

Site Characterisation Report

By

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Applicant: Frank Reynolds

APPENDIX A: SITE CHARACTERISATION FORM

File Reference:

1.0 GENERAL DETAILS (From planning application)

Prefix: Mr First Name: Surname:

Address: Site Location and Townland:

Number of Bedrooms: Maximum Number of Residents:

Comments on population equivalent

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

2.0 GENERAL DETAILS (From planning application)

Soil Type, (Specify Type):

Subsoil, (Specify Type):

Bedrock Type:

Aquifer Category: Regionally Important | Locally Important Poor

Vulnerability: Extreme High Moderate Low

Groundwater Body: Status:

Name of Public/Group Scheme Water Supply within 1 km:

Source Protection Area: ZOC SI SO Groundwater Protection Response:

Presence of Significant Sites (Archaeological, Natural & Historical):

Past experience in the area:

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).

Moderate vulnerability groundwater will be at risk
There are no wells in the area

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:

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

Slope Comment

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

Houses:

House borders site to Northwest
House borders site to Southeast. There are 2 further houses to Southeast within 250m
House to North and 3 houses to Northeast within 300m

Existing Land Use:

Vegetation Indicators:

Groundwater Flow Direction:

Ground Condition:

Site Boundaries:

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Roads:

Road to Northeast

Outcrops (Bedrock And/Or Subsoil):

Nothing exposed

Surface Water Ponding:

None

Lakes:

Nothing within 500m

Beaches/Shellfish Areas:

None

Wetlands:

None

Karst Features:

None

Watercourses/Streams:*

Tributary of Liffey 300m northwest

*Note and record water level

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Drainage Ditches:*

None bordering site

Springs:*

None

Wells:*

Area served by Mains water

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).

Good agricultural land in the area.
No evidence of poor soakage
No wells
Likely to be acceptable

*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):

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

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

Depth of water ingress: Rock type (if present):

Date and time of excavation: Date and time of examination:

Depth of Surface and Subsurface

Percolation Tests	Soil/Subsoil Texture & Classification**	Plasticity and dilatancy***	Soil Structure	Density/ Compactness	Colour****	Preferential flowpaths
0.1 m <input type="text" value="P"/>	Topsoil	Dilatent	Crumb	Firm	Dark Brown	Rootlets and roots from hedgerow
0.2 m <input type="text" value="P"/>						
0.3 m <input type="text" value="P"/>						
0.4 m <input type="text" value="P"/>	Sandy CLAY Few angular cobbles	Slowly Dilatent Trds =9,9,11 Ribs= 100,100,110	Blocky	Firm	Brown	
0.5 m <input type="text"/>						
0.6 m <input type="text"/>						
0.7 m <input type="text"/>	Fractured Rock with low clay content	No Trds or Ribs			Dark Grey/Brown	
0.8 m <input type="text"/>						None
0.9 m <input type="text"/>						
1.0 m <input type="text"/>						
1.1 m <input type="text"/>						
1.2 m <input type="text"/>						
1.3 m <input type="text"/>	Base of Trench					
1.4 m <input type="text"/>						
1.5 m <input type="text"/>						
1.6 m <input type="text"/>						
1.7 m <input type="text"/>						
1.8 m <input type="text"/>						
1.9 m <input type="text"/>						
2.0 m <input type="text"/>						
2.1 m <input type="text"/>						
2.2 m <input type="text"/>						
2.3 m <input type="text"/>						
2.4 m <input type="text"/>						
2.5 m <input type="text"/>						
2.6 m <input type="text"/>						
2.7 m <input type="text"/>						
2.8 m <input type="text"/>						
2.9 m <input type="text"/>						
3.0 m <input type="text"/>						
3.1 m <input type="text"/>						
3.2 m <input type="text"/>						
3.3 m <input type="text"/>						
3.4 m <input type="text"/>						
3.5 m <input type="text"/>						

Likely Subsurface Percolation Value:

Likely Surface Percolation Value:

Note: *Depth of percolation test holes should be indicated on log above. (Enter Surface or Subsurface at depths 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.

