IAN HEFFERNAN
& ASSOCIATES

Tel: (086) 8891862
ian@heffernancivilengineers.ie
Cnoc Dubh,
Ballymanus Lower,
Blackhill,
Glenealy,
Co.Wicklow

20th Feb 2022
South Dublin County Council
County Hall
Tallaght
Dublin 24
Co.Dublin

Dear Sir,

Client: Brendan McAtamney & Caroline Dowling

Location: Hazelberry,Hazelhatch,Celbridge,Co.Kildare.PRR:SD21B/0493

In relation to the above named clients and the above planning application we can confirm we have been employed by Brendan McAtamney & Caroline Dowling to respond to Item 1 of the Further Information Request and we comment as follows.

Item 1:

We can confirm that our clients will be installing a new Soakaway to deal with the proposed Planning Permission.
Please see attached proposals for a New Soakaway. Tests have been conducted in accordance with BRE Digest 365.

Trial Pit for Testing

Soakaway Design in accordance with BRE Digest 365

TABLE 1
Values of Factor Z1 for rainfall duration *D* and ratio *r*

Duration	Z_1	
(mins)		r = 0.33
10	0.5	Dublin Area
15	0.61	
30	0.78	
60	1	
120	1.23	
240	1.53	
360	1.73	
600	2.04	

I = the Inflow from the impermiable area drained to the Soakaway
O = the Outflow infiltrationg into the soil during rainfall
S = the required Storage in Soakaway to Balance temporarily Inflow & Outflow
R = the Total rainfall in a Design Storm
A = the Impermeable area drained to the soakaway
f = the soil infiltration rate determined in a trial pit at the sit of the soakaway
D - the Storm Duration
a_{50} = the internal surface area of the soakaway to 50% effective depth
(this excludes the base area which is assumed to clog with fine particles and become ineffective in the long term)

TABLE 2
100 year rainfall

Duration	M100-D mm
(mins)	
10	13.3
15	17
30	22.3
60	28.1
120	34.7
240	43.1
360	50.6
720	62.7

Impermeable Area	150	(m^2)

Soil Infiltration	7.30E-05	(m/sec)

Brown Soils

	(m/sec) (R)	(m^3/sec) Inflow (I)
10 min Rainfall	0.0133	2.00
15 mm Rainfall	0.017	2.55
30 mm Rainfall	0.0223	3.35
60 min Rainfall	0.0281	4.22
120 min Rainfall	0.0347	5.21
240 min Rainfall	0.0431	6.47
360 min Rainfall	0.0506	7.59
600 min Rainfall	0.0627	9.41

(I) Inflow = (Impermeable Area)x(Total Rainfall in Design Storm)
(O) Outflow = (a_{50})x(Soil Infiltration)x(Storm Duration)

Length	3	(L)	(m)	=depth of Sackaway
Breath	1.5	(B)	(m)	=breath of Sackaway
Effective Depth	1.5	(D)	(m)	=depth of Sackaway below Invert level of Inflow pipe

A_{50}	6.75	(A_{50})	(m^2)	=[Length]*([Breath]*2)*(0.5)*(Effective Depth)
Effective area	6.41	(A_{eff})	(m^2)	=[Length]*([Breadth]*[Effective Depth]*(Void Ratio)

Void Ratio for WAVIN AQUACELL 0.95

(mm)	(m^3/sec)	(m^3/sec)	(m^3)	(m^3)	
Duration (D)	Inflow (I)	Outflow (O)	Storage Capacity (S)	Excess Storage	
10	2.00	2.96E-01	6.41	4.71315	0.17 hour / 10Min
15	2.55	4.43E-01	6.41	4.30598	0.25 hour / 15 min
30	3.35	8.87E-01	6.41	3.55445	0.5 hour / 30 min
60	4.22	1.77E+00	6.41	3.97140	1 hour
120	5.21	3.55E+00	6.41	4.75530	2 hour
240	6.47	7.10E+00	6.41	7.04310	4 hour
360	7.59	1.06E+01	6.41	9.46690	6 hour
600	9.41	1.77E+01	6.41	14.74650	10 hour

Time of Soakage 1.81 hours < 24 hours

IAN HEFFERNAN
& ASSOCIATES

Tel: (086) 8891862
ian@heffernancivilengineers.ie
Cnoc Dubh,
Ballymanus Lower,
Blackhill,
Glenealy,
Co.Wicklow

I can confirm also that I am a fully qualified Engineer (Degree gained from DIT Bolton Street) and I am also a qualified site assessor having completed the Site Assessors Course with FAS. I am also a member of The Institute of Engineers Ireland.

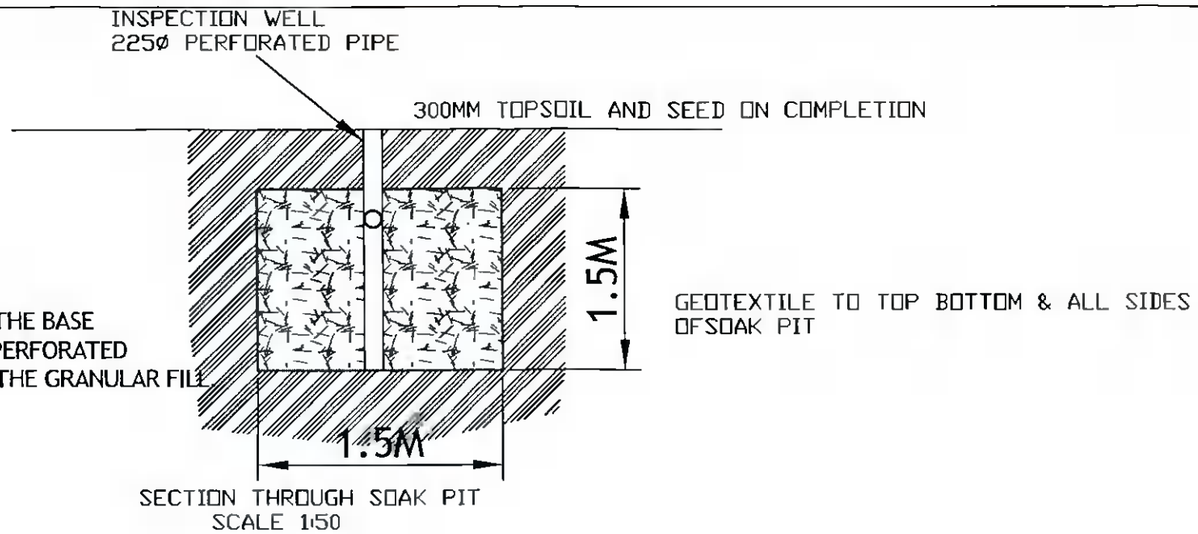
We trust that the above is in order and if you require any further information please do not hesitate to contact the undersigned.

