PUNCH
consulting engineers

Green Park Youghal Pavilion

Engineering Planning Report

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1 Introduction

This report was prepared to accompany a planning application for the proposed development of a pavilion structure within the Green Park amenity area in Knockaverry, Youghal, Co. Cork. The site location is shown in Figure 1-1 below.

The Green Park amenity area is bordered by Carleton Wharf residential apartment blocks to the north, O'Brien Place roadway, the Walter Raleigh and several private domestic dwellings to the west, the Front Strand beach to the south and Youghal Harbour to the east. The existing space comprises a Victorian style park with a manicured lawn and a central linear arrangement of protected monuments. The park is bounded by a raised promenade to the south and east with a single access point to the beach at the southwestern corner. The park is generally relatively flat falling at a gradient of approximately 1 in 80, from approximately 2.1 mAOD at the east, to 3.2 mAOD towards the west of the site.

Figure 1-1: Site Location of the Proposed Development

1.1 Proposed Development

The proposed works are outlined in a series of architectural drawings prepared by John McLaughlin Architects and engineering drawings prepared by PUNCH Consulting Engineers and supplied as part of the planning documentation.

The proposed development comprises the construction of a pavilion structure. The proposed levels range from 3.3mAOD to 4.2mAOD.

The proposed structure is an open pavilion with side walls for support. The area around the pavilion will be finished with a concrete slab with the creation of steps to match the existing levels.

2 Stormwater Drainage Design

2.1 Existing Stormwater Drainage

Online records indicate that there is an existing combined sewer running along O'Briens Place to the west, flowing in a northerly direction. A further combined sewer enters the park at the south-western corner, flowing in an easterly direction to the south-western corner. Information such as sewer material and size are unavailable for the area. There is no indication of any connections to these sewer lines from the existing structures in the park.

Please refer to Appendix A for Council Record Drawings illustrating the existing stormwater drainage arrangement. An extract is shown in Figure 2-1 below.

Figure 2-1: Existing stormwater drainage surrounding the site

2.2 Proposed Stormwater Drainage

The proposed surface water drainage system has been designed using Causeway Flow software in accordance with the Department of Environment and Local Government's guidance document "Recommendations for Site Development Works for Housing Areas", with guidance taken from the "Greater Dublin Strategic Drainage Study" (GDSDS) and the Cork County Development Plan 2022-2028.

A new surface water sewer network shall be provided for the proposed development. All surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network and discharged to a local soakaway at the adjacent to the proposed pavilion structure.

All proposed finished floor levels are 500mm above drainage water levels for a 100-year return period.

Table 2-1 describes the stormwater drainage design parameters used and detailed calculations are enclosed in Appendix B

Levels and drainage have been designed to ensure that no surface water generated by the development outfalls to the surrounding areas.

Table 2-1: Stormwater Drainage Design Parameters

Description	Value
Total Impervious Site area	0.0075 ha
Return period target	Pipe Design 1 in 5 year. Network Design 1 in 30 year + CC. Check 1 in 100 year + CC for flooding.
Climate Change	20%
M5-60	17
Ratio R	0.3
SOIL type	2
Soil value	0.3
SAAR	1098mm
Infiltration Rate	36 mm/hr (Assumed based on ground conditions. Detailed investigation to confirm).

2.2.1 Soakaways

The soakaways will provide an additional level of attenuation storage within the voids of the soakpit. The base and sides of the soakpit will be lined.

It is proposed to discharge surface water via infiltration. Infiltration is considered an effective means of controlling runoff and supporting groundwater recharge. On site infiltration tests will be procured as part of a proposed site investigation and the size of the soakpit will be amended as necessary to reflect the BRE 365 test results.

3 Foul Water Drainage Design

3.1 Existing Foul Water Drainage

Irish Water record drawings indicate that there is no existing dedicated foul water infrastructure in the vicinity of the site. A combined sewer network runs along O'Brien Place as discussed in section 2.1.

3.2 Proposed Foul Water Drainage

The proposed development will not require a foul water drainage system or connection to the public network. The existing public toilets provided along O'Brien Place may be used by visitors to the park.

4 Watermain Design

4.1 Existing Watermain

Irish Water record drawings indicate that there is an existing 152.4mm (6”) ductile iron watermain running along O’Brien Place to the west of the park.

Please refer to Appendix A for Council Record Drawings illustrating the existing watermain arrangement in the area. An extract is shown in Figure 4-1 below.

Figure 4-1: Existing watermain surrounding the site

4.2 Proposed Watermain

The proposed development will not require a watermain connection.

5 Flooding

A Site-Specific Flood Risk Assessment has been undertaken by PUNCH Consulting Engineers for the development which accompanies this planning submission.

