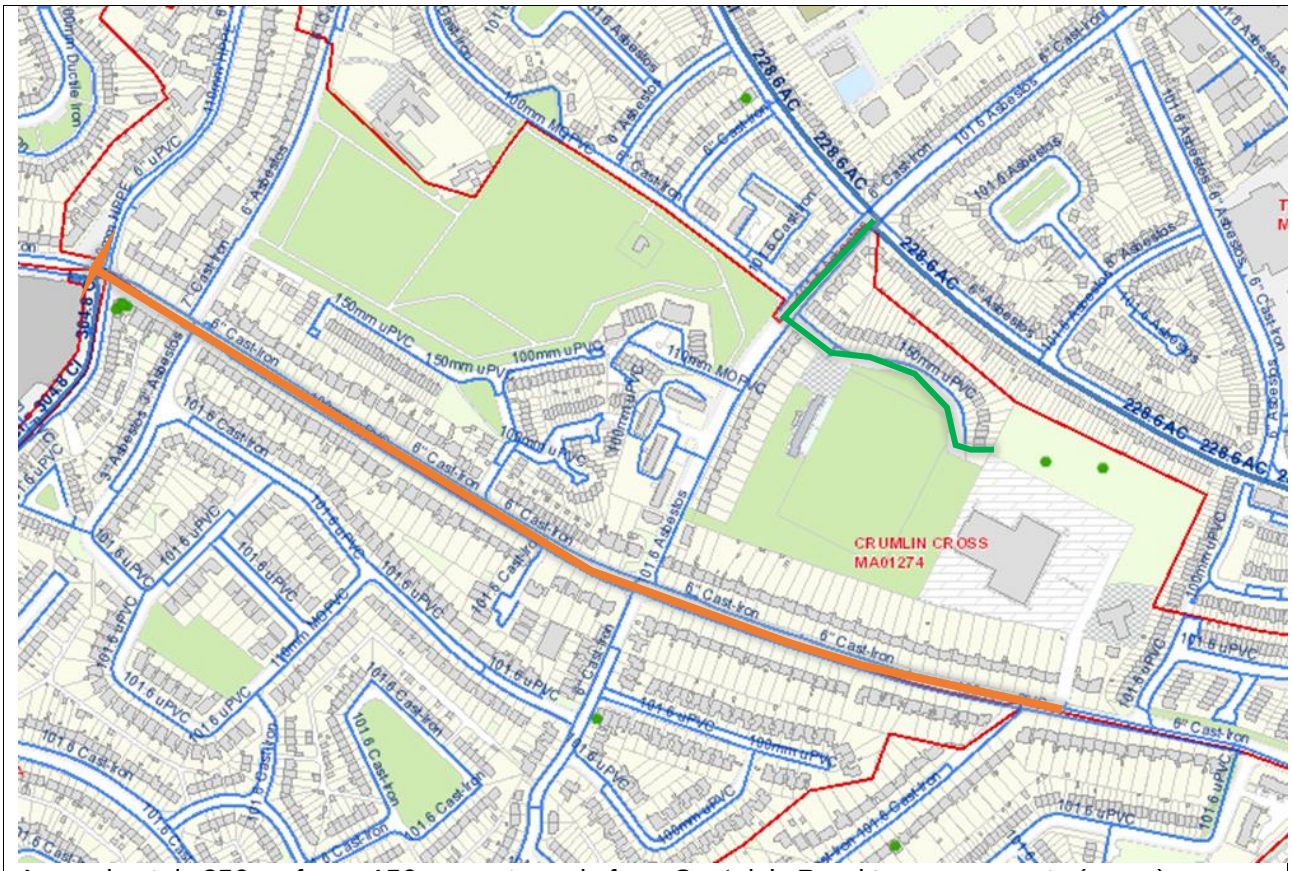
Dear Sir/Madam,

Irish Water has reviewed your pre-connection enquiry in relation to a Water & Wastewater connection at Carlisle Site, Kimmage Road West, Dublin (the **Premises**). Based upon the details you have provided with your pre-connection enquiry and on our desk top analysis of the capacity currently available in the Irish Water network(s) as assessed by Irish Water, we wish to advise you that your proposed connection to the Irish Water network(s) can be facilitated at this moment in time.

SERVICE	**OUTCOME OF PRE-CONNECTION ENQUIRY** **THIS IS NOT A CONNECTION OFFER. YOU MUST APPLY FOR A CONNECTION(S) TO THE IRISH WATER NETWORK(S) IF YOU WISH TO PROCEED.**
Water Connection	Feasible subject to upgrades
Wastewater Connection	Feasible without infrastructure upgrade by Irish Water
SITE SPECIFIC COMMENTS	
Water Connection	In order to accommodate the proposed connection to Irish Water water network at the Premises, upgrade works are required. A new 150mm diameter watermain to be laid from Captain's road to your property by approximately 350m (Please see below GIS sketch). Irish Water currently does not have any plans to extend its network in this area. Should you wish to progress with the connection you will be required to fund this network extension. Alternatively, you can connect to the watermain in Kimmage Road West, upgrade works are required to upsize the existing 6" diameter watermain to 200/250mm watermain for approximately 950m. Should you wish to progress with this connection you will be required to fund this network upgrade. You will also be required to install approximately 180m of new watermain through third party lands from Kimmage Road West to your site.

	Evidence would need to be provided that the third party owner has given permission to lay the pipe in their property.
Wastewater Connection	In order to facilitate your connection it will be required for you to install approximately 180m of rising main through third party lands from Kimmage Road West to your site. Evidence would need to be provided that the third party owner has given permission to lay the pipe in their property. This infrastructure will have to be constructed to Irish Water standards and a wayleave to the benefit of Irish Water shall be provided over the pipes. A pumping station is required to be installed on your site. All infrastructure should be designed and installed in accordance with the Irish Water Code of Practice.
Strategic Housing Development	Irish Water notes that the scale of this development dictates that it is subject to the Strategic Housing Development planning process. Therefore: in advance of submitting your full application to An Bord Pleanala for assessment, you must have reviewed this development with Irish Water and received a Statement of Design Acceptance in relation to the layout of water and wastewater services.
The design and construction of the Water & Wastewater pipes and related infrastructure to be installed in this development shall comply with the Irish Water Connections and Developer Services Standard Details and Codes of Practice that are available on the Irish Water website. Irish Water reserves the right to supplement these requirements with Codes of Practice and these will be issued with the connection agreement.	

The map included below outlines the current Irish Water infrastructure adjacent to your site:



Approximately 350m of new 150mm watermain from Captain's Road to your property (green)
Approximately 950m of existing 6" watermain to be upsized to 200/250mm in Kimmage Road West (Orange)

Wastewater network in the area

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

Whilst every care has been taken in its compilation Irish Water gives this information as to the position of its underground network as a general guide only on the strict understanding that it is based on the best available information provided by each Local Authority in Ireland to Irish Water. Irish Water can assume no responsibility for and give no guarantees, undertakings or warranties concerning the accuracy, completeness or up to date nature of the information provided and does not accept any liability whatsoever arising from any errors or omissions. This information should not be relied upon in the event of excavations or any other works being carried out in the vicinity of the Irish Water underground network. The onus is on the parties carrying out excavations or any other works to ensure the exact location of the Irish Water underground network 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.

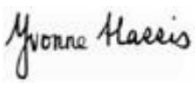
General Notes:

1) The initial assessment referred to above is carried out taking into account water demand and wastewater discharge volumes and infrastructure details on the date of the assessment. **The availability of capacity may change at any date after this assessment.**

2) This feedback does not constitute a contract in whole or in part to provide a connection to any Irish Water infrastructure. All feasibility assessments are subject to the constraints of the Irish Water Capital Investment Plan.
3) The feedback provided is subject to a Connection Agreement/contract being signed at a later date.
4) A Connection Agreement will be required to commencing the connection works associated with the enquiry this can be applied for at https://www.water.ie/connections/get-connected/
5) A Connection Agreement cannot be issued until all statutory approvals are successfully in place.
6) Irish Water Connection Policy/ Charges can be found at https://www.water.ie/connections/information/connection-charges/
7) Please note the Confirmation of Feasibility does not extend to your fire flow requirements.
8) Irish Water is not responsible for the management or disposal of storm water or ground waters. You are advised to contact the relevant Local Authority to discuss the management or disposal of proposed storm water or ground water discharges
9) To access Irish Water Maps email datarequests@water.ie
10) All works to the Irish Water infrastructure, including works in the Public Space, shall have to be carried out by Irish Water.

