# SHD Development at Cooldown Commons Phase 3

## Block D4 Amendments Infrastructure Design Report

190003-DBFL-XX-XX-RP-C-1004

INFRASTRUCTURE

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DBFL CONSULTING ENGINEERS

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| Project Title: | **SHD Development at Cooldown Commons Phase 3** | | |
| Document Title: | **Block D4 Amendments Infrastructure Design Report** | | |
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| 1 | 27/04/21 | First Issue | Carlo Sidoti | Kevin Sturgeon | Kevin Sturgeon |
| | | | | | |
| | | | | | |

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# 1 Introduction

DBFL Consulting Engineers were commissioned by the applicant to provide engineering design services in support of the proposed mixed-use development at Cooldown Commons Phase 3, Citywest, Dublin 24.

Cairn Homes Properties Limited intend to apply to South Dublin County Council for an amendment to Block D4 of a strategic housing development ABP-310570-21 at Cooldown Commons and Fortunestown, Citywest, Dublin 24 (on lands located north of the Luas red line and Fortunestown Luas stop). The proposed amendment to Block D4 is for a reduction in height to 9 storeys (from 13 storeys) and associated reduction in the number of residential units to 44 (from 60 no. units) including 1 beds, 2 beds and 3 beds units all with associated private balconies/terraces to the north/south/east/west elevations. This will result in the reduction in the total number of residential units across the entire development site from 421 no. residential units to 405 no. residential units. All other elements associated with Block D4 and across the development site as a whole will remain the same.

This report considers the impact of the proposed amendments to the Block D4 building on the previously approved engineering aspects including the following;

- Flood Risk,
- Access and Parking,
- Stormwater,
- Foul Sewerage,
- Water supply.

# 2 Existing Site

Block D4 is located to the southern end of the permitted development site, immediately to the north of the proposed plaza and the existing redline Luas stop, Fortunestown Lane. It is located along the central spine route into the site. The subject application site is circa 1077 sqm and is rectangular in shape, running in a predominantly north-south direction.

It is part of a wider site which is located approximately 1km northwest of Saggart in the Fortunestown area of Citywest. It is bounded to the west and north by Phases 1 & 2 residential development under construction under planning reference ABP-302398-18 and to the north and east by undeveloped lands. It is also bounded to the east and south by the LUAS red line with Fortunestown LUAS Stop located at the southern boundary of the site. The N7 Naas Road is approximately 700m north of the site, with junction 3 accessed from the N82. The Baldonnell Upper Stream forms the north eastern and eastern boundary of the site. The site falls from south to north and west to east towards the Stream. Refer to figure 2.1.


*Figure 2-1 Site location aerial view (indicative red line)*

Construction of the parent permission (planning reference ABP-310570-21) has commenced with basement construction underway and main site services installed. Blocks E1 and E2 are completed up to the first floor. All the site roads have been completed to base course with drainage lines completed below. All the attenuation tank and wider site services have been installed.

# 3 Engineering assessment of amendment

## 3.1 Flood Risk

The proposed amendment to the permitted scheme reduces Block D4 from 13 storeys to 9 storeys which does not impact flood risk to the site or development. The amendment does not increase the building imprint size and as such the drainage run-off is unchanged and consistent with the permitted scheme. The proposed amendment does not impact the flood risk of the development which is still within flood zone C.

## 3.2 Road Layout & Parking

The proposed amendment to the permitted scheme does not impact or alter the permitted internal road layout or permitted access locations to Citywest Avenue.

Since the proposed amendment involves a reduction of 16 apartments, it will not result in any additional vehicle movements over and above those predicted as part of the permitted development assessment. Accordingly, the predicted impact generated by the subject amendment on the surrounding road network is not likely to be increased.

No additional car parking is proposed as part of the amended scheme, see table 3.1 below. Total car parking spaces are to be retained at 289 spaces as per the permitted scheme proposals.

Condition 11a of the grant of permission ABP Reg Ref 310570-21 requires that "278 number clearly identified car parking spaces shall be assigned permanently for the residential development and shall be reserved solely for that purpose." This equates to a ratio of 0.66 spaces per residential unit. In line with this condition, and the reduced number of units proposed by this amendment, it is proposed to allocate 268 no. car parking space for the residential development. These will be identified in the Parking Management Plan which will be submitted prior to occupation in line with condition 11b of the grant of permission ABP Reg Ref 310570-21.

