Cork
City Council
Comhairle Cathrach Chorcaí

# Proposed Housing Development at Redemption Road, Blackpool, Cork.

## Design Statement

reddy architecture +urbanism

HGConstruction
building | civil engineering contractors

# Design Statement

Proposed Housing Development,

Redemption Road,

Blackpool,

Cork.


**Reddy Architecture and Urbanism**

Schoolhouse Studio,
Old Carrigaline Road,
Douglas,
Cork,
Ireland

Tel: 00 353 (0)21 4362922
Fax: 00 353 (0)21 4363048
E-mail: info@rorsa.ie
Website: www.rorsa.ie



**Date:** 19th June 2020

**Revision:** A1

**Issue:** Issued for Planning

**Status:** Planning

# Design Statement

## INTRODUCTION

This Architect's Design Report summarises the design approach for a new housing scheme on the site at Redemption Road, Blackpool, Co. Cork.

**Client / Contracting Authority:**

The Contracting Authority for this project is *Cork City Council*

Cork City Council
Comhairle Cathrach Chorcaí

Rebuilding Ireland
Action Plan for Housing and Homelessness

**Project:**

The proposed housing development will consist of a total of 64 units, comprising of 34no. Apartment Units, 20 no. sheltered apartments and 10 no. terraced houses at Redemption Road, Blackpool, Cork.

# Design Statement

**PROJECT TEAM**

| | |
|---|---|
| **HG Construction,** | • Developer<br>• Works Contractor |
| **Reddy Architecture + Urbanism**<br>Schoolhouse Studio, Carrigaline Road,<br>Douglas, Cork.<br>Tel: +353 (0)21 4362922 | • Architecture<br>• Master planning & Urban Design<br>• Landscape Design<br>• PSDP |
| **Punch Consulting Engineers**<br>Copley Hall,<br>Cotters Street, Cork.<br>Tel: + 353 (0)21 462 4000 | • Civil/Structural Engineering<br>• Services Engineering / Infrastructure<br>• Traffic and Transportation Engineering<br>• Roads Engineering<br>• Environmental Engineering<br>• Drainage & Water Engineering |

CONTENTS

# 1 EXISTING SITE CONTEXT

## 1.1 LOCATION

This development is proposed on a large inner suburban site within the environs of Blackpool. The development site is located within a neighbourhood centre and bounds typically social / private housing.

## 1.2 SUITABILITY

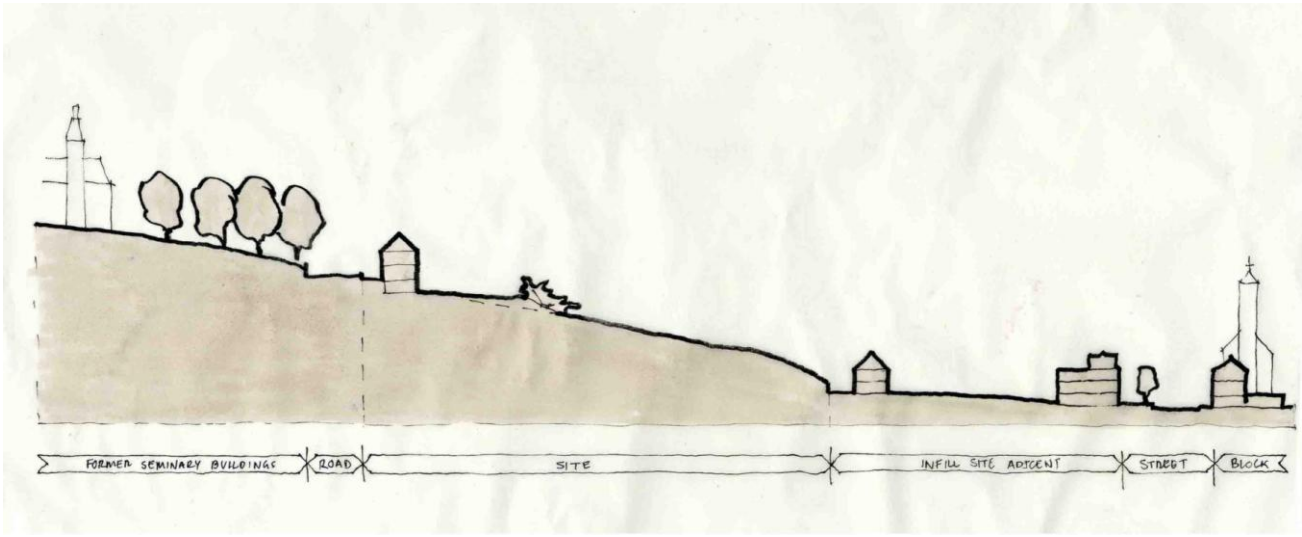
The most viable and most appropriate use of the site is for housing.  The demand at this location is evident by the historical residential development in this established residential area. Further evident of its suitability for Housing is the close proximity of the site to the city centre and Blackpool village. The Site is also zoned Residential, Local Services and Institutional Uses, under the Cork City Development Plan 2015-2021. A pre-planning consultation took place on 26th July 2006. the site has been identified as most suitable for a social housing scheme to be developed in tandem with the local authority.

The site bounds local community facilities which will benefit the development.

## 1.3 CHARACTERISTICS & AERIAL PHOTOS

The general site is characterised by its significant change in level of approx. 30m from east to west. The upper level of the site has spectacular views over Blackpool and as a consequence much of the site is visible from across the valley.

The site is a brownfield site. There are a number of existing buildings on the upper level which included Glen View House together with a number of outbuildings and container buildings. A significant portion of the land is vacant. The Ground conditions included an element of cut, fill and possibly some original ground.




Site Section

Redemption Road

Lover's Walk/Redemption Road is an inner-suburban street. The road is defined by a mix of residential types and tenures together with surrounding institutional and other uses. Historically the former seminary, now the Farranferris Educational Campus is a dominant feature on Lover's Walk. The surrounding houses are typically terraced two-story houses.

‘Glen View House’ a 4-story residential building on the site which is subdivided into 12no. 1-bed apartments. Glen View House is to be demolished as part of the development.


Existing street view from Redemption Road

Seminary Court

Seminary Court is a relatively recent Cork City Council Housing Scheme. It is a double fronted street of terraced houses over two and a half floors. This estate is formed by the provision of a large retaining wall which runs the length of the site. The upper part of the main retaining wall functions as a landscape zone which has the potential to be a green backdrop to the estate. The middle tier of the proposed development is to follow this pattern of development and become an extension of the estate.

Hatton’s Alley Lane

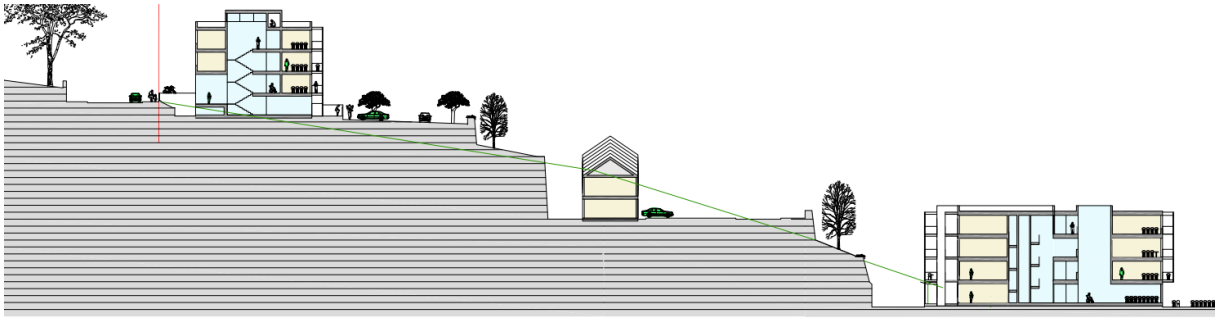
Hatton’s Alley Lane is a cul-de-sac street consisting of typically semidetached and terraced houses. Many of the houses are owned and operated by Share Housing Association. The lower tier has an existing vehicular entrance from this lane.


Aerial view of site

## 2 SITE STRATEGY

Due to the topography of the site the development land will be tiered into a number of distinct housing zones which will be characterised by distinct types of housing. The diversity of mix will consequently correspond to this tiered nature of the site. The upper tier will consist of a new apartment complex and landscaped grounds. The height of such a building respects the height of an existing building and the streetscape. The existing apartment building on the site which is 4 stories will be demolished. This currently comprises of 12no. 1-bed apartments. The number of units in the proposed complex will be 34 units comprising typically 2-bed units. These new units will all be standards compliant. The scale of the complex is appropriate for its eventual management.

The middle tier of the development consists of terraced houses for families. These correspond in scale to the adjoining housing scheme at Seminary Court. The lower tier which is a back-land infill type site will consist of sheltered housing as it has immediate connectivity to Blackpool and is fully accessible in this regard. This building benefits from its immediate adjacency to Blackpool community and medical centre. Sheltered housing in turn has a ripple effect of freeing up houses elsewhere in the locality which can consequently be used by families.



The site is laid out in response to the Cork tradition of building on a level contour. Notable examples include the neighboring Farranferris Educational Campus building as well as numerous other examples in Cork. The masterplan reinforces this pattern of development for the overall site which consist of a series of layers of building and layers of soft landscaping. This in turn is the response to the landscape protection zone which the site form part of.

Boundary Conditions/Proposed Works

The site has extensive site boundary conditions. The site has road frontage to the west which fronts onto Redemption Road. This boundary is a mixture of high walls and gates buildings together with some residential scaled gates and railings. The Redemption Road boundary treatment is to be replaced in its entirety with typically residential scaled gates and railings. A new road entrance is provided.

The northern boundary is bound on the upper tier by an unused laneway, on the middle tier by an unused overgrown green area and on the lower tier the site bounds with the community centre astroturf ball court and car park. These northern boundaries are to be secured with fencing/walling.

The eastern boundary is typically bound by the rear gardens of adjoining properties. These boundaries are to be typically retained as fencing/walling with limited alterations where required.

The Southern boundary is typically bound by rear gardens of adjoining properties. These boundaries are to be typically maintained as fencing/walling with limited alterations where required. On the lower tier, the existing vehicular entrance gate and walls are to be retained. On the middle tier, the road from Seminary Court is extended into the site to give vehicular access. On the upper tier the site adjoins the current land owner's residential accommodation outside the site boundary. This boundary is to be realigned to suit the development.

## 3 DEVELOPMENT PLAN OBJECTIVES

The Site is also zoned Residential, Local Services and Institutional Uses, under the Cork City Development Plan 2015-2021.

The lands identified for this housing scheme is currently an under-utilized brown-field inner-suburban site. The site is suitably zoned for housing with a preference for a social housing development to meet need in the area. In addition to providing local housing, the development of this large site would help to regenerate this part of the city and can lead to better connectivity to Blackpool. Under the city development plan, the site is contained within a landscape protection zone. The site is steeply sloping. The upper part of the site is suitable for development. A transitional zone can accommodate the significant level change and this resultant embankment can be planted to enhance the landscape protection zone.

Space Standards

| | |
|---|---|
| Context: | Inner Suburban, Brownfield Site, Blackpool Cork |
| Site Area: | Total = 8,394sqm<br>Zone 1 – Apartment Complex = 3,256sqm<br>Zone 2 – Terraced Housing = 1,014sqm<br>Zone 3 – Sheltered Housing = 1,631sqm |
| Density: | Zone 1 – 30 units per acre<br>Zone 2 – 20 units per acre<br>Zone 3 – 38 units per acre |
| Mix: | Houses, Apartment Complex, Residential Centre<br>34 x 2-bed apartments, typically 80sqm<br>10 x 3-bed terraced houses, typically 95sqm<br>17 x 1-bed sheltered apartments, typically 55sqm<br>3 x 2-bed sheltered apartment, typically 75sqm |
| % Mix | 100% Residential |
| No. of dwellings | Total = 64 units |
| Car Spaces: | Zone 1:<br>Required: 1.25 per unit<br>Provided: 36 spaces |
| Open Space: | Zone 1 - 410sqm = 12% |
| Height: | 2-4 storey |

Densities

There are extensive areas dedicated to landscaping to accommodate the significant changes in level and to satisfy the landscape protection zone. in addition, dedicated usable green areas are provided in the 3 tiers areas respectively for the use and enjoyment of the residents.

Building heights

The apartment complex is a standalone building which corresponds with the height to the existing Glenview House (to be demolished).

The sheltered housing is a standalone 4-storey residential centre.

The terrace of houses corresponds to the adjacent terrace of houses.

Housing mix

The housing mix is defined by the tiered nature of the site.

# 4 URBAN DESIGN CRITERIA

## 4.1 CONTEXT

The site is laid out in response to the Cork tradition of building on a level contour. Notable examples include the neighboring Farranferris Educational Campus building as well as numerous other examples in Cork. The masterplan reinforces this pattern of development for the overall site which consist of a series of layers of building and layers of soft landscaping. This in turn is the response to the landscape protection zone which the site form part of.

## 4.2 CONNECTIONS

Each tier of the property has its own dedicated site entrance. The upper tier is accessed directly form Redemption Road. The middle tier is accessed directly form Seminary Court. The lower tier is accessed directly from Hatton's Alley Lane.

While the site does not have a direct connection onto Great William O'Brien Street, it has connectivity to Blackpool village via Hatton's Alley Lane.

## 4.3 LAYOUT/DISTINCTIVENESS/VARIETY

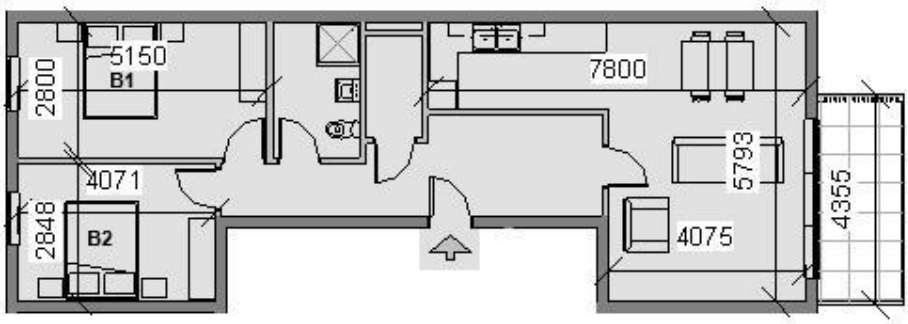
The scheme is characterized by the three distinct zones of development with a variety of material choices and design approach for each zone.

Upper tier – Apartment Complex

The upper tiered site provides a new purpose-built apartment complex. The building has been designed to a Design Brief with the optimum number of apartments being achieved to cater for a wide range of occupancy types.

The design brief for this project has provided 34 no. 2-bed apartment units, each with core access and dual aspect. Typically the apartments are “through apartments” with bedrooms facing west onto Lover’s Walk and living spaces addressing the view over the valley to the east. Corner units also benefit from having a southern orientation. The building is laid out over 4 storeys with surface parking and green space.

This typology, mix and scale of building is specifically designed to take account of the contextual considerations and surroundings. The units are designed to meet current space standards. Typical 2-bed apartments range between 80sqm. This allows for generous living areas, bedrooms, storage as well as generous balconies at upper floors and patios for ground floor units. On-street parking is proposed on Lover’s Walk together with a new parking area to the rear. A communal green open space is provided and this is complimented by the embankments which are to be heavily landscaped in response to the landscape protection zone.




Typical 2 bed Apartment

Middle Tier - Houses

The middle tier contains 10 terraced houses. Each house has a front and rear garden with shared parking and common green space. This terrace follows the traditional and surrounding pattern of building in-line with the contour. The middle tier is accessed from Seminary Court.

Lower tier

The lower tier contains a sheltered housing complex. The building is laid out over 4 floors. Each floor has typically six units arranged along an internal ‘street’ corridor which links to a stair and lift. The ‘street’ enhances the common areas by creating social space for residents. At the ground floor the a large common room is provided and at second floor a common terrace is provide for residents. This complex contains 20no. units over four floors. These units are all typically 1 bed apartments with 3 no. 2-bed units. There is a common day rooms at ground floor.

### 4.4 EFFICIENCY

Each zone is designed efficiently to maximise use of the available space on site. Roads and circulation spaces are kept to a minimum to ensure the maximum amount of Public Open space can be utilized. The apartment and housing units are designed in compact regular shapes to achieve a low perimeter to area ratio. Existing landscape features and topography has been exploited to maximise efficiency both in terms of construction and design.

### 4.5 PUBLIC REALM

All three tiers respond to the context of the tight urban infill site and enhance the public realm in distinct ways. The upper tier apartments address Lover’s Walk with street access from the ground floor apartments to maintain the streetscape character. The massing of the apartments reconciles a strong building line and resolves the disjointed nature of the development at present.

The middle tier site is developed at a lower density and maintains and enhances the landscape buffer zone that is currently inaccessible on the site.

The lower tier development has less of a public presence due to it landlocked nature.

In terms of Anti-social Behavior the development has single point access to each tier. All green areas are overlooked and provided as private green opens where possible, rear gardens are protected. Remote parking is provided immediately adjacent to the residential units with good passive surveillance. Access to landscape protection zones is to be restricted other than for maintenance. Linkages between tiers is to be limited to the northern boundary and has the potential to be gated. The division of the scheme mitigates the scale of development.

## 4.6 ADAPTABILTY

All units have been designed to facilitate future adaptability. The design endeavors to ensure that dwellings can meet the changing needs of occupants over their lifetimes, including needs associated with moderate mobility difficulties and the normal frailty associated with old age. Older people or persons with moderate disabilities, who wish to remain independent in their own home, should be able to do so without the need for costly and disruptive remodelling of the dwelling.

In particular, the layout of the mid-tier housing is designed in such a way that the ground floor toilet could be easily extended to provide a bath should the resident have mobility issues. The Stair design would allow for a straightforward retrofit of a stairlift also. e.g., by locating the kitchen/ bathroom core in a way that allows for different layout possibilities. External private space has been orientated to make best use of available views and sunlight and is adequate in size to accommodate a small table and a number of chairs

## 4.7 PRIVACY & AMENITY

Landscaping

The site is to be extensively landscaped. The landscape follows the pattern of development which consist of layering zones of buildings and zones of soft landscaping. In this way trees are provided on terraced escarpments to provide a layer of greenery.

Planting

The predominant tree type proposed are trees which are ubiquitous in the Irish landscape, such as Scotts Pine, Rowan, Hawthorn. Other specimen trees are proposed on the greens with small trees that grow to the scale of a house are located closer to the building such as blossom trees. The sunken courts incorporate a tiered retaining planter, which has low shrubs.

## 4.8 TRAFFIC AND PARKING

Roads Standard:

The external works are to be carried out to meet current site development works standard. Roads are typically 6m wide with dedicated turning areas. Footpaths range from 1.5m to 2m wide. The roads and paths slope at 1 in 21 providing gentle slopes throughout.

Roads have been designed with the aid of the “Design Manual for Urban Roads and Streets” (DMURS) published by Department of Transport, Tourism and Sport. The DMURS aims to aid the design of safer, more attractive and vibrant streets which will generate and sustain communities and neighbourhoods. As well as cars and other vehicles this encompasses pedestrians, cyclists and those using public transport. All roads within the development will be cul de sacs.

The road surfaces will be formed from macadam with footpaths formed from concrete.

The proposed roads and footpaths within the site will be taken in charge by Cork City Council following completion of the works given that this will be a social housing project.

Utility and emergency access:

All roadways are provided with suitable access for refuse vehicles and fire trucks.

Car Parking:

For the upper tier aparments 36 parking spaces are provided on-site and on-street. In addition 1 no. disabled parking space is provide on-site at the rear and 1 no disable parking space is provided on-street.

Middle Tier Housing wil have cutilage parking for each house unit.

The lower tier sheltered housing is provided with wheelchair accessible and set down parking.

Bicycle Parking:

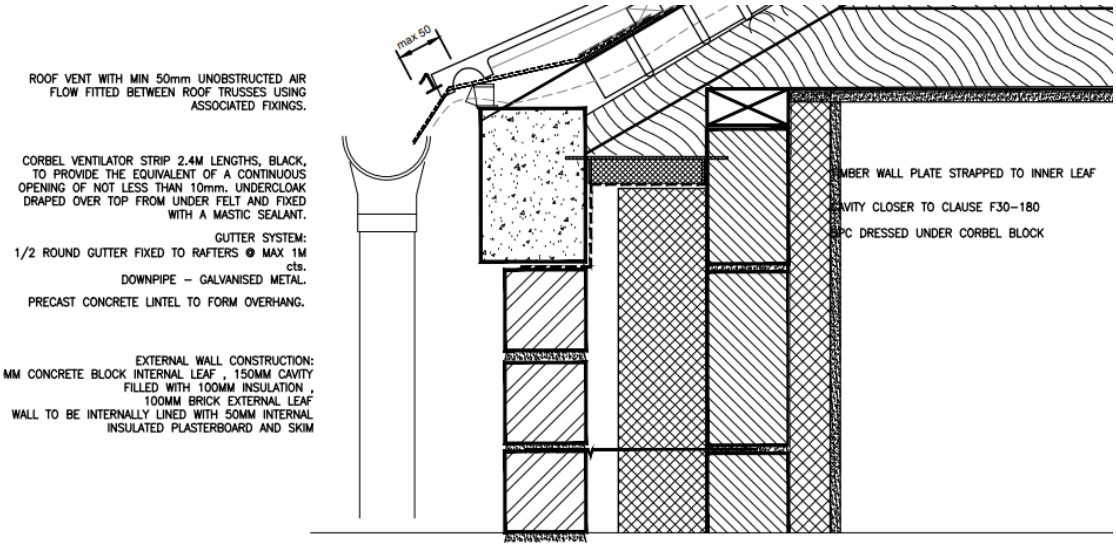
Bicycle parking is proposed in the rear parking area.

## 4.9 DETAILED DESIGN

The upper and lower tier apartment blocks will be built using a mix of Reinforced Concrete and concrete blockwork construction, with prefabricated concrete floor and roof structure. The mid-tier housing units will be either traditional cavity wall construction with timber floor joists and roof trusses or full timber frame units. Please refer to Punch Consulting Engineers Report for detailed structural information.

Materials

The external building material consists predominantly of blue-grey brick walls and complimentary painted metalwork for projecting canopies balconies and glazing. Boundary and retaining wall treatment is finished in concrete masonry. This limited palette of robust materials give the scheme its simplicity and continuity.




Energy Use

Building Energy Rating Certificates will be required for each unit in this development. The Building Regulations will require a A3 rating in this regard. An energy assessment will be carried out at the detail design stage to demonstrate compliance with TGD Part L. Of note, measures include solar panels as a suitable renewable, increased thermal insulation, higher thermal performance windows and doors, elimination of cold bridging, and airtight construction together with low energy lighting and controls will be incorporated into the development.

# 5 SITE SERVICES

## 5.1 STORM WATER DRAINAGE

Currently Storm water drainage from the site is primarily by infiltration to ground with certain volumes running off at low level into the Hattons Alley Lane site at the bottom of the site. The existing runoff from the site finds its way into the existing combined sewer network on Hatton's Alley Lane.

It is proposed to install 3 no. storm water soakaways to deal with stormwater generated on the site. Runoff from the top tier of apartments fronting onto Redemption Road will be transferred to a soakaway to be located to the rear of the apartments in what is proposed to be a green area. A second soakaway to be located on the green area to the east of the proposed terrace houses will deal with the middle tier of housing including any over spill from the top tier.

Runoff from the bottom apartment block (Eastern network) is to be collected in a separate soakaway adjoining the proposed building. As the bottom block of apartments will be piled, there will be no danger of the soakaway having a detrimental effect on the building sub structure.

Stormwater discharge from the site will be limited to the 1 in 30 year greenfield runoff rate. The greenfield runoff rate was calculated separately for the two separate drainage networks on the site. The calculations were based on an IH124 Greenfield Runoff rate calculation for the area using a SOIL value of 0.4, based on the shallow depth of rock and the steep gradients at much of the site. A SAAR value of 1,200mm was used in the calculation of the greenfield runoff rate.

For the western network (Upper and middle tiers) on the site the runoff rate was calculated as 7.6l/s, and for the eastern network (lowest tier) of the site the runoff rate was calculated as 1.3l/s.

The storage capacities of the three soakaways tanks have been calculated as part of the overall drainage design. To ensure that there is no flooding in the 1 in 100 year rainfall event with a 20% allowance for climate change, attenuation tanks will be provided.

## 5.2 FOUL WATER DRAINAGE

It is proposed to connect the foul water drainage from the top tier of the site to the combined sewer which flows southwards along Redemption Road. The existing Glen View House is

connected to an existing manhole on the footpath south of the proposed entrance to the site. It is proposed to reuse this pipe if it can be proven to suit the purposes of the new development.

It is proposed to convey foul waste from the middle tier of housing, namely the terraced two storey houses to the existing foul sewer on Seminary Court. A potential alternative being to convey the sewage through a series of back drop manholes to the sewers on Hatton's Alley Lane. The foul water waste from the bottom level tier comprising of the sheltered housing apartments will be disposed of to the combined sewer on Hattons Alley Lane.

The basic approach adopted for the design of the proposed foul water drainage is to connect each proposed house to a proposed foul sewer system running through the proposed development, following the route of the access road and discharging ultimately towards the existing combined sewer. It is proposed that foul drainage from each house will connect via 100mm diameter branch lines.

### 5.3 WATERMAIN DESIGN

A pre-enquiry form has been submitted to Irish Water with respect to the required water connection. A confirmation of feasibility has been received from Irish Water. It is proposed to make a connection to the water supply network at both ends of the site at Redemption Road and Hattons Alley Lane with the main snaking its way through the development. The existing main on Seminary Court is intended to be extended as part of the development.

Generally it is required by Irish Water that a 'ring main' setup is constructed to allow for the network to be partially isolated in the event of a leak or breakage. Due to the geometry and constraints of the site and the proposed development layout, it is considered that the requirement for a ring main has been satisfied. A 100mm diameter main is proposed for the site, although this is open to review by Irish Water.

Fire hydrants have been included in the design for the site layout. These have been positioned such that all proposed dwellings have a fire hydrant within 46m as per the Irish Water standard detail requirements.

Please refer to Punch Consulting Engineers Report for further information on Site Services.

**END.**

## 1. EUROPEAN SITE DATA

| **Great Island Channel candidate Special Area Of Conservation (site code 001058)** | |
|---|---|
| Conservation objective | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. |
| Qualifying interests | Annex I listed habitats: mudflats, sandflats not covered by seawater at low tide, estuaries, spartina swards, Atlantic salt meadows. |
| References and further information | *Conservation Objectives for Great Island Channel SAC [001058]* (NPWS), *Natura 2000 Standard Data Form* (NPWS), *Site Synopsis Great Island Channel Site Code 001058* (NPWS) (see www.npws.ie for further details) |

| **Cork Harbour Special Protection Area (site code 004030)** | |
|---|---|
| Conservation objective | To maintain or restore the favourable conservation condition of the bird species listed as special conservation interests for this SPA. |
| Qualifying interests | Annex I-listed bird species: bar-tailed godwit, common tern (breeding), golden plover, ruff, whooper swan. Other birds of special conservation interest include black-headed gull, black-tailed godwit, common gull, curlew, dunlin, great crested grebe, grey heron, grey plover, lapwing, lesser black-backed gull, little grebe, oystercatcher, pintail, red-breasted merganser, redshank, shelduck, shoveler, teal, and widgeon. This site is an internationally important wetland site supporting > 20,000 wintering waterfowl. |
| References and further information | *Conservation Objectives for Cork Harbour SPA [004030]* (NPWS), *Natura 2000 Standard Data Form* (NPWS), *Site Synopsis Cork Harbour SPA Site Code 004030* (NPWS) (see www.npws.ie for further details) |

## 2. DETAILS OF PROPOSED DEVELOPMENT

| | |
|---|---|
| **Reference no.** | Redemption Heights |
| Development consent type | *Part 8 Planning Application* |
| Development location | *Redemption Road, located in Blackpool, Cork* |
| Description of development | *The demolition of existing structures, The proposed housing development will consist of a total of 64 units, comprising of 34 no. apartment units, 20 no. sheltered apartments and 10 no. terraced houses, the provision of landscaping and amenity areas, all associated ancillary development works including lighting, drainage, boundary treatments, bicycle parking and bin storage.* |
| Distance from cSAC | *The River Bride is located approximately 120 metres east of the site. This river joins with the Glen River approximately 150 metres downstream to form the River Kiln, which discharges into the River Lee ~1 km downstream.* |
| Distance from SPA | *3.8 km* |
| Relevant strategies or policies | *City Development Plan* |
| EIS submitted? | *N/A* |

## 3. ASSESSMENT OF LIKELY DIRECT, INDIRECT AND CUMULATIVE EFFECTS

| | | *Yes / No* |
|---|---|---|
| 1. | Is the proposed development directly connected to or necessary for the conservation management of the SPA and/or cSAC? *(If yes, no further assessment required. If no, screening required.)* | *No* |
| 2. | Is the proposed development located within or partly within the SPA? | *No* |
| 3. | Is the proposed development located within 100m of the SPA? | *No* |
| 4. | Does the proposed project involve the development, extension or upgrade of a cycleway or walkway within 200m of the SPA? | *No* |
| 5. | Does the proposed development involve development in the intertidal or coastal zone within the potential impact zone of the SPA? | *No* |
| 6. | Could the proposed project increase the level of recreational or other use of marine or intertidal areas within the potential impact zone of the SPA? | *No* |
| 7. | Does the proposed development involve the excavation of previously undeveloped land within an area that has been identified to be at risk of flooding within the potential impact zone of the SPA? | *No* |
| 8. | Does the proposed development involve the removal of significant amounts of topsoil within 100m of the SPA? | *No* |
| 9. | Does the existing wastewater treatment system have the capacity to treat any additional loading? | *Yes* |

## 3. ASSESSMENT OF LIKELY DIRECT, INDIRECT AND CUMULATIVE EFFECTS

| | *Yes / No* |
|---|---|
| 10. Would the proposed development result in direct surface water or other discharge to water bodies in or feeding into the SPA or cSAC? Would it result in additional storm flows into a combined sewer and subsequently into a combined sewer overflow (CSO), resulting in increased frequency, quantity and/or duration of overflow from the CSO to watercourses feeding into the European sites? | *Yes** |
| 11. Would the proposed development involve dredging or could it result in the mobilisation of marine sediments in the Harbour area? | *No* |
| 12. Could the proposed development give rise to increased risk of oil or chemical spillage or leaks within the marine environment or watercourse within the potential impact zone for the SPA or cSAC? | *No* |
| 13. Are there relevant plans or projects which, in combination with the proposed development, are likely to give rise to any cumulative effects? | *No* |

### Comments or notes

3.10 * During the post-construction phase, it is proposed to have 3 soakaway pits that will treat surface water and prevent overland discharge.

In the unlikely case that surface water did infiltrate the nearby River Bride, it would undergo a considerable amount of dilution before reaching Cork Harbour SPA and Great Island Channel SAC. Cork Harbour SPA is located ~6 km downstream from the site location and Great Island Channel SAC is located ~11 km downstream.

Given the above, the contamination of surface water and its infiltration of hydrological pathways is not deemed to be a likely significant risk to the integrity of Cork Harbour SPA or Great Island Channel SAC.

## 4. SCREENING CONCLUSION STATEMENT

***In view of the above it is considered that*** *(tick one box only)**:*

☐ **Appropriate Assessment is not required**
The proposed development is directly connected / necessary to the conservation management of a site.

X **Appropriate Assessment is not required**
It can be excluded through screening that the proposed development will have significant effects on the sites.

☐ **Further information is required**
Potential impacts have been identified through initial screening and/or there is insufficient information to enable the planning authority to screen out impacts, but on balance it is determined that the issues could be resolved through minor modifications to the proposed development or by appropriate conditions. The information required is specified below.

☐ **Appropriate Assessment is required**
Significant issues have been identified and/or significant effects are certain, likely or uncertain, and the submission of a Natura Impact Statement (NIS) is required, or the proposed development must be rejected.

### Further information required / Comments or Notes

This Appropriate Assessment Screening therefore concludes that the proposed development would not be likely to have a significant effect on any Natura 2000 site.

*Please refer to Appendix A for report titled; EU Habitats Directive Stage 1 Screening Statement for Appropriate Assessment prepared by Cuthbert Environmental, dated March 2019.*

| | |
|---|---|
| **Name:** | Declan Roche |
| **Position:** | A/Director of Services - Housing |
| **Date:** | 27th May 2020 |

# Appendix A

# EU Habitats Directive
# Stage 1 Screening Statement for Appropriate Assessment

CUTHBERTENVIRONMENTAL

# EU Habitats Directive

# Stage 1 Screening Statement for Appropriate Assessment

*at*

# Redemption Road,

# Blackpool,

# Co. Cork

Cuthbert Environmental

March 2019

Vat No. IE 3334070 OH

Directors: T. Cuthbert & C. Cuthbert
Cuthbert Environmental is a trading name of
Eco Resources Ltd.
Co. No. 541156

Unit 14, Togher Industrial Estate,
Westlink,
Togher, Cork,
T12 FX39.

Tel: 353 21 4975683
Mob: 353 86 3864518
toddy.cuthbert@gmail.com

Screening Statement

Redemption Road,

Blackpool

Co. Cork

| Document Version | Changes | Prepared by | Checked by | Date |
|---|---|---|---|---|
| 0 | - | JB | ST | 13/03/2019 |
| 1 | General edits | ST | - | 14/03/2019 |

This report has been prepared by Cuthbert Environmental with all reasonable skill, care and diligence. Information reported herein is based on the interpretation of data collected and has been accepted in good faith as being accurate and valid.

Cuthbert Environmental accepts no responsibility to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.

# Table of Contents

# 1 Introduction

Cuthbert Environmental has been commissioned to undertake an Appropriate Assessment screening exercise for a proposal to develop a total of 64 units, comprising of 34 apartment units, 20 sheltered apartments and 10 terraced houses at Redemption Road, Blackpool, Cork City.

## 1.1 Background & Requirements for HDA (Habitats Directive Assessment)

### 1.1.1 Project Description

This project involves the construction of a housing development. The proposed housing development will consist of a total of 64 units, comprising of 34 apartment units, 20 sheltered apartments and 10 terraced houses at Redemption Road, Blackpool, Cork City. This development is proposed on a large inner suburban site in the environs of Blackpool. The site is located in a neighbourhood centre and bounds typically social / private housing. (location shown in Figure 1).

The general site is characterised by its significant change in level of approx. 30m from west to east. There are a number of existing buildings on the upper level which include Glen View House (to be demolished), together with a number of outbuildings and container buildings. A significant portion of the land is vacant. The ground conditions include an element of cut, fill and possibly some original ground. Due to the topography of the site, the development land will be tiered into a number of distinct housing zones which will be characterised by distinct types of housing. The upper tier will consist of a new apartment complex and landscaped grounds. The middle tier of the development consists of terraced houses for families. The lower tier which is a back-land infill type site will consist of sheltered housing as it has immediate connectivity to Blackpool and is fully accessible in this regard. On the lower tier, the existing vehicular entrance gate and walls are to be retained. On the middle tier, the road from Seminary Court (adjacent housing estate) is extended into the site to give vehicular access. On the upper tier the site adjoins the current land owner's residential accommodation outside the site boundary. A proposed site layout is shown in Figure 2.