If you have any further questions, please contact Dario Alvarez from the design team on + 353 2254621 or email dalvarez@water.ie For further information, visit **www.water.ie/connections.**

Yours sincerely,



Yvonne Harris

Head of Customer Operations

Appendix 6

YUKO Car Share – Letter of Support

T: 00353 1691 8816

E: support@yuko.toyota.ie

W: Www.yuko.ie

5th October 2021

Carlisle Site Kimmage Road West.

To Whom It May Concern,

This is a letter to confirm that Yuko Toyota Car Club working in partnership with 1 Terenure Land Ltd. intends to provide shared car club vehicles at the Carlisle Site Kimmage Road West development, subject to planning.

Toyota Motor Corporation chose Dublin as its global launch city in 2016 starting with 25 vehicles. Since then, the car sharing service has grown to 7,000 members in Dublin and now has 135 vehicles with ambitious plans to expand this service up to at least 2023.

Toyota has recently launched a new brand, KINTO, dedicated to offering mobility services to users across Europe. Yuko Ireland will rebrand to KINTO in the near future.

Dr Johan van Zyl, President and CEO of Toyota Motor Europe, said: "KINTO is part of our strategy to grow our total European business. In markets where it can be viable and sustainable, adding mobility services to our traditional business model will allow us to respond to new customer needs and support cities and regions' emerging mobility requirements."

The initial services that will be introduced in some European markets include:

1. KINTO Share: a car sharing service based on a large hybrid vehicle line-up available via a self-service concept, without the running costs. Toyota's existing car sharing service Yuko which is already operational in several cities in Europe (Dublin; Venice; Copenhagen; and Madrid), will be re-branded under KINTO.
2. KINTO Join: Carpooling, connecting employees who wish to share their daily commute to work, benefitting both employees and companies who can reduce their CO2 footprint.

Other services are being evaluated, such as ride-hailing and a multi-modal app.

The Department of Housing & Planning Design Standards for New Apartments - Guidelines for Planning Authorities 2018 outline: “For all types of location, where it is sought to eliminate or reduce car parking provision, it is necessary to ensure... provision is also to be made for alternative mobility solutions including facilities for car sharing club vehicles.” Each Yuko self-charging hybrid has the potential to replace the journeys of up to 20- 30 private cars*. *Boston Consulting report 2017

Yuko Toyota Car Club members sign up online and can book cars via the mobile app. Our YUKO fleet will always avail of the most advanced technology to reduce or eliminate our carbon footprint. Any car supplied to the Carlisle Site Kimmage Road West will be hybrid or fully electric.

Currently our fleet is running at 62% zero emissions*. *Tested by UCD study 2019.

Yuko is ideal for residents who only need occasional access to a car. We would anticipate that the Yuko Car available in the Carlisle Site would supplement the public transport / cycling and walking options available to this community.

For any queries, please do not hesitate to contact me.

Kind regards,

_____

Shane Higgins
Advanced Mobility Executive
Toyota Ireland

Appendix 7

DCC Transportation Correspondence from ABP313043

4 Feb 2022 BMCE Response to DCC Transportation Comments from Stage 2

Michael Hughes | BM

From:	Michael Hughes | BM
Sent:	Friday 4 February 2022 16:17
To:	Heidi Thorsdalen; David Conway
Cc:	Brian O'Neill | BM; Katherine Beach | BM; Maciej Radecki | BM; John Cooney; Matt Walsh; Victor Beneit; Jacques D'Arcy; Brenda Butterly; Trevor Sadler; Ciaran Kennedy | BM
Subject:	Re 21.221 Carlisle Site - Response to DCC Transportation Planning comments at PAC Stage 2 [Filing cancelled]
Attachments:	CST-BMD-00-ZZ-DR-C-1017.pdf; 6269 - General Floor Plan - Ground Floor Level.pdf; 21.221.L.001 (Response to DCC Transportation Planning PAC Comments).pdf

Hi Heidi / David

I refer to the above project and to DCC Transportation comments received at SHD PAC Stage 2
Please see attached letter and relevant attachments, which detail a line by line response to DCC Transportation Dept comments

Please note that the full application is due to be lodged shortly

Regards,

Michael Hughes
Associate Director
mhughes@bmce.ie
086 8214026

BARRETT MAHONY
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FAO Ms Heidi Thorsdalen and David Conway
By Email Only : heidi.thorsdalen@dublincity.ie / david.conway@dublincity.ie
Transportation Planning Division
Dublin City Council,
Environment & Transportation Department
Civic Offices
Wood Quay
Dublin 8.

Our Ref: 21.221.L.001

Date: 4 February 2022

Re: 21.221 Carlisle Site, Kimmage Road West, Terenure, Dublin 6 SHD Pre-App. (Reg Ref : ABP-311705-21)
Response to DCC Transportation Planning Division Comments

Dear Heidi and David,

We refer to the above site and the SHD Pre-app submission in respect of same. We note the Dublin City Council Transportation Planning Section commentary on the Pre-app submission documents. This letter seeks to address each comment, on a line by line basis. The DCC comments are reproduced below in italics, with the response shown below in each case and supporting information contained in the attachments.

DCC comment:

1. Access

a) This division recommends that further analysis and design interventions is required on the private road access as well as the vehicular entrance and exit to the adjacent gym car park.

i. The applicant should consider interventions to improve the pedestrian environment on the existing access road such as reduced junction width by consolidating turning lanes, corner radii, increased footpath width, reduced vehicular lane widths and other interventions as prescribed by DMURS and having regard to the proposed pedestrian modal share envisaged for the proposed development and the current and proposed traffic flows on the access road.

ii. Consideration should be given to forming one entry/exit vehicular point into the existing gym car park to reduce potential pedestrian conflict.

iii. Consideration should be given to the provision of facilities/infrastructure and/or other interventions to facilitate cyclists on the existing access road to the proposed development.

BMCE Response:

Following further review and following discussion between the applicant and Ben Dunne Carlisle Gym, we are proposing certain alterations to the access road and footpaths, to address the concerns raised. See attached BMCE drawing CST-BMD-00-ZZ-DR-C-1017

In broad outline, the proposed alterations include:

- Reducing the carriageway width for the majority of the access road, from 8m to 6m, and amending the carriageway alignment.

- Introducing 1800mm wide continuous footpaths on both sides of the access road, the entire way from Kimmage Road West to the entrance of the proposed development.
- Introducing on-carriageway 'advisory cycleways' on the existing access road, the entire way from Kimmage Road West to the entrance of the proposed development.
- While it is proposed to retain the dual entrance/exit arrangement of Ben Dunne Gyms, onto the access road, none the less these will be reduced in width from 8m to 6m, which will facilitate more convenient crossing for pedestrians.
- While it is proposed to retain the established dual exit lanes from the access road onto Kimmage Road West, none the less it is proposed to provide a flush pedestrian crossing and to indicate pedestrian priority across the junction by way of a change of surfacing type and colour between road carriageway and pedestrian zone.

It should be noted that it is not within the applicants control to carry the following:

- Extinguish the existing, established dual entrance/exit arrangement of Ben Dunne Gyms, onto the access road.
- Extinguish the two existing, established exit lanes from the access road onto Kimmage Road West, in lieu of single exit lane with reduced overall carriageway width.

DCC Comment:

1b) The applicant should be requested to carry out a road safety audit of the proposed and existing road network (i.e. private access road, gym access points and proposed road network), including reviewing vehicular, cyclist and pedestrian access, and review the management of vehicles entering and egressing the gym car park. The road safety audit should be carried out by a suitably qualified independent road safety auditor.