3.2 Trial Hole (contd.) Evaluation:

Good mineral soil overlaying a Clay. Site had been used as a plant nursery in the past. However overburden is shallow at 600mm above fractured limestone. The fractured rock was removed down to 1.2m bgl - no evidence of watertable.

3.3(a) Subsurface Percolation Test for Subsoil

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

Pre-soak start	Date	02-Nov-2021	02-Nov-2021	02-Nov-2021
	Time	<input type="text"/>	<input type="text"/>	<input type="text"/>
2nd pre-soak start	Date	02-Nov-2021	02-Nov-2021	02-Nov-2021
	Time	<input type="text"/>	<input type="text"/>	<input type="text"/>

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

Step 3: Measuring T_{100}

Percolation Test Hole No.	1	2	3
Date of test	03-11-2021	03-11-2021	03-11-2021
Time filled to 400 mm	08:28	08:29	08:30
Time water level at 300 mm	09:40	09:44	09:43
Time (min.) to drop 100 mm (T_{100})	72.00	75.00	73.00
Average T_{100}			73.33

- If $T_{100} > 300$ minutes then Subsurface Percolation value >120 – 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		
	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	09:40	11:01	81.00	09:44	11:07	83.00	09:43	11:09	86.00
2	11:01	12:34	93.00	11:07	12:50	103.00	11:09	12:53	104.00
3	12:34	14:26	112.00	12:50	14:58	128.00	12:53	15:11	138.00
Average Δt Value			95.33			104.67			109.33
	Average $\Delta t/4 =$ [Hole No.1] <input type="text" value="23.83"/> (t_1)			Average $\Delta t/4 =$ [Hole No.2] <input type="text" value="26.17"/> (t_2)			Average $\Delta t/4 =$ [Hole No.3] <input type="text" value="27.33"/> (t_3)		

Result of Test: Subsurface Percolation Value = (min/25 mm)

Comments:

Soakage is well within the acceptable range

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

Percolation Test Hole No.	1					
	Time Factor = T_r	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{100} = T_r / T_m$	T-Value = $4.45 / K_{100}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 1 = (T_1)		<input type="text" value="0.00"/>		

Percolation Test Hole No.	2					
	Time Factor = T_r	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{100} = T_r / T_m$	T-Value = $4.45 / K_{100}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 2 = (T_2)		<input type="text" value="0.00"/>		

Result of Test: Subsurface Percolation Value =

(min/25 mm)

Percolation Test Hole No.	3					
	Time Factor = T_r	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{100} = T_r / T_m$	T-Value = $4.45 / K_{100}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 3 = (T_3)		<input type="text" value="0.00"/>		

Comments:

3.3(b) Surface Percolation Test for Soil

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	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

Pre-soak start	Date	02-Nov-2021	02-Nov-2021	02-Nov-2021
	Time			
2nd pre-soak start	Date	02-Nov-2021	02-Nov-2021	02-Nov-2021
	Time			

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

Step 3: Measuring T_{100}

Percolation Test Hole No.	1	2	3
Date of test	03-Nov-21	03-Nov-21	03-Nov-2021
Time filled to 400 mm	08:33	08:34	08:35
Time water level at 300 mm	09:39	09:46	09:40
Time to drop 100 mm (T_{100})	66.00	72.00	65.00
Average T_{100}			67.67

If $T_{100} > 300$ minutes then Surface Percolation 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	09:39	11:02	83.00	09:46	11:12	86.00	09:40	11:08	88.00
2	11:02	12:29	87.00	11:22	12:56	94.00	11:08	12:46	98.00
3	12:29	14:12	103.00	12:56	14:45	109.00	12:46	14:29	103.00
Average ΔT Value	91.00			96.33			96.33		
	Average $\Delta T/4 =$ [Hole No.1] <input type="text" value="22.75"/> (T_1)			Average $\Delta T/4 =$ [Hole No.2] <input type="text" value="24.08"/> (T_2)			Average $\Delta T/4 =$ [Hole No.3] <input type="text" value="24.08"/> (T_3)		