It is proposed to make a connection to the water supply network at both ends of the site. These connections will be made at Redemption Road, which is located at the west side of the proposed site and Hattons Alley Lane, which is a cul-de-sac located at the east side of the proposed site. The water supply will then move its way through the development. The existing main on Seminary Court is intended to be extended as part of the development. Foul water drainage from the top tier of the site will be connected to the combined sewer which flows southwards along Redemption Road. It is proposed to convey foul waste from the middle tier of housing to the existing foul sewer on Seminary Court. The foul water waste from the bottom level tier comprising of the sheltered housing apartments will be disposed of to the combined sewer on Hattons Alley Lane. The

buildings will be serviced by an existing electricity supply.

It is proposed to install 3 storm water soakaways to deal with stormwater generated on the site. Runoff from the top tier of apartments fronting onto Redemption Road will be transferred to a soakaway to be located to the rear of the apartments in what is proposed to be a green area. A second soakaway, to be located on the green area to the east of the proposed terrace houses will deal with the middle tier of housing including any over spill from the top tier. Runoff from the bottom apartment block (Eastern network) is to be collected in a separate soakaway adjoining the proposed building.

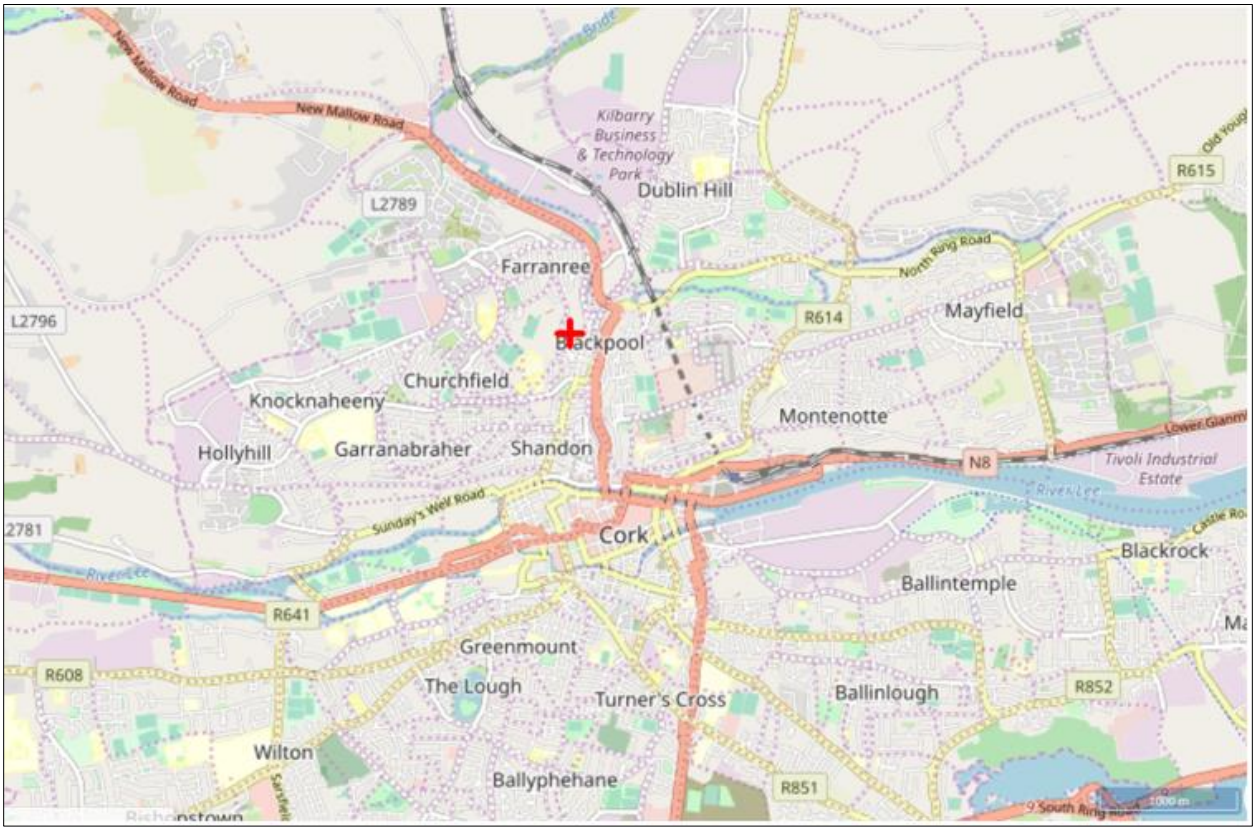



**Figure 1**. Project Site Location (Data Source: Google Earth, 2018)

**Figure 2**. Engineer Plans (Source: Reddy Architecture + Urbanism)

### 1.1.2 **Requirement for Habitat Directive Assessment**

The transposition of the EU Habitats Directive Assessment by the European Communities (Natural Habitats) Regulations 1997 – 2011 (referred to as the Habitat Regulations) provide the legal basis for the protection of habitats and species of European importance in Ireland. The legislative protection of habitats and species provided by the Habitats Directive has been implemented in Ireland and throughout Europe through the establishment of a network of designated conservation areas known as the Natura 2000 (N2K) network. The N2K network includes sites designated as Special Areas of Conservation (SACs), under the EU Habitats Directive and Special Protection Areas (SPAs) designated under the EU Birds Directive. SACs are designated in areas that support habitats listed on Annex I and/or species listed on Annex II of the Habitats Directive. SPAs are designated in areas that support: 1% or more of the all-Ireland population of bird species listed on Annex I of the EU Birds Directive; 1% or more of the population of a migratory species; and more than 20,000 waterfowl. Under the Habitat Regulations, sites designated as SACs and SPAs are referred to as **European Sites**. It is noted that, under the Habitats Regulations, the term European Site also includes candidate SACs (cSACs) as well as SACs.

Articles 6(1) & (2) of the Habitats Directive set out provisions for the conservation management of European Sites. Articles 6(3) and 6(4) of this Directive set out a series of procedural steps that test whether or not a plan or project is likely to affect a European Site. Article 6(3) also establishes the requirement for a HDA:

"*any plan or project not directly connected with or necessary to the management of the (Natura 2000) site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4* (i.e Article 6(4)), *the competent national authorities shall agree to the plan or project only after having ascertained that it will not affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public*".

As such, any project with the potential to result in likely significant effects, either individually or in combination with other plans or projects, upon the conservation objectives of a Natura 2000 site must undergo an assessment of its implications on relevant Natura 2000 sites. In order to establish whether or not a likely significant effect will arise as a result of this project in Redemption Road, a screening exercise should be undertaken.

### 1.1.3 Stages of the Habitats Directive Assessment

European Guidance (EC, 2002) has outlined a staged process for the completion of a HDA.

- Stage 1 – Screening: This stage defines the proposed plan, establishes whether the proposed plan is necessary for the conservation management of the Natura 2000 site and assesses the likelihood of the plan to have a significant effect, alone or in combination with other plans or projects, upon a Natura 2000 site.
- Stage 2 – Appropriate Assessment: If a plan or project is likely to have a significant effect an Appropriate Assessment must be undertaken. In this stage the impact of the plan or project to the Conservation Objectives of the Natura 2000 site is assessed. The outcome of this assessment will establish whether the plan will have an adverse effect upon the integrity of the Natura 2000 site.
- Stage 3 – Assessment of Alternative Solutions: If it is concluded that, subsequent to the implementation of mitigation measures, a plan has an adverse impact upon the integrity of a Natura 2000 site, it must be objectively concluded that no alternative solutions exist before the plan can proceed.
- Stage 4 – Where no alternative solutions exist and where adverse impacts remain but imperative reasons of overriding public interest (IROPI) exist for the implementation of a plan or project, an assessment of compensatory measures that will effectively offset the damage to the Natura site 2000 will be necessary.

Following on from Article 6(3) of the Habitats Directive the objective of this assessment is to screen for Likely Significant Effects and to conclude whether the activities associated with this project are likely to result in significant adverse effects to the integrity of European Sites.[1]

# 2 Stage 1: Screening Assessment

## 2.1 Screening Methodology

The function of the Screening Assessment is to identify whether or not the proposal will have a likely significant effect on European Sites. In this context "likely" refers to the presence of doubt with regard to the absence of significant effects (ECJ case C-127/02) and "significant" means not trivial or inconsequential but an effect that has the potential to undermine the site's conservation objectives (English Nature, 1999; ECJ case C-127/02). In other words, any effects that would

[1] Note - this report has taken account of the recent ECJ ruling (C-323/17): "Article 6(3) of the Habitats Directive must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of the measures intended to avoid or reduce the harmful effects of the plan or project on that site."

compromise the functioning and viability of a site and interfere with achieving the conservation objectives of the site would constitute a significant effect.

The nature of the likely interactions between the proposal and the integrity of European Sites will depend upon the sensitivity of the Site's qualifying features to potential impacts arising from the proposal; the current conservation status of the Site; and the likely changes to water quality that will result from activities associated with the project, in combination with other plans and projects.

This Screening exercise has been undertaken with reference to respective National and European guidance documents: Appropriate Assessment of Plans and Projects in Ireland (NPWS, 2009, amended in 2010) and *Assessment of Plans and Projects Significantly Affecting Natura 2000 sites – Methodological Guidance of the Provisions of Article 6(3) and (4) of the Habitats directive 92/43/EEC* (European Communities, 2002) and recent European and National case law (ECJ C-258/11 & High Court case ref 2014-320-JR). The following guidance documents were also of relevance during this Screening Assessment:

- Birds and Natural Habitats Regulations (SI No. 477 of 2011)
- Managing Natura 2000 Sites – The provisions of Article 6 of the Habitats directive 92/43/EEC. European commission (2000).
- Guidance on Article 6(4) of the Habitats Directive 92/43/EEC – Clarification of the Concepts of: Alternative Solutions, Imperative reasons of Overriding Public Interest, Compensatory Measures, Overall coherence, Opinion of the Commission. European Commission (2007).

The EU Guidelines (EC, 2002) outline the stages involved in undertaking a Screening Assessment of a project that has the potential to have likely significant effects on European Sites. The methodology adopted for this Screening Assessment is informed by these guidelines and was undertaken in the following stages:

1. Define the project and determine whether it is necessary for the conservation management of European Sites;
2. Identify European Sites likely to be influenced by the project;
3. Review the project to determine if it has the potential to affect European Sites and determine whether the European Sites are vulnerable to the effects; and
4. Identify other plans or projects that, in combination with the project, have the potential to affect European Sites.

## 2.2 The Project and N2K Baseline

### 2.2.1 Definition of the Project

The project has been defined in *Section 1.1.1* and it is clear from the description of the project that it is not necessary for the conservation management of European Sites.

### (i) Construction Phase

The proposed development will occur according to the plans submitted separately to Cork City Council. The construction site will be entirely contained within the proposed site boundary seen in Figure 3.

It is understood that best practice construction strategies will be carried out during the construction phase. For example, during construction, there will be adequate measures put in place to contain surface water on site and prevent it running off into surrounding areas.

It is also understood that common best practice strategies will be employed to minimise dust emissions from the construction site. During periods of dry weather, for example, surfaces will be dampened.

Similarly, it is understood that best practice noise control strategies will be employed. Engines will be switched off when not in use, and the construction methods used will be the quietest available, insofar as practicable.

### (ii) Post-Construction Phase

Post-construction, the proposed development will presumably become occupied. Activities onsite will revert to residential, domestic movements. As mentioned in Section 1.1.1, the new development will be serviced by an existing electricity supply and mains water. Wastewater will be serviced by an existing mains sewer. As previously mentioned, it is proposed to have 3 storm water soakaway pits to deal with storm water generated on the site. This will prevent surface water run-off from the site during the post-construction phase.

## 2.2.2 Description of the Project Area

### (i) Receiving Environment

The project site is located at Redemption Road, Blackpool, Cork City. Blackpool village is located immediately east of the site. The site is approximately 400 metres southeast of Blackpool shopping centre and 1.5 km north of Cork City centre. Figure 3 provides an aerial view of the project site, showing an approximate site boundary (please refer to engineering drawings for exact dimensions of site features). There is an urban landscape surrounding the site. Much of the surrounding landscape appears to be residential. There are however a number of bars, cafes and shops located east of the site in Blackpool village. There are two schools located nearby. These include Gaelscoil Pheig Sayers, which is located at Farranferris Educational Campus, west of the proposed site. North Monastery Secondary School is located south-west of the site. There are also various recreational facilities in the vicinity of the proposed site. These include an Astroturf pitch located along the north-east boundary of the site that belongs to Blackpool Community Centre. There are green areas/sports pitches located next to Gaelscoil Pheig Sayers to the west of the site. There are also sport pitches belonging to North Monastery Secondary School located south-west of the site.

The River Bride is located approximately 120 metres east of the site. This river joins with the Glen River approximately 150 metres downstream to form the River Kiln, which discharges into the River Lee ~1 km downstream.


**Figure 3**. Project site aerial photograph (Data Source: Google Earth, 2018).

### 2.2.3 Identification of European Sites

The approach adopted during the identification of European Sites follows that outlined in established guidance (Scott Wilson *et al.*, 2006). An initial list of European Sites occurring within a radius of 15 km was compiled. Figure 4 shows all European Sites occurring within this radius of the project site. The following European Sites occur within this range:

1. Cork Harbour SPA
2. Great Island Channel SAC
3. Blackwater River SAC

See the tables overleaf for a summary of the sites' qualifying interests and conservation objectives.

**Table 1**. Cork Harbour SPA– Qualifying Interests and Conservation Objectives

| Site Name and Code | Qualifying Interests<br>[Natura 2000 Code]<br>*Denotes priority habitat | Conservation Objectives |
|---|---|---|
| Cork Harbour SPA [004030] | [A004] Little Grebe *Tachybaptus ruficollis*<br>[A005] Great Crested Grebe *Podiceps cristatus*<br>[A017] Cormorant *Phalacrocorax carbo*<br>[A028] Grey Heron *Ardea cinerea*<br>[A048] Shelduck *Tadorna tadorna*<br>[A050] Wigeon *Anas penelope*<br>[A052] Teal *Anas crecca*<br>[A054] Pintail *Anas acuta*<br>[A056] Shoveler *Anas clypeata*<br>[A069] Red-breasted Merganser *Mergus serrator*<br>[A130] Oystercatcher *Haematopus ostralegus*<br>[A140] Golden Plover *Pluvialis apricaria*<br>[A141] Grey Plover *Pluvialis squatarola*<br>[A142] Lapwing *Vanellus vanellus*<br>[A149] Dunlin *Calidris alpina alpina*<br>[A156] Black-tailed Godwit *Limosa limosa*<br>[A157] Bar-tailed Godwit *Limosa lapponica*<br>[A160] Curlew *Numenius arquata*<br>[A162] Redshank *Tringa totanus*<br>[A179] Black-headed Gull *Chroicocephalus ridibundus*<br>[A182] Common Gull *Larus canus*<br>[A183] Lesser Black-backed Gull *Larus fuscus*<br>[A193] Common Tern *Sterna hirundo*<br>[A999] Wetlands | To maintain the favourable conservation condition of the qualifying interests in Cork Harbour SPA (see left). |

**Table 2.** Great Island Channel SAC - Qualifying Interests and Conservation Objectives

| Site Name and Code | Qualifying Interests<br>[Natura 2000 Code]<br>*Denotes priority habitat | Conservation Objectives |
|---|---|---|
| Great Island Channel SAC [001058] | [1140] Mudflats and sandflats not covered by seawater at low tide<br>[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) | • To maintain the favourable conservation condition of the habitat 'Mudflats and sandflats not covered by seawater at low tide'<br>• To restore the favourable conservation condition of the habitat 'Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)' |

**Table 3**. Blackwater River SAC - Qualifying Interests and Conservation Objectives

| Site Name and Code | Qualifying Interests<br>[Natura 2000 Code]<br>*Denotes priority habitat | Conservation Objectives |
|---|---|---|
| Blackwater River SAC [002170] | [1029] Freshwater Pearl Mussel *Margaritifera margaritifera*<br>[1092] White-clawed Crayfish *Austropotamobius pallipes*<br>[1095] Sea Lamprey *Petromyzon marinus*<br>[1096] Brook Lamprey *Lampetra planeri*<br>[1099] River Lamprey *Lampetra fluviatilis*<br>[1103] Twaite Shad *Alosa fallax*<br>[1106] Atlantic Salmon *Salmo salar* (only in fresh water)<br>[1130] Estuaries<br>[1140] Mudflats and sandflats not covered by seawater at low tide<br>[1220] Perennial vegetation of stony banks<br>[1310] *Salicornia* and other annuals colonizing mud and sand<br>[1330] Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)<br>[1355] Otter *Lutra lutra*<br>[1410] Mediterranean salt meadows (*Juncetalia maritimi*)<br>[1421] Killarney Fern *Trichomanes speciosum*<br>[3260] Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation<br>[91A0] Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles<br>[91E0] *Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion, Alnion incanae, Salicion albae*)<br>[91J0] **Taxus baccata* woods of the British Isles | To maintain or restore the favourable conservation condition of the Annex I habitat(s) and/or the Annex II species for which the SAC has been selected. |

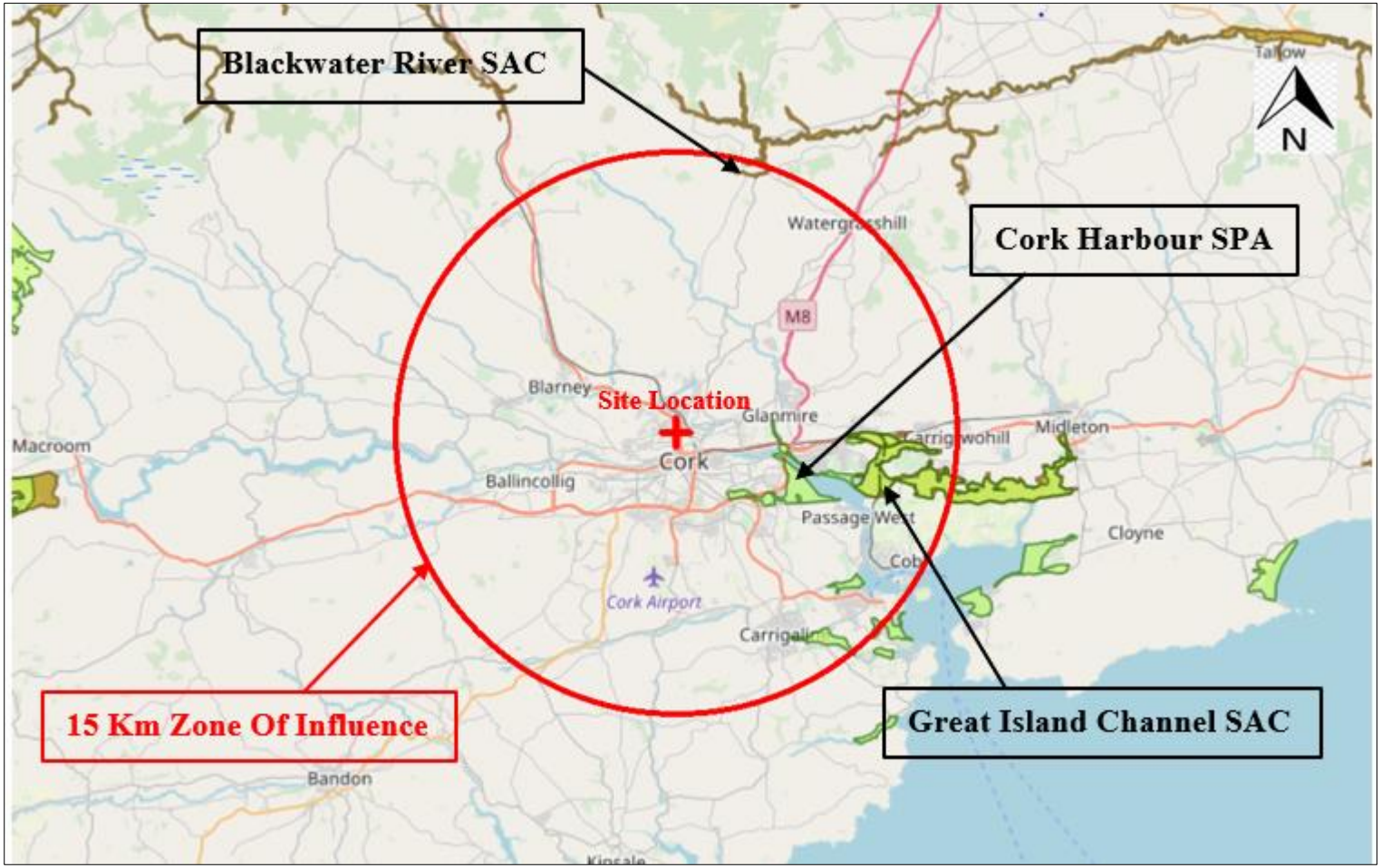



**Figure 4**. 15-km sensitivity radius around project site (Data Source: OSI, 2018)

Once all European Sites in this area were identified, an initial assessment of the project's relationship with these European Sites was undertaken to identify whether any of them will be affected by site activities. The zone of influence of the project concerns the project's potential to result in direct and indirect impacts to European Sites.

**Direct Impacts** are impacts which occur within or immediately adjacent to European Sites and result in the:

- Physical loss of Qualifying Features of Interest through habitat loss, habitat fragmentation, species disturbance or mortality. Note that impacts to qualifying mobile species outside the boundary of their European Site are considered under indirect impacts below; and
- Physical damage to Qualifying Features of Interests through habitat degradation, habitat fragmentation, severance/barrier effects and edge effects.

The location of the proposed site is such that direct impacts are not an issue in this scenario.

**Indirect Impacts** are:

- Secondary impacts which occur as a result of direct impacts e.g. the effects of displaced species on the occupancy of alternative habitats),
- Impacts that occur away from the project sites e.g. downstream to species and habitats as a result of perturbations to water quality; and
- The interaction of effects e.g. the interaction of siltation and chemical pollution to water quality.

For this project, there are no obvious pathways connecting the proposed site to Blackwater River SAC. This SAC will not be discussed further in this report.

As previously mentioned, the River Bride is located approximately 120 metres east of the site. This river discharges into the River Lee just over 1 km downstream via the River Kiln. The River Lee flows into Cork harbour SPA approximately 5 km downstream and meets Great Island Channel SAC 10 km downstream. The proximity of the site to the River Bride (a hydrological pathway to the aforementioned SPA and SAC), means that the potential of indirect impacts to these European Sites needs to be explored. The hydrological pathway between the proposed site and Cork Harbour is shown in Figures 5 and 6.

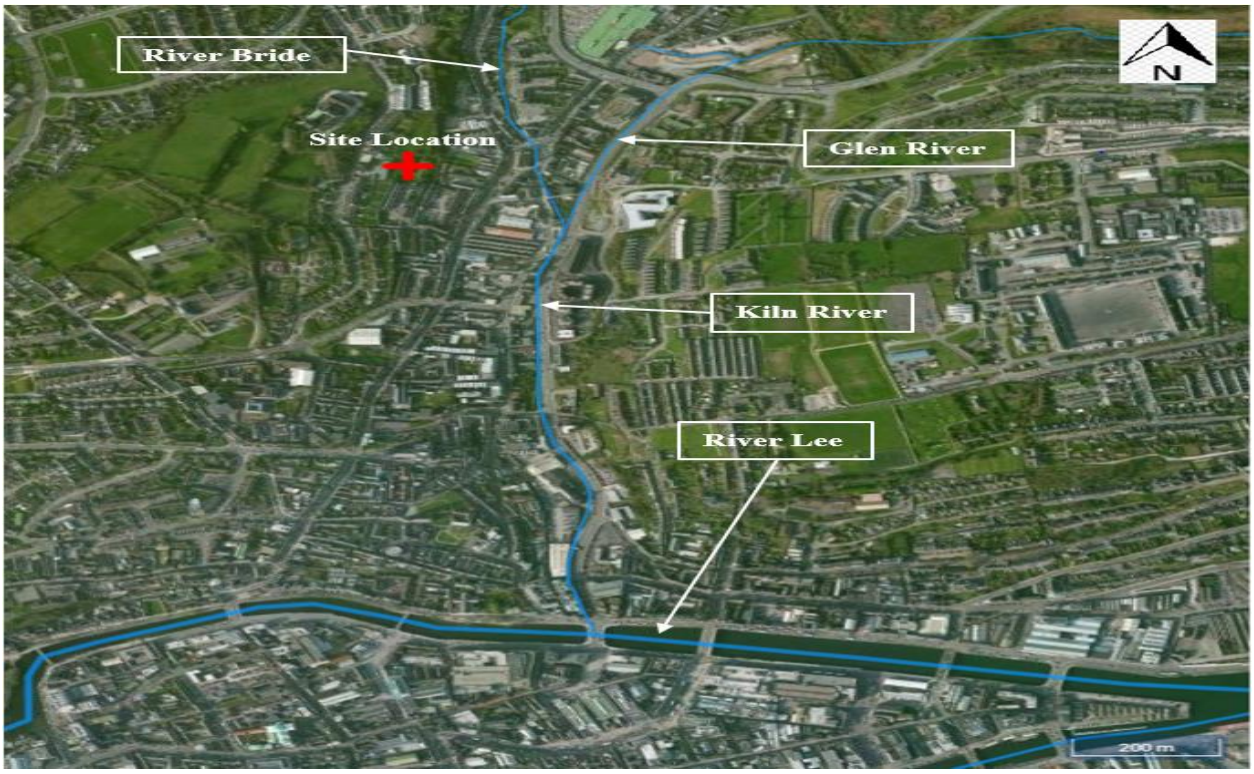



**Figure 5**. Rivers/streams located in the vicinity of the proposed site location

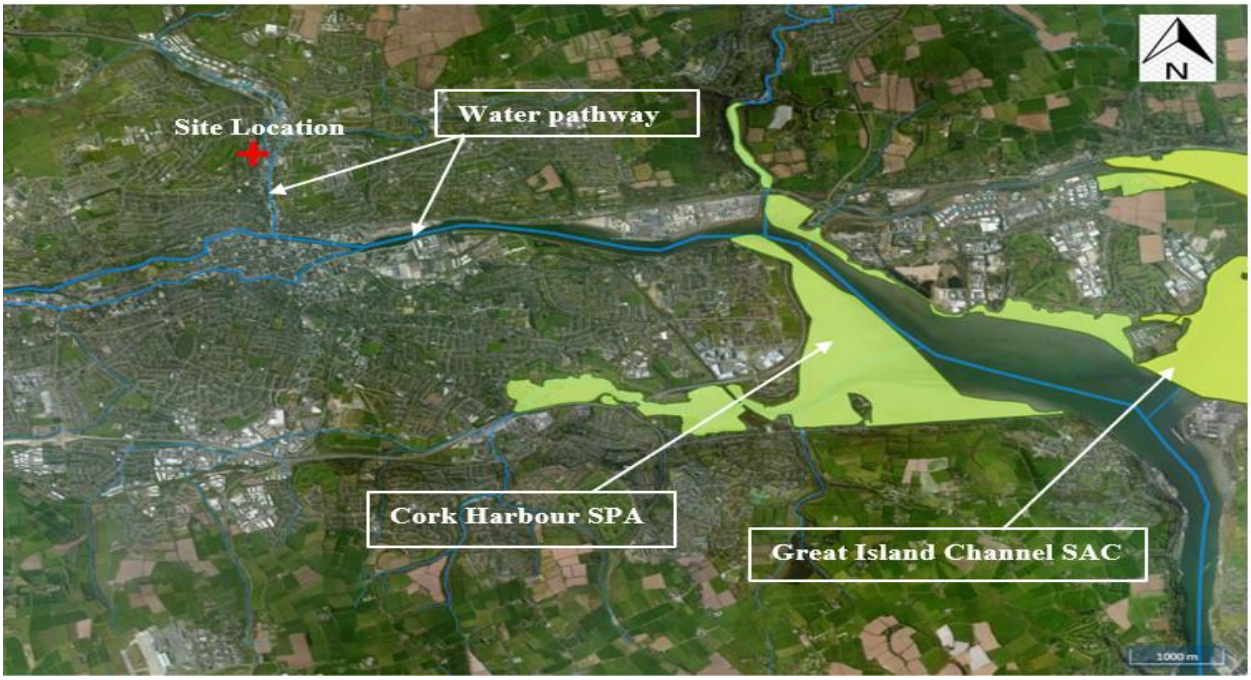



**Figure 6.** Water pathway from site location to Cork harbour SPA/Great Island Channel SAC

### (i) Surface Water

As mentioned in Section 2.2.1, it is understood that best practice strategies will be employed during the construction phase to ensure that surface water will not leave the site. During the post-construction phase, it is proposed to have 3 soakaway pits that will treat surface water and prevent overland discharge.

In the unlikely case that surface water did infiltrate the nearby River Bride, it would undergo a considerable amount of dilution before reaching Cork Harbour SPA and Great Island Channel SAC. Cork Harbour SPA is located ~6 km downstream from the site location and Great Island Channel SAC is located ~11 km downstream.

Given the above, the contamination of surface water and its infiltration of hydrological pathways is not deemed to be a likely significant risk to the integrity of Cork Harbour SPA or Great Island Channel SAC.

### (ii) Dust

As mentioned in Section 2.2.1, it is understood that best practice dust-suppression measures will be employed during the construction phase of the project. Post-construction, dust creation will revert to current levels, which, typical of a domestic setting, are thought to be negligible.

Cork Harbour SPA and Great Island Channel SAC are too far-removed to be at risk of direct dust contamination, and the above-mentioned suppression measures are deemed adequate such that there will be no likely significant risk to these sites as a result of infiltration of the River Bride.

### (iii) Noise

An increase in noise will occur during the construction phase of the project. Post-construction, noise will revert to current levels. Bird species protected by Cork Harbour SPA are very unlikely to be impacted by noise– they will be too far removed from the proposed site.

Best-practice noise management strategies are understood to be employed during construction. This will contribute to minimising noise created by vehicles and machinery during the construction phase. In any case, it is not believed that noise levels generated from the site will exceed that of surrounding areas in the city which already produces noise through traffic and various industries.

From the above information, it is deemed that no likely significant risks to the integrity of Cork Harbour SPA and/or Great Island Channel SAC will exist as a result of noise emissions from the proposed site.

In summary, Table 4 below details the likely effects the proposed project will have on the European Sites within the 15-km sensitivity zone.

**Table 4.** Likely changes to the integrity of European Sites by virtue of proposed project

| Site Name | Reduction in habitat area | Disturbance to key species | Habitat or species fragmentation | Reduction in species density | Changes in key indicators of conservation value | Climate change |
|---|---|---|---|---|---|---|
| Cork Harbour SPA | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged |
| Great Island Channel SAC | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged |
| Blackwater River SAC | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged | None envisaged |

### 2.2.4 **Other Plans or Projects in the Area**

In assessing the potential for "in-combination" effects, the research undertaken for this screening exercise took note of the following documentation:

- Cork City Council Development Plan, 2015
- Farranferris Local Area Plan, 2009
- Existing planning applications.

Figure 7 below is taken from Cork City Council's Planning Enquiry System. From examining the available information, there does not appear to be any recent planning applications in the surrounding area that will interact with the proposed project site in any way that could negatively affect the nearby European sites.


**Figure 4**. Planning applications near project site

The following is an extract from the Farranferris Local Area Plan pertaining to general plans for Blackpool village. It illustrates plans for Great William O'Brien street which is located near the eastern boundary of the proposed site.

## Public Realm Improvements

**5.8** A series of public realm improvements are proposed in Blackpool. These include:

- Enhance the physical fabric of important streets and spaces in line with Street Improvement Area objectives;
- Aid pedestrian flow and reduce the quantity of on street parking where appropriate;
- Compliment quality public realm upgrades that have occurred around the church under the 1998 Blackpool/Shandon Integrated Area Plan.

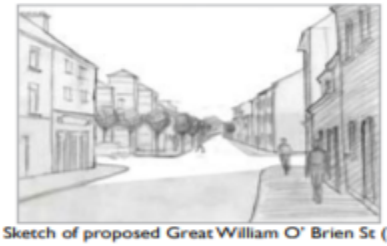
***Great William O' Brien Street***

**5.9** The proposed upgrade of the lower section of Great William O' Brien Street is illustrated in Fig. 5.3 and includes:

- Reducing the carriageway width to 5.5 - 6m;
- The widening of both footpaths (2-2.5m) to enhance the built environment for pedestrians and give greater space to the frontage of important buildings;
- The creation of alternating tree lined edges will help enclose the street, add visual relief and improve its environmental quality;
- The removal of visual clutter on in the streetscape, e.g. overhead wires and provision of appropriate street furniture;
- The provision of traffic calming measures and pedestrian priority crossings will help slow traffic and encourage safe movement of pedestrians across the carriageway;
- Dedicated on street car parking should be provided for residents (permit parking) with a limited amount of on street parking provided for shoppers and workers


Fig. 5.3 Planned Upgrade of Great William O' Brien Street

Sketch of proposed Great William O' Brien St (1)



Sketch of proposed Great William O' Brien St (2)

FARRANFERRIS LOCAL AREA PLAN

It is believed that the planned upgrades of Great William O'Brien street will not interact with the project site in any way so as to significantly affect the integrity of Cork Harbour SPA and/or Great Island Channel SAC. The proposals are near, but are independent of each other. If they are both occurring at the same time, traffic congestion is expected to become a minor issue; this does not represent a consequence of concern to the integrity of the above-mentioned European Sites. The

remainder of the Local Area Plan does not appear to contain evidence of any plan or project that will interact in any significant way with this project.

In summary, this project is not expected to interact with any other projects or plans so as to affect the integrity of any European Sites.

### 2.2.5 Potential Impacts on European Sites within the Project's Sensitivity Zone

It is deemed that the proposed activities will have no impact on any European Sites within the project's sensitivity zone.

## 3 Screening Conclusion

This Stage 1 Screening exercise has resulted in a finding of ***no significant effects*** to any European Sites occurring within the potential area of influence of the project site.

In light of the findings of this screening for Appropriate Assessment, it is concluded that the project will not have a significant negative effect on the special qualifying interests or conservation objectives or integrity of any European Sites.

As it has been deemed that the implementation of the proposed project will not result in significant effects to European Sites, a Stage 2 appropriate assessment is *not* required.

The Appropriate Assessment Screening concluded that the proposed development would not be likely to have a significant effect on any Natura 2000 site.

## References


Cork City Council (2009). Farranferris Local Area Plan. [Online] Available at: https://www.corkcity.ie/en/media-folder/planning/farranferris-local-area-plan-2009.pdf (accessed 13/03/2019).

Cork City Council (2015). Cork City Development Plan. [Online} Available at: http://www.corkcitydevelopmentplan.ie/images/Downloads/CDP_Volume_1.pdf (accessed 13/03/2019).

Cork City Council (2018). Planning Enquiry System. [Online] Available at: http://corkcity.maps.arcgis.com/apps/webappviewer/index.html?id=e4af482c8da547de9f1689eba346a1ed (accessed 13/03/2019).

English Nature (1999). *Determination of Likely Significant Effect under The Conservation (Natural Habitats &c) Regulations 1994* (Habitats regulations guidance note no. 3).

