APPLICANT: MR. PETER LAWLOR

PROPOSED DEVELOPMENT AT MOUNTPELIER,
BOHERNABREENA, DUBLIN 24

SURFACE WATER DRAINAGE REPORT

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CONSULTING ENGINEERS

2 PROSPECT GROVE

STOCKING LANE,

RATHFARNHAM,

DUBLIN 16.

APRIL 2023

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APPLICANT: MR. PETER LAWLOR

PROPOSED DEVELOPMENT AT MOUNTPELIER,
BOHERNABREENA, DUBLIN 24

SURFACE WATER DRAINAGE REPORT

Introduction:

The proposed development consists of single storey extension to the rear of the existing dwelling-house at Mountpelier, Bohernabreena, Dublin 24.

It is proposed that the surface water drainage system should incorporate, where practical, green infrastructure measures to mitigate and compensate for the impact of the proposed development on the existing site. The measures should include SUDS measures such as gravel paving surfaces, water butts for water recycling and grass swale.

The rainwater run-off from the existing dwelling-house discharges to the existing stone filled soakaways located within the existing site. The runoff from the existing tarmac surface at the entrance to the dwelling-house site and on the existing road to the family farm discharges to the existing stone filled soakaway located inside the site entrance – refer Drainage Layout Plan

It is proposed to discharge the rainwater runoff from the proposed extension to a new Grass Swale located where shown on the Drainage Layout Plan.

Surface Water - Infiltration Rate:

The soil infiltration rate for the soakaway design has been calculated as 0.90×10^{-5} m/s.

Grass Swale:

It is proposed to discharge the rainwater runoff from the proposed extension to a new Grass Swale located where shown on the Drainage Layout Plan.

A run-off coefficient of 0.9 has been assumed in the calculation of the surface water runoff from the single storey extension roof.

Proposed Extension (FFL 246.00 mOD): 134 m2

Contributing Area: 134 m2 x 0.9 = 120.6 m2 (say 121 m2)

Design Grass Swale for Contributing Area of 121 m2.

Allow for outflow through base of grass swale area = 25 m2.

The soil infiltration rate in the grass swale has been taken as 0.90×10^{-5} m/s.

Storm Duration (Mins)	Rainfall (mm)	Rainfall +15% (min)	Total Quantity (m3)	Outflow Quantity (m3)	Storage Quantity (m3)	
5	9.3	10.7	1.29	0.07	1.22	
10	13.0	14.9	1.80	0.14	1.66	
15	15.3	17.6	2.13	0.20	1.93	
30	20.6	23.7	2.87	0.40	2.47	
60	27.8	32.0	3.87	0.81	3.06	
120	37.6	43.2	5.23	1.62	3.61	
180	44.8	51.5	6.23	2.43	3.80	
240	50.7	58.3	7.05	3.24	3.81	*
360	60.4	69.5	8.41	4.86	3.55	
540	72.0	82.8	10.02	7.29	2.73	
720	81.6	93.8	11.35	9.72	1.63	
1440	110.1	126.6	15.32	19.44	-----	

Hence, storage capacity required in Grass Swale = 3.81 m3.

Grass Swale shall have minimum storage capacity of 5.00 m3.

Top water level in Grass Swale: 244.90 mOD.

Invert level in Grass Swale: 244.50 mOD.

The Grass Swale shall be located where shown on the Drainage Layout Plan. Details of the Grass Swale are incorporated in the Landscape Architect's Drawings and Landscape Specification.

Water Butts:

It is proposed to incorporate 2 No. 200 litre water butts, for rainwater recycling, where shown on Drainage Layout Plan.

SuDS Management Plan:

As outlined above, the proposed surface water drainage system shall incorporate, where practical, green infrastructure measures to mitigate and compensate for the impact of the proposed development on the existing site. The measures should include SUDS measures such as gravel paving surfaces, water butts for water recycling and grass swale.

Details of the proposed surface water drainage arrangements for the development, including green infrastructure and SuDS measures, are shown on the Drainage Layout Plan. Details of the landscaping measures are provided on the Landscape Architect's Drawings and Landscape Specification.

The applicant shall have prepared and implement a comprehensive maintenance plan in respect of the surface water system including maintenance of the existing stone filled soakaways and the proposed grass swale.