Result of Test: Surface Percolation Value = (min/25 mm)

Comments:

Soakage is within acceptable range

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

Percolation Test Hole No.	1					
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{10} = T_f / T_m$	T-Value = $4.45 / K_{10}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 1 = (T_1)				<input type="text" value="0.00"/>

Percolation Test Hole No.	2					
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{10} = T_f / T_m$	T-Value = $4.45 / K_{10}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 2 = (T_2)				<input type="text" value="0.00"/>

Result of Test: Surface Percolation Value =

(min/25 mm)

Percolation Test Hole No.	3					
Fall of water in hole (mm)	Time Factor = T_f	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{10} = T_f / T_m$	T-Value = $4.45 / K_{10}$
300 - 250	8.1			0.00		
250 - 200	9.7			0.00		
200 - 150	11.9			0.00		
150 - 100	14.1			0.00		
Average	T-Value	T-Value Hole 3 = (T_3)				<input type="text" value="0.00"/>

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.

Slope of proposed infiltration / treatment area:

Flat

Are all minimum separation distances met?

✓

Depth of unsaturated soil and/or subsoil beneath invert of gravel (or drip tubing in the case of drip dispersal system)

0.90

Percolation test result: Surface: 24.00

Sub-surface: 26.00

Not Suitable for Development

Suitable for Development

Identify all suitable options

1. Septic tank system (septic tank and percolation area) (Chapter 7) No
2. Secondary Treatment System (Chapters 8 and 9) and soil polishing filter (Section 10.1) Yes
3. Tertiary Treatment System and Infiltration / treatment area (Section 10.2) Yes

Discharge Route¹

groundwater

5.0 SELECTED DWWTS

Propose to install: Secondary Treatment System and soil polishing filter

and discharge to: Ground Water

Invert level of the trench/bed gravel or drip tubing (m) 900.00

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

Install BAF P6 followed by Soil filter with base of gravel at 300mm above existing ground level. This gives the required 900mm depth of free draining soil under distribution gravel distribution layer.

The area is prepared by removing the vegetation. A layer of soil 300mm deep is placed on the prepared area (soil from the site can be used) A 200mm layer of distribution gravel is placed on this soil. The distribution pipes (32mm diameter) are placed on the gravel and covered with a further 100mm gravel.

PE = 6

Hydraulic load = 900 litres

T= 20 - 40 Load at 10 litres/m²

Require 90m² soil filter

¹ 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 2.4.

6.0 TREATMENT SYSTEM DETAILS

SYSTEM TYPE: Septic Tank Systems (Chapter 7)

Tank Capacity (m ³) <input style="width: 80%;" type="text"/>	Percolation Area	Mounded Percolation Area
	No. of Trenches <input style="width: 80%;" type="text"/>	No. of Trenches <input style="width: 80%;" type="text"/>
	Length of Trenches (m) <input style="width: 80%;" type="text"/>	Length of Trenches (m) <input style="width: 80%;" type="text"/>
	Invert Level (m) <input style="width: 80%;" type="text"/>	Invert Level (m) <input style="width: 80%;" type="text"/>

SYSTEM TYPE: Secondary Treatment System (Chapters 8 and 9) and polishing filter (Section 10.1)

Secondary Treatment Systems receiving septic tank effluent (Chapter 8)

Media Type	Area (m ²)*	Depth of Filter	Invert Level
Sand/Soil	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>
Soil	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>
Constructed Wetland	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>
Other	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>	<input style="width: 80%;" type="text"/>

Packaged Secondary Treatment Systems receiving raw wastewater (Chapter 9)