Environmental Protection Agency (2018). EPA Maps. [Online] Available at: https://gis.epa.ie/EPAMaps/ (accessed 13/02/2019).

European Commission (2000). Managing Natura 2000 sites. *The provisions of Article 6 of the Habitats Directive 92/43/EEC*. Luxembourg.

European Communities (2002). Assessment of plans and projects significantly affecting Natura 2000 sites. *Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*. Luxembourg.

European Commission (1992). *EU Habitats Directive*.

Fossitt, J.A., 2000. *A Guide to Habitats in Ireland*. The Heritage Council, Dublin.

Google Maps (2018). Maps. [Online] Available at: https://www.google.ie/maps/ (accessed 13/03/2019).

National Parks and Wildlife Service (2009). *Appropriate Assessment of Plans and Projects in Ireland*. DEHLG.

National Parks and Wildlife Service (2013). *The status of EU Protected habitats and species in Ireland*. DEHLG.

National Parks and Wildlife Service (2018). Map Viewer. [Online] Available at: http://webgis.npws.ie/npwsviewer/ (accessed 13/03/2019)

OSI (Ordnance Survey Ireland, 2018). Public Map Viewer. [Online] Available at: http://map.geohive.ie/ (accessed 13/03/2019).

Scott Wilson, Levett-Therivel Sustainability Consultants, Treweek Environmental Consultants & Land Use Consultants (2006). *Appropriate Assessment of Plans*.

**SUB THRESHOLD EIS SCREENING REPORT**
**REDEMPTION HEIGHTS**

*Criteria for determining whether a development would or would not be likely to have significant effects on the environment as per the requirements of Article 120 of the Planning and Development Regulations 2001 as amended*

| **1. CHARACTERISTICS OF PROPOSED DEVELOPMENT** | |
|---|---|
| Size of Proposed Development | *The **Redemption Heights** proposed development comprises of the demolition of buildings and the construction of The proposed housing development will consist of a total of 64 units, comprising of 34 no. apartment units, 20 no. sheltered apartments and 10 no. terraced houses at Redemption Road, Blackpool, Cork. The development site area is approximately 0.84 hectares.* |
| Cumulation with other Proposed Development | *N/A* |
| The nature of any associated demolition works (* see article 8 of SI 235 of 2008) | *Demolition of existing buildings and boundaries to the west of the project site will be undertaken to facilitate the proposed development. The demolition works will be completed in a control and orderly fashion. Structures will be demolished in sections to minimise the potential for disturbance to surrounding neighbouring properties. The demolition of the buildings section by section will also minimise the potential for the generation of noise and dust during the demolition process.*<br>*The demolition works are expected to last for approximately 5 weeks.*<br>*Standard noise and dust control measures, will be implemented during all demolition works.*<br>*Given the scale of the demolition works, which is considered to be small, the approach to the works on a section by section basis and the implementation of noise and dust control measures there will be no potential for these works to result in likely significant effects to the environment.* |
| Use of Natural Resources | *Construction related activities will be largely restricted to the footprint of the project site. Soil that will be excavated within the project site will be reused for landscaping and filling. Where surplus soil material is generated it will be disposed of at an approved facility.*<br>*Water required for the construction phase and operation phase of the project will be supplied by the existing mains water supply. Irish Water has confirmed that there is adequate water to meet the future needs of the project.*<br>*No significant effects to biodiversity are predicted to arise as a result of the construction or operation of the project.*<br>*Natural resources in the form of hydrocarbons will be required for energy and electricity during the construction phase and operation phase of the project. Other building raw materials will be required during the construction phase. However the natural resources required will be typical of those required for the development and operation of a residential development and there provision will not have the potential to result in significant negative effects.* |
| Production of Waste | *Solid inert waste in the form of soil and stone will be produced during construction but materials will be only ordered as required. Any wastes from the construction process will either be reused within the scheme, or recycled/disposed of at an authorised waste facility. During the construction phase the waste management hierarchy will be implemented onsite, which prioritises the prevention and minimisation of waste generation.*<br>*During the operation phase the waste generated will be typical of a residential development. All waste generated will be disposed of by a licenced waste contractor.*<br>*Wastewater generated during the operation phase will be directed to the existing municipal wastewater treatment plant (WWTP), where it has been confirmed that capacity exists for proper treatment of all wastewater prior to discharge to the receiving environment.* |
| Pollution and Nuisances | *The construction phase presents the greatest risk of pollution to water resources. Potential sources of water pollution to both surface and groundwater include fuel, lubricants, suspended solids and concrete. Silt-laden surface runoff could arise during vegetation stripping. However as no surface watercourse occurs within the development footprint and given the approach to the construction phase of the project the potential impact to surrounding surface water quality during the construction phase has been assessed as being imperceptible.*<br>*Similarly, given the design measures to be implemented for the operation phase of the project potential pollution to water resources is considered to be imperceptible.*<br>*The construction phase has the potential to result in nuisance to surrounding receptors as a result of noise, vibrations and dust generated during construction activities.*<br>*In order to minimise any potential for noise and vibration nuisance mitigation measures will be implemented during the construction phase.*<br>*At all times these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures, such as the covering of all dust-emanating materials, will be implemented to rectify the problem before the resumption of construction operations.*<br>*With the implementation of these dust minimisation measures in addition to a construction management plan including dust mitigation fugitive emissions of dust from the site will be insignificant and will not pose a nuisance at nearby sensitive receptors.* |
| Risk of Major Accidents | *Provided that all measures to be outlined in the CEMP, which will be based on best practice mitigation measures, for the project are implemented and that all associated building and environmental regulations are adhered to it is not predicted that the project will not have the potential to result in a major accident or disaster.* |

| | |
|---|---|
| Risk to Human Health | *Section 2 above details measures that are to be implemented to ensure that the project does not result in pollution to waters or air or nuisance generated by noise, dust or vibration emissions. All best practice mitigation measures outlined in this screening report will represent a minimum requirement to be implemented as part of the CEMP for the construction phase of the project. With the implementation of these measures the construction phase will not represent a significant risk to human health.*<br>*During the operation phase the development will be connected to the existing public water and sewer infrastructure and will not result in the release of untreated foul effluent.*<br>*Other emissions generated during the operation phase will relate to air conditioning and heating units. The emissions to atmosphere from such units are not predicted to have the potential to result in significant adverse environmental effects. No significant risks to human health have been identified* |

| **2. LOCATION OF PROPOSED DEVELOPMENT** | |
|---|---|
| Existing Land Use | *The existing land use within the project site is dominated by brownfield land with existing building and yard areas to the rear.*<br>*The project site is located within an area otherwise dominated by residential land use.*<br>*The proposed development is in line with approved zoning land use for the project site.* |
| Relative Abundance, Quality and regenerative Capacity of Natural Resources in the Area | *The project site is currently representative of a brownfield site and is not sensitive in terms of natural resources.*<br>*The overall design of the project has included a design that aims to blend the development into the existing urban fabric surrounding the project site.*<br>*The proposed development will not have a significant effect on the relative abundance, availability, quality and regenerative capacity of natural resources.* |
| Absorption Capacity of the Natural Environment | *There are no natural environments in proximity likely to be impacted by the construction of the proposed development. The proposed use is compatible with the geographical area. The high quality architectural design will contribute to the urban landscape. No significant negative impacts are likely.* |

| **3. CHARACTERISTICS OF POTENTIAL IMPACTS** | |
|---|---|
| Extent of the Impact | *Minor and localized temporary impacts are identified primarily at construction stage only.*<br>*No significant negative impacts are likely.* |
| Transfrontier nature of the Impact | *n/a* |
| Magnitude and Complexity of the Impact | *The operational phase of the development is moderate in scale and will be actively managed. No significant negative impacts are likely.* |
| Probability of the Impact | *The operational phase will inevitably change the local environment, however the change will be consistent with emerging trends in the area. Measures are in place to avoid, reduce or mitigate any likely negative impacts.* |
| Duration, Frequency and Reversibility of the Impact | *No long-term or permanent significant negative impacts are predicted to arise as a result of the construction phase.*<br>*There will be an irreversible and permanent loss of arable land to the footprint of the project. The conversion of this land to residential and amenity grassland will not represent a significant negative environmental effect*. |

## SCREENING CONCLUSION STATEMENT

*The Environmental Impact Assessment Screening therefore concludes that there is no real likelihood of significant effects and therefore an Environmental Impact Assessment is not required.*

*Please refer to Appendix A for report titled; Environmental Impact Assessment Screening Report prepared by Doherty Environmental, dated March 2019.*

| | |
|---|---|
| Name: | Declan Roche |
| Position: | A/Director of Services - Housing |
| Date: | 27th May 2020 |

# Appendix A

# Environmental Impact Assessment Screening Report

# Residential Development

# Redemption Heights

# Lover's Walk, Redemption Road, Blackpool, Cork

# Environmental Impact Assessment Screening

Doherty Environmental

March 2019

# Residential Development

## Redemption Road, Blackpool, Cork

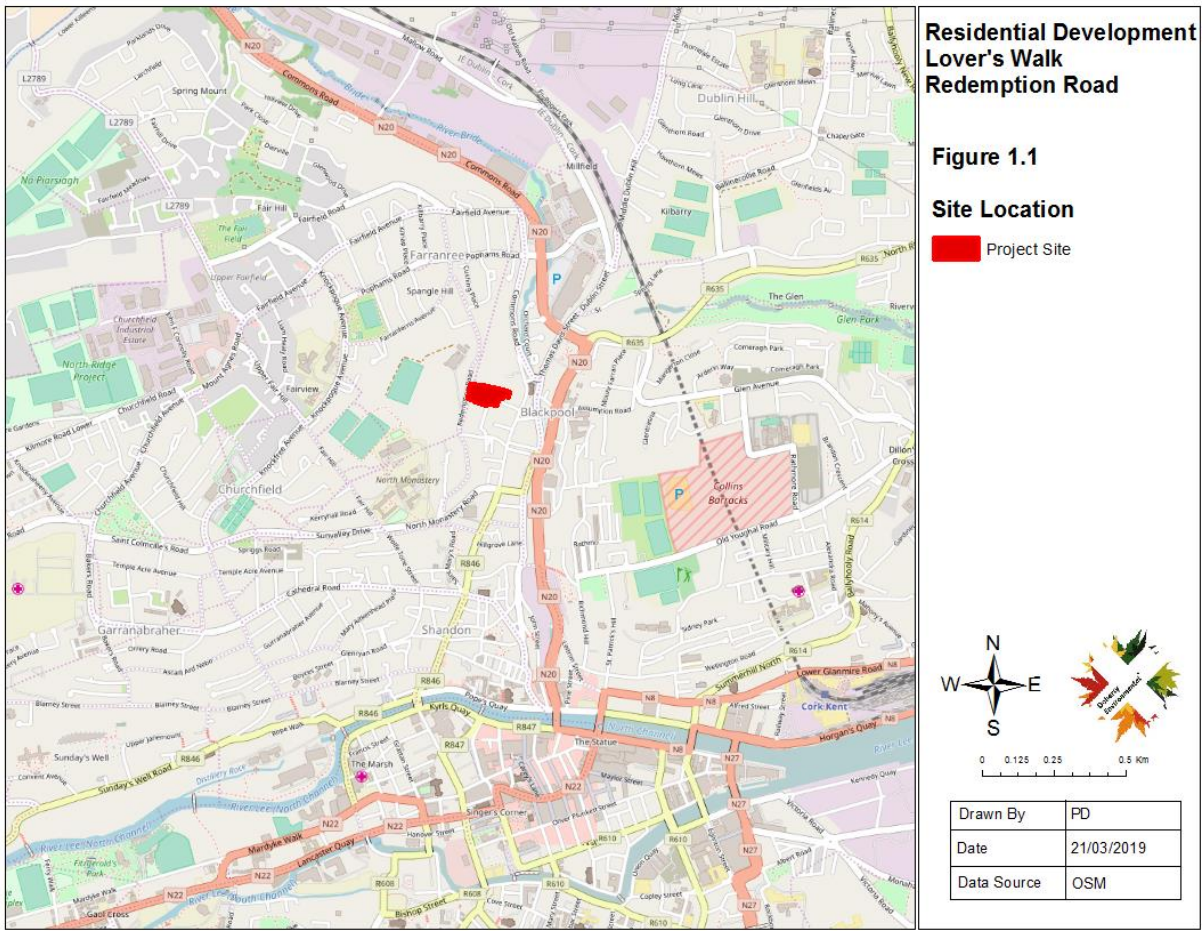
## Environmental Impact Assessment Screening

| Document Stage | Document Version | Prepared by |
|---|---|---|
| Final | 1 | Pat Doherty MSc, MCIEEM |

# Table of Contents

## 1.0 INTRODUCTION

Doherty Environmental Consultants (DEC) Ltd. have been commissioned by Cork City Council to undertake a Environmental Impact Assessment Screening Report for a proposed housing development at Redemption Heights, Lover's Walk, Redemption Road, Blackpool, Cork (see Figure 1.1 for location).




The findings of the EIA Screening assessment for the proposed housing development (i.e. the project) are presented in this report.

## 1.1 PURPOSE OF THIS REPORT

This EIA screening report contains necessary information to enable the competent authority, in this case Cork City Council, to undertake an EIA screening assessment and determine whether an EIA is required for the proposed housing development. The findings of the EIA

screening assessment are presented in this report and will inform the determination by Cork City Council for the proposed Housing development at Redemption Heights, (to be referred to throughout this report as "the project").

The purpose of this Report is to determine whether or not the project is likely to have significant effects on the environment and, as such, requires an EIA to be carried out and an EIAR to be prepared. This Report provides an overview of the project (section 2), the existing baseline environment (section 3) and then assesses the potential environmental impacts (Section 4) posed by the proposed project.

## 1.2 LEGISLATIVE CONTEXT

Directive 2011/92/EU as amended by Directive 2014/52/EU (the EIA Directive) sets out the requirements for environmental impact assessment ("**EIA**"), including screening for EIA. Projects listed in Annex I of the EIA Directive require a mandatory EIA while projects listed in Annex II require screening to determine whether an EIA is required. The proposed development does not require a mandatory EIA under the provisions of the EIA Directive as it is not a project listed in Annex I.

The prescribed classes of development and thresholds or criteria that trigger the need for an EIA are set out in Schedule 5 of the Planning and Development Regulations, 2001, as amended. A review of the classes of development was carried out to determine whether the proposed development falls into any of the development classes which require an EIA. Part 2 of Schedule 5 of the Regulations (see Part 2, 10(b)(i)) set out thresholds for mandatory EIA of a housing development where the number of units proposed exceed 500 dwelling units. As the number of dwelling units proposed from the project will be 64 units, it will be significantly below the threshold for mandatory EIA as specified in Part 2, 10(b)(i) of the Regulations. As such the proposed development does not fall into any of the classes described in Schedule 5 of the Planning and Development Regulations, 2001. The need for an EIA has therefore not been triggered under the requirements of the Planning and Development Regulations, 2001, as amended.

Given that the project is a sub-threshold development under the EIA Regulations, the key issue for the competent/consent authority in the context of the possible need for EIA of a sub-

threshold development is whether or not such a development is likely to have significant effects on the environment. Consideration of significant effect should not be determined by reference to size only. The nature and location of a project must also be taken into account. Provision for such is set out in Schedule 5, Part 2, 15 of the Regulations which states:

*Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.*

This EIA Screening Report is therefore being undertaken to assist Cork City Council in determining whether the proposed Redemption Heights Housing Development will have the potential to result in likely significant effects to the environment.

According to European Commission Guidance (2017[1]):

"Screening has to implement the Directive's overall aim, i.e. to determine if a Project listed in Annex II is likely to have significant effects on the environment and, therefore, be made subject to a requirement for Development Consent and an assessment, with regards to its effects on the environment. At the same time, Screening should ensure that an EIA is carried out only for those Projects for which it is thought that a significant impact on the environment is possible, thereby ensuring a more efficient use of both public and private resources. Hence, Screening has to strike the right balance between the above two objectives."

Recent guidelines from the Department of Housing, Planning and Local Government (2018) [2] in relation to screening state:

---

**[1] Environmental Impact Assessment of Projects Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU). European Commission 2017. Page 23.**

**[2] Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment**

"3.1. Screening is the initial stage in the EIA process and determines whether or not specified public or private developments are likely to have significant effects on the environment and, as such, require EIA to be carried out prior to a decision on a development consent application being made. A screening determination is a matter of professional judgement, based on objective information relating to the proposed project and its receiving environment. Environmental effects can, in principle, be either positive or negative.

3.2. Screening must consider the whole development. This includes likely significant effects arising from any demolition works which must be carried out in order to facilitate the proposed development. In the case of transboundary developments, screening must consider the likely significant effects arising from the whole project both sides of the boundary. A screening determination that EIA is not required must not undermine the objective of the Directive that no project likely to have significant effects on the environment, within the meaning of the Directive, should be exempt from assessment."

Annex III of the EIA Directive (as amended)/Schedule 7 to the Planning and Development Regulations 2001, as amended, lists the criteria for determining whether a project should be subject to EIA.

Annex IIA of the EIA Directive (as amended)/Schedule 7A to the Planning and Development Regulations, 2001, as amended, set out the information to be provided for the purposes of EIA Screening. The information set out in Schedule 7A is grouped together under 3 main headings:

| Annex IIA requirements | Relevant section of this screening report |
|---|---|
| A description of the proposed development, including in particular –<br><br>a description of the physical characteristics of the whole proposed development and, where relevant, of demolition works, and<br><br>a description of the location of the proposed development, with particular regard to the environmental sensitivity of geographical areas likely to be affected | Section 2 & 3 of this Report describes the characteristics of the project. |

| | |
|---|---|
| A description of the aspects of the environment likely to be significantly affected by the proposed development | Section 4 of this Report describes the aspects of the environment that may be affected by the proposed development. |
| A description of any likely significant effects, to the extent of the information available on such effects, of the proposed development on the environment resulting from— (a) the expected residues and emissions and the production of waste, where relevant, and (b) the use of natural resources, in particular soil, land, water and biodiversity | Section 5 of this Report describes any likely significant effects to the environment. |

## 2.0 CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

### 2.1 OVERVIEW

The project comprises the proposed development of a 64 no. dwelling units. It is proposed to tiered the development site into a number of distinct housing zones which will be characterised by distinct types of housing. The proposed tiering approach has been adopted to reflect the sloping topography of the project site. The diversity of mix will consequently correspond to this tiered nature of the site. The upper tier will consist of a new apartment complex and landscaped grounds. The height of such a building respects the height of an existing building and the streetscape. The existing apartment building on the site which is 4 stories will be demolished. This currently comprises of 12no. 1-bed apartments. The number of units in the proposed complex will be 36 units comprising typically 2-bed units. These new units will all be standards compliant. The scale of the complex is appropriate for its eventual management.

The Design Brief for this complex was based on the requirements of a housing association. The middle tier of the development consists of terraced houses for families. These correspond in scale to the adjoining housing scheme at Seminary Court. The lower tier which is a back-land infill type site will consist of sheltered housing as it has immediate connectivity to Blackpool and is fully accessible in this regard. This building benefits from its immediate adjacency to Blackpool community and medical centre. Sheltered housing in turn has a ripple

effect of freeing up houses elsewhere in the locality which can consequently be used by families.

The site is laid out in response to the Cork tradition of building on a level contour. Notable examples include the neighboring Farranferris Educational Campus building as well as numerous other examples in Cork. The masterplan reinforces this pattern of development for the overall site which consist of a series of layers of building and layers of soft landscaping. This in turn is the response to the landscape protection zone which the site form part of.

## 2.2 BOUNDARY CONDITIONS/PROPOSED WORKS

The site has extensive site boundary conditions. The site has road frontage to the west which fronts onto Redemption Road. This boundary is a mixture of high walls and gates buildings together with some residential scaled gates and railings. The Redemption Road boundary treatment is to be replaced in its entirety with typically residential scaled gates and railings. A new road entrance is provided.


The northern boundary is bound on the upper tier by an unused laneway, on the middle tier by an unused overgrown green area and on the lower tier the site bounds with the community centre astroturf ball court and car park. These northern boundaries are to be secured with fencing/walling.

The eastern boundary is typically bound by the rear gardens of adjoining properties. These boundaries are to be typically retained as fencing/walling with limited alterations where required.

The Southern boundary is typically bound by rear gardens of adjoining properties. These boundaries are to be typically maintained as fencing/walling with limited alterations where required. On the lower tier, the existing vehicular entrance gate and walls are to be retained. On the middle tier, the road from Seminary Court is extended into the site to give vehicular access. On the upper tier the site adjoins the current land owner's residential accommodation outside the site boundary. This boundary is to be realigned to suit the development.

## 2.3 ROADS STANDARD

Roads are typically 6m wide with dedicated turning areas. Footpaths range from 1.5m to 2m wide. The roads and paths slope at 1 in 21 providing gentle slopes throughout.

Roads have been designed with the aid of the "Design Manual for Urban Roads and Streets" (DMURS) published by Department of Transport, Tourism and Sport. The DMURS aims to aid the design of safer, more attractive and vibrant streets which will generate and sustain communities and neighbourhoods. As well as cars and other vehicles this encompasses pedestrians, cyclists and those using public transport. All roads within the development will be cul de sacs.

The road surfaces will be formed from macadam with footpaths formed from concrete.

The proposed roads and footpaths within the site will be taken in charge by Cork City Council following completion of the works given that this will be a social housing project.

## 2.4 UTILITY AND EMERGENCY ACCESS

All roadways are provided with suitable access for refuse vehicles and fire trucks.

## 2.5 CAR PARKING

For the upper tier aparments 36 parking spaces are provided on-site and on-street. In addition 1 no. disabled parking space is provide on-site at the rear and 1 no disable parking space is provided on-street.

Middle Tier Housing wil have cutilage parking for each house unit.

The lower tier sheltered housing is provided with wheelchair accessible and set down parking.

## 2.6 BICYCLE PARKING

Bicycle parking is proposed in the rear parking area.

## 2.7 MATERIALS

The external building material consists predominantly of blue-grey brick walls and complimentary painted metalwork for projecting canopies balconies and glazing. Boundary and retaining wall treatment is finished in concrete masonry. This limited palette of robust materials give the scheme its simplicity and continuity.

## 2.8 ENERGY USE

Building Energy Rating Certificates will be required for each unit in this development. The Building Regulations will require a A3 rating in this regard. An energy assessment will be carried out at the detail design stage to demonstrate compliance with TGD Part L. Of note, measures include solar panels as a suitable renewable, increased thermal insulation, higher thermal performance windows and doors, elimination of cold bridging, and airtight construction together with low energy lighting and controls will be incorporated into the development.

## 2.9 STORM WATER DRAINAGE

Currently Storm water drainage from the site is primarily by infiltration to ground with certain volumes running off at low level into the Hattons Alley Lane site at the bottom of the

site. The existing runoff from the site finds its way into the existing combined sewer network on Hatton's Alley Lane.

It is proposed to install 3 no. storm water soakaways to deal with stormwater generated on the site. Runoff from the top tier of apartments fronting onto Redemption Road will be transferred to a soakaway to be located to the rear of the apartments in what is proposed to be a green area. A second soakaway to be located on the green area to the east of the proposed terrace houses will deal with the middle tier of housing including any over spill from the top tier.

Runoff from the bottom apartment block (Eastern network) is to be collected in a separate soakaway adjoining the proposed building. As the bottom block of apartments will be piled, there will be no danger of the soakaway having a detrimental effect on the building sub structure.

Stormwater discharge from the site will be limited to the 1 in 30 year greenfield runoff rate. The greenfield runoff rate was calculated separately for the two separate drainage networks on the site. The calculations were based on an IH124 Greenfield Runoff rate calculation for the area using a SOIL value of 0.4, based on the shallow depth of rock and the steep gradients at much of the site. A SAAR value of 1,200mm was used in the calculation of the greenfield runoff rate.

For the western network (Upper and middle tiers) on the site the runoff rate was calculated as 7.6l/s, and for the eastern network (lowest tier) of the site the runoff rate was calculated as 1.3l/s.

The storage capacities of the three soakaways tanks have been calculated as part of the overall drainage design. To ensure that there is no flooding in the 1 in 100 year rainfall event with a 20% allowance for climate change, attenuation tanks will be provided.

## 2.10 FOUL WATER DRAINAGE

It is proposed to connect the foul water drainage from the top tier of the site to the combined sewer which flows southwards along Redemption Road. The existing Glen View House is

connected to an existing manhole on the footpath south of the proposed entrance to the site. It is proposed to reuse this pipe if it can be proven to suit the purposes of the new development.

It is proposed to convey foul waste from the middle tier of housing, namely the terraced two storey houses to the existing foul sewer on Seminary Court. The foul water waste from the bottom level tier comprising of the sheltered housing apartments will be disposed of to the combined sewer on Hattons Alley Lane.

The basic approach adopted for the design of the proposed foul water drainage is to connect each proposed house to a proposed foul sewer system running through the proposed development, following the route of the access road and discharging ultimately towards the existing combined sewer. It is proposed that foul drainage from each house will connect via 100mm diameter branch lines.

## 2.11 WATERMAIN DESIGN

A pre-enquiry form has been submitted to Irish Water with respect to the required water connection. A confirmation of feasibility has been received from Irish Water. It is proposed to make a connection to the water supply network at both ends of the site at Redemption Road and Hattons Alley Lane with the main snaking its way through the development. The existing main on Seminary Court is intended to be extended as part of the development.

Generally it is required by Irish Water that a 'ring main' setup is constructed to allow for the network to be partially isolated in the event of a leak or breakage. Due to the geometry and constraints of the site and the proposed development layout, it is considered that the requirement for a ring main has been satisfied. A 100mm diameter main is proposed for the site, although this is open to review by Irish Water.

Fire hydrants have been included in the design for the site layout. These have been positioned such that all proposed dwellings have a fire hydrant within 46m as per the Irish Water standard detail requirements.

## 2.12 CONSTRUCTION PHASE MONITORING

The construction phase of the project will be monitored to ensure that environmental best practice is adhered to and effectively implemented throughout the duration of this phase. The following systems will be put in place to ensure adherence to best practice:

- The contractor will assign a member of the site staff as the environmental officer with the responsibility for ensuring the environmental measures prescribed above are adhered to. A checklist will be filled in on a weekly basis to show how the measures have been complied with. Any environmental incidents or non-compliance issues will immediately be reported to the project team.

- The project managers will be continuously monitoring the works and will be fully briefed and aware of the environmental constraints and protection measures to be employed.

## 2.13 ASSESSMENT OF THE CHARACTERISTICS OF THE PROPOSED DEVELOPMENT

An assessment of the potential characteristics of the Proposed Development as described above against the criteria outlined in Schedule 7 of the Planning and Development Regulations 2001 to 2018 are outlined in Table 2.2 below and conclusion and rationale is provided to determine whether these characteristics have the potential to result in likely significant effects to the environment.

**Table 2.1: Characteristics of the Proposed Development**

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| (a) the size and design of the whole project | The project site is approximately 0.8 Ha in size. All construction works will be largely restricted to the footprint of the project site and will be completed within a 24-month period. The construction phase will be guided by a Construction and Environmental Management Plan (CEMP) that will seek to ensure the construction phase is completed in line with best practice and does not result in adverse effects to surrounding receptors.<br><br>The final footprint of the development within the project site will be less than 1 ha.<br><br>A landscape design has been prepared for the project, which includes for the provision of boundary treatments and the landscaping within the project site. The scale of the proposed development is in keeping with the scale of surrounding residential land use in terms of size and design. The project site is located within the residential and urban fabric of Blackpool and Cork City and is well served by amenities and public transport. |
| (b) cumulation with other existing and/or approved projects; | A review of Cork City Council's EPlan online planning viewer identified no recent (within the last five years) planning applications in the immediate vicinity of the project site.<br><br>The nearest recent planning applications identified are located approximately to the south, southwest of the project site are relates to the demolition and replacement with a vehicular gate to provide parking (Planning References: 1638890 and 1737458).<br><br>The works associated with this other project are minor in scale and are likely to have been completed at the time of writing. There will be no potential for the project to combine with this other project to result in likely significant effects to the environment. |
| (c) the nature of any | Demolition of existing buildings and boundaries to the west of the project site will be undertaken to facilitate the proposed development. The demolition works will be completed in a control |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| associated demolition works | and orderly fashion. Structures will be demolished in sections to minimise the potential for disturbance to surrounding neighbouring properties. The demolition of the buildings section by section will also minimise the potential for the generation of noise and dust during the demolition process.<br><br>The demolition works are expected to last for approximately 5 weeks.<br><br>Standard noise and dust control measures, will be implemented during all demolition works.<br><br>Given the scale of the demolition works, which is considered to be small, the approach to the works on a section by section basis and the implementation of noise and dust control measures there will be no potential for these works to result in likely significant effects to the environment. |
| (d) the use of natural resources, in particular land, soil, water and biodiversity; | Construction related activities will be largely restricted to the footprint of the project site. Soil that will be excavated within the project site will be reused for landscaping and filling. Where surplus soil material is generated it will be disposed of at an approved facility.<br><br>Water required for the construction phase and operation phase of the project will be supplied by the existing mains water supply. Irish Water has confirmed that there is adequate water to meet the future needs of the project.<br><br>No significant effects to biodiversity are predicted to arise as a result of the construction or operation of the project.<br><br>Natural resources in the form of hydrocarbons will be required for energy and electricity during the construction phase and operation phase of the project. Other building raw materials will be required during the construction phase. However the natural resources required will be typical of those required for the development and |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| | operation of a residential development and there provision will not have the potential to result in significant negative effects. |
| (e) the production of waste; | Solid inert waste in the form of soil and stone will be produced during construction but materials will be only ordered as required. Any wastes from the construction process will either be reused within the scheme, or recycled/disposed of at an authorised waste facility. During the construction phase the waste management hierarchy will be implemented onsite, which prioritises the prevention and minimisation of waste generation.<br><br>During the operation phase the waste generated will be typical of a residential development. All waste generated will be disposed of by a licenced waste contractor.<br><br>Wastewater generated during the operation phase will be directed to the existing municipal wastewater treatment plant (WWTP), where it has been confirmed that capacity exists for proper treatment of all wastewater prior to discharge to the receiving environment. |
| (f) pollution and nuisances; | The construction phase presents the greatest risk of pollution to water resources. Potential sources of water pollution to both surface and groundwater include fuel, lubricants, suspended solids and concrete. Silt-laden surface runoff could arise during vegetation stripping. However as no surface watercourse occurs within the development footprint and given the approach to the construction phase of the project the potential impact to surrounding surface water quality during the construction phase has been assessed as being imperceptible.<br><br>Similarly, given the design measures to be implemented for the operation phase of the project potential pollution to water resources is considered to be imperceptible.<br><br>The construction phase has the potential to result in nuisance to surrounding receptors as a result of noise, vibrations and dust |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| | generated during construction activities.<br><br>In order to minimise any potential for noise and vibration nuisance mitigation measures will be implemented during the construction phase. These measures will adhere to the best practice guidelines outlined in BS5228: Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1 Noise (2009 + A1 2014). These standard guidelines offer detailed guidelines on the control of noise and vibration from construction activities. The following mitigation measures will be implemented during the construction phase of the proposed development to ensure noise and vibration limit values are complied with:<br><br>• The hours during which site activities are likely to create high levels of noise will be limited to a set time period;<br><br>• During the construction phase a clear line of communication will be established between the contractor/developer, Local Authority and residents;<br><br>• A site representative will be appointed to take responsibility of all matters relating to noise and vibration;<br><br>• Noise monitoring will be undertaken during the construction phase, particularly during critical periods and at sensitive locations;<br><br>• All site access roads will be kept even to mitigate the potential for noise and vibration from lorries.<br><br>• Plant with low inherent potential for generating noise and/ or vibration will be selected for construction;<br><br>• Where required noise barriers will be erected around items such as generators or high duty compressors; |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| | • Noisy plant will be sited as far away from sensitive properties as permitted by site constraints.<br><br>• Construction site hoarding will be erected along noise sensitive boundaries where works are taking place in proximity to existing residential properties where no substantial screening exists.<br><br>• With the implementation of the measures it is predicted that the nuisance impact of noise generated during the construction phase will be of a short-term, slight, negative nature.<br><br>There is the potential for dust emissions arising during construction, particularly during dry and/or windy weather conditions. Dust emissions may also be exacerbated by the presence of dry surfaces and uncovered stockpiles during the construction. The quantity of dust is likely to be relatively small and dust emissions would be temporary in nature. Dust effects are likely to create nuisance in the immediate locale rather than significant environmental effects. Best practice mitigation measures will be put in place to minimise adverse effects. The measures will include the following:<br><br>A dust minimisation plan will be finalised and implemented for the construction phase of the project, as construction activities are likely to generate some dust omissions. In order to minimise dust omissions during construction the following measure will form part of that plan and will be implemented during the construction phase:<br><br>• Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.<br><br>• Furthermore, any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions.<br><br>• Bowsers or suitable watering equipment will be |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| | available during periods of dry weather throughout the construction period.<br>• Access gates to the site shall be located at least 10m from sensitive receptors where possible<br>• Vehicles using site roads will have their speed restricted, both on un-surfaced site roads and on hard surfaced roads, as site management dictates.<br>• During periods of very high winds (gales), activities likely to generate significant dust emissions shall be postponed until the gale has subsided.<br>• Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities such as rock blasting or demolition are necessary during dry or windy periods.<br>• Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions and cleaned as necessary.<br>• The Principal Contractor or equivalent will be obliged to monitor the contractors' performance to ensure that the proposed mitigation measures are implemented and that dust impacts and nuisance are minimised;<br>• During working hours, dust control methods will be monitored as appropriate, depending on the prevailing meteorological conditions;<br>• The name and contact details of a person to contact regarding air quality and dust issues shall be displayed on the site boundary, this notice board should also |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| | include head/regional office contact details;<br>• Community engagement will be undertaken before works commence on site explaining the nature and duration of the works to local residents and businesses;<br>• A complaints register will be kept on site detailing all telephone calls and letters of complaint received in connection with dust nuisance or air quality concerns, together with details of any remedial actions carried out;<br>• It is the responsibility of the contractor at all times to demonstrate full compliance with the dust control conditions herein;<br>• At all times, the procedures put in place will be strictly monitored and assessed.<br>At all times these procedures will be strictly monitored and assessed. In the event of dust nuisance occurring outside the site boundary, movements of materials likely to raise dust will be curtailed and satisfactory procedures, such as the covering of all dust-emanating materials, will be implemented to rectify the problem before the resumption of construction operations.<br>With the implementation of these dust minimisation measures in addition to a construction management plan including dust mitigation fugitive emissions of dust from the site will be insignificant and will not pose a nuisance at nearby sensitive receptors. |
| (g) the risk of major accidents and/or disasters which are relevant to the project concerned, including those caused by climate change, in | Provided that all measures to be outlined in the CEMP, which will be based on best practice mitigation measures, for the project are implemented and that all associated building and environmental regulations are adhered to it is not predicted that the project will not |

| **Screening Question** | **Response** |
|---|---|
| 1. Characteristics of projects The characteristics of projects must be considered, with particular regard to: | |
| accordance with scientific knowledge; | have the potential to result in a major accident or disaster. |
| (h) the risks to human health (for example due to water contamination or air pollution). | Section 2 above details measures that are to be implemented to ensure that the project does not result in pollution to waters or air or nuisance generated by noise, dust or vibration emissions. All best practice mitigation measures outlined in this screening report will represent a minimum requirement to be implemented as part of the CEMP for the construction phase of the project. With the implementation of these measures the construction phase will not represent a significant risk to human health.<br><br>During the operation phase the development will be connected to the existing public water and sewer infrastructure and will not result in the release of untreated foul effluent.<br><br>Other emissions generated during the operation phase will relate to air conditioning and heating units. The emissions to atmosphere from such units are not predicted to have the potential to result in significant adverse environmental effects. |

**Conclusion: No significant effects likely to arise associated with the characteristics of the proposed development.**

**Rationale:** The scale and extent of the works proposed are representative of a small to medium scale project and are proposed on habitats of low ecological value in an area contiguous with established residential land use and high levels of human activity. Designs measures that form part of the project will also ensure protection of the receiving environment. These design measures include the implementation of SUDs and the landscaping of the project site boundary with the planting of additional trees. Design measures for lighting will minimise the potential for disturbance to woodland habitats and the

fauna supported by them. The provision of a new linear woodland/hedgerow boundary along the northern boundary of the proposed development will screen the development from lands to the north and will also provide additional woodland habitat for fauna species. The implementation of targeted mitigation measures to minimise noise levels at sensitive receptors will also ensure that the project does not result in nuisance to the receiving population.