There will be no changes to the total bicycle parking numbers (650 spaces) permitted under planning reference ABP-302398-18 resulting in an overall increase in the ratio of bike spaces per unit when compared to the permitted scheme. The ratio was 1.49 spaces per unit in the permitted scheme and will now be 1.55 spaces per unit. Their location and provision will remain as set out in the permitted development. A breakdown of the bicycle parking provided for the amended development quantum across the whole scheme is detailed in Table 3.2 below. Locations for the Long and Short stay bicycle parking is detailed in Figure 3.4 and 3.5.

| Block | SDCC Requirement | | | | Proposed | |
|---|---|---|---|---|---|---|
| | | | | | Long Stay | Short Stay |
| Apartment (D1, D2, D3 and D4) | 49 | 24 | 410 | 118 | 328[1] | 60 |
| Apartment (E1,E2) | 27 | 13 | 208 | 67 | 116 | 31 |
| | 8 | 4 | 90 | 18 | 80 | 12 |
| Retail / Commercial (D3) | 1 | 6 | | | 2[1] | 6 |
| Retail/Commercial (E1) | 1 | 9 | | | 1 | 9 |
| Office (E1) | 3 | 2 | | | 3 | 2 |
| Total | 89 | 58 | | | 530 | 120 |
| | 147 | | | | 650 | |