BMCE Response:

We confirm that a full Quality Audit, including Stage 1 Road Safety Audit, shall be carried out and shall be submitted with the application. Bruton Consulting Engineers have been appointed as the Quality Auditors. We shall highlight any specific measures proposed to address issues raised in the Audit.

DCC Comment:

1c) This division has concerns in relation to the internal road carriageway width located between block 3 and 4/5, and the applicant is requested to review the proposed carriageway width having regard to DMURS and swept path analysis etc.

BMCE Response:

The internal road between Block 3 and Block 4/5 is 6m wide. This is a standard carriageway width and is actually in excess of DMURS requirement for a 'local street' (see below extract from DMURS) and we consider is appropriate in this circumstance. Furthermore, 6m carriageway width allows perpendicular parked cars on both sides to easily access their parking spaces.

DCC Comment:

1 d) The applicant should be requested to identify the various temporary waste collection areas located though out the development site. Temporary waste collection areas should not be located on footpaths or sections of carriageway which may obstruct pedestrians, cyclists or vehicles.

BMCE Response:

Refer to BKD drawing 6289-P-101 Rev 08 attached indicating the waste storage areas and temporary bin staging areas. On waste collection days, all bins will be taken directly from the waste storage areas by the managing agent, and placed at the staging areas. After emptying the bins will be deposited back to the waste storage areas.

DCC Comment:

1 e) The applicant should be requested to provide updated swept path analysis drawings which demonstrate that full access for refuse vehicles can be achieved without wheel tracks crossing over kerb lines or entering car parking spaces. Updated swept path analysis drawings should also provide all main vehicular movements, including entering, exiting and turning within the site.

BMCE Response:

See attached suite of swept path analysis drawings for fire tenders, refuse trucks, general large item delivery vehicles. Note that in no instances do wheel tracks cross kerb lines. Front and rear bumpers of turning vehicles do overhang kerb lines in certain locations, however this only occurs in areas with low height landscaping.

DCC Comment:

1 f) The applicant should provide details on set-down locations to facilitate service vehicles and outline how these are to be managed.

BMCE Response:

A set down area has now been provided along the central street between blocks 3 and 4, close to the site entrance. Refer to BKD drawing 6289-P-101 Rev 08. Appropriate signage will be provided to clearly identify that the area is for set down / loading only. Any illegal parking within the set down will be managed by the Car Park manager / Managing Agents in the normal manner.

DCC Comment:

2. The applicant should be requested to clarify the following issues in regards to the proposed cycle parking facilities:

a) A review of the residential and visitor cycle parking locations should be carried out having regard to the pedestrian entry points and how convenient the location is for residents and visitors in order to facilitate and encourage active travel.

BMCE Response:

A review of the bicycle parking locations has been carried out in conjunction with the Architect, and having regard to the pedestrian building entry points. The bicycle parking layout has been slightly amended - see attached BKD drawing drawing 6289-P-101 Rev 08. This provides improved convenience for cyclists.

For blocks 1,2 and 3, long stay bike parking is provided in 3No secure and dry rooms in the ground level under-croft area. These rooms are easily accessible to cyclists and dismounted cyclists have a very short walk to the respective internal stair/lift cores for blocks 1,2 and 3.

For blocks 4 and 5, long stay bike parking is provided in a standalone, secure and covered bike store to the east of these blocks. A centrally located access to blocks 4 and 5 is now proposed on the eastern elevation. This means that dismounted cyclists have a very short walk from the bike store to the building stair/lift cores for blocks 3 and 4.

Sheffield stand type, short stay bike spaces have been provided externally and close to all entrances to Blocks 1-5.

DCC Comment:

2b) Following the applicant's review of the cycle parking locations, the route to and from the proposed cycle parking locations should be assessed, including any possible cyclist desire lines to ensure sufficient width is provided to allow shared use of pedestrians and cyclists. The applicant should be requested to provide electric bike charging facilities within the resident cycle parking areas.

BMCE Response:

Refer to BKD drawing 6289-P-101 Rev 08 attached for latest draft layout.

For blocks 1,2 and 3, long stay bike parking is provided in 3No secure and dry rooms in the ground level under-croft area. These rooms are easily accessible to cyclists and dismounted cyclists have a very short walk to the respective internal stair/lift cores for blocks 1,2 and 3.

For blocks 4 and 5, long stay bike parking is provided in a standalone, secure and covered bike store to the east of these blocks. A centrally located access to blocks 4 and 5 is now proposed on the eastern elevation. This means that dismounted cyclists have a very short walk from the bike store to the building stair/lift cores for blocks 3 and 4.

Sheffield stand type, short stay bike spaces have been provided externally and close to all entrances to Blocks 1-5.

We confirm that electric bike charging facilities will be provided within the resident cycle parking areas and will be detailed on the M&E drawings in due course.

DCC Comment:

2c) Clarification is sought to ensure that sufficient operational space is provided for the proposed system and confirm that the system will allow both wheel and frame to be locked as per the Dublin City Development Plan standards.

BMCE Response:

We confirm that all bike parking systems proposed will allow both wheel and frame to be locked as per the Dublin City Development Plan standards. Detailed drawings of the bike parking systems will be provided by BKD Architects as part of the full planning permission.

DCC Comment:

3. The applicant should be requested to clarify the following issues in regards to the car parking proposals:

a) This division does have concerns in relation to low car parking ratio having regard to the high rate of car ownership within the local area, availability of public transport within close proximity of the site as well as potential overspill car parking from the proposed development. The applicant is requested to review proposed provision.

BMCE Response:

As per our Stage 2 submission, it is our contention that the proposed reduced car parking provision for the residential development is entirely sustainable based on current car ownership and modal splits for the journey to work for existing residents living within Electoral Districts close to the subject site, and is entirely in line with recommendations on parking provision set out in the 'Sustainable Urban Housing: Design Standards for New Apartments (Guidelines for Planning Authorities): March 2018'

A parking provision of 0.48 spaces per apartment unit is sustainable, given that car usage for the journey to work is in the region of 40% and public transport / soft mode usage for the journey to work is projected to be in the region of 60%.

A detailed and comprehensive Residential Travel Plan has been prepared (and will accompany the final submission) which aims to promote a sustainable travel culture for residents at the residential development by outlining a travel strategy, by listing measures to achieve its objectives and by committing to appoint a travel plan coordinator to oversee and monitor progress towards the target modal splits predicted for the site on its day of opening.

DCC Comment:

3b) The quantum of car share should also be increased to a minimum 5 spaces and a review of demand and provision for car share should be incorporated into the Residential Travel Plan and Car Park Management Strategy. All car share spaces should be fitted with EV charging.

BMCE Response:

As requested, we will identify 5 No. spaces within the development to be allocated as car share spaces. We would note however that in our discussions with car share provider GoCar, they indicated that they would not propose any vehicles in this area, at this time, due to lack of demand. Furthermore, providers Yuko and Enterprise Clubcar would only propose 1 No. vehicle. Whereas we have indicated 5 No. car share spaces, would propose that the Car Park Management Strategy can actively manage these spaces and if appropriate, can make temporary use of same for non car share vehicles, until such time as car share operator demand increases.

DCC Comment:

3c) The applicant should be requested to provide motorcycle spaces having regard to the 4% minimum standard.

BMCE Response:

Refer to BKD drawing 6289-P-101 Rev 08. A total of 6 motorcycle parking spaces are now proposed in the under-croft parking area (which is in excess of the 4% min standard).

DCC Comment:

3d) Clarification that car parking spaces located between blocks 3 and 4/5 will not encroach onto the footpath by overhanging the footpath when parked. Consideration should also be given to how a pedestrian accesses the car parking spaces located west of block 5 having regard to the location of the grass verge.

BMCE Response:

Refer to BKD drawing 6289-P-101 Rev 08. The layout has been amended in this area to provide a 2300mm wide footpath, which facilitates a 300mm bumper overhang zone, while still maintaining 2000mm unobstructed.

DCC Comment:

3e) The applicant should clarify that each car space, including on-street car parking spaces will be future proofed for the provision of electrical charging point. The applicant should also clarify how

the proposal to ensure no "long-term parkers" by the introduction of higher tariffs on EV charging over a certain period of time is to be managed as it is unclear how this would work in terms of allocation of spaces.