# 3.0 LOCATION OF THE PROPOSED DEVELOPMENT

## 3.1 INTRODUCTION

The location of the proposed development is described in accordance with the aspects of the environment likely to be significantly affected by a proposed development as outlined in Schedule 6 of the Planning and Development Regulations, 2001 to 2018. These aspects of the environment are:

- Population & Human Health
- Biodiversity
- Soil & Geology
- Water
- Air/climatic factors
- Landscape
- Cultural heritage, including the architectural and archaeological heritage and cultural heritage
- Material assets
- The inter-relationship between the above factors.

A summary of each of the above topics as they relate to the location of the proposed development is provided in the following sub-sections.

### *3.1.1 Population & Human Health*

Based on the "Draft Advice Notes for Preparing Environmental Impact Statements issued by the EPA" (EPA, 2017), the following types of sensitive receptors should be noted in particular during impact assessment:

- homes;
- hospitals;
- hotels and holiday accommodation; and
- schools and rehabilitation workshops.

The principal sensitive receptors within the environs of the project site include residential properties surrounding the project site and schools to the southwest of the project site.

### *3.1.2 Noise & Human Health*

**WHO Guideline**

In 2018 the WHO issued updated guidelines Environmental Noise Guidelines for the European Region. They issued specific guidelines for a number of noise sources such as roads, railways, aircraft and wind turbines. The recommended noise levels of from these sources range between 45 and 54 dB Lden (during day time) and 45 dB Lnight (during night time).

Consideration of the potential for noise nuisance during the construction phase of the project has been outlined in at Point (f) in Table 2.2. above. Provided all measures outlined in Table 2.2 to minimise noise during the daytime are implemented the construction phase of the project will not result in significant noise impacts to the surrounding population. As no construction activity will be undertaken at night time there will be no potential for the construction phase to negatively affect the surrounding population during night time and normal sleeping hours.

Once construction is complete the project will operate as a residential area and will not generate noise that could represent disturbance to the surrounding population.

### *3.1.3 Land*

The project site is representative of a brownfield site. Existing buildings and and artificial surfaces dominate the land cover to the west of the site adjacent to Lover's Walk. The rear of the site is colonised by ruderal and scrub vegetation.

There is a known history of dumping within the western portion of the site. Trial pits have been completed in this area and evidence of construction and demolition waste was identified within these trial pits. No evidence of historic waste material was identified elsewhere within the project site.

In order to avoid any potential environmental effects associated with this construction and demolition waste material it is proposed to leave this material in-situ. The proposed residential scheme has been developed such that this construction and demolition waste material will be buried under areas of proposed car parking associated with the scheme.

### *3.1.4 Biodiversity*

The project site is located at a remote distance from the nearest European Site, Natural Heritage Areas (NHAs) and proposed NHAs (pNHAs). A Screening Statement in support of Appropriate Assessment has been completed by Cuthbert Environmental and this has concluded that the project will not have the potential to result in likely significant effects to the qualifying features of interest and Conservation Objectives for European Sites, NHAs and pNHAs and that the integrity of these sites will not be adversely affected.

The project site is situated within an urban area and is dominated by low value habitats in the form of buildings and ruderal, recolonising bare ground (ED3) and scrub habitat.

### *3.1.5 Soils & Geology*

#### *3.1.5.1 Land & Subsoils*

The topography of the study area is sloping from west to east. Elevation changes from circa 90m OD to 70m OD in the south. Overall, this whole area is underlain by carboniferous sandstone of the Cuskinny Formation.

The project site is located within the Ballinhassig East groundwater catchment and is underlain by a locally important aquifer: bedrock, which is moderately productive only in local zones. The GSI aquifer vulnerability maps for the area indicate that the majority of the site is of high vulnerability, while the southern portion of the site is of extreme vulnerability. The groundwater quality of the area is classified as good.

#### *3.1.5.2 Geological Heritage Sites and Protected Habitats*

There are no recorded geological heritage sites in the close proximity to the study area.

#### *3.1.5.3 Historic Landfills and Illegal Dumping*

A review of EPA data on waste licence and unlicensed sites has confirmed that there are no known historic landfills or illegal landfills in the area of the study area. As noted above in Section 3.1.3 historic dumping of construction and demolition waste within the western section of the site bounding Lovers Walk has been identified.

#### *3.1.5.4 Quarrying*

There are no active quarries within the wider area surrounding the project site.

### *3.1.6 Water*

#### *3.1.6.1 Surface Water*

The project site is located within the Bride River sub-basin district in Hydrometric Area No. 19 of the Irish River Network. It is within the River Lee and Cork Harbour catchment.

An un-named stream occurs to the south of the project site and treated surface water will be discharged from the project site to this stream. This un-named stream flows into the

Knockacorbally Stream, which in turn flows into the River Martin. The River Martin is a tributary of the River Shournagh, which finally drains into the River Lee to the east of Ballincollig. Figure 3.1 illustrates the location of these surface watercourses and the hydrological pathway between the project site and the River Lee.

The Bride (North) rises in the townland of Ballycannon, near Healy's Bridge, before flowing in an easterly direction towards Cork City. It is the most easterly tributary of the River Lee joining it east of Ovens. The Glenamought River rises in Whitechurch and flows in a southerly direction before making an abrupt right-turn in the townland of Ballincrokig. The Bride (North) and the Glenamought meet each other in a culverted system at the North Point Business Park on the N20. The Glen River flows in a westerly direction from Mayfield, through the Glen River Park, before entering a culvert under Spring Lane. It then merges with the Bride (North) in a large culvert junction under Madden's Buildings, 100m downstream of Blackpool Church. Downstream of the confluence of the Bride (North) and the Glen, the watercourse has traditionally been known as the Kiln River. The Kiln River discharges to the River Lee at Christy Ring Bridge.

Surface water quality at sites on the River Bride (North) were indicative of Q3-4 moderate status, slightly polluted water.

#### *3.1.6.2 Water Supplies*

There are no regional groundwater supplies or Source Protection Areas identified within this area.

The GSI Well Card Index is a record of wells drilled in Ireland. It is noted that this record is not comprehensive, as licensing of wells is not currently a requirement in Ireland. This current index shows the location of springs and wells. A review of the index has revealed that the no wells occur within the wider area surrounding the project site.

##### *3.1.6.2.1 Flooding*

There has been a history of extensive flooding in the Blackpool area of Cork City in recent years. The River Bride (Blackpool) Certified Drainage Scheme proposes a combination of flood defence measures at specific locations and a rigorous and organised channel

maintenance programme though the reach of the catchment. The River Bride (Blackpool) Certified Drainage Scheme aims to improve flood protection with the provision of a suite of measures including replacement of culverts, embankment works and defence wall improvements and therefore reduces the risk of water levels overtopping the bank and flooding the surrounding area.

The project site is located at an elevated position and is located outside of any known flood zone.

### *3.1.7 Air & Climatic Factors*

#### *3.1.7.1 Air*

The latest annual report on Air Quality in Ireland 2014 (EPA 2014) states that overall air quality in the country is good. Measured values of sulphur dioxide ($SO_2$), nitrogen dioxide ($NO_2$), carbon monoxide (CO), Ozone ($O_3$), particulate matter (PM10 and PM2.5), heavy metals, benzene and polycyclic aromatic hydrocarbons (PAH) were all below limit and target values set out in the CAFE Directive and 4th Daughter Directive. However, when some of these parameters are compared to the tighter WHO Air Quality Guideline values, it highlights some potential issues. Ireland is above these guideline values with respect to PM10, PM2.5, ozone and PAH.

The primary sources of pollutants are traffic (source of nitrogen dioxide and particulate matter), and domestic solid fuel use (particulate matter). The project site is located within Air Zone B and within the Cork City Air Quality Index Region and the current air quality in this region has been classified as "Good" by the EPA (http://www.epa.ie/air/quality/).

A review of IPPC licences issued by the EPA for the region show that there are no IPPC licenced facilities with emissions to the atmosphere within 5km radius of the project site.

#### *3.1.7.2 Climate*

Ireland has signed up to several Climate agreements including the "*2030 Climate and Energy Policy Framework*" which aims to reduce GHG emissions by 40% compared with 1990 levels by 2030. 2013 and 2014 saw a decreasing trend in Ireland's GHG emissions, this can be attributed to a decrease in economic activity. The agriculture and transport sectors make up

the majority of non-ETS emissions making up 72.4% of emissions in 2014. Energy production using fossil fuels is continually decreasing in recent years with renewable energy production increasing. Renewable energy production increased by 6.6% on 2012 levels in 2013 and by 12.6% based on 2013 levels in 2014. This increasing trend continued into 2015 with a 4% increase in renewable energy production based on 2014 levels. However in 2016 renewables accounted for 25.5% of electricity generated in 2016 (down from 27.3% in 2015).

Between 2014 and 2016, national total emissions have increased by 7.4% or 4.23 Mt $CO_2$eq. In the same period, emissions in the ETS sector have increased by 11.2% or 1.78 Mt $CO_2$eq and in the non-ETS sector by 5.9% or 2.45 Mt CO2eq.

This change in trend is a result of increasing economic growth and employment. While Ireland has been in compliance with its EU 2020 target up to 2015 however 2016 figures indicate that Ireland exceeded its 2016 annual limit set under the EU's Effort Sharing Decision (ESD), 406/2009/EC3 by 0.3 Mt $CO_2$eq.

### *3.1.8 Landscape & Visual*

The project site has been designated as an Area of High Landscape Value in the Cork city Development Plan 2015 – 2021.

### *3.1.9 Cultural Heritage*

#### *3.1.9.1 Archaeology*

A burial ground is located to the east of the project site at Church of Anunciation, Blackpool.

#### *3.1.9.2 Architectural Heritage*

The western boundary of the Blackpool Architectural Conservation Area is located approximately 40m to the east of the project site.

No sites listed on the National Inventory of Architectural Heritage (NIAH) are located within the vicinity of the project site.

The Church of Anunciation, Blackpool is listed as a protected structure.

### *3.1.10 Material Assets*

#### *3.1.10.1 Transportation*

The principal road in the vicinity of the project site is the N20 located to the east of the project site. Lovers Walk is the main public road that accesses the project site.

The main Cork to Dublin railway line is located approximately 600m to the east of the project site.

During the construction phase all construction traffic will access the project site via Lover's Walk. It is estimated that construction vehicle movements will be restricted to 6 no. of movements per day between the hours of 8am and 6pm Monday to Friday.

Given the location of the project within close proximity to the urban centre of Cork residents during the operation phase will be served by multiple transport and mobility options, including walking, cycling, bus and vehicular transport.

#### *3.1.10.2 Utilities*

A review of all utility constraints within the surrounding area has been completed. This review identified the following utilities in the wider area surrounding the project site:

- ESBI & ESB – Power Supply
- Gas Networks Ireland (GNI) - Gas Supply
- Eir - Telecommunications
- Virgin Media - Telecommunications
- Irish Water - Storm Water & Foul Wastewater
- Irish Water – Water Supply and Sewerage

### *3.1.11 Inter-relationship of Parameters & Environmental Sensitivity*

The proposed development at the project site will provide continuity with the existing extent of built land occurring within Blackpool. It is located within the existing urban frabic of

Blackpool. It supports habitats of low value. The project site is not located within the immediately vicinity of any major watercourse. It is located in a sensitive groundwater area. It is not at risk of flooding and is located in an area of good air quality status.

The footprint of the proposed development is located in an area of high landscape value. The proposed development will be in keeping with the existing built fabric in the surrounding area and has been designed to compliment the existing architectural form in the surrounding area.

There are no protected sites or monuments or protected buildings occurring within or in the immediately vicinity of the project site.

The project will not have the potential to result adverse effects to the material assets occurring in the vicinity of the project site. For instance it will not have the potential to result in road closures, adversely effect the electricity network or the water supply network.

Given the above the project site is considered to be of low environmental sensitivity. The most environmentally sensitive aspect of the project site and surrounding area is the presence of existing residential dwelling in Sunberry estate to the east of the project site, the presence of a school to the south of the project site and the presence of woodland habitats surrounding the project site.

## 3.2 ASSESSMENT OF THE LOCATION OF THE PROPOSED DEVELOPMENT

Table 3.1 below provides information on the location of the proposed development with respect to the assessment criteria provided in Schedule 7 of the Planning and Development Regulations 2001 to 2018.

**Table 3.1: Location of the Proposed Development**

| **Screening Criteria**<br><br>***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:*** | **Response** |
|---|---|
| (a) the existing and approved land use; | The existing land use within the project site is dominated by brownfield land with existing building and yard areas to the rear.<br><br>The project site is located within an area otherwise dominated by residential land use.<br><br>The proposed development is in line with approved zoning land use for the project site. |
| (b) the relative abundance, availability, quality and regenerative capacity of natural resources (including soil, land, water and biodiversity) in the area and its underground | The project site is currently representative of a brownfield site and is not sensitive in terms of natural resources.<br><br>The overall design of the project has included a design that aims to blend the development into the existing urban fabric surrounding the project site.<br><br>The proposed development will not have a significant effect on the relative abundance, availability, quality and regenerative capacity of natural resources. |
| (c) the absorption capacity of the natural environment, paying particular attention to the following areas:<br><br>(i) wetlands, riparian areas, river | The potential for the proposed development to significantly effect the absorption capacity of the environment, with respect to the parameters listed in Column 1 opposite are outlined below.<br><br>(i) no works are proposed that will affect wetlands, riparian areas or river mouths.<br><br>(ii) not applicable, the project is located at a remote distance from |

| **Screening Criteria**<br><br>***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:*** | **Response** |
|---|---|
| mouths;<br><br>(ii) coastal zones and the marine environment;<br><br>(iii) mountain and forest areas;<br><br>(iv) nature reserves and parks;<br><br>(v) areas classified or protected under national legislation; Natura 2000 areas designated by Member States pursuant to Directive 92/43/EEC and Directive 2009/147/EC; | the coastal zone.<br><br>(iii) not applicable, the project is located at a remote distance from mountainous and forested areas.<br><br>(iv) not application, the project is located at a remote distance from any nature reserves and parks.<br><br>(v) The Screening Statement in support of Appropriate Assessment that accompanies the proposed development application has assessed the likely significant effects of the proposal on the conservation objectives of European Sites within a 15km buffer of the development and has concluded in a finding of no likely significant effects. In addition no NHAs or pNHAs are located in the vicinity of the project site and there will be no potential for the project to interact with such areas. |
| (vi) areas in which there has already been a failure to meet the environmental quality standards, laid down in Union legislation and relevant to the project, or in which it is considered that there is such a failure; | (vi) Surface water quality within the wider area has been assessed to be of moderate status.<br><br>Environmental Quality Standards for Noise and Air have been reviewed as part of this EIA Screening and no existing exceedances in these standards have been reported.<br><br>The Groundwater Body in the surrounding area has been assigned Good status.<br><br>The design of the project and the best practice mitigation measures that will be required to be implemented during the construction phase will ensure that the project does not perturb the long-term |

| **Screening Criteria**<br><br>***The environmental sensitivity of geographical areas likely to be affected by projects must be considered, with particular regard to:*** | **Response** |
|---|---|
| | quality of the environment in the wider area surrounding the project site. |
| (vii) densely populated areas; | The subject lands are located within the Cork City and the environs of Blackpool. While the surrounding area is representative of a densely populated area there is sufficient capacity in terms of services and amenities to accommodate the proposed development. |
| (viii) landscapes and sites of historical, cultural or archaeological significance | The footprint of the proposed development is not located within an area of high landscape value and the design of the proposed development has sought to compliment the existing built form in the surrounding area. |

**Conclusion: No significant effects likely to arise associated with the location of the proposed development.**

**Rationale:** The proposed development relates to a relatively small area of less than 1 ha contiguous with an area of existing residential land use in Blackpool and Cork City. The lands do not offer significant potential for environmental enhancement as they are largely severed from adjacent natural and agricultural habitats by roads, existing built land and amenity grassland. A Screening Statement for Appropriate Assessment has determined a finding of no likely significant effects on the conservation management objectives of European Sites within a 15km radius of the study area. The proposed development will represent a continuation of the existing land use within this area and is consistent with the land use zoning of this location. The design of the project will compliment the existing built form in the surrounding area and will be in keeping with the existing landscape setting.

## 4.0 CHARACTERISTICS OF POTENTIAL IMPACTS

Having considered the above environmental factors the aim of t this section is to address likely impacts on the environment by the implementation of the proposed development. Whether an EIA would be deemed necessary relevant to the scale of the project and the environment will then be determined.

The 2014 EIA Directive requires that an assessment of the likely significant effects of a project on the environment must be considered with regard to the factors specified in Article 3(1) of the Directive and Section 171A(b)(i)(I) to (V) of the Planning and Development Regulations 2001 to 2018, taking into account:

(a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected);

(b) the nature of the impact;

(c) the transboundary nature of the impact;

(d) the intensity and complexity of the impact;

(e) the probability of the impact;

(f) the expected onset, duration, frequency and reversibility of the impact;

(g) the cumulation of the impact with the impact of other existing and/or approved projects;

(h) the possibility of effectively reducing the impact.

The factors outlined in Article 3(1) of the Directive are presented in Table 4.1 below under the heading of "Environmental Factor". The results of the assessment provided in Table 4.1 are then used to inform an assessment against the criteria evaluating the characteristics of potential impacts.

**Table 4.1: Characteristics of Potential Impacts on Environmental Factors**

| Environmental Topic | Potential Impact |
|---|---|
| Populations & Human Health | Some short-term local effects from noise and air emissions of the construction phase are expected however all construction activities will have to comply with best practice measures as outlined in this screening report. All relevant best practice mitigation measures required for avoiding likely significant effects to populations and human health through potential effects to soils, water, noise, air etc will be required to be implemented as part of a CEMP for the construction phase of the project. No operational impacts are identified for human beings. |
| Biodiversity | As the habitats present relate to existing built land and disturbed ground with ruderal and scrub habitat no significant negative impacts are identified for habitats within the project site at construction or operation in this regard. |
| Soil and Geology | There will be no significant impact to soils or geology. |
| Water | The project site is not located in close proximity to any major watercourse and no surface waters occur within the footprint of the project. The project site is underlain by a sensitive aquifer of local importance.<br><br>All design and mitigation measures outlined in this screening report with regard to managing water on site during the construction phase and operation phase will be implemented. These measures are representative of best practice guidelines for preventing pollution to water and their implementation will eliminate or at minimum reduce to an insignificant level the risk of pollution to waters.<br><br>The project site is not located within a flood zone and is not at risk of flooding.<br><br>The project will be connected to the existing sewer and all foul water generated at the project site during the operation phase will be directed to the municipal WWTP for treatment. This will eliminate the potential |

| Environmental Topic | Potential Impact |
|---|---|
| | for the emission of wastewater to the surrounding aquatic environment. |
| Air Quality and climate | The potential will exist for localised, temporary impacts associated with dust generated from construction plant and machinery such as diggers or excavators. Emissions during works phase will be minimised through the implementation of best practice mitigation techniques as outlined in this Screening Report. |
| Noise and Vibration | Noise during the construction phase may result in nuisance however, noise and vibration during works phase will be minimised through best practice and the implementation of mitigation measures outlined in this screening report. With the implementation of these measures the construction phase will not result in significant noise nuisance to sensitive receptors and will be minimised to a short term, slight negative impact.<br><br>Traffic noise and vibration during the operation phase are not considered likely to be significantly increased as a result of the project. |
| Cultural Heritage | None identified. No known archaeological or architectural features are within the site footprint. The project will not impact on cultural heritage receptors occurring to the east. |
| Landscape & Visual | The proposed development is located in an area of high landscape value. The project has been designed to ensure that it blends in with and compliments the existing built form occurring within this area. This design will ensure that the project results in a neutral and/or positive impact to the landscape surrounding the project site site. |
| Interrelationship between above parameters | The key interrelationship arises between air quality and noise associated with traffic emissions and excavation during construction and human health. The implementation of mitigation measures outlined in this Screening Report will ensure that these emissions are minimised to a level that will not result in significant noise, vibration or dust nuisance to |

| Environmental Topic | Potential Impact |
|---|---|
| | surrounding sensitive receptors. |

**Table 4.2: Characteristics of the potential impacts**

| **Characteristics of potential impacts The potential significant effects of proposed development in relation to criteria set out under Tables 4.3. and 4.2 above, and having regard in particular to:** | |
|---|---|
| (a) the magnitude and spatial extent of the impact (for example geographical area and size of the population likely to be affected); | Minor and localized temporary impacts are identified primarily at construction stage only. |
| (b) the nature of the impact; | The nature of the impact associated with the proposed development to environmental parameters have been set out in Table 4.3 above. It has been concluded that provided all best practice and mitigation measures as outlined in this Screening Report are implemented the project will not have the potential to result in significant environmental effects. |
| (c) the transboundary nature of the impact; | Given the size, scale and location of the proposed development potential transfrontier impacts will not arise. |
| (d) the intensity and complexity of the impact; | The project is representative of a small to medium scale residential development. It will by of a short term duration with the construction phase being completed within an estimated |

| | |
|---|---|
| | timeframe of 20 months. With the implementation of best practice measures and associated mitigation it will not result in intense or complex impacts to the receiving environment. |
| (e) the probability of the impact; | Potential impacts during the construction phase associated with nuisance to sensitive receptors at adjacent dwellings and schools are probable, but the implementation of best practice measures and associated mitigation will ensure that these effects are of a short term and slight negative impact. |
| (f) the expected onset, duration, frequency and reversibility of the impact; | It is estimated that impacts associated with the construction phase will commence within 3 months of planning approval and will last for approximately 20 months. This will represent a short-term impact. No long-term or permanent significant negative impacts are predicted to arise as a result of the construction phase.<br><br>There will be an irreversible and permanent loss of arable land to the footprint of the project. The conversion of this land to residential and amenity grassland will not represent a significant negative environmental effect. |
| (g) the cumulation of the impact with the impact of other existing and/or approved projects; | As outlined in Table 2.1 above no other projects have been identified in the area immediately surrounding the project site and there will be no potential for the project to combine with other projects to result in cumulative effects on the environment. |
| (h) the possibility of effectively reducing the impact. | Measures to minimise any adverse effects to the environment are detailed in this screening report and are derived from best practice guidelines. These measures have been implemented as a best practice approach for the proposed development and are proven to be effective at reducing the potential for adverse environmental impacts to occur. |

**Conclusion: No significant effects likely to arise associated with the potential impacts on environmental parameters.**

**Rationale:** As outlined in Table 4.3 the proposed development will not have the potential to result in significant adverse effects to biodiversity, soils and geology, water, landscape and cultural heritage. There will be potential for impacts to human beings as a result of noise and air emissions during the construction phase of the proposed development. However these impacts have been assessed as being of low significance and measures have been outlined to ensure that these potential impacts are mitigated to in insignificant level. As such no significant residual impacts to environmental parameters as outlined in Table 4.1 are predicted to arise as a result of the proposed road development.

**Conclusion: No significant effects likely to arise associated with the characteristics of the potential impacts.**

**This Environmental Impact Assessment Screening concluded that there is no real likelihood of significant effects therefore an Environmental Impact Assessment is not required.**

## 5.0 CONCLUSION

The proposed residential housing development at Lovers Walk, Redemption Road does not trigger the threshold for mandatory EIA/EIAR as set out in the 2001 Regulations (as Amended) and has been assessed as a sub-threshold EIA development. This EIA Screening Assessment has determined that the characteristics of the proposed development are considered not significant due to the scale and nature of the proposed development and its footprint, which is confined to an area of approximately 0.8ha, the characteristics and sensitivities of the receiving environment and design and mitigation measures that will be implemented as part of the construction phase and operation phase of the proposed development.

The European Guidance on EIA Screening provides a checklist to assist with the decision of whether an EIA is required based on the characteristics of a project and its environment. This screening checklist is presented in Table 5.1 below and have been informed by the various assessments that have been set out in Sections 2, 3 and 4 above.

**Table 5.1: Screening Checklist**

| Questions to be Considered | Yes / No? Briefly describe | Is this likely to result in a significant effect? Yes/No/? – Why? |
|---|---|---|
| 1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc.)? | Yes | No. The construction of the proposed development will involve a minor change in land cover within sections of its footprint. This will involve a small area of physical land cover change. The project has been designed to be in keeping with the surrounding landscape. |
| 2. Will construction or operation of the Project use natural resources such as land, water, materials or energy, especially any resources which are non-renewable or in short supply? | Yes | No. The proposed development will require natural resources in the form of standard construction materials. The quantities to be used as part of the proposed development will be relatively small given the scale of the proposed development. |

| | | |
|---|---|---|
| 3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health? | Yes | No. Standard construction materials for a proposed project will be used during construction, however it is unlikely that this would include any quantity of materials that could be harmful to human health or the environment. Best practice construction will be implemented during the construction phase and all such materials will be stored in secure locations and will be handled in accordance with accepted construction procedures. |
| 4. Will the Project produce solid wastes during construction or operation or decommissioning? | Yes | No. Waste in the form of construction material wrappings and pallets etc. will be generated during the project. In addition waste generated by site operative at the site canteen etc. will be generated. All solid waste will be managed in accordance with relevant waste legislation and all waste would be removed by the site by a licensed contractor and disposed of at a licensed facilities.<br><br>Efforts will be made to reuse as part of the project's construction phase wherever possible soil material generated during excavations at the project site. Where materials cannot be reused they will be transferred off site by a licensed contractor and disposed of at a licensed facilities. The movement of an soil material from the project site will be subject to the control measures.<br><br>Historic waste material identified within the project site will remain in-situ. The project has been designed so that the locations of this construction and demolition waste material will be situated under proposed car parking areas. |
| 5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air? | Yes | No. It is expected that dust and emissions from construction vehicles, plant and equipment may be released temporarily during construction. Mitigation measures as outlined in this Screening Report will be implemented to minimise emissions and prevent discharge. All emissions will be kept within standard air quality limits outlined in the relevant legislation. |
| 6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation? | Yes | No. It is expected that noise and vibration will occur during construction of the project. Mitigation measures have been outlined this Screening Report to minimise the potential impact of noise and vibration.<br><br>The project site is located within an urban environment with existing night time lighting. The |

| | | |
|---|---|---|
| | | project will not change the extent of night time lighting in the area. |
| 7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal wasters or the sea? | Yes | No.<br><br>All potential polluting substances would be stored and managed appropriately by the contractor to reduce the risk of accidental spillages and/or discharges. There will be no discharge to surface water, groundwater, coastal waters or the sea and appropriate measures to ensure effective incident control will be provided for the construction phase and operation phase of the project. |
| 8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment? | Yes | No. Construction activities would be undertaken with due regard to occupational health and safety. The site manager would be responsible for the management of health and safety on site during construction. |
| 9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment? | No | No. The project is not predicted to have the potential to result in social changes in demography, traditional lifestyles or employment. |
| 10. Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality? | Yes | This Report undertook a review of the Cork City Council planning portal to identify other existing and approved projects within the wider surrounding area. No such projects were identified and the project will not have the potential to combine with other existing or approved projects to result in likely significant effects to the environment. |
| 11. Are there any areas on or around the location which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project? | No | No protected natural areas such as European Sites or NHAs occur in the vicinity of the project site.<br><br>Cultural Heritage Receptors have been identified to the east of the project, beyond the project's footprint. There will be no potential for the project to interact with areas designated for cultural heritage.<br><br>The project site is located within an area of high landscape value and has been designed to blend in with and compliment the existing built landscape in the surrounding area. The project will not have any potential to diminish the value of the landscape in |

| | | |
|---|---|---|
| | | the surrounding area. |
| 12. Are there any other areas on or around the location which are important or sensitive for reasons of their ecology e.g. wetlands, watercourses or other waterbodies, the coastal zone, mountains, forests or woodlands, which could be affected by the project? | No | The habitats occurring within and in the vicinity of the project are dominated by artificial man-made structures or intensively managed agricultural or amenity grassland. They are not representative of sensitive ecological receptors. |
| 13. Are there any areas on or around the location which are used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project? | No | The project site and surrounding area does not support habitats that are relied upon by important or sensitive species of fauna or flora. |
| 14. Are there any inland, coastal, marine or underground waters on or around the location which could be affected by the project? | Yes | No. |
| 15. Are there any areas or features of high landscape or scenic value on or around the location which could be affected by the project? | No | Yes. The project site is located within an area of high landscape value and has been designed to blend in with and compliment the existing built landscape in the surrounding area. The project will not have any potential to diminish the value of the landscape in the surrounding area. |
| 16. Are there any routes or facilities on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project? | Yes | No. |
| 17. Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project? | Yes | No. The construction phase will be of a short term duration and will involve a low number of construction vehicular movements that are not predicted to have the potential to result in significant traffic volumes that could lead to congestion.<br><br>The project site is located within Blackpool and the Cork City metropolitan area. It is served by public transport and is located a short distance from the city centre. The project site represents a location that offers capacity of residential dwelling and residents where sustainable modes of transport can be relied |

| | | |
|---|---|---|
| | | upon. The operation phase of the project is not anticipated to have the potential to result in congestion within the surrounding road network. |
| 18. Is the project in a location where it is likely to be highly visible to many people? | Yes | Yes. During the construction phase mitigation measures will be put in place to minimise the visual disturbance caused by the construction works.<br><br>Once constructed the project will blend in with the surrounding built landscape. |
| 19. Are there any areas or features of historic or cultural importance on or around the location which could be affected by the project? | No | Yes. Cultural Heritage Receptors have been identified to the east of the project, beyond the project's footprint. There will be no potential for the project to interact with areas designated for cultural heritage.<br><br>. |
| 20. Is the project located in a previously undeveloped area where there will be loss of greenfield land? | Yes | No. The project is representative of a brownfield site. |
| 21. Are there existing land uses on or around the location e.g. homes, gardens, other private property, industry, commerce, recreation, public open space, community facilities, agriculture, forestry, tourism, mining or quarrying which could be affected by the project? | Yes | No. As outlined in this Report the potential exists for disturbance and nuisance to properties occurring adjacent to the project site. Mitigation measures have been outlined in this Report and it is predicted that, with the implementation of these mitigation measures, potential for disturbance and nuisance to these properties will be minimised. |
| 22. Are there any plans for future land uses on or around the location which could be affected by the project? | No | No. |
| 23. Are there any areas on or around the location which are densely populated or built-up, which could be affected by the project? | Yes | No. The construction phase will be restricted to the project site and with the implementation of a best practice approach to the construction phase and all measures outlined in this Report there will be no potential for significant effects to the population occurring in the surrounding area. |
| 24. Are there any areas on or around the location which are occupied by sensitive land uses e.g. hospitals, schools, places of worship, community facilities, | Yes | Yes. A school is located to the southwest of the project site. However the construction phase will be restricted to the project site and with the implementation of a best practice approach to the construction phase and all measures outlined in this |

| | | |
|---|---|---|
| which could be affected by the project? | | Report there will be no potential for significant effects to the population occurring in the surrounding area. |
| 25. Are there any areas on or around the location which contain important, high quality or scarce resources e.g. groundwater, surface waters, forestry, agriculture, fisheries, tourism, minerals, which could be affected by the project? | No | No. |
| 26. Are there any areas on or around the location which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project? | No | No. |
| 27. Is the project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems? | Yes | No. |

Given the scale and nature of the project and taking account of all available information, the overall probability of impacts on the receiving environment arising from the proposed development (during the construction or operational phases) is considered to be low, as summarised in Table 5.1 above.

No significant environmental impacts will occur once mitigation measures outlined in this Report are implemented. These mitigation measures are representative of standard industry environmental management that are implemented to minimise the impact of projects to the environment.

The Environmental Impact Assessment Screening concluded that there is no real likelihood of significant effects therefore an Environmental Impact Assessment is not required.

PUNCH
consulting engineers

# Redemption Road, Blackpool Housing Development

## Civil and Structural Engineering Planning Report

**June 2020**

# Document Control

Document Number: Project No.-184109-ENGPL-PL1

| Revision | Description | Date | Prepared | Checked | Approved |
|---|---|---|---|---|---|
| PR0 | Issue for Planning | 05/10/2018 | A Cashman | C Murphy | C Murphy |
| PR1 | Issue for Planning | 01/03/2019 | A Cashman | C Murphy | C Murphy |
| PL0 | Issue for Planning (Part VIII) | 15/05/2020 | A Cashman | M O'Connor | C Murphy |
| PL1 | Issue for Planning (Part VIII) | 19/06/2020 | A Cashman | M O'Connor | C Murphy |

# Table of Contents

# 1.0 Introduction

This report has been prepared to accompany a planning application for a proposed social housing development in Blackpool, Cork City. The report describes the design strategy for surface water and foul water drainage design along with water supply, roads, parking and flooding.

The location of the site in relation to the local surroundings and road network is shown in Figure 1-1 below.


**Figure 1-1 Site Location (boundary shown is indicative)**

The proposed housing development will consist of 3 blocks of residential units in Blackpool, Cork. The first block of apartments is to be constructed at the highest point in the site fronting onto Redemption Road. The middle tier of units will consist of a block of terraced houses, constructed at a level similar to and accessed from the Seminary Court estate. The lowest level of the site will accommodate the construction of a block of sheltered housing apartments. These units will be accessed from Hattons Alley Lane which is a cul de sac adjoining Great William O'Brien St in Blackpool. The site is steeply inclined with a change of elevation from 40m A.O.D at Redemption Road in the west to 10.5m A.O.D at Hattons Alley Lane in the east. The change in elevation being catered for through the use of large soil retaining structures which mimic structures which are already in place on developments to the south of the site.

# 2.0 Desktop study

A desktop study was carried out at design commencement stage. The summary findings of this study are as follows:

The subject land is located to the north of Cork City approximately 150m to the west of Blackpool church and 300m to the south west of Blackpool Shopping Centre. The site is approximately 0.85 ha in area, is bordered to the north by a mixture of residential and green field land, to the south by residential development, Redemption Road to the west and residential and commercial properties to the east. Current access to the site is via Hattons Alley Lane and Redemption Road.

