SITE CHARACTERISATION FORM

File Reference:

1.0 GENERAL DETAILS (From planning application)

Prefix: First Name: Magaret Surname: Carrigan

Address:

Site Location and Townland: Hazelhatch Road, Newcastle Co. Dublin

Telephone No: 0872868034 Fax No:

E-Mail:

Maximum no. of Residents: 6 No. of Double Bedrooms: 4 No. of Single Bedrooms:

Proposed Water Supply: Mains ✔ Private Well/Borehole ☐ Group Well/Borehole ☐

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type): Limestone Till

Aquifer Category: Regionally Important ☐ Locally Important LI Poor ☐

Vulnerability: Extreme ✔ High ☐ Moderate ☐ Low ☐ High to Low ☐ Unknown ☐

Bedrock Type: Dinantian Upper Impure Limestone

Name of Public/Group Scheme Water Supply within 1 km: None

Groundwater Protection Scheme (Y/N): Yes Source Protection Area: SI ☐ SO ☐

Groundwater Protection Response: R1

Presence of Significant Sites (Archaeological, Natural & Historical): None

Past experience in the area: Acceptable soakage

Comments:

(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, and/or any potential site restrictions).

The surface water and groundwater are likely to be targets at risk

Note: Only information available at the desk study stage should be used in this section.

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment

Landscape Position: Flat Landscape

Slope: Steep (>1:5) ☐ Shallow (1:5-1:20) ☐ Relatively Flat (<1:20) ☑

Surface Features within a minimum of 250m (Distance To Features Should Be Noted In Metres)

Houses: House Borders site to North and South

Existing Land Use: Residential

Vegetation Indicators: large mature site - nothing to suggest poor soakage

Groundwater Flow Direction: To North

Ground Condition: Firm - no surface water

Site Boundaries: Hedge Roads: To West

Outcrops (Bedrock And/Or Subsoil): No soil or subsoil esposed

Surface Water Ponding: None Lakes: None within 500m

Beaches/Shellfish: None Areas/Wetlands: None

Karst Features: None Watercourse/Stream*: None within 500m

Drainage Ditches*: Along road Dry at 0.5m Springs / Wells*: Area served by mains

Comments:
(Integrate the information above in order to comment on: the potential suitability of the site, potential targets at risk, the suitability of the site to treat the wastewater and the location of the proposed system within the site).

Ground conditions are dry despite very heavy rainfall in previous days.
There is an existinng septic tank tha is operating from a visual inspection suggesting there is good soakage

*Note and record water level

3.2 Trial Hole (should be a minimum of 2.1m deep (3m for regionally important aquifers))

To avoid any accidental damage, a trial hole assessment or percolation tests should not be undertaken in areas, which are at or adjacent to significant sites (e.g. NHAs, SACs, SPAs, and/or Archaeological etc.), without prior advice from National Parks and Wildlife Service or the Heritage Service.

Depth of trial hole (m): 0.90

Depth from ground surface to bedrock (m) (if present): 0.90

Depth from ground surface to water table (m) (if present):

Depth of water ingress:

Rock type (if present):

Date and time of excavation: 28/08/2019

Date and time of examination: 02/09/2019

	Depth of P/T Test*	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m	P	Top soil - loam	dilatant	Crumb	Firm	Black	Rootlets Roots of trees
0.2 m	P						
0.3 m	P,						
0.4 m	P,T1,3	CLAY	Poorly Dilatent Trds= 11,9,11 Ribs = 110,110,110	Blocky	Firm	Brown	
0.5 m	T1-3						None
0.6 m	T1-3						
0.7 m	T1-3						
0.8 m	T2						
0.9 m							
1.0 m		Rock and Base of trench					
1.1 m							
1.2 m							
1.3 m							
1.4 m							
1.5 m							
1.6 m							
1.7 m							
1.8 m							
1.9 m							
2.0 m							
2.1 m							
2.2 m							
2.3 m							
2.4 m							
2.5 m							
2.6 m							
2.7 m							
2.8 m							
2.9 m							
3.0 m							

Evaluation:

Topsoil is likely to have good soakage. Subsoil is a clay that is hallow but has open structure.

Likely T value: 30.00

Note: *Depth of percolation test holes should be indicated on log above. (Enter P or T at depts as appropriate).
** See Appendix E for BS 5930 classification.
*** 3 samples to be tested for each horizon and results should be entered above for each horizon.
**** All signs of mottling should be recorded.

3.3(a) Percolation ("T") Test for Deep Subsoils and/or Water Table

Step 1: Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm) (A)	300	300	300
Depth from ground surface to base of hole (mm) (B)	700	700	700
Depth of hole (mm) [B - A]	400	400	400
Dimensions of hole [length x breadth (mm)]	300 x 300	300 x 300	300 x 300

Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started	02/09/2019		02/09/2019		02/09/2019	

Each hole should be pre-soaked twice before the test is carried out. Each hole should be empty before refilling.