BMCE Response:

On behalf of the applicant, we can confirm that each car space, including on-street car parking spaces will be future proofed for the provision of electrical charging. A drawing(s) will be provided by the M&E Engineers, to accompany the planning application, indicating the cable tray provision to the under-croft car spaces and the underground ducting provision to the external car spaces.

On behalf of the applicant we confirm that there will be higher tariffs on EV charging over a certain period of time, to ensure no 'long term parkers' within dedicated EV charging spaces. This will also be managed by the Car Park Manager / Managing Agents.

DCC Comment:

4. The applicant is requested to provide an Outline Construction Traffic Management Plan (CTMP) to indicate the traffic impacts during the various construction phase of the proposed development. The CTMP should indicate the proposed phasing, construction access and include construction HGV routes to and from the site.

BMCE Response:

We confirm that an outline Construction Traffic Management Plan (CTMP) is being prepared and will accompany the planning application.

It is anticipated to lodge the Stage 3 SHD application within the next 2-3 weeks maximum. Whereas some tweaking of the site layouts may continue up to date of final lodgement, these will not affect the principles of what is set out in this letter and attachments.

We trust the above responses sufficiently address DCC Roads and Transportation comments in respect of this proposed development. If you wish to discuss any of the above, do not hesitate to contact me directly by phone or email.

Yours sincerely,

Michael Hughes

Michael Hughes
BEng, CEng, MIEI, MIStructE, FConsEI, EurIng.
Associate Director
Barrett Mahony Consulting Engineers
Email – mhughes@bmce.ie
Mobile – 0868214026

BARRETT MAHONY
CONSULTING ENGINEERS
CIVIL & STRUCTURAL

Cc:

1. Lioncor – John Cooney, Matt Walsh, Mike White
3. McGill Planning – Brenda Butterly, Trevor Sadler
4. BKD Architects – Jacque D'Arcy, Victor Beneit
5. BMCE – Ciaran Kennedy, Brian O'Neill, Katherine Beach

Attachments:

1. BMCE Drawing CST-BMD-00-ZZ-DR-C-1017 Roads Drawings
2. Architect BKD drawing 6289-P-101 Rev 08 Site Plan

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK'.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

BLOCK 1
FFL +47.000

BLOCK 2
FFL +47.000

BLOCK 3
FFL +46.775

BLOCK 4
FFL +46.450

BLOCK 5
FFL +46.400

PROPOSED BUILDING

PROPOSED BUILDING

PROPOSED PEDESTRIAN CORRIDOR, WITH LANDSCAPING TO DIFFERENTIATE SAME

WASTE COLLECTION POINT

NEW 2m FOOTPATH LINK

RUS 027 'STOP' SIGN AS PER CH. 5 OF TSM. (750mm SIZE)

RUS 050 'NO ENTRY' SIGN AS PER CH. 5 OF TSM. (750mm SIZE)

NEW 'HEIGHT BARRIER TO BE INSTALLED

RUS 004 'STRAIGHT AHEAD' SIGN AS PER CH. 5 OF TSM. (750mm SIZE)

NEW KERB ARRANGEMENT AND PEDESTRIAN CROSSING

PROPOSED 1.8m WIDE FOOTPATH

LOW PLINTH WALL AND RAILING OVER

EXISTING BEN DUNNE GYM CAR PARK

Carlisle Health And Fitness Club

Car Park

Nora Dunne Gallery

Art Gallery

EXISTING HEIGHT BARRIER TO BE REMOVED

EXISTING ISLAND TO BE REMOVED

EXISITNG TRAFFIC LIGHTS

EXISTING YELLOW CHEVRON BOX

KIMMAGE RD W

KIMMAGE

RUS 027 'STOP' SIGN AS PER CH. 5 OF TSM. (750mm SIZE)

LEGEND

	PROPOSED BUILDING
	NEW ASPHALT ROAD SHARED SURFACE (1435 m²)
	CONCRETE (FOOTPATH / KERBS) (1050 m²)
	GRASS / SOFT LANDSCAPING AT GRADE
	PERMEABLE PAVING (453 m²)
	SuDS ROOF- INTENSIVE (1909 m²)
	SuDS ROOF - BLUE ROOF + EXTENSIVE SEDUM GREEN ROOF (3173 m²)
	STANDARD ROOF RUN-OFF
	RED LINE BOUNDARY (BOUNDARY OF SUBJECT SITE)

ROADS LAYOUT

SCALE @ A0: 1:250
SCALE @ A2: 1:500

ISSUE	DATE	DESCRIPTION	BY
PL2	04.02.22	ISSUED FOR PLANNING	MR
P2	02.02.22	ISSUED FOR INFORMATION	MR

Project Engineer: MH | Project Director: CK

BM STAGE: **PLANNING**

BM BARRETT MAHONY
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Tel: (01) 677 3200 Fax: (01) 677 3164
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12 Mill Street, London SE1 2AY, United Kingdom
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Consulting Engineers, Civil , Structural . Project Management.E-mail: bmce@bmce.ie Web: www.bmce.ie

CLIENT: **1 TERENURE LAND LTD.**

PROJECT TITLE: **CARLISLE SITE KIMMAGE, RESIDENTIAL DEVELOPMENT**

BM PROJECT No.: **21.221**

MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: **ROADS LAYOUT**

DWG | DRAWING REFERENCE: **CST-BMD-00-ZZ-DR-C-1017** | STATUS: **PL** | REVISION: **2**

DRAWING KEY

208 UNITS

1 Bed - 104 - 50%
2 Bed - 104 - 50%

DUAL ASPECT UNITS
110 (52.9%)
UNITS 10% BIGGER
110 (52.9%)

PUBLIC OPEN SPACE
c. 1263sqm - 10.1% site area 1.25Ha

COMMUNAL OPEN SPACE
c. 1431 sqm - (1248 sqm - required)

CAR PARKING
100 spaces (of which 6 UA spaces)
c. 0.48 spaces/unit
6 motorcycle spaces (6%)

BIKE PARKING
480 spaces (416 spaces required)
of which: 24 spaces cargo bikes (5%)

COLOUR CODE

- GREEN OPEN SPACE
- UNIT A1 - 1 BED / 2 PERS UNIT
- UNIT A2 - 1 BED / 2 PERS UNIT (+10%)
- UNIT B1 - 2 BED / 4 PERS UNIT
- UNIT B2 - 2 BED / 4 PERS UNIT (+10%)
- UNIT C1 - 2 BED / 4 PERS UNIT (+10%)
- SERVICE SPACES
- SUBJECT PROPOSAL BOUNDARY LINE

Notes

1. Copyright Reserved
2. Work to figured dimensions only. Do not scale drawing.
3. The contractor is responsible for checking all levels and dimensions on site and shall refer all discrepancies to the Architect
4. Where appropriate, for details of r.c. structure, or mechanical and electrical details, see Engineers drawings
5. Proprietary items shall be fixed in strict accordance with manufacturers instructions.
6. Sizes of proprietary items shall be checked with manufacturer.
7. The contractor shall be responsible for the coordination of structure, finishes and services.