Historical maps were used to identify all significant past land uses relating to the proposed site. The 6" historical maps which date from the period between 1837 and 1842 indicate the presence of Glen View House, with outbuildings at the western end of the site with no significant buildings elsewhere on the property. The area covering the rest of the site was undeveloped agricultural land at this stage as shown in Figure 2-1 below.

The later historical 25" maps, which date from the period between 1888 to 1913, shows little change across the site in the intervening period. (See Figure 2-2)

**Figure 2-1 Extract from 6" Map (boundary shown is indicative only and shown for location purposes)**

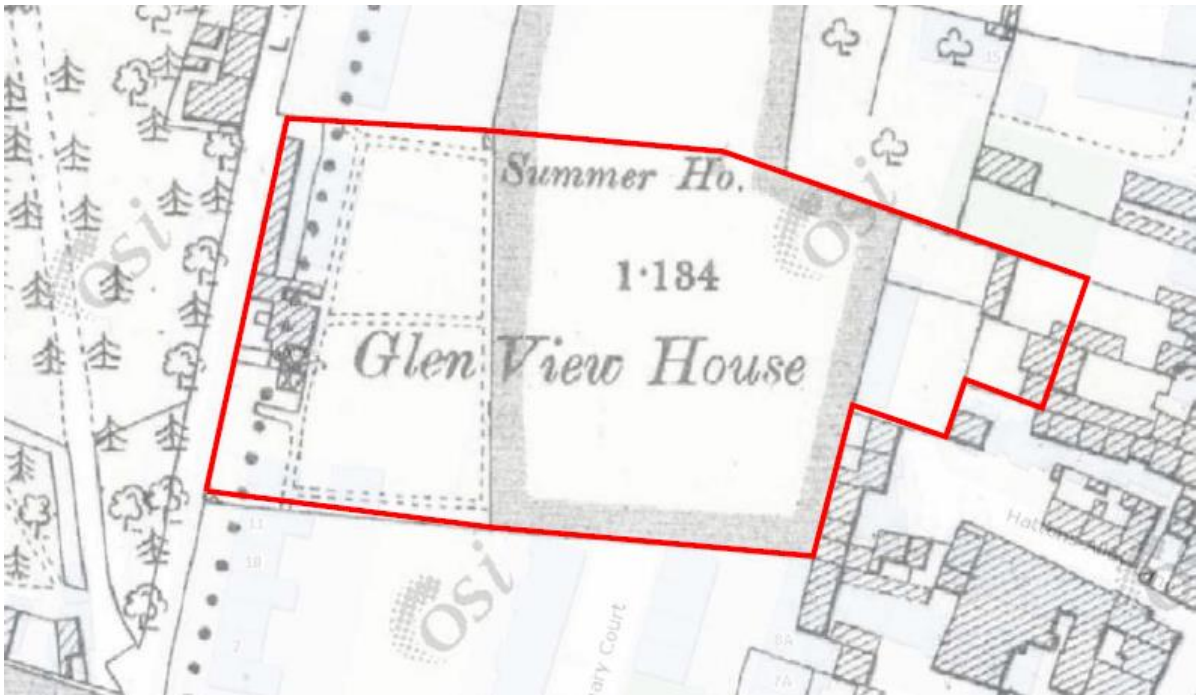



**Figure 2-2 Extract from 25" Map (boundary shown is indicative only and shown for location purposes)**

Having reviewed records in the Cork city council planning department, there appears to have been a number of previous planning applications made in respect to a portion of the property, predominantly at the western end of the site.

Research of the files indicates that one of the buildings ancillary to the existing residential building was used as an abattoir at some point in the past. Also material obtained from outside the site had been dumped in the area surrounding Glen View house. The planning files did not state the type of imported material but it is assumed to have been construction & demolition waste. The importation of said material is thought to have occurred in the 1990's.

Existing utility records show a range of existing services adjoining the site including Eir, ESB, Gas, water, telecoms etc. (See Appendix C)

# 3.0 Structural Design

The proposed development includes 3No individual blocks which combined achieve a total of 64No units on the site. The blocks will be separate from each other due to the steeply inclined nature of the site.

The first block is 4 stories in height and fronts onto Redemption Road.

The second block consists of a terrace of 10 no. 2 storey dwelling houses which will be accessed by connecting onto the Seminary Court development immediately to the south. The third block will be 4 storeys in height and will consist of 20 no. sheltered housing units. This third block being accessed from the existing cul de sac, Hattons Alley Lane.

## 3.1 Apartments off Redemption Road (34 No. units)

### 3.1.1 Substructure

Draft borehole logs indicate the presence of competent sandstone at depths of between 4.5-5.5m below ground level. Because of this, it is proposed to employ the use of bored concrete piles with reinforced concrete ground beams which will support a suspended ground floor slab. A portion of the ground floor level at the northern end of the site will necessitate the use of reinforced concrete retaining walls as part of the substructure given that the adjoining neighbours land is approximately 2m higher than floor level.

### 3.1.2 Building Structure

The vertical load bearing elements of the block are likely to comprise of load bearing masonry retaining walls in addition to some steel and reinforced concrete columns.

The ground floor slab, subject to site investigation findings will most likely consist of a suspended concrete slab resting on ground beams.

Floor slabs at first floor level and above are likely to consist of a structural concrete screed poured onto 200mm thick pre-stressed hollow core concrete slabs. The slabs will be simply supported on either end on either masonry walls or reinforced concrete/ steel beams

At roof level, it is likely that the building will have a flat roof. It is assumed that a sloped concrete screed will be poured on hollow core slabs with insulation and a weathering membrane fixed on top of that.

The external walls of the building are likely to be constructed from a 215mm thick load bearing inner leaf, an insulated cavity and a rendered 100mm masonry outer leaf. The outer leaf of masonry being supported in certain locations by steel relieving angles fixed to the inner load bearing structure at floor plate level.

Party walls within the building shall be formed using 215mm wide blockwork, plastered on each side.

Lateral stability within the building will be provided by the longitudinal shear capacity of the external and party walls. The lift shaft and stairs shafts will also provide sufficient resistance to lateral forces. The floor plates will also act to disperse lateral loading throughout the various floor levels via diaphragm action.

In order to comply with the disproportionate collapse requirements of IS EN 1991-1-7: Accidental Actions, horizontal ties are required for the buildings. The horizontal ties in the form of steel reinforcement will be employed within the screed.

## 3.2 10 No. houses off Seminary Court

### 3.2.1 Substructure

Site investigations carried out to date indicate that a competent sandstone rock will be in the path of the terrace houses and their rear gardens. As a result it is considered likely that the houses foundations will consist of reinforced concrete strip footings based on rock. Due to the sloped nature of the site, the foundations will be stepped at each house location. The ground floor slab will most likely comprise of a 150mm thick concrete slab.

### 3.2.2 Building Structure

These dwellings will lend themselves to be constructed from either a traditional masonry & timber structure or a timber frame with masonry cladding on the exterior. The choice of system to be used will depend on the most economically advantageous solution, taking into account both capital and running costs.

## 3.3 20 No. Apartments off Hattons Alley Lane

### 3.3.1 Substructure

Draft borehole logs indicate the presence of competent sandstone at depths of between 3-6m below ground level. Because of this, it is proposed to employ the use of bored concrete piles with reinforced concrete ground beams which will support a suspended ground floor slab.

### 3.3.2 Building Structure

The structural scheme to be employed here will mirror that to be used in the apartment block located at the top of the site.

## 3.4 External Works

Given the sloped nature of the site, a significant usage of soil retaining structures will be required. Where the walls form part of the proposed buildings, these walls will be constructed from reinforced concrete. Where retaining walls are required in areas remote from the proposed buildings, a variety of structures can be used, be they reinforced concrete walls, segmental retaining walls or reinforced earth structures.

In the main, it is proposed to use segmental concrete retaining walls to break the site into 3 tiered levels. These segmental concrete walls have already been used on adjoining sites to the south of this property. The middle tier of the development will necessitate the removal of rock to form the rear gardens of the terrace of houses, in addition to constructing the houses themselves. It is proposed to batter the rock back at of an angle of between 10-15° to the vertical. It is envisaged that this rock face may need to be stabilised by the addition of shotcrete or alternative systems to prevent loose stones falling onto occupants below.

# 4.0 Foul Water Drainage Design

## 4.1 Existing Foul Water Drainage

The Cork City Council & Irish Water drainage record drawings show that the existing drainage infrastructure in the vicinity of the proposed development site consists of combined sewers.

The combined sewers run along Redemption Road as well as Hatton's Alley Lane. There are separate foul and storm sewers on the Seminary Court estate which it is believed are in the process of being taken in charge by Irish Water/ Local Authority.

## 4.2 Proposed Foul Water Drainage

A pre-enquiry form has been submitted to Irish Water with respect to the required wastewater connection. A confirmation of feasibility has been received from Irish Water. Following confirmation of feasibility, PUNCH Consulting Engineers issued a Design Submission to Irish Water, which was reviewed and accepted by Irish Water. Please refer to Appendix D for Irish Water correspondence.

It is proposed to connect the foul water drainage from the top tier of the site to the combined sewer which flows southwards along Redemption Road. The existing Glen View House is connected to an existing manhole on the footpath south of the proposed entrance to the site. It is proposed to reuse this pipe if it can be proven to suit the purposes of the new development.

It is proposed to convey foul waste from the middle tier of housing, namely the terraced two storey houses to the existing foul sewer on Seminary Court. The foul water waste from the bottom level tier comprising of the sheltered housing apartments will be disposed of to the combined sewer on Hattons Alley Lane.

Please refer to PUNCH drawing no. 184-109-003 for details of the proposed foul water drainage and Appendix A to this report for detailed calculations.

### 4.2.1 Foul Loading

A wastewater flow per capita of 150 l/day has been adopted in the calculation of design flows for the proposed development as suggested in the *Irish Water Code of Practice for Wastewater Infrastructure – Connections and Developer Services*. This code of practice also advises using a standard value of 2.7 persons per dwelling which has been applied to both the sheltered housing and the social/affordable accommodation.

The resulting average dry weather flows and design flows for the proposed housing are indicated below in Table 4-1. These are based on a daily flow per person of 150 litres with an allowance for an additional 10% flow.

**Table 4-1 Foul Design Loadings**

| Unit Type | No. of such units | No. of occupants per unit | Daily foul loading (l/day) | DWF (l/s) | Design Flow (6DWF) (l/s) |
|---|---|---|---|---|---|
| Sheltered Accommodation | 20 | 2.7 | 8,910 | 0.103 | 0.619 |
| Terraced Houses | 10 | 2.7 | 4,455 | 0.052 | 0.309 |
| 2 Bedroom apartments | 34 | 2.7 | 15,147 | 0.175 | 1.052 |
| **TOTAL** | **64** | | **28,512** | **0.330** | **1.980** |

### 4.2.2 Design Criteria

The foul water sewers have been designed using Causeway Flow drainage software in accordance with the Irish Water Code of Practice, *"Recommendations for Site Development Works for Housing Areas"* design guide published by the Department of Environment, Heritage and Local Government (DoEHLG) and with the aid of *"Sewers for Adoptions – 7th Edition"* published by WRc plc.

# 5.0 Surface Water Sewer Design

## 5.1 Existing Storm Water Drainage

Storm water drainage from the site is primarily by infiltration to ground with certain volumes running off at low level into the Hattons Alley Lane site at the bottom of the site. The existing runoff from the site finds its way into the existing combined sewer network on Hatton's Alley Lane.

## 5.2 Proposed Storm Water Drainage Design

### 5.2.1 Proposed Storm Drainage Infrastructure

It is proposed to install 3 no. storm water soakaways to deal with stormwater generated on the site. Runoff from the top tier of apartments fronting onto Redemption Road will be transferred to a soakaway to be located to the rear of the apartments. A second soakaway to be located on the green area to the east of the proposed terrace houses will deal with the middle tier of housing.

Runoff from the bottom apartment block (Eastern network) is to be collected in a separate soakaway adjoining the proposed building. As the bottom block of apartments will be piled, there will be no danger of the soakaway having a detrimental effect on the building sub structure.

The storage capacities of the three soakaways tanks have been calculated as part of the overall drainage design, based on infiltration tests carried out on the site by PUNCH Consulting Engineers in conjunction with HG Construction.

### 5.2.2 Design Criteria

The proposed storm water drainage network has been designed and modelled using Causeway Flow software in accordance with the *"Recommendations for site development works for Housing Areas"* design guide and the Greater Dublin Strategic Drainage Study (GDSDS). Detailed calculations are enclosed in Appendix B. Cognisance was taken of the Cork City Development Plan 2015-2021 in the design.

Please refer to PUNCH Drawing Nos. 184-109-003 for details of proposed storm water drainage.

Please refer to Appendix B for detailed calculations of the proposed storm water drainage infrastructure.

# 6.0 Flood Risk

The proposed development is located within Flood Zone C. This zone defines areas with a low probability of flooding. For river flooding it is defined as less than 0.1% probability or between less than 1 in 1,000 years, also for coastal flooding less than 0.1% probability or less than 1 in 1,000 years.

Planning guidelines on flood risk and development have been published by the OPW and Department of Environment, Heritage and Local Government (DoEHLG). The below sections summarise how the development's design will be assessed in accordance with the main principles of these guidelines.

## 6.1 Sequential Approach

The sequential approach makes use of flood zones for river and coastal flooding, as described below:

**Zone A** – High probability. This zone defines areas with the highest risk of flooding. For river flooding it is defined as more than 1% probability or more than 1 in 100 year, and for coastal flooding it is defined as 0.5% probability or more than 1 in 200 year.

**Zone B** – Moderate probability. This zone defines areas with a moderate risk of flooding. For river flooding it is defined as 0.1% to 1% probability or between 1 in 100 and 1 in 1,000 years, and for coastal flooding 0.1% and 0.5% probability or between 1 in 200 and 1 in 1,000 years.

**Zone C** – Low probability. This zone defines areas with a low risk of flooding less than 0.1% probability or less than 1 in 1,000 years.

The flood zones are then to be looked at with the vulnerability of the building proposed;

| | |
|---|---|
| Highly Vulnerable | – Hospitals, Garda stations, homes, motorways etc. |
| Less Vulnerable | – Commercial, retail, offices etc. |
| Water Compatible | – Marina's, green areas |

A sequential approach is then taken to assess the most favourable location for the development based on its vulnerability.

**Zone A** - Water Compatible or Justification Test

**Zone B** - Less Vulnerable if no other lands are available or highly vulnerable with Justification Test

**Zone C** - Any development

## 6.2 Development Sequential Test

**Coastal Flood Risk**

Coastal flooding results from sea levels which are higher than normal and result in sea water overflowing onto the land. Coastal flooding is influenced by the following three factors which often work in combination: high tide level, storm surges and wave action.

There is no risk associated with coastal flooding for this site as general ground levels for the site are much higher than expected extreme coastal flood levels.

**Fluvial Flood Risk**

Fluvial flooding is the result of a river exceeding its capacity and excess water spilling out onto the adjacent floodplain.

CFRAMS Maps for the area to the indicate no fluvial flood risk to the proposed dwellings, with flooding confined to the east of the Blackpool Church which is close to the proposed development. As the roads accessing the site are also in Flood Zone C, access/egress from the development for emergency services during a flood event will not be compromised.

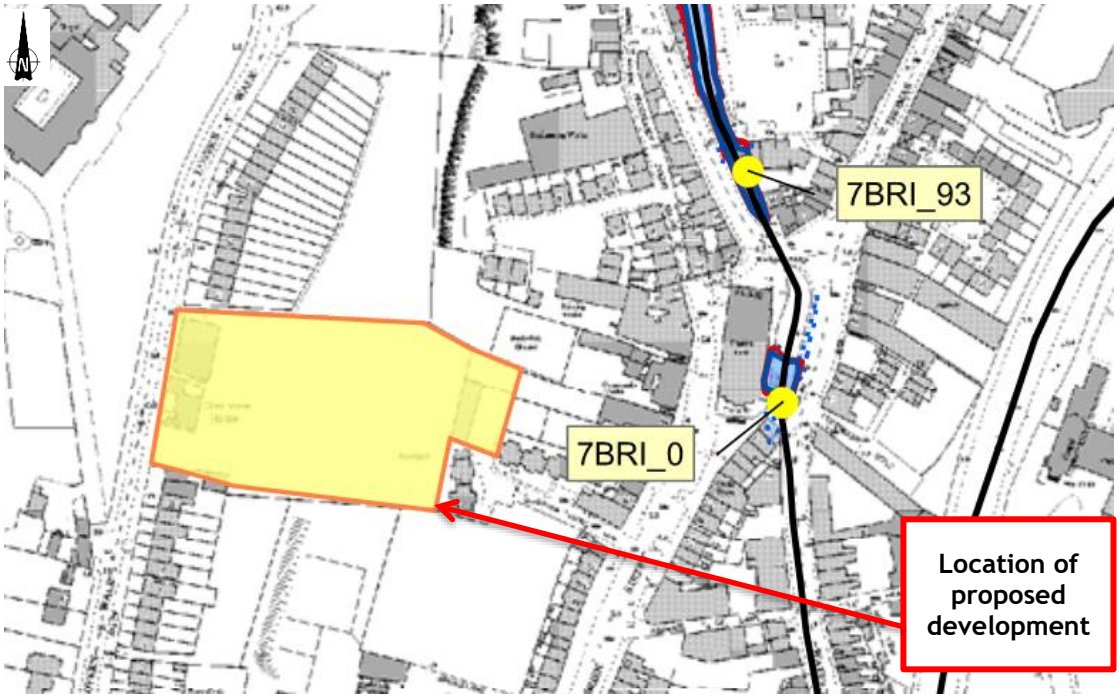



**Figure 6-1 Fluvial Flood Map (image taken from CFRAM)**

**Pluvial Flood Risk**

Pluvial flooding is the result of rainfall-generated overland flows which arise before run-off can enter any watercourse or sewer. It is usually associated with high intensity rainfall and typically occurs in the summer months. Pluvial flood risk has not been identified by the Preliminary Flood Risk Assessment (PFRA) mapping as being a risk to this site.

Additionally, the proposed drainage network will alleviate any concerns of pluvial flooding.

**OPW Flood Maps**

The OPW Flood Hazard Mapping Website is a record of historic flood events. This database indicates that there is no record of flooding incidents in the area of the proposed development.

## 6.3 Flood Risk Assessment Conclusions

The site has been assessed in accordance with the "The Planning System and Flood Risk Management" Guidelines. As part of the sequential test, the OPW flood hazard maps have been consulted, as have the Catchment Flood Risk Assessment Maps produced by the OPW.

In all cases it was found that there is a low risk of flooding at the development (less than 1 in 1000 probability in any given year) and that the development is deemed appropriate within the proposed site location.

# 7.0 Watermain Design

## 7.1 Existing Watermain

Based on Irish Water Watermain record drawings, there is an existing public watermain on Redemption Road and on Hattons Alley Lane.

The records available from Irish Water do not indicate the diameters of the mains or the materials from which they are manufactured.

## 7.2 Proposed Watermain

A pre-enquiry form has been submitted to Irish Water with respect to the required water connection. A confirmation of feasibility has been received from Irish Water. Following confirmation of feasibility, PUNCH Consulting Engineers issued a Design Submission to Irish Water, which was reviewed and accepted by Irish Water. Please refer to Appendix D for Irish Water correspondence.

It is proposed to construct 3 No. 100mm diameter watermains to service each level of the development. These feeds will provide potable and firefighting water to the proposed development. A bulk water meter shall be provided in accordance with Irish Water's requirements. The watermain layout has been designed in accordance with "Irish Water Code of Practice for Water Infrastructure". All watermains are to be constructed in accordance with Irish Water Code of Practice and Cork City Council's requirements. Fire coverage is to be reviewed and certified by the fire consultant.

Fire hydrants have been included in the design for the site layout. These have been positioned such that all proposed dwellings have a fire hydrant within 46m and no closer than 6m to the building as per the Irish Water standard detail requirements and Part B of the Building Regulations.

Please refer to PUNCH Drawings 184-109-004 for details of proposed watermains.

# 8.0 Road & Footpath Design

## 8.1 Existing Road & footpaths

### 8.1.1 Redemption Road

Redemption Road is a two-way vehicular road which connects the Blackpool area with the Farranree suburb of the city. The existing road surface is in reasonable condition. There is evidence of patch repairs having been carried out as well as new surfaces due to utilities works. The road is approximately 6.0m wide with a concrete footpath on both sides.

### 8.1.2 Hattons Alley Lane

Hattons Alley Lane is a cul de sac which features on street parking. The road is narrow, allowing one way traffic when cars are parked at both sides of the road. The existing road surface consists of macadam which is in reasonable condition though there is a requirement for some localised repairs.

### 8.1.3 Seminary Court

Seminary Court is an existing residential development containing 24 houses and is a cul de sac.

This is a modern development and has a 6m wide road with onstreet parking. Concrete footpaths on both sides.

## 8.2 Proposed Road & Footpath Design

Roads have been designed with the aid of the "Design Manual for Urban Roads and Streets" (DMURS) published by Department of Transport, Tourism and Sport. The DMURS aims to aid the design of safer, more attractive and vibrant streets which will generate and sustain communities and neighbourhoods. As well as cars and other vehicles this encompasses pedestrians, cyclists and those using public transport. All roads within the development will be cul de sacs.

The road surfaces will be formed from macadam with footpaths formed from concrete.

The proposed roads and footpaths within the site will be taken in charge by Cork City Council following completion of the works given that this will be a social housing project.

# 9.0 Site Boundaries

## 9.1 Existing Site Boundaries

### 9.1.1 Redemption Road (Western boundary)

Redemption Road forms the western boundary of the site. At present the boundary consists of a mixture of buildings and secure masonry walls and gates,

### 9.1.2 Northern boundary

The northern boundary consists of a mixture of blockwork walls and sod and stone ditch, At the lower or eastern end of the boundary a steel palisade fence is in place.

### 9.1.3 Eastern boundary

The eastern boundary of the site is largely characterised by masonry walls. This end of the site adjoins dwellings on Hattons Alley Lane as well as the rear of some commercial units which front onto Great

William O'Brien Street. At present there is a pedestrian door linking the site with the rear of one of the commercial premises (public house). A portion of the eastern boundary of what will be part of the site does not have a fence/ wall as it entails the purchase of a portion of the garden of a adjoining property.

### 9.1.4 Southern boundary

The southern boundary of the site bounds a number of residential developments. The boundaries being delineated by masonry walls and buildings.


**Figure 9-1 Site Boundary (Shown for indicative purposes)**

## 9.2 Proposed Site Boundaries

### 9.2.1 Redemption Road (Western boundary)

The western boundary of the site fronting onto Redemption Road is likely to consist of a steel fence or masonry wall resting on the edge of the existing building line. Set back from this by approximately 6m will be the proposed apartment block.

### 9.2.2 Northern, southern & eastern boundaries

The remaining boundaries on the site will be marked with masonry walls. Where walls are existing there will be repaired if necessary with new masonry walls introduced where necessary. Such walls being typically 2m in height.

# Appendix A Foul Water Drainage Calculations

## Design Settings

| | | | |
|---|---|---|---|
| Frequency of use (kDU) | 0.00 | Minimum Velocity (m/s) | 0.75 |
| Flow per dwelling per day (l/day) | 2676 | Connection Type | Level Inverts |
| Domestic Flow (l/s/ha) | 0.0 | Minimum Backdrop Height (m) | 0.600 |
| Industrial Flow (l/s/ha) | 0.0 | Preferred Cover Depth (m) | 0.800 |
| Additional Flow (%) | 0 | Include Intermediate Ground | ✓ |

## Nodes

| Name | Dwellings | Cover Level (m) | Manhole Type | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|
| F1-0 | 12 | 38.000 | Adoptable | 567180.164 | 573333.556 | 0.689 |
| F1-1 | 11 | 38.000 | Adoptable | 567175.486 | 573313.238 | 1.036 |
| F1-2 | 11 | 39.200 | Adoptable | 567168.536 | 573283.023 | 2.443 |
| F1-3 | | 39.400 | Adoptable | 567165.161 | 573283.627 | 2.666 |
| F1-4 (outfall) | | 39.240 | Adoptable | 567160.844 | 573270.249 | 2.600 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F1.000 | F1-0 | F1-1 | 20.850 | 0.600 | 37.311 | 36.964 | 0.347 | 60.1 | 150 |
| F1.001 | F1-1 | F1-2 | 31.004 | 0.600 | 36.964 | 36.757 | 0.207 | 149.8 | 150 |
| F1.002 | F1-2 | F1-3 | 3.429 | 0.600 | 36.757 | 36.734 | 0.023 | 149.1 | 150 |
| F1.003 | F1-3 | F1-4 (outfall) | 14.057 | 0.600 | 36.734 | 36.640 | 0.094 | 149.5 | 150 |

| Name | Pro Vel @ 1/3 Q (m/s) | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Dwellings (ha) | Σ Units (ha) | Σ Add Inflow (ha) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F1.000 | 0.332 | 1.300 | 23.0 | 0.4 | 0.539 | 0.886 | 0.000 | 12 | 0.0 | 0.0 | 13 | 0.474 |
| F1.001 | 0.305 | 0.819 | 14.5 | 0.7 | 0.886 | 2.293 | 0.000 | 23 | 0.0 | 0.0 | 23 | 0.422 |
| F1.002 | 0.339 | 0.821 | 14.5 | 1.1 | 2.293 | 2.516 | 0.000 | 34 | 0.0 | 0.0 | 27 | 0.476 |
| F1.003 | 0.339 | 0.819 | 14.5 | 1.1 | 2.516 | 2.450 | 0.000 | 34 | 0.0 | 0.0 | 27 | 0.475 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| F1.000 | 20.850 | 60.1 | 150 | Circular | 38.000 | 37.311 | 0.539 | 38.000 | 36.964 | 0.886 |
| F1.001 | 31.004 | 149.8 | 150 | Circular | 38.000 | 36.964 | 0.886 | 39.200 | 36.757 | 2.293 |
| F1.002 | 3.429 | 149.1 | 150 | Circular | 39.200 | 36.757 | 2.293 | 39.400 | 36.734 | 2.516 |
| F1.003 | 14.057 | 149.5 | 150 | Circular | 39.400 | 36.734 | 2.516 | 39.240 | 36.640 | 2.450 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| F1.000 | F1-0 | 1200 | Manhole | Adoptable | F1-1 | 1200 | Manhole | Adoptable |
| F1.001 | F1-1 | 1200 | Manhole | Adoptable | F1-2 | 1200 | Manhole | Adoptable |
| F1.002 | F1-2 | 1200 | Manhole | Adoptable | F1-3 | 1200 | Manhole | Adoptable |
| F1.003 | F1-3 | 1200 | Manhole | Adoptable | F1-4 (outfall) | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F1-0 | 567180.164 | 573333.556 | 38.000 | 0.689 | 1200 | 0 | F1.000 | 37.311 | 150 |
| F1-1 | 567175.486 | 573313.238 | 38.000 | 1.036 | 1200 | 1 | F1.000 | 36.964 | 150 |
| | | | | | | 0 | F1.001 | 36.964 | 150 |
| F1-2 | 567168.536 | 573283.023 | 39.200 | 2.443 | 1200 | 1 | F1.001 | 36.757 | 150 |
| | | | | | | 0 | F1.002 | 36.757 | 150 |
| F1-3 | 567165.161 | 573283.627 | 39.400 | 2.666 | 1200 | 1 | F1.002 | 36.734 | 150 |
| | | | | | | 0 | F1.003 | 36.734 | 150 |
| F1-4 (outfall) | 567160.844 | 573270.249 | 39.240 | 2.600 | 1200 | 1 | F1.003 | 36.640 | 150 |

## Design Settings

| | | | |
|---|---|---|---|
| Frequency of use (kDU) | 0.00 | Minimum Velocity (m/s) | 0.75 |
| Flow per dwelling per day (l/day) | 2676 | Connection Type | Level Inverts |
| Domestic Flow (l/s/ha) | 0.0 | Minimum Backdrop Height (m) | 0.600 |
| Industrial Flow (l/s/ha) | 0.0 | Preferred Cover Depth (m) | 0.800 |
| Additional Flow (%) | 0 | Include Intermediate Ground | ✓ |

## Nodes

| Name | Dwellings | Cover Level (m) | Manhole Type | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|
| F10-0 | 3 | 21.800 | Adoptable | 567257.631 | 573319.752 | 1.577 |
| F10-1 | 4 | 21.350 | Adoptable | 567252.501 | 573301.877 | 1.437 |
| F10-2 | 3 | 20.405 | Adoptable | 567242.518 | 573267.099 | 1.095 |
| F10-3 (Outfall) | | 20.200 | Adoptable | 567239.273 | 573259.103 | 0.948 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F10.000 | F10-0 | F10-1 | 18.597 | 0.600 | 20.223 | 19.913 | 0.310 | 60.0 | 150 |
| F10.001 | F10-1 | F10-2 | 36.182 | 0.600 | 19.913 | 19.310 | 0.603 | 60.0 | 150 |
| F10.002 | F10-2 | F10-3 (Outfall) | 8.629 | 0.600 | 19.310 | 19.252 | 0.058 | 150.0 | 150 |

| Name | Pro Vel @ 1/3 Q (m/s) | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Dwellings (ha) | Σ Units (ha) | Σ Add Inflow (ha) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F10.000 | 0.216 | 1.301 | 23.0 | 0.1 | 1.427 | 1.287 | 0.000 | 3 | 0.0 | 0.0 | 7 | 0.315 |
| F10.001 | 0.277 | 1.301 | 23.0 | 0.2 | 1.287 | 0.945 | 0.000 | 7 | 0.0 | 0.0 | 10 | 0.399 |
| F10.002 | 0.228 | 0.818 | 14.5 | 0.3 | 0.945 | 0.798 | 0.000 | 10 | 0.0 | 0.0 | 16 | 0.330 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| F10.000 | 18.597 | 60.0 | 150 | Circular | 21.800 | 20.223 | 1.427 | 21.350 | 19.913 | 1.287 |
| F10.001 | 36.182 | 60.0 | 150 | Circular | 21.350 | 19.913 | 1.287 | 20.405 | 19.310 | 0.945 |
| F10.002 | 8.629 | 150.0 | 150 | Circular | 20.405 | 19.310 | 0.945 | 20.200 | 19.252 | 0.798 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| F10.000 | F10-0 | 1200 | Manhole | Adoptable | F10-1 | 1200 | Manhole | Adoptable |
| F10.001 | F10-1 | 1200 | Manhole | Adoptable | F10-2 | 1200 | Manhole | Adoptable |
| F10.002 | F10-2 | 1200 | Manhole | Adoptable | F10-3 (Outfall) | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| F10-0 | 567257.631 | 573319.752 | 21.800 | 1.577 | 1200 |  | 0 | F10.000 | 20.223 | 150 |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| F10-1 | 567252.501 | 573301.877 | 21.350 | 1.437 | 1200 |  | 1 | F10.000 | 19.913 | 150 |
| | | | | | | | 0 | F10.001 | 19.913 | 150 |
| F10-2 | 567242.518 | 573267.099 | 20.405 | 1.095 | 1200 |  | 1 | F10.001 | 19.310 | 150 |
| | | | | | | | 0 | F10.002 | 19.310 | 150 |
| F10-3 (Outfall) | 567239.273 | 573259.103 | 20.200 | 0.948 | 1200 |  | 1 | F10.002 | 19.252 | 150 |

## Design Settings

| | | | |
|---|---|---|---|
| Frequency of use (kDU) | 0.00 | Minimum Velocity (m/s) | 0.75 |
| Flow per dwelling per day (l/day) | 2676 | Connection Type | Level Inverts |
| Domestic Flow (l/s/ha) | 0.0 | Minimum Backdrop Height (m) | 0.600 |
| Industrial Flow (l/s/ha) | 0.0 | Preferred Cover Depth (m) | 0.800 |
| Additional Flow (%) | 0 | Include Intermediate Ground | ✓ |

## Nodes

| Name | Dwellings | Cover Level (m) | Manhole Type | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|
| F20-0 | 6 | 10.900 | Adoptable | 567302.665 | 573315.049 | 0.950 |
| F20-1 | 3 | 10.900 | Adoptable | 567313.595 | 573310.952 | 1.242 |
| F20-2 | 4 | 10.900 | Adoptable | 567307.146 | 573292.369 | 1.734 |
| F20-3 | | 10.900 | Adoptable | 567294.923 | 573295.438 | 2.050 |
| F21-0 | 4 | 11.000 | Adoptable | 567278.727 | 573317.259 | 0.950 |
| F21-1 | 3 | 11.000 | Adoptable | 567275.326 | 573296.700 | 1.401 |
| F20-4 | | 10.900 | Adoptable | 567293.502 | 573290.751 | 2.156 |
| F20-5 | | 10.420 | Adoptable | 567292.486 | 573286.034 | 1.802 |
| F20-6 | | 10.340 | Adoptable | 567294.052 | 573271.524 | 2.087 |
| F20-7 | | 9.660 | Adoptable | 567303.270 | 573267.650 | 1.657 |
| EX. MH | | 7.990 | Adoptable | 567329.724 | 573258.168 | 0.839 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F20.000 | F20-0 | F20-1 | 11.673 | 1.500 | 9.950 | 9.658 | 0.292 | 40.0 | 150 |
| F20.001 | F20-1 | F20-2 | 19.670 | 1.500 | 9.658 | 9.166 | 0.492 | 40.0 | 150 |
| F20.002 | F20-2 | F20-3 | 12.602 | 1.500 | 9.166 | 8.850 | 0.316 | 39.9 | 150 |
| F20.003 | F20-3 | F20-4 | 4.898 | 1.500 | 8.850 | 8.744 | 0.106 | 46.2 | 150 |
| F21.000 | F21-0 | F21-1 | 20.838 | 1.500 | 10.050 | 9.599 | 0.451 | 46.2 | 150 |
| F21.001 | F21-1 | F20-4 | 19.125 | 1.500 | 9.599 | 8.744 | 0.855 | 22.4 | 150 |
| F20.004 | F20-4 | F20-5 | 4.825 | 1.500 | 8.744 | 8.618 | 0.126 | 38.3 | 150 |
| F20.005 | F20-5 | F20-6 | 14.594 | 1.500 | 8.618 | 8.253 | 0.365 | 40.0 | 225 |
| F20.006 | F20-6 | F20-7 | 9.999 | 1.500 | 8.253 | 8.003 | 0.250 | 40.0 | 225 |
| F20.007 | F20-7 | EX. MH | 28.102 | 1.500 | 8.003 | 7.151 | 0.852 | 33.0 | 225 |

| Name | Pro Vel @ 1/3 Q (m/s) | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Dwellings (ha) | Σ Units (ha) | Σ Add Inflow (ha) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| F20.000 | 0.279 | 1.388 | 24.5 | 0.2 | 0.800 | 1.092 | 0.000 | 6 | 0.0 | 0.0 | 10 | 0.391 |
| F20.001 | 0.318 | 1.388 | 24.5 | 0.3 | 1.092 | 1.584 | 0.000 | 9 | 0.0 | 0.0 | 11 | 0.441 |
| F20.002 | 0.356 | 1.390 | 24.6 | 0.4 | 1.584 | 1.900 | 0.000 | 13 | 0.0 | 0.0 | 14 | 0.504 |
| F20.003 | 0.331 | 1.291 | 22.8 | 0.4 | 1.900 | 2.006 | 0.000 | 13 | 0.0 | 0.0 | 14 | 0.482 |
| F21.000 | 0.220 | 1.291 | 22.8 | 0.1 | 0.800 | 1.251 | 0.000 | 4 | 0.0 | 0.0 | 8 | 0.331 |
| F21.001 | 0.347 | 1.857 | 32.8 | 0.2 | 1.251 | 2.006 | 0.000 | 7 | 0.0 | 0.0 | 9 | 0.501 |
| F20.004 | 0.417 | 1.418 | 25.1 | 0.6 | 2.006 | 1.652 | 0.000 | 20 | 0.0 | 0.0 | 17 | 0.588 |
| F20.005 | 0.381 | 1.818 | 72.3 | 0.6 | 1.577 | 1.862 | 0.000 | 20 | 0.0 | 0.0 | 15 | 0.550 |
| F20.006 | 0.381 | 1.818 | 72.3 | 0.6 | 1.862 | 1.432 | 0.000 | 20 | 0.0 | 0.0 | 15 | 0.550 |
| F20.007 | 0.390 | 2.002 | 79.6 | 0.6 | 1.432 | 0.614 | 0.000 | 20 | 0.0 | 0.0 | 15 | 0.582 |

