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CORK NORTH-WEST REGENERATION QUARTER; PHASE 3B

Part 8 Planning Report

Cork City Council

April 2022

Notice

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This document has 18 pages including the cover.

Document history

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Client signoff

Client	Cork City Council
Project	Cork Northwest Regeneration Quarter; Phase 3B
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Contents

1. Introduction

This Part 8 Engineering Planning Report is submitted as part of the Phase 3B development in the Cork Northwest Regeneration Quarter. This report encompasses the Civil, Structural, Mechanical and Electrical aspects of the project.

The Proposed Development site is the site of former terraced housing on Foto Lawn, Ardmore Ave and Glandore Park on the west side of Knocknaheeny Avenue, on the north side of Cork City, County Cork.

Figure 1-1 Site Location

The report and its appendices address the following engineering aspects associated with the development;

- Road Engineering
- Structural Engineering
- Foul Water Drainage
- Storm Water Drainage
- Potable Water Supply
- Part L 'Conservation of Fuel and Energy' – Report
- Public Lighting

This report is to be read in conjunction with the applicable reports attached to this report and the Engineering Drawing set, as attached in Appendix C;

2. Existing Site

2.1. Existing Site

The existing development site is located on the west side of Knocknaheeny Avenue, on the north side of Cork City, County Cork. There are currently a number of terraced houses on the site which dates back to the 1950's. The majority of these units are currently not occupied, and they are to be demolished under a separate contract.

The proposal is to develop a 62-unit development on the site which will include 26 houses and 36 apartment/duplex units.

2.2. Existing Civils

The site slopes from North to South with a considerable fall across the site of approximately 9 metres. The highest elevation is in the northeast corner of the site of approx. 126.5 metres and falls to the southwest corner of the site which is approx. 118.0 metres.

Following the demolition contract on the site, it is proposed that a final accurate topographical survey and GPR/Utility survey are to be carried out of the proposed site footprint.

A desktop study has identified the following utilities/services in the vicinity of the site;

- Foul Water Drainage
- Storm Water Drainage
- Watermains
- Telecoms (Eircom and Virgin Media)
- Overhead & Underground Electrical Cables
- Gas
- Public Lighting

3. Roads & Traffic Engineering

3.1. Site Access and Circulation

The roads infrastructure for the proposed development is as per the adopted Masterplan design for the regeneration project. Access to the developed site will be via the Spine Road, which is been constructed as part of both Phase 2B and Phase 1C of the overall regeneration project. Access to the site during the construction works will be via Knocknaheeny Avenue at the East of the site.

A Stage 01 Road Safety Audit has been completed for the proposed development and all actions called for in the audit have been accepted and addressed in the scheme design. Please refer to Appendix D for the Stage 01 Road Safety Audit. Following consultation with Cork City Council Roads Department, it has been agreed to include for a temporary footpath along the eastern boundary of the site at Knocknaheeny Avenue from Foto Lawn to the bus stop on Knocknaheeny Avenue to facilitate mobility. There will also be a temporary footpath link between the southwest corner of the site and Harbour View Road to facility mobility. Please refer to Appendix C & D for further details.

The road layout, road section widths and road build up have all been maintained in line with the adopted Masterplan design requirements. All shared surfaces will be maintained in line with the areas called up in the Masterplan design.

The proposals outlined above have been discussed with Cork City Council with no objections raised to the proposed scheme.

3.2. Pavements

There are various pavement options proposed within the site comprising bituminous and concrete.

Trafficked areas:

Road - 200mm total bituminous on 150mm CL 804 on minimum capping required in line with TII MCDRW.

Car Parking Bays - 200mm total bituminous on 150mm CL 804 on minimum capping required in line with TII MCDRW.

Concrete Footpaths at vehicle cross over points – 225mm concrete on 150mm CL 804 on minimum capping required in line with TII MCDRW.

Pedestrian areas:

Footpaths 150mm concrete on 100mm CL 804.

4. Potable Water Supply

4.1. Proposed Water Infrastructure

The potable water supply for the proposed development has been designed in accordance with Irish Water Code of Practice and Standard Construction Details.

It is proposed to provide the watermains infrastructure across the phase in line with the masterplan design, which will encompass 150mm diameter, 100mm diameter and 63mm diameter lines. The water main infrastructure will take into account tie in locations for future phases in line with the Masterplan design. The phase will be connected to the water infrastructure of Phase 2B and Phase 1C which is to the Southwest and West of the site. Refer to Appendix C for watermain layout drawings.

An Irish Water Pre-Connection Enquiry has been submitted to Irish Water for the proposed water demand based on the information contained within this Report and the adopted Masterplan design. A letter of confirmation of feasibility (reference no. CDS21002937) has been received from Irish Water for the proposal as outlined above. Refer to Appendix G for a copy of conformation of feasibility letter.

5. Foul Water Drainage

5.1. Proposed Foul Infrastructure

It is proposed to provide a foul water pipe network in line with the adopted Masterplan design for Phase 3B. There has been an allowance made for the tie in of future phases in line with the masterplan. Phase 3B will tie directly into the new foul infrastructure constructed as part of Phase 2B and 1C which is situated to the Southwest and West of the site. All tie in location invert levels to future phases are to be maintained as per the Masterplan design.