Issue Status	
Progress	
Planning Application	■
Fire Cert	
Disability Cert	
Tender	
Construction	
As Built	
Information Only	

M:\Project Section - Current\6269 Carlisle Site Terenure\CAD\Drawings\Sketch Plans\220117_Detailed Floorplans 4.0\220125_LVL00 - General Floor Plan.dwg 28/01/2022 16:57:05

DRAFT

No.	Date	Revision	Initials
01	26/08/21	First Issue [Draft]	BKD
02	17/09/21	Issued for Information	VF
03	22.09.2021	Issued for Information	VF
04	30.09.2021	Issued for Information	VF
05	05.10.2021	Issued for Information	VF
06	08.10.2021	Issued for general revision	VF
07	12/10/21	SHD architectural drawing pack	BKD
08	21/01/22	Issued for general revision	BKD

Project: **Carlisle Site, Kimmage Residential Development**

Drawing Title: Proposed Level 00 Ground Floor Plan

Drawing No: 6269 - P - 101

Scale	Rev	Drawn	Date
1:200@A0	08	BKD	26/08/21

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e architecture@bkd.ie
www.bkd.ie
bkdarchitects
BURKE-KENNEDY DOYLE

16-19 Feb 2022 DCC Transportation Comments (By email) and BMCE Further Responses in Red (By email)

Michael Hughes | BM

Subject: FW: Re 21.221 Carlisle Site - Response to DCC Transportation Planning Further comments of 16 Feb 2022

From: Michael Hughes | BM
Sent: Saturday 19 February 2022 07:17
To: David Conway <david.conway@dublincity.ie>; Heidi Thorsdalen <heidi.thorsdalen@dublincity.ie>
Cc: Brian O'Neill | BM <boneill@bmce.ie>; Katherine Beach | BM <kbeach@bmce.ie>; Victor Beneit <vbeneit@bkd.ie>; Jacques D'Arcy <jdarcy@bkd.ie>; Trevor Sadler <trevor@mcgplanning.ie>; Ciaran Kennedy | BM <ckennedy@bmce.ie>; John Cooney <jcooney@lioncor.ie>; Brenda Butterly <brenda@mcgplanning.ie>; Maciej Radecki | BM <mradecki@bmce.ie>; Matt Walsh <mwalsh@lioncor.ie>
Subject: RE: 21.221 Carlisle Site - Response to DCC Transportation Planning Further comments of 16 Feb 2022

Hi David / Heidi,

Thanks for your email of 16 Feb.
I appreciate your time in reviewing our updated proposals and responding to same
Please see below further responses in red

Regards,

Michael Hughes
Associate Director
mhughes@bmce.ie
086 8214026

From: David Conway <david.conway@dublincity.ie>
Sent: Wednesday 16 February 2022 12:44
To: Michael Hughes | BM <mhughes@bmce.ie>; Heidi Thorsdalen <heidi.thorsdalen@dublincity.ie>
Cc: Brian O'Neill | BM <boneill@bmce.ie>; Katherine Beach | BM <kbeach@bmce.ie>; Maciej Radecki | BM <mradecki@bmce.ie>; John Cooney <jcooney@lioncor.ie>; Matt Walsh <mwalsh@lioncor.ie>; Victor Beneit <vbeneit@bkd.ie>; Jacques D'Arcy <jdarcy@bkd.ie>; Brenda Butterly <brenda@mcgplanning.ie>; Trevor Sadler <trevor@mcgplanning.ie>; Ciaran Kennedy | BM <ckennedy@bmce.ie>
Subject: RE: Re 21.221 Carlisle Site - Response to DCC Transportation Planning comments at PAC Stage 2

HI Michael,

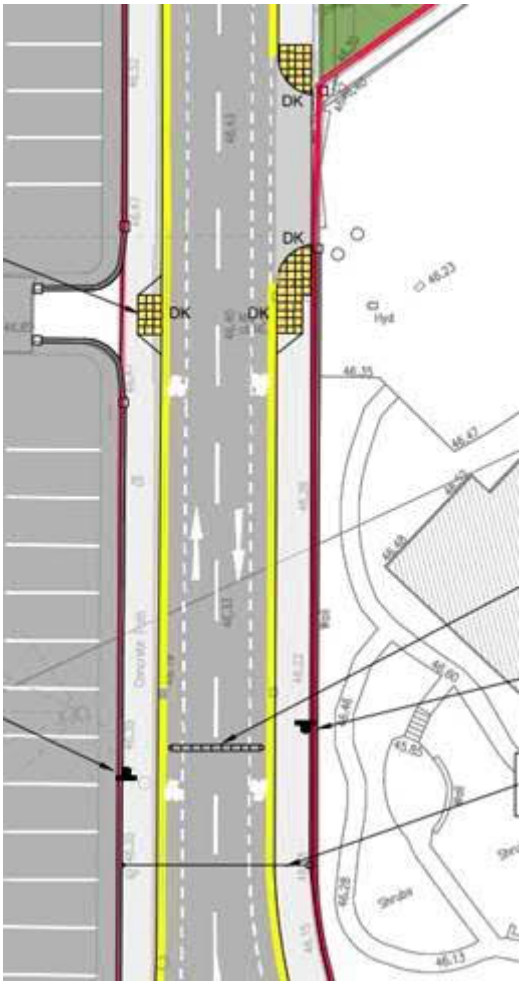
Thank you for your email. Please see below comments in response to the changes/alterations in response to PAC Stage 2 comments from the Transportation Planning Division (TPD). The following comments are issued without prejudice. Comments are numbered to reflect the attached document issued in response to original TPD comments.

1.

a) Access

The changes to the carriageway width and the addition of a footpath on the eastern side of the access road are noted. However, the advisory cycle lanes will provide limited benefit to cyclists accessing/egressing the proposed development. This is especially the case on approach to the junction with Kimmage Road West. The retention of the dual lane exit from the access road onto Kimmage Road West will in this division's opinion negate any advantage of reducing laneway widths further north of the dual lane exit by providing a wide carriageway which may encourage driver speeds. It is unclear if the benefit of a 'pedestrian priority' raised table mitigates the wide pedestrian crossing provided. As noted at Stage 2 by this division, the overall context of the access road is proposed to change having regard to the reliance on active travel modes to and from the proposed development.

- We would reiterate that it is not within the applicants control to extinguish the two existing, established exit lanes from the access road onto Kimmage Road West, in lieu of single exit lane with reduced overall carriageway width.
- We would contend that the measures we are proposing do in fact significantly improve the character / context the access road, will serve to reduce vehicle speeds on the access road and will make the road arrangements more appropriate for a residential setting with an associated mixed modal split.
- We would make the point that the proposed development is off modest size. We would consider a 6m road carriageway, with 1800mm footpaths each side, and on-carriageway advisory cycle lanes, is more than adequate to link the development (of 208 units) out to the public road (Kimmage Road West).
- Where the existing access road narrows (at the Nora Dunne gallery site – see drawing extract below), we physically don't have the space available within the extg road reservation, to introduce segregated cycle lanes and still achieve the additional eastern footpath. So we have to work within that constraint, for that section of the road at least. We should not lose the second footpath on the eastern side of the road, and so the cycle lanes must be 'on-carriageway'.



- We are satisfied that the proposed arrangements are safe.
- We attach the Quality Audit report (including RSA) – the findings and recommendations of which we are fully accepting of and have implemented. We note that the Auditors have not raised any concerns regarding the improvements being made to the access road.
- We attach updated road layout, incorporating the Audit findings

b) Response is noted. No further comment.
c) This division would welcome a carriageway width in accordance with DMURS i.e. a local street width of 5 – 5.5m. Exceeding the width outlined in DMURS for a local street may encourage vehicle speeds. A 6m carriageway is by no means excessive for the type of residential environment. A 5m-5.5m wide street is not conducive to having perpendicular parking (minimum carriageway width needed for entering / exiting standard 2.4m wide perpendicular parking spaces).Whereas parallel parking could be used, which would facilitate the use of a 5.5m carriageway (within the development), this would result in a loss of car spaces – and we are already cognisant of DCC's views on the reduced car parking ratios.
d) Response is noted. No further comment
e) Swept path analysis drawing not included in email below, sent by applicant on 4/02/2022 in response to TPD comments. Response is noted. No further comment
f) Response is noted. No further comment

2. Cycle parking & access (a – c): Responses are noted No further comment

3. Car parking (a – e): This division still has concerns with the low car parking ration proposed having regard to the reasons outlined at Stage. The responses are noted. No further comment

4. Outline Construction Traffic Management Plan: Response is noted. No further comment

In summary, this division still has concerns with the retention of the wide access as outlined by the reasons above and at Stage 2. The low car parking ratio is also still of concern to this division having regard to the reasons outlined at Stage 2. The addition of a footpath on the eastern side of the access road into the proposed development is welcome, however the reliance on active travel modes (which can include walking and cycling to public transport) is not fully reflected within the layout of the access road due to its width and limited cycle facilities. See comments above

Regards,

David Conway CEng **| Senior Executive Engineer**

Transportation Planning | Environment & Transportation Department | Block 1, Floor 5, Civic Offices, D08 RF3F
Rannán Pleanáil Iompair | Roinn Comhshaoil agus Iompair | Bloc 1, Urlár 5, Oifigí Cathartha, An Ché Adhmaid, D08 RF3F

T: +353 1 222 5431 | Email: David.Conway@dublincity.ie

HikeIt. BikeIt. LikeIt.
Dublin

Appendix 8

Irish Water
Statement of Design Acceptance

Michael Hughes
Sandwith Hse
52-54 LWR Sandwith Street
Dublin 2
D02WR26

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

Irish Water
PO Box 448,
South City
Delivery Office,
Cork City.

www.water.ie

1 March 2022

Re: Design Submission for Carlisle Site, Kimmage Road West, Dublin (the "Development") (the "Design Submission") / Connection Reference No: CDS21004635

Dear Michael Hughes,

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, Irish Water has no objection to your proposals.