## Pipeline Schedule

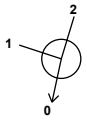
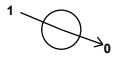
| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| F20.000 | 11.673 | 40.0 | 150 | Circular | 10.900 | 9.950 | 0.800 | 10.900 | 9.658 | 1.092 |
| F20.001 | 19.670 | 40.0 | 150 | Circular | 10.900 | 9.658 | 1.092 | 10.900 | 9.166 | 1.584 |
| F20.002 | 12.602 | 39.9 | 150 | Circular | 10.900 | 9.166 | 1.584 | 10.900 | 8.850 | 1.900 |
| F20.003 | 4.898 | 46.2 | 150 | Circular | 10.900 | 8.850 | 1.900 | 10.900 | 8.744 | 2.006 |
| F21.000 | 20.838 | 46.2 | 150 | Circular | 11.000 | 10.050 | 0.800 | 11.000 | 9.599 | 1.251 |
| F21.001 | 19.125 | 22.4 | 150 | Circular | 11.000 | 9.599 | 1.251 | 10.900 | 8.744 | 2.006 |
| F20.004 | 4.825 | 38.3 | 150 | Circular | 10.900 | 8.744 | 2.006 | 10.420 | 8.618 | 1.652 |
| F20.005 | 14.594 | 40.0 | 225 | Circular | 10.420 | 8.618 | 1.577 | 10.340 | 8.253 | 1.862 |
| F20.006 | 9.999 | 40.0 | 225 | Circular | 10.340 | 8.253 | 1.862 | 9.660 | 8.003 | 1.432 |
| F20.007 | 28.102 | 33.0 | 225 | Circular | 9.660 | 8.003 | 1.432 | 7.990 | 7.151 | 0.614 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| F20.000 | F20-0 | 1200 | Manhole | Adoptable | F20-1 | 1200 | Manhole | Adoptable |
| F20.001 | F20-1 | 1200 | Manhole | Adoptable | F20-2 | 1200 | Manhole | Adoptable |
| F20.002 | F20-2 | 1200 | Manhole | Adoptable | F20-3 | 1200 | Manhole | Adoptable |
| F20.003 | F20-3 | 1200 | Manhole | Adoptable | F20-4 | 1200 | Manhole | Adoptable |
| F21.000 | F21-0 | 1200 | Manhole | Adoptable | F21-1 | 1200 | Manhole | Adoptable |
| F21.001 | F21-1 | 1200 | Manhole | Adoptable | F20-4 | 1200 | Manhole | Adoptable |
| F20.004 | F20-4 | 1200 | Manhole | Adoptable | F20-5 | 1200 | Manhole | Adoptable |
| F20.005 | F20-5 | 1200 | Manhole | Adoptable | F20-6 | 1200 | Manhole | Adoptable |
| F20.006 | F20-6 | 1200 | Manhole | Adoptable | F20-7 | 1200 | Manhole | Adoptable |
| F20.007 | F20-7 | 1200 | Manhole | Adoptable | EX. MH | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F20-0 | 567302.665 | 573315.049 | 10.900 | 0.950 | 1200 |  0 | F20.000 | 9.950 | 150 |
| F20-1 | 567313.595 | 573310.952 | 10.900 | 1.242 | 1200 |  1 | F20.000 | 9.658 | 150 |
| | | | | | | 0 | F20.001 | 9.658 | 150 |
| F20-2 | 567307.146 | 573292.369 | 10.900 | 1.734 | 1200 |  1 | F20.001 | 9.166 | 150 |
| | | | | | | 0 | F20.002 | 9.166 | 150 |
| F20-3 | 567294.923 | 573295.438 | 10.900 | 2.050 | 1200 | 1 | F20.002 | 8.850 | 150 |
| | | | | | |  0 | F20.003 | 8.850 | 150 |
| F21-0 | 567278.727 | 573317.259 | 11.000 | 0.950 | 1200 |  0 | F21.000 | 10.050 | 150 |
| F21-1 | 567275.326 | 573296.700 | 11.000 | 1.401 | 1200 |  1 | F21.000 | 9.599 | 150 |
| | | | | | | 0 | F21.001 | 9.599 | 150 |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| F20-4 | 567293.502 | 573290.751 | 10.900 | 2.156 | 1200 |  | 1 | F21.001 | 8.744 | 150 |
| | | | | | | | 2 | F20.003 | 8.744 | 150 |
| | | | | | | | 0 | F20.004 | 8.744 | 150 |
| F20-5 | 567292.486 | 573286.034 | 10.420 | 1.802 | 1200 |  | 1 | F20.004 | 8.618 | 150 |
| | | | | | | | 0 | F20.005 | 8.618 | 225 |
| F20-6 | 567294.052 | 573271.524 | 10.340 | 2.087 | 1200 |  | 1 | F20.005 | 8.253 | 225 |
| | | | | | | | 0 | F20.006 | 8.253 | 225 |
| F20-7 | 567303.270 | 573267.650 | 9.660 | 1.657 | 1200 |  | 1 | F20.006 | 8.003 | 225 |
| | | | | | | | 0 | F20.007 | 8.003 | 225 |
| EX. MH | 567329.724 | 573258.168 | 7.990 | 0.839 | 1200 |  | 1 | F20.007 | 7.151 | 225 |

## Appendix B Storm Water Drainage 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 (%) | 10 | Minimum Velocity (m/s) | 0.80 |
| FSR Region | Scotland and Ireland | Connection Type | Level Inverts |
| M5-60 (mm) | 18.800 | Minimum Backdrop Height (m) | 0.600 |
| Ratio-R | 0.250 | Preferred Cover Depth (m) | 0.800 |
| CV | 0.750 | Include Intermediate Ground | ✓ |
| Time of Entry (mins) | 5.00 | Enforce best practice design rules | ✓ |

## Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|---|
| S1-0 | 0.234 | 5.00 | 37.500 | 1200 | 567201.107 | 573276.711 | 1.500 |
| Soakaway | | | 37.300 | 1200 | 567211.389 | 573317.325 | 1.998 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | T of C (mins) | Rain (mm/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S1.001 | S1-0 | Soakaway | 41.895 | 0.600 | 36.000 | 35.302 | 0.698 | 60.0 | 225 | 5.41 | 50.0 |

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| S1.001 | 1.691 | 67.2 | 34.9 | 1.275 | 1.773 | 0.234 | 0.0 | 115 | 1.705 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| S1.001 | 41.895 | 60.0 | 225 | Circular | 37.500 | 36.000 | 1.275 | 37.300 | 35.302 | 1.773 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| S1.001 | S1-0 | 1200 | Manhole | Adoptable | Soakaway | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| S1-0 | 567201.107 | 573276.711 | 37.500 | 1.500 | 1200 | 0 | S1.001 | 36.000 | 225 |
| Soakaway | 567211.389 | 573317.325 | 37.300 | 1.998 | 1200 | 1 | S1.001 | 35.302 | 225 |

## Simulation Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FSR | Skip Steady State | x |
| FSR Region | Scotland and Ireland | Drain Down Time (mins) | 240 |
| M5-60 (mm) | 18.800 | Additional Storage (m³/ha) | 20.0 |
| Ratio-R | 0.250 | Check Discharge Rate(s) | x |
| Summer CV | 0.750 | Check Discharge Volume | x |
| Analysis Speed | Normal | | |

### Storm Durations

| 15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440 | 2160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|---|---|---|---|
| 30 | 10 | 0 | 0 |
| 100 | 10 | 0 | 0 |

## Node Soakaway Soakaway Storage Structure

| | | | | | |
|---|---|---|---|---|---|
| Base Inf Coefficient (m/hr) | 0.94300 | Invert Level (m) | 35.302 | Depth (m) | 0.800 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 48 | Inf Depth (m) | |
| Safety Factor | 2.0 | Pit Width (m) | 12.000 | Number Required | 1 |
| Porosity | 0.95 | Pit Length (m) | 6.000 | | |

**Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.06%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | S1-0 | 11 | 36.232 | 0.232 | 68.7 | 0.9842 | 0.0000 | SURCHARGED |
| 60 minute summer | Soakaway | 46 | 35.713 | 0.411 | 51.7 | 28.5615 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 15 minute summer | S1-0 | S1.001 | Soakaway | 66.8 | 2.291 | 0.993 | 1.5860 |
| 60 minute summer | Soakaway | Infiltration | | 9.4 | | | |

**Results for 100 year +10% CC Critical Storm Duration. Lowest mass balance: 99.06%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 30 minute summer | S1-0 | 19 | 36.656 | 0.656 | 85.1 | 2.7885 | 0.0000 | SURCHARGED |
| 60 minute summer | Soakaway | 50 | 35.898 | 0.596 | 64.5 | 41.4698 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 30 minute summer | S1-0 | S1.001 | Soakaway | 75.7 | 1.994 | 1.126 | 1.6662 |
| 60 minute summer | Soakaway | Infiltration | | 9.4 | | | |

## Design Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FSR | Maximum Time of Concentration (mins) | 30.00 |
| Return Period (years) | 5 | Maximum Rainfall (mm/hr) | 50.0 |
| Additional Flow (%) | 10 | Minimum Velocity (m/s) | 0.80 |
| FSR Region | Scotland and Ireland | Connection Type | Level Inverts |
| M5-60 (mm) | 18.800 | Minimum Backdrop Height (m) | 0.600 |
| Ratio-R | 0.250 | Preferred Cover Depth (m) | 0.800 |
| CV | 0.750 | Include Intermediate Ground | ✓ |
| Time of Entry (mins) | 5.00 | Enforce best practice design rules | ✓ |

## Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|---|
| S10-0 | 0.072 | 5.00 | 21.600 | 1200 | 567260.000 | 573324.000 | 1.025 |
| S11-0 | 0.100 | 5.00 | 20.400 | 1200 | 567244.000 | 573269.000 | 1.025 |
| S10-1 | | | 20.983 | 1200 | 567248.000 | 573283.000 | 3.127 |
| Soakaway | | | 21.000 | 1200 | 567252.000 | 573282.000 | 3.160 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | T of C (mins) | Rain (mm/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S10.000 | S10-0 | S10-1 | 42.720 | 0.600 | 20.575 | 18.439 | 2.136 | 20.0 | 225 | 5.24 | 50.0 |
| S11.000 | S11-0 | S10-1 | 14.560 | 0.600 | 19.375 | 17.856 | 1.519 | 9.6 | 225 | 5.06 | 50.0 |
| S10.001 | S10-1 | Soakaway | 4.123 | 0.600 | 17.856 | 17.840 | 0.016 | 257.7 | 225 | 5.33 | 50.0 |

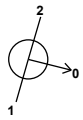
| Name | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|---|---|---|---|---|---|---|---|---|
| S10.000 | 2.939 | 116.8 | 10.7 | 0.800 | 2.319 | 0.072 | 0.0 | 46 | 1.858 |
| S11.000 | 4.251 | 169.0 | 14.9 | 0.800 | 2.902 | 0.100 | 0.0 | 45 | 2.659 |
| S10.001 | 0.810 | 32.2 | 25.6 | 2.902 | 2.935 | 0.172 | 0.0 | 152 | 0.897 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| S10.000 | 42.720 | 20.0 | 225 | Circular | 21.600 | 20.575 | 0.800 | 20.983 | 18.439 | 2.319 |
| S11.000 | 14.560 | 9.6 | 225 | Circular | 20.400 | 19.375 | 0.800 | 20.983 | 17.856 | 2.902 |
| S10.001 | 4.123 | 257.7 | 225 | Circular | 20.983 | 17.856 | 2.902 | 21.000 | 17.840 | 2.935 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| S10.000 | S10-0 | 1200 | Manhole | Adoptable | S10-1 | 1200 | Manhole | Adoptable |
| S11.000 | S11-0 | 1200 | Manhole | Adoptable | S10-1 | 1200 | Manhole | Adoptable |
| S10.001 | S10-1 | 1200 | Manhole | Adoptable | Soakaway | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| S10-0 | 567260.000 | 573324.000 | 21.600 | 1.025 | 1200 |  0 | S10.000 | 20.575 | 225 |
| S11-0 | 567244.000 | 573269.000 | 20.400 | 1.025 | 1200 |  0 | S11.000 | 19.375 | 225 |
| S10-1 | 567248.000 | 573283.000 | 20.983 | 3.127 | 1200 |  1 | S11.000 | 17.856 | 225 |
| | | | | | | 2 | S10.000 | 18.439 | 225 |
| | | | | | | 0 | S10.001 | 17.856 | 225 |
| Soakaway | 567252.000 | 573282.000 | 21.000 | 3.160 | 1200 | 1  | S10.001 | 17.840 | 225 |

## Simulation Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FSR | Skip Steady State | x |
| FSR Region | Scotland and Ireland | Drain Down Time (mins) | 240 |
| M5-60 (mm) | 18.800 | Additional Storage (m³/ha) | 20.0 |
| Ratio-R | 0.250 | Check Discharge Rate(s) | x |
| Summer CV | 0.750 | Check Discharge Volume | x |
| Analysis Speed | Normal | | |

### Storm Durations

| 15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440 | 2160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|---|---|---|---|
| 30 | 10 | 0 | 0 |
| 100 | 10 | 0 | 0 |

## Node Soakaway Soakaway Storage Structure

| | | | | | |
|---|---|---|---|---|---|
| Base Inf Coefficient (m/hr) | 0.31023 | Invert Level (m) | 17.840 | Depth (m) | 0.800 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 155 | Inf Depth (m) | |
| Safety Factor | 2.0 | Pit Width (m) | 4.000 | Number Required | 1 |
| Porosity | 1.00 | Pit Length (m) | 14.000 | | |

**Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.85%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | S10-0 | 10 | 20.640 | 0.065 | 21.2 | 0.1660 | 0.0000 | OK |
| 15 minute summer | S11-0 | 10 | 19.438 | 0.063 | 29.4 | 0.1946 | 0.0000 | OK |
| 240 minute summer | S10-1 | 184 | 18.480 | 0.624 | 17.2 | 0.7053 | 0.0000 | SURCHARGED |
| 240 minute summer | Soakaway | 184 | 18.479 | 0.639 | 16.7 | 36.5318 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 15 minute summer | S10-0 | S10.000 | S10-1 | 20.9 | 2.212 | 0.179 | 0.4033 |
| 15 minute summer | S11-0 | S11.000 | S10-1 | 29.3 | 1.216 | 0.173 | 0.3539 |
| 240 minute summer | S10-1 | S10.001 | Soakaway | 16.7 | 0.824 | 0.520 | 0.1640 |
| 240 minute summer | Soakaway | Infiltration | | 2.4 | | | |

**Results for 100 year +10% CC Critical Storm Duration. Lowest mass balance: 99.85%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | S10-0 | 10 | 20.650 | 0.075 | 27.5 | 0.1906 | 0.0000 | OK |
| 15 minute summer | S11-0 | 10 | 19.447 | 0.072 | 38.2 | 0.2228 | 0.0000 | OK |
| 240 minute summer | S10-1 | 204 | 19.427 | 1.571 | 21.8 | 1.7768 | 0.0000 | SURCHARGED |
| 240 minute summer | Soakaway | 204 | 19.427 | 1.587 | 21.2 | 46.6227 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 15 minute summer | S10-0 | S10.000 | S10-1 | 27.1 | 2.375 | 0.232 | 0.4878 |
| 15 minute summer | S11-0 | S11.000 | S10-1 | 38.1 | 1.274 | 0.225 | 0.3695 |
| 240 minute summer | S10-1 | S10.001 | Soakaway | 21.2 | 0.858 | 0.658 | 0.1640 |
| 240 minute summer | Soakaway | Infiltration | | 2.4 | | | |

## Design Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FSR | Maximum Time of Concentration (mins) | 30.00 |
| Return Period (years) | 5 | Maximum Rainfall (mm/hr) | 50.0 |
| Additional Flow (%) | 10 | Minimum Velocity (m/s) | 0.80 |
| FSR Region | Scotland and Ireland | Connection Type | Level Inverts |
| M5-60 (mm) | 18.800 | Minimum Backdrop Height (m) | 0.600 |
| Ratio-R | 0.250 | Preferred Cover Depth (m) | 0.800 |
| CV | 0.750 | Include Intermediate Ground | ✓ |
| Time of Entry (mins) | 5.00 | Enforce best practice design rules | ✓ |

## Nodes

| Name | Area (ha) | T of E (mins) | Cover Level (m) | Diameter (mm) | Easting (m) | Northing (m) | Depth (m) |
|---|---|---|---|---|---|---|---|
| S20-0 | 0.030 | 5.00 | 10.900 | 1200 | 567314.296 | 573308.689 | 1.025 |
| S20-1 | | | 10.900 | 1200 | 567308.732 | 573290.848 | 1.336 |
| S20-2 | | | 10.900 | 1200 | 567296.251 | 573293.873 | 1.550 |
| S20-3 | | | 10.900 | 1200 | 567294.758 | 573288.895 | 1.637 |
| S21-0 | 0.030 | 5.00 | 11.000 | 1200 | 567280.156 | 573318.951 | 1.025 |
| S21-1 | | | 11.000 | 1200 | 567276.483 | 573294.767 | 1.188 |
| S20-4 | 0.020 | 5.00 | 10.900 | 1200 | 567284.647 | 573292.245 | 1.815 |
| Soakaway | | | 10.800 | 1200 | 567280.253 | 573291.419 | 1.790 |

## Links

| Name | US Node | DS Node | Length (m) | ks (mm) / n | US IL (m) | DS IL (m) | Fall (m) | Slope (1:X) | Dia (mm) | T of C (mins) | Rain (mm/hr) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| S20.000 | S20-0 | S20-1 | 18.688 | 0.600 | 9.875 | 9.564 | 0.311 | 60.0 | 225 | 5.18 | 50.0 |
| S20.001 | S20-1 | S20-2 | 12.842 | 0.600 | 9.564 | 9.350 | 0.214 | 60.0 | 225 | 5.31 | 50.0 |
| S20.002 | S20-2 | S20-3 | 5.197 | 0.600 | 9.350 | 9.263 | 0.087 | 60.0 | 225 | 5.36 | 50.0 |
| S20.003 | S20-3 | S20-4 | 10.652 | 0.600 | 9.263 | 9.085 | 0.178 | 60.0 | 225 | 5.47 | 50.0 |
| S21.000 | S21-0 | S21-1 | 24.461 | 0.600 | 9.975 | 9.812 | 0.163 | 150.0 | 225 | 5.38 | 50.0 |
| S21.001 | S21-1 | S20-4 | 8.545 | 0.600 | 9.812 | 9.775 | 0.037 | 230.9 | 225 | 5.55 | 50.0 |
| S20.004 | S20-4 | Soakaway | 4.471 | 0.600 | 9.085 | 9.010 | 0.075 | 60.0 | 225 | 5.59 | 50.0 |

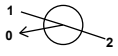
| Name | Vel (m/s) | Cap (l/s) | Flow (l/s) | US Depth (m) | DS Depth (m) | Σ Area (ha) | Σ Add Inflow (l/s) | Pro Depth (mm) | Pro Velocity (m/s) |
|---|---|---|---|---|---|---|---|---|---|
| S20.000 | 1.691 | 67.2 | 4.5 | 0.800 | 1.111 | 0.030 | 0.0 | 39 | 0.967 |
| S20.001 | 1.691 | 67.2 | 4.5 | 1.111 | 1.325 | 0.030 | 0.0 | 39 | 0.967 |
| S20.002 | 1.691 | 67.2 | 4.5 | 1.325 | 1.412 | 0.030 | 0.0 | 39 | 0.967 |
| S20.003 | 1.691 | 67.2 | 4.5 | 1.412 | 1.590 | 0.030 | 0.0 | 39 | 0.967 |
| S21.000 | 1.065 | 42.3 | 4.5 | 0.800 | 0.963 | 0.030 | 0.0 | 49 | 0.693 |
| S21.001 | 0.856 | 34.0 | 4.5 | 0.963 | 0.900 | 0.030 | 0.0 | 55 | 0.596 |
| S20.004 | 1.691 | 67.2 | 11.9 | 1.590 | 1.565 | 0.080 | 0.0 | 64 | 1.282 |

## Pipeline Schedule

| Link | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| S20.000 | 18.688 | 60.0 | 225 | Circular | 10.900 | 9.875 | 0.800 | 10.900 | 9.564 | 1.111 |
| S20.001 | 12.842 | 60.0 | 225 | Circular | 10.900 | 9.564 | 1.111 | 10.900 | 9.350 | 1.325 |
| S20.002 | 5.197 | 60.0 | 225 | Circular | 10.900 | 9.350 | 1.325 | 10.900 | 9.263 | 1.412 |
| S20.003 | 10.652 | 60.0 | 225 | Circular | 10.900 | 9.263 | 1.412 | 10.900 | 9.085 | 1.590 |
| S21.000 | 24.461 | 150.0 | 225 | Circular | 11.000 | 9.975 | 0.800 | 11.000 | 9.812 | 0.963 |
| S21.001 | 8.545 | 230.9 | 225 | Circular | 11.000 | 9.812 | 0.963 | 10.900 | 9.775 | 0.900 |
| S20.004 | 4.471 | 60.0 | 225 | Circular | 10.900 | 9.085 | 1.590 | 10.800 | 9.010 | 1.565 |

| Link | US Node | Dia (mm) | Node Type | MH Type | DS Node | Dia (mm) | Node Type | MH Type |
|---|---|---|---|---|---|---|---|---|
| S20.000 | S20-0 | 1200 | Manhole | Adoptable | S20-1 | 1200 | Manhole | Adoptable |
| S20.001 | S20-1 | 1200 | Manhole | Adoptable | S20-2 | 1200 | Manhole | Adoptable |
| S20.002 | S20-2 | 1200 | Manhole | Adoptable | S20-3 | 1200 | Manhole | Adoptable |
| S20.003 | S20-3 | 1200 | Manhole | Adoptable | S20-4 | 1200 | Manhole | Adoptable |
| S21.000 | S21-0 | 1200 | Manhole | Adoptable | S21-1 | 1200 | Manhole | Adoptable |
| S21.001 | S21-1 | 1200 | Manhole | Adoptable | S20-4 | 1200 | Manhole | Adoptable |
| S20.004 | S20-4 | 1200 | Manhole | Adoptable | Soakaway | 1200 | Manhole | Adoptable |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| S20-0 | 567314.296 | 573308.689 | 10.900 | 1.025 | 1200 |  | 0 | S20.000 | 9.875 | 225 |
| S20-1 | 567308.732 | 573290.848 | 10.900 | 1.336 | 1200 |  | 1 | S20.000 | 9.564 | 225 |
| | | | | | | | 0 | S20.001 | 9.564 | 225 |
| S20-2 | 567296.251 | 573293.873 | 10.900 | 1.550 | 1200 |  | 1 | S20.001 | 9.350 | 225 |
| | | | | | | | 0 | S20.002 | 9.350 | 225 |
| S20-3 | 567294.758 | 573288.895 | 10.900 | 1.637 | 1200 |  | 1 | S20.002 | 9.263 | 225 |
| | | | | | | | 0 | S20.003 | 9.263 | 225 |
| S21-0 | 567280.156 | 573318.951 | 11.000 | 1.025 | 1200 |  | 0 | S21.000 | 9.975 | 225 |
| S21-1 | 567276.483 | 573294.767 | 11.000 | 1.188 | 1200 |  | 1 | S21.000 | 9.812 | 225 |
| | | | | | | | 0 | S21.001 | 9.812 | 225 |
| S20-4 | 567284.647 | 573292.245 | 10.900 | 1.815 | 1200 | | 1 | S21.001 | 9.775 | 225 |
| | | | | | |  | 2 | S20.003 | 9.085 | 225 |
| | | | | | | | 0 | S20.004 | 9.085 | 225 |

## Manhole Schedule

| Node | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Connections | Link | IL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| Soakaway | 567280.253 | 573291.419 | 10.800 | 1.790 | 1200 | 1 | S20.004 | 9.010 | 225 |


## Simulation Settings

| | | | |
|---|---|---|---|
| Rainfall Methodology | FSR | Skip Steady State | x |
| FSR Region | Scotland and Ireland | Drain Down Time (mins) | 240 |
| M5-60 (mm) | 18.800 | Additional Storage (m³/ha) | 20.0 |
| Ratio-R | 0.250 | Check Discharge Rate(s) | x |
| Summer CV | 0.750 | Check Discharge Volume | x |
| Analysis Speed | Normal | | |

### Storm Durations

| 15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440 | 2160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|---|---|---|---|
| 30 | 10 | 0 | 0 |
| 100 | 10 | 0 | 0 |

## Node Soakaway Soakaway Storage Structure

| | | | | | |
|---|---|---|---|---|---|
| Base Inf Coefficient (m/hr) | 0.11250 | Invert Level (m) | 9.010 | Depth (m) | 0.800 |
| Side Inf Coefficient (m/hr) | 0.00000 | Time to half empty (mins) | 427 | Inf Depth (m) | |
| Safety Factor | 2.0 | Pit Width (m) | 4.000 | Number Required | 1 |
| Porosity | 1.00 | Pit Length (m) | 8.000 | | |

**Results for 30 year +10% CC Critical Storm Duration. Lowest mass balance: 99.70%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 15 minute summer | S20-0 | 10 | 9.931 | 0.056 | 8.8 | 0.0963 | 0.0000 | OK |
| 960 minute summer | S20-1 | 705 | 9.700 | 0.136 | 1.2 | 0.1533 | 0.0000 | OK |
| 960 minute summer | S20-2 | 705 | 9.700 | 0.350 | 1.2 | 0.3953 | 0.0000 | SURCHARGED |
| 960 minute summer | S20-3 | 705 | 9.700 | 0.437 | 1.7 | 0.4937 | 0.0000 | SURCHARGED |
| 15 minute summer | S21-0 | 10 | 10.045 | 0.070 | 8.8 | 0.1205 | 0.0000 | OK |
| 15 minute summer | S21-1 | 11 | 9.894 | 0.082 | 8.7 | 0.0926 | 0.0000 | OK |
| 960 minute summer | S20-4 | 690 | 9.700 | 0.615 | 4.0 | 0.8303 | 0.0000 | SURCHARGED |
| 960 minute summer | Soakaway | 675 | 9.700 | 0.690 | 3.1 | 22.8452 | 0.0000 | OK |

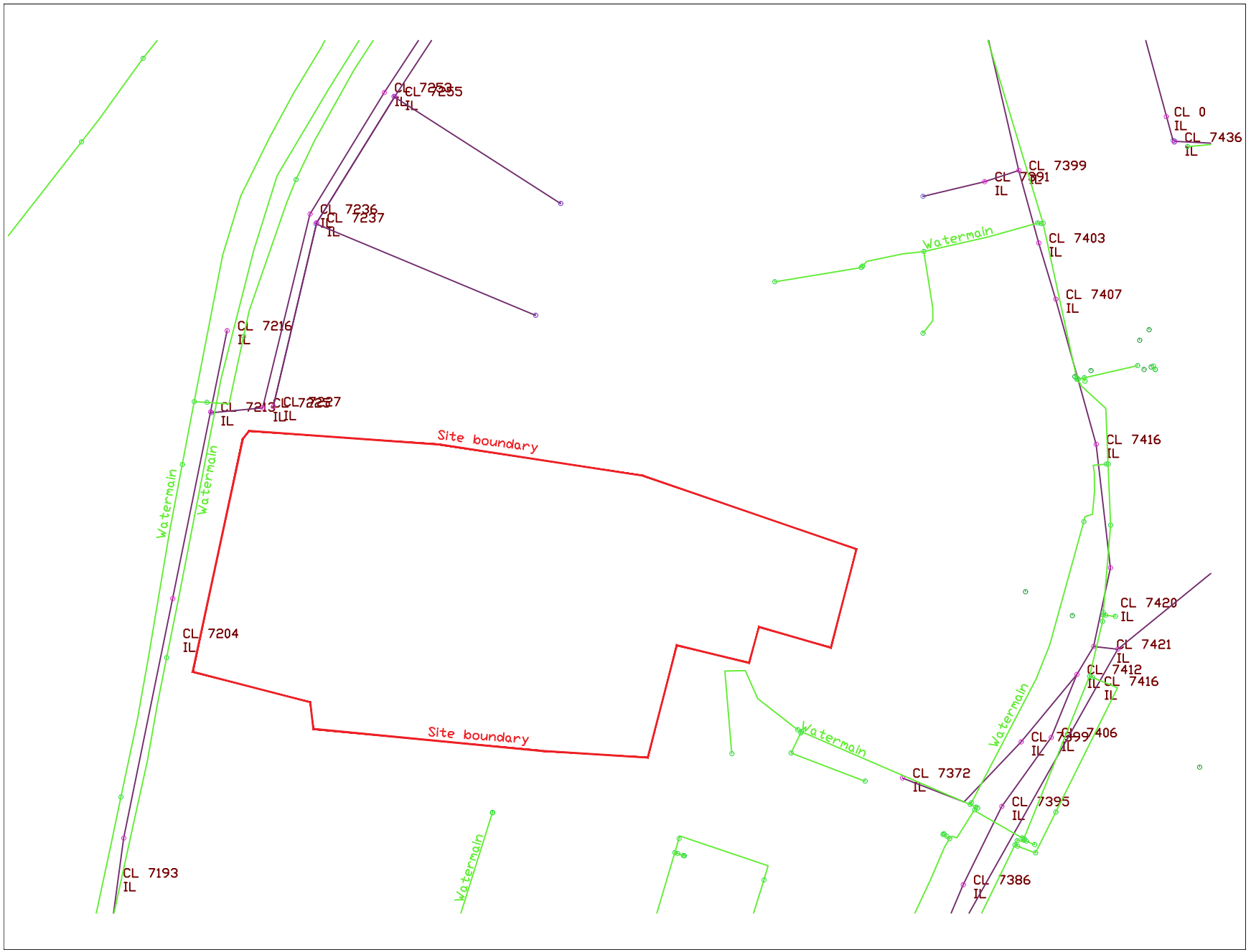
| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 15 minute summer | S20-0 | S20.000 | S20-1 | 8.7 | 1.130 | 0.130 | 0.1442 |
| 960 minute summer | S20-1 | S20.001 | S20-2 | 1.2 | 0.646 | 0.018 | 0.4158 |
| 960 minute summer | S20-2 | S20.002 | S20-3 | 1.7 | 0.585 | 0.025 | 0.2067 |
| 960 minute summer | S20-3 | S20.003 | S20-4 | 1.0 | 0.325 | 0.015 | 0.4236 |
| 15 minute summer | S21-0 | S21.000 | S21-1 | 8.7 | 0.744 | 0.205 | 0.2860 |
| 15 minute summer | S21-1 | S21.001 | S20-4 | 8.7 | 0.699 | 0.254 | 0.1058 |
| 960 minute summer | S20-4 | S20.004 | Soakaway | 3.1 | 0.639 | 0.047 | 0.1778 |
| 960 minute summer | Soakaway | Infiltration | | 0.5 | | | |

**Results for 100 year +10% CC Critical Storm Duration. Lowest mass balance: 99.70%**

| Node Event | US Node | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status |
|---|---|---|---|---|---|---|---|---|
| 600 minute summer | S20-0 | 600 | 10.171 | 0.296 | 2.0 | 0.5084 | 0.0000 | SURCHARGED |
| 600 minute summer | S20-1 | 525 | 10.171 | 0.607 | 2.0 | 0.6866 | 0.0000 | SURCHARGED |
| 600 minute summer | S20-2 | 570 | 10.172 | 0.822 | 2.0 | 0.9298 | 0.0000 | SURCHARGED |
| 600 minute summer | S20-3 | 525 | 10.171 | 0.908 | 1.7 | 1.0274 | 0.0000 | SURCHARGED |
| 600 minute summer | S21-0 | 585 | 10.170 | 0.195 | 2.0 | 0.3353 | 0.0000 | OK |
| 600 minute summer | S21-1 | 555 | 10.171 | 0.359 | 2.0 | 0.4060 | 0.0000 | SURCHARGED |
| 600 minute summer | S20-4 | 555 | 10.173 | 1.088 | 4.9 | 1.4693 | 0.0000 | SURCHARGED |
| 600 minute summer | Soakaway | 525 | 10.170 | 1.160 | 4.9 | 26.9285 | 0.0000 | OK |

| Link Event (Upstream Depth) | US Node | Link | DS Node | Outflow (l/s) | Velocity (m/s) | Flow/Cap | Link Vol (m³) |
|---|---|---|---|---|---|---|---|
| 600 minute summer | S20-0 | S20.000 | S20-1 | 2.0 | 0.754 | 0.030 | 0.7432 |
| 600 minute summer | S20-1 | S20.001 | S20-2 | 2.0 | 0.702 | 0.030 | 0.5107 |
| 600 minute summer | S20-2 | S20.002 | S20-3 | 1.7 | 0.650 | 0.025 | 0.2067 |
| 600 minute summer | S20-3 | S20.003 | S20-4 | 1.6 | 0.311 | 0.023 | 0.4236 |
| 600 minute summer | S21-0 | S21.000 | S21-1 | 2.0 | 0.499 | 0.047 | 0.9345 |
| 600 minute summer | S21-1 | S21.001 | S20-4 | 2.0 | 0.473 | 0.059 | 0.3398 |
| 600 minute summer | S20-4 | S20.004 | Soakaway | 4.9 | 0.647 | 0.073 | 0.1778 |
| 600 minute summer | Soakaway | Infiltration | | 0.5 | | | |

# Appendix C Utilities records


CL 7253
IL
CL 7255
IL
CL 7236
IL
CL 7237
IL
CL 7216
IL
CL 7213
IL
CL 7227
IL
Site boundary
Watermain
Watermain
CL 7204
IL
Site boundary
CL 7193
IL
Watermain
Watermain
CL 7372
IL
Watermain
CL 7399
IL
CL 7391
IL
CL 7403
IL
CL 7407
IL
CL 7416
IL
CL 7420
IL
CL 7421
IL
CL 7412
IL
CL 7416
IL
CL 7406
IL
CL 7395
IL
CL 7386
IL
CL 0
IL
CL 7436
IL

