

Site Characterisation Report

By

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Applicant: GMC

APPENDIX A: SITE CHARACTERISATION FORM

File Reference:

1.0 GENERAL DETAILS (From planning application)

Prefix: First Name: Surname:

Address: Site Location and Townland:

Number of Bedrooms: Maximum Number of Residents:

Comments on population equivalent

Pop equivalent is based on EPA Manual Treatment Systems for Small Communities, Business, Leisure Centre and Hotels
Maximum of 10 people work on site with no Canteen 30 litres and 20grams BOD /worker = 300 litres and 200 grams = PE of 2
based on Hydraulic load and 3.3 based on organic load. System is therefore designed for PE of 4 - minimum as per EPA Code
of practice 2021

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 Pu

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

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:

Industrial area but house borders site to West and house borders site to East

Existing Land Use:

Industrial unit
Rear of site is fallow seems to have been unused for an extended period

Vegetation Indicators:

Nothing to suggest poor soakage in adjoining agricultural lands.
On this site thr rear is unused - few bunches of rushes but mainly brier around edges

Groundwater Flow Direction:

Ground Condition:

dry

Site Boundaries:

Hedgerow

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:*

North 200m

*Note and record water level

3.0 ON-SITE ASSESSMENT

3.1 Visual Assessment (contd.)

Drainage Ditches:*

West boundary - water at 1m
There is a berm between the site and the ditch

Springs:*

None

Wells:*

Area served 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).

Good agricultural land
No evidence of poor 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):

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

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
0.2 m <input type="text" value="P"/>						
0.3 m <input type="text" value="P"/>	Sandy Gravely CLAY High sand	Slowly Dilatent Trds =8,9,9 Ribs= 100,90,100	Blocky	Stiff to Hard	Light Brown	None
0.4 m <input type="text" value="P"/>						
0.5 m <input type="text" value="I"/>						
0.6 m <input type="text" value="I"/>	Gravely CLAY	Poorly Dilatent	Blocky	Firm	Dark Grey	
0.7 m <input type="text" value="I"/>	Increasing content of small cobbles	Trds = 10, 9, 10, Ribs= 100,100,100				
0.8 m <input type="text" value="I"/>						
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"/>						
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"/>	Gravely SILT/CLAY with few cobbles	Slowly Dilatent Trds = 4,5,4, Ribs= 70,70,70	Massive	Firm	Dark Grey, Black	
2.0 m <input type="text"/>						
2.1 m <input type="text"/>						
2.2 m <input type="text"/>						
2.3 m <input type="text"/>	Base of Trench					
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:

Very shallow topsoil
 Upper horizon of subsoil is very compacted will reduce soakage.
 High gravel content in lower subsoil.
 Watertable is high at 1m bgl and means a septic tank will not suffice on this site

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)	400	400	400
Depth from ground surface to base of hole (mm) (B)	800	800	800
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	01-Dec-2021	01-Dec-2021	01-Dec-2021
	Time			
2nd pre-soak start	Date	01-Dec-2021	01-Dec-2021	01-Dec-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	02-12-2021	02-12-2021	02-12-2021
Time filled to 400 mm	08:04	08:05	08:06
Time water level at 300 mm	09:20	08:10	09:19
Time (min.) to drop 100 mm (T_{100})	76.00	5.00	73.00
Average T_{100}			51.33

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		
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	09:20	11:32	132.00	08:10	08:16	6.00	09:19	11:26	127.00
2	11:32	13:54	142.00	08:16	08:22	6.00	11:26	13:53	147.00
3	13:54	17:36	222.00	08:22	08:29	7.00	13:53	17:36	223.00
Average Δt Value	165.33			6.33			165.67		
	Average $\Delta t/4 =$ [Hole No.1] <input type="text" value="41.33"/> (t_1)			Average $\Delta t/4 =$ [Hole No.2] <input type="text" value="1.58"/> (t_2)			Average $\Delta t/4 =$ [Hole No.3] <input type="text" value="41.42"/> (t_3)		

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

Comments:

Soakage is within the acceptable range. However T2 is totally different to T1&T3 and reflects the fact that it is in gravel. This differs from the other T-tests and the Trial Pit and it is therefore concluded that T1&T3 being in agreement and reflecting the Trial Pit that T2 should be ignored. The T-value is taken as 41.35 rather than 28.1.

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

Percolation Test Hole No.	1					
Fall of water in hole (mm)	Time Factor = T_1	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{15} = T_1 / T_m$	T-Value = $4.45 / K_{15}$
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_1	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{15} = T_1 / T_m$	T-Value = $4.45 / K_{15}$
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					
Fall of water in hole (mm)	Time Factor = T_1	Start Time hh:mm	Finish Time hh:mm	Time of fall (mins) = T_m	$K_{15} = T_1 / T_m$	T-Value = $4.45 / K_{15}$
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	01-Dec-2021	01-Dec-2021	01-Dec-2021
	Time			
2nd pre-soak start	Date	01-Dec-2021	01-Dec-2021	01-Dec-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	01-Dec-21	01-Dec-21	01-Dec-2021
Time filled to 400 mm	08:14	08:15	08:16
Time water level at 300 mm	09:25	09:24	09:28
Time to drop 100 mm (T_{100})	71.00	69.00	72.00
Average T_{100}			70.67

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	09:25	10:58	93.00	09:24	10:42	78.00	09:28	10:54	86.00
2	10:58	13:09	131.00	10:42	12:56	134.00	10:54	13:06	132.00
3	13:09	16:40	211.00	12:56	16:04	188.00	13:06	16:39	213.00
Average ΔT Value	145.00			133.33			143.67		
	Average $\Delta T/4 =$ [Hole No.1] <input type="text" value="36.25"/> (T_1)			Average $\Delta T/4 =$ [Hole No.2] <input type="text" value="33.33"/> (T_2)			Average $\Delta T/4 =$ [Hole No.3] <input type="text" value="35.92"/> (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	$K_{fs} = T_f / T_m$	T - Value = $4.45 / K_{fs}$
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	$K_{fs} = T_f / T_m$	T - Value = $4.45 / K_{fs}$
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	$K_{fs} = T_f / T_m$	T - Value = $4.45 / K_{fs}$
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:

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)

Percolation test result: Surface:

Sub-surface:

Not Suitable for Development

Suitable for Development

Identify all suitable options

- | | |
|---|----------------------------------|
| 1. Septic tank system (septic tank and percolation area) (Chapter 7) | <input type="text" value="No"/> |
| 2. Secondary Treatment System (Chapters 8 and 9) and soil polishing filter (Section 10.1) | <input type="text" value="Yes"/> |
| 3. Tertiary Treatment System and Infiltration / treatment area (Section 10.2) | <input type="text" value="Yes"/> |

Discharge Route ¹

groundwater

5.0 SELECTED DWWTS

Propose to install:

and discharge to:

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

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

Install BAF P6 followed by Soil filter with base of gravel at existing ground level. This gives in excess of the required 900mm under distribution gravel filter.
 The area is prepared by removing the vegetation. 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 = 4
 Hydraulic load = 600 litres
 T= 40 - 50 Allow 30m²/PE (Load at 5 litres/m²)
 Require 120m² 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="120.00"/>	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

Provide performance information demonstrating system will provide required treatment levels

Provide design information

DISCHARGE ROUTE:

Groundwater	<input checked="" type="checkbox"/>	Hydraulic Loading Rate * (l/m ² .d)	<input style="width: 80%;" type="text" value="5.00"/>	Surface area (m ²)	<input style="width: 80%;" type="text" value="120.00"/>
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:

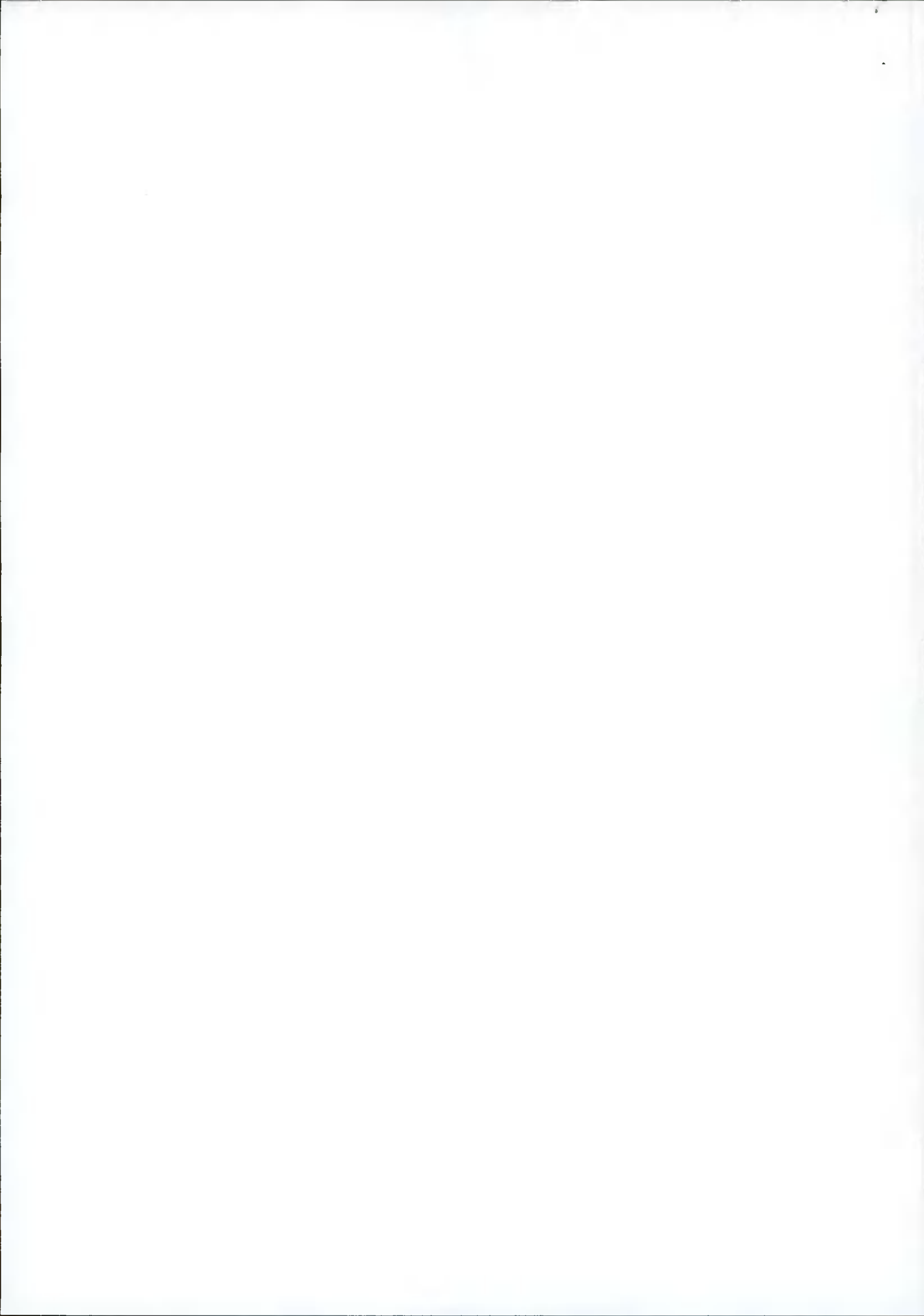
Phone:

E-mail:

Indemnity Insurance Number:

Signature: _____





Maps – Aquifer, Vulnerability, Berdock



Aquifer is PU

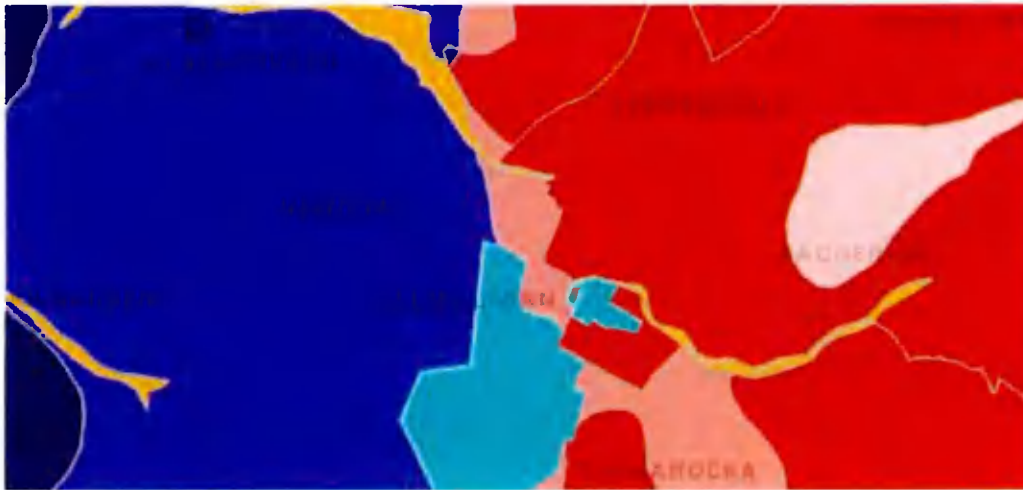


Vulnerability is Moderate



Bedrock is Silurian Metasediments and Volcanics

Soil



Parent Material	Made	IFS Soil Code	Made
Parent Material Name	Made ground	IFS Soil Description	Made/Built land
Parent Material Description	Made ground	County	KILDARE
Soil Group		Category	Made ground
IFS Soil Code	Made	Legend	Made - Made ground

Subsoil



Lithology	Till derived from Lower Palaeozoic sandstones and shales
Quaternary Segment	TLPSS

Photos

Row 1 - P1, P2



Row 2 - P3, T1



Row 3 - T2, T3



Trial Pit



Site overview



Site Location