This letter does not constitute an offer, in whole or in part, to provide a connection to any Irish Water infrastructure. Before you can connect to our network you must sign a connection agreement with Irish Water. This can be applied for by completing the connection application form at www.water.ie/connections. Irish Water'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 Irish Water's network(s) (the "**Self-Lay Works**"), as reflected in your Design Submission. Acceptance of the Design Submission by Irish Water does not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

If you have any further questions, please contact your Irish Water representative:
Name: Dario Gozalo Alvarez
Email: dalvarez@water.ie

Yours sincerely,

Yvonne Harris

Yvonne Harris
Head of Customer Operations

Appendix A

Document Title & Revision

- [CST-BMD-00-ZZ-DR-C-1002]
- [CST-BMD-00-ZZ-DR-C-1003]
- [CST-BMD-00-ZZ-DR-C-1020]

Standard Details/Code of Practice Exemption: N/A

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 Irish Water will not, in any way, render Irish Water liable for any elements of the design and/or construction of the Self-Lay Works.

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

HYDRANTS COVERS, WHERE LOCATED IN GRASS AREAS, TO BE SURROUNDED BY A CONCRETE PLINTH, 200mm ALL ROUND AND 100mm DEEP, FORMED WITH C20/25 CONCRETE, 20mm AGGREGATE SIZE, AND BEDDED IN CLAUSE 804 MATERIAL. THE PLINTH TO INCORPORATE MILD STEEL REINFORCEMENT LINKS AND TO HAVE A BULL-NOSE FINISH AROUND ITS EXTERNAL PERIMETER.

HYDRANTS AS PER STW-W-39 IRISH WATER STANDARDS

AIR VALVE

150Ø HDPE WATERMAIN

BLOCK 1
FFL +47.000

BLOCK 2
FFL +47.000

BLOCK 3
FFL +46.775

BLOCK 4
FFL +46.450

BLOCK 5
FFL +46.400

CONNECTION TO APARTMENTS: METERS FOR APARTMENTS SHALL BE INSTALLED INTERNALLY WITHIN THE PREMISES IN ACCORDANCE WITH THE BUILDING CONTROL AUTHORITIES REQUIREMENTS AND SUBJECT TO REVIEW BY IRISH WATER. ISOLATION DEVICE TO BE PROVIDED USING A CONNECTION VIA AN UNRESTRICTED AIR-GAP DEVICE (AA TYPE DEVICE, IS EN 1717) TO PREVENT BACKFLOW FROM THE INTERNAL WATER DISTRIBUTION SYSTEM TO IRISH WATER'S NETWORK TO PREVENT THE RISK OF BACKFLOW CONTAMINATION.

CONNECTION TO WATER TANK: ISOLATION DEVICE TO BE PROVIDED USING A CONNECTION VIA AN UNRESTRICTED AIR-GAP DEVICE (AA TYPE DEVICE, IS EN 1717) TO PREVENT BACKFLOW FROM THE INTERNAL WATER DISTRIBUTION SYSTEM TO IRISH WATER'S NETWORK TO PREVENT THE RISK OF BACKFLOW CONTAMINATION.

WATER TANK

SPRINKLERS TANK

SCOUR VALVE DRAINED TO MANHOLE S1.4

MAGNETIC FLOW WATER METER AS PER IRISH WATER SPACIFICATION

Carlisle Health And Fitness Club

Car Park

Art Gallery

NO ENTRY

EXIT

KIMMAGE

KIMMAGE ROAD W

PROPOSED IW UPGRADE 200Ø WATERMAIN

CONNECTION TO PROPOSED IW UPGRADE 200Ø WATERMAIN

6 CAST IRON 1920

6 CAST IRON 1940

100mm uPVC 2002

150Ø HDPE WATERMAIN

200Ø HDPE WATERMAIN

CIVIL LEGEND

DENOTES SUBJECT APPLICATION SITE FOR PCE

CIVIL LEGEND

- Ex. WATERMAIN
- WATERMAIN
- SLUICE VALVE (SV)
- STOP COCK (SC)
- AIR VALVE (AV)
- FIRE HYDRANT
- TRUST BLOCK
- CHECK VALVE (CV)
- MAGNETIC FLOW WATER METER WITH TELEMETRY KIOSK (M TK)
- SCOUR VALVE (Sc.V)

NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL WATERMAINS IN ACCORDANCE WITH THE LATEST IRISH WATER STANDARD DETAILS AND CODE OF PRACTICE.

2. POSITIONS OF SERVICES SHOWN ARE INDICATIVE ONLY. THE SETTING-OUT OF ALL SERVICES INDICATED IS THE RESPONSIBILITY OF THE CONTRACTOR, AND HE/SHE SHALL SATISFY THEMSELVES THAT THE REQUIRED DEPTH OF COVER AND SEPARATION DISTANCES ARE ACHIEVED IN ACCORDANCE WITH THE IRISH WATER CODE OF PRACTICE AND STANDARD DETAILS.

3. THE CONTRACTOR SHALL REVIEW THE PLAN LAYOUTS PRIOR TO COMMENCEMENT HAVING REGARD TO THE REQUIREMENTS OF THE CODES OF PRACTICE AND STANDARD DETAILS PUBLISHED BY IRISH WATER. WHERE A DISCREPACY BETWEEN BMCE PLAN LAYOUT DRAWINGS AND THE RELEVANT REQUIREMENTS OF THE CODES OF PRACTICE OR STANDARD DETAILS IS IDENTIFIED, THE CONTRACTOR MUST CONSULT BMCE, PRIOR TO COMMENCING CONSTRUCTION, SO THAT AN APPROPRIATE DESIGN AMENDMENT CAN BE MADE IF REQUIRED.

4. THE GENERAL SPECIFICATION FOR THE WATERMAIN SYSTEM ON THE PROJECT SHALL BE THE "CODE OF PRACTICE FOR WATER INFRASTRUCTURE" PUBLISHED BY IRISH WATER (LATEST EDITION). THE CONTRACTOR SHALL FAMILIARISE HIMSELF WITH ALL ASPECTS OF THIS DOCUMENT WHICH SHALL BE READ IN CONJUNCTION WITH THIS PARTICULAR SPECIFICATION.

PROPOSED WATERMAIN SITE PLAN LAYOUT

SCALE @ A0: 1:250
SCALE @ A2: 1:500

ISSUE	DATE	DESCRIPTION	BY
PL4	18.02.22	ISSUED TO IW	MR
PL3	04.02.22	ISSUED FOR PLANNING	MR
P2	01.02.22	ISSUED TO IW	MR
PL2	13.10.21	ISSUED FOR PLANNING	MR
PL1	08.10.21	ISSUED FOR PLANNING	MR
P1	30.06.21	IW PCE ISSUED	SM

Project Engineer: MH | Project Director: CK

BM STAGE: **PLANNING**

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Tel: (01) 677 3200 Fax: (01) 677 3164
London Office:
12 Mill Street, London SE1 2AY, United Kingdom
Tel: (0044) 20 3750 5530
Consulting Engineers, Civil . Structural . Project Management.E-mail: bmce@bmce.ie Web: www.bmce.ie

CLIENT: **1 TERENURE LANDS LTD.**

PROJECT TITLE: **CARLISLE SITE KIMMAGE, RESIDENTIAL DEVELOPMENT**

BM PROJECT No.: **21.221**

ORIGIN | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: **PROPOSED WATERMAIN SITE PLAN LAYOUT**

ORIG | DRAWING REFERENCE: **CST-BMD-00-ZZ-DR-C-1003** | STATUS: **PL** | REVISION: **4**

NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECT'S DRAWINGS.FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.