Step 3: Measuring T_{100}

Percolation Test Hole No.	1	2	3
Date of test	03/09/2019	03/09/2019	03/09/2019
Time filled to 400 mm	08:11	08:12	08:13
Time water level at 300 mm	09:00	09:01	09:04
Time to drop 100 mm (T_{100})	49.00	49.00	51.00
Average T_{100}			49.67

If T_{100} > 300 minutes then T-value >90 – site unsuitable for discharge to ground
If $T_{100} \leq 210$ minutes then go to Step 4;
If T_{100} > 210 minutes then go to Step 5;

Step 4: Standard Method (where $T_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δt (min)
1	09:00	10:14	74.00	09:01	10:11	70.00	09:04	10:22	78.00
2	10:14	11:37	83.00	10:11	11:32	81.00	10:22	11:51	89.00
3	11:37	13:29	112.00	11:32	13:42	130.00	11:51	14:05	134.00
Average Δt Value			89.67			93.67			100.33
	Average Δt/4 = [Hole No.1]		22.42 (t_1)	Average Δt/4 = [Hole No.2]		23.42 (t_2)	Average Δt/4 = [Hole No.3]		25.08 (t_3)

Result of Test: T = 23.64 (min/25 mm)

Comments:

Soakage is acceptable.

Step 5: Modified Method (where $T_{100} > 210$ minutes)

Percolation Test Hole No.	1				2				3			
Fall of water in hole (mm)	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	T – Value = 4.45 / K_{fs}	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	T – Value = 4.45 / K_{fs}	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	T – Value = 4.45 / K_{fs}
300 - 250	8.1				8.1				8.1			
250 - 200	9.7				9.7				9.7			
200 - 150	11.9				11.9				11.9			
150 - 100	14.1				14.1				14.1			
Average T- Value	T- Value Hole 1= (t_1)			0.00	T- Value Hole 1= (t_2)			0.00	T- Value Hole 1= (t_3)			0.00

Result of Test: T = 0.00 (min/25 mm)

Comments:

3.3(b) Percolation ("P") Test for Shallow Soil / Subsoils and/or Water Table

Step 1: Test Hole Preparation

Percolation Test Hole	1	2	3
Depth from ground surface to top of hole (mm)	0	0	0
Depth from ground surface to base of hole (mm)	400	400.00	400
Depth of hole (mm)	400	400	400
Dimensions of hole [length x breadth (mm)]	300 x 300	300 x 300	300 x 300

Step 2: Pre-Soaking Test Holes

Date and Time pre-soaking started	02/09/2019		02/09/2019		02/09/2019	

Each hole should be pre-soaked twice before the test is carried out. Each hole should be empty before refilling.

Step 3: Measuring P_{100}

Percolation Test Hole No.	1	2	3
Date of test	03/09/2019	03/09/2019	03/09/2019
Time filled to 400 mm	08:19	08:22	08:23
Time water level at 300 mm	09:26	09:28	09:27
Time to drop 100 mm (P_{100})	67.00	66.00	64.00
Average P_{100}			65.67

If P_{100} > 300 minutes then T-value >90 – site unsuitable for discharge to ground
If $P_{100} \leq 210$ minutes then go to Step 4;
If P_{100} > 210 minutes then go to Step 5;

Step 4: Standard Method (where $P_{100} \leq 210$ minutes)

Percolation Test Hole	1			2			3		
Fill no.	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)	Start Time (at 300 mm)	Finish Time (at 200 mm)	Δp (min)
1	09:26	10:39	73.00	09:28	10:35	67.00	09:27	10:41	74.00
2	10:39	12:11	92.00	10:35	12:17	102.00	10:41	12:21	100.00
3	12:11	14:11	120.00	12:17	14:23	126.00	12:21	14:49	148.00
Average Δp Value			95.00			98.33			107.33
	Average Δp/4 = [Hole No.1]		23.75 (p_1)	Average Δp/4 = [Hole No.2]		24.58 (p_2)	Average Δp/4 = [Hole No.3]		26.83 (p_3)

Result of Test: P = 25.06 (min/25 mm)

Comments:

The P-value is within the acceptable range

Step 5: Modified Method (where $P_{100} > 210$ minutes)

Percolation Test Hole No.	1				2				3			
Fall of water in hole (mm)	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	P – Value = 4.45 / K_{fs}	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	P – Value = 4.45 / K_{fs}	Time Factor = T_f	Time of fall (mins) = T_m	K_{fs} = T_f / T_m	P – Value = 4.45 / K_{fs}
300 - 250	8.1				8.1				8.1			
250 - 200	9.7				9.7				9.7			
200 - 150	11.9				11.9				11.9			
150 - 100	14.1				14.1				14.1			
Average P- Value	P- Value Hole 1= (p_1)			0.00	P- Value Hole 1= (p_2)			0.00	P- Value Hole 1= (p_3)			0.00

Result of Test: P = 0.00 (min/25 mm)

Comments:

4.0 CONCLUSION of SITE CHARACTERISATION

Integrate the information from the desk study and on-site assessment (i.e. visual assessment, trial hole and percolation tests) above and conclude the type of system(s) that is (are) appropriate. This information is also used to choose the optimum final disposal route of the treated wastewater.