ESB Networks

# TITLE: 20180926-035_A3

COLOUR CODE:

- BLACK - 38KV & HIGHER VOLTAGE OVERHEAD LINES
- GREEN - MV(10KV/20KV) OVERHEAD LINES
- BLUE - LV (400V/230V) OVERHEAD LINES
- CYAN - 38KV & HIGHER VOLTAGE UNDERGROUND CABLE ROUTES
- RED - MV/LV (10KV/20KV/400V/230V) UNDERGROUND CABLE ROUTES

DATE: 26-Sep-2018

** SCALE: 1:1000

** SCALE WHEN PRINTED ON AN A3 PAGE
XY COORDINATES DISPLAYED IN IRISH GRID COORDINATE SYSTEM



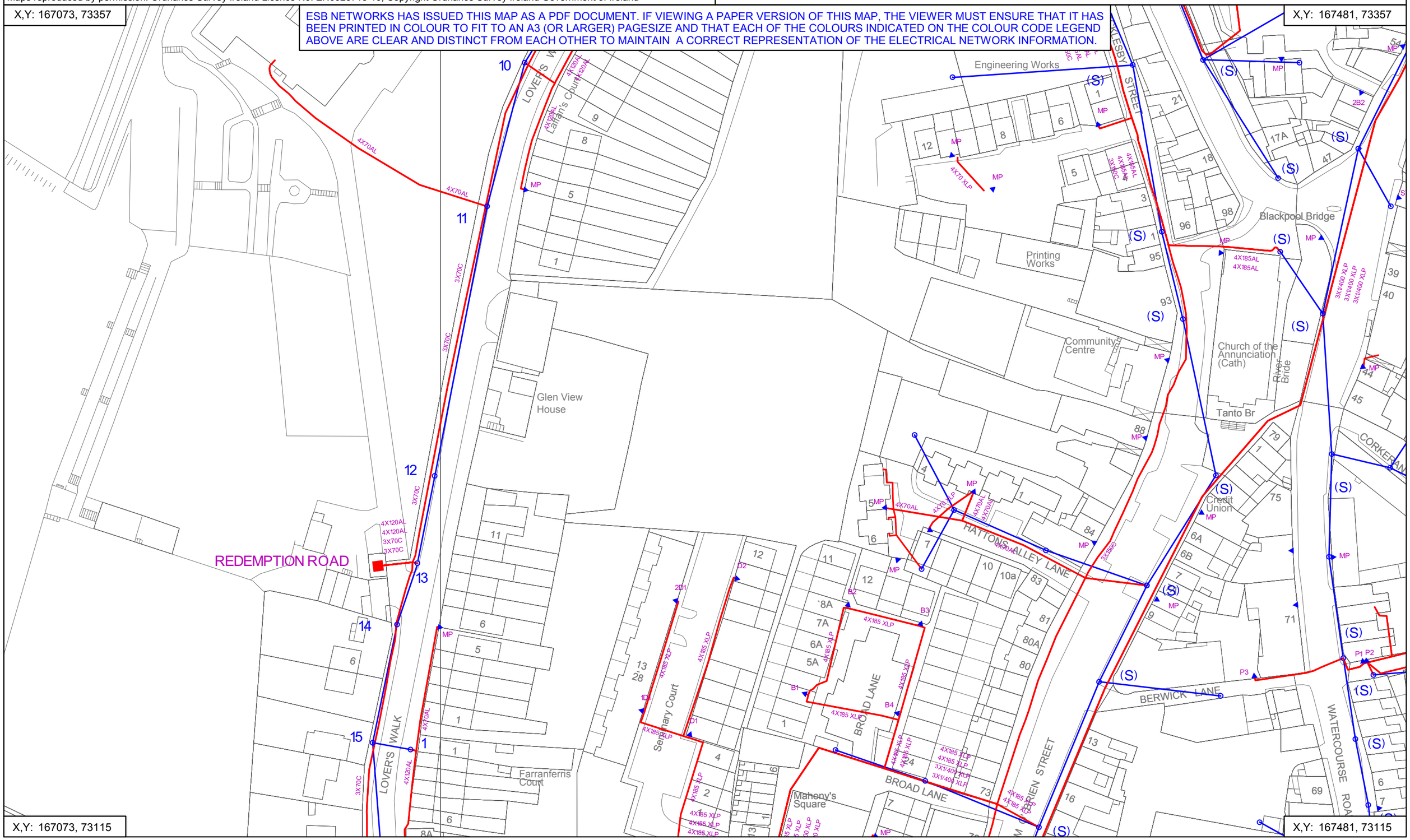
## WARNING

THIS MAP INDICATES THE APPROXIMATE LOCATION OF ESB TRANSMISSION (400KV, 220KV, 110KV, 38KV) AND DISTRIBUTION (20KV, 10KV, 230V/400V) UNDERGROUND CABLES AND OVERHEAD LINES IN THE GENERAL AREA OF THE PROPOSED WORKS. ESB NETWORKS TAKES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF THE MAP. IT IS THE USER'S RESPONSIBILITY TO INDEPENDENTLY VERIFY THE INFORMATION AND THE LOCATION OF UNDERGROUND CABLES AND OVERHEAD LINES. LOW VOLTAGE (230V/400V) SERVICE CABLES (E.G. HOUSE SERVICES, FACTORY/SHOP SERVICES, PUBLIC LIGHTING LAMP SERVICES, ETC) ARE NOT INCLUDED BUT THEIR PRESENCE SHOULD BE ANTICIPATED. THE DEPTHS OF UNDERGROUND CABLES MUST NEVER BE ASSUMED. ADDITIONAL MORE DETAILED INFORMATION IS AVAILABLE FOR HIGH VOLTAGE TRANSMISSION UNDERGROUND CABLES (38KV, 110KV, 220KV, 400KV) FROM THE LOCAL ESB NETWORKS TRANSMISSION REPRESENTATIVE - SEE ATTACHED LIST FOR CONTACT DETAILS OR CALL 1850 372 757. NO WORK SHOULD BE CARRIED OUT IN THE VICINITY OF 38KV OR HIGHER VOLTAGE UNDERGROUND CABLES WITHOUT PRIOR CONSULTATION WITH ESB NETWORKS. BEFORE ANY MECHANICAL EXCAVATION IS UNDERTAKEN, THE ACTUAL LOCATION OF ALL UNDERGROUND ELECTRICITY CABLES MUST BE ESTABLISHED AND VERIFIED ON THE SITE USING: (A) UP-TO-DATE MAP RECORDS; (B) CABLE LOCATER EQUIPMENT OPERATED IN BOTH POWER AND RADIO MODES; (C) CAREFUL HAND DIGGING OF TRIAL HOLES USING 'SAFE DIGGING PRACTICE'. REFER ALSO TO 'HSA CODE OF PRACTICE FOR AVOIDING DANGER FROM UNDERGROUND SERVICES'. ESB TAKES NO RESPONSIBILITY FOR AND SHALL BEAR NO LIABILITY, HOWSOEVER ARISING, IN RELATION TO ANY DAMAGE, INJURY/DEATH OR LOSS OF SUPPLY AS A RESULT OF DAMAGE OR INTERFERENCE WITH ITS NETWORKS.

ESB NETWORKS HAS ISSUED THIS MAP AS A PDF DOCUMENT. IF VIEWING A PAPER VERSION OF THIS MAP, THE VIEWER MUST ENSURE THAT IT HAS BEEN PRINTED IN COLOUR TO FIT TO AN A3 (OR LARGER) PAGESIZE AND THAT EACH OF THE COLOURS INDICATED ON THE COLOUR CODE LEGEND ABOVE ARE CLEAR AND DISTINCT FROM EACH OTHER TO MAINTAIN A CORRECT REPRESENTATION OF THE ELECTRICAL NETWORK INFORMATION.

X,Y: 167073, 73357

X,Y: 167481, 73357




X,Y: 167073, 73115

X,Y: 167481, 73115

# Drainage Records

**Legend**

**IW_FoulNetwork**
**PIPE_FUNCT**
- LOCAL COMBINED
- LOCAL FOUL
- INTERCEPTOR
- PRIVATE FOUL

**IW_FoulManholes**
**MANHOLE_**
- Manhole

THE SEWERS SHOWN ON THIS MAP ARE FOR REFERENCE ONLY. THE LOCATION AND PROPERTIES OF ALL SEWERS, LEVELS, PIPESIZES, etc, MUST BE CONFIRMED ON SITE.

1:750

N

**CORK CITY COUNCIL ENVIRONMENT DIRECTORATE**
**(As agents of Irish Water)**

**Drawn By:** A. Homan

**Checked by:** G.R.

**Date:** 18/09/2018


# Drainage Records

**Legend**

**IW_FoulNetwork**
**PIPE_FUNCT**
- LOCAL COMBINED
- LOCAL FOUL
- INTERCEPTOR
- PRIVATE FOUL

**IW_FoulManholes**
**MANHOLE_**
- Manhole

THE SEWERS SHOWN ON THIS MAP ARE FOR REFERENCE ONLY. THE LOCATION AND PROPERTIES OF ALL SEWERS, LEVELS, PIPESIZES, etc, MUST BE CONFIRMED ON SITE.

1:750

N

**CORK CITY COUNCIL ENVIRONMENT DIRECTORATE**
**(As agents of Irish Water)**

**Drawn By:** A. Homan

**Checked by:** G.R.

**Date:** 18/09/2018

# Drainage Records

**Legend**
**CCC_StormNetwork**
**PIPE_FUNCT**
LOCAL STORM
PRIVATE STORM

THE SEWERS SHOWN ON THIS MAP ARE FOR REFERENCE ONLY. THE LOCATION AND PROPERTIES OF ALL SEWERS, LEVELS, PIPESIZES, etc, MUST BE CONFIRMED ON SITE.

1:750

N

**CORK CITY COUNCIL ENVIRONMENT DIRECTORATE**
**Storm Network**

**Drawn By:** A. Homan

**Checked by:** G.R.

**Date:** 18/09/2018

A3

Chapel

Burial Ground

LOVER'S WALK

Lafferty Court

Glen View House

Ardfert

Area Under Development

Engineering Works

Printing Works

Basketball Ground

Community Centre

Millview Cottages

BROCKLESBY STREET

HATTON'S ALLEY LANE

BERWICK LANE

CORKERAN'S

WATER

Blackpool Bridge

Tanto Br

Church (Cath)

Credit Union

River Bride

Arthur Villas

PO

CHP1

1026 1027 1934 1935 1936 1937 1914 1915 1916 1917 1927 1982 1983 1984 1985 1988 1989 1991 1992 1993 1994 2034 2129 2131 3561 3562 3698 3699 3791 4472 4473

1x100PP 2x100PP 4x100PP 1x50PP 4x100ST 4x150ST 1x100SW 4x150SW 1x100SD 4x150SD 1x100SE 4x150SE

PLANT REQUESTED FROM eircom emaps CBYD SERVICE

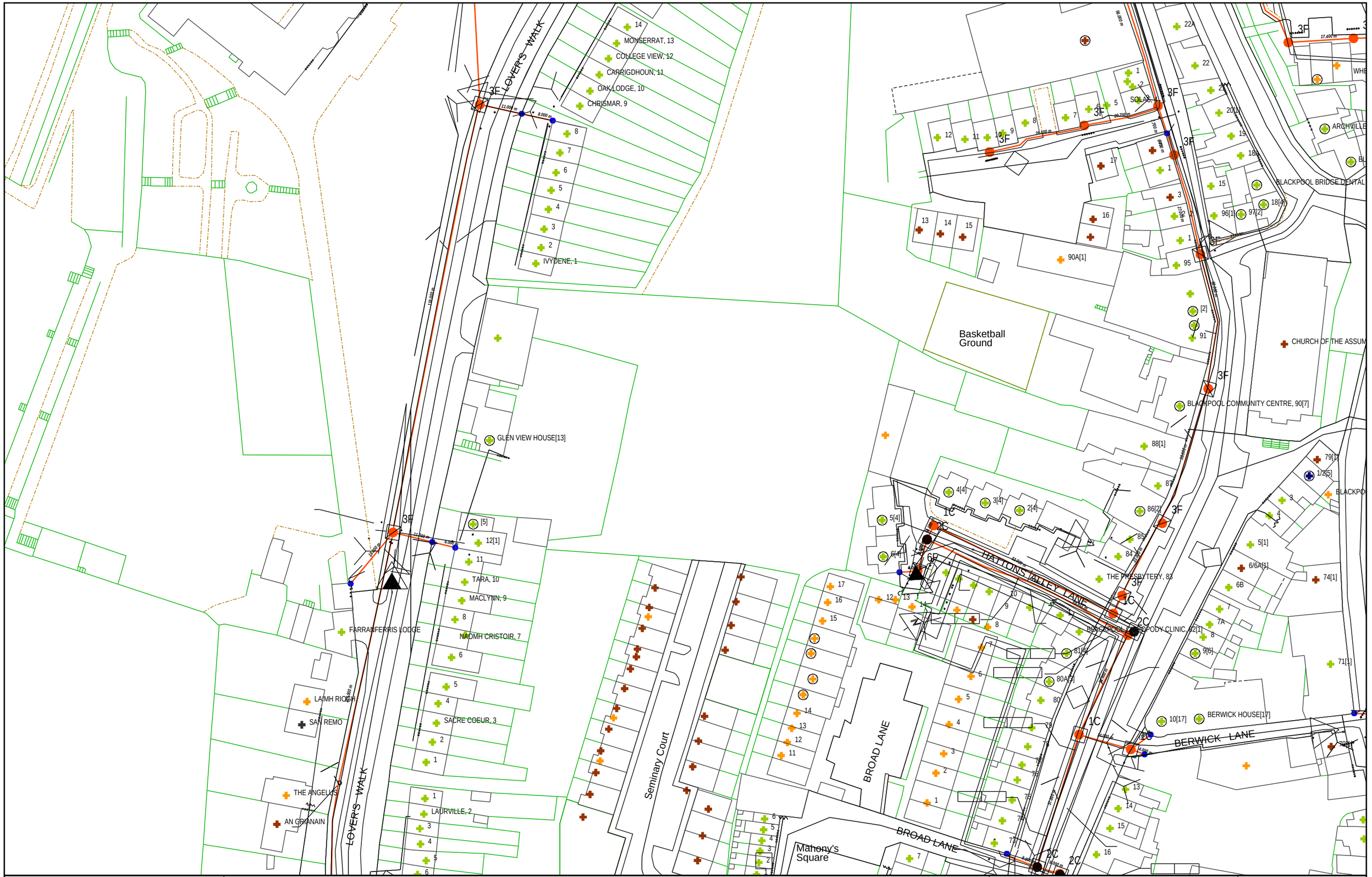
https://cbyd.emaps.eircom.ie/

Scale: 1:1000

Irish National Grid Co-Ordinates
Centre XY: 167285 m, 73253 m

Date
19/09/2018

emaps CBYD




| | | | |
|---|---|---|---|
| Virgin Media<br>Unit 6 & 7<br>Broomhill Business Park<br>Tallaght 24 | PROJECT NAME<br><br>DESIGNED BY: | Ordnance Survey Ireland Licence No. EN0023805<br>(c) Ordnance Survey Ireland and Government of Ireland<br><br>Produced on: 19/09/2018 | @ A3 |


REPRODUCED FROM THE ORDNANCE SURVEY BY PERMISSION OF THE GOVERNMENT. LICENCE No. 3-3-34

**Important Safety Notice:**

Damage to gas pipelines can result in serious injury or death. Gas network information is provided as a general guide. The exact location and depth of medium or low pressure distribution gas pipes must be verified on site by carrying out necessary investigations, including, for example, hand digging trial holes along the route of the pipe. Service pipes are not generally shown but their presence should always be anticipated.

High pressure transmission pipelines are shown in red. If a transmission pipeline is identified within 10m of any intended excavations then work must not proceed before GNI has been consulted. The true location and depth of a transmission pipeline must be verified on site by a representative of GNI. Contact can be made through 1850 427 747.

All work in the vicinity of the gas network must be completed in accordance with the current edition of the Health & Safety Authority publication, Code of Practice For Avoiding Danger From Underground Services which is available from the Health and Safety Authority (1890 289 389) or can be downloaded at www.hsa.ie.

**Legal Notice:**

Gas Networks Ireland (GNI) and its affiliates, accept no responsibility for the accuracy of any information contained in this document including data concerning location and technical designation of the gas distribution and transmission network (the Information ). The Information should not be relied on for accurate distance or depth of cover measurements.

Any representations and warranties, express or implied, are excluded to the fullest extent permitted by law. No liability shall be accepted for any loss or damage including, without limitation, direct, indirect or consequential loss, arising out of or in connection with the use or re-use of the Information.

- Aurora Telecom Fibre Optic Cable
- Aurora Telecom Duct
- Aurora Telecom Sub-duct
- Aurora Telecom Inserted Gas Pipe

Contact Aurora Telecom on 1850-427-399 or (01)203-0120.

- Transmission Pipe (High Pressure)
- Transmission Pipe (Construction Issue)
- Distribution Pipe (Medium Pressure)
- Distribution Pipe (Low Pressure)
- Service Pipe (Medium Pressure)
- Service Pipe (Low Pressure)
- Strategic Pipe (Medium Pressure)
- Strategic Pipe (Low Pressure)
- Inserted Pipe (Medium Pressure)
- Inserted Pipe (Low Pressure)
- Distribution Pipe (Abandoned)

| | | | |
|---|---|---|---|
| .C=? | Cover (depth in meters) | | Pressure Monitor |
| CP | CP Test Point | | Protection (Sleeve) |
| | End Cap | | Protection (Slabbing) |
| | Hot Tap | | Reducer |
| | Installation | | Service Terminator |
| | Valve | | Tee |
| | Mains Verification ** | | Transition |

** Please contact GNI on 1850-427747 for specific information.

***Design Department - DUBLIN***

Gas Networks Ireland

# GAS NETWORK INFORMATION

| | |
|---|---|
| Issue: Punch | |
| Location: Lovers Walk, Farranferris, Cork | |
| Plot Date: 17/09/2018 | Contact: AC |
| Plotted by: A.Abbott | Scale: 1:1000 |

## Appendix D Irish Water Confirmation of Feasibility & Design Acceptance

HG Construction IRL LTD
c/o Alan Cashman
Punch Consulting Eng,
Unit 2,
Cofley Hall,
Cotters Street,
Cork

Uisce Éireann
Bosca OP 6000
Baile Átha Cliath 1
Éire

Irish Water
PO Box 6000
Dublin 1
Ireland

T: +353 1 89 25000
F: +353 1 89 25001
www.water.ie

22 November 2018

Dear Sir/Madam,

**Re: Customer Reference No 4517062213 pre-connection enquiry - Subject to contract | Contract denied**
**62 unit housing development at Glenview House, Lovers Walk, Redemption Road, Cork**

Irish Water has reviewed your pre-connection enquiry in relation to water and wastewater connections at Glenview House, Lovers Walk, Redemption Road, Cork. Based upon the details that you have provided with your pre-connection enquiry and on the capacity currently available in the network(s), as assessed by Irish Water, we wish to advise you that, subject to a valid connection agreement being put in place, your proposed connection to the Irish Water network(s) can be facilitated.

In the case of wastewater connections this assessment does not confirm that a gravity connection is achievable. Therefore a suitably sized pumping station may be required to be installed on your site. All infrastructure should be designed and installed in accordance with the Irish Water Code of Practice.

While your water and wastewater connection can be facilitated, we regret to inform you that the discharge of stormwater as requested cannot be accommodated. You are advised to consider onsite disposal measures for the stormwater or alternatively consider contacting your Local Authority to discuss a connection to a stormwater sewer in the area.

All infrastructure should be designed and installed in accordance with the Irish Water Codes of Practice and Standard Details. A design proposal for the water and/or wastewater infrastructure should be submitted to Irish Water for assessment. Prior to submitting your planning application, you are required to submit these detailed design proposals to Irish Water for review.

You are advised that this correspondence does not constitute an offer in whole or in part to provide a connection to any Irish Water infrastructure and is provided subject to a connection agreement being signed at a later date.

A connection agreement can be applied for by completing the connection application form available 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.

If you have any further questions, please contact Brian O'Mahony from the design team on 022 52205 or email *bomahony@water.ie* . For further information, visit **www.water.ie/connections**

Yours sincerely,

**Maria O'Dwyer**

**Connections and Developer Services**

HG Construction Ltd. c/o Michael O'Connor,
Punch Consulting Engineers,
Unit 2,
Copley Hall,
Cotters Street,
Cork

**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**

13 June 2019

**Re: Design Submission for Development at Glenview House, Lovers Walk, Redemption Road, Cork (the "Development") (the "Design Submission") / 4517062213.**

Dear Michael,

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: Brian O'Mahony
Phone: 022 52205
Email: bomahony@water.ie

Yours sincerely,

**Maria O'Dwyer**

**Connections and Developer Services**

**Appendix A**

**Document Title & Revision**

| | |
|---|---|
| • 184-109-001 | Site Location Plan |
| • 184-109-003-PR4 | Proposed Drainage Layout |
| • 184-109-004-PR3 | Proposed Water Main Layout |
| • 184-109\|MOC\|01-04-2018\|SK010 Rev01 | Foul Long Sections |

**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.*


| | AMENDMENT | | |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |



# Lover's Walk Blackpool Housing Development

## Site Location Plan

PUNCH Consulting Engineers

Dublin: Carnegie House, Library Road, Dun Laoghaire, Co. Dublin, Ireland
t +353 1 271 2200 | f +353 1 271 220 | e dublin@punchconsulting.com

Limerick: 97 Henry Street, Limerick, Ireland
t +353 21 462 4000 | f +353 21 462 4001 | e cork@punchconsulting.com

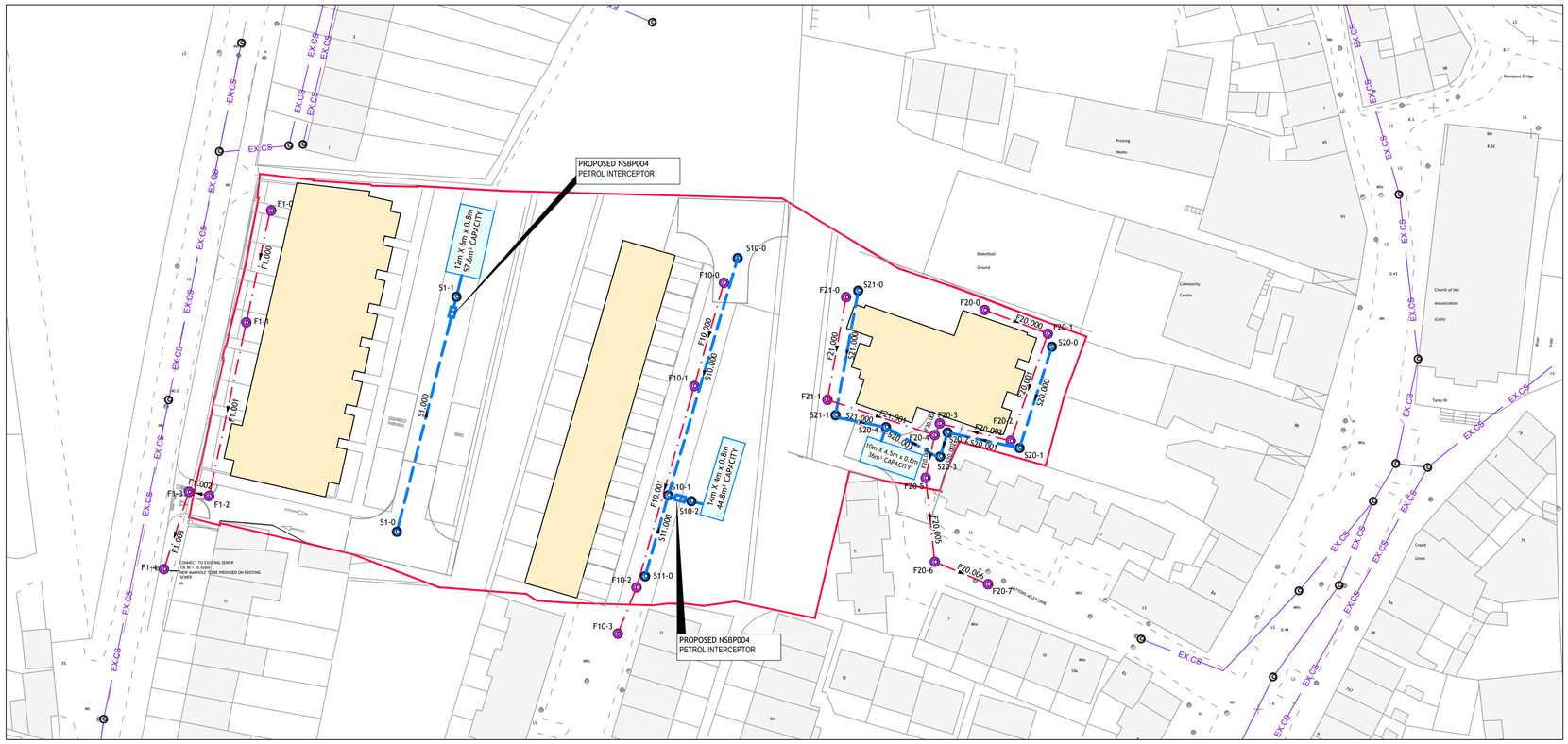
Cork: Copley Hall, Cotters Street, Cork, Ireland
t +353 21 462 4000 | f +353 21 462 4001 | e cork@punchconsulting.com

www.punchconsulting.com

| | |
|---|---|
| | PL0 |
| Stage: | PLANNING |
| Scale: | 1:2,500 @A3 |
| Drawn: | RW |
| Checked: | AC |
| Approved: | AC |
| Date: | 21/09/2018 |
| Drawing No: | 184-109-001 |

## IRISH WATER WASTEWATER DETAILS

| Drawing No. | Drawing Title |
|---|---|
| STD-WW-01 | Waste water service connection responsibility |
| STD-WW-02 | Typical layout for sewer within new developments |
| STD-WW-03 | Drain & service connection pipework |
| STD-WW-04 | Typical sewer / service pipe connection |
| STD-WW-05 | Typical service layout indicating separation distances |
| STD-WW-06 | Restrictions on trees/shrubs planting adjacent to sewers |
| STD-WW-07 | Trench backfill & bedding |
| STD-WW-08 | Concrete bed, haunch & surround to wastewater pipes |
| STD-WW-09 | Blockwork manhole (<450mm dia.) |
| STD-WW-10 | Pre-cast concrete manhole |
| STD-WW-11 | In-situ concrete manhole |
| STD-WW-12 | Backdrop manholes |
| STD-WW-13 | Private side inspection chamber |
| STD-WW-14 | Thrust blocks for rising mains |
| STD-WW-15 | Scour valve chamber (foul rising main <200mm dia.) |
| STD-WW-16 | Sluice valve details for rising mains ductile iron (D.I.) pipe (<200mm dia.) (sheet 1 of 2) |
| STD-WW-17 | Sluice valve details for rising mains polyethylene (P.E.) pipe (<200mm dia.) (sheet 2 of 2) |
| STD-WW-18 | Air valve chamber (foul rising main <200mm dia.) |
| STD-WW-19 | Duct chamber |
| STD-WW-20 | Emergency overflow structure |
| STD-WW-21 | Typical ditch/stream crossing for gravity main (sheet 1 of 2) |
| STD-WW-22 | Typical ditch/stream crossing for rising main (sheet 2 of 2) |
| STD-WW-23 | Typical bridge crossing for rising main (sheet 1 of 2) |
| STD-WW-24 | Typical bridge crossing for rising main (sheet 2 of 2) |
| STD-WW-25 | Security gate & fencing |
| STD-WW-26 | Indicative pumping station layout |
| STD-WW-27 | Flow meter chamber (foul rising main <200mm dia.) |
| STD-WW-28 | Indicative submersible pumping station |
| STD-WW-28A | Indicative pre-cast concrete submersible pumping station |
| STD-WW-29 | Rising main discharge manhole |
| STD-WW-30 | Kiosk type 1 pumping station & wet kiosk (sheet 1 of 2) |
| STD-WW-31 | Kiosk type 2 + 3 pumping station & wet kiosk (sheet 2 of 2) |
| STD-WW-32 | Hardstanding area pumping station (permeable & impermeable) |
| STD-WW-33 | Lamp bollard & lamp standard |
| STD-WW-34 | Vent stack |




**DRAINAGE GENERAL:**

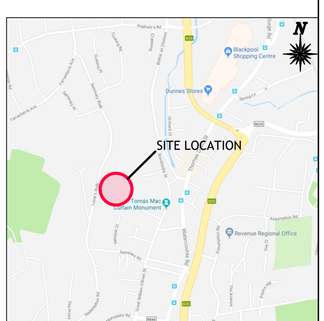
1. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING OUT ALL DRAINAGE INFRASTRUCTURE TO ENSURE NO CLASHES OCCUR WITH SERVICE DUCTS, CHAMBERS ETC.
2. CARE SHOULD BE TAKEN BY THE CONTRACTOR WHEN HANDLING PIPES, PARTICULARLY WHEN UNLOADING AND STACKING, SO AS TO AVOID DAMAGING THEM.
3. ALL PIPE SEALS AND GASKETS SHOULD BE STORED INDOORS AWAY FORM DIRECT SUNLIGHT.
4. ALL SEWERS TO BE THERMOPLASTIC STRUCTURED WALL SEWER PIPE AND SHALL COMPLY WITH THE RELEVANT PROVISIONS OF WIS 4-35-01. (I.E.POLYSEWER BY POLYPIPE CIVILS OR EQUIVALENT APPROVED)
5. EXCAVATION SHOULD NOT BE CARRIED OUT TOO FAR IN ADVANCE OF PIPE INSTALLATION. ALL RELEVANT HEALTH & SAFETY REQUIREMENTS IN RESPECT OF EXCAVATION SHOULD BE OBSERVED BY THE CONTRACTOR DURING EXCAVATION WORKS.
6. MINIMUM COVER TO PIPES;
   a) 1200mm ROADWAYS
   b) 900mm OPEN SPACES & FOOTPATHS NOT ADJACENT TO ROADS
   c) 600mm GARDENS
7. THE CONTRACTOR SHOULD PLAN HIS WORK FOR CHAMBERS AND MANHOLES SO AS TO MINIMISE AS MUCH AS POSSIBLE WORKING REQUIRED IN CONFINED SPACES.
8. JOINT LUBRICANTS FOR SLIDING JOINTS SHALL HAVE NO DELETERIOUS EFFECT ON EITHER THE JOINT RINGS OR PIPES AND SHALL BE UNAFFECTED BY SEWAGE.
9. ALL ABANDONED SEWER PIPES TO BE FILLED WITH C12/15 CONCRETE. ABANDONED MANHOLES TO BE BROKEN OUT IF POSSIBLE. OTHERWISE THEY SHOULD BE FILLED WITH C12/15 CONCRETE.
10. THE CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE RELEVANT SERVICE PROVIDERS IN ADVANCE OF ANY PLANNED EXCAVATION WORKS TO VERIFY THE LOCATION, DEPTH AND NATURE OF ANY UNDERGROUND SERVICES.
11. ROCKER PIPES;
    a) ROCKER PIPES SHOULD BE PROVIDED AT ALL LOCATIONS WHERE;
       i. A PIPE ENTERS OR LEAVES A MANHOLE, PUMPING STATION OR OTHER RIGID STRUCTURE.
       ii. A PIPE ENTERS OR LEAVES A CONCRETE ENCASEMENT.
       iii. ANY LOCATION AS DIRECTED BY THE ENGINEER.
    b) ROCKER PIPE JOINT TO BE LOCATED NO MORE THAN 150mm FROM THE OUTSIDE FACE OF THE STRUCTURE TO WHICH THE PIPEWORK IS SERVING. THE EFFECTIVE LENGTH OF THE ROCKER PIPE SHOULD BE;
       i. PIPE DIAMETER 150mm TO 600mm: 0.60m
       ii. PIPE DIAMETER 600mm TO 750mm: 1.00m
       iii. PIPE DIAMETER GREATER THAN 750mm: 1.25m
    c) ALL ROCKER PIPES ARE TO BE FORMED BY CUTTING AND TRIMMING A LENGTH OF SPIGOT & SOCKET PIPE TO FORM A SPIGOT AT THE CUT END, THEREBY FORMING SPIGOT & SOCKET JOINTS AT BOTH ENDS OF THE ROCKER PIPE.
12. PIPEWORK AND BENCHING TO A SINGLE MANHOLE CHAMBER SHOULD BE COMPLETED AND THE ENGINEER INVITED TO INSPECT SAME BEFORE ALL REMAINING CHAMBERS ARE COMPLETED.
13. ONLY PROPRIETARY CONNECTION PIECES TO BE USED FOR MAKING CONNECTIONS TO SEWERS.
14. WHEN INSTALLING FLEXIBLE PIPES (SINGLE\TWIN WALLED PVC OR SIMILAR) PARTICULAR CARE SHOULD BE TAKEN BY THE CONTRACTOR TO ENSURE THE PIPES ARE WELL BEDDED AND SURROUNDED IN GOOD QUALITY GRANULAR MATERIAL IN ACCORDANCE WITH THE SPECIFICATION.
15. THE CONTRACTOR MUST TAKE GREAT CARE WHEN COMPACTING MATERIAL OVER DRAINAGE PIPES SO AS NOT TO DISLODGE THEM FROM THEIR CORRECT LINE AND LEVEL.
16. TYPE E BEDDING TO BE USED WHERE MINIMUM COVER OR GREATER IS PROVIDED TO FLEXIBLE PIPES.
17. FOR PIPES IN ROADWAYS WHERE COVER IS LESS THAN 1200mm BUT GREATER THAN 800mm TYPE G BEDDING TO BE USED.
18. FOR PIPES IN ROADWAYS WHERE COVER IS LESS THAN 800mm TYPE X BEDDING TO BE USED.
19. FOR PIPES IN OPEN SPACES, FOOTPATHS NOT ADJACENT TO ROADS AND GARDENS WHERE MINIMUM COVER OR GREATER IS NOT ACHIEVED, TYPE G BEDDING TO BE USED.
20. ALL MANHOLES TO BE CONSTRUCTED WITH PRECAST CONCRETE RINGS IN ACCORDANCE WITH RELEVANT ENGINEERS DETAILS DRAWING.
21. PROPRIETARY CONNECTIONS TO BE USED THROUGHOUT.
22. ALL JOINTS TO BE WATERTIGHT TO CL 504 SUB CLAUSE 3 OF THE NRA SPECIFICATION FOR ROADWORKS.
23. MANHOLES WITHIN PAVING TO BE D400 AND RECESSED TO RECEIVE PAVIORS.
24. MANHOLES IN TARMACADAM/GRASSED AREAS TO BE NON ROCK D400 LOCKABLE MANHOLES.
25. TRENCHES IN EXISTING SURFACES TO BE SAW CUT.
26. IF CONSTRUCTING MANHOLE CHAMBERS USING PRECAST CONCRETE RINGS, THE CONTRACTOR SHOULD ENSURE THAT THE JOINTS IN THE PRECAST CONCRETE RINGS ARE STAGGERED WITH THE JOINTS IN THE CONCRETE SURROUND TO REDUCE THE POSSIBILITY OF GROUND WATER INGRESS.
27. WHERE A CONNECTION IS REQUIRED TO AN EXISTING PUBLIC SEWER SYSTEM, THE CONTRACTOR MUST MAKE A FORMAL APPLICATION TO THE LOCAL AUTHORITY TO DO SO.
28. A DETAILED METHOD STATEMENT MUST BE SUBMITTED TO THE LOCAL AUTHORITY FOR APPROVAL AT LEAST FOUR WEEKS IN ADVANCE OF THE PLANNED CONSTRUCTION WORKS.
29. WHERE NEW DRAINAGE INFRASTRUCTURE IS TO CROSS AN EXISTING ROAD, THE CONTRACTOR IS REQUIRED TO:
    a) CONTACT THE RELEVANT AUTHORITIES WELL IN ADVANCE OF THE PLANNED WORKS.
    b) MAKE AN APPLICATION AND PAY FOR A ROAD OPENING LICENCE IF APPLICABLE.
    c) MAKE GOOD THE EXISTING ROAD TO THE SATISFACTION OF THE ENGINEER & THE RELEVANT AUTHORITIES ON COMPLETION OF THE WORKS.
30. THE CONTRACTOR IS ADVISED TO COMPLETE AIR TESTING ON A DAILY BASIS DURING THE COURSE OF THE WORKS TO ENSURE ISOLATION OF ANY FAILED TESTS.
31. THE COMPLETE DRAINAGE WORKS SHOULD BE PROTECTED, WHERE NECESSARY, FROM LOADS IMPOSED BY CONSTRUCTION PLANT DURING CONSTRUCTION.
32. ON COMPLETION OF THE WORKS, THE CONTRACTOR MUST ENSURE ALL INTERNAL SURFACES OF THE NEW SEWERS ARE THOROUGHLY CLEANED TO REMOVE ALL DELETERIOUS MATERIAL. THIS MATERIAL MUST BE PREVENTED FROM ENTERING THE PUBLIC SEWER SYSTEM.
33. A CCTV SURVEY OF THE COMPLETED UNDERGROUND DRAINAGE NETWORK SHOULD BE CARRIED OUT BY THE CONTRACTOR ON COMPLETION OF THE WORKS. IT IS RECOMMENDED THAT THIS EXERCISE IS COMPLETED BEFORE FINAL SURFACE COURSES AND FINISHES ARE APPLIED IN CASE ANY REMEDIAL WORKS ARE REQUIRED TO THE DRAINAGE.