Type	<input style="width: 80%;" type="text" value="BAF"/>
Capacity PE	<input style="width: 80%;" type="text" value="6"/>
Sizing of Primary Compartment	<input style="width: 80%;" type="text" value="3.00"/> m ³

Polishing Filter*: (Section 10.1)

Surface Area (m ² *)	<input style="width: 80%;" type="text"/>	Option 3 - Gravity Discharge Trench length (m)	<input style="width: 80%;" type="text"/>
Option 1 - Direct Discharge Surface area (m ²)	<input style="width: 80%;" type="text"/>	Option 4 - Low Pressure Pipe Distribution Trench length (m)	<input style="width: 80%;" type="text"/>
Option 2 - Pumped Discharge Surface area (m ²)	<input style="width: 80%;" type="text" value="90.00"/>	Option 5 - Drip Dispersal Surface area (m ²)	<input style="width: 80%;" type="text"/>

SYSTEM TYPE: Tertiary Treatment System and infiltration / treatment area (Section 10.2)

Identify purpose of tertiary treatment <input style="width: 100%; height: 100%;" type="text"/>	Provide performance information demonstrating system will provide required treatment levels <input style="width: 100%; height: 100%;" type="text"/>	Provide design information <input style="width: 100%; height: 100%;" type="text"/>
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DISCHARGE ROUTE:

Groundwater	<input checked="" type="checkbox"/>	Hydraulic Loading Rate * (l/m ² .d)	<input style="width: 80%;" type="text" value="10.00"/>	Surface area (m ²)	<input style="width: 80%;" type="text" value="90.00"/>
Surface Water **	<input type="checkbox"/>	Discharge Rate (m ³ /hr)	<input style="width: 80%;" type="text"/>		

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

** Water Pollution Act discharge licence required

6.0 TREATMENT SYSTEM DETAILS

QUALITY ASSURANCE:

Installation & Commissioning

Install system as specified - Supervised and Certified by Assessor

On-going Maintenance

Annual maintenance by independent maintenance technician

7.0 SITE ASSESSOR DETAILS

Company:

Prefix: First Name: Surname:

Address:

Qualifications/Experience:

Date of Report:

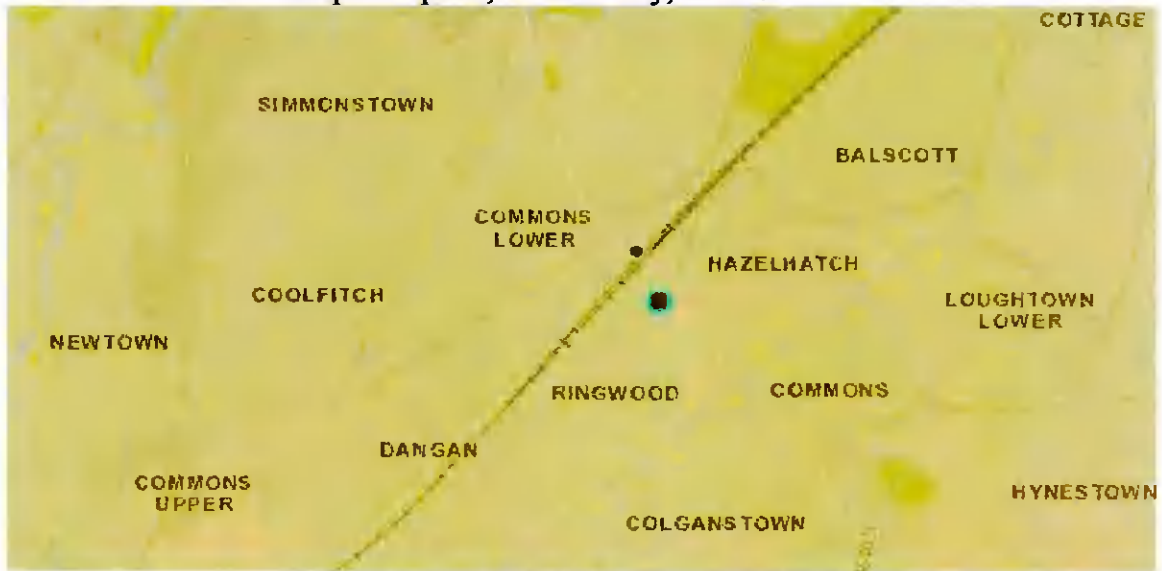
Phone: E-mail:

Indemnity Insurance Number:

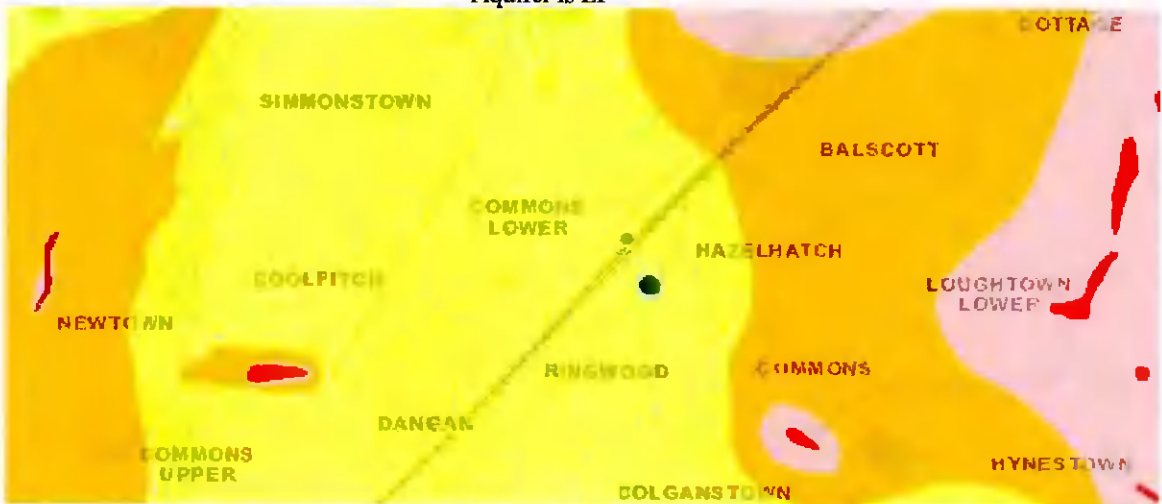
Signature: _____



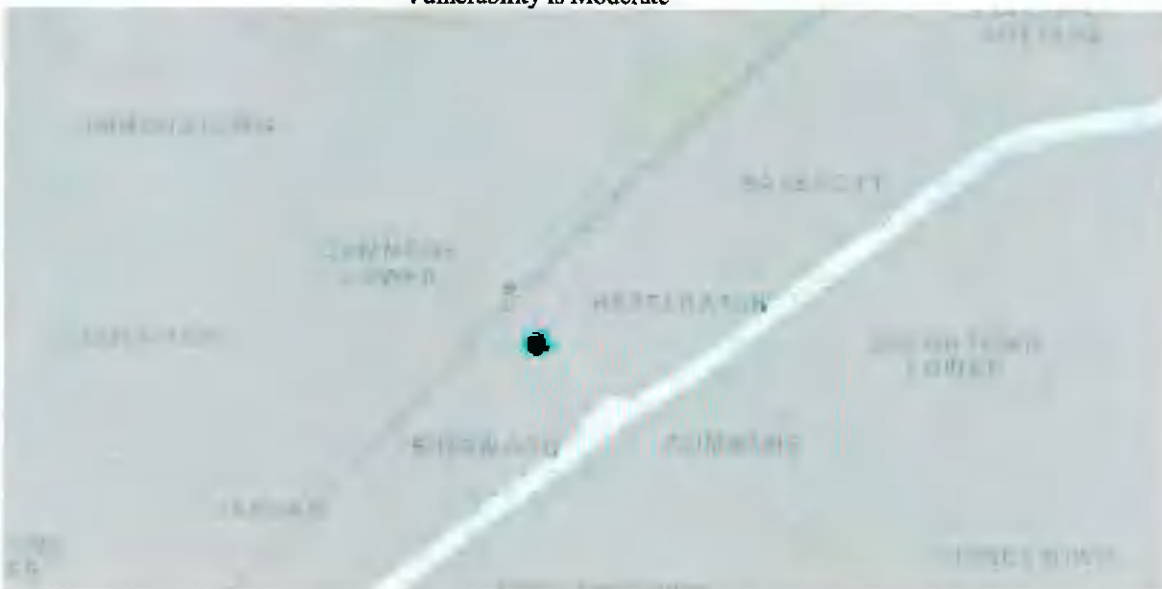
Maps – Aquifer, Vulnerability, Berdock



Aquifer is LI

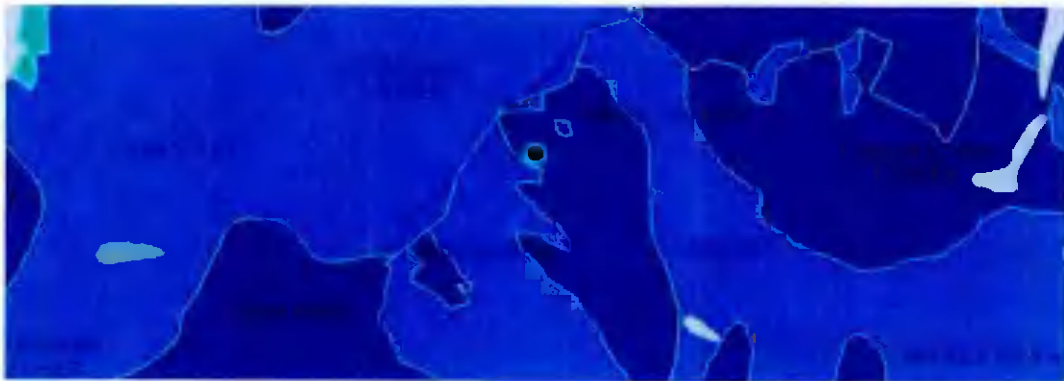


Vulnerability is Moderate



Bedrock is Dinantian Upper Impure Limestones

Soil



Parent Material	TLs	IFS Soil Description	Derived from mainly calcareous parent materials
Parent Material Name	Till derived chiefly from Limestone	County	DUBLIN