1 Located at basement level

*Table 3-1 Bicycle Parking Provision v SDCC Development Plan and DHPLG*

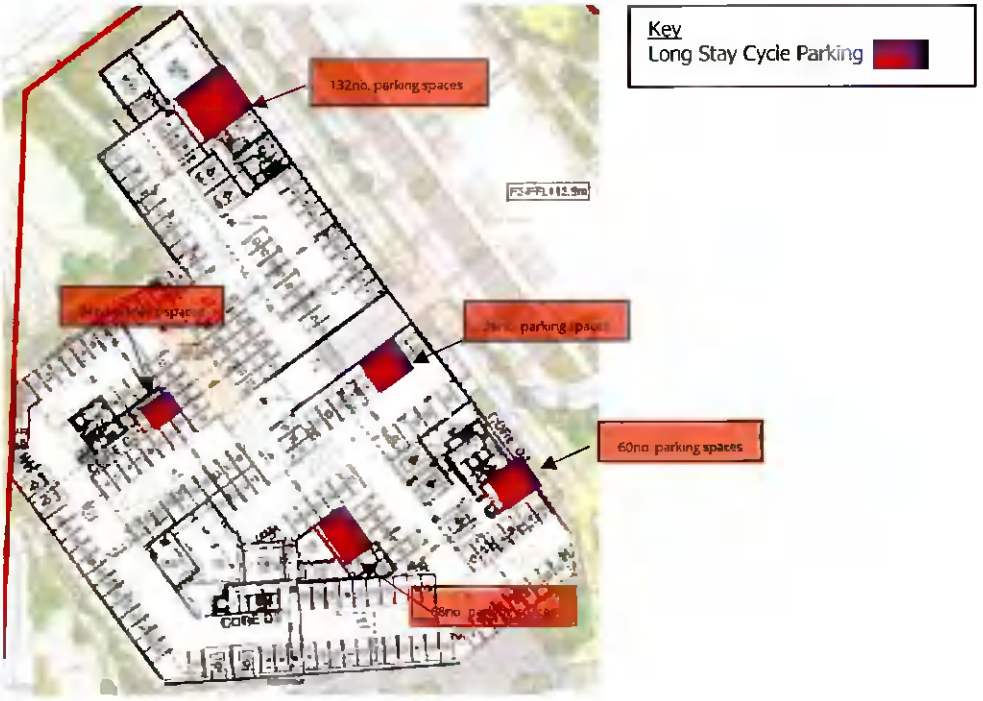


*Figure 3-1 Long Stay Bicycle Parking at Basement Level*

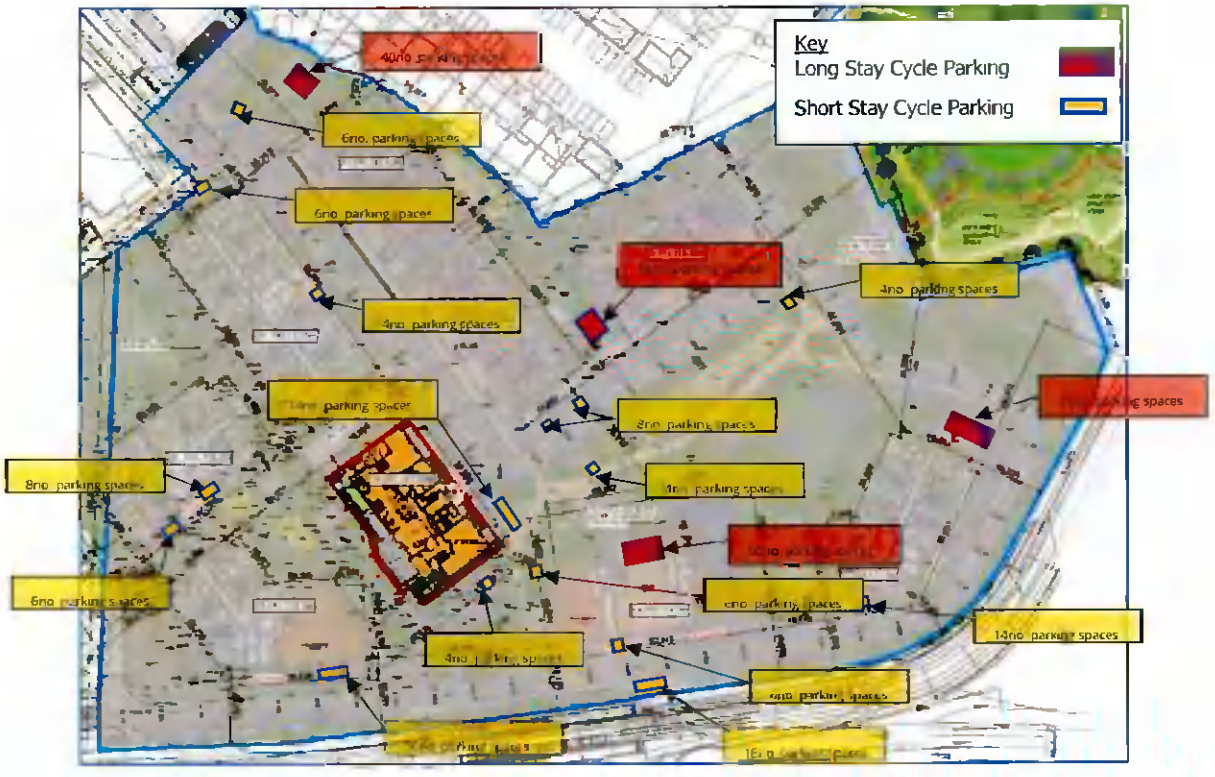


*Figure 3-2 Long & Short Stay Bicycle Parking at Surface Level*

## 3.3 Stormwater

The stormwater management for the previous permitted scheme split the site into two surface water catchments, "A" and "B" corresponding to two different surface water outfalls, refer to Figure 3.4. The amended Block D4 is within Catchment "B" which outfalls to the Fortunestown Stream via an attenuated outlet and on-line attenuation storage for a 1:100 year return event with provision for climate change.

The proposed amendment to Block D4, does not result in any increased impermeable area or any additional roof area. There is no changes to the stormwater flows or any changes required to the stormwater pipework or to the attenuation storage volume.

The previous stormwater drainage strategy, layout and details are therefore unchanged as a result of the proposed amendment. No revised stormwater calculations are therefore required.


*Figure 3-3 Surface Water Catchment*

## 3.4 Foul Sewerage & Loading

The proposed amendment will reduce the number of residential units in the development from 421 to 405. This will result in a subsequent reduction in total flow effluent and foul sewer flows from the development which will be a slight benefit.

Foul flows will reduce from 15.04 l/s (permitted development) to 14.55 l/s. Refer to Table 3.2 and Table 3.3 below.

