Our Ref: P3852
Project: 53 Unit HD, Rockbrae House, Bray
Client: Wicklow County Council

SuDS Commentary

The proposed drainage strategy has been designed to ensure surface water is captured and controlled on site, and ensure the proposed development will not have a detrimental impact on Flood Risk on and offsite. The surface water strategy follows the principle of Sustainable Drainage Systems (SuDS), whereby surface water is collected at source and the rate, volume and quality of runoff controlled and improved.

In accordance with the hierarchy for discharging surface water, infiltration testing was undertaken to establish the viability of discharging surface water generated by the development to the ground. Two of the three soakaway tests undertaken to the south and west of the development, as part of the Site Investigation works, demonstrated that the infiltration potential of the underlying geology was low and not suitable for infiltration. One soakaway test to the northeast of the development achieved good filtration results (3.16E-04 m/s) in a gravel layer 1.3m to 1.9m below existing ground level. The test pit was terminated at 1.9m bgl due to an obstruction. The infiltration results are included overleaf.

In accordance with the hierarchy for discharge, infiltration will be used where possible to discharge surface water runoff with a high-level overflow provided. The feasibility of the area surrounding soakaway test, SA02 for filtration will need to be reviewed at detailed design stage due to;

(a) the test pit being terminated at a shallow depth, due to an obstruction and also
(b) the deep drainage design invert levels required at this location.

The current proposal is to use this area for storm water attenuation storage. At detailed design stage a permeable membrane may be viable if infiltration rates are good at the deeper depth.

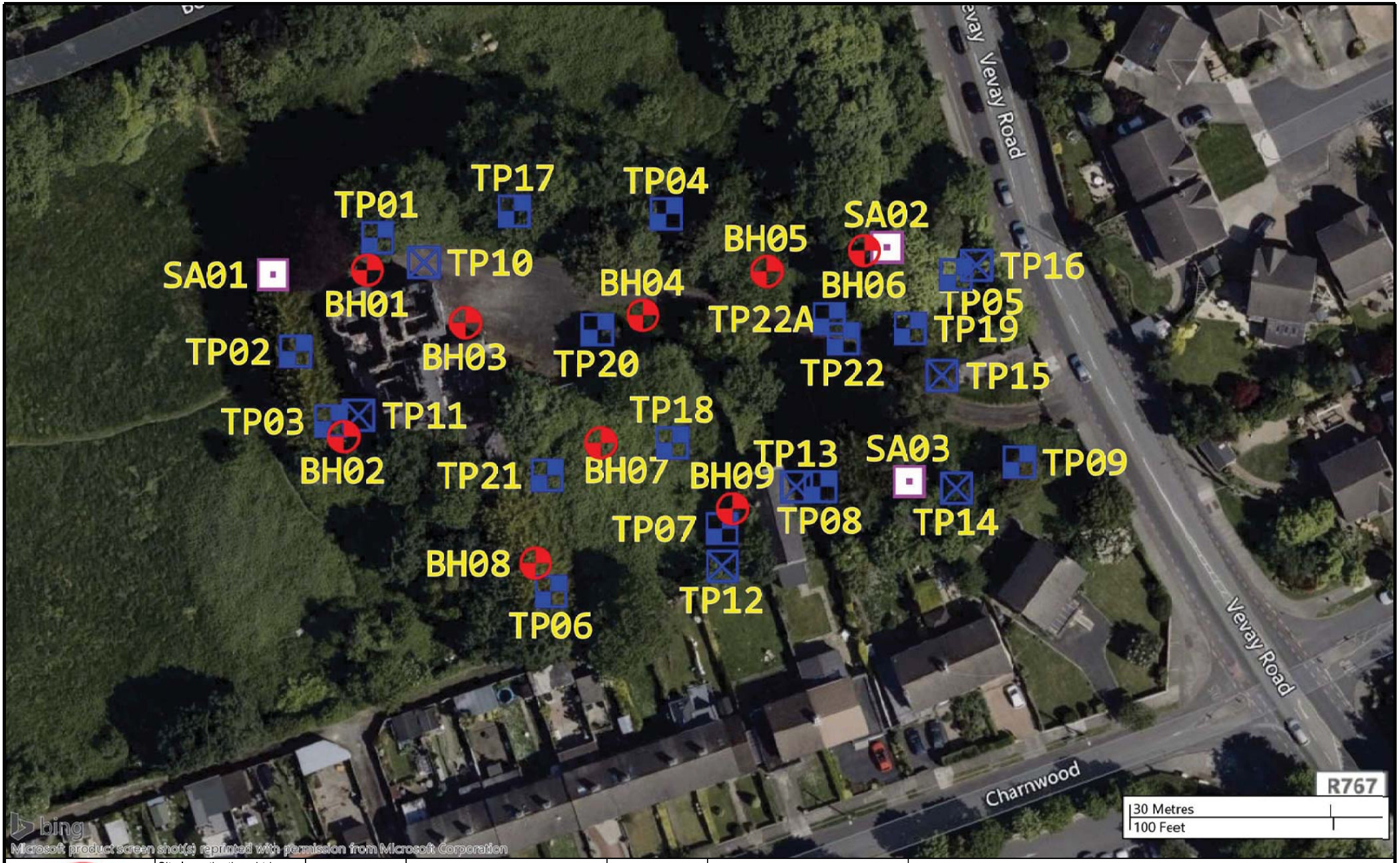
Another means of discharging site run-off will therefore be required, and the next preferred means of discharging surface water is to a watercourse. The proposed site is not located directly adjacent to any watercourse or ditches. Therefore, discharge from the site will need to be via an existing storm sewer manhole and 225mm dia pipe located on Aevay Road, 100m north of the development entrance. There will be one 225mm dia pipe connection from the proposed development, with flow restricted to 10 l/s which is an improvement on the current brownfield rate, subject to approval from Wicklow County Council Drainage Department.

