

South Dublin County Council Planning Department
South Dublin County Council
County Hall
Tallaght
Dublin 24, YNN5

15 December 2022

212126-PUNCH-XX-XX-CO-CS-L001

**Re: Planning Compliance, South Dublin County Council Planning reference SD22A/0270
Planning Condition 2**

Dear Sir / Madam

This letter and enclosed report is provided in response to planning condition 2 (i).

South Dublin County Council Condition

2. Drainage - Surface Water.

Prior to the commencement of development, the applicant/developer shall submit the following for the written agreement of the Planning Authority:

(i) A drawing and report to show in m3 what surface water attenuation is required and what is provided for proposed development.

PUNCH Compliance Response:

Surface water attenuation is provided within proposed 900mm diameter pipework and associated manholes servicing the proposed roadway and is controlled by a Hydrobrake before discharge to the River Camac.

Please see below schedule of drainage and associated water storage volume. Drainage modelling has been undertaken as described in the planning submission to indicate the volume of surface water attenuation stored in the oversized drainage pipe that acts as surface water attenuation.

Pipe Name	US Node	DS Node	Length (m)	Dia (mm)	Surface Water Attenuation Provided	Surface Water Attenuation Volume Provided (m ³)	Surface Water Attenuation Volume Used (m ³)
1.001	S1-0	S1-1	26.37	900	Yes	16.8	15.2
2.000	S2-0	S1-1	15.44	900	Yes	9.8	9.8
1.000	SJ1	S1-0	5.60	900	Yes	3.6	3.0
1.002	S1-1	HEADWALL	12.31	300	No	-	
Total						30.2	28.0

Please see enclosed Drainage Modelling Output and PUNCH Drawing 212126-PUN-XX-XX-DR-C-0100.

Yours sincerely

Mark Richardson
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PUNCH Consulting Engineers
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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)	1.00
FSR Region	Scotland and Ireland	Connection Type	Level Soffits
M5-60 (mm)	18.700	Minimum Backdrop Height (m)	0.200
Ratio-R	0.271	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	4.00	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	0.045	4.00	99.000	1800	703576.992	728097.354	1.728
S2-0		4.00	98.660	1800	703599.554	728132.552	1.560
S1-1	0.038	4.00	98.700	1800	703591.077	728119.651	1.677
HEADWALL			98.000	1200	703581.508	728127.397	1.039
SJ1		4.00	99.100		703576.908	728091.754	1.800

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)
1.002	S1-1	HEADWALL	12.311	0.600	97.023	96.961	0.062	200.0	300	4.43	50.0
1.001	S1-0	S1-1	26.373	0.600	97.272	97.140	0.132	200.0	900	4.24	50.0
2.000	S2-0	S1-1	15.437	0.600	97.100	97.023	0.077	200.0	900	4.12	50.0
1.000	SJ1	S1-0	5.601	0.600	97.300	97.272	0.028	200.0	900	4.04	50.0

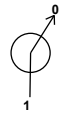

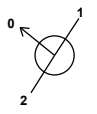


Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.002	1.108	78.3	11.2	1.377	0.739	0.082	0.0	76	0.790
1.001	2.212	1407.0	6.1	0.828	0.660	0.045	0.0	42	0.572
2.000	2.212	1407.0	0.0	0.660	0.777	0.000	0.0	0	0.000
1.000	2.212	1407.0	0.0	0.900	0.828	0.000	0.0	0	0.000

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)
1.002	12.311	200.0	300	Circular	98.700	97.023	1.377	98.000	96.961	0.739
1.001	26.373	200.0	900	Circular	99.000	97.272	0.828	98.700	97.140	0.660
2.000	15.437	200.0	900	Circular	98.660	97.100	0.660	98.700	97.023	0.777
1.000	5.601	200.0	900	Circular	99.100	97.300	0.900	99.000	97.272	0.828

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.002	S1-1	1800	Manhole	Adoptable	HEADWALL	1200	Manhole	Adoptable
1.001	S1-0	1800	Manhole	Adoptable	S1-1	1800	Manhole	Adoptable
2.000	S2-0	1800	Manhole	Adoptable	S1-1	1800	Manhole	Adoptable
1.000	SJ1		Junction		S1-0	1800	Manhole	Adoptable

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
S1-0	703576.992	728097.354	99.000	1.728	1800		1	1.000	97.272	900
S2-0	703599.554	728132.552	98.660	1.560	1800		0	1.001	97.272	900
S1-1	703591.077	728119.651	98.700	1.677	1800		1 2	2.000 1.001	97.023 97.140	900 900
HEADWALL	703581.508	728127.397	98.000	1.039	1200		1	1.002	96.961	300
SJ1	703576.908	728091.754	99.100	1.800			0	1.000	97.300	900

Simulation Settings

Rainfall Methodology	FSR	Skip Steady State	x
FSR Region	Scotland and Ireland	Drain Down Time (mins)	240
M5-60 (mm)	18.700	Additional Storage (m ³ /ha)	20.0
Ratio-R	0.271	Check Discharge Rate(s)	✓
Summer CV	0.750	Check Discharge Volume	✓
Winter CV	0.840	100 year 360 minute (m ³)	
Analysis Speed	Detailed		

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 %)
100	20	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.95
Greenfield Method	IH124	Growth Factor 100 year	2.48
Positively Drained Area (ha)		Betterment (%)	0
SAAR (mm)		QBar	
Soil Index	1	Q 1 year (l/s)	
SPR	0.10	Q 30 year (l/s)	
Region	1	Q 100 year (l/s)	
Growth Factor 1 year	0.85		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)		Storm Duration (mins)	360
Soil Index	1	Betterment (%)	0
SPR	0.10	PR	
CWI		Runoff Volume (m ³)	

Node HEADWALL Surcharged Outfall

Overrides Design Area	x	Depression Storage Area (m ²)	0	Evapo-transpiration (mm/day)	0
Overrides Design Additional Inflow	x	Depression Storage Depth (mm)	0		
Applies to All storms					

Time (mins)	Depth (m)	Time (mins)	Depth (m)
0	0.550	10080	0.550

Node S1-1 Online Hydro-Brake® Control

Flap Valve	✓	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	97.023	Product Number	CTL-SHE-0064-2000-1200-2000
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.100
Design Flow (l/s)	2.0	Min Node Diameter (mm)	1200

Results for 100 year +20% CC Critical Storm Duration. Lowest mass balance: 99.02%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
480 minute winter	S1-0	344	97.983	0.711	2.8	2.1752	0.0000	OK
480 minute winter	S2-0	344	97.983	0.883	0.7	2.2474	0.0000	OK
480 minute winter	S1-1	344	97.983	0.960	4.1	2.8752	0.0000	SURCHARGED
15 minute summer	HEADWALL	1	97.511	0.550	0.3	0.0000	0.0000	OK
480 minute winter	SJ1	344	97.983	0.683	0.3	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m ³)	Discharge Vol (m ³)
480 minute winter	S1-0	1.001	S1-1	1.8	0.380	0.001	15.2200	
480 minute winter	S2-0	2.000	S1-1	-0.7	-0.017	-0.001	9.7617	
480 minute winter	S1-1	Hydro-Brake®	HEADWALL	1.8				43.6
480 minute winter	SJ1	1.000	S1-0	-0.3	-0.012	0.000	2.9491	