AtkinsRéalis

Civil, Structural, Mechanical & Electrical Part 8 Planning Report

Cork City Council

27 March 2026

CORK NORTHWEST REGENERATION; PHASE 3C

Notice

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Client	Cork City Council
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Figures

1. Introduction

This Stage 2A Report is submitted as part of the Phase 3C development in the Cork Northwest Quarter Regeneration. This report encompasses the Civil, Structural, Mechanical and Electrical aspects of the project.

The project is part of the Cork City Northwest Regeneration Masterplan, which includes a phased programme of relocation, demolition and construction of replacement housing.

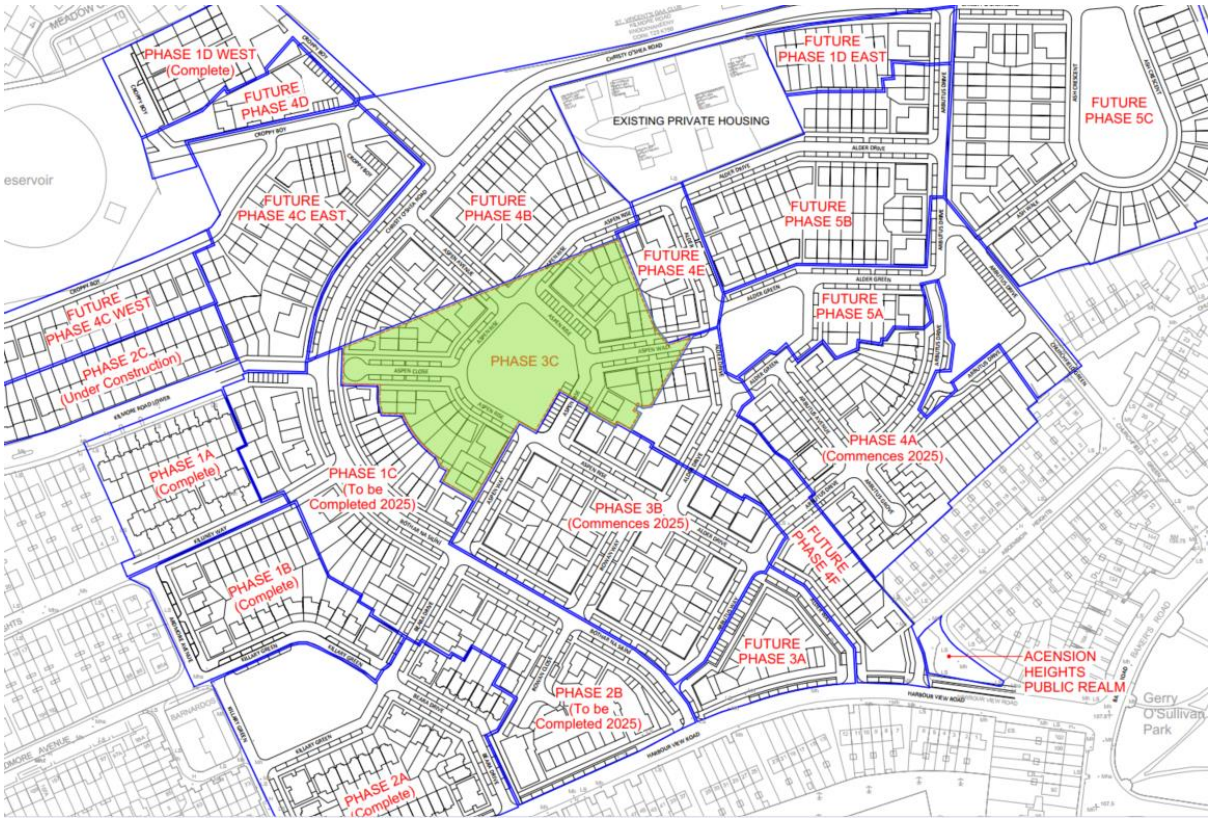

Figure 1-1 - Site Location Map (Showing CNWQR Masterplan Phases) (Source: City Architect's Department)