5.1 Site-Specific Flood Risk Assessment Conclusions

A Site-Specific Flood Risk Assessment was carried out in accordance with *“The Planning System & Flood Risk Management Guidelines”* published by the Department of the Environment, Heritage and Local Government in November 2009, and the Cork County Development Plan 2022-2028. Please refer to 224125-PUNCH-XX-XX-RP-C-0002_Site Specific Flood Risk Assessment.

This determined that the proposed development site is currently located in Flood Zone C for both the Fluvial and Tidal flooding. Due to the fact that the development is classed as water-compatible, it is deemed appropriate without carrying out a Justification Test.

6 Roads and Access

6.1 Proposed Roads & Access

The existing pedestrian access points to the park off O'Brien Place will be maintained with an additional wheeled access ramp proposed for the south-western corner.

Traffic calming measures will be incorporated along O'Brien Place and will be designed in accordance with the Design Manual for Urban Roads and Streets (DMURS) and the Recommendations for Site Development Works.

DMURS aims to aid the design of safer, more attractive and vibrant streets which will generate and sustain communities and neighbourhoods. Research has shown that narrow carriageways are one of the most effective measures of traffic calming. This has been factored in the design of the development with features such as tree planting, raised crossing tables, mood lighting and high-quality hard and soft landscape treatments also proposed for the area.

Sight lines at junctions along O'Brien Place will remain unchanged.

6.2 Parking

As there is ample public parking available in the locality, no parking will be provided for the proposed development.

Appendix A Causeway Stormwater Drainage Design Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	5	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	0.70
FSR Region	Scotland and Ireland	Connection Type	Level Inverts
M5-60 (mm)	17.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.300	Preferred Cover Depth (m)	1.200
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)
SIC1-0	0.011	5.00	3.720	1200	2853.397	1535.125	0.600
SIC1-1			3.590	1200	2863.624	1534.573	0.641
Soakaway			3.585	1200	2865.605	1534.466	0.641

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)
1.000	SIC1-0	SIC1-1	10.242	0.150	3.120	2.949	0.171	60.0	100	5.14	50.0
1.001	SIC1-1	Soakaway	1.984	0.150	2.949	2.944	0.005	396.8	100	5.22	50.0

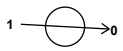
Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.180	9.3	1.5	0.500	0.541	0.011	0.0	27	0.867
1.001	0.438	3.4	1.5	0.541	0.541	0.011	0.0	46	0.421

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)
1.000	10.242	60.0	100	Circular	3.720	3.120	0.500	3.590	2.949	0.541
1.001	1.984	396.8	100	Circular	3.590	2.949	0.541	3.585	2.944	0.541

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.000	SIC1-0	1200	Manhole	Adoptable	SIC1-1	1200	Manhole	Adoptable
1.001	SIC1-1	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)
SIC1-0	2853.397	1535.125	3.720	0.600	1200				
						0	1.000	3.120	100
SIC1-1	2863.624	1534.573	3.590	0.641	1200	1	1.000	2.949	100
									
						0	1.001	2.949	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
Soakaway	2865.605	1534.466	3.585	0.641	1200	1	1.001	2.944	100
									

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	17.000	Additional Storage (m³/ha)	20.0
Ratio-R	0.300	Check Discharge Rate(s)	x
Summer CV	0.750	Check Discharge Volume	x
Analysis Speed	Normal		

Storm Durations

15	60	180	360	600	960	2160	4320	7200	10080
30	120	240	480	720	1440	2880	5760	8640	

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
30	20	0	0
100	20	0	0

Node Soakaway Soakaway Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	1.949	Depth (m)	1.000
Side Inf Coefficient (m/hr)	0.05000	Time to half empty (mins)	534	Inf Depth (m)	
Safety Factor	1.0	Pit Width (m)	1.500	Number Required	1
Porosity	0.95	Pit Length (m)	2.500		

Results for 30 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute summer	SIC1-0	10	3.160	0.040	3.4	0.0603	0.0000	OK
15 minute summer	SIC1-1	11	3.020	0.071	3.4	0.0807	0.0000	OK
600 minute summer	Soakaway	405	2.942	-0.002	0.5	3.5377	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	SIC1-0	1.000	SIC1-1	3.4	0.753	0.362	0.0455
15 minute summer	SIC1-1	1.001	Soakaway	3.3	0.612	0.958	0.0107
600 minute summer	Soakaway	Infiltration		0.1			

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
720 minute summer	SIC1-0	480	3.265	0.145	0.6	0.2177	0.0000	SURCHARGED
720 minute summer	SIC1-1	480	3.265	0.316	0.6	0.3578	0.0000	SURCHARGED
720 minute summer	Soakaway	480	3.265	0.321	0.6	3.9288	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)
720 minute summer	SIC1-0	1.000	SIC1-1	0.6	0.461	0.065	0.0801
720 minute summer	SIC1-1	1.001	Soakaway	0.6	0.370	0.174	0.0155
720 minute summer	Soakaway	Infiltration		0.1			