Signed: Patrick Joyce.....
Patrick C. Joyce
Patrick Joyce Associates

Date: 12th April 2023

APPLICANT: MR. PETER LAWLOR
DEVELOPMENT AT MOUNTPELIER, BOHERNABREENA
DUBLIN 24

Met Eireann
Return Period Rainfall Depths for sliding Durations
Irish Grid: Easting: 310039, Northing: 223613,

	Interval		Years												
DURATION	6months,	1year,	2,	3,	4,	5,	10,	20,	30,	50,	75,	100,	150,	200,	250,	500,
5 mins	3.0,	4.3,	5.0,	6.1,	6.8,	7.4,	9.3,	11.5,	13.0,	15.1,	16.9,	18.4,	20.6,	22.4,	23.8,	N/A ,
10 mins	4.2,	6.0,	7.0,	8.5,	9.5,	10.3,	13.0,	16.1,	18.1,	21.0,	23.6,	25.6,	28.7,	31.1,	33.2,	N/A ,
15 mins	4.9,	7.1,	8.2,	10.0,	11.2,	12.2,	15.3,	18.9,	21.3,	24.7,	27.7,	30.1,	33.8,	36.6,	39.0,	N/A ,
30 mins	6.6,	9.5,	11.1,	13.5,	15.1,	16.4,	20.6,	25.5,	28.7,	33.3,	37.4,	40.6,	45.6,	49.4,	52.7,	N/A ,
1 hours	8.9,	12.8,	15.0,	18.2,	20.4,	22.1,	27.8,	34.4,	38.7,	44.9,	50.5,	54.8,	61.5,	66.7,	71.1,	N/A ,
2 hours	12.0,	17.3,	20.2,	24.6,	27.6,	29.9,	37.6,	46.4,	52.3,	60.6,	68.1,	73.9,	83.0,	90.0,	95.9,	N/A ,
3 hours	14.4,	20.7,	24.1,	29.3,	32.8,	35.6,	44.8,	55.3,	62.3,	72.2,	81.2,	88.1,	98.9,	107.3,	114.3,	N/A ,
4 hours	16.3,	23.4,	27.3,	33.2,	37.2,	40.3,	50.7,	62.6,	70.6,	81.8,	91.9,	99.8,	112.0,	121.5,	129.4,	N/A ,
6 hours	19.4,	27.9,	32.5,	39.5,	44.3,	48.1,	60.4,	74.6,	84.1,	97.5,	109.5,	118.9,	133.4,	144.8,	154.3,	N/A ,
9 hours	23.1,	33.2,	38.7,	47.1,	52.8,	57.3,	72.0,	88.9,	100.2,	116.2,	130.5,	141.7,	159.0,	172.6,	183.8,	N/A ,
12 hours	26.2,	37.6,	43.9,	53.3,	59.8,	64.9,	81.6,	100.7,	113.5,	131.6,	147.8,	160.5,	180.1,	195.4,	208.2,	N/A ,
18 hours	31.2,	44.8,	52.3,	63.6,	71.3,	77.3,	97.2,	120.0,	135.2,	156.8,	176.2,	191.3,	214.6,	232.9,	248.1,	N/A ,
24 hours	35.3,	50.8,	59.2,	72.0,	80.7,	87.6,	110.1,	135.9,	153.2,	177.6,	199.5,	216.6,	243.1,	263.8,	281.0,	341.9,
2 days	45.4,	63.3,	72.9,	87.2,	96.8,	104.3,	128.5,	155.8,	173.8,	199.0,	221.3,	238.6,	265.1,	285.6,	302.7,	362.1,
3 days	53.7,	73.5,	83.9,	99.4,	109.7,	117.7,	143.4,	172.1,	190.7,	216.8,	239.7,	257.3,	284.3,	305.0,	322.2,	381.7,
4 days	61.0,	82.4,	93.6,	110.0,	120.9,	129.4,	156.4,	186.2,	205.5,	232.3,	255.8,	273.8,	301.3,	322.4,	339.7,	399.6,
6 days	73.8,	97.9,	110.3,	128.5,	140.4,	149.6,	178.7,	210.6,	231.1,	259.3,	283.8,	302.5,	331.0,	352.7,	370.4,	431.5,
8 days	85.2,	111.6,	125.1,	144.7,	157.5,	167.3,	198.2,	231.8,	253.3,	282.7,	308.2,	327.5,	356.8,	379.1,	397.3,	459.6,
10 days	95.8,	124.2,	138.6,	159.4,	173.0,	183.3,	215.9,	251.0,	273.3,	303.8,	330.1,	350.0,	380.1,	402.9,	421.6,	485.0,
12 days	105.7,	135.9,	151.2,	173.1,	187.3,	198.2,	232.2,	268.6,	291.7,	323.2,	350.3,	370.7,	401.5,	424.9,	443.9,	508.4,
16 days	124.2,	157.7,	174.4,	198.3,	213.7,	225.4,	261.9,	300.8,	325.3,	358.4,	386.9,	408.3,	440.4,	464.6,	484.3,	550.8,
20 days	141.5,	177.7,	195.8,	221.4,	237.9,	250.3,	289.0,	330.0,	355.7,	390.3,	419.9,	442.2,	475.4,	500.4,	520.7,	589.0,
25 days	161.8,	201.2,	220.7,	248.2,	265.9,	279.2,	320.3,	363.5,	390.6,	426.9,	457.8,	480.9,	515.4,	541.3,	562.3,	632.6,