The changes do not require any adjustments to the foul sewer network already permitted.

| CALCULATED DEVELOPMENT WASTEWATER LOADS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Use Type | No. of Units | Occupancy Rate | Population (P) | Loading (G) (l/day/person)* | Daily Loading (PG) (l/day) | Daily Loading (l/s) | Growth Factor | Infiltration @10% (as CoP App C 1.2.4) | Dry Weather Flow (l/s) | Peaking Factor (as CoP App C 1.2.5) | Design Foul FLow (l/s) |
| Residential | 405 | 2.7 | 1094 | 150 | 164025 | 1.90 | 1 | 0.19 | 2.09 | 6 | 12.53 |
| Commercial | 4 | varies | 346 | varies | 13202 | 0.31 | 1 | 0.03 | 0.34 | 6 | 2.02 |
| | | | | | | | | Total Dry Weather Flow (l/s) | 2.42 | | |
| | | | | | | | | | Total Design Foul FLow (l/s) | | 14.55 |
| * Flow rates calculated using IW CoP for Wastewater Infrastructure Appendix C | | | | | | | | | | | |

*Table 3-2 Amended Foul loading*

| CALCULATED DEVELOPMENT WASTEWATER LOADS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Use Type | No. of Units | Occupancy Rate | Population (P) | Loading (G) (l/day/person)* | Daily Loading (PG) (l/day) | Daily Loading (l/s) | Growth Factor | Infiltration @10% (as CoP App C 1.2.4) | Dry Weather Flow (l/s) | Peaking Factor (as CoP App C 1.2.5) | Design Foul FLow (l/s) |
| Residential | 421 | 2.7 | 1137 | 150 | 170505 | 1.97 | 1 | 0.20 | 2.17 | 6 | 13.02 |
| Commercial | 4 | varies | 346 | varies | 13202 | 0.31 | 1 | 0.03 | 0.34 | 6 | 2.02 |
| | | | | | | | | Total Dry Weather Flow (l/s) | 2.51 | | |
| | | | | | | | | | Residential Design Foul FLow (l/s) | | 15.04 |
| * Flow rates calculated using IW CoP for Wastewater Infrastructure Appendix C | | | | | | | | | | | |

*Table 3-3 Permitted Foul loading*

## 3.5 Water Supply & Demand

The proposed amendment to the building does not impact the previous permitted water main network, water supply connection to Block D4 or connection size.

The reduced number of residential units will reduce the design peak hour water demand of the development from 11.4l/s (permitted) to 11.02 l/s. Refer to Table 3.4 and Table 3.5 below.

The changes do not require any adjustments to the watermain network already permitted.

| CALCULATED DEVELOPMENT WATER DEMAND | | | | | | | |
|---|---|---|---|---|---|---|---|
| Use Type | No. of Units | Occupancy Rate | Population (P) | Average daily domestic demand (l/day) | Average Daily Domestic Demand (l/s) | Average daily/peak week demand (l/s) | Peak hour water demand (l/s) |
| Residential | 405 | 2.7 | 1094 | 164025 | 1.90 | 2.37 | 9.49 |
| Commercial | 4 | varies | 346 | 13202 | 0.31 | 0.38 | 1.53 |
| | | | | | Total Water Demand | | 11.02 |

* Flow rates calculated using IW CoP for Watermains

*Table 3-4 Amended Water Demand*

| CALCULATED DEVELOPMENT WATER DEMAND | | | | | | | |
|---|---|---|---|---|---|---|---|
| Use Type | No. of Units | Occupancy Rate | Population (P) | Average daily domestic demand (l/day) | Average Daily Domestic Demand (l/s) | Average daily/peak week demand (l/s) | Peak hour water demand (l/s) |
| Residential | 421 | 2.7 | 1137 | 170505 | 1.97 | 2.47 | 9.87 |
| Commercial | 4 | varies | 346 | 13202 | 0.31 | 0.38 | 1.53 |
| | | | | | Total Water Demand | | 11.40 |

* Flow rates calculated using IW CoP for Watermains

*Table 3-5 Permitted Water Demand*

Water supply for fire-fighting requirements for the building are not impacted by the proposed amendment

# 4 Summary

The proposed amendment to the permitted scheme is for for the reduction in height to 9 storeys (from 13 storeys) of the Block D4 and does not impact already permitted engineering services (stormwater, foul sewers, watermains) or infrastructure (roads, parking provision). The amendment does not increase the building imprint size and there is no impact on flood risk.

**DBFL** CONSULTING ENGINEERS


Registered Office
Ormond House
Upper Ormond Quay
Dublin 7 Ireland D07 W704

+ 353 1 400 4000
info@dbfl.ie
www.dbfl.ie

Cork Office
14 South Mall
Cork T12 CT91

+ 353 21 202 4536
info@dbfl.ie
www.dbfl.ie

Wexford Office
Suite 6b The Atrium
Maritana Gate, Canada St
Waterford X91 W028

+ 353 51 309 500
info@dbfl.ie
www.dbfl.ie