An Irish Water Pre-Connection Enquiry has been submitted to Irish Water for the proposed foul layout based on the information contained within this Report and the adopted Masterplan design. A letter of confirmation of feasibility (reference no. CDS21002937) has been received from Irish Water for the proposal as outlined above. Refer to Appendix G for a copy of conformation of feasibility letter.

“MicroDrainage” which is and industry standard tool for design and assessment of gravity sewer drainage networks has been used to model the proposed foul network. The MicroDrainage model shows that the proposed foul network has adequate capacity for the flows that will be generated from the proposed development and will achieve self-cleansing velocities. The foul network has been designed to achieve self-cleansing velocity in the pipe system at least once per day. This varies for pipe sizes with full bore self-cleansing are in accordance with Irish Water Wastewater Code of Practice.

As part of the proposed development, decommissioning of the existing foul network within this area will be required. In order to facilitate existing discharge of upstream foul flows from the existing residential areas north of the development, a diversion will be required to connect existing foul discharge into the proposed development foul network. The proposed diversion will be located immediately south of the Knocknaheeny Avenue / Killala Gardens junction to the east of the site and will connect into the proposed 225mm foul line at MH F60 via a 225mm dia diversion sewer.

The proposed diversion is a temporary solution to cater for the existing foul network until the later phases of the CNWQR masterplan are completed, at which time the temporary sewer will be decommissioned. The temporary diversion solution has been replicated within MicroDrainage and the proposed foul network was shown to have sufficient capacity to accept existing foul network flows.

The entire foul water network will be constructed in accordance with Irish Water Code of Practice and Standard Details.

Refer to Appendix C for Proposed Foul Water Drainage Layouts.

6. Surface Water Drainage

6.1. Proposed Surface Water Drainage

It is proposed that the development site will collect the surface water runoff and discharge the flow under gravity conditions into the storm infrastructure network as adopted under the masterplan design and constructed under Phase 1C and Phase 2B works. Pipe diameters will vary from 225mm to 675mm, allowing all tie in location invert levels to future phases to be maintained as per the Masterplan design.

“MicroDrainage” which is and industry standard tool for design and assessment of gravity sewer drainage networks has been used to model the proposed surface water network. The MicroDrainage model shows that the proposed surface water network has adequate capacity for the flows that will be generated from the proposed development and will achieve the full bore self-cleansing velocities.

As part of the proposed development, decommissioning of the existing surface water network within this area will be required. In order to facilitate existing discharge of upstream surface water runoff from the existing residential areas north of the development, 2no. diversions will be required to connect existing runoff into the proposed development surface water network.

The first diversion will be located at the junction of Knocknaheeny Avenue and Fota Lawn and will connect existing runoff into the 675mm dia surface water sewer at MH S6 via a 600mm dia diversion sewer. The second diversion will be immediately south of the Knocknaheeny Avenue / Killala Gardens junction and will connect runoff into the proposed 525mm dia surface water sewer at MH S61 via a 525mm dia diversion sewer.

The proposed diversions are a temporary solution to cater for existing runoff until the later phases of the CNWQR masterplan are completed, at which time these temporary sewers will be decommissioned. The temporary diversion solution has been replicated within MicroDrainage and the proposed surface water network was shown to have sufficient capacity to accept existing surface water flows.

Given the nature of site, the surface water runoff overland flow has been considered and site levels designed accordingly. Proposed levels allow surface water runoff to fall away and avoid ponding around buildings.

The entire surface water network will be constructed in accordance with the Greater Dublin Code of Practice for Drainage Works Version 6.0 and the Cork City Council standard details. Surface Water Drainage has been designed in accordance with the Greater Dublin Code of Practice for Drainage Works Version 6.0.

Refer to Appendix C for Proposed Surface Water Drainage Layouts.

6.2. Site Design Details

A minimum cover of 1.2m has been provided for the proposed network to give sufficient cover to soffit level within road locations, with a minimum slope specified to achieve self-cleansing velocities to reduce drainage depths at the downstream of the site. Steeper gradients have been proposed in the northern section of drainage by the access road to maintain the minimum 1.2m cover. Where the desired 1.2m cover cannot be achieved, an absolute minimum 900mm is proposed and surround the pipe in concrete to ensure adequate protection is maintained.

The proposed impermeable areas have been incorporated into the hydraulic model, with 100% of impermeable areas applied to the drainage network. The Phase 3B roads shall drain via traditional proprietary products such as kerb, gullies and drains to the storm water network.

The proposed surface water design was designed to provide the following.

- No surcharging in the 1 in 5-year storm event.
- No flooding in the 1 in 30-year storm event.
- No flooding against a 1 in 100-year storm event (including climate change allowance of 10%).

Appendices

Appendix A. Foul Drainage Design Criteria and Manhole Schedules

Appendix B. Surface Drainage: Design Criteria, Pipeline Schedules, Flow Control Design and Network Simulation Results

Appendix C. Engineering Drawings

Appendix D. Stage 01; Road Safety Audit

Appendix E. Public Lighting Report

Appendix F. Part L Report

Appendix G. Irish Water Pre-Connection Enquiry for Potable Water and Wastewater

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