NOTES:
N/A Data not available
These values are derived from a Depth Duration Frequency (DDF) Model
For details refer to:
'Fitzgerald D. L. (2007), Estimates of Point Rainfall Frequencies, Technical Note No. 61, Met Eireann, Dublin',
Available for download at www.met.ie/climate/dataproducts/Estimation-of-Point-Rainfall-Frequencies_TN61.pdf

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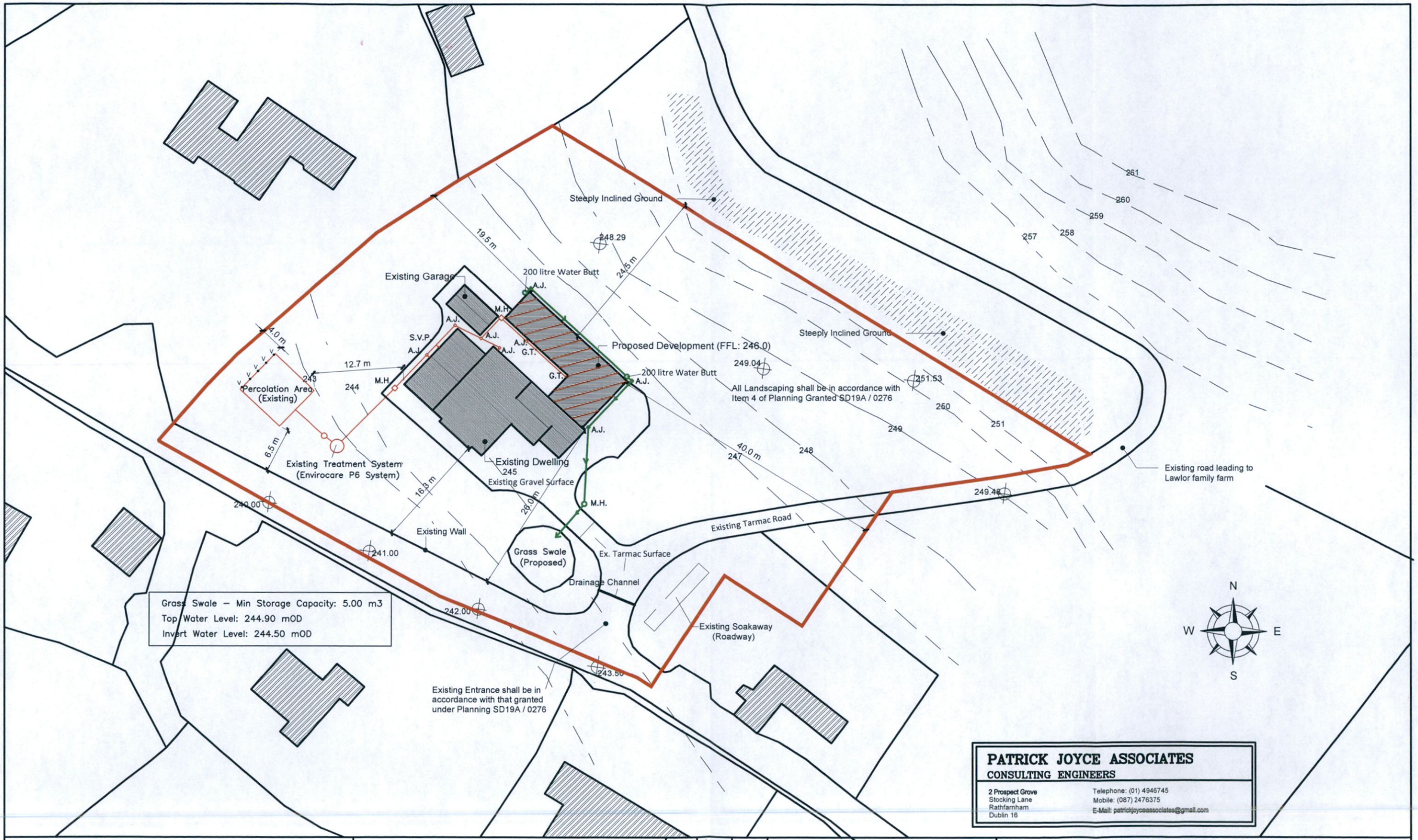

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DO NOT SCALE FROM THIS DRAWING.

Use given dimensions. Contractor to check all dimensions on site prior to commencement of works. Any discrepancies are to be referred to the Site Architect / Engineer.

Date:	Issue:	Rev.	Description:

Indicates New Works.

ISSUED FOR PLANNING PURPOSES ONLY

CLIENT:	PROJECT:	DRAWING TITLE:
Mr. Peter Lawlor	PROPOSED DEVELOPMENT AT MOUNTPELIER BOHERNABREENA CO. DUBLIN.	DRAINAGE LAYOUT PLAN

PREPARED BY:	DATE:	DWG. NO.	SCALE:	REVISION:	STATUS:
P Mc Gillen	Dec. 2022	PP010	1 : 500		