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
- Electricity Supply
- Telecommunications
- Fibre optics diversions

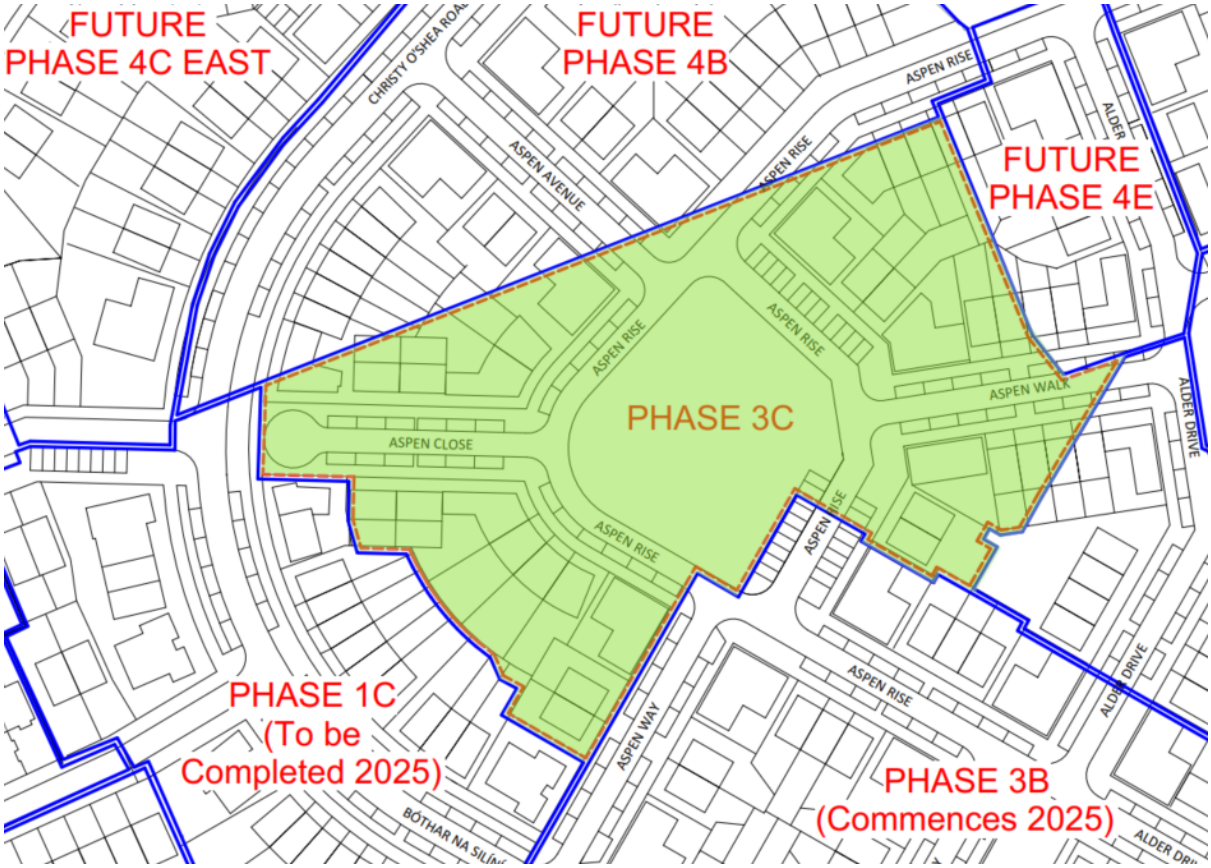

Figure 1-2 - Site Location Map - Phase 3C (Source: City Architect's Department)

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 A:

