Crocon Engineers Ltd.

Drainage Impact Assessment

Conversion of former Garda Station to 2 no. dwelling units & all ancillary site works

at

former Garda Station,
Goleen,
Co. Cork

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		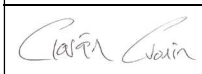	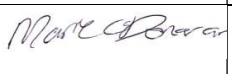	

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Contents

1 INTRODUCTION

1.1 General

CROCON Consulting Engineers have been commissioned by Cork County Council to prepare a Drainage Impact Assessment Report (DIA) for the proposed development at former Garda Station, Goleen, Co. Cork as part of the Part 8 application for Cork County Council.

The report details the existing site conditions, existing drainage infrastructure within the site and surrounding area and provides an overview of the proposed storm drainage infrastructure for the development.

1.2 Objectives and Scope

The objectives of this DIA are to:

- Outline the strategy for the surface water drainage for the development.
- Identify any drainage issues which may arise from the development.

To achieve these objectives this report provides the following information:

- The existing drainage infrastructure on the site.
- Outline the relevant policy, standards, and guidance for the design of the site drainage.
- The proposed strategy for the surface water drainage.

2 Surface Water Sewer

It is proposed to dispose of surface water on site by means of discharging to the existing storm network on the public road.

2.1 Drainage Impact Assessment.

This report will be prepared to provide details of the storm water elements associated with the proposed development. The report will deal with the following aspects associated with this development:

• Storm Water Drainage Design

• Sustainable urban Drainage Systems (SuDS)

• Flood Risk Assessment and Exceedance Flows

• SuDS Maintenance.

2.2 Surface Water Management & Maintenance.

A thorough drainage impact assessment is crucial for understanding the potential effects of drainage systems on the environment and surrounding areas. It helps in identifying the potential impacts on water quality, hydrology, vegetation, wildlife, and human activities. The findings of a drainage impact assessment can guide decision-makers in developing appropriate mitigation measures and best management practices to minimise adverse effects and ensure sustainable drainage practices.

Modern surface water management requires a softer engineered or 'nature-based approach' to be used to manage rainfall runoff on the site i.e., to manage and treat surface water above-ground rather than sending rainfall below-ground into drains, pipes, attenuation tanks and other 'hard engineering' solutions. The aim is to maximise the retention and/or infiltration of storm water runoff on-site, minimise discharges to the public drainage system and to limit the discharge rates from the site to greenfield runoff rate or less.

To help with selecting and using nature-based solutions, please see Table 1 which identifies the options to be utilised on this site.

Table 1

SUDS SELECTION HIERARCHY SHEET FOR SMALL-SCALE DEVELOPMENT

SuDS Measures		**Measures to be used on site**	**Rational for selecting / not selecting measure including discharge rate applied with supporting calculations**
Water butt – 150L capacity or more (based water use demand) with means of overflow		X	Water Harvesting Cost saving Environmental benefits
Permeable paving – consider for all hard paved areas without heavy traffic			Limited applicability. Grassed areas are maximised on site.
Bio-retention planter – disconnect downpipe connection into drains and allow roof runoff into planter with means of overflow		X	Water Harvesting Cost saving Environmental benefits
Rain garden - disconnect downpipe/RWP into the planted flower bed		X	Water Harvesting Cost saving Environmental benefits .
Green / Blue Roof – requires a minimum substrate depth (growth medium) of at least 80 mm excluding the vegetative map			Limited applicability: Not compatible with design. Installation and ongoing maintenance costs Structural considerations
Other			

As per Criterion 4, in accordance with the recommendations of CIRIA 753 (SuDS Manual) and requirements of CCC, all new developments are to incorporate the principles of 'SuDS'. The aim of 'SuDS', inclusion across the development is to provide an effective system separate from the foul network to mitigate the adverse effects of storm water run-off on the environment, through enhanced quality systems and on local infrastructure to aid in preventing downstream flooding. The features proposed shall reduce runoff volumes, pollution concentrations and enhance groundwater recharge and biodiversity.

The proposed development 'SuDS' features shall consist of:

a) Permeable Paving – this system allows rainwater to be directed into carparking bays whereby the rainwater can filter through gaps in the paving blocks and percolate into the subsoil. The area which can be drained is subject to the infiltration characteristics of the subsoil.

b) Water Butts – Water butts collect water from roofs and are installed/connected to rainwater downpipes. Each installed water butt will have a capacity of 150l.

c) Oil Separator – An oil separator will be installed before the final disposal point at the existing storm water network. This ensures that hydrocarbon elements that are harmful to the environment are removed from the water before disposal.

d) Low Water Usage Appliances – It is also worth highlighting that low water usage appliances should also be utilised to aid in the reduction of water usage on the development.

The combination of the above noted elements will allow the proposed development to adhere to the principles of sustainable drainage practices while enhancing overall storm water quality.

3 Flooding and Exceedance flows.

As part of the design process, we have carried out a preliminary Flood Risk review for the proposed development. An investigation was undertaken to determine the susceptibility of the site to flooding as part of the scheme design. The site is located to the south of Goleen.

The PSFRM Guidelines classify dwelling houses as “Highly Vulnerable development” in terms of its sensitivity to flooding. Such developments should be constructed in Flood Zone C, where there is less than a 0.1% Annual Exceedance Probability (AEP) of fluvial, pluvial, groundwater and coastal flooding.

The developable area is located outside the predicted flood extents inundation line. The risk of flooding (fluvial, pluvial, groundwater and coastal flooding) to the proposed development is considered minimal, and as such the development as it is currently proposed is considered ‘appropriate’ in line with the PSFRM Guidelines.

4 Conclusion.

In conclusion to the foregoing, regular monitoring and adaptive management should also be implemented to continuously evaluate the effectiveness of mitigation measures and make necessary adjustments to ensure ongoing environmental protection & sustainable water management.