Yours Sincerely

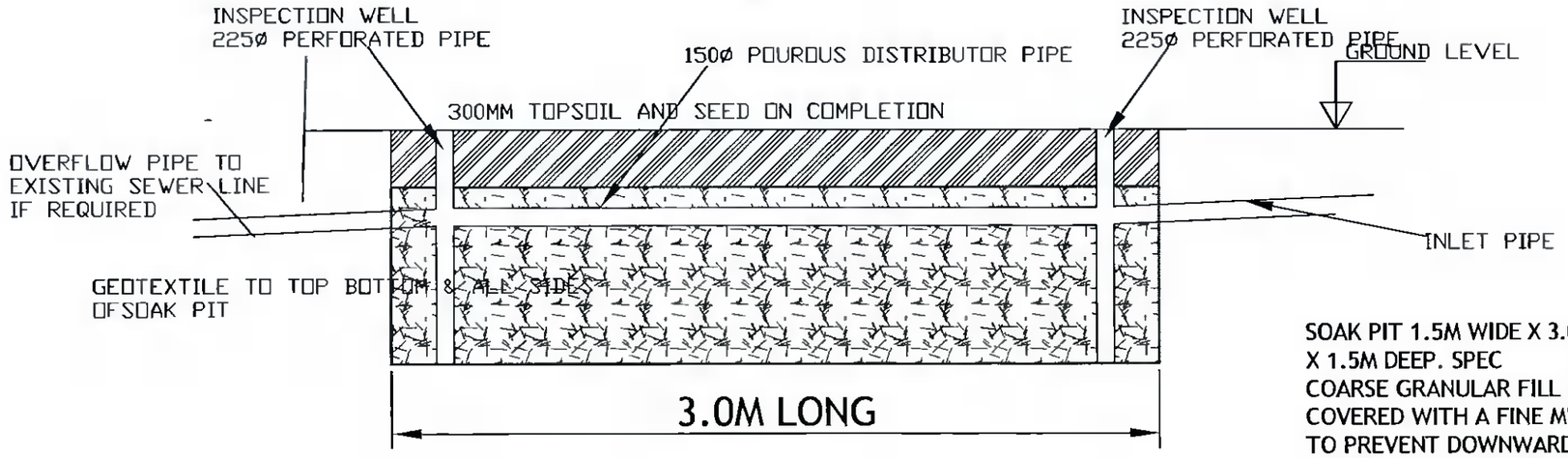
Ian Heffernan.

Ian Heffernan BEng, M.I.E.I
Fetac Certified Site Assessor

SOAK PIT 1.5M WIDE X 3.0M LONG
X 1.5M DEEP. SPEC
COARSE GRANULAR FILL (30% FREE VOLUME)
COVERED WITH A FINE MESH GEOTEXTILE (TERRAM)
TO PREVENT DOWNWARD SILTING OF FINES.
SILT TRAPS ARE TO BE PROVIDED AT THE INLEL LEVEL
WITH AN INSPECTION CHAMBER PROVIDING A CLEAR VIEW OF THE BASE
OF THE SOAKAWAY AND LINKING THE END OF A HORIZONTAL PERFORATED
DISTRIBUTOR PIPE EG WAVIN D3752 RUNNING ALONG TOP OF THE GRANULAR FILL



SECTION THROUGH SOAK PIT
SCALE 1:50



LONGITUDINAL SECTION THROUGH SOAK PIT
SCALE 1:50

SOAK PIT 1.5M WIDE X 3.0M LONG
X 1.5M DEEP. SPEC
COARSE GRANULAR FILL (30% FREE VOLUME)
COVERED WITH A FINE MESH GEOTEXTILE (TERRAM)
TO PREVENT DOWNWARD SILTING OF FINES.
SILT TRAPS ARE TO BE PROVIDED AT THE INLEL LEVEL
WITH AN INSPECTION CHAMBER PROVIDING A CLEAR VIEW OF THE BASE
OF THE SOAKAWAY AND LINKING THE END OF A HORIZONTAL PERFORATED
DISTRIBUTOR PIPE EG WAVIN D3752 RUNNING ALONG TOP OF THE GRANULAR FILL

IAN HEFFERNAN & ASSOCIATES
I H A
CNOC DUBH
BALLYMANUS LOWER
BLACKHILL,
GLENEALY,
CO. WICKLOW.
PH : (086) 8891862
EMAIL : Ian@Heffernancivilengineers.ie

DRG: 2022/001A

SOAKAWAY DESIGN AT Hazelberry,Hazelhatch, Celbridge,Co.Kildare

SCALE: 1/50

CLIENT: Brendan McAtamney & Caroline Dowling

DATE: Feb 2022