BLOCK 1 FFL +47.000

BLOCK 2 FFL +47.000

BLOCK 3 FFL +46.775

BLOCK 4 FFL +46.450

BLOCK 5 FFL +46.400

ATTENUATION TANK STORMTECH SC740 SYSTEM OR SIMILAR APPROVED TANK VOLUME EQUALS 146m³

ATTENUATION TANK STORMTECH SC740 SYSTEM OR SIMILAR APPROVED TANK VOLUME EQUALS 551 m³

GREENLEAF REROOT TREE ROOT PROTECTION SYSTEM OR SIMILAR APPROVED

GREENLEAF REROOT TREE ROOT PROTECTION SYSTEM OR SIMILAR APPROVED

EXISTING 450Ø STORM DRAINAGE TO BE DIVERTED

DIVERSION OF EXSITING STORM DRAINAGE

PETROL INTERCEPTOR
UNIT TYPE: NSBE030
SILT CAPACITY: @ 3000 ltrs
SILT CAPACITY: @ 300 ltrs
REFER TO DETAIL B

HYDROBRAKE FLOW CONTROL
UNIT TYPE: HYDROBRAKE
S-TYPE UNIT
FLOW RATE: 2.0 l/s
ASSUMED WORKING HEAD: 1.2m
MIN OUTLET DIA: 150mm
MIN CHAMBER DIA: 1200 mm

NOTE: ALL EXISTING U/G SERVICES TO BE DIVERTED AWAY FROM THE FOOTPRINT OF THE PROPOSED FOUL PUMPING STATION

MINIMUM DISTANCE FROM PUMPUNG STATION TO PROPOSED STRUCTURE

MINIMUM DISTANCE FROM PUMPUNG STATION TO STRUCTURE

FOUL PUMPING STATION REFER TO DRAWING 1206 FOR DETAILS

NEW SW MANHOLE

NEW SW MANHOLE

NEW SW MANHOLE

EXISTING GULLIES TO REMAIN

EXISTING IL 44.45

CONNECTION TO EXISTING

CONNECTION TO EXISTING SEWER

Carlisle Health And Fitness Club

Car Park

Art Gallery

KIMMAGE ROAD W

KIMMAGE

SWAN NECK UNABLE TO SEWER

CIVIL LEGEND

EX. FOUL MANHOLE	Ex.F
EX. FOUL PIPE	PIPE DESCRIPTION
NEW FOUL MANHOLE	F
NEW FOUL PIPE	PIPE DESCRIPTION
EX. SURFACE WATER MANHOLE	Ex.S
EX. SURFACE WATER PIPE	PIPE DESCRIPTION
NEW SURFACE WATER MANHOLE	S
NEW SURFACE WATER PIPE	PIPE DESCRIPTION
EX. COMBINED MANHOLE	Ex.C
EX. COMBINED PIPE	PIPE DESCRIPTION
NEW COMBINED MANHOLE	C
NEW COMBINED PIPE	PIPE DESCRIPTION
NEW RISING MAIN	PIPE DESCRIPTION
PIPE CROSSOVER	
EX. ROOF RAIN WATER MANHOLE	Ex.R
EX. ROOF RAIN WATER PIPE	PIPE DESCRIPTION
NEW ROOF RAIN WATER MANHOLE	R
NEW ROOF RAIN WATER PIPE	PIPE DESCRIPTION
DECOMMISSIONED LINE	PIPE DESCRIPTION
FOUL ACCESS JUNCTION	AJ
SURFACE ACCESS JUNCTION	AJ
RAINWATER PIPE	RWP
SOIL VENT PIPE	SVP
ROAD GULLEY	RG
BACK INLET GULLEY TRAP	BIGT
FOUL RODDING EYE	RE
SURFACE RODDING EYE	RE
GULLEY TRAP	GT

SERVICES LEGEND

UNDERGROUND ELECTRICITY LINE	FOUL DRAINAGE
ELECTRICAL M/HOLE	FOUL MANHOLE
OVERHEAD LINE WITH POLE	STORM DRAINAGE
OVERHEAD ELECTRIC	STORM DRAINAGE MANHOLE
UNDERGROUND HV ELECTRICITY LINE	COMBINED DRAINAGE
6m HIGH STREET LIGHT	COMBINED DRAINAGE MANHOLE
MINI PILLAR	PRODUCT DRAINAGE
EIR	PRODUCT DRAINAGE MANHOLE
EIR CHAMBER	CHEMICAL LINE
OVERHEAD LINE WITH POLE	CHEMICAL MANHOLE
ENET	ROAD GULLY
ENET CHAMBER	GULLY TRAP
COMMS	WATER MAIN
COMMS CHAMBER	SLUICE VALVE
VIRGIN	FIRE HYDRANT
VIRGIN CHAMBER	WATER METER
FIBRE	SCOUR VALVE
FIBRE CHAMBER	PRESSURE RELEASE VALVE
AURORA TELECOM	AIR VALVE
AURORA TELECOM CHAMBER	NON-RETURN VALVE
CATV	FUEL LINE/TANK
CATV CHAMBER	GAS SV
BT	GAS LINE
BT CHAMBER	GAS HIGH PRESSURE LINE
ESAT	GROUND LEVEL (metres - os datum)
ESAT CHAMBER	COVER LEVEL (metres - os datum)
SIRO FIBRE	INVERT LEVEL (metres - os datum)
SIRO CHAMBER	DEPTH TO TOP OF SERVICE DUCT OR CABLE
UNIDENTIFIED SERVICE	DP ON MANHOLES = INVERT LEVEL OF CHAMBER
UNIDENTIFIED CHAMBER	DP ON DRAINAGE = INVERT LEVEL OF PIPE
EARTH LINE AND RODS	UNABLE TO OPEN
TRAFFIC SENSORS	OUTSIDE SURVEY AREA
CCTV POLE	UNABLE TO TRACE
UTILITIES CABNET	SURVEYED AREA

CIVIL LEGEND

DENOTES SUBJECT APPLICATION SITE FOR PCE

NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL FOUL WATER DRAINAGE IN ACCORDANCE WITH THE LATEST IRISH WATER 'CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE' & 'WASTEWATER INFRASTRUCTURE STANDARD DETAILS'.

2. POSITIONS OF SERVICES SHOWN ARE INDICATIVE ONLY. THE SETTING-OUT OF ALL SERVICES INDICATED IS THE RESPONSIBILITY OF THE CONTRACTOR, AND HE/SHE SHALL SATISFY THEMSELVES THAT THE REQUIRED DEPTH OF COVER AND SEPARATION DISTANCES ARE ACHIEVED IN ACCORDANCE WITH THE IRISH WATER 'CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE' & 'WASTEWATER INFRASTRUCTURE STANDARD DETAILS".

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4. THE GENERAL SPECIFICATION FOR THE FOUL WATER NETWORK ON THE PROJECT SHALL BE THE 'CODE OF PRACTICE FOR WASTEWATER INFRASTRUCTURE' & 'WASTEWATER INFRASTRUCTURE STANDARD DETAILS' PUBLISHED BY IRISH WATER (LATEST EDITION). THE CONTRACTOR SHALL FAMILIARISE HIMSELF WITH ALL ASPECTS OF THIS DOCUMENT WHICH SHALL BE READ IN CONJUNCTION WITH THIS PARTICULAR SPECIFICATION.