- P3C-ZZZ-ZZZ-DR-ATK-CE-950700 Phase 3C - Proposed road pavement layout
- P3C-ZZZ-ZZZ-DR-ATK-CE-950710 Phase 3C - Proposed road levels
- P3C-ZZZ-ZZZ-DR-ATK-CE-950740 Phase 3C - Proposed layout junction sightlines
- P3C-ZZZ-ZZZ-DR-ATK-CE-950751 Phase 3C - Proposed autotracking layout refuse truck
- P3C-ZZZ-ZZZ-DR-ATK-CE-950752 Phase 3C - Proposed autotracking layout pumping appliance
- P3C-ZZZ-ZZZ-DR-ATK-CE-950753 Phase 3C - Proposed autotracking layout private car
- P3C-ZZZ-ZZZ-DR-ATK-CE-951200 Phase 3C - Road signs and traffic markings
- P3C-ZZZ-ZZZ-DR-ATK-CE-960500 Phase 3C - Proposed storm water drainage layout
- P3C-ZZZ-ZZZ-DR-ATK-CE-960520 Phase 3C - Proposed foul water drainage layout
- P3C-ZZZ-ZZZ-DR-ATK-CE-960580 Phase 3C - Proposed SUDS
- P3C-ZZZ-ZZZ-DR-ATK-CE-962700 Phase 3C - Watermain layout
- P3C-XXX-XXX-DR-ATK-CE-960590 Phase 3C - Proposed services typical details
- P3C-XXX-XXX-DR-ATK-CE-960591 Phase 3C - Proposed SUDS typical details
- P3C-ZZZ-ZZZ-DR-ATK-CE-910070 Phase 3C - Proposed site layout
- P3C-ZZZ-ZZZ-DR-ATK-CE-950705 Phase 3C - Proposed route types
- P3C-XXX-ZZZ-DR-ATK-EE-000001 Proposed Public Lighting
- P3C-XXX-ZZZ-DR-ATK-EE-000002 Proposed Public Lighting Details

2. Existing Site

2.1 Existing Site

The site is a brownfield site with an area of ca. 0.63 hectares located within the Knocknaheeny regeneration area as described in the 2011 Cork City Northwest Regeneration Masterplan.

Phase 3C is bounded by Phase 1C to the west & Phase 3B to the south. Phase 3C includes a large green open space, outline of which will be designed by the City Architects Dept.

Due to Masterplan site levels some retaining works will be required to rear / side boundaries and Spine Rd to adjacent Phase 1C.

The proposal is to develop a 24-unit development on the site which will include 12 houses and 4 apartment blocks, comprising 3 units each.

2.2 Existing Civils

The site topography rises from the south to north by approximately 3-4m. There are significant level differences along the western boundary with adjacent Phase 3C of up to 2m in places.

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. Proposed Civil Works

3.1 Site Access & Circulation

The roads infrastructure for the proposed development is as per the adopted Masterplan design for the regeneration project. Access to the site will be provided via Aspen Rise and Aspen Way (currently under construction). All routes ultimately connect to Bóthar Na Slíní and Harbour View Road at the south.

A Stage 01 Road Safety Audit has been completed for the proposed development and is attached in the appendices of this report. The road layout, road section widths and road build up will all be maintained in line with the adopted Masterplan design requirements.

3.2 Pavements

There is 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.

Cycle Lanes – High Friction surfacing 3-5mm hot applied thermoplastic

Car Parking Bays:

Car Parking Bays - 120mm total porous asphalt on 30mm choker course on 220mm CL 804 subbase on minimum capping required in line with TII MCDRW. Subbase layer to be lined with permeable non-woven textile.

Pedestrian areas:

Footpaths – 100mm Concrete on 100mm CL 804 subbase.

Footpaths at Vehicular Access Locations – 150mm Concrete with 1 Layer of A393 Mesh top & bottom CL 804 on minimum capping required in line with TII MCDRW.

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 3B and Phase 4F.

Refer to Appendix C for watermain layout drawings.

An Irish Water Pre-Connection Enquiry (ref. CDS25006834) 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 confirmation of feasibility letter has been received for the proposal as outlined above.

Refer to Appendix G for a copy of confirmation of feasibility letter.

5. Foul Water Drainage

5.1 Proposed Foul Infrastructure

It is proposed to provide foul water pipe network in line with the adopted Masterplan design for Phase 3C. There has been an allowance made for the tie in of future phases in line with the masterplan. Phase 3C will tie directly into the new foul infrastructure constructed as part of Phase 2B and 3B to the south.

An Irish Water Pre-Connection Enquiry (ref. CDS25006834) 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 confirmation of feasibility letter has been received for the proposal as outlined above. Refer to Appendix E for a copy of confirmation of feasibility letter.

“MicroDrainage” which is an 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.

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, 2B and 3B 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.

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. Where this is not achievable due to topographical constraints and the ground slopes toward the buildings, suitable drainage measures (e.g., linear drains) will be installed to intercept surface water outside the property boundary and prevent ponding.

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. Where the desired 1.2m cover cannot be achieved, an absolute minimum 900mm is proposed and the pipe is to be adequately protected with concrete surround and protection slab as per IW typical detail STD-WW-08. The overall primary infrastructure will be maintained as per the masterplan with the tie in points to future phases levels been fixed as per the masterplan requirements.

“MicroDrainage” which is an 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 for this phase was developed as part of the overall masterplan model. The results presented in this report represent the entire development included in the masterplan, as the surface water network functions as a single integrated system across all phases. 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.

The proposed impermeable areas have been incorporated into the hydraulic model, with 100% of impermeable areas applied to the drainage network. The Phase 3C 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;

- For the overall stormwater network design, a 10% climate change was allowed for all storm events, as per original masterplan
- For the sizing of the Ascension Heights attenuation tank, a 20% climate change was allowed.
- No surcharging in the 1 in 5-year storm event. Pipes immediately upstream of flow control devices may encounter small amount of surcharging due to the flow being throttled accordingly.
- No Flooding in the 1 in 30-year storm event.
- No flooding against a 1 in 100-year storm event or controlled flooding allowing the volume to be contained on site and not impact the surrounding infrastructure.

6.3 Sustainable Drainage Systems

It is proposed that a combination of Sustainable Drainage Systems (SuDS) be utilised to attenuate flows throughout the site and allow for the calculated reduced discharge to the existing network.

There are 4 main types of SuDS proposed within the development:

- Porous asphalt on the proposed car parks
- Bio retention swales in open spaces
- Bioretention Raingardens
- Tree Pits

An overall layout of the proposed locations of SuDS is included as part of this planning application.

Porous Asphalt

Porous asphalt is proposed for the car parks as a cost-effective surface water drainage solution, owing to the substantial storage capacity provided within the pavement system, allowing rainfall to pass into

a permeable sub-base structure beneath, where it is stored temporarily before infiltrating into the ground or being conveyed via an underdrain. This SuDS component provides both attenuation and treatment by filtering sediments and reducing runoff at source.

The porous asphalt surface will be laid over an open-graded stone sub-base designed to accommodate temporary stormwater storage. Infiltrating water will percolate through the sub-base, where fine sediments are trapped and flow velocities are reduced. Depending on ground permeability, the system will operate as either an infiltration pavement or a lined attenuation pavement with a controlled discharge.

Porous asphalt should be inspected regularly and after major storms, with vacuum sweeping carried out at least twice yearly (typically in spring and autumn) to remove sediment and debris and maintain infiltration performance. Any local clogging should be addressed promptly, while sand application, sealcoating and conventional crack sealing should be avoided as they can block surface voids.

Bioretention swales

It is proposed to incorporate bioretention swales throughout the site at strategic locations, along the internal road network and adjacent landscape zones, to manage and treat surface water runoff. A bioretention swale is a shallow, vegetated channel designed to slow and convey runoff while promoting filtration, sediment capture, evapotranspiration, and partial infiltration through engineered soil media. These systems treat surface water through a combination of physical, chemical, and biological processes, improving water quality before it enters the downstream drainage network.

Runoff entering the swale will be directed through a vegetated surface layer, where coarse sediments are trapped. Water will then percolate through the bioretention soil media, which provides further filtration and pollutant removal. Depending on ground conditions, the swales may include an underdrain to convey any excess treated water to the surface water discharge network, while areas with suitable infiltration potential will allow a proportion of flows to infiltrate directly into the underlying ground. Check dams may also be provided where appropriate to enhance storage, lengthen residence time, and further reduce peak flow rates.

Bioretention swales will provide attenuation by temporarily storing runoff within the vegetated depression and engineered media and will also reduce flow velocities across the drainage system and contribute an additional level of treatment prior to discharge.

Regular maintenance will be required to ensure long-term functionality and water quality performance. Routine activities will include removal of litter and debris, inspection of vegetation health and density, checking for standing water, erosion, or silt accumulation, and assessing inlet and outlet structures for blockage or damage. Occasional maintenance may involve vegetation replanting, removal of accumulated sediment, rehabilitation of eroded sections, and replacement of the bioretention soil media or underdrain components where necessary, particularly in areas subject to higher pollution loads.

Bioretention Raingardens

Bioretention raingardens will be provided at strategic locations across the site and adjacent to the road network to manage runoff from nearby hard surfaces. Raingardens are shallow, vegetated features that slow, filter, and attenuate surface water before it infiltrates into the ground or discharges to the surface water network, offering water quality, biodiversity, and amenity benefits.

Runoff will enter the raingardens via overland flow or small inlets/kerb depressions and water will then percolate through engineered bioretention media, providing treatment through filtration, adsorption, and biological uptake. Where ground conditions limit infiltration, an underdrain may be included to convey

treated flows onward. Check dams may also be provided where appropriate depending on ground slope.

Raingardens should be maintained through regular inspection of infiltration surfaces, underdrains, planting, and inlets/outlets to identify silting, ponding, blockages, poor plant health or invasive species. Routine maintenance should include removal of litter, weeds, sediment and debris, replacement of failed planting, localised repair of erosion or silted areas, and replacement of filter media and vegetation where remedial works are required.

SuDS Tree Pits

It is proposed to include SuDS tree pits in selected areas of the development to provide localised surface water interception, treatment, and attenuation while contributing to site landscaping. SuDS tree pits are engineered planting pits designed to receive runoff from adjacent hardstanding areas, where water is filtered through a structured soil medium that supports tree growth and provides pollutant removal. They function as small-scale bioretention systems integrated within urban environments.

Surface water runoff will enter the tree pits via pavement inlets or direct overland flow. As water passes through the permeable soil media, sediments and pollutants are removed through filtration, adsorption, and biological uptake by vegetation and microorganisms within the rooting zone. Depending on the underlying ground conditions, the pits may include an underdrain to convey excess treated water into the surface water drainage network, while areas with suitable infiltration potential will allow a proportion of flows to infiltrate into the natural subgrade. Storage is provided within the soil matrix and voided sub-base layers, enabling attenuation and controlled discharge rates during rainfall events.

SuDS tree pits will reduce peak runoff flows and contribute an additional level of treatment within the overall surface water management strategy. They also offer landscape and ecological benefits by supporting healthy tree growth, improving urban cooling, and increasing local biodiversity.

Routine maintenance will be required to ensure the long-term performance and health of the system. Typical maintenance activities will include removal of litter, debris, and sediment from inlets; inspection of tree health, soil levels, and mulch conditions; checking for signs of waterlogging, erosion, or surface clogging and ensuring that inlets, outlets, and underdrain components remain free-flowing. Occasional maintenance may involve top-up of mulch, pruning of tree branches, removal of accumulated sediment from the upper soil layers, and replacement of soil media or tree stock where necessary, particularly in areas subject to higher pollution loads or heavy usage.

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 1 Road Safety Audit

Appendix E. Public Lighting Report

Appendix F. MEP Design report & Energy Statement (Part L Requirement)

Appendix G. Irish Water Confirmation of Feasibility Letter for Potable Water and Wastewater

AtkinsRéalis

AtkinsRéalis Ireland Limited
Unit 2B
2200 Cork Airport Business Park
Cork
T12 R279

Tel: +353 21 429 0300