**DRAINAGE LEGEND**

- PROPOSED FOUL SEWER & MANHOLE (F1-0 — F1.000)
- PROPOSED SURFACE WATER & MANHOLE (S1-0 — S1.000)
- PROPOSED ATTENUATION TANK
- PROPOSED PETROL INTERCEPTOR
- PROPOSED BUILDING
- EXISTING COMBINED SEWER & MANHOLE (EX.CS)
- PROPOSED SITE BOUNDARY

| PN | USMH Name | Length (m) | Fall (m) | Slope (1:X) | USCL (m) | USIL (m) | DSCL (m) | DSIL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| F1.000 | F1-0 | 20.850 | 0.347 | 60.1 | 38.000 | 37.311 | 38.000 | 36.964 | 150 |
| F1.001 | F1-1 | 31.004 | 0.207 | 149.8 | 38.000 | 36.964 | 39.200 | 36.757 | 225 |
| F1.002 | F1-2 | 3.429 | 0.023 | 149.1 | 39.200 | 36.757 | 39.400 | 36.734 | 225 |
| F1.003 | F1-3 | 14.057 | 0.094 | 149.5 | 39.400 | 36.734 | 39.240 | 36.640 | 225 |
| F10.000 | F10-0 | 18.597 | 0.372 | 50.0 | 23.000 | 20.700 | 22.350 | 20.328 | 150 |
| F10.001 | F10-1 | 36.182 | 0.905 | 40.0 | 22.350 | 20.328 | 20.400 | 19.423 | 150 |
| F10.002 | F10-2 | 8.629 | 0.173 | 50.0 | 20.400 | 19.423 | 20.200 | 19.250 | 150 |
| F20.000 | F20-0 | 11.673 | 0.292 | 40.0 | 10.900 | 9.950 | 10.900 | 9.658 | 150 |
| F20.001 | F20-1 | 19.670 | 0.492 | 40.0 | 10.900 | 9.658 | 10.900 | 9.166 | 150 |
| F20.002 | F20-2 | 12.602 | 0.316 | 39.9 | 10.900 | 9.166 | 10.900 | 8.850 | 150 |
| F20.003 | F20-3 | 2.201 | 0.106 | 20.8 | 10.900 | 8.850 | 11.000 | 8.744 | 150 |
| F21.000 | F21-0 | 18.028 | 0.451 | 40.0 | 11.000 | 10.050 | 11.000 | 9.599 | 150 |
| F21.001 | F21-1 | 19.516 | 0.855 | 22.8 | 11.000 | 9.599 | 10.900 | 8.744 | 150 |
| F20.004 | F20-4 | 7.548 | 0.126 | 59.9 | 10.900 | 8.744 | 10.420 | 8.618 | 225 |
| F20.005 | F20-5 | 14.594 | 0.365 | 40.0 | 10.420 | 8.618 | 10.340 | 8.253 | 225 |
| F20.006 | F20-6 | 9.999 | 0.250 | 40.0 | 10.340 | 8.253 | 9.660 | 8.003 | 225 |

| PN | USMH Name | Length (m) | Fall (m) | Slope (1:X) | USCL (m) | USIL (m) | DSCL (m) | DSIL (m) | Dia (mm) |
|---|---|---|---|---|---|---|---|---|---|
| S1.001 | S1-0 | 41.895 | 0.698 | 60.0 | 37.500 | 36.000 | 37.300 | 35.302 | 225 |
| S10.000 | S10-0 | 42.720 | 2.136 | 20.0 | 23.200 | 22.175 | 20.400 | 20.039 | 225 |
| S11.000 | S11-0 | 14.560 | 0.588 | 24.8 | 20.400 | 19.375 | 21.400 | 18.787 | 225 |
| S10.001 | S10-1 | 4.123 | 0.016 | 257.7 | 21.400 | 18.787 | 20.700 | 18.771 | 225 |
| S20.000 | S20-0 | 18.376 | 0.306 | 60.0 | 10.900 | 9.875 | 10.900 | 9.569 | 225 |
| S20.001 | S20-1 | 12.738 | 0.212 | 60.0 | 10.900 | 9.569 | 10.900 | 9.357 | 225 |
| S20.002 | S20-2 | 4.349 | 0.072 | 60.0 | 10.900 | 9.357 | 10.900 | 9.285 | 225 |
| S20.003 | S20-3 | 10.317 | 0.172 | 60.0 | 10.900 | 9.285 | 11.000 | 9.113 | 225 |
| S21.000 | S21-0 | 21.860 | 0.364 | 60.0 | 11.000 | 9.975 | 11.000 | 9.829 | 225 |
| S21.001 | S21-1 | 9.658 | 0.498 | 19.4 | 11.000 | 9.829 | 10.900 | 9.792 | 225 |
| S20.004 | S20-4 | 2.924 | 0.049 | 60.0 | 10.900 | 9.113 | 10.800 | 9.064 | 225 |




LOCATION MAP N.T.S.



COLOUR DRAWING

Date Drawn: 2018-10-03
Drawn By: COLIN O'SULLIVAN
Date Issued: 2018-10-05
Issued By: COLIN O'SULLIVAN

| Rev | Amendment | By | Date |
|---|---|---|---|
| PR1 | SCALES REVISED AS REQUESTED | COS | 2018-10-08 |
| PR2 | REVISED TO INCORPORATE NEW INFORMATION (INFILTRATION TESTING, IW COMMENTS, NEW LAYOUT) | COS | 2019-03-22 |
| PR3 | NETWORK F1.000 REVISED | COS | 2019-04-01 |
| PR4 | REVISIONS TO ACCOUNT FOR IRISH WATER DESIGN COMPLIANCE COMMENTS | MOC | 2019-05-30 |

Client:

HG CONSTRUCTION
-

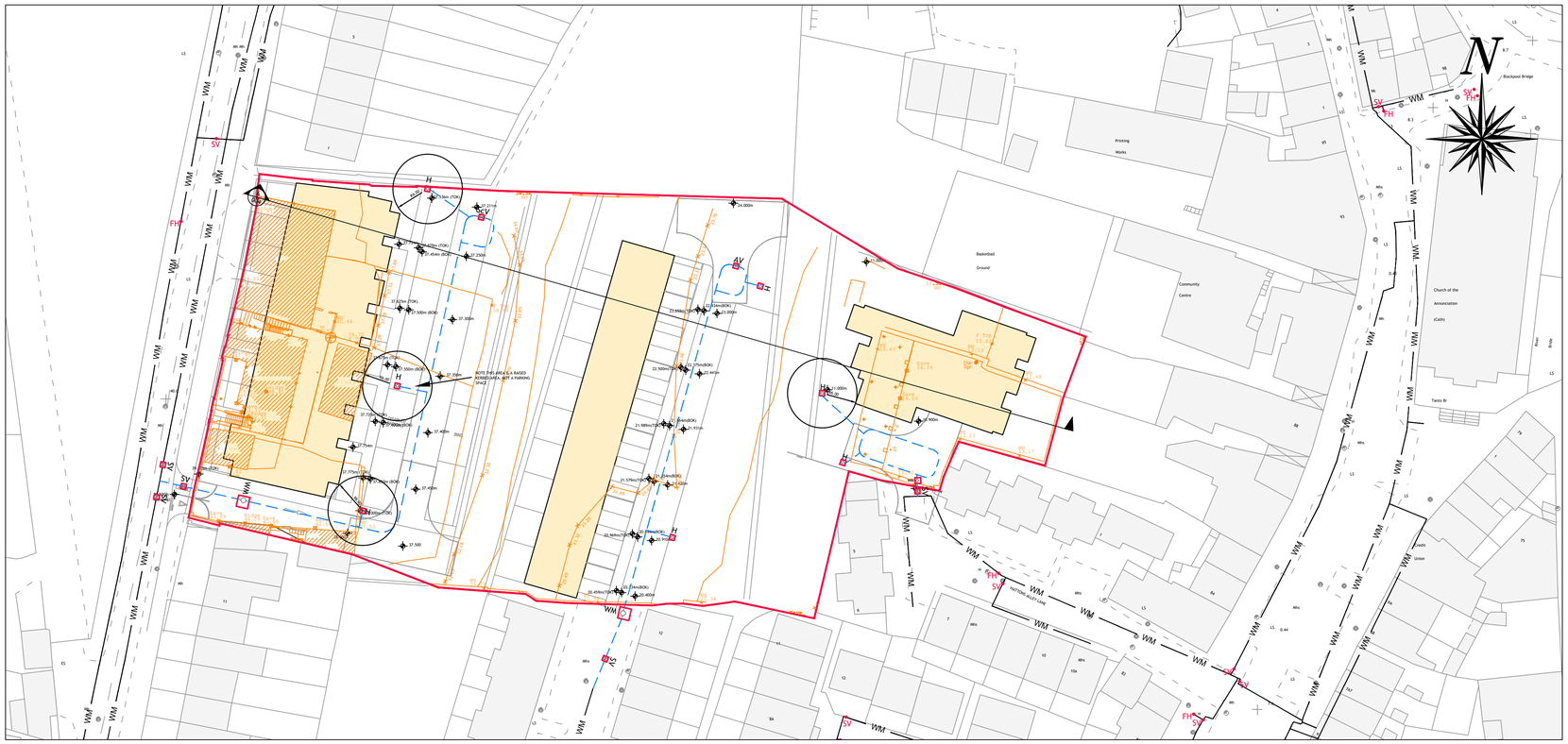
Job: REDEMPTION ROAD, BLACKPOOL, CORK
Title: PROPOSED DRAINAGE LAYOUT

PUNCH consulting engineers
Dublin|Limerick|Cork|Galway|Glasgow
Copley Hall, Cotters Street, Cork, T12 XF59
IRL: +353 21 462 4000 www.punchconsulting.com

Stage: PRELIMINARY
Scale @ A1: 1:500
Technician Check: TIM CROWLEY
Engineer Check: ALAN CASHMAN
Approved: CIAN MURPHY
Drawing No: 184-109-003
Rev: PR4

## IRISH WATER WATERMAIN DETAILS

| Drawing No. | Drawing Title |
|---|---|
| STD-W-01 | STD-WW-01 Waste water service connection responsibility |
| STD-W-02 | Typical layout for water mains within developments |
| STD-W-03 | Customer connection & boundary box |
| STD-W-04 | General pipe connections (sheet 1 of 7) |
| STD-W-05 | General pipe connections (sheet 2 of 7) |
| STD-W-06 | General pipe connections (sheet 3 of 7) |
| STD-W-07 | General pipe connections (sheet 4 of 7) |
| STD-W-08 | General pipe connections (sheet 5 of 7) |
| STD-W-09 | General pipe connections (sheet 6 of 7) |
| STD-W-10 | General pipe connections (sheet 7 of 7) |
| STD-W-11 | Typical service layout indicating separation distances |
| STD-W-12 | Restrictions on trees / shrubs planting adjacent to watermains |
| STD-W-13 | Trench backfill & bedding |
| STD-W-14 | Sluice valve for ductile iron (D.I.) pipe (<350mm dia.) (sheet 1 of 2) |
| STD-W-15 | Sluice valve for polyethylene (P.E.) pipe (<350mm dia.) (sheet 2 of 2) |
| STD-W-16 | On-line hydrant for ductile iron (D.I.) pipe (sheet 1 of 4) |
| STD-W-17 | Off-line hydrant for ductile iron (D.I.) pipe (sheet 2 of 4) |
| STD-W-18 | On-line hydrant for polyethylene (P.E.) pipe (sheet 3 of 4) |
| STD-W-19 | Off-line hydrant for polyethylene (P.E.) pipe (sheet 4 of 4) |
| STD-W-20 | On-line air valve for ductile iron (D.I.) pipe (sheet 1 of 4) |
| STD-W-21 | Off-line air valve for ductile iron (D.I.) pipe (sheet 2 of 4) |
| STD-W-22 | On-line air valve for polyethylene (P.E.) pipe (sheet 3 of 4) |
| STD-W-23 | Off-line air valve for polyethylene (P.E.) pipe (sheet 4 of 4) |
| STD-W-24 | Pressure reducing / sustaining valve (P.R.V. / P.S.V.) chamber |
| STD-W-25 | Booster pump station arrangement |
| STD-W-26 | Meter chamber (≤300mm dia.) |
| STD-W-27 | Marker posts / plates |
| STD-W-28 | Water main thrust & support blocks |
| STD-W-29 | Duct chamber |
| STD-W-30 | Scour chamber & head wall arrangements |
| STD-W-30A | Washout hydrant |
| STD-W-31 | Typical ditch / stream crossing for water main |
| STD-W-32 | Typical bridge crossing for water main (sheet 1 of 2) |
| STD-W-33 | Typical bridge crossing for water main (sheet 2 of 2) |
| STD-W-34 | Security gate & fencing |
| STD-W-35 | Pipe repair to existing mains |
| STD-W-36 | Telemetry and wet kiosk |
| STD-W-37 | Lamp bollard & lamp standard |



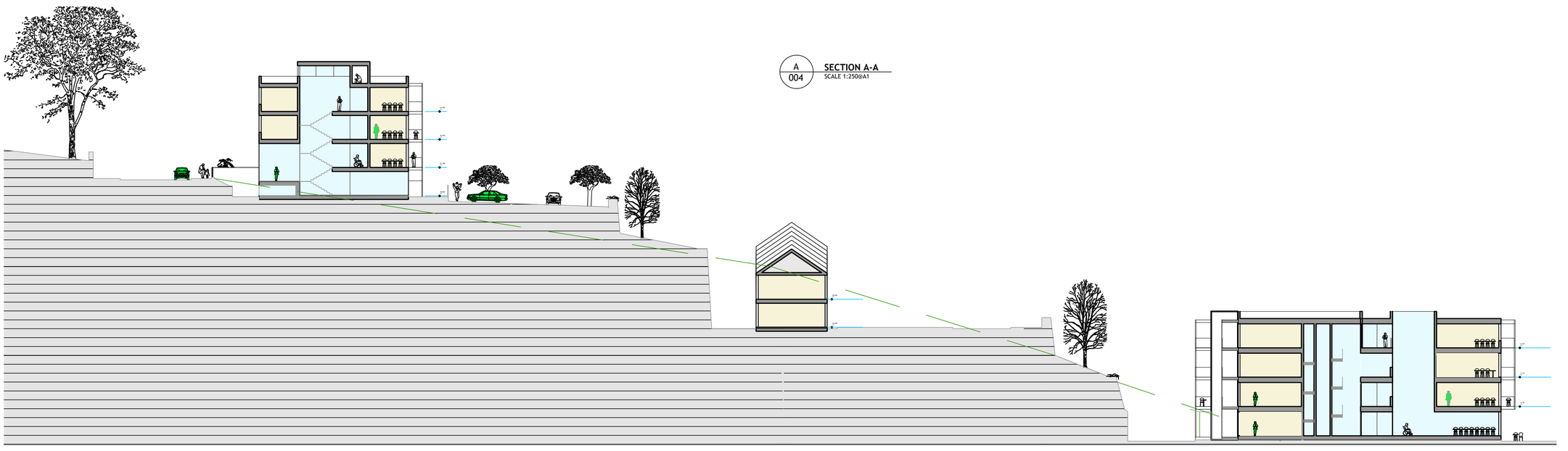

### LEGEND

| | |
|---|---|
| EXISTING IW WATERMAIN (DETAILS & LOCATION TBC) | WM — WM |
| PROPOSED WATERMAIN (125mm OD PE100 SDR11 PIPE) | |
| PROPOSED PROPERTY BOUNDARY BOX | BB |
| PROPOSED FIRE HYDRANT | H |
| PROPOSED SLUICE VALVE | SV |
| PROPOSED AIR VALVE | AV |
| PROPOSED WATERMETER | WM |
| PROPOSED SCOUR VALVE | ScV |
| EXISTING HYDRANT | FH |
| EXISTING SLUICE VALVE | SV |
| EXISTING METER | M |
| PROPOSED SITE BOUNDARY | |


LOCATION MAP N.T.S.

**WATERMAIN:**

1. THIS DRAWING SHOULD BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS & MANUFACTURERS DRAWINGS & SPECIFICATIONS.
2. ALL PIPE DIAMETERS ARE NOMINAL.
3. WHERE CONNECTION IS REQUIRED TO AN EXISTING PUBLIC WATERMAIN, THE CONTRACTOR MUST ISSUE DETAILED DOCUMENTATION FOR APPROVAL TO THE RELEVANT LOCAL AUTHORITY AND IRISH WATER. THIS DOCUMENTATION MUST BE ISSUED AT LEAST 40 WORKING DAYS IN ADVANCE OF THE PLANNED WORKS OR AS AGREED WITH THE LOCAL AUTHORITY AND IRISH WATER.
4. ALL THRUST BLOCKS MUST BE CAST AGAINST UNDISTURBED GROUND. FLEXIBLE PIPES SHOULD BE WRAPPED IN ONE LAYER OF 1000 GAUGE POLYTHENE TO AVOID DIRECT CONTACT WITH THE CONCRETE. MARKER POSTS AND PLATES TO BE PROVIDED FOR ALL VALVES, METERS AND HYDRANTS.
5. CHLORINATION AND BACTERIOLOGICAL TESTS TO BE UNDERTAKEN BY EXTERNAL TESTER AND TEST CERTIFICATION TO BE SUBMITTED TO ENGINEER.
6. MARKER POSTS AND PLATES TO BE PROVIDED FOR ALL VALVES.
7. IN ADVANCE OF TESTING OF THE WATERMAINS, THE CONTRACTOR MUST PRESENT TO THE ENGINEER A CALIBRATION CERTIFICATE FOR THE APPARATUS TO BE USED IN THE TEST.
8. ALL DETAILS TO BE AGREED WITH LOCAL AUTHORITY
9. ALL EXISTING WATERMAINS TO BE ADEQUATELY PROTECTED. ANY WATERMAINS DAMAGED DURING THE COURSE OF CONSTRUCTION WILL BE REPLACED BY THE CONTRACTOR AT THEIR COST.
10. COVERS OF ALL HYDRANT CHAMBERS TO BE PAINTED YELLOW
11. ALL ROCKER PIPES SHALL BE NO MORE THAN 150mm FROM THEIR ASSOCIATED CHAMBER
12. WHERE PIPE RUN IS LOCATED ADJACENT TO FOUNDATION AND IS AT A LEVEL BELOW UNDERSIDE OF THE FOUNDATION, PIPE TRENCH TO BE BACKFILLED TO FORMATION LEVEL WITH CLASS 15/20 CONCRETE.
13. PROVIDE ANCHOR/THRUST BLOCKS ON ALL BENDS EQUAL TO OR IN EXCESS OF 22.5° , DEAD ENDS AND TEES ON ALL PIPES
14. TRENCHES IN EXISTING SURFACES TO BE SAW CUT.
15. CONTRACTOR SHALL BE RESPONSIBLE FOR SETTING OUT WATERMAINS & SLUICE VALVES TO ENSURE NO CLASHES WITH SERVICE DUCTS OR PIPES.
16. METERS FOR APARTMENTS OR SIMILAR PROPERTIES WILL BE INSTALLED INTERNALLY WITHIN THE PREMISES IN ACCORDANCE WITH THE BUILDING CONTROLS AUTHORITY REQUIREMENTS AND SUBJECT TO REVIEW BY IRISH WATER
17. WHERE BOOSTER PUMP IS TO BE PROVIDED, ISOLATION DEVICE SHALL 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.
18. LOOPS SHALL HAVE A MINIMUM OF 4 CONNECTED PROPERTIES



A 004 **SECTION A-A**
SCALE 1:250@A1



COLOUR DRAWING ☒

Date Drawn: 2018-10-03
Drawn By: COLIN O'SULLIVAN
Date Issued: 2018-10-05
Issued By: COLIN O'SULLIVAN

| Rev | Amendment | By | Date |
|---|---|---|---|
| PR1 | SCALES REVISED AS REQUESTED | COS | 2018-10-08 |
| PR2 | LAYOUT REVISED | COS | 2019-03-22 |
| PR3 | REVISIONS TO ACCOUNT FOR IRISH WATER DESIGN COMPLIANCE COMMENTS | MOC | 2019-05-30 |
| | | | |
| | | | |
| | | | |

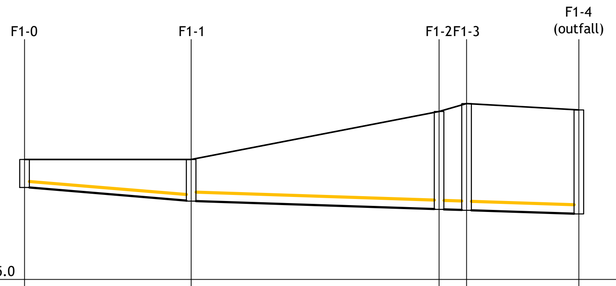
Client:

HG CONSTRUCTION
-

Job: REDEMPTION ROAD, BLACKPOOL, CORK
Title: PROPOSED WATERMAIN LAYOUT

PUNCH consulting engineers
Dublin|Limerick|Cork|Galway|Glasgow
Copley Hall, Cotters Street, Cork, T12 XF59
IRL: +353 21 462 4000 www.punchconsulting.com

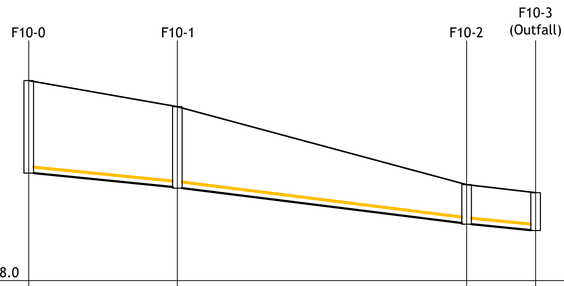
Stage: PRELIMINARY
Scale @ A1: 1:500
Technician Check: TIM CROWLEY
Engineer Check: ALAN CASHMAN
Approved: CIAN MURPHY
Drawing No: 184-109-004
Rev: PR3




Vert exaggeration = 5.0

Datum = 35.0

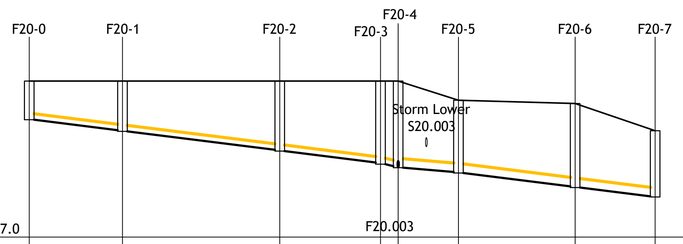
| Link Name | | F1.000 | F1.001 | F1.002 | F1.003 | |
|---|---|---|---|---|---|---|
| Section Type | | 150mm | 225mm | 225mm | 225mm | |
| Slope | | 1:60.1 | 1:149.8 | 1:149.1 | 1:149.5 | |
| Cover Level | | 38.000 | 38.000 | 39.200 / 39.400 | | 39.240 |
| Invert Level | | 37.311 | 36.964 / 36.964 | 36.757 / 36.757 / 36.734 / 36.734 | | 36.640 |
| Length | | 20.850 | 31.004 | 3.429 | 14.057 | |




Vert exaggeration = 5.0

Datum = 18.0

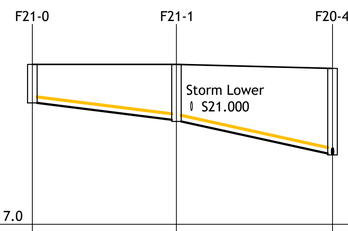
| Link Name | | F10.000 | F10.001 | F10.002 | |
|---|---|---|---|---|---|
| Section Type | | 150mm | 150mm | 150mm | |
| Slope | | 1:50.0 | 1:40.0 | 1:50.0 | |
| Cover Level | | 23.000 | 22.350 | 20.400 | 20.200 |
| Invert Level | | 20.700 | 20.328 / 20.328 | 19.423 / 19.423 | 19.250 |
| Length | | 18.597 | 36.182 | 8.629 | |




Vert exaggeration = 5.0

Datum = 7.0

| Link Name | | F20.000 | F20.001 | F20.002 | F20.004 | F20.005 | F20.006 | |
|---|---|---|---|---|---|---|---|---|
| Section Type | | 150mm | 150mm | 150mm | 150mm / 225mm | 225mm | 225mm | |
| Slope | | 1:40.0 | 1:40.0 | 1:39.9 | 1:20.8 / 1:59.9 | 1:40.0 | 1:40.0 | |
| Cover Level | | 10.900 | 10.900 | 10.900 | 10.900 / 10.900 | 10.420 | 10.340 | 9.660 |
| Invert Level | | 9.950 | 9.658 / 9.658 | 9.166 / 9.166 | 8.850 / 8.744 | 8.618 / 8.618 | 8.253 / 8.253 | 8.003 |
| Length | | 11.673 | 19.670 | 12.602 | 2.201 | 7.548 | 14.594 | 9.999 |




Vert exaggeration = 5.0

Datum = 7.0

| Link Name | | F21.000 | F21.001 | |
|---|---|---|---|---|
| Section Type | | 150mm | 150mm | |
| Slope | | 1:40.0 | 1:22.8 | |
| Cover Level | | 11.000 | 11.000 | 10.900 |
| Invert Level | | 10.050 | 9.599 / 9.599 | 8.744 |
| Length | | 18.028 | 19.516 | |

# 184-109|MOC|13-06-2019|SK010 Rev 1
# Redemption Road Social Housing
# Foul Long Sections NOT TO SCALE

**REPORT IN RELATION TO COMPLIANCE WITH PART B (FIRE SAFETY)**

**OF THE**

**BUILDING REGULATIONS**

# ITCD FOR CORK CITY COUNCIL SOCIAL HOUSING PROGRAMME 2017-19-LOT 1A

# REDEMPTION ROAD

**DAIRE BYRNE & ASSOCIATES**

**FIRE SAFETY CONSULTING ENGINEERS**

**OVERVIEW**

Daire Byrne & Associates, Fire Safety Consulting Engineers have been engaged as part of the Reddy Architecture Design Team in relation to the Social Housing Programme 2017-19 Lot 1A.

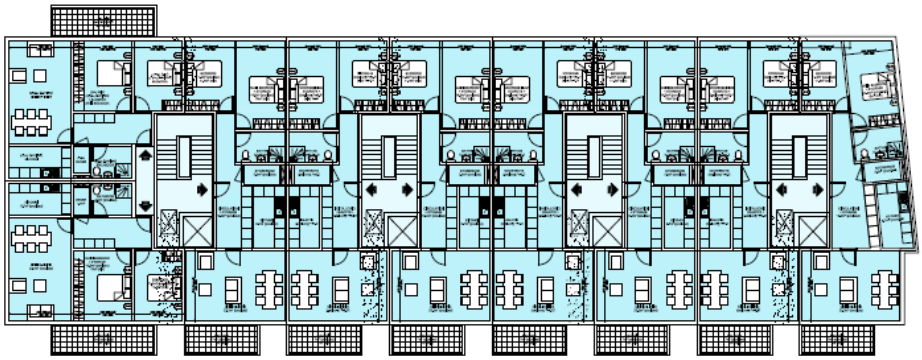
The proposed development site for Cork City Council Social Housing Programme 2017-19-Lot 1A at Redemption Road will provide for three different types of housing. These are:

Type 1 – A four storey block of apartments
Type 2 – A terrace of two storey houses
Type 3 – A four storey block of apartments for sheltered housing

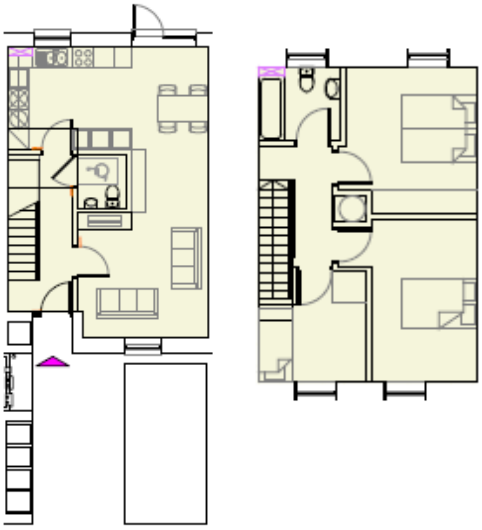
The fire strategy for the various types of accommodation involves an assessment of each of the accommodation types which are standard apartments, sheltered housing units and terraced houses.

The approach for all dwelling types to ensure compliance with Part B of the Building Regulations is achieved is to address each of the functional requirements of the Building Regulations in respect of each unit type.

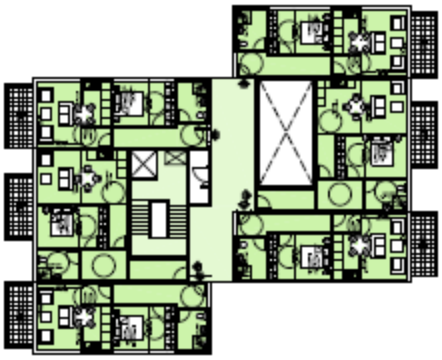
Typical Apartment Layout



Typical Terrace House



Typical Sheltered Housing



**REGULATION B1 MEANS OF ESCAPE**

The means of escape from all apartment units (Type 1 and 3) are assessed with reference to BS 9991 : 2015 to address Regulation B1.

Standard independent terraced houses are assessed with reference to Technical Guidance Document B Volume 2.

**REGULATION B2 INTERNAL FIRE SPREAD (LININGS)**

The requirements in relation to internal fire spread (linings) will be assessed for compliance with reference to Technical Guidance Document B and Technical Guidance Document B Volume 2.

**REGULATION B3 INTERNAL FIRE SPREAD (STRUCTURE)**

The requirements in relation to internal fire spread - structure are assessed for compliance with reference to BS 9991 and Technical Guidance Document B Volume 2.

Each individual residential unit will form a separate fire compartment.

Where any non-standard forms of construction are proposed accompanying certification project specific will be in place along with inspection regimes for the various stages of construction.

**REGULATION B4 EXTERNAL FIRE SPREAD**

The requirements in relation to external fire spread will be assessed for compliance with reference to BRE Report 187 : 2014.

The extent of the boundary conditions on site will ensure that there are no issues in relation to external fire spread.

**REGULATION B5 ACCESS AND FACILITIES FOR THE FIRE SERVICE**

The three types of fire brigade vehicle access for each of the accommodation types is outlined below along with the basis of compliance.

**Type 1 – Four Storey Apartment Block**

This Block fronts onto Lovers Walk which is a public roadway and also has vehicular access to the rear of the block.

Internally the building is sub-divided into four separate cores, three of which are accessed from Lovers Walk on the West Elevation and one core is accessed from the internal roadway on the East Elevation.

As this building is an apartment development the basis of compliance for fire fighting vehicle access is Section 5 of Technical Guidance Document B.

With reference to Table 5.1 of Technical Guidance Document B vehicle access is required to 15% of the building perimeter. In excess of this distance is provided to the West Elevation.

**Type 2 – Terrace of Two Storey Houses**

This Block is accessed via an existing residential estate, Seminary Court.

As this building is a block of two storey terrace houses the basis of compliance is Technical Guidance Document B Volume 2.

Section 5.4.2 requires that vehicle access for an appliance is to be such that a fire brigade appliance should be within 45m of the principal entrance to the dwelling house.

Section 5.4.4 requires that turning facilities for appliances are to be provided in any dead-end access route that is more than 20m long.
A hammer head turning facility is provided for at the dead-end section of Seminary Court.

**Type 3 - Four Storey Block of Apartments for Sheltered Housing**

This Block is accessed from Hattons Alley Lane which is a public roadway.

As this building is an apartment development the basis of compliance for fire fighting vehicle access is Section 5 of Technical Guidance Document B.

With reference to Table 5.1 of Technical Guidance Document B vehicle access is required to 15% of the building perimeter. In excess of this distance is provided to the West Elevation.

With specific reference to “Recommendations for Site Development Works for Housing Areas”:

Section 2 relates to the design of roadways and footpaths. This primarily relates to the structural design of roadways to include provisions relating to residential turning bays. Figure 2.2 provides details in relation to turning bays and hammer head facilities. These requirements have been incorporated in the roadway design on site int here specific areas, namely:

(i) To the South East Elevation of Accommodation Type 1.
(ii) To the North East Elevation of Accommodation Type 2.
(iii) To the South West Elevation of Accommodation Type 3.

Section 4 relates to water supply provisions, under Section 4.12 hydrants are required so that no house is more than 46m from a hydrant. This requirement is being complied with and will be addressed through Fire Safety Certificate applications in respect of accommodation Types 1 and 3.

The above demonstrates the provisions made in respect of fire fighting vehicle access complies with:

- Technical Guidance Document B.
- Technical Guidance Document B Volume 2
- Recommendations for Sire Development Works for Housing Areas as published by the DoELG.