PROPOSED FOUL AND SURFACE WATER DRAINAGE LAYOUT

SCALE @ A0: 1:250
SCALE @ A2: 1:500

ISSUE	DATE	DESCRIPTION	BY
PL4	18.02.22	ISSUED TO IW	MR
PL3	04.02.22	ISSUED FOR PLANNING	MR
P3	01.02.22	ISSUED TO IW	SM
PL2	13.10.21	ISSUED FOR PLANNING	MR
PL1	08.10.21	ISSUED FOR PLANNING	MR

Project Engineer: MH | Project Director: CK

BM STAGE: **PLANNING**

BARRETT MAHONY
Dublin Office: Sandwith House, 52-54 Lower Sandwith Street, Dublin 2, Ireland. Tel: (01) 677 3200 Fax: (01) 677 3164
London Office: 12 Mill Street, London SE1 2AY, United Kingdom Tel: (0044) 20 3750 5530
Consulting Engineers, Civil . Structural . Project Management.E-mail: bmce@bmce.ie Web: www.bmce.ie

CLIENT: 1 TERENURE LAND LTD.

PROJECT TITLE: CARLISLE SITE KIMMAGE, RESIDENTIAL DEVELOPMENT

BM PROJECT No.: 21.221

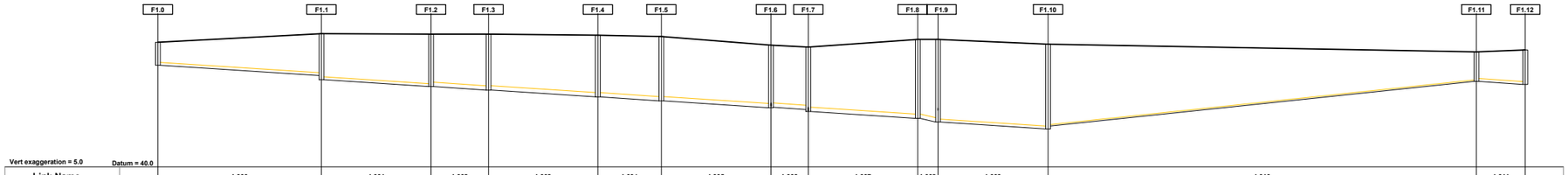
MODEL | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE: PROPOSED FOUL AND SURFACE WATER DRAINAGE LAYOUT

ZONE | DRAWING REFERENCE: CST-BMD-00-ZZ-DR-C-1002 | STATUS: PL | REVISION: 4

NOTES

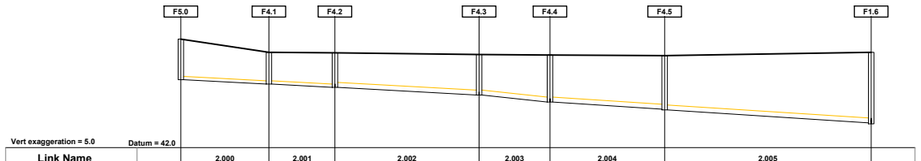
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL ENGINEERS & ARCHITECTS DRAWINGS FIGURED DIMENSIONS ONLY (NOT SCALING) TO BE USED. WHERE A CONFLICT OF INFORMATION EXISTS OR IF IN ANY DOUBT - ASK.
2. CONSULTANTS TO BE INFORMED IMMEDIATELY OF ANY DISCREPANCIES BEFORE WORK PROCEEDS.



Vert exaggeration = 5.0 Datum = 40.0

Link Name		1.000	1.001	1.002	1.003	1.004	1.005	1.006	1.007	1.008	1.009	1.010	1.011
Section Type		150mm	150mm	225mm	225mm	225mm	225mm	225mm	225mm	225mm	150mm	75mm	150mm
Slope		1:80.0	1:80.0	1:80.0	1:80.0	1:80.0	1:80.0	1:80.0	1:80.0	1:28	1:80.0	1:-48.2	1:80.0
Cover Level		46.500	46.950	46.925	46.925	46.870	46.800	46.350	46.250	46.650	46.650	46.400	46.000 46.100
Invert Level		45.300	44.795 44.595	44.192 44.192	44.004 44.010	43.653 43.650	43.442 43.442	43.084 43.112	42.990 42.990	42.532 42.532	42.340 42.340	41.980 42.134	44.460 44.460 44.300
Length		42.777	28.676	15.035	28.585	16.614	28.655	9.775	28.629	5.296	28.789	112.022	12.783

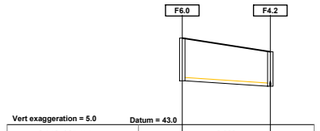
SECTION F1.0 - F1.12 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 42.0

Link Name		2.000	2.001	2.002	2.003	2.004	2.005
Section Type		150mm	150mm	225mm	225mm	225mm	225mm
Slope		1:100.5	1:100.5	1:94.1	1:50.6	1:80.0	1:80.0
Cover Level		46.950	46.350	46.325	46.250	46.225	46.200 46.350
Invert Level		45.100	44.900 44.900	44.750 44.750	44.400 44.400	44.080 44.080	43.753 43.720 43.130
Length		20.102	15.079	32.923	16.181	26.188	47.161

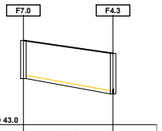
SECTION F5.0, F4.1 - F4.5, F1.6 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 43.0

Link Name		3.000	
Section Type		150mm	
Slope		1:80.4	
Cover Level		46.960	46.325
Invert Level		45.000	44.750
Length		20.102	

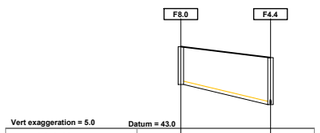
SECTION F6.0, F4.2 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 43.0

Link Name		4.000	
Section Type		150mm	
Slope		1:29.2	
Cover Level		46.840	46.250
Invert Level		45.100	44.400
Length		20.474	

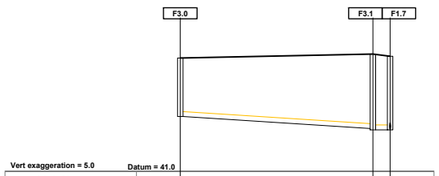
SECTION F7.0, F4.3 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 43.0

Link Name		5.000	
Section Type		150mm	
Slope		1:22.3	
Cover Level		46.725	46.225
Invert Level		45.000	44.080
Length		20.474	

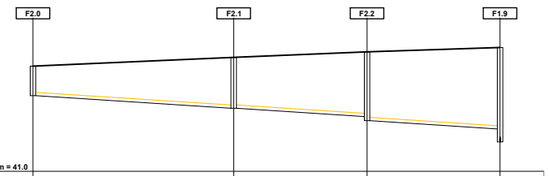
SECTION F8.0, F4.4 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 41.0

Link Name		6.000	5.001
Section Type		225mm	225mm
Slope		1:80.0	1:0.0
Cover Level		46.170	46.350 46.250
Invert Level		43.500	42.990 42.990 42.990
Length		43.988	3.935

SECTION F3.0 - F3.1, F1.7 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50



Vert exaggeration = 5.0 Datum = 41.0

Link Name		7.000	7.001	7.002
Section Type		150mm	150mm	150mm
Slope		1:80.0	1:80.0	1:80.0
Cover Level		46.800	46.200	46.450 46.650
Invert Level		44.460	43.577 43.577	43.106 43.310 42.930
Length		45.829	30.454	30.370

SECTION F2.0 - F2.2, F1.9 HORIZONTAL SCALE 1:500 VERTICAL SCALE 1:50

ISSUE	DATE	DESCRIPTION	BY
PL2	18.02.22	ISSUED TO IW	MR
PL1	04.02.22	ISSUED FOR PLANNING	MR
P1	01.02.22	ISSUED TO IW	MR

Project Engineer: MH | Project Director: CK

BIM STAGE
PLANNING

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PROJECT TITLE
CARLISLE SITE KIMMAGE, RESIDENTIAL DEVELOPMENT

BM PROJECT No.
21.221

CODE | REFERENCE | SUITABILITY | REVISION

DRAWING TITLE
FOUL WATER LONGITUDINAL SECTIONS

CODE | DRAWING REFERENCE | STATUS | REVISION
CST-BMD-00-ZZ-DR-C-1020 | **PL** | **2**

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