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S1 Ballymount Drive

Drainage Report

ONCE Civil & Structural Ltd

Contents

1.0 INTRODUCTION 3

 1.1 Instruction 3

2.0 Proposals 4

3.0 Surface Water Drainage 5

 3.1 Existing Surface Water 5

 3.2 Surface Water Policy 5

 3.3 Attenuation Tanks: 5

 3.3.2 Hydro Break 6

 3.4 PETROL/OIL SEPARATORS & SILT TRAPS 6

APPENDIX 7

1.0 INTRODUCTION

1.1 Instruction

ONCE Consultant Engineers have been appointed to provide civil engineering design services for a proposed industrial unit at S1 Ballymount Drive, Dublin 12.

The following report will address the civil engineering elements, including;

- Surface Water Strategy design

The existing site covers approximately 0.03 hectares. This is an existing green field at the end of an existing industrial unit.



Figure 1, Site Layout

2.0 Proposals

The proposed development consists of a two industrial units, figure 2.



Figure 2, Proposed Layout

3.0 Surface Water Drainage

3.1 Existing Surface Water

The site is an existing industrial unit with grass land to the side elevation.

3.2 Surface Water Policy

The proposed development will comprise of two new single story industrial unit adjoining to the existing building and widening of the side footpath.

The proposed development will include a new surface water drain to collect the surface water runoff from the roof and new carparking and discharge to an attenuation tank in the common area of the site.

The drainage is designed to comply with policies and guidelines, outlined in the Greater Dublin Strategic Drainage Study (GSDS), Greater Dublin Regional Code of Practice for Drainage Works

The following main measures will be provided by the design;

- Attenuation of surface water collection prior to discharge to the existing network.

3.3 Attenuation Tanks:

The attenuation tanks will be located in a trafficked area, a standard minimum depth of cover from road level to top of the roof of the tank will be 1.2m as per Greater Dublin Regional Code of Practice V6.0 30 16.6.3. Lockable manhole covers will be installed at either end of the tank and will allow for safe access and egress via step irons, see section 10 All enlarged pipes and associated manholes will comply with this document

The location for the attenuation tank is noted in figure 3



Figure 3, Proposed Drainage Layout

The attenuation tank was chosen based on the characteristics of the site and the data extracted from the Flood studies Reports.

The contribution factors were;

Contribution Area -- 350m²

Total Site Area -- 350 m²

Obar - 2.0/sec /H

With these factors and then data from the rainfall Return Table (Annex) the required storage need for the site estimated at 2.0cu.m for a 15min storm event.

A concrete 3cu.m attenuation tank will discharge through a stainless steel hydrobreak with flow restricted for the qbar of the site.

3.3.2 Hydro Break

The hydro beak chosen for this design is a Hydro-Brake® Optimum.

Technical Specification:

Control Point	Head (m)	Flow (l/s)
Primary Design	2.15	2.550
Flush-Flo	0.278	1.717
Kick-Flo®	0.567	1.392
Mean Flow	////////////////////	1.890

(Full Design shown in Appendix)

Hydro-Brake® Optimum Complies with Design requirements.

3.4 PETROL/OIL SEPARATORS

Where SUDS cannot be utilised or in areas where there is a risk of pollution by petrol, oil, silt or other suspended materials appropriate interceptors must be installed. These must be designed and constructed in accordance with the relevant standards.

All surface car parks with the provision for 10 spaces or more must be fitted with a Class I Light Liquid Separator, the proposed development will have 6 carparking spaces, no interceptor is proposed.



Thomas O'Neill for ONCE Consultant Engineers

APPENDIX

Rainfall Figures for Co.Wicklow from Met Eireann

Return Period 100
 Gross Area 157 Sq.m
 SAAR 900
 Soil Index 0.30

S1 Ballymount

Duration (mins)	Rainfall (mm)	Intensity (mm/hr)	Runoff (l/sec)	Outflow (l/sec)	Storage (cu.m)
1	2.6	156.00	6.80	0.325	0.388689
2	4.3	129.00	5.63	0.325	0.636077
5	7.9	94.80	4.13	0.325	1.142744
10	11.5	69.00	3.01	0.325	1.610387
15	14.7	58.80	2.56	0.325	2.015231
30	19.8	39.60	1.73	0.325	2.523261
60	26	26.00	1.13	0.325	2.911323
120	32.3	16.15	0.70	0.325	2.729746
240	42.7	10.68	0.47	0.325	2.021192
360	51	8.50	0.37	0.325	0.982938
720	66.7	5.56	0.24	0.325	-3.57622
1440	81.3	3.39	0.15	0.325	-15.3321

Qbar = 0.325 l/sec

Required Storage (cu.m)
2.91

100 year return table

Pipe Diameter (meters)	Required Length	Tank Size (meters)	SQUARE	(meters)		DEPTH
0.6	6.4	1.71	X	1.71	X	1.0
0.9	2.8	1.39	X	1.39	X	1.5
1.05	2.1	1.21	X	1.21	X	2.0
1.2	1.6	1.08	X	1.08	X	2.5
1.5	1.0	0.99	X	0.99	X	3.0

Date	Development Address	Calculations By	TON
15/09/2021		ONCE Civil & Structural Ltd	
Ref. No.		4 Bridgecourt Office Park	
5386	S1 Ballymount	01 426 4883	

Sq.m = Sq.km

Area of hard land scaping

157.000

To change from sq.m to sq.km enter

358 0.000

Total Area of the Site (sq. km)	Area	0.000	SQ.KM
Standard Average Annual Rainfall (mm)	SAAR	900	MM
Soil Type	G1	0	%
	G2	100	%
	G3	0	%
	G4	0	%
	G5	0	%
Soil Index			
SOIL= .15G1+.3G2+.4G3+.45G4+.5G5			
(g1+g2+g3+g4+g5)	SOIL	0.30	
Mean Annual Flow (l/sec)	MAF	0.166	l/sec

Maximum Allowable Discharge

Return Period	2	5	10	25	50	100
FSR Ireland Multiplier	0.95	1.2	1.37	1.6	1.77	1.96
Max Allowable Discharge (l/sec)	0.158	0.199	0.227	0.265	0.294	0.325

Institute of Hydrology No.124: Flood Estimation for Small Catchments 1997

Flood Studies Report, NERC (1976), Vol. 1, Table 2.39 p.173