The proposed development will incorporate a robust surface water drainage strategy to ensure flood risk off and on site will not be affected by the proposed development.

Surface water falling on the development will be collected by permeable paving, rainwater butts, tree pits, oversized manholes and pipes, raingardens, and cellular type attenuation structures prior to release into the existing surface water pipe network. Flow will be attenuated within these SuDS components and will accommodate up to the 1 in 100-year event plus 20% for climate change and 10% urban creep. As stated previously, flow leaving the site will be controlled by a flow control device which will limit runoff to 10 l/s, which is an improvement on the current brownfield rate.

A detailed review of possible SuDS techniques has been undertaken in the overall context of the site, and it is proposed the following measures to be implemented where appropriate.

- Permeable paving will be utilised to the front and rear paths of the dwellings and parking spaces to filter surface run-off through the pavement layers.
- Rainwater butts will be used to collect and store roof runoff from the housing units for reuse by the residents for gardening needs.
- The run-off from the roofs of Apartment Building A and Apartment Building B will be conveyed from the downpipes and filtered through the raingardens around the buildings before discharging to the proposed local drainage and to the storm pipe network.
- Tree pits will be constructed at proposed tree locations and used as a SuDS source control measure. Tree pits will be under drained and connected to the storm network for run-off to filter through the tree pit material prior to discharge.
- Run-off from the large green area at the southeast of the site will be routed to raingardens before reaching the proposed pipe network.
- Oversized manholes and pipes along with cellular storage crate units will be used to attenuate runoff downstream prior to discharging to the existing storm sewer.
- All flow will be conveyed via SuDS components ensuring the quality of surface water leaving the development will be maintained and a comprehensive treatment train is in place to treat surface water runoff falling on the site.



Site Investigations Ltd
The Grange
12th Lock Road
Lucan
Co. Dublin
T: 01 6108768
e: info@siteinvestigations.ie

Contract No:	6426	Client:	Wicklow County Council
Contract Name:	Rockbrae House	Engineer:	McMahon Associates
Location:	Vevay Road, Bray, Co. Wicklow	Scale:	1:750
Title:	Site Plan	Drawn By:	SL

Legend Key

- Locations By Type - CP
- Locations By Type - IP
- Locations By Type - OP

SOAKAWAY TEST

Project Reference:	6426
Contract name:	Rockbrae House
Location:	Vevay Road, Bray, Co. Wicklow
Test No:	SA01
Date:	13/01/2025

Ground Conditions

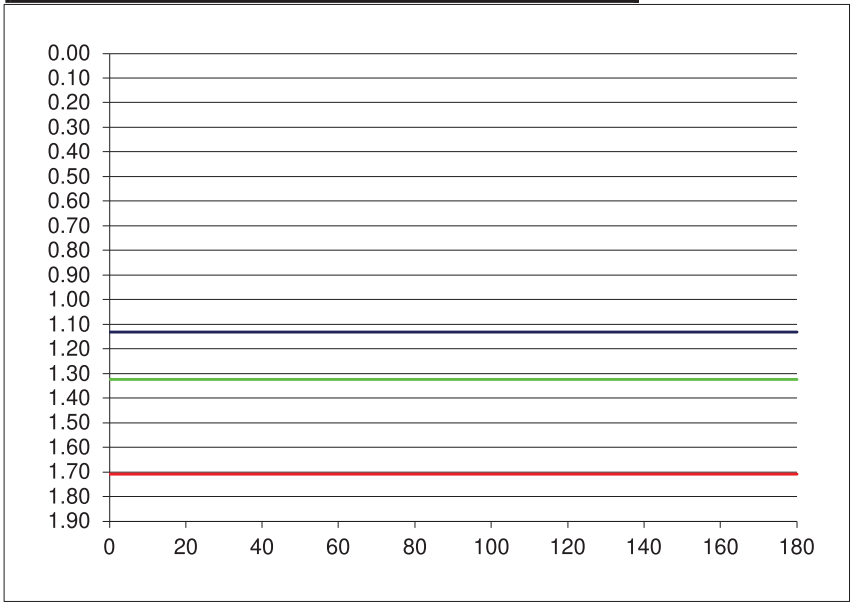
From	To	
0.00	0.30	TOPSOIL.
0.30	0.80	Firm brown slightly sandy slightly gravelly silty CLAY.
0.80	1.90	Firm becoming stiff light brown slightly sandy slightly gravelly silty CLAY with high cobble content.

Remarks:

Obstruction at 1.90mbgl - pit terminated and test completed.

Elapsed Time (mins)	Fall of Water (m)
0	1.13
0.5	1.13
1	1.13
1.5	1.13
2	1.13
2.5	1.13
3	1.13
3.5	1.13
4	1.13
4.5	1.13
5	1.13
6	1.13
7	1.13
8	1.13
9	1.13
10	1.13
12	1.13
14	1.13
16	1.13
18	1.13
20	1.13
25	1.13
30	1.13
40	1.13
50	1.13
60	1.13
75	1.13
90	1.13
120	1.13
150	1.13
180	1.13

Pit Dimensions (m)		
Length (m)	2.40	m
Width (m)	0.50	m
Depth	1.90	m
Water		
Start Depth of Water	1.13	m
Depth of Water	0.77	m
75% Full	1.32	m
25% Full	1.71	m
75%-25%	0.39	m
Volume of water (75%-25%)	**0.46**	m3
Area of Drainage	**11.02**	m2
Area of Drainage (75%-25%)	**3.43**	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	**N/A**	min
Time 75% to 25% (sec)	**N/A**	sec



f = **Fail** m/min or **Fail** m/s

SOAKAWAY TEST

Project Reference:	6426
Contract name:	Rockbrae House
Location:	Vevay Road, Bray, Co. Wicklow
Test No:	SA02
Date:	13/01/2025

Ground Conditions

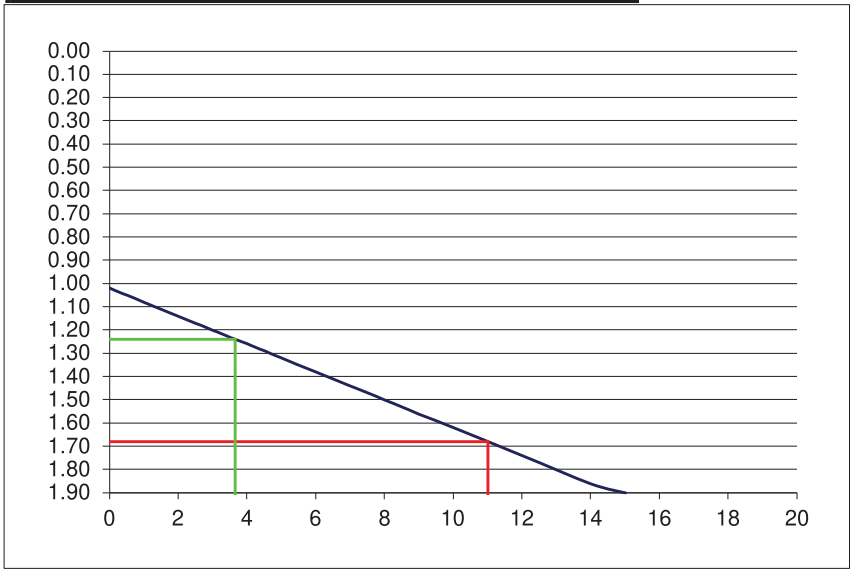
From	To	
0.00	0.30	TOPSOIL.
0.30	0.50	Firm brown slightly sandy slightly gravelly silty CLAY.
0.80	1.30	Firm becoming stiff light brown slightly sandy slightly gravelly silty CLAY with high cobble content.
1.30	1.90	Brown grey silty sandy GRAVEL with high cobble content.

Remarks:

Obstruction at 1.90mbgl - pit terminated and test completed.

Elapsed Time (mins)	Fall of Water (m)
0	1.02
0.5	1.05
1	1.08
1.5	1.11
2	1.14
2.5	1.17
3	1.20
3.5	1.23
4	1.26
4.5	1.29
5	1.32
6	1.38
7	1.44
8	1.50
9	1.56
10	1.62
12	1.74
14	1.86
15	1.90

Pit Dimensions (m)		
Length (m)	2.20	m
Width (m)	0.50	m
Depth	1.90	m
Water		
Start Depth of Water	1.02	m
Depth of Water	0.88	m
75% Full	1.24	m
25% Full	1.68	m
75%-25%	0.44	m
Volume of water (75%-25%)	**0.48**	m3
Area of Drainage	**10.26**	m2
Area of Drainage (75%-25%)	**3.48**	m2
Time		
75% Full	3.66	min
25% Full	11	min
Time 75% to 25%	**7.34**	min
Time 75% to 25% (sec)	**440.4**	sec



f = 0.01897 m/min or **3.16E-04 m/s**

SOAKAWAY TEST

Project Reference:	6426
Contract name:	Rockbrae House
Location:	Vevay Road, Bray, Co. Wicklow
Test No:	SA03
Date:	13/01/2025

Ground Conditions

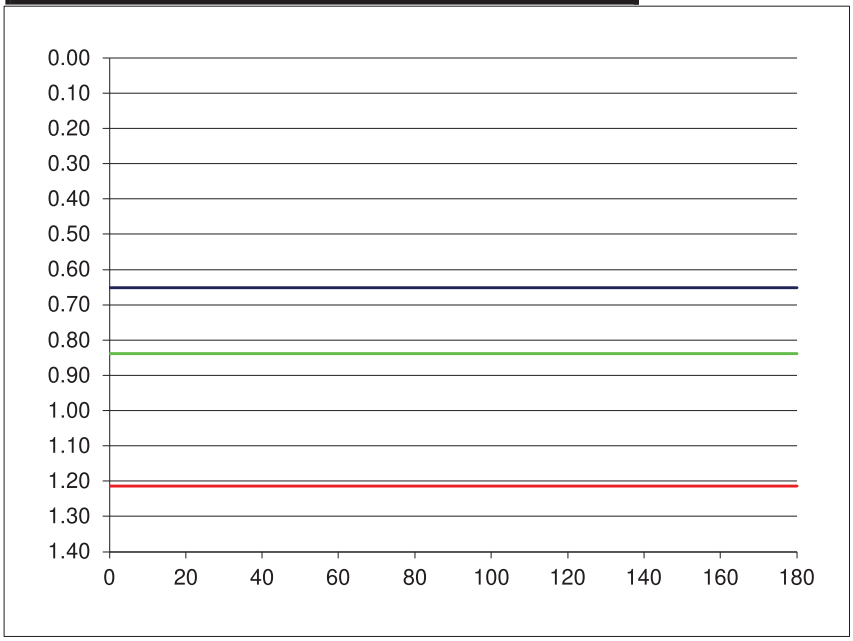
From	To	
0.00	0.30	TOPSOIL.
0.30	1.40	Firm becoming stiff light brown slightly sandy slightly gravelly silty CLAY with high cobble content.

Remarks:

Obstruction at 1.40mbgl - pit terminated and test completed.

Elapsed Time (mins)	Fall of Water (m)
0	0.65
0.5	0.65
1	0.65
1.5	0.65
2	0.65
2.5	0.65
3	0.65
3.5	0.65
4	0.65
4.5	0.65
5	0.65
6	0.65
7	0.65
8	0.65
9	0.65
10	0.65
12	0.65
14	0.65
16	0.65
18	0.65
20	0.65
25	0.65
30	0.65
40	0.65
50	0.65
60	0.65
75	0.65
90	0.65
120	0.65
150	0.65
180	0.65

Pit Dimensions (m)		
Length (m)	2.10	m
Width (m)	0.50	m
Depth	1.40	m
Water		
Start Depth of Water	0.65	m
Depth of Water	0.75	m
75% Full	0.84	m
25% Full	1.21	m
75%-25%	0.38	m
Volume of water (75%-25%)	**0.39**	m3
Area of Drainage	**7.28**	m2
Area of Drainage (75%-25%)	**3.00**	m2
Time		
75% Full	N/A	min
25% Full	N/A	min
Time 75% to 25%	**N/A**	min
Time 75% to 25% (sec)	**N/A**	sec



f = **Fail** m/min or **Fail** m/s