Parent Material Description	Limestone till (Carboniferous)	Category	Deep well drained mineral (Mainly basic)
Soil Group	Grey Brown Podzolics Brown Earths (medium-high base status)	Legend	Brm nDW - Deep well drained mineral (Mainly basic)
IFS Soil Code	Brm nDW		

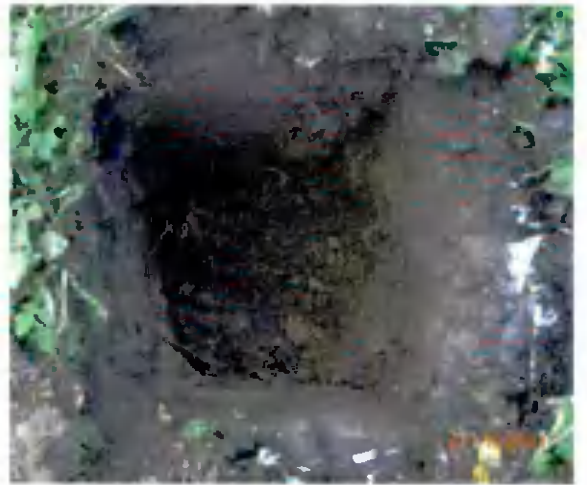
Subsoil



Lithology	Till derived from limestones
Quaternary Sediment	TLs

Photos

Row 1 - P1, P2



Row 2 - P3, T1



Row 3 - T2, T3



Trial Pit



Site overview



Site Location