Not Suitable for Development ☐

Suitable for [1]		**Discharge Route**
1. Septic tank system (septic tank and percolation area)	No	Discharge to Ground Water
2. Secondary Treatment System		
a. septic tank and filter system constructed on-site and polishing filter; or	Yes	
b. packaged wastewater treatment system and polishing filter	Yes	

5.0 RECOMMENDATION

Propose to install: Packaged wastewater treatment system and polishing filter

and discharge to: Ground Water

Trench Invert level (m):

Site Specific Conditions (e.g. special works, site improvement works testing etc.

It is recommended to install a Package aeration system and to polish the effluent through a Sand polishing filter and discharge to ground.
It is proposed to follow the amendment to the EPA code of Practice as published Feb. 2012 (Clarification on the Disposal of Effluent from Polishing Filters - Tertiary Treatment Systems) This allows the area for disposal of treated wastewater to be calculated from the formula Area = 0.125 x T x PE.
The proposed approach is to achieve secondary treatment in an Oakstown BAF unit and Tertiary treatment in a Sand Filter. The disposal of the treated wastewater is then achieved by distributing the effluent from the sand filter over a gravel distribution layer. As the bedrock is at 900mm bgl it is recommended that the base of the distribution gravel is at existing ground level. The vegetation is removed and a 300mm layer of washed gravel (8-32mm diameter) is placed over the prepared area. The Sand Filter is placed on this gravel. Effluent flows from the sand filter percolated into the gravel by gravity.
On this site the T-value is 24 and the PE is 6. Area for disposal = 0.125 x 24 x 76 m2 = 18m2. It is recommended to double to about 50m2
The sand filter can be loaded at up to 60 litres/m2 - thus requiring 15m2 filter. It must be constructed in accordance with the EPA code of practice using Sand certified to be of the required particle size and with a Cu <4
The BAF should be at least 7m from the dwelling and 10m from all ditches. The Sand Filter and disposal pad should be located at least 10m from all dwellings,10m from all ditches and 3m from all boundaries. The system should be located to th rear of the site.

[1] note: more than one option may be suitable for a site and this should be recorded

[2] A discharge of sewage effluent to "waters" (definition includes any or any part of any river, stream, lake, canal, reservoir, aquifer, pond, watercourse or other inland waters, whether natural or artificial) will require a licence under the Water Pollution Acts 1977-90. Refer to Section 2.6.2.

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank System

Tank Capacity (m^3)		Percolation Area		Mounded Percolation Area	
		No. of Trenches		No. of Trenches	
		Length of Trenches (m)		Length of Trenches (m)	
		Invert Level (m)		Invert Level (m)	

SYSTEM TYPE: Secondary Treatment System

Filter Systems

Media Type	Area (m^2)*	Depth of Filter	Invert Level
Sand/Soil			
Soil			
Constructed Wetland			
Other			

Package Treatment Systems

Type: Oakstown BAF P6

Capacity PE: 6.00

Sizing of Primary Compartment: 3.50 m^3

SYSTEM TYPE: Tertiary Treatment System

Polishing Filter: Surface Area (m^2)* 15.00

or **Gravity Fed:**

No. of Trenches

Length of Trenches (m)

Invert Level (m)

Package Treatment System: Capacity (pe)

Constructed Wetland: Surface Area (m^2)*

DISCHARGE ROUTE:

Groundwater	✔	Hydraulic Loading Rate * ($l/m^2.d$)	60.00
Surface Water **		Discharge Rate (m^3/hr)	

TREATMENT STANDARDS:

Treatment System Performance Standard (mg/l)	BOD	SS	NH_3	Total N	Total P
	20.00	30.00	20.00		10.00

QUALITY ASSURANCE:

Installation & Commissioning	On-going Maintenance
Installation supervised and Certified by qualified assessor or a suitably qualified person familiar with the EPA Code of Practice 2009.	Annual maintenance contract - including desludging

* Hydrolic loading rate is determined by the percolation rate of subsoil

** Water Pollution Act discharge licence required

7.0 SITE ASSESSOR DETAILS

Company: Trinity Green

Prefix: Dr. First Name: Eugene Surname: Bolton

Address: Clonfert, Maynooth, Co. Kildare

Qualifications/Experience: PhD Microbiology, Site Suitability Assessment Course (FETAC)

Date of Report: 09/10/2019

Phone: 086 2434828 Fax: e-mail info@trinitygreen.ie

Indemnity Insurance Number: PSE00185337

Signature: